DOE/EIS - 0138
Volume II A.1 Pages 2,007-2,508

FINAL
ENVIRONMENTAL IMPACT STATEMENT

SUPERCONDUCTING SUPER COLLIDER

Volume II
Comment Resolution Document

A. Comments
1. Letters

December 1988

U.S. Department of Energy
Washington D.C. 20585

LETTER 1031

Sept. 19, 1988

Dr. Wilmot Hess, Chairman, SSC Site Task Force
ER-65/GTN, Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attention: SSC Draft EIS

Dear Dr. Hess,

1 After reading and discussing the EIS Statement on housing availibility in Morgan County, Co., it is the findings of our committee that Ft. Morgan and Brush were expected, according to the Statement, to experience sizeable impact in regard to housing demand. This was found not to be the case with other possible sites in different states. We would like to address this issue.

Morgan County has historically been able to handle large influx of population growth and construction increases caused by the demands of the oil industry, utility industry and meat packing industries in previous years. Because of these experiences, we feel Morgan County will be able to absorb the increased demands in housing.

2 In the early 1950's the oil industry brought an influx of over 500 families to this area within a 2 year period. Most of these people became permanent residents. In the early 1970's our meat packing industry brought in 400 new employees. This peaked in the early 1980's to 1100 new employees all within a 6 month period. Even at this rate there was ample available housing. The modular housing industry introduced 350 employees to our community in less than a year. Most of these people became permanent residents, as well. In 1978 to 1979, the peak years of the Pawnee power plant, over 1800 workers were introduced and absorbed into the community.

An economic downturn experienced in the early 80's brought virtually all new construction to a halt. Demand for new building slowed, as there wasn't a need. We were overbuilt and could supply needed housing in the existing market. This would account for only 350 permits for construction of housing units in the '80-'87 period according to the U.S. Bureau of the Census(1987, 1985, 1987b) referred to in the EIS Statement. Prior to this economic downturn, Morgan County was issuing over 125,housing permits annually.

In the EIS Statement pg. 267 of the EIS Vol IV Appendix 14, states if the expansion of the proposed (but postponed) Pawnee power plant were to occur during construction of the SSC, the towns of Fort Morgan and Brush would experience great difficulty in absorbing the substantial impact. It
3 is doubtful that the second phase of the power plant will be constructed and peak at the same time as the SSC. If they were to be constructed simultaneously, there is a great deal of excess electricity projected for future years with present facilities. Some constructed plants are not even running at the present time, waiting for customer demand.

According to pg. 78 of DEIS Vol. IV Appendix 14, Morgan County will require an additional 950 units in 1992 and 650 units by the year 2000. The information obtained from the Morgan County Assessors office on the 1988 tax records show that presently there are 1166 total residential vacant lots
4 of which 147 are rural. Of these, approx. 603 lots are complete, all utilities intact. The remainder of the 1166 lots are platted, but incomplete, with utilities available nearby.

Morgan County has several large farms bordering city limits that can be annexed into the city when future development warrants it.

Fort Morgan is equipped with a modular housing factory that can produce many fast, permanent housing units required by SSC workers. According to the Colorado Division of Housing, Century Modular Housing is capable of producing 5 factory units per day and can operate on a double shift when necessary.

In conclusion, we feel the DEIS statement has been wrong in its conclusion about housing in our community. We hope this information will help in making the final choice for the proposed site. If the SSC were to come to Colorado, Morgan County can handle the growth and can supply the housing requirements necessary for its workers.

Sincerely,

Ryan Covelli

Ryan Covelli
Chairman, SSC local housing committee
Fort Morgan, Co.
(303) 645-2484 or (303) 867-4908

Dave Graff

Dave Graff
Spokesman, SSC local housing committee
Fort Morgan, Co.
(303) 867-3500

Mailing Address:

Ryan Covelli
25551 Co. Rd. 6.7
Weldona, Co. 80653

LETTER 1032

This is one of our (C.A.T.C.H. of Illinois) signs from the hearings. I want you to see this for exactly what it is - One of the many pieces of proof that we WILL NOT allow the Department of Energy or the State of Illinois to build this project in Illinois. No matter what it takes - physical force, violence, court orders or even serious injuries - we WILL NOT be taken from our homes and properties or allow our friends and loved ones to be taken from their homes and properties. And let me assure you; you will be dealing with MANY MORE than a handful of people. We have over 20.000 members - most of whom care a great deal about what is happening to each other. It would be the BIGGEST news went in a long, long time. To see men, women and children dragged from their homes under physical violence is not the way the Department of Energy wants to build the SSC.

Patricia Schwartz

Monday, October 10, 1988

To: The Department of Energy:

It has been three days since I walked out of your hearings on Friday night October 7th, and I am still just as mad, upset and confused as I was then. As are everyone of us who have been waiting for months to know the final choice of the siting of the SSC. We found out in
2 January of this year that our state was one of the possible "lucky ones" under consideration for the SSC. Almost every minute of every day since then has been filled with fear, anger, mistrust and the thoughts of how we could do something to save our homes, ways of lives and possible safety of our families! **IT HAS BEEN A NIGHTMARE!!**

I am not one of the most affected-- I will not be losing my home. But I happen to have a brother, sister, and MANY friends who will be losing their's. My sister, her husband, and their three small children will be losing theirs if the SSC comes to Illinois. Her husband will be losing almost all of his farmland, which is their sole means of support. The land belongs to his grandfather and has been in the family for over 70 years. Much of that
3 family's prime farmland would be taken for your experiment. My brother will be losing his home that he recently bought in an area that he and his family have always wanted to be, and that they have saved for years to be able to buy. And many friends of mine in Kaneville will be losing their homes to the SSC. Some of them built their homes brick-by-brick, nail-by-nail, completely on their own. How can you even consider simply destroying so many people's lives when you have other alternatives?! And it **will** be totally destroying to these people. And they ARE people, not dots on a map or numbers on a page, or "receptors" as your Draft EIS referred to us!

Those of you who were at the Illinois hearings should have been able to plainly see that we are family people. We are NOT politicians, union workers told to be there, or FermiLab workers. We have not had YEARS to put our
4 strategies together, as our Governor and other elected officials have had. As I stated before, most of us found out in mid-January. And would you believe that some affected landowners (those losing homes) have **still** not been notified by the State or your DOE!! Laws and legislation have been

quietly changed in the past few years so that few of us would be able to do anything once Illinois was chosen.

And would you like to know what I think is almost the saddest thing of all? This issue has put people in the area on opposite sides of the fence. No matter what you have been told, the population is split almost 50/50 on this issue, with a certain number of people out there who don't even know what the SSC is, and who don't care to know. This country has enough problems without something like this pitting neighbor against neighbor. There is hatred and mistrust on both sides of this issue. The pro-SSCer's in Illinois actually hate those of us fighting to save our homes and livelihoods. And
5 none of the opposition can actually comprehend that there are people out there that can't understand our feelings on the issue. We are growing to hate them for making us feel like ignorant, running-scared, "Chicken Littles". No matter what the final decision turns out to be, the feelings run deep and will not be forgotten over night. Most of our local newspapers refuse to cover the issue in a neutral manner. They take whatever negative thing they can get from the opposition and magnify it 100 times, likewise completely ignoring all negatives from the proponents. We have even had obscene and threatening phone calls in the middle of the night.

Don't make the mistake of listening to the Governor or others in Illinois who tell you that there is little opposition here. Our numbers are strong and we have the ways and means to keep the SSC from being built even if
6 Illinois is chosen! We are all intelligent, resourceful people and will do whatever it takes to keep our homes, farms, businesses and schools safe and in our possessions. **WE DON'T WANT THE SSC! THE SSC WILL NOT BE BUILT IN ILLINOIS!!!**

Sincerely,
Patti Huggins
R.R.# 1 Box 273
Sugar Grove, Illinois 60554

LETTER 1033

United States Department of Agriculture
Soil Conservation Service
101 South Main
Temple, Texas
76501-7682

October 4, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U. S. Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

1 We have reviewed the Draft Environmental Impact Statement (DEIS) for the Superconducting Super Collider (SSC), U. S. Department of Energy, August 1988. The parts of the DEIS reviewed encompassed only those sections relevant to the proposed site in Ellis County, Texas. The review included: Volume I Environmental Impact Statement; and the following appendices of Volume IV: 1 - Engineering Description/Implementation, 2 - Cost Estimates, 7 - Water Resources, 13 - Land Resource Assessments, and 14 - Socioeconomics and Infrastructive Assessments.

We have no specific comments on these documents. However, we do have a general comment that we want to make concerning the "several floodwater retarding structures of the Soil Conservation Service, located ..." referred to in the DEIS, Volume I, Chapter 4, pages 4-50.

2 The floodwater retarding structures are a part of the Chambers Creek subwatershed of the Trinity River Watershed. They were planned and constructed by the SCS under the authority of the Flood Control Act of 1944 (58 Stat. 887), Public Law 534. The local sponsoring organizations in Ellis County which are responsible for the acquisition of land rights needed for construction of the floodwater retarding structures and the necessary operation and maintenance after constructure, are Ellis-Prairie Soil and Water Conservation District and the Ellis County Commissioners Court. These local sponsoring organizations or the SCS should be contacted prior to any actions that may modify or endanger the planned purpose of the floodwater retarding structures.

3 Floodwater retarding structures that have been identified to occupy the proposed construction site for the SSC include FRS Nos. 9, 17, 20, 89, and 108. FRS Nos. 87 and 88 are included in the Chambers Creek Watershed plan but have not been constructed. Local sponsoring organizations plan to acquire the necessary land rights for these structures by 1990 and 1995, respectively. If the DOE has any questions concerning the FRS, they should contact the SCS or the local sponsoring organizations.

Thank you for the opportunity to review and comment on the aforementioned documents.

Sincerely,

FOR HARRY W. ONETH
State Conservationist

cc: Marion Porter, Area Conservationist, SCS, Terrell

LETTER 1034

First National Bank
in DeSoto

911 N. Hampton Rd., P.O. Box 1007, DeSoto, Texas 75115, (214) 223-1234

Fred Orr
President,
Chairman of the Board
And CEO

September 21, 1988

Dr. Wilmot Hess
Chairman
SSC Site Task Force
Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

The firm of First National Bank of De Soto is pleased to reply to the Draft Environmental Impact Statement concerning the possible siting of the Superconducting Super Collider (SSC) in Ellis County, Texas.

We strongly support a Federal decision to locate the SSC in Ellis County, Texas. The positive economic impacts of building and operating the SSC facility will benefit not only the region but Texas as a State. We look forward to being host State to the research and the scientific breakthroughs which the SSC will generate.

1 Texans are rightfully known for our "can-do" spirit and work ethic. These qualities of our people and our businesses will insure not only timely, quality construction and operation of the SSC by the skill pools here in Texas, but also long-term public support for the SSC program for years to come.

Please record our favorable response to the socioeconomic impact of the SSC being sited in Ellis County, Texas.

Sincerely,

Fred Orr

FO;kly

LETTER 1035

L.V. HILLIS, JR.
REPRESENTATIVE
43RD DISTRICT

ROUTE 1, BOX 157
SPARTA, TENNESSEE 38583
(615) 738-6337

LEGISLATIVE OFFICE
SUITE 22, LEGISLATIVE PLAZA
NASHVILLE, TENNESSEE 37219
(615) 741-3876

House of Representatives
State of Tennessee

NASHVILLE

CHAIRMAN
CONSERVATION AND ENVIRONMENT

MEMBER OF COMMITTEES
CALENDAR AND RULES
FINANCE, WAYS AND MEANS
VETERANS AFFAIRS

October 5, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Dear Dr. Hess:

I represent as State Representative the 43rd representative district of Tennessee. I currently serve as Chairman of the House Conservation and Environment committee for the Tennessee General Assembly. I have served in the legislature for 18 years and as committee chairman for
1 10 years. I have sponsored or co-sponsored many environmental and conservation bills over those years which have become law and now are being effectively and responsibly administered across the state. Due to my experience in the General Assembly and interest in out-of-doors and the wildlife in Tennessee, I want to share my full support for the SSC project to be sited in Tennessee as described in the Draft EIS dated August 1988.

I believe the Tennessee proposal, having been developed by staff in the many state agencies, responsible for highway construction, air quality
2 control, water quality control, solid waste management, radiological health, ecology, archaeology, geology and others, has a prime interest to assure the protection of the environment. The data generated during the preparation of the proposal gave them a full confidence that the project can be constructed to meet DOE needs. The siting as Tennessee
3 has proposed, minimizes the impact on those sensitive environmental features of wetlands, cedar glades, and endangered or threatened
4 species of plants or wildlife. The siting also minimizes impacts on water quality and air quality.

Tennessee has suggested good construction management practices which
5 will further assure that no significant impact will occur. We also have adequate laws and regulations and a strong commitment to consistent and equitable enforcement which could be used as necessary to maintain proper compliance.

We in Tennessee don't want our environment damaged or destroyed and I
6 believe the project, as proposed, will continue a very good level of protection. It is expected that should any unanticipated event occur

Dr. Wilmot Hess, Chairman
October 5, 1985
Page 2

during construction or operation that all prudent mitigative measures will be pursued cooperatively to effectively and responsibly protect the environment and the health of the citizens.

7 The Tennessee proposal for locating the spoil piles and protective catch basins will provide good protection to the surface water quality. The availability of public water supplies and the commitment by the state to provide connections for any wells removed from service is a good mitigation measure because the public supplies are fully meeting state and federal drinking water quality standards.

8 I believe the EIS addresses the environmental issues and that any environmental impact will be insignificant. I support the Tennessee proposal and I urge you to select Tennessee as the preferred site.

Sincerely:

I.V. Hillis
State Representative

LETTER 1036

THE DESERT TORTOISE COUNCIL

September 27, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments

Dear Dr. Hess:

The Desert Tortoise Council has been involved in this process since an initial contact with RTK engineering which was responsible for some of the data gathering and scoping work on this EIS. We suggested several data sources and voiced our concerns on the value of the desert tortoise habitat in the Maricopa Mountains, which harbor the highest known densities in the Sonoran Desert. Additionally, federally listing this reptile as threatened or endangered was found by the U.S. Fish and Wildlife Service to be "warranted." This EIS, while mentioning the tortoise, did not seem to seriously consider impacts it would cause this animal and its habitat, nor did it seem to give serious consideration to mitigation for this species and wildlife in general. We have several comments and strong suggestions in this regard. 1

Volume IV, Appendix 5

2 5.1.9 None of the citations in this section is listed in the References section.

3 Figure 5.1.9-2 Mountains within and adjacent to the ring are desert tortoise habitat and are quite likely Arizona Upland Desertscrub, not Lower Colorado Desertscrub.

4 Page 78, # 1, Paragraph 2. 57 tortoises were found on the Maricopa Permanent Study Plot.

5 Figure 5.1.9-3. Given the make-up of adjacent mountain masses, "high density" habitat could easily occur in areas of the ring area that are not depicted on the map. DOE should sponsor work correctly identify habitat use and relative abundance in the unstudied parts of the Maricopa Mountains to delineate areas where avoidance and mitigation should occur.

6 Page 80, paragraph 1. Tortoises are not dependent on ephemeral washes for reproductive success. Tortoises usually nest in soil at the entrance to burrows. Twenty years is too early an estimate for age at sexual maturity. Thirty may be more likely. If the writer knows of such data for wild tortoises, please inform us.
Volume IV, APPENDIX 11

7 We can not find any real mitigation measures for wildlife for the Arizona site.

8 Tortoise numbers differ between appendix 5 and 11.

9 Ending paragraph, first sentence. We are not aware of this specific list of measures as a BLM-wide standard. Ross is from Nevada, and these may be Nevada standards. We feel many more measures are needed to lessen the impacts on the tortoise.

10 Page 7, Paragraph 2. Permanent plots are used to determine density, to establish size class (age) structure and sex ratios, and to establish a baseline for trends through time. They are not used with the primary purpose of studying livestock grazing. Additionally, the Maricopa Mountains support the highest known tortoise density in Arizona, making the population one of the most important in Arizona.

11 Impacts of facilities bringing water, electricity, traffic, and related products supporting the SSC are not included as wildlife impacts in this EIS. Adjacent tortoise habitats, tortoise movement corridors between mountain ranges, and the SSC ring are not analyzed.

12 Page 7, Paragraph 2. The effects of noise and ground vibration are not given sufficient significance on amphibians or reptiles, particularly the desert tortoise. Some California studies have found that deafness in reptiles could result from noise levels that may occur with some construction or operation at some of the SSC facilities. Additionally, tortoises and some amphibians may be drawn out from their burrows and subjected to unnatural conditions and experience stress and even death.

13 Page 9, 11.3.1.4. paragraph 1. Most fencing does not impact desert tortoises unless it is specifically designed to impede their movements.

Some additional mitigation needs follow.

14 Pre-construction and concurrent-with-construction clearances for desert tortoises, moving animals in burrows or pallets to artificial or natural burrows in the immediate vicinity, or releasing after construction, depending upon length of construction, time of year, and other factors.

15 Avoid construction during the months of March, April, May, July, August, September, and October in identified "high density" habitat.

16 Construct tortoise barriers along developed roads adjacent to and within "high density" habitat, including bridges, culverts or similar structures allowing animals to cross.

17 Revegetate all sites with native Sonoran Desert plant species, particularly those of value to desert tortoises.

18 Monitor tortoises and populations to measure the effectiveness of tortoise mitigation.

19 The proponents of this project should provide for compensation of impacted desert tortoise habitat by the SSC.

The following methodology uses a formula developed for the California Desert District, BLM (BLM 1988) and follows similar compensation formulas used by the California Energy Commission for energy-related projects.

The following is based on 300 acres permanent disturbance in tortoise habitat.

Tortoise habitat will be disturbed, lost to conservation management, or population density in disturbed area is expected to drop to 0 ore nearly 0 in near future. Value of L=1.

Project is greater than 160 acres. Value of S=2.

20 Adjacent or other lands will receive additional direct or indirect impacts which will reduce tortoise densities (low=1, medium=2, high=3). Value of A=2.

The project will have growth inducing or conflict effects. Value of G=1.

Tortoise habitat is in BLM tortoise category 1. Value of C=2.

Term of the effect is long. Value of T=1.

There is little or no existing habitat disturbance. Value of E=1.

Using the Compensation formula

$$\frac{(L + S + A + G) * C}{T * E} = \text{Multiplying Factor}$$

$$\frac{(1 + 2 + 2 + 1) * 2}{1 * 1} = 12$$

Compensation should be based on acres of land directly disturbed. The dollar value of the land disturbed or affected is to be considered only where habitat enhancement or services are to be paid for or supplied. The formula is designed to offset direct loss of habitat and indirect and direct losses due to future effects of projects. The formula is designed to produce a factor which multiplies the number of acres of direct habitat loss.

Thus, the 300 acres of direct loss, should be compensated with 3600 acres of acquired or permanently protected habitat.

We suggest this compensation should be targeted toward blocking up lands in and around the Picacho Mountains of Arizona, where BLM intends to manage an area for the desert tortoise, but which is not in full public ownership (Draft Phoenix Resource Management Plan, 1988).

BLM, 1988. Recommendations for management of the desert tortoise in the California Desert. Riverside, California. 54+pp.

21 The Desert Tortoise Council is available to assist you in developing an acceptable mitigation and compensation package for this project, considering its impacts on the desert tortoise.

Sincerely,

James A. St. Amant
Senior Co-Chairman

cc: Arizona Interagency Desert Tortoise Team
U.S. Fish and Wildlife Service, Ecological Services, Phoenix

LETTER 1037

TENNESSEE STATE PLANNING OFFICE
307 JOHN SEVIER STATE OFFICE BUILDING
500 CHARLOTTE AVENUE
NASHVILLE, TENNESSEE 37219-5082
(615) 741-1676

NED McWHERTER
Governor

JIM HALL
Executive Director

October 3, 1988

89-0183

Dr. Wilmot Hess
SSC Site Task Force, ER-65;, GTN
Office of Energy Research, U.S. Dept. of Energy
Washington, D.C. 20545

SUBJECT: CHTN-100388-001 Draft Environmental Impact Statement Superconducting Super Collider Volume IV Appendix 15-16, August 1988

Dear Dr. Hess:

In accordance with Presidential Executive Orders 12372 and 12416 and with Gubernatorial Executive Order 58, this office serves as the designated State Clearinghouse for federal activities and grants review.

State and local government evaluation of submitted materials has indicated no conflicts with existing or planned activities. Therefore, we are recommending that this proposal be approved based on the descriptive information made available to us. However, should additional information come to the attention of this office, we may wish to comment further. 1

This letter should be attached to the application and become a permanent part of the project file. Any involved federal agency should respond in writing to this office if there are problems in complying with this approval. The above State Clearinghouse Identification Number should be placed in the appropriate block on the federal application form.

The appropriate funding agency will now be reviewing our recommendation. If we can be of further assistance, please do not hesitate to contact us.

Sincerely,

Charles W. Brown

Charles W. Brown
Director, State Clearinghouse

CWB:mcp

cc: Dan Sherry, Betsy Bunting, Bob Bay
Allan Lucas, Joe Richardson, Robert Baker

LETTER 1038

Dear Dr Hess;

I strongly urge you to select the State of Illinois as the site to build the S.S.C.

1 I feel Kerrville offers the very best choice for construction of the S.S.C.

Sincerely
Beatrice V. Motzer

LETTER 1039

(1) oct 6 - 1988

Dear Sirs
I was born in Lone Elm Texas & moved into Waxahachie at the age of 16 so I have been in Ellis Co. my life time
You can see why I am Against the SSC.
I do not think it will help us I think it
1 will destory our little City that we have learned to love. (no 1) it will raise our
2 Taxes so high we wont be able to pay them because we older people lives on a fixed income. (no 2) our streets & Roads
3 will be torn up worse than if a Tornado hit us. (no 3) it will cause more Crime
4 more Dope that we dont need.
(no 4) I have eat the dust for 4 yrs while they remodled the Hospitle & got all of nothgate Dirt in a land fill
5 close to my home And I can imagine what the Dust will be like when they start Blasting the hite Rocks I
Also know what that dust is like. Also the Blasting will damage the foundation
6 of our homes & cause the walls to crack

LETTER 1039 (CONTINUED)

(2)

(No 5) I think it would a disaster to put all those people that has built their homes to how a place to live when they get old to be put off their land I understand that ~~they~~ will be wiped of the map & thats good Farm Land that we dont need to loose of the SSC now I hope & pray that you will find a nother State to build it so it wont make so many people loose their homes & Farm land

(No 6) I also think it would ruin our underground water

Hoping that you will consider a nother site to build you SSC instead of Texas

Mrs Clyde Cagle
1506 W Jefferson St
Waxahachie, Tex 75165

LETTER 1040

October 3, 1988

Dr. Wilmot Hess

My husband and I have lived in our home for twenty two years. We do not want the Superconducting Super collider in our township of White oak.

John & Shirley Jostman
2955 Carter Rd
Danville, Mich

IIA.1. 2026

LETTER 1041

North Texas Commission
Box 610246
Dallas/Fort Worth Airport, Texas 75261

MEMORANDUM

DATE: 9/30/88
TO: Roger Mayes
FROM: Robert K. Tener
SUBJECT: DEIS response - Socioeconomics

Roger —

You had suggested that we submit in writing the comments I presented in Waxahachie -- I wanted you to see the information we've provided.

Our compliments -- respectfully submitted -- on a highly effective & professional EIS process.

Dallas/Fort Worth
The Southwest Metroplex

Bob Tener

LETTER 1041 (CONTINUED)

NTC
NORTH TEXAS COMMISSION
P.O. Box 610246
DFW Airport, Texas 75261-0246
214/621-0400 (Metro)

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* Executive Committee

September 30, 1988

SSC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Dear SSC Site Task Force Members:

Enclosed is our response to the invitation to comment on the Draft Environmental Impact Statement for the Superconducting Super Collider Project.

If you should have any questions, please do not hesitate to call.

Sincerely,

Robert K. Tener

Robert K. Tener, Ph.D., P.E.
Executive Vice President

RKT:kw

Enclosure

RESPONSE TO THE DRAFT EIS
BY THE NORTH TEXAS COMMISSION
SEPTEMBER 26, 1988

The North Texas Commission is a consortium of 450 private corporations, cities, and chambers of commerce, organized to provide regional economic development leadership in the nine-county Dallas/Fort Worth Metroplex. Through the work of Dr. Hylan Lyon and others, the North Texas Commission has been an active participant in developing the Superconducting Super Collider proposal for the Ellis County site since 1986.

1 The Draft EIS generally confirms our past conclusions that the Ellis County site is environmentally well suited for the SSC to be built and operated for its stated purposes.

Our comments today are directed generally to the socioeconomic impacts as stated in the DEIS, and specifically to the suitability of this region to host the SSC workforce. This statement responds to, among other sections, Volume IV, Appendix 14, as regards to labor force, worker output, and both construction- and operation-related newcomers.

For three years, analyses carried out by the North Texas Commission have characterized the makeup and trends of the technology-intensive sector of Metroplex industries and their comparison to other regions in the United States. Relevant to the SSC, and especially to the research productivity which the SSC environment must support are these facts:

2 1. The traditional bases for the prior economy in the Metroplex region -- oil and gas, agriculture, and real estate -- are being supplanted by dynamic growth in technology-intensive industries, especially the computer, electronics, biotechnical, and aerospace sectors.

2. The Dallas/Fort Worth Metroplex currently ranks, among major metropolitan regions in the U.S.:

   a. Fourth (after Greater Los Angeles, Silicon Valley, and Greater Boston) in industrial output from the high-tech sector. During 1976-1984, we passed the Chicago and Philadelphia regions on this indicator;

3 b. Second nationally in employment and industrial output in the telecommunications sector.

   c. First nationally in the rate of growth of Federal R & D expenditures for basic research.

These facts better help us understand the nature of the resident regional workforce which would host the SSC and its staff.

In the Metroplex, we now find:

1. The third largest regional population of scientists and engineers (both by total number and per capita) of any region nationally, according to NSF findings.

2. The fastest growing rate of increase nationally of this population of scientists and engineers.

4 3. A regional employment center for the computer, tele-communications, and precision instrument sectors which rank among the top three regions nationally.

4. A highly productive workforce. The DEIS sector-specific regional worker productivity figures show that Texas ranks, among the seven states being considered, first in worker productivity in services, first in mining, and second (to Michigan) in manufacturing.

In sum, the people among whom the SSC scientists, engineers and technicians will find themselves in this region are a productive, technologically advanced host community.

5 We submit on the basis of these facts that the DEIS findings that SSC operation-related newcomers "... would find the region hospitable" understates the actual case considerably. We note that the projections of growth of this workforce will increasingly match the growth of the SSC employment to its peak in the year 2000.

Thirty years ago this month (September 12, 1958), a Texas Instruments engineer, Jack S. Kilby, launched the age of microelectronics in a T.I. lab in Dallas, when he demonstrated successfully the first germanium semiconductor. In the past three decades, regional engineers, scientists, and industry leaders have capitalized on technological innovation to transform this region into one fully cognizant of the essential roles of science, research, and technology in today's and tomorrow's society.

6 Today, our already fine teaching universities in the Dallas/Fort Worth region -- both public and private -- are successfully developing their research capabilities. Together with local industry, universities such as University of Texas - Arlington, University of Texas - Dallas, University of North Texas, Southern Methodist University, University of Dallas, and University of Texas Southwestern Medical Center are receiving new support and creating new research initiatives.

It is this environment of educated, skilled, energetic Texans -- young and technologically/progressive -- into which the SSC workforce can be assimilated, and within which the research productivity essential to successfully SSC construction and operation can reach its optimum.

Thank you for this opportunity to comment on the Superconducting Super Collider Draft Environmental Impact Statement.

LETTER 1042

William H. Kirk
3528 Shandon, P. O. Box 7003
Midland, TX 79708-0003
October 3, 1988

SSC Draft, EIS Comments
Attention: Wilmot Hess
SSC Site Task Force
Office of Energy Research
ER-65 GTN
Department of Energy
Washington, DC 20545

Gentlemen:

I've read in USA TODAY of the many state groups that do NOT want the SSC located in their area and that due to the high cost of land acquisition, and various other reasons, it should be "out in the desert."

1 People in West Texas thought that too, and had proposed a site that offered low cost land and had many, many other favorable features.

Maybe it is time to reconsider the West Texas desert location, now that there is so much opposition to present siting options. Mr. Thane Akins, of Midland, Texas headed the task force for locating the SSC in this area. I'm sure he is still available to assist in helping locate the SSC in the "desert" as some people wish.

If further help is needed, please contact me.

Sincerely,

Wm. H. Kirk

LETTER 1043

STATE OF NORTH CAROLINA
OFFICE OF THE GOVERNOR
RALEIGH 27603-8001

JAMES G. MARTIN
GOVERNOR

Board of Science and Technology
Room 2009 Q
116 West Jones Street
Raleigh, NC 27611

5 October 1988

Dr. Wilmot N. Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments

Dear Dr. Hess:

The North Carolina Department of Administration (through the State Clearinghouse, Ms. Chrys Baggett, Director) has solicited comments on the Draft Environmental Impact Statement for the Superconducting Super Collider from the relevant departments of State government. We understand that the SSC Site Task Force would appreciate receiving comments on the *DEIS* as soon as possible. *Therefore, we are forwarding these comments as they are* received, rather that waiting for the Clearinghouse to assemble a complete package of comments from the various departments.

Enclosed are comments from the following organizations within the N.C. Department of Natural Resources and Community Development:

1

- Division of Community Assistance
- Water Quality Section, Division of Environmental Management
- *Air Quality Section, Division of Environmental Management*
- Division of Forest Resources
- N.C. Natural Heritage Program, Division of Parks and Recreation
- N.C. Wildlife Resources Commission

We wish to emphasize that these comments are submitted in accordance with the State government's customary DEIS review process, independently of the N.C. SSC Project. They do not necessarily reflect the views of the N.C. SSC Project staff or of other divisions of State government. The N.C. SSC Project Director, Dr. William Dunn, will be submitting separate written comments on the *DEIS* for your consideration.

Sincerely,

Susan Dakin

Susan Dakin
N.C. SSC Project Deputy Director

Enclosures

cc Dr. William Dunn

COMMENTS ON DRAFT ENVIRONMENTAL IMPACT STATEMENT

SUPERCONDUCTING SUPER COLLIDER

DIVISION OF COMMUNITY ASSISTANCE

5.5.10.1 Regional Setting

Since the original submission of information regarding land use planning and regulation, several changes have taken place which positively affect the prevention of incompatible land uses near the SSC site.

2 Granville County has simultaneously prepared both a draft land use plan and a draft zoning ordinance. These documents are currently being reviewed by the public. Two initial public information meetings have been held (September 26 & 27, 1988) and public hearings are scheduled for mid-October. The County Commissioners have publicly stated their intention to adopt both documents in November.

3 The Community of Butner Planning Commission has approved a new land use plan, new subdivision regulations, and a new zoning ordinance in August 1988. These documents now more clearly delineate the boundary of Butner's jurisdictions than previous documents and establish better control over development within their jurisdiction.

4 Person County is currently preparing a county-wide zoning ordinance. Public review and hearings are proposed for late 1988 with action by the County Commissioners in early 1989.

5 Durham County and the City of Durham have recently consolidated their planning commissions to form a City-County Planning Board. This new structure will enable the county to more effectively implement their growth controls.

It is recommended that several statements in 5.5.10.1.D and 5.5.10.2.B be amended as indicated in the attached document.

RECOMMENDED AMENDMENTS TO:

Affected Environments at Site Alternatives
North Carolina

(changes in bold type)

5.5.10.1.D. Paragraph 5, pp. NC 81-82

6 Under North Carolina state law, the establishment of comprehensive zoning and subdivision regulations is delegated to either the county level for all unincorporated lands or to incorporated municipalities, such as cities. Counties can issue zoning regulations for either their entire jurisdictions at once as did Durham County (1987), or piecemeal by township, as did Person County for Roxboro and part of Flat River Townships (1983). Person County and Granville County are currently reviewing zoning ordinances that will be applicable county-wide (Person County, Granville County 1988). Durham, Granville, and Person Counties have subdivision regulations in effect. Several municipalities located in the SSC project study area have prepared land use plans and have zoning ordinances and/or subdivision regulations in effect. The community of Butner has recently prepared a land use plan update (1987) and has a zoning ordinance and subdivision regulations in effect. The cities of Oxford, Roxboro, and Creedmoor have zoning and subdivision regulations in effect.

5.5.10.2.B.1. SSC Project Near Cluster Quadrant, p. NC 91

7 The last sentence should be replaced with the following:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

5.5.10.2.B.1.b. Injector Area B, p. NC 91

8 The last sentence should be replaced by the following:

The southwestern portion lies within the planning and zoning jurisdiction of the Community of Butner, and is classified as a rural watershed area. The northern and southeastern portions lie within the planning jurisdiction of Granville County and is designated as rural watershed in the land use plan and zoning ordinance presently under consideration.

5.5.10.2.B.1.d.2. East Buffer Area and Buried Beam Zone 1 Buried Beam Zone Access Areas J3 and J4, p. NC 92

9 Paragraph 1: The last line of the paragraph should be replaced with the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

10 Paragraph 2 (site J3): The last line of the paragraph should be replaced with the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

11 Paragraph 3 (site J4): The last line of the paragraph should be replaced with the following statement:

The site is privately owned and a land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

5.5.10.2.B.1.e. Near Cluster Ring G ..., p. NC 94

12 Paragraph 9 (site J6): The last sentence should be replaced with the following statements:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

13 Paragraph 10 (site E10): The last sentence should be replaced with the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

14 Paragraph 11 (site F9): The last sentence should be replaced with the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural watershed.

5.5.10.2.B.2.a. Far Cluster Ring H ...

Paragraph 1 should be replaced with the following:

15 The far cluster quadrant, located in both Granville County and the Allensville Township of Person County, is privately owned, with land use consisting mainly of agriculture and forested land. Some rural residences are found along intersecting minor roads, and several small lakes and drainages are located in the area. One overhead transmission line crosses the arc and another is found approximately 1,000 ft to the north. Generally, the area is sparsely developed and of a rural/agricultural character. Both Person and Granville Counties presently are considering adoption of zoning ordinances for these areas. The Person County Development Plan and draft Granville County Land Use Plan classify the area as rural. Areas scattered throughout the quadrant are designated as prime farmland, and the area is expected to maintain its rural character due to a lack of development pressure.

16 Paragraph 3 (site K3): The last sentence should be replaced with the following statements:

A zoning ordinance for this area is currently being considered by Person County. The Person County Development Plan proposes no changes in use.

17 Paragraph 4 (site K4): The third sentence should be replaced with the following statement:

The area is designated as prime farmland and is privately owned. A zoning ordinance for this area is currently being considered by Person County.

18 Paragraph 5 (site F5): The last sentence should be replaced with the following statements:

A zoning ordinance for this area is currently being considered by Person County. The Person County Development Plan proposes no changes in use.

19 Paragraph 6 (site K5): The last sentence should be replaced with the following statements:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural.

20 Paragraph 7 (site E6): The last sentence should be replaced with the following statements:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County. The proposed classification for this area is rural.

5.5.10.2.B.3.a. Western Arc Quadrant D, p. NC 96

21 Paragraph 1: The fifth sentence (which begins "Land use restrictions") should be replaced by the following statement:

A county-wide zoning ordinance is currently under consideration by Person County.

22 Paragraph 2 (site E2): The third sentence should be replaced by the following statement:

The area is privately owned and zoning restrictions for the area are currently under consideration by Person County.

23 Paragraph 3 (site F2): The third sentence should be replaced by the following statements:

The land is privately owned and designed as prime farmland. Zoning for the area is currently under consideration by Person County.

24 Paragraph 4 (site E3): The fifth sentence should be replaced by the following statement:

A small portion of the area is designated as prime farmland, and zoning for the area is currently under consideration by Person County.

25 Paragraph 7 (site F4): The last sentence should be amended as follows:

The Person County Development Plan proposes no land use changes; and zoning for this area is currently under consideration by Person County.

5.5.10.2.B.4.a. Eastern Arc Quadrant D

26 Paragraph 1: The final sentence should be replaced by the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

27 Paragraph 2 (site F6): The final sentence should be replaced by the following statement:

Portions of the site and surrounding area are designated as prime farmland, and a land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

28 Paragraph 3 (site E7): The final sentence should be replaced by the following statement:

The northeast portion of this area is designated as prime farmland, and a land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

29 Paragraph 4 (site F7): The final sentence should be replaced by the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

30 Paragraph 5 (site E8): The final sentence should be replaced by the following statement:

The site is designated as prime farmland, and a land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

31 Paragraph 6 (site F8): The final sentence should be replaced by the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

32 Paragraph 7 (site E9): The fifth sentence should be replaced by the following statement:

A land use plan and zoning ordinance are currently under consideration for adoption by Granville County.

State of North Carolina
Department of Natural Resources and Community Development
Division of Environmental Management
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor
S. Thomas Rhodes, Secretary

R. Paul Wilms
Director

September 19, 1988

MEMO TO: Bill Flournoy

FROM: John Dorney

SUBJECT: Review of water quality-related Issues in Draft EIS for Super Conducting Super Collider

I have reviewed the nine volumes of the draft EIS for the SSC
33 with regard to water quality in North Carolina. In general, it is a well written, thorough review of the issue. The following suggestions are made to clarify or expand discussions of various portions. If I can be of further help, please let me know.

1. Volume IV. Appendix 5c, pg. 24 (and tables)

34 a. Stream classifications - all of the Neuse basin is also NSW (nutrient sensitive waters).

35 b. The turbidity water quality standard only applies to discharges (point sources) rather than ambient data.

36 c. The notation that average levels of Pb and Hg exceed water quality standards is true only when samples with less than detection are assigned half of the detection limit when averages are calculated (which is DEM's general procedure also). Note should be made in the text of this mathematical decision. A more useful measure for low level metals is the % of samples which exceed the standard.

2. Volume IV. Appendix 7. (7.1.3.5F.2)

37 a. Pg 59, para. 2 - Treatment of the far cluster's wastewater at the Durham or Oxford WWTPs would involve long, expensive pipelines. A more cost effect approach

MEMO TO: Bill Flournoy
September 20, 1989
Page Two

on the northern end of the ring would be to use land application systems (septic field or spray) for the domestic waste and surface discharge for the cooling water. *This would remove any dissolved oxygen impact* on the small streams in the area and also not violate DEM policy regarding BOD -laden waste discharge to zero flow streams.

38 b. *Pg 59, para.3 - Land application (spray or septic) would* also be feasible.

JD/jbo
cc: Charles Wakild
David Williams

Air Quality Section

October 3, 1988

MEMORANDUM

TO: Bill Flournoy

FROM: Russell Hageman RH

SUBJECT: SSC Draft EIS

These are some comments on the air quality aspects of the SSC Draft EIS. Probably the comments on "background" and CP&L, Roxboro, are the most important.

39 I 3-67 That CO NAAQS is exceeded in likely not true. See comments on 5.1.3-7.

40 I 4-27 The CO 2nd maximum is the more usual comparison rather than the maximum, probably all states were done this way.

41 I 5.1.3-7 CO values for the SSC contribution at the SSC site appear to have been added to downtown Durham monitoring site "background". The "background" at the SSC site is undoubtedly much lower. Perhaps the same was done for other states.

42 IV 5.5-45 (5.5.4.2) Actually there are State Ambient Air Quality Standards (15 NCAC 2D .0400). The only real difference from numbers in Table 5.5.4-3 is 150 for TSP-24-hr.

43 IV 5.5-45 (5.5.4.3) The data in Table 5.5.4-4 do not reflect all the latest data sent in. Note also Collins & Aikman, Siler City. In addition, CP&L's Roxboro Plant should be added to the list. The omission apparently occurred because the original questions were about PSD sources (which CP&L, Roxboro, is not), and CP&L, Roxboro, never made it on to the list when the questions changed. X1 on the map should be in the upper right corner of the County; CP&L, Roxboro, is approximately where X1 is now.

44 IV 8.4.5.1 B (Table 8-41) The high value for CO 1-hr Total caused by high background is not representative of SSC site. Perhaps this should be footnoted, too. See comment on I 5.1.3-7.

cc: N.O. Gerald

September 22, 1988

OCT 1988 RECEIVED PLANNING ASSESSMENT

MEMORANDUM

TO: Bill Flournoy, Planning and Assessment

THROUGH: Harry Layman, Director, Forest Resources

FROM: Don H. Robbins, Staff Forester DHR

SUBJECT: Superconducting Super Collider (SSC) Project Draft EIS in Durham, Granville, and Person Counties in North Carolina

Project #: 89-0135 and 88-0645
Due Date : 10-4-88

We have reviewed the above subject environmental document and have the following comments:

1. If North Carolina is selected for the project, forestry and related resources will be impacted as follows according to their data.

45 a. 1,190 acres of woodland and ecological resources will be disturbed as a result of construction of the actual project.

46 b. Approximately 100 acres of woodland would be used for spoils disposal, if other non-woodland sites could not be located.

47 c. Some woodland for ancillary facilities such as highways, roads, gas pipeline, and transmission lines will be taken up. This could amount to approximately 276 to 543 acres of woodland (assuming that 65% of the area is forested) depending on what is needed for transmission lines and who provides the power.

48 d. 186 acres of palustrine forest wetlands would be involved.

49 2. The 1,190 acres of habitat that will be disturbed for the actual facility could possibly be increased if they have to do more cut-and-cover excavation than what they plan to do for the injector facility.

50 3. It is hoped that the merchantable timber that has to be cut to permit the construction could be salvaged for pulpwood and sawtimber to reduce the need for piling and burning of debris.

Bill Flournoy
Page 2
September 22, 1988

51 4. The document indicates that precautions will be taken to prevent erosion and sedimentation from damaging the water resources, but I did not find any provisions for protecting the remaining standing trees outside of construction limits from damage by the heavy equipment.

52 5. The document does adequately describe the forest resources in Volume IV, Appendix 5C that will be involved in North Carolina, and it appears that their information and data are correct.

53 6. In North Carolina they indicate the following concerning purchasing of land for the project - 7,950 acres to be held in fee simple estate outright, 7,947 acres to be held in stratified fee estate (this will be an area that is greater than 15' below the ground that is 70' high by 1,000' wide), and 15,897 acres total, not including the ancillary facilities.

54 7. It is hoped that the U. S. Department of Energy would manage or allow the property owners to continue to manage the existing woodland that is not disturbed by construction over the 7,947 acres that would be acquired as stratified fee estate. It is also hoped that DOE would attempt to manage the woodland that is not needed in the 7,950 acres that they would acquire in fee simple estate.

55 8. The Division of Forest Resources does not wish to stand in the way of progress if North Carolina is the selected site. We, of course, would hope that all provisions could be made to cause the least impact to the forest and related resources during the pre-construction, construction, and operating phases of the project.

DHR/lnc

cc: Technical Dev. Section Chief Fred White, Central Office
Operations Section Chief Dane Roten, Central Office
District Forester Greg Williams, Hillsborough Office

DIVISION OF PARKS AND RECREATION

INTER-DIVISIONAL MEMORANDUM

TO: Bill Flournoy

FROM: Carol Tingley C Tingley

DATE: September 30, 1988

SUBJECT: Draft EIS for the Superconducting Super Collider

56 The Division of Parks and Recreation has reviewed the Draft Environmental Impact Statement for the proposed Superconducting Super Collider (SSC). Our Division includes the N. C. Natural Heritage Program, which inventories and monitors the status of rare species and significant natural areas in North Carolina. The following comments are primarily from the Natural Heritage Program.

58 Generally, the DEIS is reasonably thorough, and primary impacts are considered. Secondary impacts are not discussed, however. There are two such secondary impacts of concern to us: (1) The moving of the N. C. National Guard from the Butner facility to some other facility is likely, and possible locations which have been mentioned include game lands such as the Sandhills Game Land or Caswell Game Land. Wildlife and the natural environment could be greatly impacted by such a move. (2) Siting of the SSC would likely cause accelerated growth in the Butner area, which is the portion of the study area containing the greatest number of
59 significant natural areas. Although development may eventually impact such natural areas anyway, siting of the SSC would accelerate concerns about the protection of these natural areas. These and other secondary impacts unfortunately appear to be outside the scope of the DEIS and are not covered by it.

Below are specific comments, and the Volumes and Pages to which the comments refer.

Volume I

60 Page 4-46. Terrestrial ecotypes for NC are listed as "Cropland". This is incorrect, based on the listings for the other states. Some forest types should be listed.

Bill Flournoy
Page Two
September 30, 1988

61 Page 4-55. Table 4-17. Harperella has since been Proposed Endangered by the U. S. Fish and Wildlife Service. It is no longer a C1 species. Also, the material in parentheses for the other species (R and C) should be listed as C2 for all these six species.

62 Page 4-56. The paragraph of North Carolina contains several errors. "Marperella" is a typo; it should be "Harperella". This is the same species as "Bishop's weed" on Table 4-18; "Harperella" is the name used by the U. S. Fish and Wildlife Service and thus should take precedence. The N. C. Natural Heritage Program does have population data for all species on Table 4-17 and 4-18 located in the SSC vicinity.

63 A major error is the inclusion of the Coppercheek darter in the North Carolina paragraph. This fish is endemic to Tennessee and is not found in North Carolina (see Table 4-18 on page 4-58). The two sentences referring to the darter should be moved to the paragraph on Tennessee species.

64 Page 4-57. Table 4-18. The footnote categories do not match those in the table. The "S" on the table is "Special Concern".

65 This phrase should be listed in the footnote. The "C1" for several plants in NC should be "PP" (Primary Proposed).

66 Also, the Ancient floater is the same species as the Dwarf wedge mussel (on Table 4-17). To avoid confusion, the name "Dwarf wedge mussel" should be used throughout the DEIS. The name "Ancient floater" appears a number of times in the text. The sunflower is spelled incorrectly; it is Schweinitz's.

67 Page 4-65. The rare plants on the old fields and transition zones occur primarily over circumneutral or basic soils . Some of them have prairie affinities. The second sentence of the second paragraph such be reworded to included this information.

68 The statement about the Roanoke bass is in error. The bass is found in a number of sites from central Virginia to northern North Carolina; it is found outside the SSC area.

69 Page 5.1.2-16. The map on this page, and the same map on other pages throughout the document, fails to properly illustrate Mayo Reservoir. This is a large lake that occupies most of Mayo Creek just north of the SSC ring. These maps show it as a tiny lake in Virginia.

70 Page 5.1.7-5. There is an important typo: NC should be listed as having 593 acres, rather than 393.

Bill Flournoy
Page Three
September 30, 1988

71 Page 5.6-11. The statement in section 5.6.4.5 seems inconsistent with the comments made about impacts in the other six states. Certainly there are some impacts, such as the loss of prime farmland, loss of wetlands, etc.

Volume IV, Appendix 5c.

72 Page 75. The N. C. Natural Heritage Program does have population data for all the candidate species in the SSC area. A sentence in the middle of the page states otherwise, presumably because the information for the page came from the U.S. Fish and Wildlife Service, which does not deal with population data.

73 Page 76. Same comments about a sentence at the top of the page. The NC NHP does have population data available.

74 Page 77. Plant table. "Harperella" is the same species as "Bishop's weed". The latter name in the table should be replaced by "Harperella".

75 Omitted from the table is Echinacea laevigata (smooth coneflower), which is found in the proposed site area and is state protected. This species is listed on page 75, but

76 somehow it is not listed on page 77. There are also a number of small typos on the scientific and common names. A number of typos are present on the animal table, the most glaring of which is the "Neuse River dog" instead of "Neuse River waterdog".

77 Page 144. There is no mention of Hinton (1988) in the References list, but Hinton is cited several times on page 144 and 145.

Volume IV. Appendix 7.

78 Page 53. The map again fails to properly show Mayo Reservoir.

Volume IV. Appendix 11.

79 Page 36. Note again that "Ancient floater" is the same species as "Dwarf wedge mussel". The latter name should take priority, as this is the common name in use by the U.S. Fish and Wildlife Service.

Thank you for the opportunity to review this information.

cc: Chuck Roe
Harry LeGrand

LETTER 1043 (CONTINUED)

North Carolina Wildlife Resources Commission

512 N. Salisbury Street, Raleigh, North Carolina 27611, 919-733-3391
Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Bill Flournay, Chief
Environmental Assessment, NRCD

FROM: W. Donald Baker
Habitat Conservation Program Manager
Division of Boating and Inland Fisheries

DATE: October 4, 1988

SUBJECT: Comments on SSC Project Draft EIS

Vol. I, Page 1-4

80 Water Resources - The proposed SSC in NC will use a large fraction of excess capacity. The Piedmont of North Carolina is having significant problems meeting its potable and industrial water needs during the summer months. Without ensuring minimum flows, may of our aquatic game and nongame species may face serious population declines in the future.

Vol. I, Page 1-4

81 Ecological Resources (Wetlands) - North Carolina faces the third highest wetland loss of the seven states being considered for the SSC. Adequate surveys to determine species diversity in these wetlands have not been conducted.

82 Ecological Resources (Habitat loss: threatened and endangered species) - Authors of the DEIS state that there are no T or E species in the SSC area. Therefore, it cannot be stated as fact that there are no federally listed Threatened and Endangered species in the proposed collider area.

Vol. I, Page 3-28

Sewage from campus areas - 6 miles to existing system

83 From DEM Report number 84-04: "There are presently 2,395 point source dischargers of waste to surface waters in the State of North Carolina. These discharges include both industrial and domestic wastes and are permitted under the National Pollution Discharge Elimination System

(NPDES). At the present time, approximately twenty-eight percent of dischargers are not in compliance with their final permit limits. Forty-six percent of 342 municipal plants are not meeting limits while twenty-five percent of 2,053 nonmunicipal plants are not meeting final limits. As a result, the quality of the State's receiving waters is being adversely affected.... Regardless of the priority assigned for inspections, many plants may go uninspected for years because of limited staff."

84 This quote from a DEM report indicates that North Carolina has not been able to adequately manage its wastewaters. Therefore, additions to the wasteload in this environmentally sensitive area may harm native wildlife species.

Vol. I, Page 3-28

85 Waste Disposition: Spoils disposal - 17 sites on 315 acres, all within about 2 miles of the site

86 The depth of the spoils material (up to 20 feet deep in forested areas) will essentially eliminate native wildlife habitat. DOE would need to mitigate this loss. Also, before any spoils material is deposited on these sites, a complete inventory of plant and animal species found at each site needs development.

87 Finally, spoils material must not be allowed to erode into existing waterways.

Vol. I, Page 3-42

88 Quote: "The entire tunnel would be constructed by tunneling in the interlayered metamorphosed volcanic and sedimentary rocks below the water table." There can be no guarantees that local streams, creeks, and rivers will not be dewatered by SSC construction activities during drought periods. Should this happen, many native aquatic species could be extirpated. There are significant aquatic species in this area. They will be described later in this comment paper.

Vol. I, Page 3-52

Habitat loss: T and E species

89 DEIS states that no T or E species habitat loss will take place; however, complete surveys of the area have not been accomplished. Therefore, it is unknown whether T or E species habitat exists in the area.

Habitat loss: sensitive communities, commercial and recreational - 1,190 acres disturbed.

90 This loss needs to be mitigated. All disturbed acres need to be completely surveyed for plant and animal species present.

Vol. I, Page 3-60

Energy: Electric Power - 288,000,000 KWH/YR used during operations: 42,600,00 KWH/YR used during construction.

91 During operation of the SSC, the energy used during a year equals that used by 74,000 households. Depending upon the proportion of electricity generated from coal fired power plants, the plants producing this electricity will significantly increase the loading of pollutants into the atmosphere, thus increasing the threats from acid precipitation and global warming. These impacts have not been addressed in this DEIS. In a state, such as North Carolina, which is already experiencing significant acidification of its rainfall, this issue is extremely important.

Vol. I, Page 3-61

DOE - Committed Mitigations

92 Should North Carolina be chosen as the SSC site, DOE needs to commit itself to completing a survey of the entire SSC area for animal and plant species. Once the surveys are completed, DOE should commit itself to consult with the State to mitigate any problems for State listed species.

Vol. I, Page 3-69

Prime and Important Farmlands loss - 593 acres in North Carolina.

93 North Carolina will suffer the greatest prime and important farmland acreage loss of any candidate SSC state. Given the tremendous global atmospheric changes modeled for the "greenhouse effect," any future prim farmland loss is extremely significant for the state and nation. This loss should be fully mitigated by possible purchase of bottomland acreage along the upper Tar River and along the upper South Flat River.

Vol. I, Page 4-10

94 General Characteristics: North Carolina is the only state listed with three drainage basins associated with the proposed SSC site. As described in the WRC comments for preparation of the DEIS, this area is significant for many reasons. Location of the SSC in this ecologically sensitive area should be fully mitigated by purchase of significant tracts of land along the major creeks and rivers in the proposed SSC area.

Vol. I, Page 4-27

Comparison of Ambient Air Quality Data for Site Alternatives

95 North Carolina has the highest 1-h average and the highest 8-h average for Carbon Monoxide levels of any other state being considered for the SSC. In fact, North Carolina's 8-h average CO concentration is 50% greater than the National Ambient Air Quality Standards. Additionally, a 3% increase in this 1-h average ozone concentration for NC will result in an exceedence of the national Ambient Air Quality Standards for ozone.

The effects of these carbon monoxide and ozone concentrations on plant and animal species may be significant. Direct and indirect increases in these concentrations from SSC activities are not clearly stated in the DEIS.

Vol. I, Page 4-45

96 4.7.1 Ecological Resources of the Alternative Sites - states the Piedmont NC site has the most productive ecosystem of all the sites. Also states NC has diverse habitats (edge effect) especially at the borders between croplands, forests, and wetlands. Also states NC contains sensitive and major wetland areas in the vicinity of the SSC site. Page 4-49 states NC occupies a diverse mesic, terrestrial and aquatic ecosystems.

> Contradiction: Vol. 4 Ap. 5c of 16 - page 76. The proposed SSC site in NC is located in the middle of the Piedmont physiographic province and no major transition zones are present. Also, states the three different river systems are similar in floral and fauna components and we take exception to this. Also these three systems in the upper reaches are vastly different from other streams in NC by harboring wildlife and fish species not located in other sections of the state. Example, Roanoke bass.

Vol. I, Page 4-49

97 In the discussions of the drainage basins involved in NC, there needs to be a discussion of the rare aquatic animal communities found in South Flat River, Mayo Cree, and the upper Tar River. These communities will be discussed later in this comments paper.

Vol. I, Page 4-51

98 The bottom paragraph does not identify the state. This should read: "The generally rural nature of much of the proposed SSC in NC offers ...". Furthermore, this opening sentence and entire paragraph contradicts paragraph E located on page 5.1.5-41 which states no recreationally important plant or animal species are found in abundance.

Vol. I, Page 4-56 and 4-57

99 The number of state listed threatened or endangered species is associated with each state in this section of the DEIS. It is not appropriate to compare one state with another state relative to T and E state listed species. Some states have just initiated the listing process; while, other states have a more mature program for listing species. North Carolina has just initiated its efforts to list rare animal species, and we have little site specific data for animal species throughout our state. Also, each state has different criteria for listing state threatened and endangered species.

100 During recent weeks, at the request of North Carolina's Department of Natural Resources Commission's Nongame & Endangered Wildlife Program has surveyed creeks and rivers in the SSC proposed site area in North Carolina for the dwarf wedge mussel - a proposed federally listed endangered species known to occur in the Neuse and Tar drainages.

101 During the early 1980s, Dr. Arthur H. Clarke contracted with the US Fish and Wildlife Service to survey the Tar River and other local river systems for the Tar River spiny mussel - a federally listed endangered species. While surveying the Neuse River below Raleigh to the sound area, he could only find Elliptio complanata, a pollution tolerant species. As reported by Dr. Richard Johnson, fourteen species of mussels have been found in the Neuse Drainage during past decades. Therefore, Clarke's findings indicate a serious decline in mussel diversity in the Neuse River below Raleigh.

102 During the WRC's most recent survey activities in the Neuse, Tar, and Roanoke Drainages, survey conditions were poor. The water was a little high and quite turbid. However, a mussel refuge was discovered in the South Flat River in Person and Durham Counties. Eight of the Neuse River's fourteen species were found in the South Flat River. Also, two new species records were discovered for this Neuse River tributary. Therefore, ten of sixteen mussel species known to inhabit the Neuse

River Drainage Basin have been found in the small South Flat River tributary. These were the species found:

Species	Proposed State Status
Fusconaia masoni	Threatened
Elliptio complanata	Common
Lasmigona subviridis	Common
Anodonta cataracta	Common
Anodonta imbecilis	Undetermined
Strophitus undulatus	Common
Villosa delumbis	Special Concern
Villosa constricta	Special Concern
Lampsilis cariosa	Special Concern
Lampsilis radiata	Special Concern

Although the dwarf wedge mussel (Alasmidonta heterodon) was not found in the South Flat River, one cannot assume that it does not exist there. Considering that survey conditions were very poor during the
03 past few weeks and that appropriate dwarf wedge mussel habitat is found in the South Flat River, it is very likely that the species exists in the river. Also, the Carolina madtom (Noturus furiosus), a special concern, endemic fish species was found in the South Flat River.

As a group, mussels are extremely important water quality indicator species. Considering the South Flat River's value as a water supply resource for Durham and Durham County, it is in the best interest of all involved with natural resources conservation to manage the land and
104 water resources in the South Flat River to maintain these high water quality indicator species. Any activities, such as siltation or introduction of contaminants could significantly reduce mussel diversity in this area. Also, should the lower Neuse River's water quality improve, the South Flat RIver could be a source of native mussel individuals for restocking the lower Neuse River.

105 No mussels were found in the North Flat River. Sedimentation is a major form of pollution of this river in Person County.

The Mayo Creek, a tributary of the Roanoke River was surveyed above
106 Mayo Lake. Although the creek was quite shallow, four mussel species were found: Lasmigona subviridis, Elliptio complanata, Strophitus undulatus, and a presently unidentified mussel species.

107 No mussel species was found in Dial Creek, and only Elliptio complanata was found in Grassy Creek.

During the most recent survey period, conditions were very poor in the upper Tar River Drainage Basin. The water level was about one foot higher than under normal conditions for this time fo year, and the water was quite turbid. Although no dwarf wedge mussels were found
08 near the proposed SSC ring site, two mussels species of concern were found in this area: Fusconaia masoni (will be state listed Threatened) and Lampsilis cariosa (will be state listed Special Concern). It appears that the dwarf wedge mussel is restricted to an area of the Tar River from HW 158 down to the next bridge crossing in Granville County. However, because of the extremely poor survey conditions experienced

during the past few weeks, it is possible that a small population of the dwarf wedge mussel exists near the proposed SSC ring site crossing of the Tar River.

One other factor needs consideration relative to the dwarf wedge mussel. We do not know which fish host is required by the dwarf wedge mussel for successful maturation of its young. It is possible that the Tar River in the area of the SSC ring crossing in Granville County is
109 significant for the continued survival of the fish host. If the fish host is extirpated, the dwarf wedge mussel will also be eliminated. Many questions remain to be answered concerning the ecology of the dwarf wedge mussel. We cannot assume that activities downriver from a known population of the dwarf wedge mussel will have no effect upon the population.

Finally, all individuals concerned with natural resources conservation should understand that mussel species diversity is declining rapidly throughout the United States. Many mussel species are on the Federal list of endangered and threatened species, and many more will be added
110 in the very near future. This country is faced with the loss of not just species but an entire family of very important water quality indicator organisms if we do not conserve natural resources in such critical refuge areas as the upper Tar and South Flat Rivers in Granville, Person, and Durham Counties.

Vol. I, Page 4-57

111 This table does not specify what 'S' stands for. We suspect that it refers to special concern species.

Vol. I, Page 4-64

112 It is very probable that several natural areas of concern for animal species in the area, in addition to the upper Tar River and the South Flat River, occur in the proposed SSC site area. We cannot identify these areas until through surveys of the area have been completed.

Vol. I, Page 4-65

113 North Carolina, second paragraph, last sentence. The last sentence should read as follows: "It is particularly sensitive to increased sedimentation and alteration of its habitat (riffle-pool).

Vol. I, Page 4-97

114 The authors of the DEIS state that "no intensive survey has been undertaken in the actual proposed North Carolina SSC project area and data are not available to predict numbers of projected locations of cultural resources." Why didn't the authors state the same information for animal surveys for the area?

Vol. I, Page 5.1.1.2

115 The 2.6 to 3.2 million cubic yards of spoils materials will essentially destroy native plant and animal communities in the spoils disposal sites. There needs to be some mitigation of these habitat losses.

Vol. I, Page 5.1.2-2

116 Runoff and Erosion Impacts - Removal of vegetation during preparation of spoils and site construction states "might result in some increased runoff". We object to this wording and suggest that this will result in increased runoff.

Vol. I, Page 5.1.2.17

117 The construction of roads associated with the proposed SSC site in North Carolina will have significant effects on plant and animal communities - especially aquatic communities. Highway construction has the highest average annual rate of erosion (256 tons per acre) compared with any other land use activity in the State. Siltation of mussel beds is recognized by malacologists as one of the most significant threats to the continued survival of our mussel species. Fish and other aquatic species, such as benthic macroinvertebrates, are also extremely sensitive to siltation. In general, North Carolina is having difficulty controlling runoff from road construction sites.

Vol. I, Page 5.1.2-17

118 It states in paragraph two that they plan to cross several streams for road construction. The above paragraph states impacts from floodplain encroachment on these streams would be negligible. We take exception because these impacts would have detrimental effects upon the Roanoke bass populations in the Flat River from habitat loss.

Vol. I, Page 5.1.2-27

119 Water Use - bottom paragraph, last sentence. "However, because this increased water use would be well within the existing systems' capacities of available excess water, the increased use is not considered a significant impact". We take exception to this statement and find supporting data in Vol IV, Appendix 5c-5.5.2 Water Resources on page 28. This states information was not always available on specific uses or ultimate delivery sites. Actual amounts of water supplied to each user were available only for half of these and no information on residential or commercial and industrial uses within Butner or Durham was available. Also 5.2-2 in Vol I, III, IV, Appendix 4 states "In North Carolina both direct and indirect water requirements could affect the currently expanding Durham water supply.

Vol. I, Page 5.1.2-27

120 It is not clear whether the SSC would limit its water use activities during drought periods. Without limits, minimum flows may not be possible below Mayo Reservoir, Lake Mickie, Little River Reservoir, and Lake Butner. This is especially true considering the rate of water use increase experienced during recent years in the Research Triangle Area.

Vol. I, Page 5.1.3-8

121 The Vehicle Miles Traveled during the construction of the SSC in North Carolina would be nearly 35 million miles per year, and would be approximately 25 million miles during operation per year. In this area where CO pollution is already a problem, between 300 and 415 tons of CO would be produced from SSC related activities. The effects on people, plants, and animals may be significant.

Vol. I, Page 5.1.5-6

122 North Carolina - See paragraph 2, recommend more desirable plant species than black locust seedling such as lespedeza.

Vol. I, Page 5.1.5-7

123 Flat River Slopes Above Lake Mickie - See paragraph 2. Road construction would adversely impact fisheries habitat in these streams, so what is the mitigation?

Vol. I, Page 5.1.5-11

124 The DEIS states that "there are not federally listed species known to be in the proposed site area." This statement needs to be expanded by acknowledging that adequate surveys have not been completed for the proposed SSC site location in North Carolina.

Vol. I, Page 5.1.5-35

125 Construction Impacts - See paragraph 2 "Conversion of this habitat would be a permanent adverse effect of this project. However the degree of significance to the region, is low due to the relatively small areas impacted, as compared to the habitat available in the region". We disagree with this. This does not consider cumulative and permanent impacts to this area. The first sentence contradicts the second. See 5.1.7-1, second paragraph discusses land use changes from the project. See table 5.1.7-2, discusses lands in fee simple areas
126 which would be destroyed by the project due to road construction. Such construction could prove adverse to fisheries habitat.

Vol. I, Page 5.1.8-16

127 North Carolina will experience the greatest in-migration of workers and their families of any state proposed for the SSC. In an area already experiencing water shortages during drought periods and having significant air quality problems, increased human populations will expand stresses on natural ecosystems.

Vol. I Page 5.1.10-19

128 North Carolina-Spoils - "Spoils are projected to have no impact". We disagree with this statement. Refer to Vol. I page 4-49, see the last sentence of second paragraph, "There are several relatively rare plant communities; the most notable are the Upland Depression Swamp Forests". See Vol 4, Ap. 10.2.3.5 - North Carolina, Table 10.2.3-7 pages 23-24. This table shows close proximity of spoils to these wetland areas. We feel that these rare wetland communities will be impacted.

Vol. IV, Ap. 5, Page 72

129 The authors of the DEIS state that the fauna of the proposed site are typical of the North Carolina Piedmont. It is not appropriate for them to make such a generalization. No adequate surveys have been completed for any animal taxon. Just based upon a limited survey for the dwarf wedge mussel, there is evidence that this area may be extremely significant for the North Carolina Piedmont. Because this area contains the headwaters of three major North Carolina drainages and because water quality is relatively good, many native aquatic species may find refuge in this area. Also, aquatic and terrestrial species from the Mississippi River Drainage may be present in this area as a result of past stream capturing events between the Roanoke and New River systems. Therefore, with more intensive investigation, we may find this area to be extremely species rich and of major importance to our understanding of biogeography.

Vol. IV, Ap. 5, Page 74

130 The authors of the DEIS state animal life is moderately abundant in the flowing waters associated with the proposed SSC site in North Carolina. From the preliminary survey work completed by the WRC, it must be stated that this area, particularly the South Flat and Flat Rivers, are unusually diverse and animal life is very abundant.

During a recent survey of the Tar River Drainage Basin (roughly 10% of North Carolina's area) for the Tar River spiny mussel, no area of that basin had as high a mussel diversity as seen in the South Flat and Flat Rivers. Under ideal conditions, WRC personnel are confident that additional mussel diversity will be found in this area. To put this into perspective, the South Flat and Flat Rivers provide habitat for

nearly a third of the mussel species found along the entire United States Atlantic slope region from the Altamaha River in Georgia to the Potomac River system. Therefore this is an important refuge area for this family of very important water quality indicator species.

Vol. IV, Ap. 5, Page 77

131 Additional species need to be added to the list of State listed protected animals:

Scientific Name	Status
Villosa delumbis	Special Concern
Lampsilis cariosa	Special Concern
Lampsilis radiata	Special Concern
Noturus furiosus	Special Concern

Vol. IV, Ap. 7, Page 55

132 The authors of the DEIS state that "in addition to Knap of Reeds Creek with the campus disturbance in its watershed and close to its channel, Flat River and South Flat River, Dial Creek (all tributary to the Neuse River), and Crassy Creek (tributary to the Roanoke River), all have SSC facilities in the vicinity of their channels." They state that the disturbances could cause a measurable increase in surface erosion and sediment transport. This sedimentation could have very significant negative effects on the outstanding aquatic resources in the Flat River and its tributaries.

Vol. IV, Ap. 7, Page 57

133 The authors of the DEIS state that "impacts to surface water quality caused by the SSC facility in North Carolina may come from surface erosion, channel erosion, pollutant washoff, dewatering the tunnel, and increased wastewater treatment plant effluent. Most of these would be direct result of the SSC development, some may also result indirectly from in-migration of people for the facility." This clearly indicates that aquatic habitats will be impacted negatively and downriver water resources for humans may also be negatively impacted. Decrease of water quality in the Tar, Flat, and South Flat Rivers could result in the loss of outstanding aquatic resources.

134 Effluent from dewatering of the tunnels may contain harmful contaminants. Plans call for discharge of these waters to nearby streams (or possibly reinjection) after passing through sedimentation ponds. These effluents may be harmful to significant rare species in the receiving waters.

Vol. IV, Ap. 11. Page 3

135 The authors of the DEIS state the "assessment of ecological effects must look at the unique or unusual (uncommon or rare) characteristics of the ecological systems occupying the site...". It is inappropriate to assess this state's attractiveness for SSC construction based upon the numbers or density of uncommon or rare species. No adequate surveys have been conducted for animal species in proposed SSC site area. There is a very high probability that significantly rare animal species, yet to be discovered, exist in this area.

LETTER 1044

423 S. Gordian Ave.
Aurora, Il.
Oct. 7, 1988

Dr. Wilmot Hess, SSC - ESS Scoping
Washington, D.C.

Dear Dr. Hess,

I attended the SSC hearings at Waubonsee High in Aurora, Il, yesterday.

I was extremely proud of the well-researched testimonies the members of C.A.P.C.H. "the Citizens Against the Super Collider, here" gave.

Their wording was applied to the minutest detail and full of solid facts.

They fortified all the facts I'd gathered in the past months

1

IIA.1- 2058

LETTER 1044 (CONTINUED)

2. They presented the D.O.E. with 20,000 anti-SSC signatures.

As an Illinois citizen I am totally NOT committed to the SSC being built in Illinois.

2 The U.S government is already $3 trillion in the red!

3 Texas appears to be receptive; give them the bird.

Thank you.

Ryan Wiczik
423 S Fordham
Aurora, IL 60506

LETTER 1045

ILLINOIS ENGINEERING COUNCIL

176 W. ADAMS ST. CHICAGO, ILLINOIS 60603

October 12, 1988

RESPOND TO:

SSC Draft EIS Comments:

Dr. Wilmot Hess, Chairman
SSC Site Task Force
Office of Energy Research, ER-65, GTN
Department of Energy
Washington, DC 20545

Dear Dr. Hess,

The illinois Engineering Council composed of the regional Engineering Societies wishes to be on record in favor of
1 putting the SSC in Illinois.

We will provide any support necessary to keep Fermi Lab an international leader in basic research.

Sincerely yours,

P. B. Borrowman

Phillip E. Borrowman
President

MEMBER SOCIETIES

- American Institute of Chemical Engineers (Chicago and Joliet Sections)
- American Institute of Industrial Engineers (Chicago Chapter)
- American Nuclear Society (Chicago Section)
- American Society of Civil Engineers (Central Illinois Section)
- American Society of Civil Engineers (Illinois Section)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (Illinois Chapter)
- American Society of Mechanical Engineers (Chicago Section)
- American Society of Safety Engineers (Chicago Section)
- Consulting Engineers Council of Illinois
- Illinois Association of County Superintendents of Highways
- Illinois Registered Land Surveyors Association
- Illinois Society of Professional Engineers
- Illuminating Engineers Society (Illinois Chapter of Decatur)
- Institute of Electrical and Electronic Engineers (Chicago Section)
- Institute of Transportation Engineers (Illinois Section)
- Society of American Military Engineers (Chicago Post)
- Society of Women Engineers
- Structural Engineers Association of Illinois
- Western Society of Engineers

LETTER 1046

655 Rolfe Road
Mason, Michigan 48854
October 7, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Dept. of Energy
Washington, D.C. 20545

Dear Dr. Hess: Re: SSC-DEIS Comments

We wish to express our opposition to the potential choice of the State of Michigan as the site for the SSC. The leaders of our state appear to be bending over backwards to lure this project, but as residents living within the proposed collider ring area, we can foresee nothing but a sudden exponential population increase and a cascading effect of urban area problems for our small community. 1

We live where we do because we value a simple, quiet existence. With such growth as anticipated with the construction and operation of the SSC, our community will be forced to change quickly from rural to big city. The quality of our lives will be changed and directed by the presence of this collider project in ways we do not want to go. 2

There have been many concerns addressed at public meetings with DOE officials that have gone unanswered. We do not want to live with the unanswered consequences of this project. We do not want to be left with the severe problem of groundwater overdrafts after this project is in operation. 3 We do not want the continual noise of construction and spoils trucks on our secondary roads. 4 We do not want further deterioration of our air quality. 5 We do not want to bear the burden of adverse land values because our home is located within the experimental site or of increased taxes as our schools become overburdened and must increase in 6

size. We do not want to have to look at large building complexes incongruous with our rural surroundings. We do not want our natural wildlife leaving the area as human pressure encroaches upon their habitats. In short, we do not want to live in the middle of a giant physics experiment.

7

8

The ring position as it is proposed goes directly through the only centennial farm left in Vevay Township. The Cady Farm has been in existence for 130 years. We feel it is a crime to sacrifice such a landmark and link to our past for the sake of a project which most likely will lead to its own obsolescence.

9

Most of those supporting the SSC site location in Michigan have something to gain financially from its presence. They are in positions where they can take the money and run. The residents within the project area cannot.

10

We do not feel any amount of financial gain, through employment increases for the State of Michigan or otherwise, is worth sacrificing our quality of life in Vevay Township. We do not support the SSC being located in Michigan.

11

Sincerely,

Robert L. Schnabelrauch

Robert L. Schnabelrauch

Linda S. Schnabelrauch

Linda S. Schnabelrauch, Ph.D.

LETTER 1047

October 6, 1988

Dear Mr. Hass,

I would like to write to tell you that
1 my husband and I are firmly against the super
collider corridor being placed in Illinois.

We have recently placed our home for sale since we are planning on moving to the east coast. We had a pending contract and when the people learned that we were within 1/4 to 1/2 mile from the underground ring the prospective buyers decided not to buy
2 our home. They were hesitant because of so many unknowns, such as the effect on wells, construction noise loss of value of home and just how the conductor operation would affect them.

This is very sad to think that we are being penalized for progress. Two people work all their lives to have a retirement and then they find
3 they don't have what they thought they had because some governor has to try to place something in his home state to make himself look good. Why all the greed - why not allow the state who does not object and has as much to offer have it.

Isn't this a sad world - people don't exist
4 in decisions, its all about green paper and truly, what does it mean. Nothing, absolutely nothing.

Sincerely yours,
Mr. + Mrs. Thomas Hensley

IIA.1- 2063

LETTER 1048

Route 6 - Box 135
Levelland, Texas 79336
October 4, 1988

SSC DRAFT EIS COMMENTS
Dr. Wilmot Hess, Chairman
SSC Site Task Force
Office of Energy Research, ER-65, GTN
Department of Energy
Washington, D. C. 20545

Dear Dr. Hess:

We were in the audience for the afternoon hearing in Waxahachie, Texas September 26, 1988.

We favor the Ellis County, Texas location for the SSC and urge your consideration of the site.

1 Our farm is located on the north side of Highway 287 5.3 miles east of the Waxahachie by-pass and 4.8 miles west of Ennis.

Please place us on your mailing list to keep us advised on the proceedings. Should the Texas site be chosen for the SSC we would like to know how our property would be affected -- the farm tenant currently operates with a lease renewed annually.

Sincerely yours,

MRS. B. J. CUESTA & JAMES LATTIMORE

By: James Lattimore
James Lattimore

LETTER 1049

PAGE. The FOLOWING IS OF INTEREST
1 ONLY IF ENERGY OF PARTICLES
BEFOR IMPACT ≠ ENERGY + MASS
AFTER IMPACT

8-21-1988. TO WHOM IT MAY CONCERN
IN A SHORT TIME the SUPER COLIDER
WILL BE BUILT. This DEVICE SHOULD
PROVE the THEORY I AM ABOUT TO
TALK ABOUT. AT SOME TIME DURING
the TESTS. the RATIO OF POWER
IN PUT TO OUT PUT SHOULD CHANGE GREA
[(BY-OUT PUT TO IN PUT I MEAN
The INITIAL VELOCITY OF the 2
PARTICLES + THEIR ENERGY) VERSES (
The OUT PUT OF ENERGY AFTER
They STRIKE EACH OTHER. AS IN:
MOMENTUM AFTER COLLISION, WAVE OUT,
1 PUT, TEMPRETURE AND ENERGY USED.
MASS + ENERGY FOR MASS CHANGE ETC. ← these things
ARE OUT PUT ENERGY.)]

How IS IT going TO CHANGE?
Some where DOWN LINE IN the
TESTS THERE WILL COME A POINT
where the IMPACT BECOMES SO
GREAT THAT the RATIO OF
POWER IN TO POWER OUT
changes. [DROPS GREATLY] OUT PUT LESS THEN IN PUT.
And the ENERGY LOSS CAN NOT
BE EXPLAINED.

The BASIC THEORIES I WILL
USE ARE DR. CHEWS "BOOT STRAP
THEORY" AND DR. PENROSES "BUNDLE
OF ENERGY THEORY."

NOTES FROM TOP & SIDE OF PAGE 2.

NOTE → BY CRYSTAL STRUCTURE I BELIVE THE STRUCTURE MAY BE AS HE HAS STATED. OR COULD BE QUARKS & NUCLIE OF AN ATOM WITH ANTI QUARKS ORBITING THE NUCLIE. OR VISA VERSA = ANTI QUARKS AND NUTRAL ANTI QUARKS COMPRESSED TO FORM A NUCLIE WITH QUARKS ORBITING. A NUTRAL QUARK OR ANTI QUARK IS MADE OF A QUARK OR ANTI QUARK AND COLORS OR ANTI COLORS.

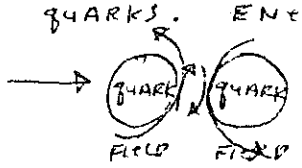
2

The BOOT STRAP theory states
NATURE REPEATS ITS SELF IN
The BASIC PARTICLE.
LETS TAKE AN ELECTRON. AN ELECTRON
IS MADE UP OF QUARKS, The QUARKS
ARE SET UP IN A CRYSTAL STRUCTURE
which MAKES the ELECTRON STABLE
IF The QUARKS IN the ELECTRON
ARE IMPACTED HARD enough, the CRYSTAL
STRUCTURE OF The ELECTRON COULD
CHANGE. IN CHANGEING The ELECTRON
COULD RELEASE QUARKS + ANTI
QUARKS OR ACCEPT QUARKS + ANTI
QUARKS. This COULD BE DONE 2 WAYS.
The FIRST, theory The ELECTRON IS IMPACTED.
The QUARKS CHANGE their CRYSTAL
STRUCTURE. IN doing SO MASS IS
either RELEASED OR ACCEPTED.
This IS BECAUSE OF A POSITIVE OR
NEGATIVE ATRACTION OR REPULSION
[such AS AN ATOM WOULD have.
IN BASIC CHEMESTRY, ANY ATOM WOULD
TRY TO STABLEISE IT SELF BY
ACCEPTING OR REJECTING OTHER ATOMS.
EXAMPLE H_2O, CO_2 ARE STABLE
ATOMS CO IS UNSTABLE. SO
IF H_2O MIXES with CO WITH HEAT
You GET CO_2 + H] WELL A PARTICLE
LIKE OUR ELECTRON DOES THE SAME
THING. WHEN IT BECOMES UNSTABLE
IT WILL LOOSE QUARKS OR + ANTI
QUARKS [LIKE the DECAY OF AN

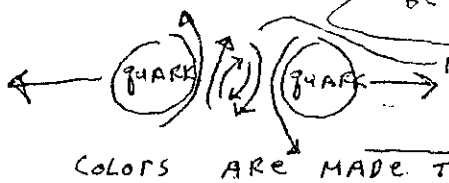
PAGE 3

UNSTABLE ATOM] OR ACCEPT QUARKS & ANTI QUARKS. [LIKE CO & H_2O = CO_2 & H

A QUARK CAN BE OBTAINED 2 WAYS IT CAN BE MADE BY THE MAGNETIC FIELDS OF THE 2 IMPACTING PARTICLES, QUARKS. ENERGY RELEASED



WHEN 2 PARTICLES STRIKE EACH OTHER THE ENERGY RELEASED WILL BE CAUGHT BETWEEN THE 2 PARTICLES



NEW QUARK OR COLOR

= QUARK QUARK OR COLOR QUARK

COLORS ARE MADE THE SAME WAY.
OR - IN EVERY CM OF SPACE THERE ARE BILLIONS OF QUARKS AND ANTI QUARKS & COLORS & ANTI COLORS, WHICH COUNTER EACH OTHER IN SPIN AND CHARGE. THE ONLY WAY YOU CAN TELL THAT THEY ARE THERE IS BY GIVING THEM ENOUGH ENERGY TO SEPERATE.
THE NEXT THEORY IS THAT THE QUARKS IN THE ELECTRON DO NOT CHANGE THEIR POSSISION. LIKE THE THEORY ON ELECTRON OR PARTICLE CRYSTAL STRUCTURE. BUT TAKE ON OR RELEASE QUARKS OR ANTI QUARKS AND OR COLORS OR ANTI COLORS.

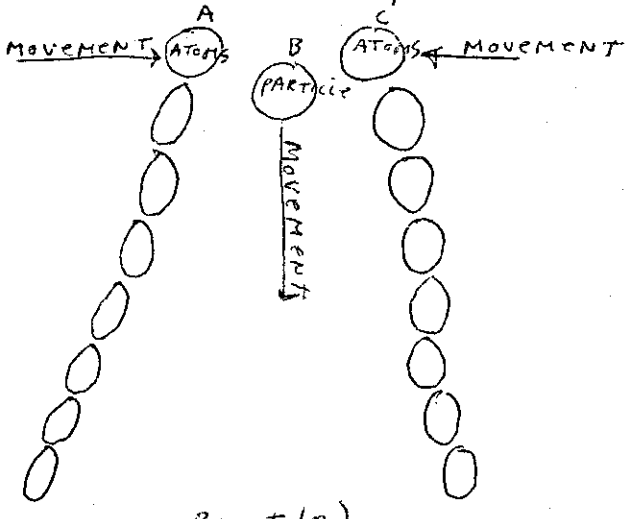
PAGE 7:

CREATEING A STATIC CHARGE
[LIKE AN ATOM LOOSEING
OR GAINING ELECTRONS.]
THIS WILL MAKE THE ELECTRON LOOK
AS IF IT HAS CHANGED BUT IN
REALITY HAS NOT.
[THOE I AM TALKING ABOUT AN ELECTRON,
FOR SIMPLISITY. THIS HOLDS TRUE FOR
ALL PARTICLES (PROTONS NEUTRONS ETC)
AND WHAT WE ARE TALKING ABOUT IS
A STATIC CHARGE (+) OR (-) OF QUARKS +
ANTI QUARKS AND OR COLORS + ANTI COLORS
THAT THE PARTICLES GAIN OR LOOSE.)
WHICH CHANGES THE MASS OF THE
PARTICLE.] WHEN YOU SEE AN ELECTRON
CHANGE TO A PROTON + ANTI PROTON OR
SOMETHING. IT MAY BE IN REALITY A
QUARK + ANTI QUARK THAT RECIVED
THE ELECTRONS ENERGY, SEPERATED,
COMBINED WITH OTHER QUARKS + ANTI
QUARKS OR COLORS + ANTI COLORS. +
LOOKS AS IF THE ELECTRON CHANGED.

Note

NEXT. IT TAKES A CERTAIN PRESURE
EXERTED AGAINST A PARTICLE BY
ANOTHER PARTICLE TO FORCE THE
QUARKS IN EACH PARTICLE TO
STRIKE EACH OTHER. NORMALY WHEN
2 PARTICLES STRIKE EACH OTHER
THE QUARKS + ANTI QUARKS MOVE DUE TO THE
IMPACT. BUT THE QUARKS OR ANTI QUARKS
DO NOT STRIKE EACH OTHER DIRECTLY
IN [illegible] THE QUARKS OR ANTI QUARKS

Repell each other. the Repelling
IF STRONG enough should be capable
OF ACCELERATEING ANOTHER PARTICLE
Beyond the speed OF LIGHT.
the REPULSION IS AT A speed OF
186,000 MPS. IF A PARTICLE THAT
IS TRAPPED BETWEEN 2 COLIDEING
HEAVY ATOMS WAS STRUCK BEFOR
ITS MAGNETIC FIELD HAD A CHANCE
TO MOVE. the QUARKS IN THAT
PARTICLE WOULD FEEL the FULL
IMPACT. USEING RAIL theory.
this CAN Be ACCOMPLISHED.



ATOM (B) MUST MOVE FROM
(B) [WHERE IT IS TO POINT (D)
BEFOR the LAST ATOM IN ROWS
2 [illegible]

This AS you CAN see WILL ACCELERATE the speed OF the PARTICLE.
This happens IN the SUPER COLIDER BY NORMAL BUNCHING.
AS this happens, the MAGNETIC VELOCITY OF the QUARKS OF PARTICLE B BECOMES FASTER then the speed OF LIGHT.
These PARTICLES COULD BE DIRECTED IN TO A PARTICLE BEEM.
[IF you WILL REMBER the U.SS.R. LEAKED INFO they HAD A PARTICLE BEAM.]
The PARTICLE BEEM when IT STRIKES ANY MASS WILL NOT BE FELT BY THAT MASS BECAUSE IT WOULD have A MAGNETIC VELOCITY OUT OF RESINANCE with the QUARKS OF the MASS IT IS STRIKEING.
BUT IF the VELOCITY OF the MAGNETIC BEEM STARTED AT 186,000 MPS AND SLOWLY INCREASED. ANY MASS the BEEM STRUCK WOULD ALSO INCREASE IN MAGNETIC VELOCITY.
LETS SAY the MASS WAS A NUCLEAR MISSILE. IF the QUARKS IN the MISSILE INCREASED IN MAGNETIC VELOCITY, AND the MISSILE EXPLODED. the MAGNETIC VELOCITY WOULD BE SO HIGH, the SUROUNDING COUNTRY SIDE

WOULD BE OUT OF MAGNETIC [velocity] RESINENCE. SO IT WOULD NOT FEEL THE EXPLOSION.

LIKE I SAID. THE ACCELERATION OF PARTICLES (B) BY ATOMS A + B(-) OR (+) CAN BE ACCOMPLISHED BY NORMAL ACCELERATION OF BUNCHES OF ATOMS.

THIS THEORY SHOULD HOLD TRUE. AND THERE SHOULD BE AN UNEXPLAINED LOSS OF ENERGY AFTER BUNCHES OF ATOMS COLIDE.

$E_{IN} \neq E_{OUT}$

2 I WOULD LIKE COPIES OF ALL TESTS IN WHICH THIS IS THE CASE

YOURS TRULY

DAVID - D - STONE
PO - BOX - 21483
PHX - AZ
85036

LETTER 1050 (CONTINUED)

JOHN S. WILDER
LIEUTENANT GOVERNOR
SUITE ONE
LEGISLATIVE PLAZA BUILDING
NASHVILLE, TENNESSEE 37219
TELEPHONE (615) 741-2368

TENNESSEE
SENATE CHAMBER

EAST COURT SQUARE
SOMERVILLE, TENNESSEE 38068
TELEPHONE (901) 465-4647

September 21, 1988

Dr. Wilmot Hess
SSC ~~Sight~~ Task Force
Office of Energy Resources
ET-65, G. T. N.
Department of Energy
Washington, D. C. 20545

Title: S. S. C. Draft
E. I. S. Comments

Dear Dr. Hess:

Due to a heavy schedule, I will be unable to attend the meeting to be held in Murfreesboro on September 29th concerning the super collider atom-smasher project.

1 I support this program and I am very hopeful that Tennessee will be the ultimate home of the Super Collider.
2 Tennessee's proposed site contains ideal geological formations that will meet DOE's criteria for stability and cost of construction.

3 Tennessee's research and technical facilities in the state include the University of Tennessee's Physics Department, the UT Space Institute, Vanderbilt University, Oak Ridge National Laboratory, the Tennessee Technology Foundation, Tennessee Valley Authority, Middle Tennessee State University and Tennessee Technological University.

4 This hugh research facility would bring thousands of new jobs to our state. The SSC is a project worthy of our best efforts. I stand ready to assist the DOE in every way possible.

With kindest regards, I am

Yours very truly,

John S. Wilder

JSW:ehj

[redacted]

LETTER 1051

October 6, 1988

SSC
Draft EIS Comments
DR. WIMOT HESS
Chairman, SSC Site Task Force
Office of Energy Research
ER 65, GTN
Department of Energy
Washington D.C. 20545

Dear Sir:

1 This letter expresses a potentially life-threatening concern: the future construction of the superconducting SUPER COLLIDER in Stockbridge, Ingham county, Michigan.

2 According to the officials in Igham county, there will be an increase of at leat 1,374 school children (not including their families) who will demand at least 2,500 gallons of water per minute. The PROBLEM is that we do not have the water. For the last two years we have been experiencing the effects of a seriuos DROUGHT: first we saw the grass dying, then our crops, later the livestock! We were living in temperatures of 100 degrees with out a drop of rain...and when we wanted to cool off we had to even limit our showers because our wells were running low. Scientists predict more periods of drought in summers to come.

3 The life-threatening situation will arise when the water that is left in the gound will be contaminated; what will we be able to drink? and if we have to drink this water, what will happen to our families? our pregnant mothers? our little children?.

4 Please, Sir, do not let this happen to our families. We are asking you to reconsider when it is your time to designate a site for the construction of this super collider.

The attention you give to this request will be greatly appreciated.

Sincerely yours,

Piedad Kelly
MRS. PIEDAD KELLLY
1863 WALLINE road
Mason, MI. 48854

Teresa Hayes
1700 Walline Rd
Mason MI 48854

Marilyn Kurtzhals
1136 Holt Rd
Mason, MI 48854

LETTER 1052

STATE OF NORTH CAROLINA
OFFICE OF THE GOVERNOR
RALEIGH 27603-8001

JAMES G. MARTIN
GOVERNOR

Board of Science and Technology
Room 2009 Q
116 West Jones Street
Raleigh, NC 27611

6 October 1988

Dr. Wilmot N. Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments

Dear Dr. Hess:

Enclosed is an additional set of comments on the Draft Environmental Impact Statement for the Superconducting Super Collider from North Carolina State government. These comments are from the Water Resources Division of the N.C. Department of Natural Resources and Community Development.

Sincerely,

Susan Dakin

Susan Dakin
N.C. SSC Project Deputy Director

Enclosure

cc: Dr. William Dunn

IIA.1- 2075

LETTER 1052 (CONTINUED)

DIVISION OF WATER RESOURCES

October 5, 1988

MEMORANDUM

TO: Bill Flournoy

FROM: John Sutherland

SUBJECT: Comments on the DEIS for the SSC

Here are our comments by volume:

Volume IV, Appendix 5

1 1. Page 21: Figure 5.5.2-2 shows Mayo Reservoir in Virginia rather than in North Carolina. The reservoir should also be much larger.

2 2. Page 29: Table 5.5.2-4. See attached table that has been corrected and updated. Projections are to the year 2000.

Volume IV, Appendix 7

3 3. Page 52, under Surface Runoff. The first sentence of the third paragraph should read "..., it could have a measurable impact on runoff and increase flows in Knap of Reeds Creek." Also, the second sentence could more clearly be stated as follows: "However, with the use of detention and retention basins, these increases could be kept at the negligible level."

4 4. Page 59, under Surface Water Use. The available excess from Lake Butner should be 7,500 acre-feet/year rather than 8,400 because the current water withdrawn from Lake Butner is 2,465 acre-feet/year. Also, in the last line of page 59, "Lake Michie" should be replaced by "Little River Reservoir."

5 5. Page 60, under Surface Water Use, first full paragraph. What is the source of 5,600 acre-feet/year of excess water for Durham County? Durham's current supply can yield up to 47,000 acre-feet/year of water. Using Table 5.5.2-4, the current excess is about 21,200 acre-feet and the year 2000 excess would be about 5,000 acre-feet.

6 6. Page 60, under Surface Water Use, first full paragraph. The discussion about the City of Durham is outdated. Durham's Little River Reservoir is complete and was full during the spring of 1988. The total usable storage of the reservoir is 4.0 billion gallons, and it has a 20-year safe yield of 21.4 million gallons per day (23,976 acre-feet per year). The City of Durham should

IIA.1. 2076

be able to easily meet the peak water needs in 1992 associated with the construction of the SSC. The first sentence of the paragraph should be rewritten as follows: The City of Durham recently completed the Little River Reservoir to effectively double the safe yield of water supply from Lake Michie. The sentence starting with, "For all but the City of Durham...," should be amended as follows: "For all counties, the impacts from the combined effects of SSC construction use of water and from off-site increases in domestic water use should be negligible compared to excess capacity of their existing water systems." The remainder of the paragraph should be deleted.

Volume 1, Chapter 3

7 7. Page 3-42, under 3.4.5: In the last paragraph the words "Lake Michie" should be replaced by "Mayo Reservoir."

Attachment

Affected Environments at Alternative Sites
North Carolina 29

Table 5.5.2-4

SURFACE WATER USE IN PROJECT VICINITY

Water Source	Use	Quantity Current acre-ft	Quantity Projected acre-ft
Roanoke River Basin			
1. Lake Butner-Knap of Reeds Creek			
Butner	Residential	--	--
~~Durham~~	~~Residential~~	--	--
~~Durham/OWASA~~	~~Residential~~	~~[illegible]~~	--
Cozart Sanitary District	Comm/Indus	~~[illegible]~~	--
Lyons Station Sanitary District	Comm/Indus	~~[illegible]~~	--
Umstead State Hospital	Residential	--	--
Total		2,465 ~~1,645~~	3,178 ~~2,368~~
2. Lake Michie-Flat River			
Durham	Residential	25,773 ~~20,775~~	41,909 ~~40,210~~
3. Lake Rogers-Ledge Creek			
Creedmoor	Residential	250	525
4. Irrigators, general			
15 ponds, wells, streams	Irrigation	5,395	--
Roanoke River Basin			
1. Isaac Walton Lake-Satterfield Creek			
Roxboro	Residential	1,780 ~~1,990~~	1,900 ~~1,810~~
	Comm/Indus	2,700	3,500
2. Kerr Reservoir-Roanoke River			
Oxford	Residential	977 ~~1,300~~	1121
Oxford	Comm/Indus	449 ~~325~~	510
~~Corps of Engineers~~	~~Cooling~~	~~[illegible]~~	
3. Mayo Reservoir-Mayo Creek			
CP & L Electric Generating Plant	Cooling	8,200 ~~5~~	16,400 ~~--~~
4. Irrigators & General 20 ponds	Irrigation	727	--
Tar River Basin			
1. Irrigators & General 25 Ponds & Wells	Irrigation	4,868	--

Sources: North Carolina Department of Natural Resources and Community Development 1988a and 1988b; Carolina Power and Light Company 1977.

LETTER 1053

WELD COLORADO

OFFICE OF BOARD OF COUNTY COMMISSIONERS
PHONE (303) 356-4000, EXT. 4200
P.O. BOX 758
GREELEY, COLORADO 80632

October 5, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65 GTN
Office of Energy Research
U.S. Department of Energy
Washington D.C. 20545

Attention: SSC DEIS Comments

Dear Dr. Hess:

Weld County has completed its review of the Draft Environmental Impact Statement (DIES) for the Department of Energy's proposed action to site the Superconducting Super Collider (SSC). Our comments address the proposed Colorado site.

1 Weld County would like the SSC Site Task Force to consider Weld County and its incorporated municipalities as potential service centers to the proposed Colorado site for the SSC. The municipalities within Weld County can provide housing, recreation areas, higher education facilities, cultural outlets, and other related functions to meet the demands of the proposed Colorado site. The City of Greeley, Weld County's largest municipality, can provide hotels, medical services, general aviation services, and convention and visitor opportunities in addition to the other identified service functions available in Weld County.

2 Please consider these comments and Weld County's proximity to the proposed Colorado site as a further factor in the environment assessment of this area as a potential site for the SSC.

Sincerely,

Gene Brantner, Chairman

C. W. Kirby, Pro Tem

Gordon E. Lacy

Jacqueline Johnson

Frank Yamaguchi

pc Governor Roy Romer

IIA.1- 2079

LETTER 1054

Sept. 21, 1988

Dear Dr. Hess:

Please read these two articles and tell me that this isn't a political issue

1. You have men who are afraid to take a stand if they do not consider it politically expedient.

1 2. You have union officials making "social calls" on people of influence.

3. You have 40,000 pro signatures and nothing in those petitions to substantiate the signers knowledge of the SS

Sincerely

Barbara J. Ryan
4624 Blanch
Downers Grove, Il
60515

IIA.1. 2080

LETTER 1054 (CONTINUED)

Du Page

Chicago Tribune Tuesday, September 20, 1988 Chicagoland

2 mayors ask changes in collider plan

Resolutions are sent to committees

By Katherine Seigenthaler and Patricia M. Szymczak

The mayors of two west suburban towns introduced resolutions in their city councils Monday night asking that the State of Illinois reconsider certain aspects of its superconducting supercollider proposal, particularly those that would remove land from the cities' tax rolls.

Both councils voted to send the resolutions to committees for review.

The City Council of West Chicago unanimously voted to send the resolution to the Zoning and Planning Committee, asking them to report back with recommendations at the next meeting on Oct. 3.

The St. Charles City Council referred the resolution to the Finance Committee to review whether the proposal should be rewritten as an amendment to a similar collider resolution passed in June.

In his motion to refer the collider proposal, St. Charles Ald. William Martin objected that the new resolution was too similar to one passed this summer.

St. Charles Mayor Fred Norris, who agreed to the decision to refer the resolution to committee, said, "There are some [people] definitely for the collider and some definitely against. I thought this resolution might address the specifics of some of those ongoing concerns."

The resolution was drafted jointly by the mayors of St. Charles in Kane County, and West Chicago in Du Page County, both of whom have expressed concern that construction of the giant particle accelerator in Illinois could have a negative impact on their communities.

The mayors' five-point resolution asked that the state:

- Reconsider its decision to buy above-ground rights to large chunks of property beyond the boundaries of Fermi National Accelerator Laboratory in Batavia. The state plans to buy a total of 3,700 acres in addition to Fermi, 1,400 of which would be in or near the St. Charles/West Chicago area.
- Clarify what would be done if the purchased property is no longer needed, and that the property involved is never subject to public auctions but reverts to the previous private owners.
- Reconsider its plan to remove several hundred acres of wetlands in the area.
- Attempt to conceal operating compressors located in residential areas.
- Increase from 5 years to at least 20 years the statute of limitations that guarantees that the taxing districts would receive payment to make up for lost tax revenues.

"It certainly seems foolish to take land unnecessarily," St. Charles' Norris said before the council session. "And since the state is now working on mitigation, we'd like to have a record of the things we'd like to see mitigated."

Because of vocal opposition to construction of the collider in Illinois, the state is in the process of setting up a mitigation task force to help resolve local residents' objections.

If the federal government chooses Illinois as the site for the 53-mile underground tunnel, it will be built as an extension of Fermilab.

The state has proposed to purchase underground easements for most of the property along the oval ring and would burrow under thousands of homes in Kane, Du Page and Kendall Counties to build the facility.

It also plans to buy the 3,700 acres above ground, either outright or through eminent domain proceedings.

West Chicago Mayor Eugene Rennels has estimated that about 1,100 acres of land would come off the tax rolls of West Chicago, costing the city about $250,000 in annual tax revenue.

2 collider resolutions may fail

By Patricia M. Szymczak

City Council resolutions pending in West Chicago and St. Charles questioning details of the superconducting supercollider proposal may die because of fear that any hint of local displeasure could cause Illinois to lose the project to Texas.

"There are strong feelings [in the City Council] about 'Let's not hamper [the collider]'," St. Charles Mayor Fred Norris said Tuesday, adding that he "wouldn't be surprised" if his council's Finance Committee recommends killing the five-point resolution on which he and West Chicago Mayor Eugene Rennels collaborated.

On Monday both councils sent to committee the resolution, which asked the state to, among other things, reconsider its decision to buy above-ground rights to large chunks of property beyond the boundaries of Fermi National Accelerator Laboratory in Batavia. The state plans to buy 3,700 acres in addition to Fermi, 1,400 of it in or near the St. Charles/West Chicago area.

Rennels and Norris said they had hoped to have the resolutions passed this week in anticipation of an organizational meeting later this month of a citizens task force to advise the state as supercollider plans progress.

"They may redraft it and soften the language. Then again they might just forget the whole thing," Rennels said of what West Chicago's Zoning and Planning Committee might do.

Norris said a move to water down the resolution may be unrealistic in St. Charles.

"Right now I think it's kind of soft the way it lays," Norris said. "We didn't step on anybody's toes. I think the mayor of West Chicago and I have made an honest and sincere effort to address certain issues raised in our communities. If people don't like what happens, they can take it up with their alderman."

Zoning and Planning Committee Chairman Colin Perry said the West Chicago council wants to present "a united opinion" on the issue and felt it needed more time to discuss points raised in the resolution.

"Also, we felt that because St. Charles had originated the resolution, they should take the lead," Perry said. Norris had called Rennels about the idea first, he said.

Delaying West Chicago's vote would have given St. Charles a leadership role. But Norris said Finance Committee Chairman James E. Martin, an ardent supporter of the supercollider project, contacted him over the weekend to say he intended to move that his committee study the resolution.

Perry said West Chicago was unaware Martin planned to ask that the resolution be sent to committee.

Rennels, branded an opponent of the $6 billion project after he criticized some aspects of the proposal in January, said he objects to the label. "Anybody who asks questions is labeled as against [the collider]," he said. "I'm not against it. I just want some questions answered. In January they sent every labor union in the state after me."

Therefore, West Chicago's elected leader is being cautious. "If the decision is that the project goes to Texas, I don't want them saying that West Chicago killed [the collider]," Rennels said. For that reason, Rennels wanted West Chicago teamed with other communities in raising some of the points in the resolution.

Other issues listed in the resolution were:

- Clarification of what would be done when the purchased property is no longer needed, and whether the property could revert to its previous owners rather than be auctioned publicly.
- Reconsideration of the plan to remove several hundred acres of wetlands.
- The attempt to conceal operating compressors located in residential areas.
- The increase to at least 20 years from 5 years of the statute of limitations that guarantees taxing districts would receive payment to make up for lost tax revenues.

Meanwhile, the supercollider project office announced Tuesday that nearly 40,000 signatures have been gathered in support of the supercollider, many of them at fairs and festivals in the West Chicago-Geneva area by volunteers who donated the equivalent of 32 days of work this summer.

See Collider, pg. 9

LETTER 1055

Dear Dr. Hess,

I am too ill to speak when you come to Ill. in Oct. Your HHC has done that to me. If you take my house the shock will kill me & will leave my son homeless, he is retarded where will he go & what will happen to him? We are very poor, yet you can spend all that money to prove God didn't create the world. The HHC is the devils project.

1

Ms. Lee Olerick
RR#1 Box 229F
Aurora EOLA Ill. 60504

IIA.1- 7082

LETTER 1056

EIS.

1 I own A 120 A. farm in Sec 12 and 13 Onondaga Twp. Ingham County
The SSC. will take part of it
I am in favor of it and most of the peopil I know are
I think the Twp boards of Vevay and Stockbrige
Are not showing the true feelings of the Twp. people as A hole

June Darrow

June Darrow
3750W W. Covert Rd.
Leslie Mich 49251

2 I own A. 60 A Farm in Sec 13 also onondaga Twp. the SSC will take all or most of it. I agree with the above statement.

Henry Jones
3645 South Edgar Rd.
Leslie Mich
49251

LETTER 1057

Oswego, Il.
October 5, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Dept of Energy
Washington, D.C. 20545

Att: SSC Draft EIS Comments

Dear Dr. Hess,

1 As affected property owners in the path of the proposed SSC, my husband and I have made it known earlier to you that we are opposed to siting it in Illinois.

2 Page 113 potentially Affected Wells: There is only 1 well shown and it is West of the Fox River (Lower Arc) I know there is a Quarry Lake (Church Camp) with a 700' well, a home in Century Acres with a deep well & a property with a barn on which is a well 2½ miles line in Sec. 8-37-8, Parcel #03-08-401-002-0040 east of the river and have had a well since 1957.

3 On 5.1.4-7 Human Receptors Map. we are shown as part of a subdivision we are not, we are between the St. Hwy. 25 and BN RR. If at some time we had to drill a deeper well and the collider underneath and for that reason go could not, our only possibility would

4 be going underneath the railroad & very costly to hook onto village water supply. Let's say this happens after the tunnel is in operation, who pays? Please answer now.

5 Also on the Human Receptor Map. I do not see Kaneland School (Upper arc) or Thompson Jr. High, Boulder Hill Pass, Oswego (Lower Arc)

6 Another concern is where the retention pond for the F2, dewatering wastes are going to be. Is it going to drain into Waubonsie Creek and then into the Fox River? Please advise on this question.

Sincerely,
Mrs. Janet Schor
1620 Rt. 25
Oswego, Il. 60543

LETTER 1056

October 6, 1988
685 S. Meach Rd.
Dansville, MI 48819

Dr. Wilmont Hess, Chairman
SSC Site Task Force
Dept. of Energy
Washington, D.C. 20545

Dear Dr. Hess:

After attending the meeting held at Stockbridge, Michigan on September 26, 1988 by the DOE I am very upset to realize how much our local and state officials are misleading those people affected within the proposed SSC site area.

As residents of the area who will be directly affected in every aspect of the SSC, we were with the understanding the Stockbridge meeting was to give the people affected the opportunity to be heard by the DOE. Hopefully you realize the evening was made up of speakers who were either representing contractors or colleges. The few other speakers, only several who were for the SSC, showed a very definite lack of knowledge relative to the many varied aspects and impacts the SSC will directly imply on our community.

As for the politicians who totally support the SSC, I would like to convey
1 to you the fact that we have only been given half-truths and by these half-truths a very large portion of those directly affected are totally unaware of the true facts relative to the SSC. Even the news media is playing the political game through the printing of information which is misleading and eliminates major facts so necessary for rational judgement on the matters which directly affect us who will be forced to bare the burden of the SSC.

As chairman of the White Oak Township Zoning Board located in Ingham County, I am appalled to find our Township, in February 1987, voted total support of the SSC. We, the taxpayers and people directly affected, were not informed of the proposed project until January of 1988. The comment received when questioning our local government officials was "we were told not to say anything until the DOE held the first meeting in Stockbridge in 1988".

As a taxpayer who is directly affected by the SSC I feel my rights and the rights of all the other people in our community have been violated. We ask ourselves over and over if this is a sign the SSC project is so devastating to our communities that federal state and local officials find it necessary to mislead the truth, play down the facts, and evade the important issues for self-centered political gain at our expense.

Sir, we are the people who built our communities and we want our communities
2 to stay as they are today. Our community, not to mention our state, cannot afford the impact the SSC will have. The majority of people who make up our community are those whose families homesteaded this land over 100 years ago.

Is it really fair or necessary to take from us because the government needs a 40 year SSC project? I would suggest a different locality where little if any impact will be felt in all areas and expansion might even be possible should it ever be necessary.

At the Stockbridge meeting on September 26, 1988, the DOE was presented with some 1,000 signatures of those opposed to the SSC. All of the signatures represent a portion of the true feelings of people in Ingham and Jackson Counties. Those who signed realize the complete impact the SSC will have on our areas and are not ready to bare the burden, which will be so generously, handed to us by the federal and state governments as soon as final disposition is made for a site.

3 Another very interesting area is the feelings of some 20,000 plus people in the state of Illinois who are against the proposed building of the SSC there. I would think if the Fermi Lab were such a good thing they would want the SSC to be built there so as to enhance their communities even more. I find it very ironic we are told by our state and local officials that nothing but good can come for everyone out of the SSC and yet the people of Illinois say "reject the SSC, only total community devastation will result, politicians whose only interest is political gain will mislead and misguide the people, and beware the truth, read the facts as they really are because once the decision is made it will be too late to be heard or to take action".

White Oak Township is located on the northeast side of the proposed SSC site. We are zoned agricultural-residential. If the DOE would take the time to read our zoning ordinance and the master plan of the township you would see why we as landowners reject the SSC. Our community abounds in
4 wildlife, serenity, and beauty and to give it all away for a project with an expected life of 40 years would mean generations of families who worked to make our communities what they are today was all in vain. It is nice to enhance Michigan in the eyes of the country and world, but is it really worth the cost? I think not and can honestly say so since our farm will be absorbed by the SSC as we are located at point F-8. Not only will our farm which as been in the family some 150 years, be taken from us also taken will be an option for ever having an oilwell. Oil has been found on two
5 various times of drilling at the traverse formation. The potential of the well is estimated at 220,000 barrels or approximately 4.5 million dollars but I am supposed to just walk away for the sake of the SSC. Politics and a 40 year SSC just do not seem worth it.

Michigan is rated #2 in the United States for pollution and with that in
6 mind, I find it very discouraging to exaggerate the problem through the building of the SSC. It would seem the DOE would rather consider an area where pollution can be controlled and impacts would be at a minimum.

We, as taxpayers and landowners who have built our communities to what they are today, ask the DOE to reconsider its position relative to Michigan and
7 the SSC. We appreciate what the SSC may have to offer in the various technical fields, but noting the devastating impact to our communities, environment, and everything we have worked so hard for, we ask that you hear our voice. We stand to lose everything, doesn't anyone care? Please don't take our heritage away from us and our future generations to come, it's too precious to give up.

Sincerely,

David C. Reinhart

LETTER 1059

CITY OF BRIGHTON

October 3, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65-GTN
Office of Energy Research
U. S. Department of Energy
Washington, D. C. 20545

Dear Dr. Hess:

In reference to the draft Environmental Impact Statement, Superconducting Super Collider, please be advised that the City of Brighton, Colorado has reviewed this document and
1 wishes to enter its comments in respect to this matter. The City of Brighton is in concurrance with the finding of the EIS as it relates to the City of Brighton. In addition, the City is well prepared to handle the associated impact(s) that may result from this project. During the past four (4) years
2 the City has annexed over 4,000 acres of land for residential, commercial, and industrial development. The existing
3 sewer plant has a capacity to serve double the current population and existing water resources are more than adequate for future growth.

4 In conclusion, I wish to state that the City of Brighton is in full support of the Superconducting Super Collider being located in Fort Morgan, Colorado.

Sincerely,

Samuel V. Gomez
Mayor

AJK/va

cc: Colleen Murphy, Department of Local Affairs
SSC File

22 South 4th Avenue - Brighton, Colorado 80601 - (303) 659-4060

LETTER 1060

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

October 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. DEPARTMENT OF ENERGY
Washington, DC 20545

ATTN: SSC DEIS Comments -- E-8

Dear Sir:

1 I would like to call your attention to a specific area on the Illinois land acquisition map included in the DEIS (attachment A-3C) showing a section of the upper arc. More specifically, take note of the land in this 1,000 foot easement on both sides of Denker Road where there is to be located E-8.

It is stated that this service facility can be moved or rotated; thus the narrative about this site is ambiguous by design. However, I can assure you there is no logical place here for the destruction of this land or the construction of this facility.

2 A false assumption in the part of planning is that this proposed E-8 facility, so described as an 875 square foot, lightweight steel-frame building covered with insulating panels, could be compatible with the surroundings. Table 13-3 shows the project land use/zoning as "light industrial" compared with existing land use/zoning as "Planned Unit Development/Farming District". A drive down Denker Road will show, for the most part, the farm is gone. One side of the road is Estate zoning and the other a PUD. This area certainly has been developed and it is quite residential. I quote Section 16.3.3.1: "Residential land uses are not visually compatible with the proposed project because of the obvious functional and structural contrasts between project features and residences."

Again, looking at the map, Parcels 62, 53, 51 and 18 are sites of private family homes; the area of Parcel 2 is shown as one large piece but represents another phase of the PUD as recorded. It is ludricous to think that this facility and its ramifications should be placed on someone's front lawn or as a homesite in a subdivision!

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

Dr. Wilmot Hess, Chairman
SSC Site Tas Force

October 6, 1988
Page Two

3 Parcel 72 is an area of flood plain and water way for drainage into a lake on the other side of the road in Parcel area 64. This lake has a spillway into Ferson Creek which makes its way ultimately into the Fox River. This land is certainly not buildable nor would you want to disturb the flow of water and surrounding natural habitat. Surprisingly, this flood plain area is not specifically addressed in the DEIS as to direct or indirect impact.

4 The attack on our environment and our quality of life during the construction of E-8 would be obscene --- the blasting, the digging, the hauling, the draining of water from shaft and tunneling, the dust and the muck!! -- and, when you have finished, by your admission, we will have a "VM Class 4....uncharacteristic of its setting....highly sensitive area..."

I know this area; you should come to know this area. E-8 does not fit in -- E-8 will not work here!!

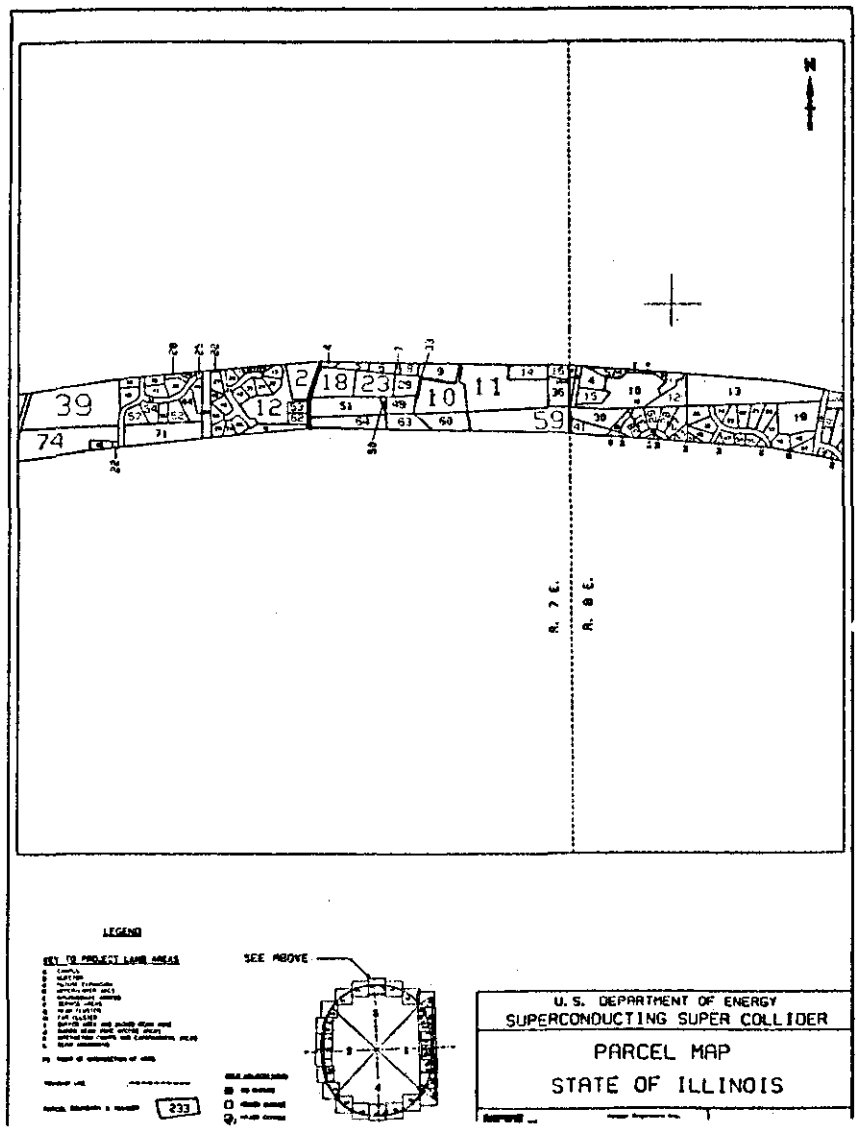
5 I would like to leave you with a thought to share with the powers that be in Washington. In your deliberations, keep this thought paramount: There are hundreds of dedicated people here who will remain steadfast in their commitment; WE WILL NOT ACCEPT THE DECISION TO SITE THE SSC IN ILLINOIS!

Very truly yours,

Barbara J. Rosi

Barbara J. Rosi

Illinois Attachment A-3C



LETTER 1061

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

October 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. DEPARTMENT OF ENERGY
Washington, D.C. 20545

ATTN: SSC DEIS Comments -- Parcel Count

Dear Sir:

1 If you look at Table 3-5 on page 3-30 and look at footnote "g" you will notice that it states "the number of affected parcels and ownerships in Illinois may vary by as much as 20% and numbers of relocations by as much as 50%." It is interesting that the DOE is willing to admit this whereas our own state officials have continually denied it!

2 One of the major points that C.A.T.C.H. has tried to make the public aware of is that the Illinois ENR has erroneously and, in this writer's opinion, purposefully misled the DOE concerning the numbers of people who will be directly affected by siting the SSC in Illinois.

3 From the beginning, the ENR used 1986 tax maps to prepare their list of affected parcel owners, wells, etc. obtaining a count which was accurate as of January 1, 1986. Due to the extensive rezoning that has taken place since then, and the rapid development throughout the entire Fox Valley area, we members of C.A.T.C.H. always knew that Illinois understated the true facts. Not only were the numbers kept small because of this, but hundreds of affected parcel owners were not duly notified that they would be potentially affected by this project. Those who appeared on the tax rolls as of January 1, 1986 were notified by the ENR when verification first became necessary in late January of this year. However, hundreds were not notified until much later, and large numbers still have not received notification. This is a situation which was totally mishandled by the State and is the major blemish on the Illinois proposal.

If you look at the Illinois land acquisition maps beginning on Page A-3A of Appendix #4 of the DEIS, you will discover that 1987 tax maps are used for the first time. You will also notice that each parcel has a number on it. A simple tabulation of the numbers in each section gives you a total of 3,826 parcels. This is an increase of 521 parcels

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

during just one year, yet this higher parcel count still only reflects conditions as of January 1, 1987. What about all the development that occurred during 1987 and the nine months of this current year? None of that increase is reflected and we all know that rapid growth has occurred during that time span. It is very possible that the real number of affected parcels involved at the proposed Illinois SSC site is in excess of 4,500. Even this new parcel count of 3,826 is larger than the parcel count of the other six states combined totalling 3,520. It is apparent that Illinois has by far the largest parcel count, the largest well count, and the largest population living in the region of influence of the proposed SSC. This statistic is a measure of the insensitivity of the State of Illinois to try and impose this project on such a large number of its people.

Because of this large parcel count in Illinois, the ENR and DOE are confronted with the most difficult land acquisition process that will be involved at any state which could delay your important 1996 target.

4

If you are sensitive at all to the protests of over 20,000 individuals, you will place the SSC in a state where the local citizens will welcome it with open arms and, believe me, that is not the case in Illinois.

The only way the SSC will come to Illinois is through the courts.

Very truly yours,

Peter R. Rosi

LETTER 1062

State Historical Site (1877)

WHITE OAK TOWNSHIP

1002 M-52 - WEBBERVILLE, MICHIGAN 48892

October 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments

Dear Dr. Hess:

I'm writing at the directive of the White Oak Township Board.

On October 5, 1988 at our regular township board meeting we had about 35 people in opposition to the SSC and only 5 people in support of the SSC.

We would like you to know how unusual this is for our township. Their reason for their opposition ranged from too many unresolved questions about the SSC being put in our area of Michigan with regards to our zoning and master plan concerning our greenbelt, land values, land use, taxes, wells, water purity, radiation, water tables, noise, pollution and the many other adverse impacts this project will have on our community and farming area as a whole.

1

Out of a population of about 1,000 in White Oak Township that haven't been polled, but by their representation at our board meeting it shows that 3½% of the residents or 7% of the registered voters oppose the SSC and we suggest that there may be more people in opposition to the SSC than earlier surveys have indicated.

The people came and we heard their compliants and concerns and thought you should know about them.

Sincerely,

Carole Oesterle, Clerk
White Oak Township

IIA.1- 2093

LETTER 1063

Oct. 7, 1988

SCC

To Whom It May Concern —

I can not write a letter on your intellectual terms. But I do know that until it actually happens you do not know the full effect on our wells, foundations, windows and structures in general, or our wildlife etc. I object to taking up so much prime farmland for something that does not serve the general population that much.

1

Yours truly,
Barbara Rusner

IIA.1- 2094

LETTER 106A

DOE
Comments on DEIS
Appendix 4 Land Acquisition Plans
Page 13 4.3.2.7 Texas

Gentlemen:

We are one of the families to be relocated from a small but efficient farm and ranch, which has been producing in our family since the turn of the century. Droughts and floods, insects and tornadoes, and many cold rainy nights waiting for that new born calf, rubbing a colicky horse, or just simply sitting and stroking the head of an old dog that lies dying after many years of helping herd the cattle, guarding the house, or just being a true friend and faithful companion. Through all the hard work, tears and sweat, we can still smile and be proud of our accomplishments, and especially proud of the family farm where truly are our roots.

1 One and one half years ago my husband retired after forty years of service to the same company. We are living on a fixed income with the operation of our farm and ranch as part of this income. Our ages are fifty eight and sixty seven, and I just can't see how we can pick up and start over at this time in our life. If a board or piece of sheet iron needs replacing or several fence posts need setting, we can do this,and have planned to do so for the rest of our lives-but to build rods of fences,build new barns and sheds, move the farm houses and try to rebuild the way we are now, would be impossible. What quality of life could we expect without income from the farm? This dilemma not only faces us, but several of the neighboring farms around us.

I wish you gentlemen of the DOE can see fit to let us keep our lands, and let us keep on living and producing for this country we love so much.

Thank you for your time and consideration.

Marvin and Aubrey Cotter
Rt. 5 Box 45
Waxahachie, Texas 75165

DOE
Comments on DEIS
Appendix 4 Land Acquisition Plans
Page 13 4.3.2.7 Texas

Sirs:

I too am one of the family farm operators to be relocated. My farm and ranch joins the family of the preceding letter. My problems are much the same with a few exceptions. I was born of this place eighty years ago. Since that time I too have endured many heartaches, hard work, much happiness and many changes. As a young woman with several brothers and one sister, I dec that my father's land and rural life was the life I would pursue. I worked at job that I could find (which was very hard to come by)and lived as meager as I could to save money and buy part of my father's farm, and after my parents' death did buy the remaining acres from my siblings. At that time I was married

2 and the mother of three children. Shorty after my third child was born my husb died, and that has been some fifty years ago. I held down a public job and worked my land by myself, with the exceptions of a few weekends that my son helped when he was off from his job. Twelve years ago my son died, and I have lost one of my daughters. With the exceptions of two months (for which I was in the hospital with a bout of cancer), very few days have passed that I have not been on my tractor or a hoe in my hand. My farm and ranch is my life, and if it is taken from me-so goes my life. I could never start over and have the

LETTER 1064 (CONTINUED)

security I have now. My social security check(which is certainly not enough to live on) is my only source of income except for my farm and ranch.

Am I to be among the ones on welfare (which I cannot stand the thought of)? Many of the people on welfare don't want off welfare. They don't want to work. I would appreciate your finding a different site for the SSC, and let me get on with my farming and producing the rest of my life.

Sincerely,

Monnie Bratche

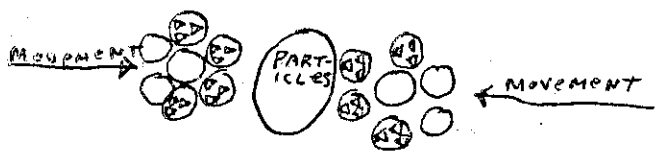
Rt. 5 Box 180
Waxahachie, Texas 75165

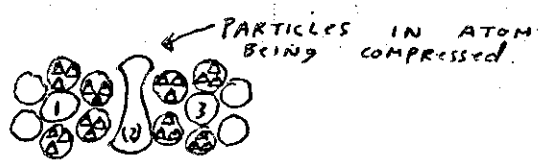
LETTER 1065

My second proposal, like the first deals with the acceleration of the magnetic field of the quarks of a particle.

theory. when 2 bunches of atoms colide [heavy atoms close to the speed of light.] the quarks in the particles of the atoms will repell each other. this causes the quarks to turn sideways just befor impact.

1



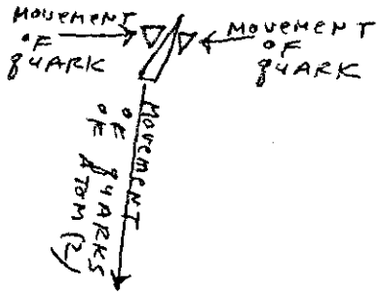


so when impact takes place. the quarks strike each other side ways.

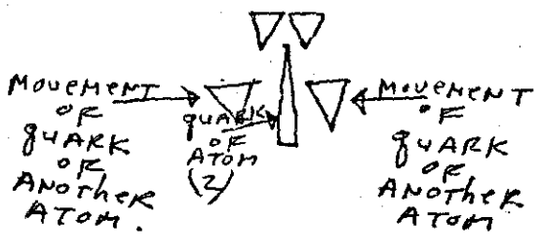
The quarks in the particles of the atoms(2) being compressed by atoms 1 & 3 become narrower & longer

IN DOING SO, THE QUARKS RECIVES ENERGY FROM ATOMS 1 + 3. SINCE THE QUARKS OF ATOM 2 ARE STILL BEING COMPRESSED BETWEEN ATOMS 1 + 3 [AND HAVE INCREASED IN MASS]
THE QUARKS OF ATOM 2 CAN NOT INCREASE IN DIAMETURE. AND IN FACT HAVE DECREASED IN DIAMETURE.
THE DENSITY OF THE QUARKS HAS TO INCREASE. [THE MAGNETIC FIELD INSIDE THE QUARKS INCREASES IN MASS BUT BECOMES MORE COMPACT. AND THE INDIVIDUAL LINES OF MAGNETIC FORCE ARE COMPRESSED CLOSER TO EACH OTHER.]
WITH THE LINES OF MAGNETIC FORCE [THE MAGNETIC FIELD IN SIDE EACH QUARK CAN BE BROKEN DOWN INTO MAGNETIC LINES OF ENERGY THAT MOVES [LIKE AIR IN A TORNADO.] IN A SWIRLING FUNNEL SHAPE MANNOR]
THAT WHEN COMPRESSED WILL REPELL EACH OTHER. [NOTE. IT IS MY BELIFE THAT THE MAGNETIC FIELD OF A QUARK HAS A FLUXUATEING MAGNETIC FIELD] THAT STRONG AREAS IN LINES OF THE MAGNETIC FIELDS OF THE QUARKS IN ATOMS 1 + 3 WILL REPELL ~~THE QUARKS OF ATOM 2~~ OTHER STRONG AREAS [BEING COMPRESSED CLOSE TO THEM] WHICH WILL FORCE THE MAGNETIC FIELD QUARKS OF ATOM (2) FORWARD. CAUSEING IT TO MOVE FASTER.

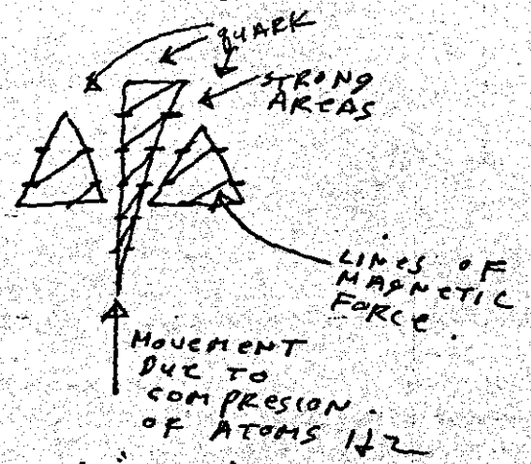
OR since the quarks of
ATOM (2) become longer.
And are compressed between
ATOMS 1 & 3.
The compression forces ATOM (2)
FORWARD as shown



Just as ATOM (2) starts to
leave ATOMS 1 & 3
ATOM (2) gets compressed by 2
more ATOMS. which futher accelerates
ATOM (2)



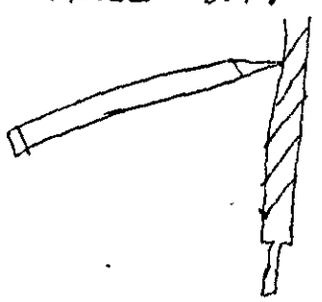
AS the quarks of ATOM 2 move past the quarks that are compressing it, they encounter the strong & week fields of the quarks of ATOMS 1 & 2. When ~~it~~ moves forward the strong areas of the magnetic field [ATOM (2)] repells against the quarks of ATOMS 1 & 2 which accelerates the magnetic field of ATOM (2)



The magnetic lines of force of quarks of atom (2) are like a peperment stick or a barber pole or candy cane that is turning [the stripes are the lines of force] as the quarks of atom (2) move

PAST THE QUARKS OF THE OTHER ATOMS [MOVEMENT DUE TO COMPRESSION] THE STRONG AREAS OF QUARK (2) REPELL THE STRONG AREAS OF QUARKS 1 + 3. AND FORCES THE QUARK (2) TO TURN AS THE STRONG AREAS MOVE PAST EACH OTHER.

EXAMPLE TAKE A PEN AND A DRILL BIT.



PUT THE PEN TIP IN THE DRILL BIT. PUSH DOWN. THE DRILL BIT WILL ROTATE. WHEN QUARKS OF ATOM (2) ARE COMPRESSED BY OTHER ATOMS AND ATOM (2) MOVES PAST THEM IT ACTS LIKE THE DRILL BIT (& REPELL ATOM (2) FROM 1+3) AND ITS MAGNETIC FIELD INCREASES IN VELOCITY.

225-775 88 - 4 (BOOK 6)

YOURS TRULY DAVID D STONE
PO BOX 21483
PHX AZ
85036

NOTE - ON THE PREVIOUS PAGE I MENTIONED THE DRILL BIT AND A PEN. IF THE PEN REPRESENTED THE STRONG MAGNETIC AREAS OF THE QUARKS OF ATOMS 1 OR 3 AND THE DRILL BITS GROOVES REPRESENTED THE STRONG AREAS OF ~~THE~~ A QUARK IN ATOM (2) BY PLACEING THE PEN IN ONE OF THE GROVES OF THE DRILL BIT IS THE SAME AS THE ATOMS 1 & 3 COMPRESSING ATOM (2) AND THE QUARKS FROM THE ATOMS ALMOST TOUCHING EACH OTHER. WHEN THE PEN PUSHES DOWN ON THE DRILL BIT. THAT IS THE SAME AS THE DRILL BIT MOVEING & THE PEN STAYING IN ONE SPOT. IF THE GROOVES WERE THE STRONG AREAS, AND THE PEN THE STRONG AREA OF A QUARK IN ATOM 1 OR 3. THEN AS THE QUARK MOVES OR OUR EXAMPLE THE DRILL BIT

LETTER 1065 (CONTINUED)

The MAGNETIC FIELD OF the
QUARK OF ATOM 1 OR 3
CAN NOT PASS THREW the
STRONG AREA OF ATOM (2)
QUARK. OR OUR EXAMPLE
The PEN CAN NOT PASS THREW
the METAL OF the DRILL BIT
SO WITH A DOWNWARD PRESURE
the QUARKS OF ATOM (2) MOVES
LIKE the DRILL BIT.
WHICHES CAUSES IT TO TURN
FASTER. OR ACCELERATE IN
VELOCITY.

Jace Gen

LETTER 1066

NATIONAL RADIO ASTRONOMY OBSERVATORY
POST OFFICE BOX O SOCORRO, NEW MEXICO 87801-0387
TELEPHONE 505 772-4011 TWX 910 988 1710

7 October 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments

Dear Dr. Hess:

I have examined the Draft Environmental Impact Statement for the Superconducting Super Collider (SSC) and have found that a question of concern to the National Radio Astronomy Observatory (NRAO) is not addressed therein - pollution by electromagnetic radiation, known as "radio-frequency interference" to radio astronomers. As Frequency Coordinator for the NRAO, I am concerned about the possibility of radio-frequency interference from the SSC at our two radio telescopes located on Kitt Peak west of Tucson, Arizona: NRAO has a twelve-meter millimeter-wavelength radio telescope and one antenna of the Very Long Baseline Array (VLBA) there, operating at frequency ranges 30-345 GHz and 0.3-86 GHz, respectively.

1 The VLBA antenna is of greatest concern because its operating frequencies overlap the frequency range of 220-420 MHz (and the low-order harmonics) of the radio-frequency accelerating system of the SSC (DEIS Volume IV, Appendix 1, page 29). The accelerating system will consume much of the peak electricity load for the SSC of 200 MW (DEIS Volume IV, Appendix 14, page 102). A small fraction of the radio-frequency radiation produced by the klystrons will leak into the general environment from the klystrons themselves, the waveguides, and the RF cavities in the beam tubes. The klystrons will be located above ground (Figure 1.1-11, DEIS Volume IV, Appendix 1, page 30) in lightweight steel frame buildings covered with insulating panels (ibid, page 19); unless properly designed, constructed, and maintained, such structures provide little shielding to radio-frequency radiation. The VLBA antenna (longitude 111d 36' 42.26" W, latitude 31d 57' 22.39" N, elevation 6385 feet) is located only 135 km from the center of the proposed Arizona site for the SSC (longitude 112d 23' 53" W, latitude 32d 58' 14" N). The intervening terrain may provide some shielding.

Any radio telescope is very sensitive to radio-frequency interference at its operating frequencies. The VLBA, and its component antennas, is much

OPERATED BY ASSOCIATED UNIVERSITIES, INC.
UNDER CONTRACT WITH THE NATIONAL SCIENCE FOUNDATION

less sensitive to interference than any other type of radio telescope, as discussed in the enclosed memorandum, "The Response of the Very Long Baseline Array to Interfering Signals." Nonetheless, on the basis of the information now available, the potential for the SSC to cause radio-frequency interference at the VLBA antenna on Kitt Peak exists and should be addressed in the Final Environmental Impact Statement.

I am also enclosing copies of three other papers for your information: two from SCIENCE and SCIENTIFIC AMERICAN describing the Very Long Baseline Array and one from the IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION on "The Response of a Radio-Astronomy Synthesis Array to Interfering Signals."

Sincerely yours,

Patrick C. Crane

Patrick C. Crane
Frequency Coordinator

PCC/pcc
Enclosures

cc: P.A. Vanden Bout
W.M. Goss
P.J. Napier
T.E. Gergely
H.D. Aller
D.L. Crawford

THE RESPONSE OF THE VERY LONG BASELINE ARRAY TO INTERFERING SIGNALS

Patrick C. Crane

11 September 1985

I. Introduction

Radio astronomy studies the nature of the Universe, based upon the reception of radio waves of cosmic origin. These cosmic emissions constitute the "cosmic background noise" of communications engineering. The emissions are random, noise-like signals that are indistinguishable from the noise generated in the receivers or from the Earth and its atmosphere. Furthermore, the intensity of cosmic radiation is usually much weaker than that of the noise (the weakest cosmic signal detected is about -234 dBW/m^2.)

The National Radio Astronomy Observatory began construction of a new radio telescope, the Very Long Baseline Array (VLBA), in May 1985; construction should be completed by 1992. The characteristics of the VLBA have been described by Kellermann and Thompson (1985). Like any other radio telescope the VLBA will be sensitive to radio interference but several features of its design will greatly reduce its sensitivity to such interfering signals.

In the following sections I will summarize the responses of a single antenna and an aperture-synthesis radio telescope to interfering signals, followed by a discussion of the response of the Very Long Baseline Array.

II. A single antenna

The harmful interference level for observations with a single antenna has been analyzed in CCIR Report 224-5: The harmful interference level is that level of interference which equals 0.1 of the rms noise level which sets the fundamental limit of the data. For a total-power receiver the harmful interference level is given by

$$F_i = \frac{0.4\pi f^2 k T_s \sqrt{B}}{c^2 G_s \sqrt{2t}},$$

where f is the observing frequency; k, Boltzman's constant; T_s, the system temperature; B, the observing bandwidth; c, the speed of light; G_s, the gain, with respect to an isotropic antenna, of the antenna in the direction of arrival of the interfering signal; and t, the total integration time. As derived in the report, the harmful interferance levels, for continuum observations with modern receivers and an integration time of 2000 seconds, range between -202 and -114 dBW/m^2 at 20 MHz and 235 GHz, respectively.

III. An aperture-synthesis radio telescope

As discussed by Thompson (1982a), two effects reduce the sensitivity to interfering signals of an aperture-synthesis radio telescope:

The first is an averaging effect that applies to any interfering signal. The motion of an astronomical source across the sky results in changes in the relative phases of the signals received at the antennas, so that if the signals from any pair of antennas are multiplied together, the output voltage will vary quasi-sinusoidally with time. The frequency of the output signal is called the natural fringe frequency and depends upon the spacing of the antennas and the position of the radio source on the sky (it ranges between a few milliHertz and tens of Hertz for existing radio telescopes.) On the other hand, a terrestrial source of interference is fixed with respect to the earth, and the corresponding output voltage will be constant. If the data are averaged for a time T, the interfering signal will be reduced by a factor of sinc(πfT), where f is the natural fringe frequency. Thompson's complete analysis includes the variations with the position of the source and the spacings of the antennas, and the harmful interference level for a twelve-hour observation time is given by

$$F_L = \frac{0.4\pi f^2 kT_s \sqrt{2\omega_e B}}{c^2 G_s} \sqrt{\frac{L}{\lambda}},$$

where ω_e is the angular rotation velocity of the earth and L is a measure of the physical size of the array.

The second effect mentioned above reduces the sensitivity of an aperture-synthesis radio telescope to broadband interfering signals. Because the signals from cosmic radio sources have the characteristics of broadband noise, such a telescope introduces computer-controlled delays to equalize the time delays from the source through the antennas to the multipliers and to maintain the coherence of the signals. For broadband interference entering the antenna sidelobes, the delays will generally differ from those of the cosmic signal, and the interfering signal will be decorrelated by an amount given by sinc($\pi B\tau_d$), where τ_d is the delay inequality. The maximum delay inequality is given by twice the delay corresponding to the maximum baseline. Obviously, for an interfering signal arriving from the same general direction as the cosmic signal, the delay inequality may be near zero. The decorrelation factor is not amenable to a general analysis, but will vary significantly with bandwidth, declination of the radio source, and the configuration.

IV. The Very Long Baseline Array

The Very Long Baseline Array (VLBA) will be much less sensitive to interfering signals than any other radio telescope, primarily because of its vastly greater geographical scale: Because the antenna spacings in the VLBA range between 200 and 8000 km (L is about 3950 km), the natural fringe frequencies are much greater (of the order of kiloHertz) than for other aperture-synthesis radio telescopes, and the averaging effect reduces the sensitivity to interfering signals by about a factor of 10,000 over a single antenna. Also the delay inequalies and the decorrelation factor are corresponding greater. Finally, except for an interfering signal originating from a satellite, such a signal is unlikely to be present at a harmful level at more than one antenna.

More significant for the VLBA will be the degradation of its performance by the addition of uncorrelated power at the individual antennas which effectively increases the noise level. The harmful level for such interference is estimated to be one percent of the system noise level (Thompson 1982b), or

$$F_L^- = \frac{0.04\pi f^2 k T_s B}{c^2 G_s}$$

At much higher levels interfering signals occurring anywhere within the passband of the front-end receiver will cause gain compression and other nonlinear behavior. The harmful levels for such interference depend upon the design of the receiver but can be estimated for each observing band.

Table 1 presents the harmful interference levels for the thirteen observing bands planned for the VLBA, which were calculated for a G_s of 1 and bandwidths of 8 MHz (1.6 MHz at 75 MHz). The estimates of the interference levels that will cause one-percent gain compression are from Thompson and Schlecht (1985). We see that the averaging effect increases the harmful interference levels of the VLBA to values comparable to those which will increase the system noise level by one percent. The 70-dB differences between the interference levels adding one percent to the system noise level and causing one-percent gain compression allow considerable leeway for processing at the IF.

V. Conclusions

The Very Long Baseline Array is far less sensitive to interfering signals than any other radio telescope. The sites of the VLBA antennas have been selected, furthermore, to minimize the potential for terrestrial sources of interference, but the VLBA will be particularly susceptible to interfering signals from air- and satellite-borne transmitters. A transmitter in geostationary orbit, isotropically broadcasting one watt, produces a signal level of -162 dBW/m^2 at the earth's surface. Allowing for a more powerful transmitter or more antenna gain at the receiver or transmitter, we see that such a transmitter could easily interfere with the VLBA.

Table 2 lists the VLBA observing bands and the adjacent and overlapping U.S. frequency allocations (international and U.S. footnotes are noted in parentheses when appropriate.) Most of the allocations for radio astronomy are adjacent to or share allocations for aeronautical radionavigation, mobile-satellite, radionavigation-satellite, meteorological-satellite, and broadcasting-satellite. Radio astronomers have already encountered problems with the U.S. Global Positioning System and the corresponding Soviet GLONASS system.

VI. References

CCIR, "Interference protection criteria for the radio astronomy service," RECOMMENDATIONS AND REPORTS, vol. II, Geneva: Int. Telecommun. Union, Rep. 224-3, pp. 497-506, 1982.

K.I. Kellermann and A.R. Thompson, "The Very Long Baseline Array," SCIENCE, 229, pp. 123-130, 1985.

A.R. Thompson, "The response of a radio-astronomy synthesis array to interfering signals," IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION, AP-30, pp. 450-456, 1982a.

A.R. Thompson, "Frequency protection for the Transcontinental Radio Telescope," VLBA MEMO NO. 81, 1982b.

A.R. Thompson and E. Schlecht, "Dynamic range and interference thresholds in the front-end and IF units," VLBA ELECTRONICS MEMO NO. 39, 1985.

TABLE 2. VLBA OBSERVING BANDS AND U.S. FREQUENCY ALLOCATIONS

Specified Band (Accessible Band)	Frequency Allocations
73.0- 74.6 MHz	54.0- 72.0 MHz Broadcasting
	72.0- 73.0 MHz Fixed, Mobile
	73.0- 74.6 MHz RADIO ASTRONOMY
	74.6- 74.8 MHz Fixed, Mobile
	74.8- 75.2 MHz Aeronautical Radionavigation
	75.2- 76.0 MHz Fixed, Mobile
	76.0- 108.0 MHz Broadcasting
312.0- 342.0 MHz	225.0- 328.6 MHz Fixed, Mobile
	322.0- 328.6 MHz Radio Astronomy (644)
	328.6- 335.4 MHz Aeronautical Radionavigation
	335.4- 399.9 MHz Fixed, Mobile
580.0- 640.0 MHz	512.0- 608.0 MHz Broadcasting
	608.0- 614.0 MHz RADIO ASTRONOMY
	614.0- 806.0 MHz Broadcasting
1350.0- 1750.0 MHz	1240.0- 1300.0 MHz Radiolocation
(1300.0- 1800.0)	1300.0- 1350.0 MHz Aeronautical Radionavigation
	1330.0- 1400.0 MHz Radio Astronomy (718)
	1350.0- 1400.0 MHz Radiolocation
	1400.0- 1427.0 MHz RADIO ASTRONOMY
	Earth Exploration-Satellite (1)
	Space Research (1)
	1427.0- 1429.0 MHz Fixed, Mobile (6)
	Space Operation (2)
	1429.0- 1435.0 MHz Fixed, Mobile
	1435.0- 1530.0 MHz Mobile (7)
	1530.0- 1544.0 MHz Maritime Mobile-Satellite (3)
	1544.0- 1545.0 MHz Mobile-Satellite (3)
	1545.0- 1559.0 MHz Aeronautical Mobile-Satellite (3)
	1559.0- 1610.0 MHz Aeronautical Radionavigation
	Radionavigation-Satellite (3)
	1610.0- 1626.5 MHz Aeronautical Radionavigation
	1610.6- 1613.8 MHz Radio Astronomy (734)
	1626.5- 1645.5 MHz Maritime Mobile-Satellite (2)
	1645.5- 1646.5 MHz Mobile-Satellite (2)
	1646.5- 1660.0 MHz Aeronautical Mobile-Satellite (2)
	1660.0- 1660.5 MHz RADIO ASTRONOMY
	Aeronautical Mobile-Satellite
	1660.5- 1668.4 MHz RADIO ASTRONOMY
	Space Research (1)
	1668.4- 1670.0 MHz RADIO ASTRONOMY
	Meteorological Aids
	1670.0- 1690.0 MHz Meteorological Aids
	Meteorological-Satellite (3)
	Radio Astronomy (US211)
	1690.0- 1700.0 MHz Meteorological Aids
	Meteorological-Satellite (3)
	1700.0- 1710.0 MHz Fixed
	Meteorological-Satellite (3)
	1710.0- 1850.0 MHz Fixed, Mobile

TABLE 1. VLBA OBSERVING BANDS AND HARMFUL INTERFERENCE LEVELS

FREQUENCY (MHz)	EFFICIENCY	TSYS (K)	RECEIVER	10% NOISE (dBW/m^2)	1% SYSTEM (dBW/m^2)	1% GAIN (dBW/m^2)
73.0- 74.6	0.50	1000	GAsFET	-168	-158	
312.0- 342.0	0.50	126	GAsFET	-157	-147	-72
580.0- 640.0	0.49	84	GAsFET	-152	-143	-67
1350.0- 1750.0	0.67	28	Cooled GAsFET	-150	-140	-59
2150.0- 2350.0	0.71	33	Cooled GAsFET	-142	-136	-55
4600.0- 5100.0	0.73	35	Cooled HEMT	-134	-129	-49
5900.0- 6400.0	0.72	38	Cooled HEMT	-131	-127	-47
8000.0- 8800.0	0.72	49	Cooled HEMT	-126	-123	-44
10200.0-11200.0	0.71	48	Cooled HEMT	-124	-121	-42
14400.0-15400.0	0.70	54	Cooled HEMT	-119	-117	-39
21700.0-24100.0	0.65	70	Cooled HEMT	-114	-113	-35
42300.0-43500.0	0.64	75	Cooled SIS	-107	-107	-30
86000.0-92000.0	0.42	300	Cooled SIS	-93	-94	

	1718.8- 1722.2 MHz	Radio Astronomy (US256)
2150.0- 2350.0 MHz	1990.0- 2110.0 MHz	Fixed, Mobile
(2100.0- 2600.0)	2110.0- 2200.0 MHz	Fixed
	2200.0- 2290.0 MHz	Fixed (8), Mobile (8) Space Research (3,4)
	2290.0- 2300.0 MHz	Space Research (3,5) Fixed, Mobile (6)
	2300.0- 2310.0 MHz	Radiolocation
	2310.0- 2390.0 MHz	Radiolocation, Mobile
	2390.0- 2450.0 MHz	Radiolocation
	2450.0- 2500.0 MHz	Fixed, Mobile
	2500.0- 2655.0 MHz	Broadcasting-Satellite Fixed Radio Astronomy (US269)
	2655.0- 2690.0 MHz	Broadcasting-Satellite Fixed Radio Astronomy
	2690.0- 2700.0 MHz	RADIO ASTRONOMY Earth Exploration-Satellite (1) Space Research (1)
4600.0- 5100.0 MHz	4400.0- 4500.0 MHz	Fixed, Mobile
	4500.0- 4800.0 MHz	Fixed, Mobile Fixed-Satellite (3)
	4800.0- 4990.0 MHz	Fixed, Mobile
	4825.0- 4835.0 MHz	Radio Astronomy (US203,778)
	4950.0- 4990.0 MHz	Radio Astronomy (US257)
	4990.0- 5000.0 MHz	RADIO ASTRONOMY
	5000.0- 5250.0 MHz	Aeronautical Radionavigation Radio Astronomy (US211)
5900.0- 6400.0 MHz	5850.0- 5925.0 MHz	Radiolocation Fixed-Satellite (2)
	5925.0- 6425.0 MHz	Fixed Fixed-Satellite (2)
8000.0- 8600.0 MHz	7750.0- 7900.0 MHz	Fixed
(7900.0- 8300.0)	7900.0- 8025.0 MHz	Fixed-Satellite (2) Mobile-Satellite (2)
	8025.0- 8175.0 MHz	Earth Exploration-Satellite (3) Fixed Fixed-Satellite (2)
	8175.0- 8215.0 MHz	Earth Exploration-Satellite (3) Fixed Fixed-Satellite (2) Meteorological Satellite (2)
	8215.0- 8400.0 MHz	Earth Exploration-Satellite (3) Fixed Fixed-Satellite (2)
	8400.0- 8450.0 MHz	Fixed Space Research (3,5)
	8450.0- 8500.0 MHz	Fixed Space Research (3)
	8500.0- 9000.0 MHz	Radiolocation
10200.0-11200.0 MHz	9500.0-10550.0 MHz	Radiolocation
	10550.0-10600.0 MHz	Fixed

	10600.0-10680.0 MHz	Earth Exploration-Satellite (1) Fixed Space Research (1) Radio Astronomy (US277)
	10680.0-10700.0 MHz	RADIO ASTRONOMY Earth Exploration-Satellite (1) Space Research (1)
	10700.0-11700.0 MHz	Fixed Fixed-Satellite (3) Radio Astronomy (US211)
14400.0-15400.0 MHz	14200.0-14500.0 MHz	Fixed-Satellite (2)
	14470.0-14500.0 MHz	Radio Astronomy (US203,862)
	14500.0-14714.5 MHz	Fixed
	14714.5-15136.5 MHz	Mobile
	15136.5-15350.0 MHz	Fixed Radio Astronomy (US211)
	15350.0-15400.0 MHz	RADIO ASTRONOMY Earth Exploration-Satellite (1) Space Research (1)
	15400.0-15700.0 MHz	Aeronautical Radionavigation Radio Astronomy (US211)
21700.0-24100.0 MHz (20000.0-26300.0)	19700.0-20200.0 MHz	Fixed, Mobile Fixed-Satellite (3)
	20200.0-21200.0 MHz	Fixed-Satellite (3) Mobile-Satellite (3)
	21200.0-21400.0 MHz	Earth Exploration-Satellite (1) Space Research (1) Fixed, Mobile
	21400.0-22000.0 MHz	Fixed, Mobile
	22000.0-22210.0 MHz	Fixed, Mobile (6)
	22010.0-22210.0 MHz	Radio Astronomy (874)
	22210.0-22500.0 MHz	RADIO ASTRONOMY Fixed, Mobile (6) Earth Exploration-Satellite (1) Space Research (1)
	22500.0-22550.0 MHz	Fixed, Mobile Broadcasting-Satellite Radio Astronomy (US211)
	22550.0-23000.0 MHz	Fixed, Mobile Inter-Satellite Broadcasting-Satellite
	22810.0-22860.0 MHz	Radio Astronomy (879)
	23000.0-23550.0 MHz	Fixed, Mobile Inter-Satellite
	23070.0-23120.0 MHz	Radio Astronomy (879)
	23550.0-23600.0 MHz	Fixed, Mobile
	23600.0-24000.0 MHz	RADIO ASTRONOMY Earth Exploration-Satellite (1) Space Research (1)
	24000.0-24050.0 MHz	Amateur Amateur-Satellite Radio Astronomy (US211)
	24050.0-24250.0 MHz	Radiolocation
	24250.0-25250.0 MHz	Radionavigation
	25250.0-27000.0 MHz	Fixed, Mobile

42300.0-43500.0 MHz	40500.0-42500.0 MHz	Broadcasting-Satellite Broadcasting Radio Astronomy (US211)
	42500.0-43500.0 MHz	RADIO ASTRONOMY Fixed, Mobile (6) Fixed-Satellite (2)
	43500.0-45500.0 MHz	Fixed-Satellite (2) Mobile-Satellite (2)
86000.0-92000.0 MHz	84000.0-86000.0 MHz	Fixed, Mobile Broadcasting-Satellite Broadcasting Radio Astronomy (US211)
	86000.0-92000.0 MHz	RADIO ASTRONOMY Earth Exploration-Satellite (1) Space Research (1)
	92000.0-95000.0 MHz	Fixed, Mobile Fixed-Satellite (2) Radiolocation
	93070.0-93270.0 MHz	Radio Astronomy (914)

(1) Passive
(2) Earth-to-Space
(3) Space-to-Earth
(4) Space-to-Space
(5) Deep Space only
(6) Except aeronautical mobile
(7) Aeronautical telemetering
(8) Line-of-Sight

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The Response of a Radio-Astronomy Synthesis Array to Interfering Signals

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Abstract—Multiplying interferometers, and the more complex synthesis arrays that have been developed from them, possess the advantage of greater discrimination against interfering signals than can be obtained with single-antenna radio telescopes. The major contribution to this effect results from the relative changes of the phases of the signals received in spaced antennas, associated with the sidereal motion of a cosmic source across the sky. Signals that do not show this predictable phase behavior are substantially suppressed in the data processing. In this paper an approximate general expression for the interference response is derived and compared with results of an experimental test. The major uncertainty results from the variability of the gain of the antenna sidelobes in which the interference is received. Threshold levels at which interference becomes harmful are derived for the very large array (VLA) of the National Radio Astronomy Observatory. In the case of broad-band interfering signals, further rejection occurs because inequalities in the time delays of the signal paths via the individual antennas result in decorrelation. The magnitude of the decorrelation depends upon the position of the source of interference, and as an example, computations are given for broad-band signals from a satellite in geostationary orbit. General thresholds for harmful interference to radio astronomy are given in International Radio Consultive Committee (CCIR) Report 224, and the present results are not intended to supercede them. Rather, the intention is to provide data specific to synthesis arrays to allow more accurate coordination in certain frequency ranges shared with active spectrum users. A possible application to the search for extraterrestrial intelligence is mentioned.

I. INTRODUCTION

BECAUSE OF their high sensitivity, radio telescopes are vulnerable to interference from other spectrum users. Telescopes that measure the total incident power in a single antenna are usually the most vulnerable, whereas interferometers that measure the correlation of signals received in two spaced antennas respond less strongly to interference. This desirable property of interferometers was first pointed out about 30 years ago by Ryle [1]. Modern instruments of this type which incorporate more than two antennas are often referred to as synthesis arrays.

Threshold levels of interference harmful to radio astronomy are specified in Report 224-4 of the International Radio Consultative Committee (CCIR) [2]. These levels are based upon the use of single-antenna telescopes, and interference received in sidelobes of gain 0 dBi.[1] In this paper interference levels for synthesis arrays are examined. The behavior of such an array is quite complicated, and depends upon parameters of the instrument, data processing techniques, and the position of the object being observed. The fact that, as will presently appear, the thresholds for synthesis arrays are higher than those in CCIR Report 224-4 must not be taken to imply that higher levels of interference are now acceptable within the frequency bands allocated to radio astronomy. Synthesis arrays are not applicable to all types of radio astronomy investigations. However, radio astronomers are often obliged to observe outside of the bands in which their service has a primary and exclusive frequency allocation, for example in studies of some radio lines. Coordination with other services is then necessary, and this often involves considerations specific to a particular observatory. Estimates of interference thresholds for different types of telescopes are therefore essential. Coordination is becoming increasingly important with the growing use of satellites, particularly those in geostationary orbit, and the practice of placing communications repeaters on the peaks of mountain ranges which have heretofore provided shielding to radio observatories. Preliminary results of the present study have been quoted with reference to a satellite power system [3], [4].

II. PRINCIPLES OF FOURIER SYNTHESIS MAPPING

Consider two antennas both pointed toward the same area of the sky, and let the outputs of the signal amplifiers expressed as complex functions of time be $e_1(t)$ from one antenna and $e_2(t)$ from the other. The antennas are connected to a receiving system that forms the time average of the product $e_1(t)e_2^*(t)$, using a multiplier that incorporates a signal-averaging circuit. When appropriately calibrated, this quantity is known as the complex visibility V. The inputs to the multiplier consist of components resulting from the wanted signal, the interference, and the system noise, which will be designated by subscripts s, i, and n, respectively. Thus:

$$V = \overline{(e_{1s} + e_{1i} + e_{1n})(e_{2s}^* + e_{2i}^* + e_{2n}^*)}$$
$$= V_s + V_i + V_n + \overline{\text{cross products}} \qquad (1)$$

where the bar denotes an average. Here, V_s, V_i, and V_n are the components of V that would be measured if only the signal, the interference, or the noise were nonzero. The cross products represent noise. They are small compared with V_n, and can be neglected, provided that V_s and V_i are small compared with V_n. This condition is met in the consideration of harmful interference thresholds which follows.

The wanted component V_s is a function of the brightness pattern under observation and the vector spacing of the antennas. It is usual to specify the spacing in terms of u and v, the components projected onto a plane normal to the direction of the center of the area of sky under observation, u being measured toward the east and v toward the north as in Fig. 1. The units of u and v are wavelengths at the center frequency of the receiving passband. It can be shown [5], that with certain assumptions, the two-dimensional function $V_s(u, v)$ is the Fourier transform of $B_s(x, y)$ the desired brightness distribution on the sky. The procedure is therefore to measure the visi-

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[1] dBi indicates decibles relative to an isotropic radiator.

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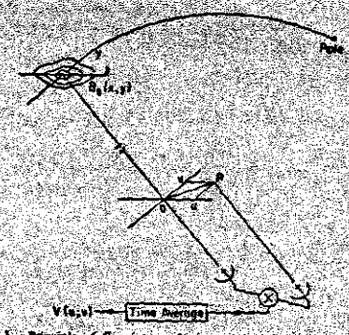

Fig. 1. Principle of Fourier synthesis mapping. $B_0(x, y)$ represents radio brightness of a source under observation, the x-axis being in the north direction as defined by a great circle through the pole. The antennas track the source position, which is the origin of the (x, y) coordinates. The antenna spacing projected onto a plane normal the direction of the source position is represented by the vector OP, which has components u and v measured in wavelengths toward the east and north, respectively. Fourier transformation of the visibility function, $V(u, v)$ yields a representation of $B(x, y)$.

bility over a sufficient range of points in the (u, v) plane and apply an inverse Fourier transform to obtain a map of the sky. Since the three components of the visibility cannot be separated, the transformation is applied to their sum V and the map obtained $B(x, y)$, is the sum of B_0 and unwanted components B_1 and B_2. Notice that corresponding components such as V_1 and B_1 are also Fourier pairs.

Two methods can be used to vary u and v tracking the point of interest across the sky or moving one of the antennas to different locations. The components u and v are given by

$$u = L_x \sin H + L_y \cos H$$

$$v = -L_x \cos \delta - L_y \sin \delta \cos H + L_z \sin \delta \sin H \qquad (2)$$

where H and δ are the hour angle and declination of the source position and L_x, L_y, and L_z are components of the baseline between the two antennas measured in wavelengths in the directions ($H = 0°$, $\delta = 0°$), ($H = -90°$, $\delta = 0°$) and ($\delta = +90°$), respectively. As H varies linearly with time, the spacing vector in the (u, v) plane traces out an arc of an ellipse. This locus may be almost circular for a source near the pole, or highly elongated for a source near the celestial equator. Since B_0 is real, $V_0(u, v) = V_0^*(-u, -v)$, so any one measurement provides data at two conjugate points in the (u, v) plane. To obtain sufficient coverage if only two antennas are used, it is necessary to move one of them a number of times, tracking the source across the sky in each new configuration. If a larger number of antennas m is available, $m(m-1)/2$ signal products can be formed simultaneously, and it may be possible to map a source in a single passage. For further descriptions of synthesis mapping see [3], [6].

III. THE VERY LARGE ARRAY

The very large array (VLA) [7], used here as an example of a synthesis array, is located in New Mexico, and consists of 27 antennas arrayed on the three arms of an equiangular Y-shaped configuration. The resulting 351 antenna-pair combinations allow a detailed map to be obtained in a single period of 8 h or less. The antennas are fully steerable reflectors of diameter 25 m, with feeds that provide separate outputs for opposite senses of circular or linear polarization. The receiving electronics is tunable over the following bands: 1340–1730 MHz (18–21 cm wavelength), 4.5–5.0 GHz (6 cm wavelength), 14.4–15.4 GHz (2 cm wavelength), and 22–24 GHz (1.3 cm wavelength). The antennas can be moved between different foundations by means of a rail-mounted transporter to allow the scale of the antenna spacings to be varied in four steps. In these configurations the most distant antenna on each arm is 0.6, 2, 6, or 21 km from the array center.

IV. THE AVERAGING EFFECT

Two effects reduce the response of a synthesis array to interference. The first, which we now consider, applies to any interfering signal, whereas the second applies only to broadband signals and is discussed in Section VIII. In a synthesis array the antenna outputs are combined in a way that maximizes the response to a source that moves across the sky as the earth rotates. In contrast, an interfering transmitter will be considered to remain fixed relative to the earth. The motion of the source results in changes in the relative phases of the signals at the antennas, and if the signals from any pair of antennas are simply multiplied together they produce a voltage that varies quasi-sinusoidally[2] with time. The output frequency is termed the natural fringe frequency, and depends upon the spacing of the antennas and the position of the radio source in the sky. Typically it is between a few millihertz and a few tens of hertz. In the VLA, time-varying phase changes are introduced into the local oscillator system which reduce the frequency of the output of the signal multipliers to zero. The required phase changes are computed for a hypothetical point source at a phase-reference position, which is usually the center of the area of sky being mapped. Two multipliers are used for each antenna pair, one having a quadrature phase shift at one input, so that the two time-averaged products represent the real and imaginary parts of $V(u, v)$. Because of the introduced phase changes, a signal from a stationary source, for which the relative phase at two antennas remains constant, produces a component at the multipliers that varies at the natural fringe frequency.

The multiplier outputs are digitized, and in the subsequent processing, these data, which correspond to points on the elliptical loci in the (u, v) plane, are interpolated to provide visibility values at points on a rectangular grid with equal spacings Δu and Δv in the u and v coordinates, respectively. Fourier transformation can then be performed using the fast algorithm for discretely sampled data. The simplest and most frequently used interpolation method is cell averaging [8] in which the (u, v) plane is divided into square cells of size Δu by Δv centered on the interpolation points, and the mean of all visibility values that fall within each cell is assigned to the central point. Thus the final averaging applied to the data before Fourier transformation depends upon the time taken for the antenna spacing vector to cross the corresponding cell. If τ is the cell-crossing time, the averaging reduces the inter-

[2] The fringe frequency varies slowly with time so the waveform is not precisely sinusoidal.

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ference by a factor

$$F_1 = \sin(\pi f \tau)/\pi f \tau. \tag{3}$$

Here f is the natural fringe frequency which is given by

$$f = \omega_0 u \cos\delta \tag{4}$$

where ω_0 is the angular rotation velocity of the earth. Note that the interference reduction becomes ineffective as F_1 approaches unity, i.e., for a source near the pole, or for any source when the spacing vector crosses the v axis.

The first step in evaluating the response to interference is to calculate the mean squared value of F_1 over the (u, v) loci. To do this we introduce the (u', v') plane where $u' = u$ and $v' = v \csc\delta$. In the (u', v') plane the elliptical loci of the (u, v) plane become circles of radius $q' = (L_x^2 + L_y^2)^{1/2}$. Each circular locus is centered on the v' axis and is generated by a radius vector that rotates with a constant angular velocity ω_0. The cells in the (u', v') plane are elongated in the v' direction. Consider the locus for an antenna pair crossing a cell at a point where the radius vector makes an angle ϕ with the u' axis. If ϕ is small the path length through a cell is closely equal to Δu, and $f\tau = \phi\Delta u \cos\delta$. Now in practice Δu is unlikely to be less than 60 wavelengths; Δu^{-1} is the width of the synthesized field which is limited by the beamwidth of the individual antennas. Commonly used values of Δu are 100 to a few thousand wavelengths. For $\Delta u = 100$ and $\delta < 70°$, F_1^2 goes from 1.0 to $< 3 \times 10^{-3}$ as ϕ increases from 0 to 10°. Thus we may use a small-ϕ approximation in deriving $\overline{F_1^2}$:

$$\overline{F_1^2} = \frac{2}{\pi}\int_0^{\pi/2} F_1^2\, d\phi$$

$$\cong \frac{2}{\pi}\int_0^{\pi/2} \frac{\sin^2(\pi\phi\Delta u \cos\delta)}{(\pi\phi\Delta u \cos\delta)^2}\, d\phi$$

$$= \frac{1}{\pi\Delta u \cos\delta}. \tag{5}$$

Note that when the above approximation fails, it does so first at declinations near the pole where $\cos\delta$ is small.

Let F_i be the power flux density of an interfering signal, and G_s be the effective gain of the antenna sidelobes in which it is received. Then the amplitude of the interference component at the multiplier output is

$$gG_sF_i\lambda^2/4\pi \tag{6}$$

where g is a gain factor of the receiving system and λ is the wavelength. After averaging over the cells of the (u, v) plane, the sum of the squared modulus of the interference component at the grid points is

$$\sum_N |\Gamma_i|^2 = N\alpha(gG_sF_i\lambda^2/4\pi)^2\overline{F_1^2}. \tag{7}$$

Here N is the number of cells in the (u, v) plane intersected by one or more spacing-vector loci, and α is the fraction of the loci which cross the v axis, where the major contributions to $\overline{|\Gamma_i|^2}$ occur, if the duration of the observation is less than 12 h, α may be less than unity. Following the usual notation for the discrete Fourier transform, e.g., [9], and using Parseval's theorem we obtain

$$n^2\overline{B_i^2} = N\alpha(gG_sF_i\lambda^2/4\pi)^2\overline{F_1^2}/m^2 \tag{8}$$

where $n \times n$ are the dimensions of the $V(u, v)$ and $B(x, y)$ arrays.

Suppose that the area of sky being mapped contains only a point source of spectral power flux density[3] F_p. The modulus of the corresponding visibility component is

$$gG_mF_p\beta\lambda^2/B\pi \tag{9}$$

where G_m is the main beam gain, β is the receiving bandwidth, and a factor of ½ is included because the antennas can accept only half the power in the randomly polarized cosmic signal. Suppose also that the source is located at the phase reference position. The imaginary component of the visibility is then zero. The resulting data are identical in each sampled cell, and after Fourier transformation they produce a peak of amplitude $B_p(0, 0)$ at the origin of the (x, y) plane given by

$$B_p(0, 0) = NgG_mF_p\beta\lambda^2/Bm^2 \tag{10}$$

Equations (8) and (10) provide the ratio of $(B_i)_{rms}$ to $B_p(0, 0)$, and by putting $F_i = 1.0$, $(B_i)_{rms}$ is obtained in units equal to the response to a point source of unit spectral power flux density. Thus we obtain

$$(B_i)_{rms} = \frac{2F_iG_s\sqrt{\alpha}}{G_m\beta\sqrt{\pi N\Delta u \cos\delta}}. \tag{11}$$

It has been assumed that no more than one locus falls within any of the N sampled cells of the (u, v) plane, but if Δu is larger than the spacing between adjacent loci, there will be, on average, n_l loci within each such cell, where $n_l > 1$. The right side of (11) should then be multiplied by $n_l^{-1/2}$. Note that the product $Nn_l\Delta u$ is essentially independent of the choice of Δu, and hence so is $(B_i)_{rms}$.

After cell averaging the interference component varies in a largely random manner, since the natural fringe period and the cell-crossing times are unrelated. In the map domain the randomness can be expected to produce a noise-like appearance in the interference component, and the concentration of large values near the v axis should result in elongation of the structure in directions close to east-west. This applies, of course, only to a steady interfering signal; bursts of intermittent duration can cause quite different distributions in the (u, v) plane. The response to interference is sometimes described as similar to the response to a hypothetical cosmic source at the pole which, like the interfering transmitter, remains fixed relative to the array. In this analogy the array would be randomly phased and the east-west structure corresponds to distant sidelobes of the synthesized response to the polar source.

V. VARIATION OF SIDELOBE GAIN

The sidelobe gain is not, of course, a constant, and as the antennas track the received interference varies with time.

[3] F_p is spectral power flux density measured in units of $Wm^{-2}Hz^{-1}$, whereas F_i is power flux density measured in Wm^{-2}. This terminology is consistent with CCIR definitions [10]. One milliJansky (mJy) = 10^{-29} $Wm^{-2}Hz^{-1}$.

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Large amplitudes in the averaged data are not precisely centered on the u axis, but show some scatter corresponding to the occurrence of high sidelobes. Also, the reduction of the interference may be less efficient by a small factor than the above calculation indicates.

Part of the variation of the received interference can be ascribed to variation of the polarization characteristics of the sidelobes, which, in general, are not matched to the interfering signal. On average, only half of the power is received. However, for the peak levels of the received interference, which make a large contribution to interference in the map, the mismatch loss cannot be large. A correction for polarization mismatch would thus involve a factor of approximately two, and would be of comparable magnitude and opposite sense to a correction for the averaging efficiency mentioned above. Both effects have been omitted from the derivation in Section IV.

For any antenna pair the squared modulus of the correlator output is proportional to the product of the antenna gains. Thus it is apparent that the factor G_a^2 in (7) represents the product of the sidelobe gains averaged over angle. To the extent that the sidelobe patterns of the antennas are identical, G_a is a root mean square (rms) average which enhances the effect of high gain peaks.

VI. AN EXPERIMENTAL INVESTIGATION

To investigate the effects described in Sections IV and V, a map of a radio source was made in the presence of a constant controlled interfering signal. The observation was made during the construction phase of the VLA, and 14 antennas were available.[4] The source 0537 + 531,[5] was mapped using a center frequency of 1430 MHz and bandwidth of 1.2 MHz. The observations covered an hour angle range of −5.2 to 4.8 h, and for 5 min out of every 20 min a calibration source 0552 + 389 was observed. This is a usual procedure in synthesis mapping, the calibration observations being used to provide a measure of the instrumental gain and phase characteristics.

A transmitter radiating 1 mW at 1427 MHz through a horizontally polarized horn of gain 5 dB was set up on a nearby mountain. Relative to the center of the array, the position of the transmitter was azimuth 106°, elevation 1.6°, and range 41 km. The signal strength at the array site was −126 ± 3 dB Wm^{-2}, based on an average of measured and calculated values. The transmitter was turned off during the calibration observations.

Fig. 2 shows one quadrant of a map from the above measurements, in which the brightness is the mean of that derived for two sets of data with opposite senses of polarization. The rms level of the interference over the map is 7.9 mJy, and this value can be used with (11) to estimate i_p, which is the least well known of the parameters involved. The other parameters for the map are G_m = 48.4 dB, β = 1.2 MHz, Δu = 134 wavelengths, γ = 1.98 × 10^{26}, δ = 53.2°, and ϵ = 0.5. If it is assumed that the interference data for the two polarizations combine with random phase, the resulting value of G_a is −7.3 ± 3 dB.

During the observation the angle between the main beam and the transmitter direction increased steadily from 66° to

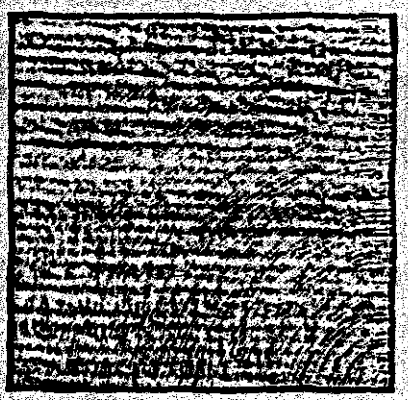

Fig. 2. One quadrant of a map of total dimensions 512 × 512 sample points, for which Δu = 134 wavelengths. The response to 0531 + 537 is at the bottom right-hand corner. Grating rings surrounding the source and the east-west structure in the interference are clearly visible.

138°. Spectrum-analyzer measurements of the level of the interfering signal received at one antenna were used to obtain an approximate indication of the sidelobe gain. For angles of 66° to 100° from the main beam the mean gain was about −10 dBi, with occasional peaks as high as −5 dBi, the widths of the peaks being comparable to the main beam. The highest levels occurred near 100°, at which angle the Cassegrain subreflector just becomes occulted by the edge of the main reflector. The gain fell to −15 dBi or less at an angle of 118°, and remained below that level as the angle from the main beam increased further. An examination of the averaged data at the grid points in the uv plane showed that 20 percent of spacing loci that went through v = 0 showed high amplitudes corresponding to sidelobe levels of −3 to −8 dBi. For the antennas involved the v-axis crossings occurred when the angle between the transmitter and the main beam was less than 110°. Thus the response to the interference was dominated by a small number of antenna pairs for which the v-axis crossings happened to coincide with high sidelobe levels in the direction of the transmitter.

VIII. DERIVATION OF HARMFUL LIMITS

From the results of Section IV it is possible to specify the rms level of the interference in a synthesized map in terms of the power flux density of the signal F_i. It is therefore possible to specify a level of F_i above which the interference becomes harmful to astronomical data. The usual criterion, e.g. [21], is that the harmful threshold occurs when the interference equals 0.10 of the rms noise level which sets the fundamental limit in the final data.

To compare the rms levels of the interference and noise note that the modulus of the rms system noise, after integration for a period τ, is

$$|S_n| = \alpha S_s \beta^{1/2} \tau^{-1/2} \tag{13}$$

[4] The data of the experiment was taken 22, 1978 and the antennas used were antennas ANT. 4A, 2, ANT. 1, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14. The CLR CLIP for an explanation of the antenna designation.

[5] The nomenclature for radio sources follows the International

where k is Boltzmann's constant and T_s is the system noise temperature. The sum of the squared values of $|V_n|$ over the sampled (u, v) cells is

$$\sum_N |V_n|^2 = (\eta k T_s)^2 \beta \sum_N r^{-1}. \tag{13}$$

The mean value of r^{-1} around a locus in the (u, v) plane is derived in the Appendix. Then from (5), (7), (13), (A2), and Parseval's theorem,

$$\frac{(B_l)_{rms}}{(B_n)_{rms}} = \frac{(|V_l|)_{rms}}{(|V_n|)_{rms}} = \frac{G_s F_l \lambda^2 \sqrt{\alpha}}{4\pi k T_s \sqrt{2\omega_0 \beta \cos\delta (1 + |\sin\delta|)}} \left[\frac{1}{N} \sum_N q'\right]^{-1/2} \tag{14}$$

If the factor $\sqrt{\cos\delta\,(1 + |\sin\delta|)}$ is set to unity, the resulting error is less than 1 dB for $0 < \delta < 71°$, and 2.3 dB at $\delta = 80°$. For the interference threshold criterion, $(B_l)_{rms} = (B_n)_{rms}/10$,

$$F_l = \frac{0.4\pi k T_s \sqrt{2\omega_0 \beta}}{G_s \lambda^2 \sqrt{\alpha}} \left[\frac{1}{N} \sum_N q'\right]^{1/2}. \tag{15}$$

Table I contains numerical results for the VLA derived from (15), with parameter values as follows. As in [2], 0 dBi is used for the sidelobe gain. For the system noise temperature, 50 K is used for all bands: it is the current value for the 18–21 and 6 cm bands, and allows for planned improvements at 2 and 1.3 cm. The factor α is set to unity so that the results are applicable to long observation times. The intermediate frequency (IF) bandwidth in the VLA can be varied in steps of factors of two from 50 MHz down to 195 kHz. For observations of the continuum spectrum of radio sources the minimum bandwidth likely to be used is 6.25 MHz. For observations of spectral lines, in which a multichannel data-analysis technique is used, the narrowest channel bandwidth is 381 Hz [7]. In either case the narrowest bandwidth is used in Table I since this corresponds to the greatest sensitivity to interference. Finally, the mean value of q' over the sampled cells of the (u, v) plane is equal to the mean over 351 baselines weighted in proportion to the number of cells intersected by the corresponding locus, i.e.,

$$\frac{1}{N} \sum_N q' = \sum_{351} q'^2 \Big/ \sum_{351} q'. \tag{16}$$

Evaluation of (16) for the most compact configuration of the VLA, which is the one most sensitive to interference, yields 436 m divided by the appropriate wavelength, and this value is used in Table I. With the most extended configuration, the corresponding thresholds are 7.7 dB greater. For broad-band signals which cover the entire receiving bandwidth, the appropriate limit on the spectral power flux density is equal to F_l/β. Values are given in Table I based on $\beta = 25$ MHz or 50 MHz, since for broad-band interference the sensitivity increases with bandwidth.

The sensitivity to interference relative to that for a single antenna with the same values for T_s, β, and λ can be examined by comparing (15) with the equivalent expression for a single antenna, following the analysis in CCIR Report 224-4 [2]. A 12 h averaging time with the single antenna corresponds to $\alpha = 1$ for the array. In the most compact configuration the VLA is less sensitive to interference by 22 dB at 21 cm wavelength and 28 dB at 1.3 cm. In the most extended configuration the equivalent figures are 30 dB and 36 dB, respectively.

TABLE I
HARMFUL INTERFERENCE THRESHOLDS FOR THE VLA DERIVED FROM (15)

		Wavelength Band (cm)				
		21	6	2	1.3	Units
Continuum observation, narrow-band interference	β	6.25	6.25	6.25	6.25	MHz
	F_l	−166	−152	−140	−135	dB Wm^{-2}
Spectral-line observation, narrow-band interference	β	381	381	381	381	Hz
	F_l	−187	−173	−161	−157	dB Wm^{-2}
Continuum observation, broad-band interference	β	25	50	50	50	MHz
	F_l/β	−237	−225	−213	−208	dB Wm^{-2} Hz^{-1}

VIII. DECORRELATION OF BROAD-BAND INTERFERENCE

Since the signals from cosmic radio sources have the form of broad-band noise, synthesis arrays contain computer-controlled delays to equalize the time delays from the source to the multipliers via each of the antennas. The coherence of the signals is thereby maintained. For broad-band interference that enters the antenna sidelobes, the delays are generally unequal, and the unwanted signal is partially decorrelated. The interference reduction is, in this case, not amenable to a general-case analysis since the delay inequalities are not uniquely defined by the (u, v) coordinates of the antenna pairs. As an example, the effect of interference from a geostationary satellite on the meridian will be examined.

In this analysis it is convenient to measure the relative position of any pair of antennas in terms of the length l of the baseline between them and the hour angle and declination (h, d) of the baseline direction. For radiation from a source with coordinates (H, δ) the difference in the space transmission paths to the two antennas is $l \cos\theta$, where θ is the angle between the direction of the incident radiation and the baseline. This angle is given by

$$\cos\theta = \sin\delta \sin d + \cos\delta \cos d \cos(H - h). \tag{17}$$

For any pair of antennas, lines of constant delay difference on the celestial sphere are small circles concentric with the antenna baseline. As the antennas track, the instrumental delays are adjusted to equalize the paths for the required direction. The circle for which the delays are equalized thus moves across the sky as indicated in Fig. 3. If θ_s is the angle from the baseline for a source being mapped, and θ_i is the angle for a source of interference, the delay inequality τ_d for the interfering signal is

$$\tau_d = l(\cos\theta_s - \cos\theta_i)/c. \tag{18}$$

LETTER 1066 (CONTINUED)

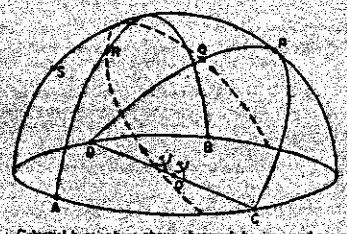

Fig. 3. Celestial hemisphere above observer's horizon and geometrical relationships for one antenna pair. The radio source under observation R moves in a circle centered on the pole P as indicated by the broken line. The angles θ_r and θ_i are DOR and DOS, respectively. The electronic delays are adjusted to equalize path lengths for radiation from all points on curve ARB which is the arc of a circle centered on the antenna baseline direction CD. The arc ARB swings across the sky, accompanying the source, and whether or not it ever encompasses the geostationary satellite at S depends upon the observing declination, the baseline direction, and the satellite hour angle. The u component of the antenna spacing goes to zero as the source crosses the point Q on the great circle DQPC which lies in the plane containing the baseline and the pole.

where c is the velocity of light. For a rectangular receiving passband of width β, the response to the interfering signal is reduced by a factor of $\sin(\pi\beta\tau_d)/\pi\beta\tau_d$.

The behavior of the decorrelation function, $\sin(\pi\beta\tau_d)/\pi\beta\tau_d$, is similar to that of the averaging function (3) except that the latter peaks on the ϕ axis of the (u, v) plane, whereas $\sin(\pi\beta\tau_d)/\pi\beta\tau_d$ can peak at any point in the (u, v) plane depending upon the azimuth of the baseline, the position of the interfering source, etc. Those antenna pairs for which the two peaks overlap contribute strongly to the interference in the map, and those for which the peaks are well separated in hour angle contribute relatively little. In making a quantitative estimate of the effect of decorrelation it is therefore necessary to consider the two effects in combination. A factor F_2 can be computed which is the rms of the product of the fringe averaging and decorrelation factors, divided by the rms fringe averaging factor:

$$F_2 = \left[\sum \frac{\phi' \sin^2(\pi\beta\tau)\sin^2(\pi\beta\tau_d)}{(\pi^2(\pi\beta\tau_d)^2}\right]^{1/2} \Bigg/ \left[\sum \frac{\phi' \sin^2(\pi\beta\tau)}{(\pi\beta\tau)^2}\right]^{1/2} \tag{19}$$

F_2 represents the additional interference rejection resulting from decorrelation. The weighting factor ϕ' in (19) is introduced to compensate for the unequal density of points in the (u, v) plane resulting from incremental sampling in hour angle. In the computation, $\delta = -9.5°$ for the geostationary satellite, and for the source H was varied in increments of 30 s from −4 to +4 h. The sums were taken over the hour angle increments and the 351 VLA antenna pairs.

The results are shown as a function of source declination in Fig. 4. The increase in F_2 near the pole results from the decrease in fringe frequency in that region, which causes the peak of $\sin(\pi\beta\tau)/\pi\beta\tau$ to broaden and thus overlap the peak in the decorrelation function for a greater number of baselines. The maximum near −9.5° declination occurs because for all antenna pairs the delay inequality for the interference be-

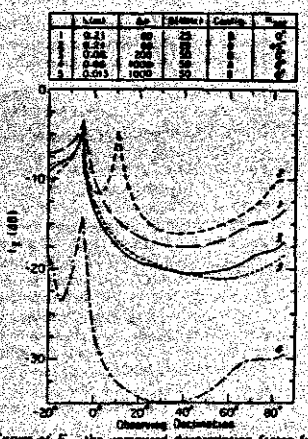

Fig. 4. Curves of F_2, the composite decorrelation factor for broadband interference from a geostationary satellite, as a function of the observing declination for various wavelengths and antenna configurations for the VLA. Configuration D is the most compact and A the most extended. $H_{S,A,T}$ is the hour angle of the satellite. Values of $\Delta\nu$ are in each case about the minimum likely to be used with the other parameters selected.

comes zero as the source passes behind the satellite. As would be expected, F_2 is decreased if the scale of the antenna spacings is increased. One curve is included for a satellite off the meridian, in which an additional maximum appears.

IX. OTHER EFFECTS

In cases where the mechanisms considered above become very powerful in reducing the response to interference, other effects may determine the harmful thresholds. These have been discussed by Burke [12] for very long baseline interferometry in which the antennas are separated by hundreds or thousands of kilometers, and the possibility of coherent interference being received in two antennas is rather small. Interference in the form of a broad-band noise signal can then limit the sensitivity by increasing the system noise temperature. A similar effect would be expected to result from a narrow-band signal which produces the same power level within the receiving passband.

Removal of contaminated visibility data is a possible means of further reducing the response to interference. After averaging in the (u, v) plane, data with unusually high amplitude values located close to the v axis can be deleted. If only a fraction of the v-axis crossings coincide with high sidelobe levels for the interfering signal, the loss of information may be only small, and can largely be compensated by data processing techniques such as the Clean algorithm [13]. It is clearly important to avoid high interference levels in the calibration-source data, and for these such data editing may be particularly useful.

Motion of an interfering transmitter will, on average, increase the frequency of the complex output variations, and thus enhance the efficiency with which the interference is reduced in averaging over the (u, v) cells. The harmful limits

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derived here should therefore be equally applicable to signals from nongeostationary satellites, other than any in very large orbits with apparent angular motion close to that of celestial objects.

X. DISCUSSION

The specification of 0 dBi sidelobe gain for the calculation of harmful thresholds follows the practice in [2] for single-antenna telescopes. If the highest peak sidelobes are omitted, the gain for a large antenna commonly falls to 0 dBi about 19° from the main beam [14]. For many single-antenna telescopes the 0 dBi specification should allow operation to within about 19° of the source of interference. This angular distance is an important consideration since it determines the area of sky lost to the observer. In the present study the sidelobe gain variation is one of the less well-understood aspects. Thus it would be unwise to use the generalized sidelobe model [14] to estimate the angular distance from the main beam at which the levels in Table I become harmful. In situations where this working distance is critical, it may be necessary to adjust the values in Table I by a few decibels in light of future experience.

The use of spaced antennas to discriminate between signals from cosmic and terrestrial sources, or more generally between signals from sources with relative angular motion, offers advantages for purposes other than synthesis mapping. In the search for signals from extraterrestrial intelligence, for example, it will be necessary to search over bands other than those assigned to passive services in order to cover the frequency spectrum adequately. Since obtaining uniform (u, v) coverage is unimportant in this case, conditions that correpond to low values of u can be avoided. The antenna spacing should be chosen so that the natural fringe frequency is high enough to produce a significant interference reduction within the minimum averaging time required in the analysis of the wanted signal. Alternatively, if individual signals can be separated, the occurrance of fringe frequency oscillations can be used to identify those that emanate from sources with nonsidereal motion.

APPENDIX

For cells in the vicinity of the point defined by the radius vector which makes an angle ϕ with the u' axis, the average path length is equal to the cell area, $\Delta u' \Delta v'$, divided by the projected cell width in the q' direction which is $\Delta u(|\sin\phi| + |\csc\delta||\cos\phi|)$. The mean cell-crossing time at position angle ϕ is

$$\tau = \frac{\Delta u\,|\csc\delta|}{q'\omega_0\,(|\sin\phi| + |\csc\delta||\cos\phi|)}. \tag{A1}$$

The mean value of τ^{-1} around a $(u'v')$ locus is

$$\frac{2}{\pi}\int_0^{\pi/2} \tau^{-1}\,d\phi = \frac{2\omega_0 q'}{\pi\Delta u}\,(1 + |\sin\delta|). \tag{A2}$$

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The Very-Long-Baseline Array

An array of 10 radio antennas across the U.S. will provide the most detailed images yet of the universe. With it astronomers will explore such cosmic puzzles as the mysterious processes powering the quasars

by Kenneth I. Kellermann and A. Richard Thompson

Ever since Galileo pointed his telescope to the night sky nearly 400 years ago, astronomers have been building instruments of ever increasing sophistication with which to observe the universe. Each improvement in the resolving power of their instruments has enabled them to examine the universe in increasing detail and to discover new kinds of objects unknown to earlier generations. Galileo's telescope achieved a twentyfold improvement in resolution and allowed human eyes to see for the first time the phases of Venus, the rings around Saturn, the four bright moons of Jupiter, the craters and mountains on the moon and the myriad stars of the Milky Way. The giant optical instruments of today, such as the 200-inch Hale telescope on Mount Palomar, can detect objects more than a million times fainter than those Galileo could see. But because of limits imposed by turbulence in the atmosphere, they can distinguish features only one-tenth the size of those that could be detected with Galileo's rudimentary telescope.

The development of radio technology in World War II opened a completely new window on the universe. When astronomers turned radio antennas to the heavens, they began to find a previously unknown universe of solar and planetary radio bursts, quasars, pulsars, radio galaxies, giant molecular clouds and cosmic masers. Not only do the radio waves reveal a new world of astronomical phenomena but also—because they are much longer than light waves—they are not as severely distorted by atmospheric turbulence or small imperfections in the telescope.

To the pioneers in radio astronomy, however, the long wavelengths appeared to be a severe handicap. The resolving power of a telescope depends on the wavelength divided by the diameter of the aperture. To obtain a resolution comparable to that of an optical telescope operating at a typical light wavelength of 5,000 angstrom units (5×10^{-7} meters), a radio antenna operating at a one-meter wavelength would have to be a million times as large. Therefore although the early radio telescopes could detect signals from remote galaxies that are faint or invisible with even the largest optical telescopes, they had such poor resolution that they could not always tell individual sources apart. Even the largest steerable single-dish antenna, a 100-meter reflector in Germany operating at wavelengths of about one centimeter, can attain a resolution of only one minute of arc, roughly the same as that of the unaided eye. To build a radio telescope with a resolution of one second of arc, comparable to that of the Hale telescope, would require an antenna with a diameter in the tens of kilometers.

Fortunately there is a way around the dilemma. About 25 years ago radio astronomers became aware that they could synthesize a resolution equivalent to that of a large aperture by combining data from smaller radio antennas that are widely separated. The effective aperture size would be about equal to the largest separation between the antennas. The technique is called synthesis imaging and is based on the principles of interferometry. Radio astronomers in the U.S. are now building a synthesis radio telescope called the Very-Long-Baseline Array, or VLBA. With 10 antennas sited across the country from the Virgin Islands to Hawaii, it will synthesize a radio antenna 8,000 kilometers across, nearly the diameter of the earth. The VLBA's angular resolution will be less than a thousandth of an arc-second—about three orders of magnitude better than that of the largest conventional ground-based optical telescopes. Astronomers eagerly await the completion early in the next decade of the VLBA, which is expected, among other things, to give an unprecedentedly clear view into the cores of quasars and galactic nuclei and to reveal details of the processes—thought to be powered by black holes—that drive them.

Radio Interferometry

The basic principle of the VLBA is that of the radio interferometer, a system that combines the signals received from a radio source by two or more antennas. The resulting interference pattern indicates the difference in the path lengths from the source to the antennas. If the paths differ by an integral number of wavelengths, wave crests will arrive at the antennas in phase, or simultaneously, and produce an intensity maximum when the signals are combined. Conversely, if the paths differ by an odd number of half wavelengths, a crest and a trough will coincide and cancel, thereby creating an intensity minimum in the combined signal. Because the path lengths are determined by the position of the radio source in relation to the antennas, the interference pattern contains information about the location and detailed features of the source and can be used to construct an image.

When a celestial object is observed with a radio interferometer, the rotation of the earth causes the path-length difference to vary and the received signal to oscillate between being in and out of phase, creating a sinusoidal pattern of maximums and minimums called interference fringes. The earth must rotate through a greater angle between one maximum and the next for short baselines than

it must for long ones. Closely spaced antennas therefore produce broad fringes and respond only to the coarser structure of a source. Antennas with wider spacings respond to finer detail. To gather full information on the structure of a source it is necessary to have an array of antennas with a variety of baseline lengths. Moreover, the baseline orientations must be carefully distributed in order to obtain good two-dimensional images. The rotation of the earth itself causes foreshortening and reorientation of a baseline in relation to the source, so that a series of observations over a period of time has the effect of adding more baselines to the array.

The most powerful radio telescope operating today, the Very Large Array (VLA), is a giant Y-shaped array spread out on a high desert plateau in central New Mexico. It consists of 27 fully steerable parabolic antennas distributed along the three arms of the Y. A 21-kilometer railroad track runs along each arm with fixed stations along the way that provide bases for the antennas. The antennas are connected by buried waveguides to a central facility where the incoming signals are combined to produce the interference fringes. The nine antennas on each arm can be moved along the track and arranged in four different configurations so that the arm lengths range from 600 meters to 21 kilometers. The antennas operate in several frequency bands from 330 megahertz (90-centimeter wavelength) to 23 gigahertz (1.3-centimeter wavelength). The VLA yields high-sensitivity images with a resolution as good as a tenth of an arc-second, and the image quality equals or surpasses that of the best ground-based optical telescopes. With the VLA astronomers have obtained radio images of such objects as sunspots, the rings of Saturn, dark clouds in our galaxy and the mysterious energetic jets emanating from quasars and from the center of radio galaxies.

But many cosmic radio sources, such as the enigmatic quasars, are much too small to be resolved even with the VLA. They can be studied only by extending the antenna spacings to thousands of kilometers. Because of the distances involved, the antennas cannot be physically interconnected. Instead signals received at each antenna are recorded on magnetic tapes, which are transported to a central laboratory and there replayed simultaneously to simulate the resolution of a single enormous antenna. This technique is called very-long-baseline interferometry (VLBI), and it has been exploited with great success since the 1960's [see "Radio Astronomy by Very-Long-Baseline Interferometry," by Anthony C. S. Readhead; SCIENTIFIC AMERICAN, June, 1982]. Every few months radio observatories around the globe, mainly in the U.S. and Europe but including at times antennas in Australia, Brazil, Canada, China, India, Japan, South Africa and the Soviet Union, coordinate their schedules to track selected objects. Tapes recorded at each of the antennas are then replayed at one of three processing locations: the Max Planck Institute for Radio Astronomy in Bonn, the National Radio Astronomy Observatory in Charlottesville, Va., and the California Institute of Technology. As many as 18 antennas have taken part in this VLBI system to obtain remarkable images of quasars, active galactic nuclei, cosmic masers and other compact radio sources.

Details of the VLBA

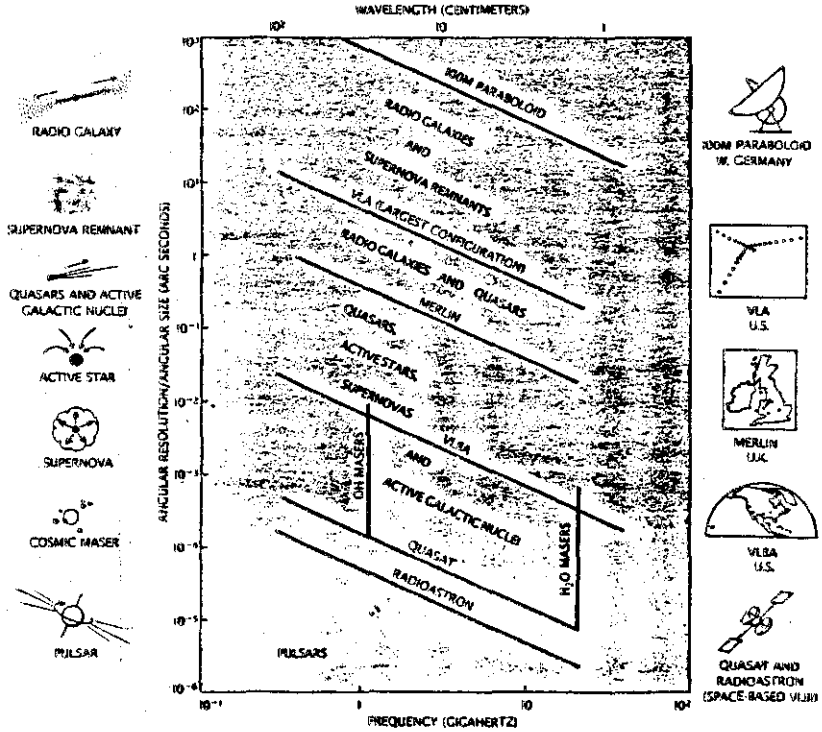
This ad hoc VLBI system nonetheless leaves much to be desired. It is not easy to arrange for a sufficient amount of coordinated observ-

VERY-LONG-BASELINE ARRAY (VLBA): 10 radio antennas will extend 8,000 kilometers across the U.S. and have a resolution comparable to that of a single antenna nearly as wide as the earth. Each antenna will record radio signals from cosmic sources, and the data will be correlated at a central facility to generate interference patterns from which images can be obtained. The Y-shaped symbol marks the location of the Very Large Array (VLA), which will provide additional data to supplement the VLBA.

ing time, and individual antennas are not properly sited to give good image quality. Moreover, the antennas vary in accuracy and sensitivity. In order to exploit the VLBI technique better, the National Radio Astronomy Observatory, with funds from the National Science Foundation, began in 1985 to construct the VLBA, a dedicated VLBI network of 10 antennas. Each antenna will be 25 meters in diameter and designed to operate at wavelengths as short as 3.5 millimeters. The antennas will be at sites throughout the U.S. chosen so that the distribution of baselines will provide good image quality. Other important objectives in the choice of antenna sites were to avoid strong manmade radio signals, to minimize atmospheric water vapor, to be near major transportation centers and to have access to local technical support. Five of the antennas will be at high elevations in the relatively dry, cloudless southwestern states.

Each antenna will be controlled through a local computer that will receive instructions over telephone lines from the VLBA Operations Center in Socorro, N.M. The array will follow a planned program under the control of a central computer that will monitor the antennas and receivers as well as weather conditions at each site. An array-control operator will be able to make changes on short notice if there is an unexpected cosmic event, such as a supernova. The operator will also be able to intervene when necessary, for example if there are technical problems or poor atmospheric conditions. For special experiments requiring even better images it will be possible to include data from as many as 10 other radio telescopes around the world.

At the present time the first VLBA



RESOLUTION OF RADIO TELESCOPES is plotted against the frequency of observed radio emissions for various antennas and arrays. The larger the effective aperture, the finer the resolution (measured by the angle subtended by the smallest distinguishable feature). The graph also indicates the angular size of various types of astronomical radio sources. The 100m telescope is a single, 100-meter antenna. The Very Large Array (VLA) consists of 27 movable antennas physically linked by waveguide. MERLIN, operated by the Nuffield Radio Astronomy Laboratories in England, is a seven-antenna array extending over 200 kilometers and linked by microwave transmission. The VLBA, with a maximum baseline of 8,000 kilometers, will use recorded data. *Quasat* and *Radioastron* orbiting telescopes will employ both microwave links and recordings to extend baselines into space.

antenna, in Pie Town, N.M., is coming into operation, and five others are in various stages of construction. The full VLBA should be completed by 1992. By the mid-1990's astronomers hope to see the first antenna for radio interferometry launched into space. The VLBA will at that time provide ground-based observations to be combined with the data gathered from space. The VLBA, then, is not only a major advance in high-resolution astronomy but also a step toward the even more powerful space-based arrays of the future.

Clocks and Recorders

Fifty years of innovations, from hydrogen-maser clocks to home videocassette recorders, have contributed to the technologies that make the VLBA possible. The highly accurate clocks are needed to synchronize the data from the antennas; the magnetic-tape recorders store the huge volumes of data collected at each antenna. The radio receivers at each antenna will be among the most sensitive available. Most of the receivers will have transistor preamplifiers that will be cooled to 15 degrees Kelvin (degrees Celsius above absolute zero) to minimize noise in the instruments. Each antenna will be equipped to cover nine separate bands in the frequency range from 330 megahertz (90-centimeter wavelength) to 43 gigahertz (seven-millimeter wavelength). In the future the frequency range may be extended to 86 gigahertz (3.5-millimeter wavelength), which approaches the operational limit of the antennas.

In order for the VLBI technique to work there must be an accurate clock at each antenna so that the data can be synchronized. In addition, because the data are converted into a lower frequency, there must be an extremely stable frequency standard so that the phase of the signal is preserved. Both functions will be carried out in the VLBA by a hydrogen-maser clock, which bases its time standard on a characteristic frequency of the hydrogen atom. (Maser stands for microwave amplification by stimulated emission of radiation—the microwave counterpart of the laser.) The clock's frequency is stable to a few parts in 10^{15} for periods of up to an hour. This means that at the VLBA's highest frequency of 43 gigahertz the data from separate antennas can be synchronized over a time interval of about half an hour before the relative phases drift by an appreciable amount. It is therefore possible to condense half-hour segments of data by taking the average and thus to greatly reduce the amount of computation needed to obtain an image.

VLBI signals are recorded digitally on magnetic tape. The timing of individual samples is controlled by the maser clock and is not affected by mechanical factors such as the accuracy of the tape speed. When the first VLBI system went into operation in the early 1960's, conventional computer tapes were used and the recorded data rate was limited to a few hundred kilobits per second. Today modified home videocassette recorders are employed to record digital samples of the signal at a rate of four megabits per second. This system, called Mark II, provides four hours of uninterrupted recording at a two-megahertz signal bandwidth on a single cassette. More than 25 radio telescopes around the world have recording systems of this type. The newer Mark III recording system developed at the Massachusetts Institute of Technology's Haystack Observatory, largely under the sponsorship of the National Aeronautics and Space Administration, uses a reel-to-reel instrumentation recorder to obtain data rates of up to 224 megabits per second. This recorder provides for signal bandwidths of 112 megahertz, but it consumes a full 10,000-foot reel of tape every six minutes.

The VLBA requires bandwidths of at least 100 megahertz in order to be sensitive to weak celestial radio sources, but this must be balanced against a need to hold down the volume of tape. The Haystack Observatory has devised a new system for the VLBA that has 512 tracks and will be able to handle 256 megabits per second while using up tape more slowly than Mark III. A single 16-inch reel holding eight kilometers of tape will last for more than 12 hours and store about seven trillion bits of data—enough to contain the information found in 1,000 years' worth of issues of a major daily newspaper.

Two reels of tape will normally be recorded every day at each of the antennas and flown to the VLBA Operations Center, where they will be played back and the data combined with data from the other antennas. Up to 20 tapes can be played back simultaneously, so that non-VLBA radio telescopes can also contribute data to enhance the sensitivity and resolution of the VLBA. Even with many baselines the data will contain gaps, which can cause spurious features, called sidelobes, to show up in the computed image. These sidelobes, however, are well understood and can generally be removed from the image by means of a well-tested computer algorithm. More serious errors can be caused by unpredictable effects in the earth's atmosphere, but practical algorithms exist for handling these as well.

Jets and Stellar Evolution

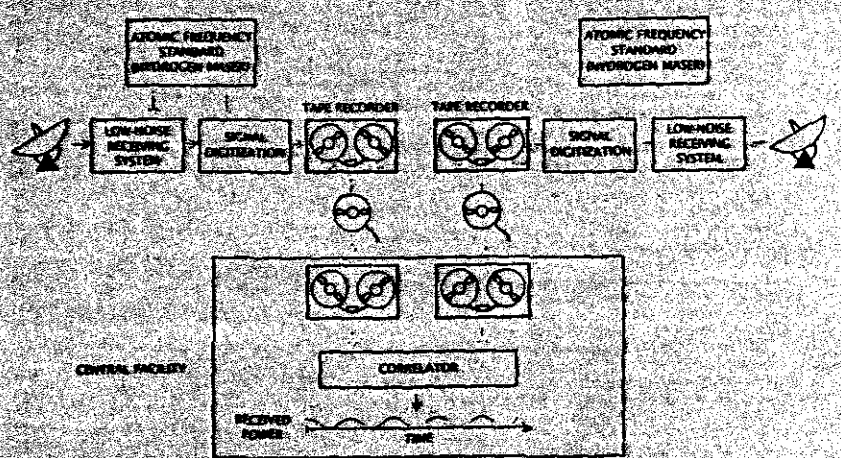
The VLBA will give high-quality radio images with a resolution of a few ten-thousandths of an arc-second, which is equivalent to the angle subtended by a pea in San Francisco as seen from New York. On an astronomical scale this corresponds to an ability to detect features with diameters as small as 100 million miles anywhere in our galaxy or as small as a few light-years even in the remotest parts of the cosmos. High on the list of targets will be the cores of galaxies and quasars, the most powerful objects known in the universe.

The ad hoc VLBI networks have already enabled radio astronomers to glimpse the inner regions of quasars and active galactic nuclei, where plasma is expelled in narrow jets. These violently energetic events are among the most perplexing problems in astronomy today. The blobs of plasma are ejected at velocities close to the speed of light and create several remarkable relativistic effects. First, the radiation becomes focused into a narrow beam along the direction of motion. If the object is moving close to the line of sight and toward the observer, a relatively weak galactic nucleus may appear to be as bright as a quasar. There is considerable debate among astronomers over whether the intense luminosity of quasars results from this effect.

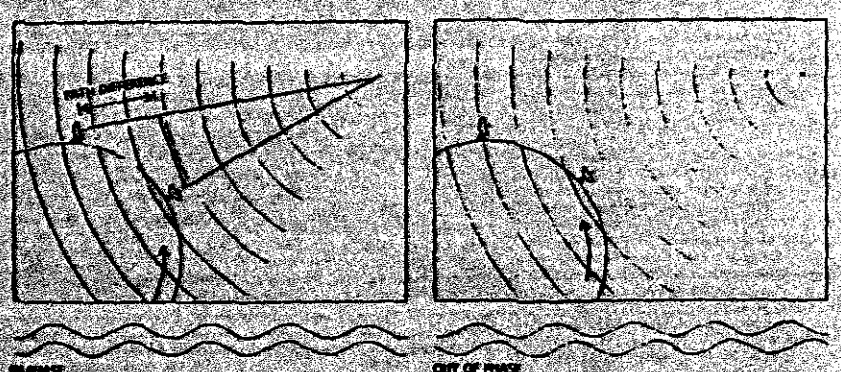
An even more remarkable consequence of relativistic motion is the illusion that the plasma blobs are moving faster than the speed of light. This arises because the object is moving toward the observer so fast that it nearly keeps up with its own radiation. If the object travels for many hundreds of years, radiation emitted at intervals of hundreds of years will reach the observer only a few years apart. As seen from the earth, the path of travel can be foreshortened and appear to be tens of light-years, giving rise to the illusion that the object has traveled tens of light-years in only a few years. The phenomenon is called superluminal motion and often occurs when a radiating plasma

blob is ejected from the nucleus of a quasar. These ejections seem to take place every few years, and it is speculated that the engine driving the activity is a massive black hole. The VLBA's resolution will enable astronomers to understand in greater detail the processes generating the jets.

Closer to home, astronomers are studying objects in our own galaxy in an attempt to understand the life cycle of stars—how they are born and how they die. Here too the VLBA can probe radio phenomena associated with stellar activity that cannot be resolved with conventional radio telescopes. Of particular interest is the intense microwave radiation from cosmic hydroxyl (OH) and water-vapor masers that are found in the gaseous envelopes of very young



VLBI: LONG-BASELINE INTERFEROMETRY (read makes use of widely spaced antennas to observe cosmic radio sources. A hydrogen maser clock at each antenna synchronizes the observing time and provides a frequency standard so that phase relations will be preserved when the data are recorded on magnetic tape. The recordings are taken to a central facility and replayed into the correlator, which combines the signals. The resulting interference pattern yields an image by Fourier transformation.



THE LARGEST SCALE VLBI provides a pair of radio telescopes separated by continents, sometimes being on different sides of planet with equal orbits. The amount of resolution achieved is larger than the planet diameter, depends both on the wavelength of the observed radio waves and on the distance separating the telescopes: the shorter the wavelength or the greater the separation, the more detailed the image. This is more determinate the number of detail that the pair of antennas can resolve as they scan the sky.

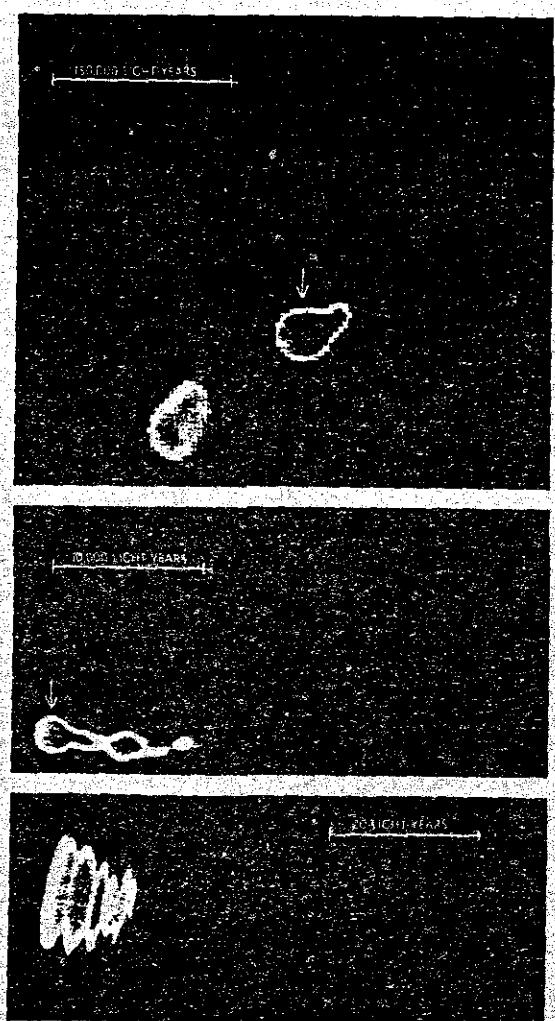
stars as well as in the dusty clouds around aging red giants.

These cosmic masers, among the brightest microwave sources in the sky, emit radiation when clouds of hydroxyl radicals or water molecules are stimulated to drop from a high energy state to a lower one. The excess energy is released as intense narrow-band microwave signals at characteristic wavelengths near 18 centimeters for the hydroxyl radical and 1.3 centimeters for water. Maser sources often contain many separate bright spots whose velocities can be determined by the Doppler shifts of their radiation. The VLBA images of maser motions should reveal much about the dynamics of the turbulent clouds, such as whether they are rotating or are flying apart in the aftermath of a cosmic explosion.

The hydroxyl maser may also act as a sensitive probe of magnetic fields in the maser cloud. Magnetic fields create small differences in the energy levels of the hydroxyl radical. The emitted radiation is split into pairs of spectral lines whose wavelengths are slightly different, a phenomenon called the Zeeman effect. High-resolution observations of the splitting can reveal details of the magnetic field in three dimensions throughout the maser cloud and so make it possible for astronomers to study the role of magnetic fields in causing clouds to collapse and form embryonic stars.

Measuring Cosmic Distances

The VLBA will also be able to yield the most accurate measurements yet of cosmic distances, a problem of fundamental importance in astronomy. An accurate scale of the universe is vital to any understanding of its total mass and energy and of its past and future evolution, and yet the overall scale of the universe is uncertain by a factor of two. High-resolution instruments provide a way to determine distance directly. For example, in the case of a supernova remnant that is assumed to be expanding evenly in all directions, the velocity of the expansion can be measured by the Doppler shift in its radiation. Then, by comparing the velocity with observations of the changing diameter, one can infer the distance. The technique was recently applied by an international team of radio astronomers to determine the distance to a supernova that occurred in the Virgo cluster in 1979. VLBI observations gave an angular

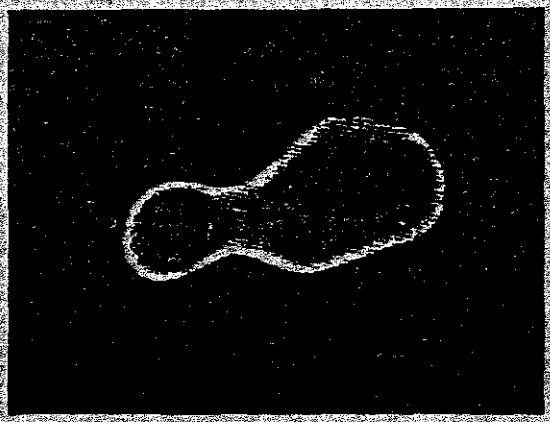


RADIO GALAXY 3C 120, half a billion light-years away, reveals more detail as the resolution of the image improves. The top image, made by the VLA at 1.667 megahertz, has a resolution of nine seconds of arc. In the middle image, made at 15 gigahertz with the array's arms extended to the full 21 kilometers, the VLA resolves features as small as .15 arc-second and shows a narrow jet curving away from the active nucleus. The bottom image, obtained by an 11-antenna VLBI observation made at five gigahertz, reveals details as small as .001 arc-second. The VLBI observations measured the apparent superluminal motion of plasma blobs in the jet as being about seven times the speed of light.

expansion rate of about .003 arc-second per year. Optical and ultraviolet spectra indicated that the supernova is expanding at 11,000 kilometers per second, which corresponds to .003 arc-second per year at a distance of about 60 light-years. So far the technique is about 35 percent accurate, but the VLBA is expected to improve the performance significantly.

VLBI has also provided a highly precise measurement of the relativistic bending of radio waves by the gravitational field of the sun. Originally proposed as one of the three classical tests of general relativity, the effect was confirmed in a landmark experiment in 1919, when stars observed during a total solar eclipse appeared to be deflected by the gravitational field of the sun. The optical observations, however, have been plagued by the difficulties of carrying out experiments in remote corners of the globe during the few minutes when a solar eclipse darkens the sky. Radio waves, on the other hand, can be observed at any time. Using data collected by two VLBI projects, POLAR (Polar-Motion Analysis by Radio Interferometer Surveying) and IRIS (International Radio Interferometric Surveying), investigators at the U.S. National Geodetic Survey have measured relativistic bending over almost the entire sky. Thousands of observations over several years confirm the accuracy of theoretical predictions to a few tenths of a percent.

POWERFUL ENERGY SOURCE Radio quasar 3C 380 appears in this VLBI image as a bright spot less than 10 light-years wide. It is thought the intense energy can be generated only by a black hole. The VLBA will be able to reveal details of such processes.



INTENSE RADIO OUTBURST In binary star UX Arietis was recorded in July, 1983. The image, made by a six-antenna VLBI system operating at five gigahertz, is barely able to distinguish the components of the binary. The radio emissions are thought to be generated by relativistic electrons accelerated in the stars' magnetic field. The VLBA will be able to observe the phenomenon in greater detail throughout the orbital cycle of the binary.

Measuring the Earth

Although it was conceived as an astronomical tool, the VLBA will be employed to study a variety of important terrestrial phenomena as well, such as plate-tectonic motion, rotation of the earth and distortions in the solid earth caused by tidal forces. These geodetic applications are possible because the response of the radio interferometer depends not only on the source under observation but also on the earth's rotation and the length and position of the baseline separating a pair of antennas. The technique is based on repeated observations of reference sources, such as quasars, so distant that they can be treated as fixed points in the sky. Changes in the earth's shape or rotation alter the results from one observation to the next (see "Studying the Earth by Very-Long-Baseline Interferometry," by William E. Carter and Douglas S. Robertson; SCIENTIFIC AMERICAN, November, 1986).

With geodetic VLBI it is possible to determine the distance between two widely separated antennas with a precision somewhat better than the wavelength at which the observation is made. VLBI can therefore detect changes in the earth's dimensions of less than one centimeter. The Jet Propulsion Laboratory's project ARIES (Astronomical Radio Interferometer Earth Surveying) is making extensive measurements in an effort to relate the incidence of earthquakes to small shifts across fault lines. Not surprisingly, earthquake-plagued countries

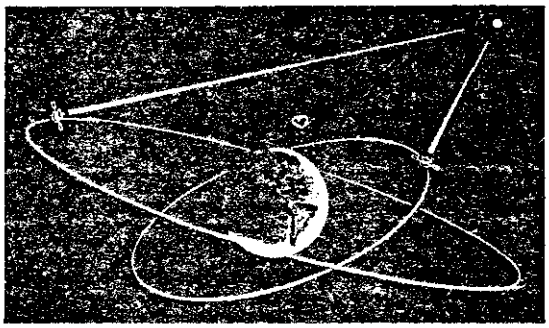
h as China, Italy and Japan have wn great interest in geodetic VLBI have already built radio tele- es dedicated to fault-line meas- ents. Because VLBI fringe oscilla- are caused by the rotation of arth, geodetic observations can sure the earth's rate of rotation nits of time provided by the ma- locks. The length of the day has been measured to an accuracy enth of a millisecond, and the lo- n of the earth's spin axis has pinpointed to within a few tens entimeters on the earth's surface.

make the geodetic measure- rs, one needs to disentangle the estrial effects from the astronomi- data. This is a complex problem is made more difficult by the tuations in the radio sources, the redictable effects of the earth's osphere and ionosphere on the o signals, the slow drift of the mic clocks at the various stations d even the relativistic bending of dio waves by the sun. In order refine the important geodetic and eophysical parameters, radio tele- scopes throughout the world have combined forces under the aegis of NASA's Crustal Dynamics Project and the POLARIS and IRIS projects mentioned above. With the VLBA it will be possible to obtain accurate images of the cosmic radio sources that provide the geodetic reference points. At the same time the VLBA will provide regular observations to supplement and extend the geodetic VLBI networks already in operation.

VLBI in Space

Still another application of the versatile VLBA will be in interplanetary navigation. VLBI networks demonstrated this capability with spectacular success during the recent Soviet Vega mission to Venus and Halley's comet. In the largest international VLBI venture yet organized, a network of 20 antennas around the world tracked the two spacecraft deployed in the mission. Each of the spacecraft, which reached Venus in June of 1985, released a balloon carrying a 1.7-gigahertz transmitter into the planet's forbidding atmosphere. The VLBI network tracked the balloons as they were buffeted by the Venusian winds and measured gales of up to 140 miles per hour.

Following the encounter with Venus, the two spacecraft continued on to rendezvous with Halley's comet on March 6 and 9, 1986, a week before the scheduled flyby of the European *Giotto* spacecraft. European Space Agency scientists hoped to steer *Giotto* to the sunny side of the comet in order to take pictures, but because they could not be sure of the comet's precise location, there was a real danger that their cameras would end up on the dark side. Optical images of the comet made by Vega, combined with VLBI data on the spacecraft positions, enabled the Europeans to make last-minute corrections to *Giotto's* trajectory and bring it to within a few hundred miles of the sunlit side of the icy core. There *Giotto's* cameras were able to make spectacular photographs of Halley's comet on March 14, during its closest approach, just before communications with the spacecraft were cut off by collisions with the comet's debris.



ORBITING RADIO TELESCOPES will extend interferometer baselines into space. During the 1990's the U.S. and Europe plan to launch *Quasat* into orbit three earth-diameters away, and the Soviet Union plans an even higher orbit for its *Radioastron* satellite.

Even when the VLBA is used in conjunction with other radio telescopes around the world, its resolution will ultimately be limited by the size of the earth. To achieve higher resolution the baselines will have to be extended into space, perhaps to the moon or even to the planets. Space-based VLBI will present a challenge to engineers, who must develop large, precise antennas and sensitive radio receivers that can operate unattended in the harsh space environment. The feasibility of space VLBI has already been demonstrated by a team of American, Australian and Japanese scientists, who employed a small antenna aboard a NASA satellite as one element of an earth-space VLBI system.

Plans for dedicated VLBI satellites are already being discussed in the U.S., Western Europe, Japan and the Soviet Union. It has been proposed that NASA and the European Space Agency jointly launch a satellite to be called *Quasat*, which would carry a 10-to-15-meter antenna into earth orbit by the middle of the next decade. Recent setbacks to the NASA space-science program have made U.S. participation in this project uncertain. The Soviet Union has also announced a space VLBI program and expects to launch two or three *Radioastron* satellites in orbits of up to 75,000 kilometers. European and American scientists have been invited to take part, but the U.S. Government's reluctance to share advanced space technology with the Soviet Union may limit U.S. involvement.

In the more distant future, some Soviet scientists envision building giant antennas, each as much as several kilometers across, to be placed in orbit around the sun. This array would provide baselines up to several hundred million miles long and an angular resolution that could be better than a millionth of an arc-second. A radio telescope of such power would open up a new frontier of astronomy. In theory it would enable scientists to observe "sunspots" on other stars in our galaxy and to resolve features in neighboring galaxies comparable to the supposed size of black holes. Fascinating as it is to speculate about the future, there remain many uncertainties about the feasibility and effectiveness of such an array. These issues should become clearer as we gain experience with the VLBA and earth-orbiting antennas.

LETTER 1066 (CONTINUED)

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The Very Long Baseline Array

K. I. Kellermann and A. R. Thompson

Summary. The Very Long Baseline Array is a high-resolution synthesis radio telescope consisting of ten antennas, each 25 meters in diameter, located throughout the United States from Puerto Rico to Hawaii. Each antenna will be equipped with low-noise receivers spaced throughout the frequency range from 300 megahertz to 43 gigahertz, a hydrogen-maser frequency standard for time and frequency reference, and broadband digital tape recorders. Tapes recorded at each antenna will be simultaneously replayed and correlated in a specially built digital correlator, and the correlator output will, by Fourier transformation, be used to construct images of celestial radio sources with an angular resolution better than one thousandth of an arc second.

The earliest radio telescopes had barely enough resolving power to distinguish one constellation in the sky from another, and for many years it was widely accepted that, because radio telescopes operate at such long wavelengths, their angular resolution must be fundamentally poorer than that of optical telescopes.

Actually, this is not the case, for two reasons. First, the resolution of large-ground-based optical telescopes is ordinarily limited to about 1 arc second, not by the size of the telescope but by irregularities in the earth's atmosphere. At radio frequencies, the atmospheric fluctuations in the path length of the incoming signal are small compared with the wavelength of radio waves, so that the effect of atmospheric irregularities is less important. Second, to form clear images, the phase of the signals must be preserved over the entire dimensions of the instrument. Because of their longer wavelength, radio waves are easier to manipulate than light waves, so that radio telescopes of very large size can be built and operated close to the theoretical diffraction limit given by the ratio of wavelength, λ, to overall array dimensions, D.

This history of radio astronomy has been one of ever-increasing angular resolution achieved by increasing the dimensions of the instruments and operating at the highest frequencies (shortest wavelengths) technically feasible. But even the largest single-radio antennas, such as the 100-m steerable reflector near Bonn, Germany, operating at their shortest wavelengths (~1 cm) provide only an angular resolution (λ/D) of approximately 1 arc minute, which is comparable to that of the unaided human eye (D, reflector diameter).

For this reason, radio astronomers long ago turned to interferometric techniques to increase the effective aperture size beyond that feasible from a single structure. A radio interferometer can be regarded as a radio analog of the well-known optical instrument developed by Michelson in the early part of this century to measure stellar diameters. Two antennas, spaced by a baseline of length D, are connected to a receiving system (Fig. 1A). After amplification and filtering, the signals are combined in a correlator. The difference Δ in the path lengths of an incoming wavefront from a distant source determines the delay difference of the two signals and thus their relative phase. Signals of the same phase, which occur when Δ is an integral number of wavelengths, produce a maximum in the correlator output, and signals in antiphase produce a minimum. With respect to the angle of incidence of the radiation, θ, the response is proportional to

$$F(\theta) = \cos[(2\pi D/\lambda)\sin\theta] \qquad (1)$$

$F(\theta)$ is the fringe pattern shown in Fig. 1B. The fringe spacing varies with the wavelength. Over the finite bandwidth of the receiving system, this variation causes the fringe amplitude to decrease for large values of the relative delay. The corresponding effect in optics is the white-light fringe phenomenon (*1*).

The fine structure in the fringe pattern enables the position and structure of a source to be studied with an angular resolution comparable to the fringe width, which is $\lambda/(D \sin\theta)$ radians. In terms of Fourier analysis, the interferometer responds to the Fourier component of the source with spatial frequency on the sky equal to $(D \sin\theta)/\lambda$ at a position angle given by the projection of the baseline onto the sky. To obtain a full two-dimensional map of a radio source, it is necessary to scan it with fringe patterns covering a wide range of fringe widths and position angles. The rotation of the earth provides part of this required variation because an observer looking down at the earth from the direction of the source sees the position angle of the baseline rotate through 180° in 12 hours (Fig. 1C). Thus the required information can be obtained by using antennas that track a source across the sky, together with different baseline lengths obtained by using a number of antennas or by moving the positions of the antennas and repeating the observation on another day (or both). The range of spatial frequencies included in the measurements is conveniently presented in the Fourier transform plane, which shows the projected interferometer spacings as seen from the direction of the source. Figure 1D shows an example of the form of the coverage for an array consisting of three antennas in an east-west line (see Fig. 1C). Although a linear arrangement is

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adequate for mapping sources at high declinations, a two-dimensional array is needed for sources near the celestial equator, where the earth's rotation introduces foreshortening rather than rotation of the baselines.

The measured response to a radio source is expressed in terms of visibility, a complex quantity that represents the magnitude and phase of the fringe oscillations at the interferometer output. The source brightness distribution is reconstructed from the two-dimensional visibility function by an inverse Fourier transformation, a technique known as synthesis mapping (2).

The recently completed Very Large Array (VLA) radio telescope gives, for the first time at radio wavelengths, images of high sensitivity with angular resolution and image quality equal to or better than that given by optical telescopes. The VLA consists of 27 antennas, each 25 m in diameter, located at intervals along the three linear arms of a Y-shaped configuration. The arms run outward from the array center at 120° intervals in azimuth and extend to 21 km. A double railroad track allows the nine antennas on each arm to be moved between four sets of foundations to provide four configurations with arm lengths ranging from 600 m to 21 km. With the largest configuration, the resolution is better than 1 arc second, which is comparable with that of large optical telescopes at the best observing sites; the lower resolution of the more compact configurations enables extended objects (such as nebulae) to be observed without loss in sensitivity. Circular waveguide is used to carry the phase-reference signal to each antenna and to carry the received signals back to the main control building, where they are combined in a digital correlator. Each of the 351 [(27 × 26)/2] interferometer outputs, corresponding to a different antenna pair, is averaged and sampled at intervals as short as 1 second and then Fourier transformed to produce a high-resolution image.

The VLA is the most powerful radio telescope in the world and has given a tremendous improvement in angular resolution, sensitivity, and image quality over previous radio telescopes (3, 4). More than 500 scientists each year use the VLA for a wide variety of extragalactic, galactic, and solar system studies. Of particular interest have been the observations of the radio emission from galaxies and quasars. Up to 10^{55} J of energy is found in clouds of relativistic plasma ejected from these objects, and understanding the source of this energy has been one of the most challenging problems of modern astrophysics. Observations made with the VLA indicate that the origin of the energy may be traced to a remarkably compact but highly luminous core found in quasars and in the nuclei of active galaxies, from which long thin jets extend up to millions of light years toward the giant extended radio clouds (5). These compact nuclei radiate as much as 10^{39} W (the radio power of 100 million normal galaxies) from a volume of space only a few light years across, or about 10^{-7} of the volume of the Milky Way system (see Fig. 2).

The angle subtended by the radio nuclei is very small, typically about one-thousandth of an arc second, or a factor of 100 to 1000 beyond the resolution limit of the VLA. In order to obtain radio pictures on this angular scale array dimensions comparable to the radius of the earth are needed. However, for dimensions much larger than those of the VLA, physical interconnections of antennas by transmission lines become costly, and there are practical problems of avoiding obstacles such as rivers and hills.

As early as the 1950's, radio astronomers in England and Australia experimented with microwave radio links to connect the distant elements of interferometer systems. Although baselines of more than 100 km were used, there were too few antenna elements to synthesize the structure of radio sources in detail. Several years ago, the Nuffield Radio Astronomy Laboratory at Jodrell Bank brought the multielement radio-linked interferometer (MERLIN) system into operation, which uses up to six simultaneous antennas with overall dimensions of 134 km (7). Operating primarily at wavelengths of 18 and 70 cm, MERLIN has been used to investigate the angular structure of radio sources with sizes as small as 0.1 arc second.

In principle, there is no limit to the dimensions that can be achieved with radio links, but the need to install repeaters every 50 km or so would make the cost prohibitive for an array of continental dimensions. Satellite repeaters have been used to distribute a phase-reference signal to distant antennas and to link the received signals at intermediate frequency (IF) to a central station. But the operation of a multielement, broad-bandwidth array would require the full capacity of a modern communications satellite, and so far only experimental satellites have been used for brief periods (8).

Fortunately, it is not necessary to have a direct, real-time connection between interferometer elements. A more cost-effective method is to record the IF signals on magnetic tape at each antenna and to transport the tapes to a central facility where they are replayed simulta-

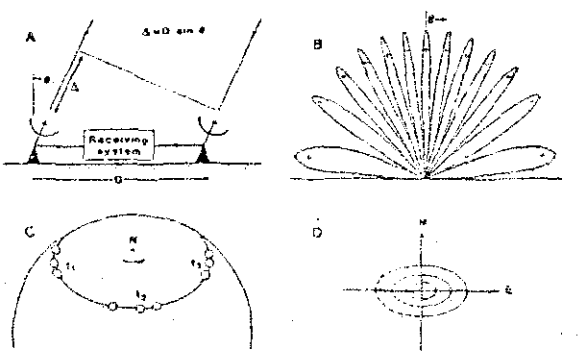


Fig. 1. (A) The two antennas of a basic interferometer, showing the differential path length Δ for a wavefront incident at angle θ. The receiving system contains a correlator that forms the time average of the product of the voltages, thus giving the cross-correlation. (B) The form of the fringe pattern given in Eq. 1, which represents the interferometer response to a point source at position θ. In practice, the number of fringes in the 180° interval shown varies from hundreds to more than a million. (C) An east-west array of three antennas as viewed from the direction of a radio source at three instants of time, t_1, t_2, and t_3, showing how the position angle of the baseline changes with time. (D) The projected antenna spacings for the three-element array in (C), N and E being the directions on the celestial sphere. The full lines represent a 12-hour interval; during the remaining 12 hours (indicated by the broken curves), the same spacings and position angles are repeated and no new information is obtained.

neously. Time synchronization of the recordings is provided by atomic frequency standards at each antenna, which also supply a stable reference signal for the local oscillators. This technique of using independent oscillators and tape recorders is known as Very Long Baseline Interferometry (VLBI) and was developed in the late 1960's, primarily in response to the need for ultrahigh resolution to study the compact radio nuclei in quasars and active galactic nuclei (9).

Since that time, more than 25 independently operated radio telescopes throughout the world have been used in coordinated VLBI programs, with up to 18 antennas being employed simultaneously. Approximately every 2 months, 1 to 2 weeks are set aside as six or more radio telescopes in the United States for simultaneous VLBI observations. In Europe, similar sessions are scheduled four times per year. Frequently a number of European and North American antennas are combined to form a global network. Regular VLBI observations are also scheduled by NASA, the National Geodetic Survey, and the Jet Propulsion Laboratory for a variety of terrestrial experiments to study global tectonics, polar motion, earth rotation, and time synchronization. Many pioneering discoveries have been reported from these networks of existing antennas, but by 1975 the need for a full-time dedicated array of specially designed and strategically located antennas had become apparent (10).

The VLBA

In 1982, after 7 years of study and evaluation, the National Radio Astronomy Observatory submitted a request to the National Science Foundation to construct a dedicated Very Long Baseline Array (VLBA) to provide high-quality radio images of very small galactic and extragalactic radio sources (11). The VLBA is being designed to give resolutions ranging from a few tenths of a milliarc second to a few hundredths of an arc second, which correspond to the planned wavelength range from about 1 cm to 1 m. The VLBA will consist of ten precision antennas, each 25 m in diameter, located throughout the United States, including Puerto Rico and Hawaii. The configuration of the elements (Fig. 3) has been chosen to optimize the resolution from within the United States while maintaining uniform coverage of projected interferometer spacings to minimize the sidelobes. However, it is also necessary to choose locations that minimize

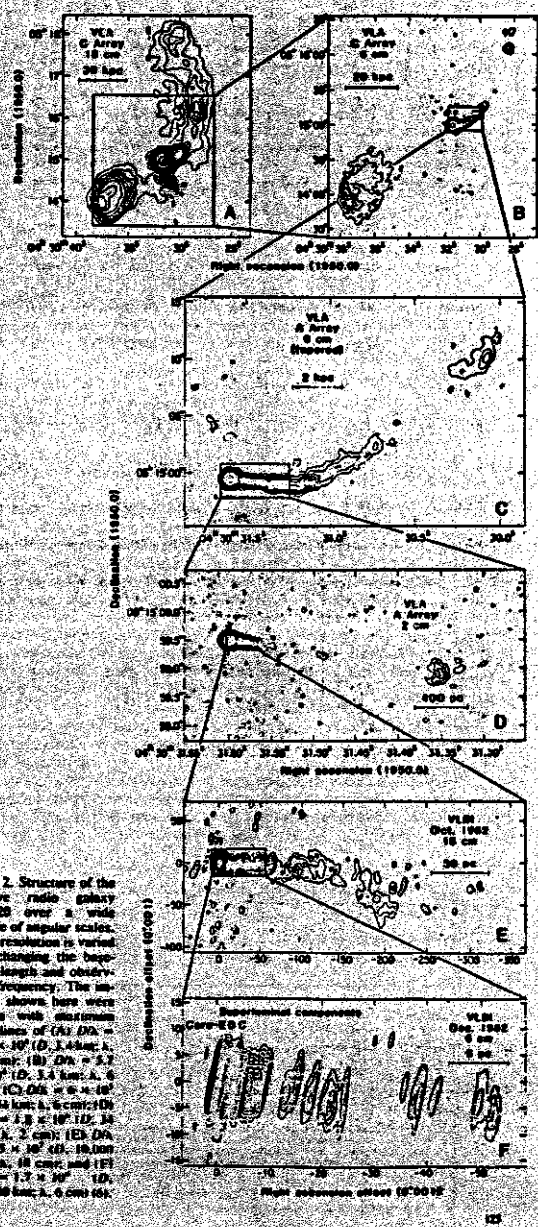


Fig. 2. Structure of the active radio galaxy 3C120 over a wide range of angular scales. The resolution is varied by changing the baseline length and observing frequency. The images shown here were made with maximum baselines of (A) $D/\lambda = 1.9 \times 10^7$ (D, 1.4 km; λ, 18 cm); (B) $D/\lambda = 5.7 \times 10^7$ (D, 3.4 km; λ, 6 cm); (C) $D/\lambda = 6 \times 10^7$ (D, 24 km; λ, 6 cm); (D) $D/\lambda = 1.8 \times 10^8$ (D, 24 km; λ, 2 cm); (E) $D/\lambda = 5.5 \times 10^8$ (D, 10,000 km; λ, 18 cm); and (F) $D/\lambda = 1.7 \times 10^9$ (D, 10,000 km; λ, 6 cm) (6).

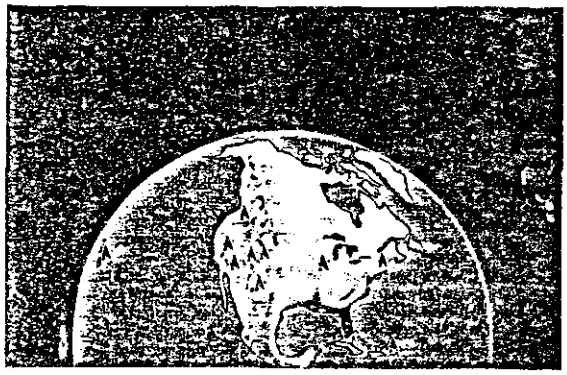


Fig. 3. The VLBA configuration showing the antennas in Hawaii, California, Oregon, Arizona, New Mexico (two), Texas, Iowa, Massachusetts, and Puerto Rico.

radio interference and atmospheric water vapor, which introduce phase fluctuations. Proximity to major transportation centers has been an important consideration and, wherever feasible, sites at existing radio observatories or other sources of technical support have been preferred. Considerable weight has therefore been given to locating as many elements as possible in the relatively dry, cloud-free southwestern United States. It is also desirable that the resolution gap between the VLBA and the largest configuration of the VLA be kept to a minimum. This in particular influences the location of the elements nearest the VLA to allow coordinated observations to be made with the combined VLA and VLBA to cover angular scales that range over a factor of more than 100,000.

Each VLBA antenna will be equipped with radio receiving systems covering assigned radio astronomy bands in the frequency range from 330 MHz to 43 GHz, giving a broad range of resolution and surface brightness sensitivity. The principal bands covered are listed in Table 1. Feeds for 330 and 610 MHz will be located at the prime focus of each antenna, and for the other frequencies feeds will be at the Cassegrain focus. The Cassegrain feeds will be arranged on a circle 1.7 m in diameter, and the subreflector will be mounted so that it can be adjusted under computer control to direct the received radiation to any desired feed element. Each feed will have outputs for opposite senses of circular polarization, and two low-noise amplifiers for each band will allow both polarizations to be received simultaneously. Most of these amplifiers will use gallium arsenide field-effect transistors (GASFET's), and for frequencies above 1 GHz they will be cooled to 15 K by closed-cycle helium refrigerator systems. By cooling the amplifiers, system noise temperatures in the range of 30 K to 70 K can be obtained, thus providing high sensitivity. At the two highest frequency bands, high-electron mobility transistors (HEMT's) and superconductor-insulator-superconductor (SIS) mixers will be used.

Table 1. Sensitivity and angular resolution in various frequency bands.

Frequency (GHz)	Receiver input state		System noise temperature (K)	Noise level[†]	Angular resolution (milli-arc seconds)
	Type[*]	Physical temperature (K)			
0.312 to 0.342	GASFET	300	120	0.2	24
0.608 to 0.614	GASFET	300	75	0.1	13
1.35 to 1.75	GASFET	15	30	0.04	5.4
2.15 to 2.35	GASFET	15	35	0.04	3.5
4.6 to 5.1	GASFET	15	35	0.04	1.6
8.0 to 8.8	GASFET	15	45	0.06	0.9
14.4 to 15.4	GASFET	15	65	0.08	0.5
22.2 to 24.6	HEMT	15	70	0.1	0.4
42.3 to 43.5	SIS mixer	3	75	0.1	0.2

[*]High-electron mobility transistors (HEMT's) may replace the standard GASFET's at other high-frequency bands as development permits. [†]Root-mean-square noise level for an 8-hour observation, measured in millijansky's (1 millijansky is equivalent to 10^{-29} W m^{-2} Hz^{-1}).

Recording System

In recording the signals on tape, a digital rather than an analog representation is almost always used. The signal is then sampled periodically, and the accuracy with which the phase is preserved depends on the timing of the sampler. In a digital system, the accuracy of the tape speed and similar mechanical factors are less critical. For preserving the information in the signal, the sampling frequency should be no less than the Nyquist rate, which is twice the signal bandwidth. Thus, if the received bandwidth is Δf, the bit rate (number of bits per second) that must be recorded is

$$f_t = 2\Delta f\, n_s \qquad (2)$$

where n_s is the number of bits per sample. The overall sensitivity (signal-to-noise ratio) increases as Δf and n_s are increased. In the common situation where the limit on the received bandwidth is imposed by the tape recorder, which limits f_t in Eq. 2, optimum performance is obtained by using two-level or three-level quantization for which n_s is 1 or about 1.6, respectively. In two-level quantization only the sign of the signal voltage is recorded, and information about the magnitude of the voltage is lost. However, the output of the interferometer is the cross-correlation of the signals received in two antennas, which take the form of Gaussian random processes. The effect of two-level quantization in this case is simply the reduction of the output signal-to-noise ratio by a factor of 0.64 relative to that for similar signals without quantization. Because of its simplicity, two-level quantization has been used almost universally in VLBI systems, with the signal bandwidth equal to half the recorded bit rate. However, in cases where the signal bandwidth is limited by factors such as the width of a spectral line or an interference-free frequency band, increasing the number of quantization levels offers an increase in sensitivity.

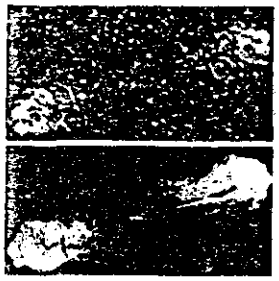
When the first VLBI system went into operation in the United States in the late 1960's, conventional computer tape drives were used, and the recorded bandwidth was restricted to a few hundred kilohertz (*12*). Since that time, in response to commercial and consumer needs, bandwidths and bit densities have increased significantly.

Two VLBI recording systems are in common use today. One, the MKII system, is based on a modified home video cassette recorder (VCR) that is used to obtain 4 hours of uninterrupted digital recording with a sampling rate of 4 megabits per second for a 2-MHz bandwidth with two-level quantization. More than 25 radio telescopes throughout the world have recording systems of this type. The recorded data can be replayed at any one of three processing facilities located at the Max-Planck Institut für Radioastronomie in Bonn, Germany; at the National Radio Astronomy Observatory in Charlottesville, Virginia; and at the California Institute of Technology in Pasadena, California.

The newer MKIII system, developed at the Massachusetts Institute of Technology Haystack Observatory largely under NASA sponsorship, uses a 28-track longitudinal instrumentation recorder to obtain data rates up to 224 megabits per second (112-MHz signal bandwidth) with a tape speed of 270 inches per second. But because the bit density of the MKIII recording system is an order of magnitude less than that of the MKII system, the high data rate is achieved only at the expense of using prodigious amounts of magnetic tape.

In recent experiments at the Haystack Observatory, good signal reproduction has been achieved with narrow recording heads machined from gap bars used to fabricate standard VHS heads for the home VCR market. The VLBA will use 32-track head stacks, with each track 20 μm wide, writing at a data rate of 4 megabits per second for a recording rate of 128 megabits per second. A piezoelectrically controlled mechanism will be used to reposition the head stack to allow 26 passes of 1-inch-wide tape. In this way a single 16-inch reel of tape (13,000 feet) will last for 8 hours and will hold approximately 3×10^{12} bits of information. Even longer recording times may be possible with thinner tapes or larger reels (or both). Tests run with a prototype system at the Haystack Observatory have been successful in keeping the position of the recorded track to within 1 μm over tape lengths of up to 9000 feet (*13*).

The recording rate of 128 megabits per second will accommodate a total bandwidth of 64 MHz with two-level quantization. Provision will also be made for use of four-level quantization for spectral-line observations. Higher recording rates will be possible for short periods of time to increase the sensitivity for special experiments. The total recorded bandwidth may be subdivided into as many as 16 subbands, over which the received signals can be distributed in frequency and polarization. For example, the most common form of observing is likely to make use of a single frequency band with both senses of circular polarization being received and with half the recorded bandwidth assigned to each one. It will be possible to position the subbands contiguously in frequency or to spread them out over a wide range (up to 500 MHz). It will also be possible to make simultaneous observations in certain pairs of frequency bands.



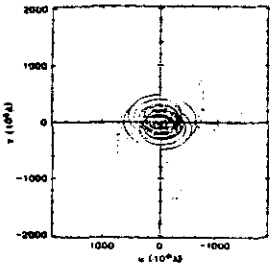


Fig. 4(left). (Top) Unprocessed image of the radio galaxy Cygnus A obtained with the VLA by Perley, Dreyer, and Cowan. The splotchy background does not represent real structure but is the result of the inability of the VLA to measure the entire Fourier transform of the object. (Bottom) Top image corrected for incomplete coverage of the Fourier transform plane (CLEAN) and atmospheric phase fluctuations (self-calibration). The dynamic range (ratio of peak brightness to root-mean-square noise) has been improved from about 100:1 to 4000:1, and structural details obscured in the top image are now readily discernible. Fig. 5 (right). Coverage of Fourier transform plane of VLBA (solid lines) with proposed extension to space by means of the QUASAT satellite (dotted lines). *u* and *v* are the projected interferometer spacings in wavelengths at a frequency of 22 GHz.

Time and Frequency Standards

The VLBA will use a hydrogen maser frequency standard at each antenna as an independent time and frequency standard. A hydrogen maser makes use of the well-known line of atomic hydrogen at 21-cm wavelength that is emitted when the spin vector of the electron changes sign relative to that of the proton in the ground-state atom. In the maser molecular hydrogen is dissociated, and atoms with the desired excitation are selected by a magnetic field and passed into a cavity that is resonant at the line frequency of 1420.405 MHz. The resulting stimulated emission provides a signal that is stable in frequency to the order of 1 part in 10^{13} for periods up to a few thousand seconds. The maximum possible integration time is set by the requirement that the relative oscillator phase must drift by no more than, say, 0.2 radians. Then at the maximum VLBA frequency f of about 40 GHz, with $0.2/(2\pi f\tau)$ approximately equal to 10^{-15}, the maximum integration time (τ) is about 1000 seconds.

In maintaining coherence over the entire signal bandwidth, the incoming wavefront must be sampled at the two antennas of each interferometer with an accuracy of the order of the reciprocal bandwidth, and this accuracy must be preserved on playback. With a bandwidth of 50 MHz, time synchronization accurate to 20 nsec is required to detect interference fringes. In actual practice, the signals are combined with a range of possible delays, so that the necessary timing accuracy is easily achieved with hydrogen maser clocks.

The Playback System

Approximately 7 miles of data tape will be accumulated each day at each antenna element and sent by commercial transport to the VLBA Operating Center in New Mexico, where it will be simultaneously played back and correlated with tapes from each of the other antennas. The processor system will allow for up to 20 playback recorders, so that additional antenna systems in the United States and other countries can be used to enhance the sensitivity and resolution of the VLBA. This processor, which is being developed at the California Institute of Technology, will contain about 50,000 complex digital correlators and will provide playback rates of at least up to 256 megabits per second (bandwidths up to 128 MHz) in the continuum mode. For spectroscopic applications, the received bandwidth can be subdivided into as

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many as 512 frequency channels with channel bandwidths as narrow as 125 Hz. An attached fringe processing computer will generate the frequency channels by Fourier transformation of the measured delay function and will perform other routine normalization and calibration tasks (*14*).

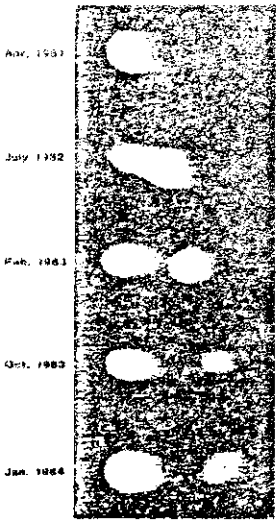
Image Formation

The image of a radio source obtained by Fourier transformation of the measured visibility is the true brightness distribution convolved with the synthesized beam pattern, which is the response of the array to a source of infinitesimal angular dimensions. The beam pattern is determined mainly by the range of spatial frequencies covered in the observations (see Fig. 1D) and is derived easily. It is ideal that the beam pattern should have a well-defined main lobe and a minimum of sidelobes. This concentrates the distribution of the baselines and was a major consideration in selecting the antenna sites. However, with only ten antennas there are sidelobes with amplitudes of the order of 5 percent of the synthesized main beam. Because the pattern of the residual sidelobes is accurately known, their effect on the radio image can be effectively reduced by numerical computation with an algorithm known as CLEAN. In this process the radio image is analyzed into a set of beam patterns (including sidelobes), and then the image is reconstructed with a clean beam (that is, one without sidelobes) (Fig. 4).

The effect of tropospheric and ionospheric irregularities on the signal phase is more serious because the resulting fluctuations are not predictable and are often too rapid to remove by using a separate calibration source, especially at short centimeter and millimeter wavelengths. However, adaptive calibration techniques have been developed that use preliminary images contaminated by phase errors to estimate the unknown phases by iterative procedures. For N antennas there are many more measured interferometer phases, $N(N-1)/2$, than unknown relative antenna phases, $N-1$; because of this, the procedure converges rapidly. Several practical algorithms now exist under the names of "hybrid mapping," "self-calibration," or "adaptive-calibration" (*15*). However, the atmospheric effects are mitigated at the expense of increased computing time because the procedures require many iterations of the basic mapping processes. These procedures are presently in use at the VLA, and the two instruments will largely share the same software and computing facilities.

Operation

The operation of a radio telescope with elements deployed over 8000 km presents a number of problems. With the present ad hoc VLBI activities, each antenna is operated by the local resident



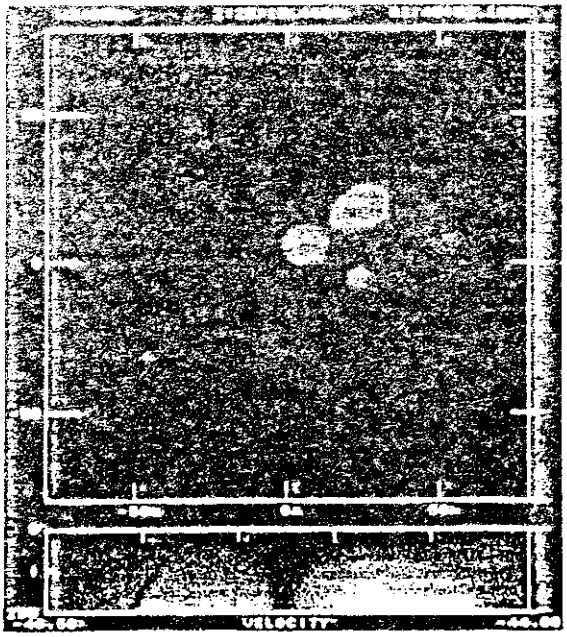


Fig. 6 (left). Five images of the quasar 3C345 showing the increase in separation of 21 light years during a 2.75-year period, or an apparent average expansion velocity of about 8*c* (*17*). Fig. 7 (right). Image of the OH maser in the envelope of a newly formed star in the constellation Cassiopeia. The colors indicate Doppler velocities of recession increasing from blue to red. Each spot is a maser source emitting radio radiation equivalent to a black body heated to 10^{11} K. This image was formed from an eight-station VLBI observation with antennas in Massachusetts, West Virginia, Texas, Illinois, Maryland, California (two), and Canada (*18*).

staff who carry out a prearranged observing program. All the elements of the VLBA will be controlled from an Operations Center in Socorro, New Mexico. This location was chosen to simplify the combined operation with the VLA, including some sharing of personnel and equipment.

Normally, each antenna will be unattended, but a technician-operator will be available at each site for inspection, routine maintenance, and the simpler unscheduled repairs. The local staff will also update the operating systems at the local control computer, change the data tapes, and ship them to the Operations Center and will be responsible for security, emergency intervention, and routine start-up and shut-down procedures.

The Operations Center will provide for major maintenance and repair requiring personnel with special skills, special equipment, or major replacement parts. However, because there are plans to build much of the electronics in modular units and to replace complete modules in the case of failure, most such replacements can be performed easily by the local site personnel. Defective modules will be returned to the Operations Center for repair. This procedure, although requiring a somewhat larger than normal inventory of spare parts, will reduce travel and personnel costs. The modular packaging was used in the design of the VLA and has proved to be highly practical.

The VLBA will be operated by means of a preplanned program under the control of a central computer that will simultaneously monitor the performance of the antennas and receivers as well as the meteorological conditions at each site. An array control operator will be present at all times at the Operations Center to intervene when necessary and to carry out various bookkeeping tasks. From time to time brief samples of the received signal at each antenna will be sent to the Operations Center via telephone lines and correlated in nearly real time to check that all components of the VLBA are functioning properly.

For special experiments, additional antennas such as the VLA and antennas in North America, Europe, Japan, and Australia may be included to increase even further the resolution, sensitivity, and image quality of the array. Of particular importance will be the dedicated VLBI antennas now being constructed in Italy and an array of four to nine elements under discussion in Canada.

These global systems will approach the best practical resolution obtainable from the surface of the earth, but even higher resolution will be possible from space. Plans already exist for a joint European Space Agency–NASA project to orbit a 15-m radio telescope known as QUASAT to operate together with the VLBA and other terrestrial arrays. QUASAT will give a further increase in baseline length over the VLBA by a factor of about 3 (Fig. 5). But perhaps more important, it will be the first step toward larger and more distant antennas in space that will permit even further improvement in resolution.

Research with the VLBA

Completion of the full VLBA, which will give high-quality radio images with unprecedented angular resolution, is planned for 1990. When completed, the array will allow detailed studies of the tiny energetic cores of galaxies and quasars, as well as pulsars, radio stars, interstellar molecular masers, and other compact sources of radio emission. In addition to astronomical studies, the array will be of importance in geodetics, crustal dynamics, and space navigation.

VLBI observations made with existing radio telescopes have already given a glimpse into the heart of quasars and galaxies, but the nature of the central energy source still remains a mystery. With the VLBA it will be possible to see in detail the dynamics of the energy generation process. Of particular interest will be the apparent faster-than-light motions resulting from the explosive ejection of relativistic material from quasars and galactic nuclei (*16*) (see Fig. 6).

Even within our own galaxy, there are various compact radio stars of interplanetary dimensions that are unresolved by conventional radio telescopes but can be studied with the VLBA. One of the most important problems in galactic astronomy is understanding the life cycle of stars. Clouds of OH, H_2O, and SiO are often found in regions where stars are formed and in the atmospheres of very old stars. They are excited by the stellar radiation and act as interstellar masers. High-resolution radio pictures made with the VLBA will be used to probe the dynamics and magnetic fields in these regions on a scale of 10^{15} to 10^{16} cm and to give information on the birth and death of stars (see Fig. 7).

Hydroxyl radical masers contain magnetic fields of the order of a few milligauss that cause the spectral features to exhibit Zeeman splitting. Observations of this splitting reveal the three dimensional magnetic field vectors throughout these regions, which give some insight into the manner in which the magnetic field affects cloud collapse and star formation. The high resolution of the VLBA will also extend the range of direct distance measurements by trigonometric parallax. Observations of proper motions will be possible both throughout our galaxy and in other galaxies. This will open up an exciting range of astrometric solutions to the important problems of the structure and rotation of the galaxy.

One type of H_2O maser source contains clusters of hundreds of bright spots whose relative motions are nearly random. The distance to such sources can be determined by statistical parallax methods, that is, by comparison of dispersions of the radial velocity and angular motions. The distances to the maser sources in Orion and W51 (1,600 and 23,000 light years, respectively) have already been measured by this technique with an accuracy of about 20 percent (*19*). With the VLBA it will be possible to make similar measurements on a larger number of objects, including H_2O masers in nearby galaxies, thus extending this relatively direct distance measurement by a factor of about 100. This will have major implications for cosmology because knowledge of the correct scale of the universe will lead to a better understanding of its mass, energy content, age, and eventual evolution.

The VLBA will also be used for a broad range of problems in physics and geophysics as well as for astronomy and astrophysics (*20*). Because the spacing of the interferometer fringes depends on the separation of the antennas, precise analysis of the received signals makes it possible to measure the antenna separations with great accuracy. This measurement has a variety of applications to geodesy and crustal dynamics (plate tectonics). VLBI techniques have already been used to measure transcontinental distances to an accuracy of a few centimeters (*21*), and systematic measurements made over a period of time may well detect the small changes in separation among the various VLBA elements that are due to motions within the earth's crust. Tides in the solid earth amount to several tens of centimeters each day, and the ability to make systematic measurements of their effect will lead to a better understanding of the interior of the earth. In particular, measurements of this type may lead to the predictions of earthquakes and the detection of continental drift over time spans of several years.

Because the directions of the baselines connecting the individual elements can

also be determined from the celestial observations, the VLBA may also be used to locate the instantaneous position of the Earth's rotation axis and the wandering of the poles. Accurate determination of the rate of the earth's rotation (time) and a better evaluation of the rate of its slowing down will also be possible.

The VLBA can also be used to measure with great accuracy the relativistic bending of radio signals as they pass close to the sun. Classical optical measurements of stars near the limb of the sun made during times of solar eclipses provided one of the first experimental demonstrations of general relativity. But even now, it is difficult to measure the bending of starlight with an accuracy better than 10 percent. Radio measurements made with connected element interferometers have already given an order of magnitude improvement in accuracy, and the much greater resolution of the VLBA will lead to further improvements. Indeed, the sensitivity to relativistic effects will be so great that even position measurements made 90° away from the sun will need to be routinely corrected for relativistic bending.

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22. The VLBA has been selected by the National Academy of Science, Astronomy Survey Committee (Field Committee) as the next major ground-based facility for astronomy (*Report of the Astronomy Survey Committee* (National Academy Press, Washington, D.C., 1982)). Preliminary funding for detailed engineering and design was made available to the National Radio Astronomy Laboratory in 1984, and Congress approved a construction start in 1985. The VLBA will be constructed by the National Radio Astronomy Laboratory and will be operated as a national facility open to all qualified scientists. Allocation of observing time will be based solely on the scientific merit of the proposed observing program. Many individuals throughout the radio astronomy community have contributed to the design and development of the VLBA. We thank especially M. H. Cohen, M. S. Ewing, J. M. Moran, M. J. Reid, A. C. S. Readhead, J. D. Rummel, A. E. E. Rogers, G. W. Swenson, Jr., and R. C. Walker for many useful discussions and comments on the manuscript. The National Radio Astronomy Laboratory is operated by Associated Universities, Inc. under contract with NSF.

Science and Technology in India

J. S. Rao

India has, throughout history, had a fair share of discoveries in medicine, mathematics, astronomy, metallurgy, and other scientific fields. A great surgeon who lived more than 2000 years ago is said to have used 500 different instruments and accomplished miracles in plastic surgery. The zero was first used in Indian mathematics. The earliest mention and description of various planets and other phenomena in the sky are found in Vedic texts, where the sun, worshipped as the source of energy to our planet, was given the central position in our solar system. Great observatories were built, making possible the tabulation of lunar and solar calendars. On the outskirts of New Delhi is an iron pillar that has stood for more than 1500 years without rust or blemish.

India, once a rich and prosperous country, fell prey to incessant invasions, and its people, weighed down by the opulence of their rulers, were impeded in their quest for innovation. During the period of industrial revolution, when the Western countries flourished with discoveries of science, India was struggling to gain independeqce. Railways and textile mills were brought to India in 1850's, yet not a single locomotive or textile mill was built there until independence was won in late 1940's.

Independent India's first Prime Minister, Pundit Jawaharlal Nehru, realized the importance of science, particularly its end application to society. He once said (*1*): "What is planning if not the application of science to our problems?" Science and technology have received major emphasis in all 5-year plans in India during the last three decades. Despite the problems that exist in a developing democratic country of large population, there has been considerable progress. For example, (i) the Indian farmer, through a green revolution, made the country self-sufficient in food and even produced exports in small quantities; (ii) the average life-span of an Indian has more than doubled since India's independence; (iii) development of basic heavy industry has placed India today among the ten largest industrialized nations in the world; (iv) India has designed and built nuclear power plants; (v) space programs have been undertaken with emphasis on applications such as long distance telecommunications, community television, and remote sensing of Earth resources and meteorological parameters; (vi) a permanent manned station has been established in Antarctica for scientific studies; and (vii) in the last decade, India has nearly tripled its oil production.

The infrastructure for R&D has had to be totally developed by the government, and a scientific policy resolution was made as early as in 1958. A chain of 42 national laboratories was established under the Council of Scientific Industrial

J. S. Rao is the science counsellor at the Embassy of India, Washington, D.C. 20008.

LETTER 1067

SSC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

John Olson
14044 N 41st Place
Phoenix, Az 85032

6 October 1988

Dear Sirs,

Please accept the following enclosure as amplification and as evidence of a deep committment to the support for the SSC at the Maricopa Site. The petition was originally submitted at the October 3, 1988, hearing on the Draft EIS at Arizona State University in Tempe, Arizona, by John Olson.

1 Each landowner's signature has been given, on the enclosure, a number which has then been written in a circle in red ink on the highlighted acreage on the Maricopa County Tax Assessor's maps as well as the ownership maps from the DEIS Land Acquisition Plan.

2 The enclosure represents the support of landowners in the immediate area, with some of the landowners directly affected by the SSC itself. Owners of over 6000 acres have signed the petition. Should it be required, more owner's signatures could be secured as there is a very deep and widespread support for the SSC.

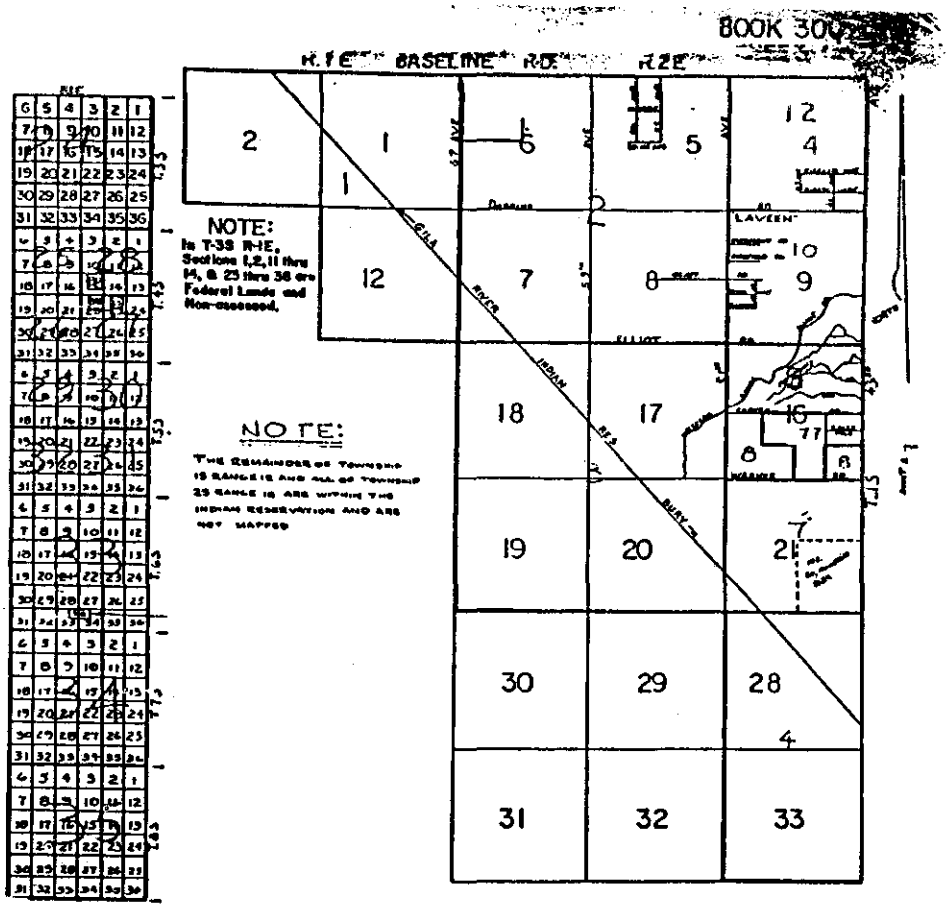
Sincerely,

John Olson

LANDOWNERS NEAR THE "MARICOPA" SITE - MARICOPA COUNTY

ARIZONANS FOR THE SUPERCONDUCTING SUPER COLLIDER HERE

We, the undersigned owners of land in Maricopa County, Arizona, near the "Maricopa" site, fully support the US Department of Energy Superconducting Super Collider Project in its attempt to locate the SSC at the best qualified site and believe that Arizona's "Maricopa" site is the best qualified location for the SSC. We believe the US DOE Draft Environmental Impact Statement clearly demonstrates that the "Maricopa" site is the IDEAL Location for the Superconducting Super Collider.

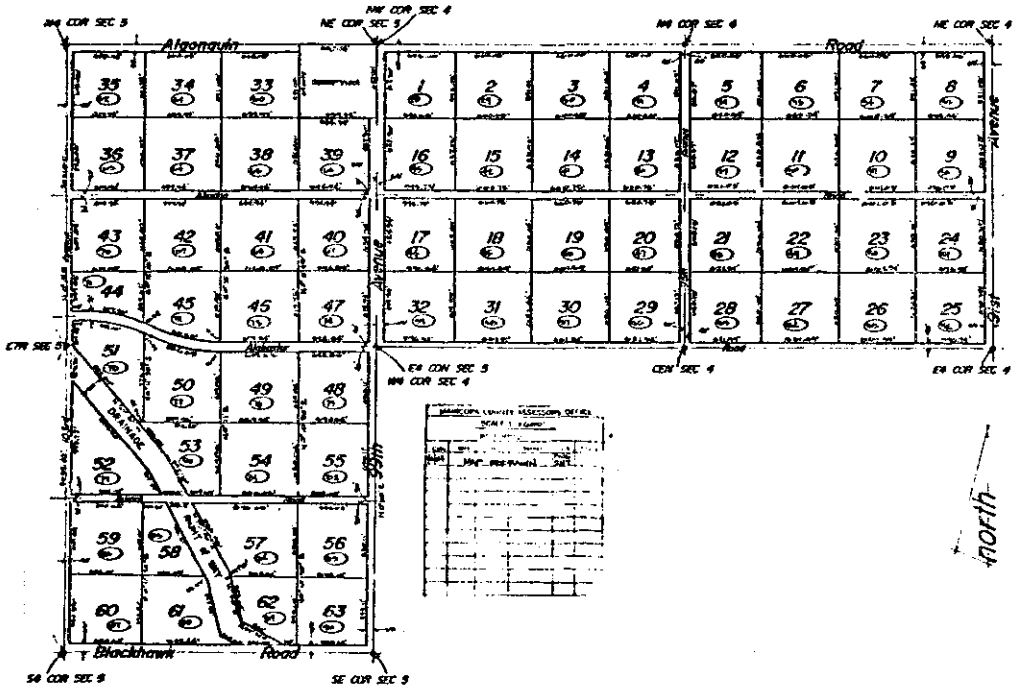

BOOK 300
R.1E BASELINE R.2E
NOTE:
In T-33 R-1E, Sections 1,2,11 thru 14, & 25 thru 36 are Federal Lands and Non-assessed.
NOTE:
THE REMAINDER OF TOWNSHIP 19 RANGE 1E AND ALL OF TOWNSHIP 25 RANGE 1E ARE WITHIN THE INDIAN RESERVATION AND ARE NOT MAPPED
LAVEEN
ELLIOT
RIVER
INDIAN
BUSY

LETTER 1067 (CONTINUED)

N2 SEC 4 and E2 SEC 5 · 4S 1E

RAINBOW AGRICULTURAL PROPERTIES· LOTS 1-63 (MCR 98-02)

BOOK 300
MAP 25
SHEET 2 of 2



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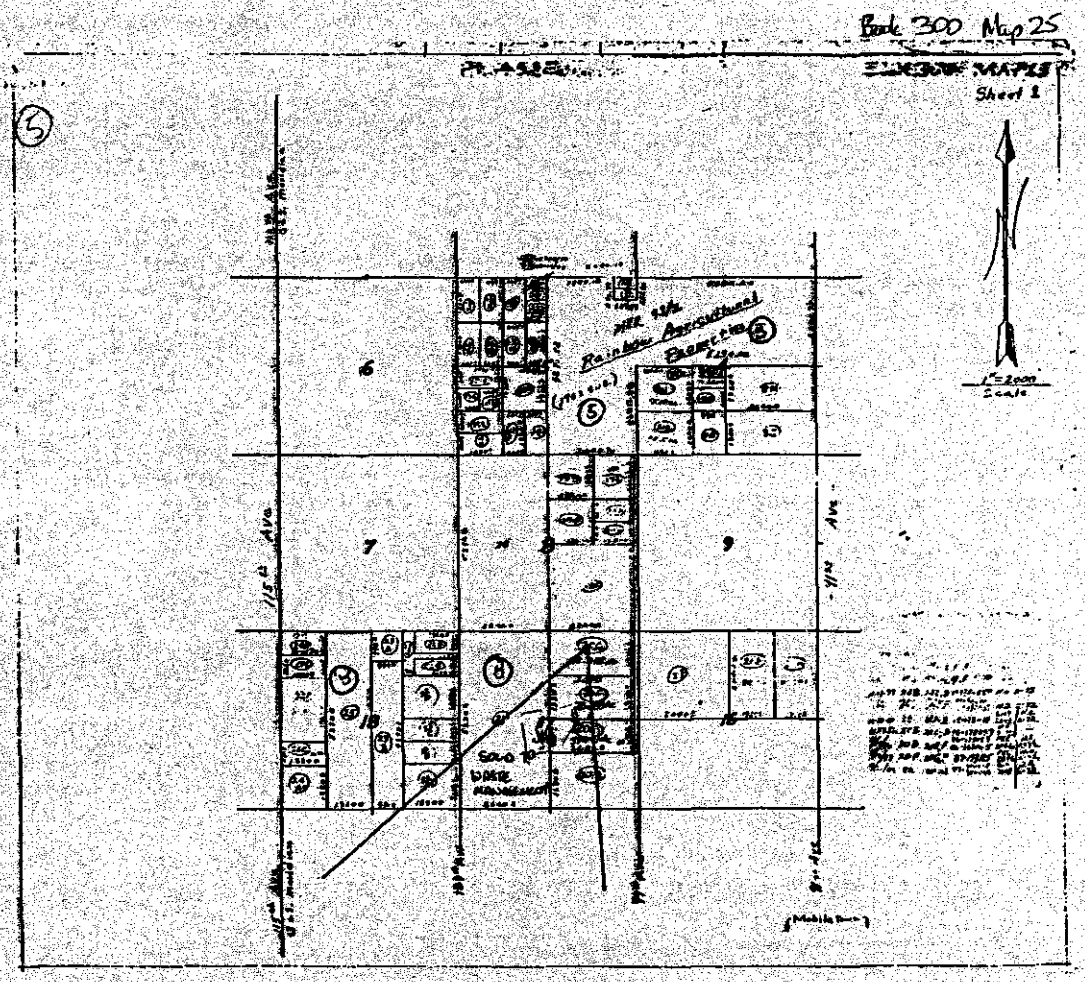

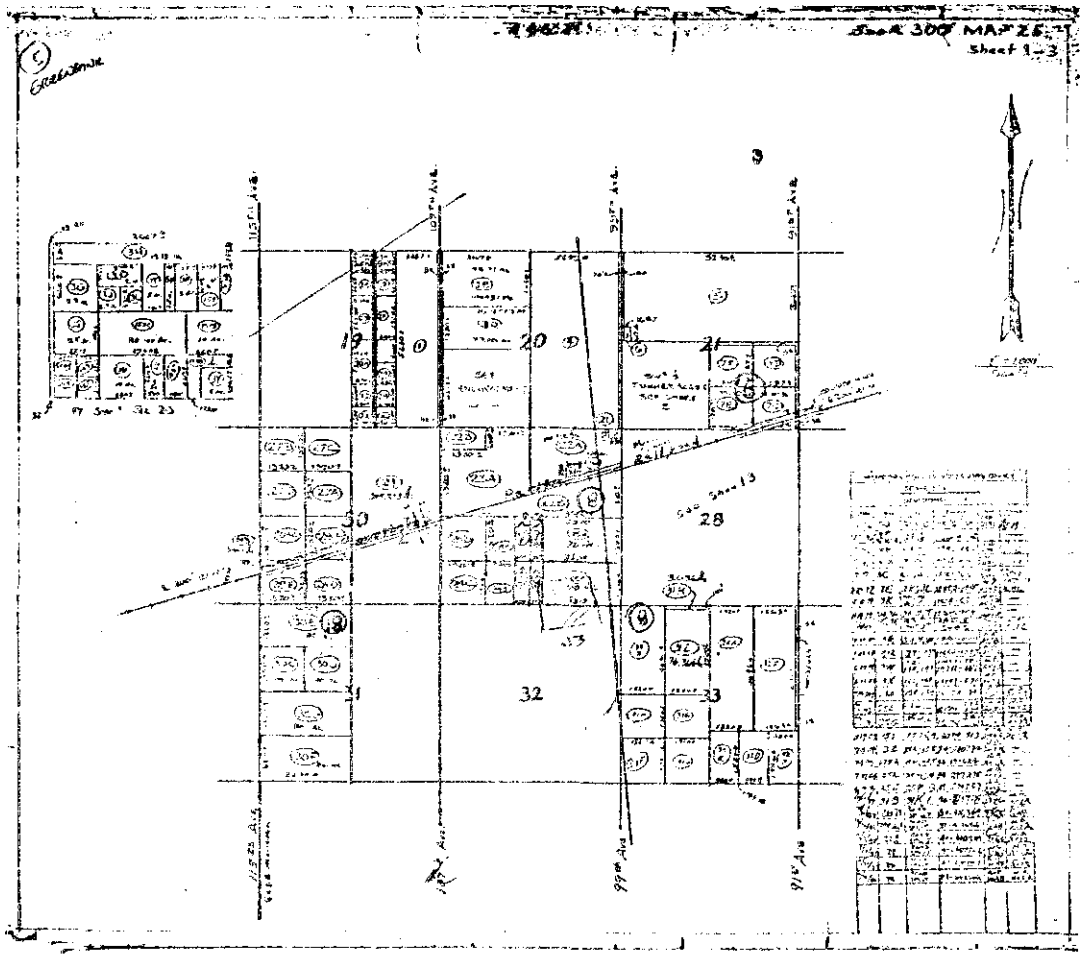
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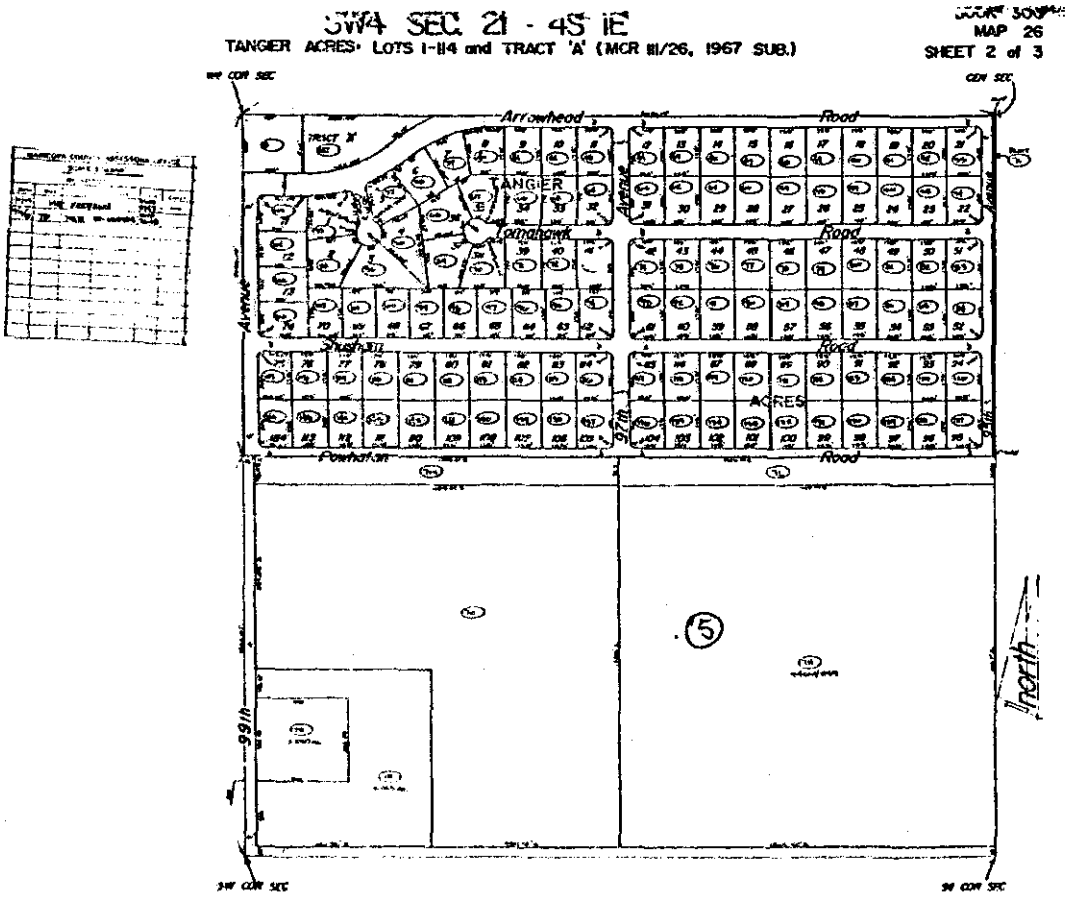

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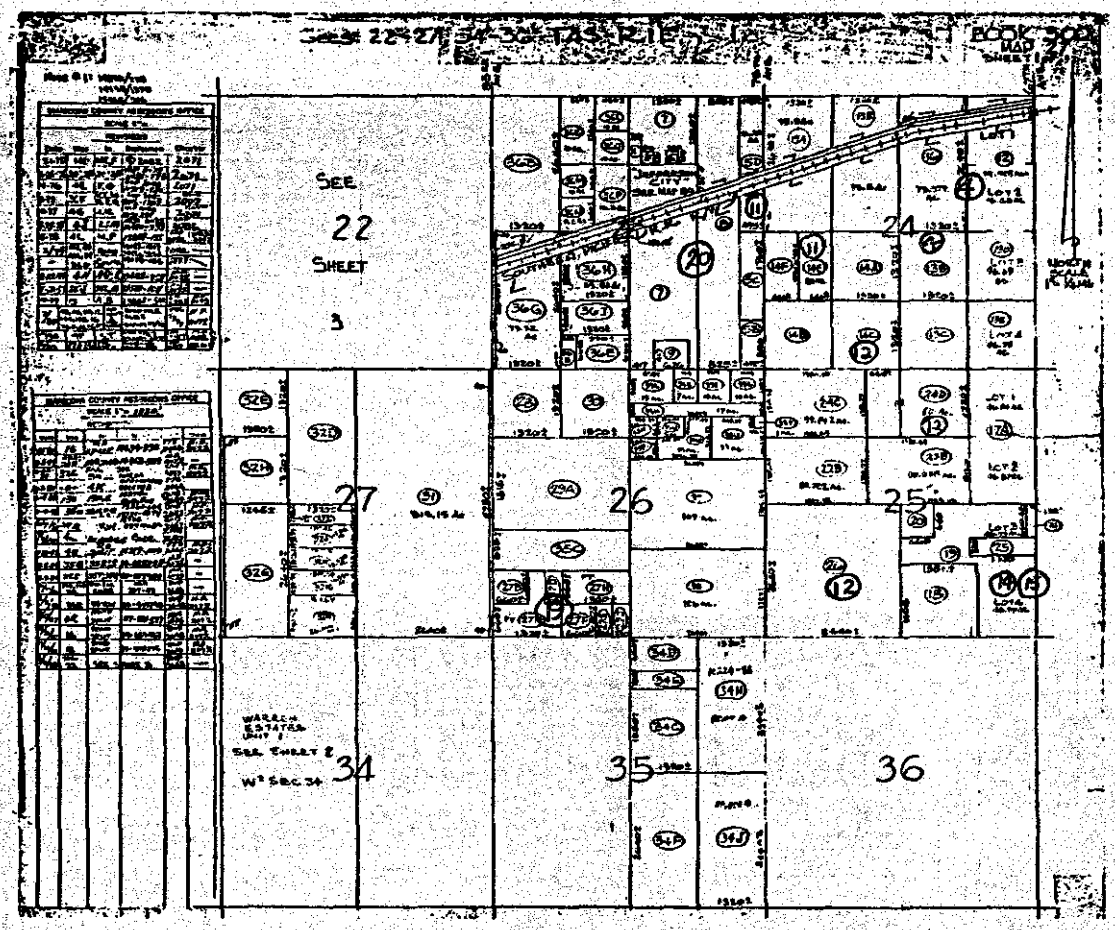

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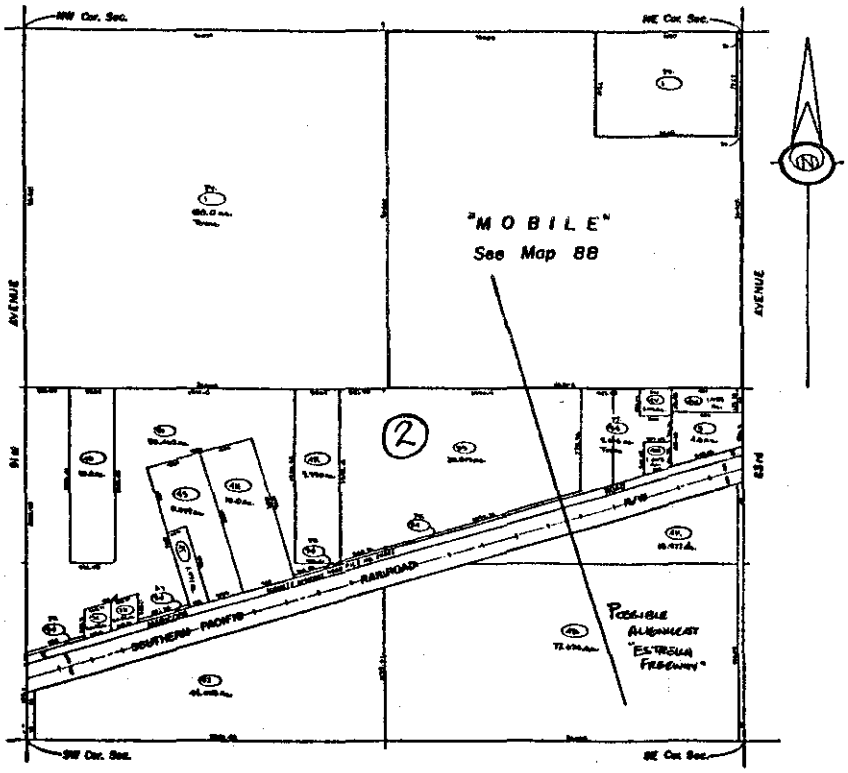
T1S R2E-T1S-R1E

Book 300
Map 27
Sheet 3



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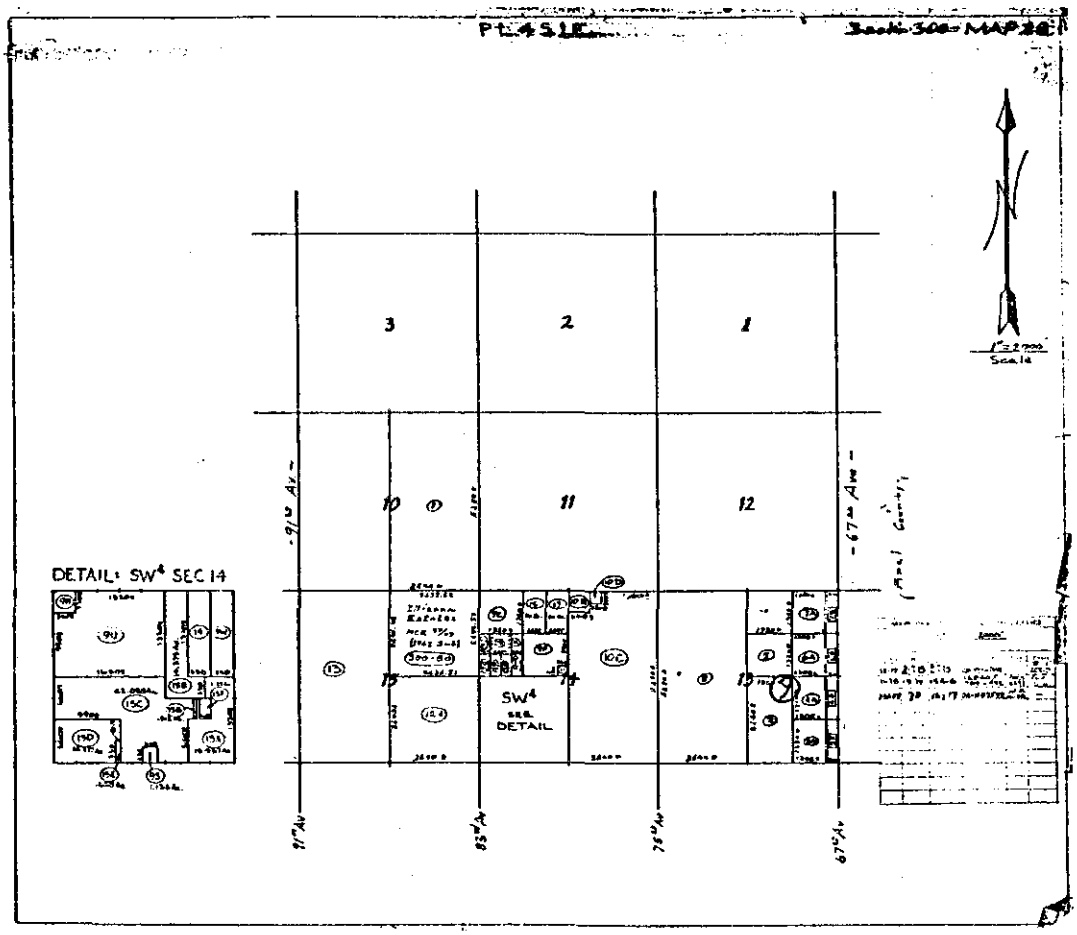

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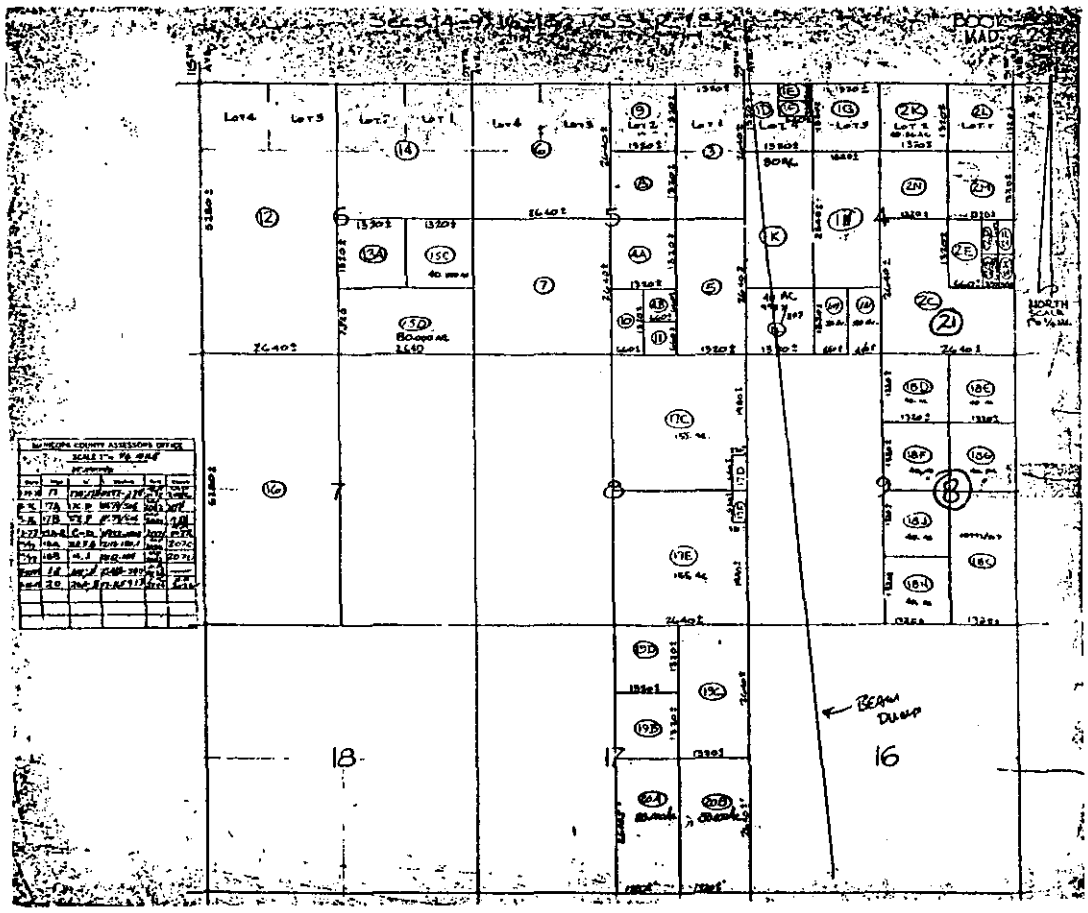

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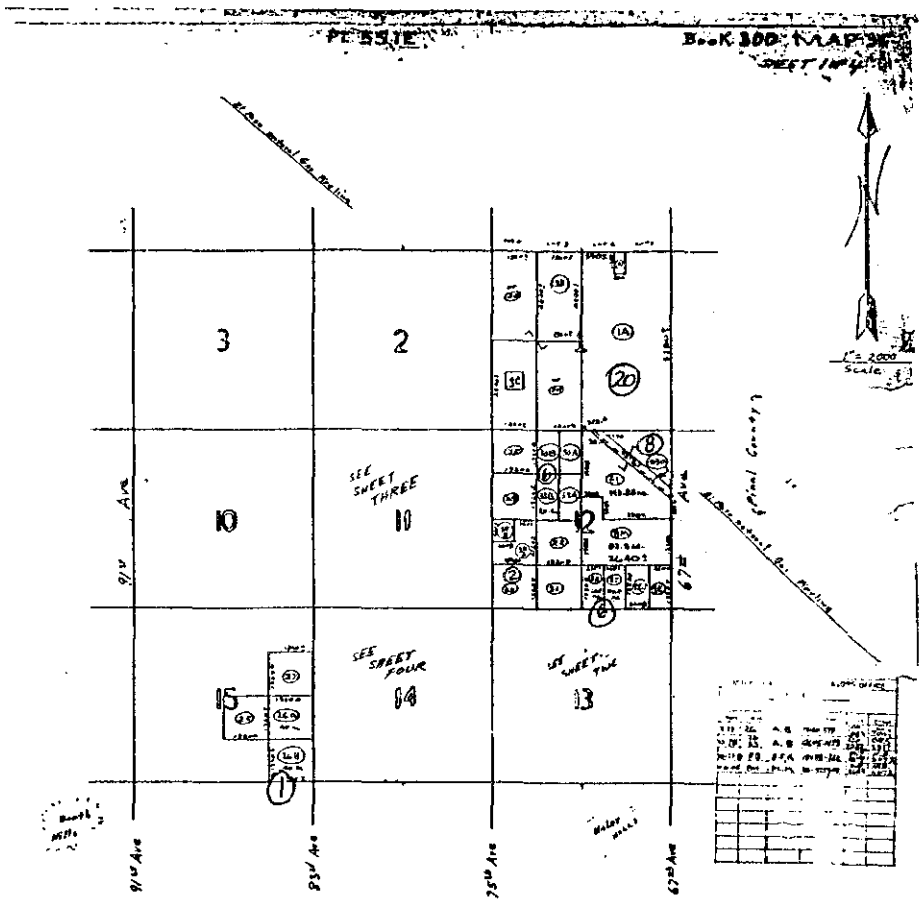

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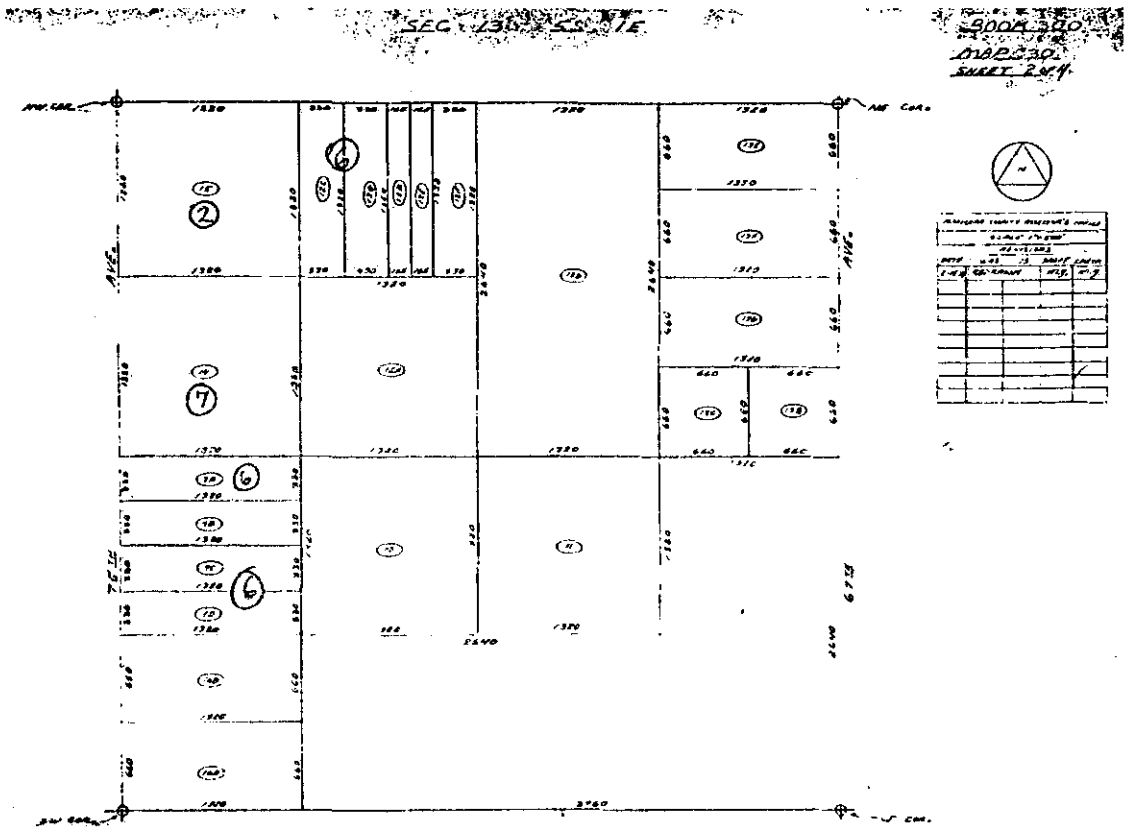

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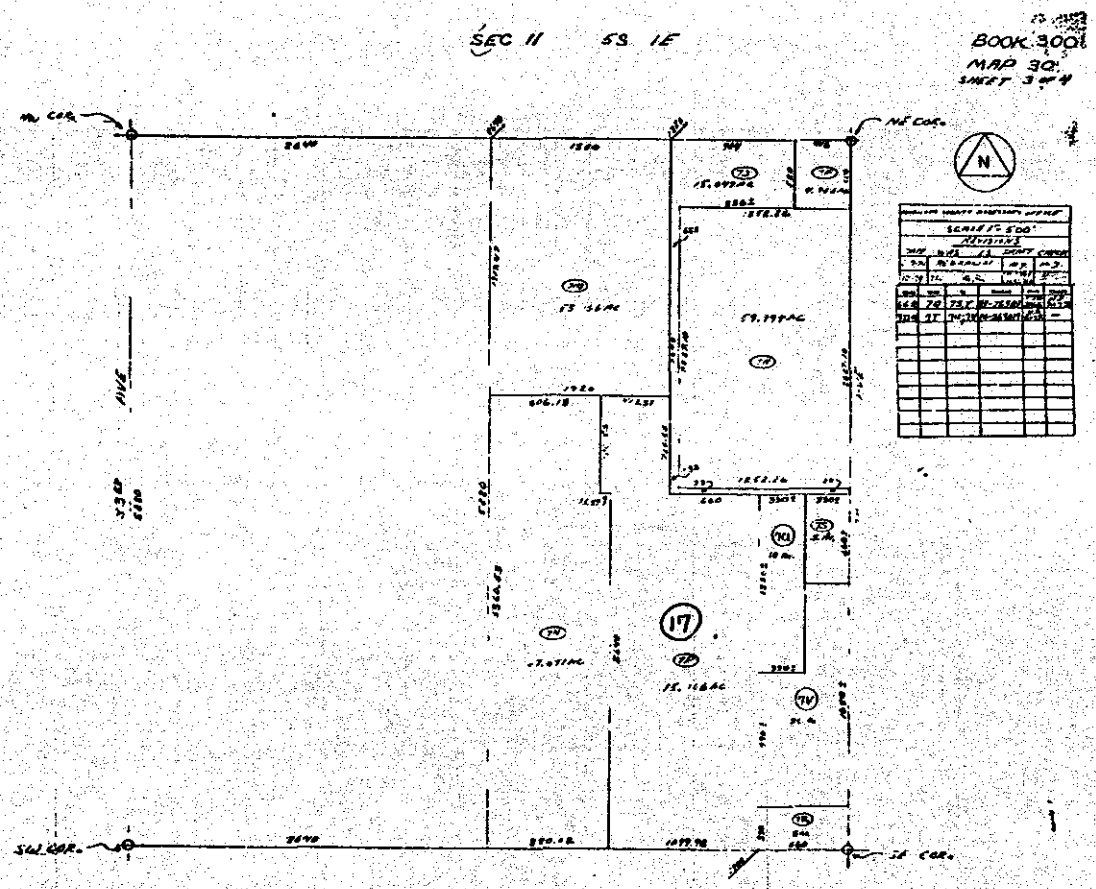

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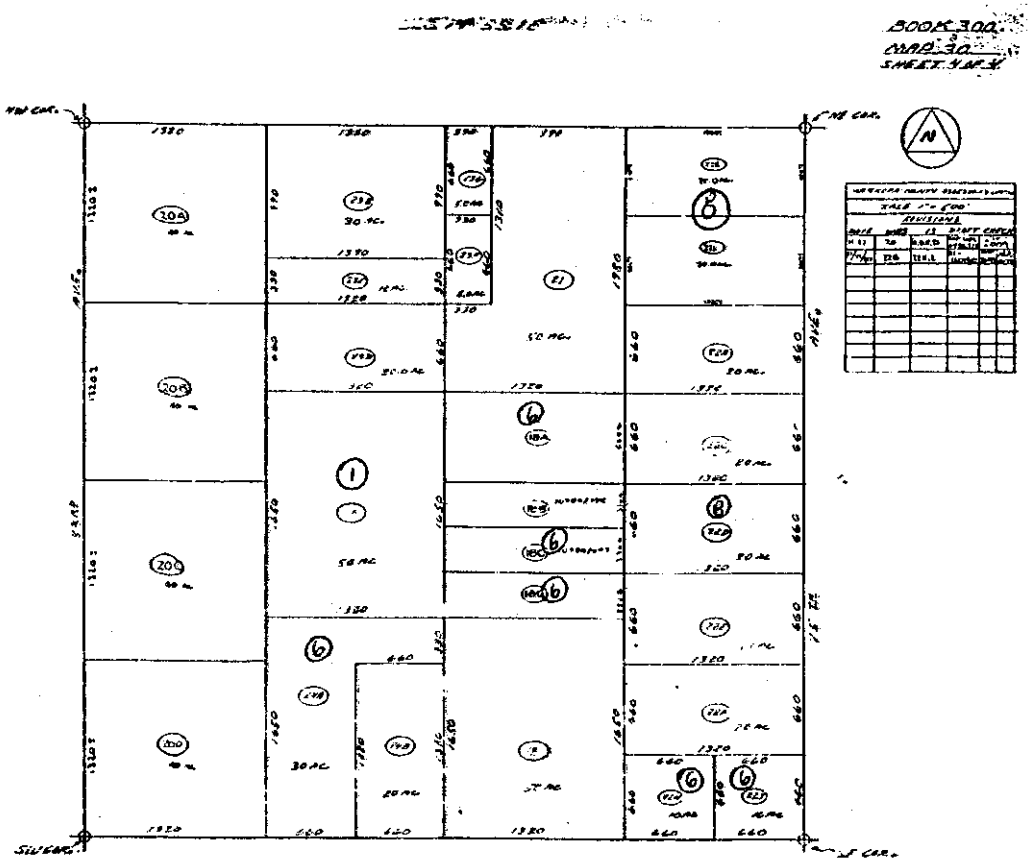

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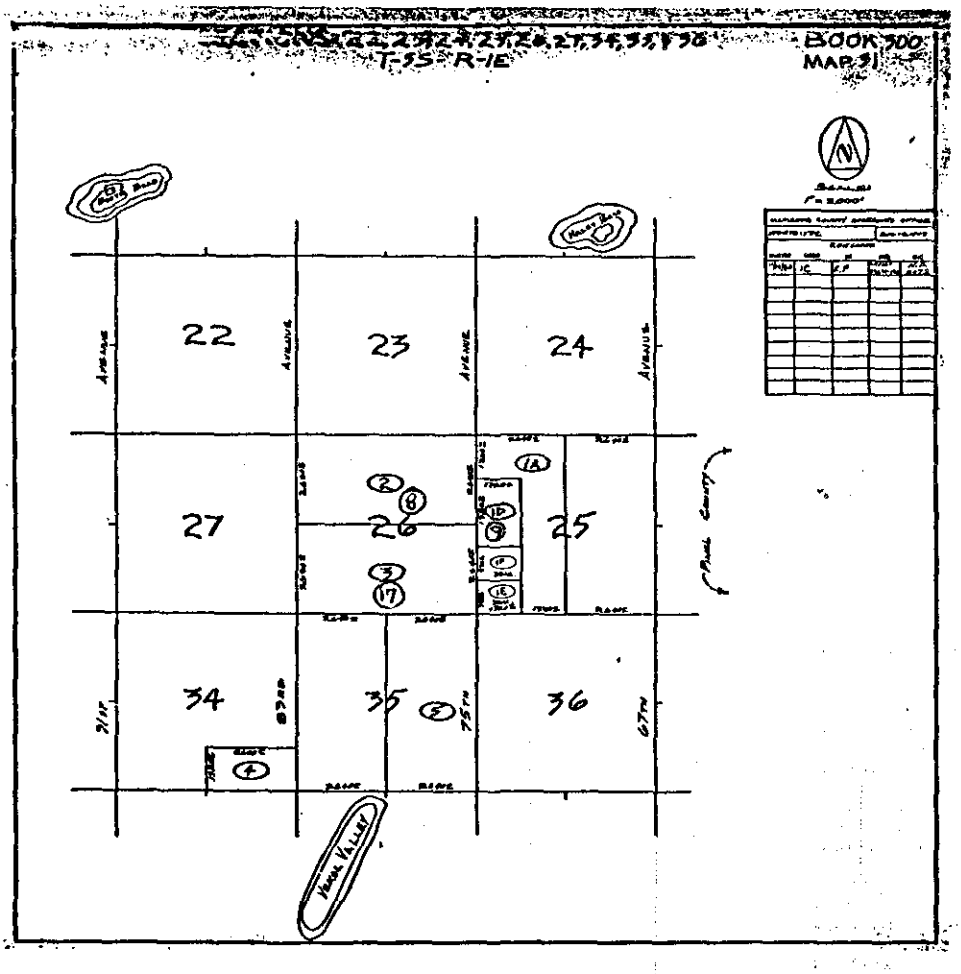

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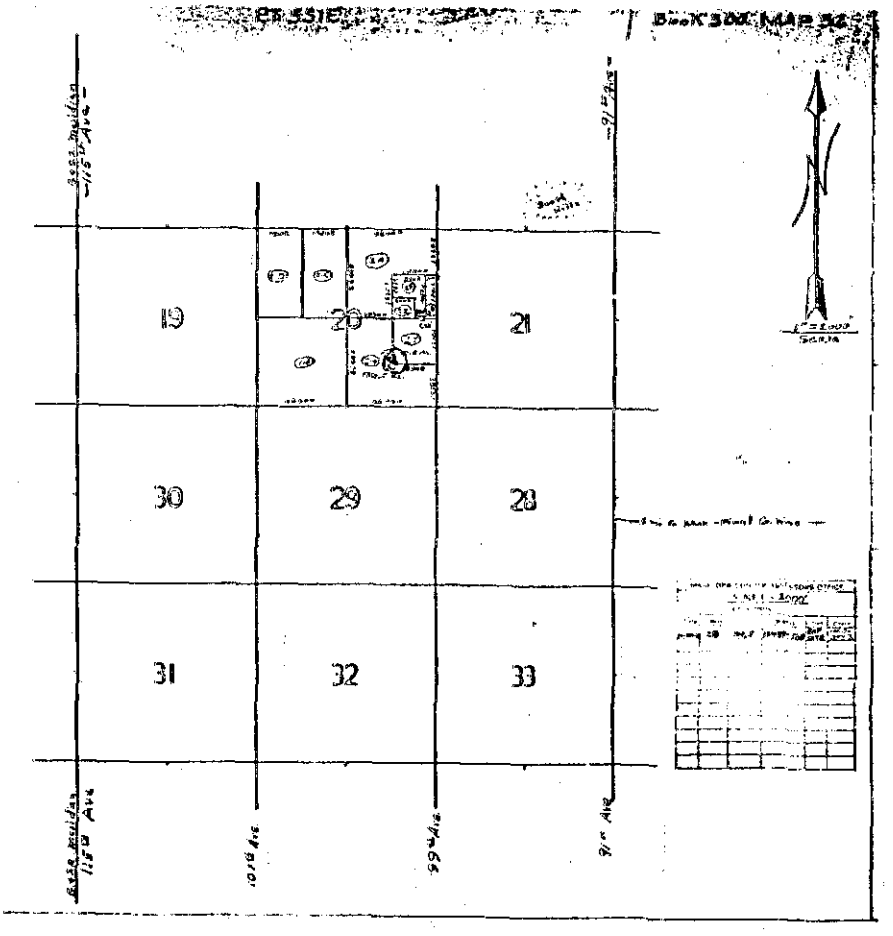

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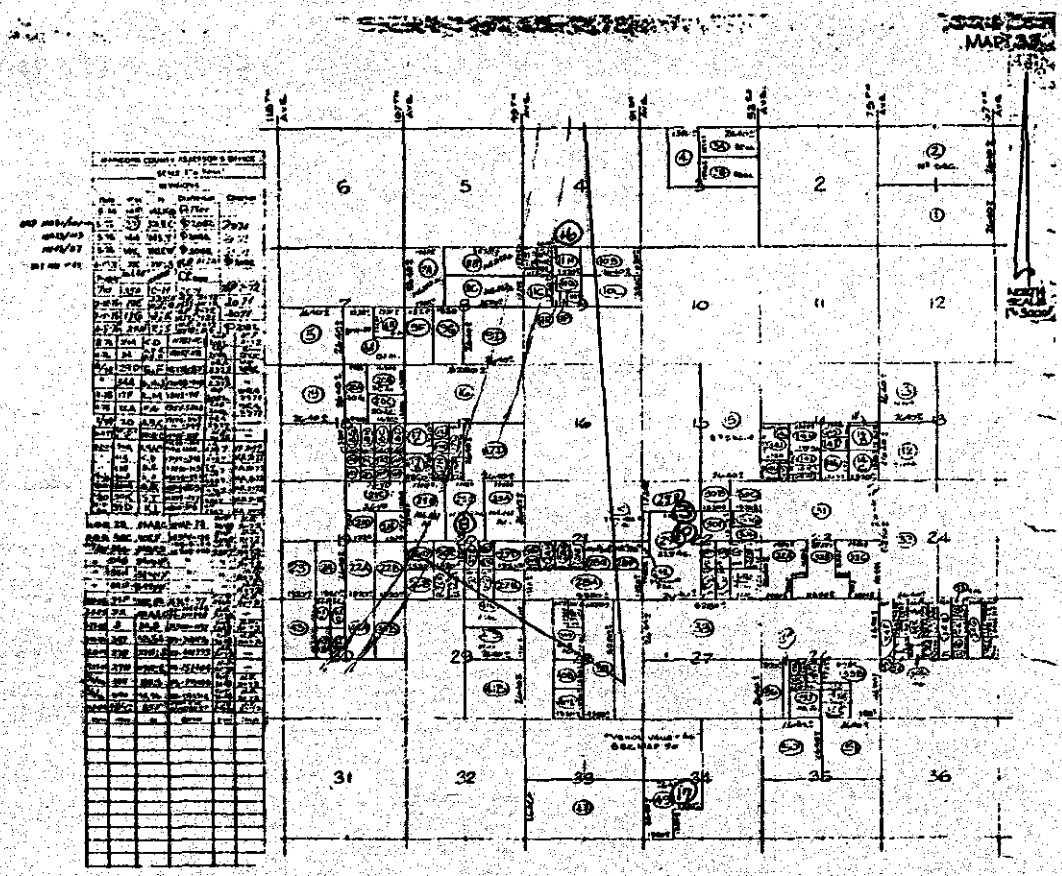

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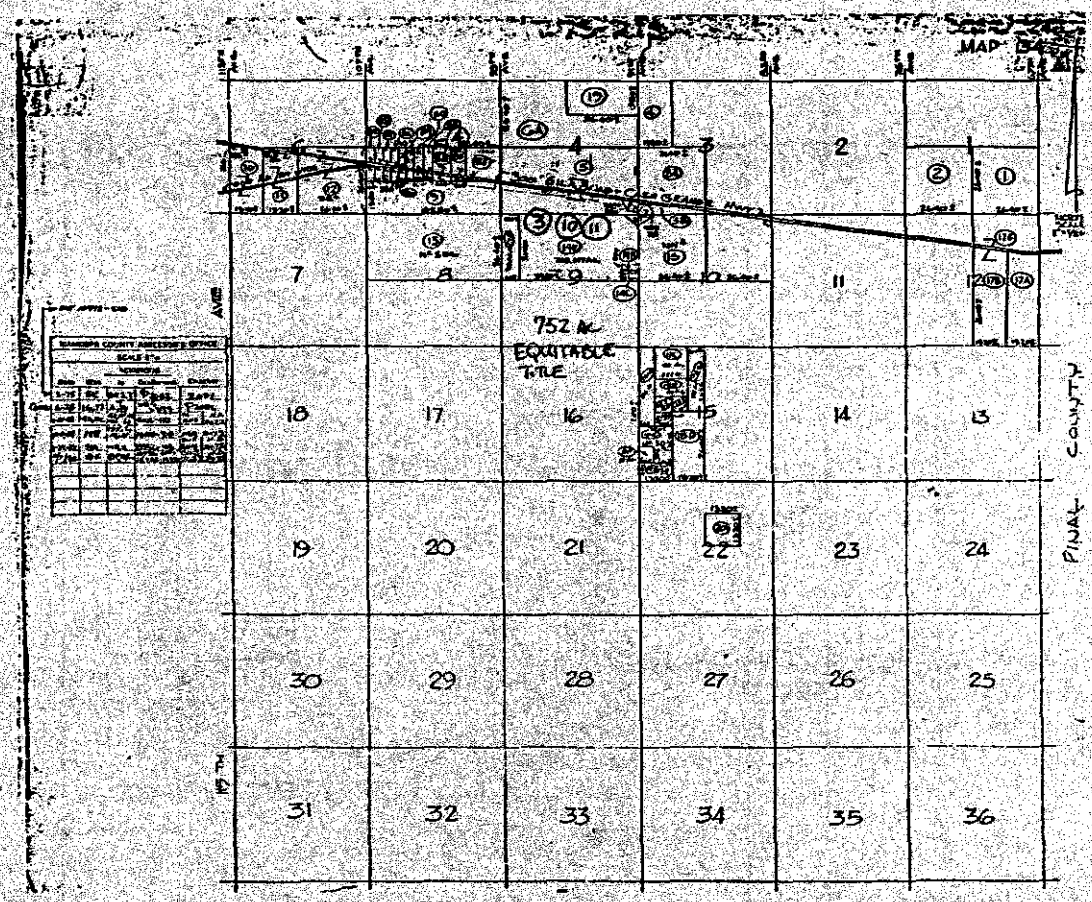
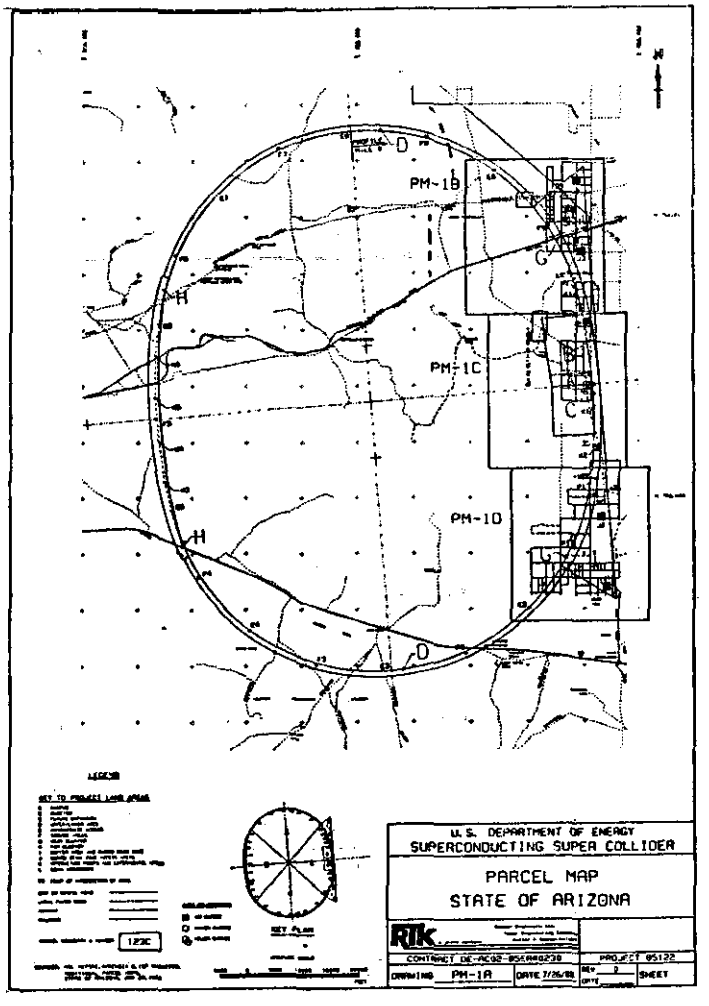


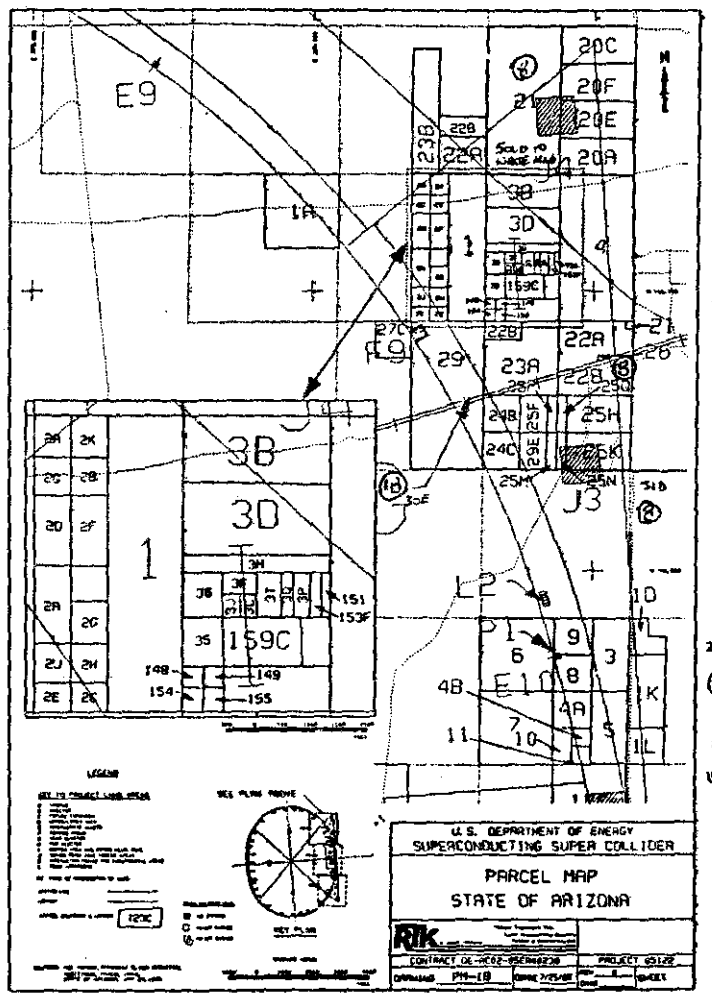
LETTER 1067 (CONTINUED)

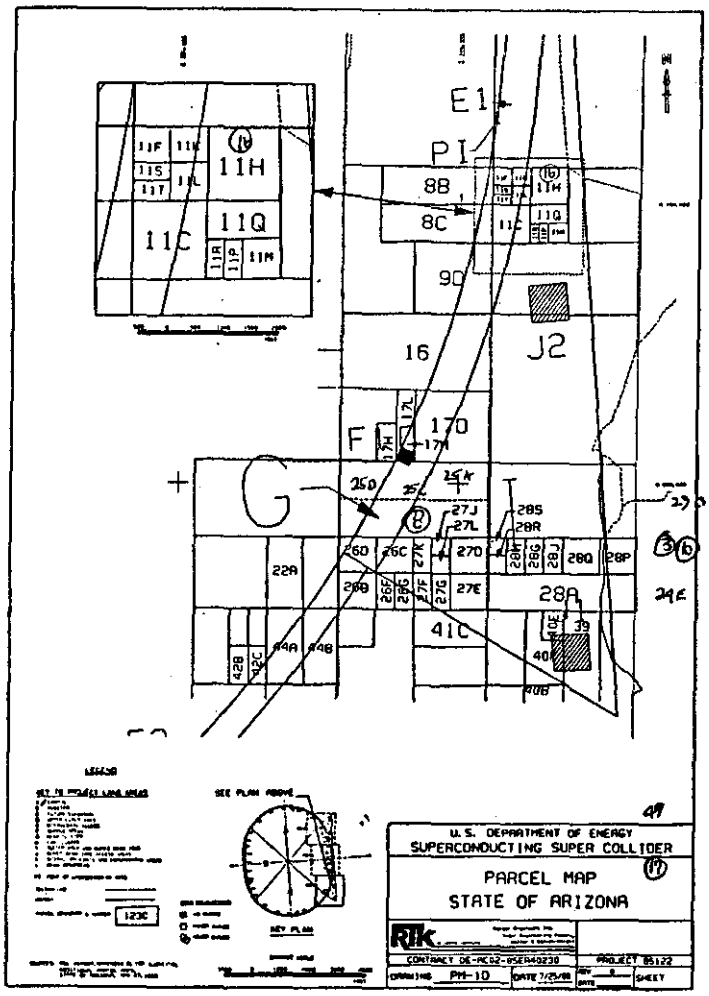
Land Acquisition Plans
Arizona Attachment A-1A



DEIS Volume IV Appendix 4

LETTER 1067 (CONTINUED)




E1
P1
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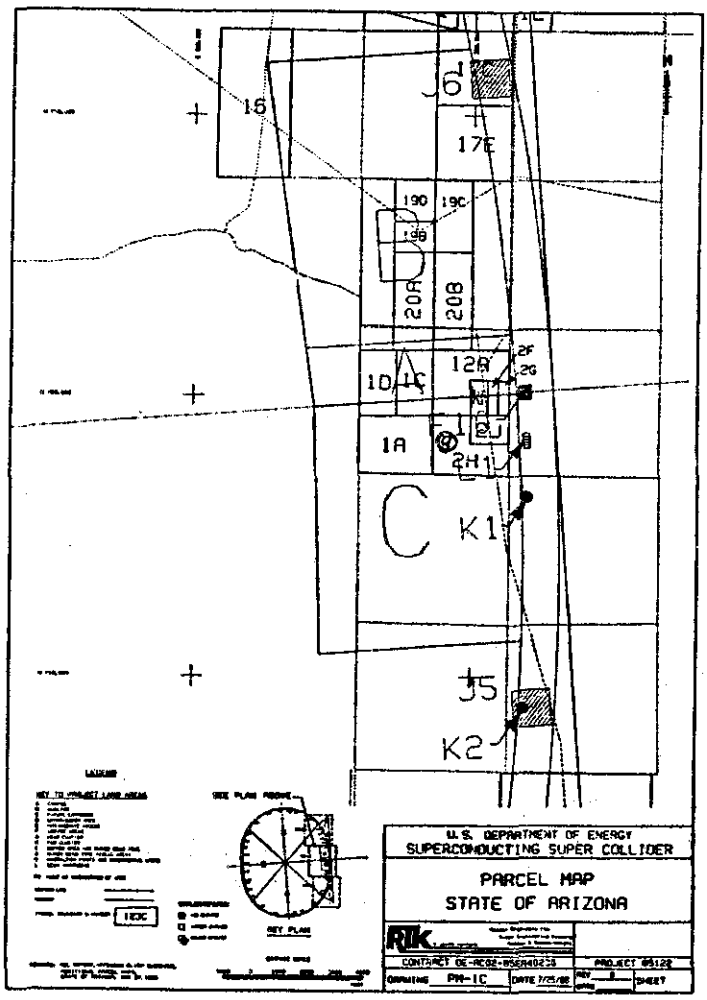
28A
41C
11H
11Q
11C
U.S. DEPARTMENT OF ENERGY
SUPERCONDUCTING SUPER COLLIDER
PARCEL MAP
STATE OF ARIZONA
RIK
CONTRACT DE-AC02-05ER40230
PROJECT 85122
PM-10

Land Acquisition Plans
Arizona Attachment A-1C



DEIS Volume IV Appendix 4

LETTER 1068

Commissioner — 1st District
RICHARD D. NEB
351 Fourth Avenue
Wiggins, Colorado 80654
Telephone: 483-7812

Commissioner — 2nd District
ROBERT L. EISENACH
14750 County Road 16
Fort Morgan, Colorado 80701
Telephone: 867-7034

Commissioner — 3rd District
BRUCE B. BASS
30621 County Road N
Brush, Colorado 80723
Telephone: 842-2903

County Clerk
FAYA VOHDY
P.O. Box 699
Fort Morgan, Colorado
Telephone: 867-5616

County Attorney
E. ORD WELLS
P.O. Box 918
Fort Morgan, Colorado
Telephone: 867-2447

Board of County Commissioners

MORGAN COUNTY, COLORADO
P.O. Box 596 Telephone: 867-8202
Fort Morgan, Colorado 80701

October 11, 1988

Mr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
Washington, D.C. 20545

Dear Mr. Hess:

Enclosed is our response to the Draft Environmental Impact Statement on the Superconducting Super Collider, Morgan County, Colorado.

The response indicates several detailed errors or misconceptions in the Draft Environmental Impact Statement.

1 The local residents welcomed the opportunity to provide a wide range of testimony at the public hearings on EIS in Fort Morgan on September 29, 1988.

Historically, eastern Colorado has been known as the "Gateway to the Rockies." Now we look forward to becoming the gateway to the greatest scientific project ever built in this country. We stand in readiness to accept this honor coupled with a feeling of great joy, anticipation, spirit, and unity.

Sincerely,
BOARD OF COUNTY COMMISSIONERS
MORGAN COUNTY, COLORADO

Richard D. Neb

Richard D. Neb, Chairman

RDN/klk

Response to:
DRAFT ENVIRONMENTAL IMPACT STATEMENT
Superconducting Super Collider
Morgan County
Board of County Commissioners

October 3, 1988

Fort Morgan, Colorado

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Response to:
DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
SUPERCONDUCTING SUPER COLLIDER
by
Morgan County Board of County Commissioners

Directed to:
Mr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
Washington, D.C. 20545

Introduction

The Morgan County Board of County Commissioners has compiled this response summary to the Draft Environmental Impact Statement (DEIS) for the Superconducting Super Collider. Letters from various committees in Morgan County have drafted responses and sent them individually to the Department of Energy. These and other points are summarized in this document and the individual committee letters are attached as an appendix. The purpose of this reponse is to elaborate, correct and clarify various statements in the DEIS Volumes I and III and Appendices 5a, 13 and 14 that relate to growth management, social and economic impacts. 2

Growth Management

There is disagreement with the statement that Morgan County and the communities of Brush and Fort Morgan would experience population impacts leading to boom town conditions. The term "boom town" implies negative growth impacts that are not managed or controlled. In the past, Morgan County has been able to handle a large influx of population growth. The County met the needs of a major oil production expansion in the early 50's and again with the construction of Pawnee I Power Plant in 1978 and 1979. We are certain we can meet the needs now for the SSC and manage any problems that arise during permitting, construction and operations. 3

1. Administration: Administrative impact to the County will be mitigated by projecting budget increases to accommodate impacts. Morgan County's population has been at a steady state in the past few years yet our assessed value has risen from $201,961,400 in 1985 to $239,414,640 in 1988. Morgan County historically has not taken its legal, allowable statutory increase in budget through mill levy adjustments. Our budget has actually increased since 1985 and we have the capacity to further increase our budget allowed by state law. From a personnel standpoint, many of our employees were here when the Pawnee I Plant was constructed and we have access to state and private resource personnel who have experience dealing with development related social and economic 4

impacts related to growth on the front range, major expansions of the tourist industry towns in the cental mountains and the oil shale expansion activities on the western slope of Colorado.

2. Planning and Permitting. Morgan County's Comprehensive Plan was completed and approved in April 1988 which provides an orderly, planned growth for the future of Morgan County, while preserving its rural life. We see the SSC project as being compatible to our plan. We have signed Intergovernmental Agreements with Adams and Washington counties to jointly permit and rezone the SSC site so that the process is efficient and mutually beneficial for the DOE and the counties affected by the land use changes. We also will manage any secondary and induced growth surrounding the SSC through a joint planning process between the three counties, the DOE and the State of Colorado acting in partnership so that this growth is phased and managed to promote quality development. Our comprehensive plan directs all initial secondary and induced growth opportunities to the existing municipalities and unincorporated areas near them in the county so that the SSC can be constructed without complicating effects of growth near the site. Any new growth near the site allowed after construction is complete will be phased and coordinated with DOE and the State of Colorado. 5

Education

In terms of education Morgan County has four (4) excellent school districts and several private schools. Our schools can handle the projected increase of over 700 students easily in their existing facilities and we totally concur with the statement in Volume 4, Appendix 5A that: "These communities are regional centers and could serve a much larger population if they experienced rapid growth with the development of the SSC. Public education levels of service provided by the four school districts within the county are better than those [national] averages." Morgan County is also fortunate to be the home of Morgan Community College. This post-secondary educational facility offers college level courses as well as skilled trade classes and has committed to expanding its program to meet the education and training needs associated with employment at the SSC. 6

Housing

In regards to housing, Morgan County is fortunate because our county already has an operating modular home plant, and with our local builders, we estimate that they could produce over five (5) housing units per day. For the early phase of the SSC, we have an excess of platted lots for single and multifamily housing as well as mobile home lots. We also have available numerous rural acreages approximately 40 acres or less so that people can enjoy our rural lifestyle. We estimate that we have enough houses, plus the ability to produce housing, to accommodate the SSC families plus having enough housing available for the projected 1000 people to build Pawnee II at the very same time during the first three to four years of construction of these two projects. This provides plenty of lead time to deal with initial impacts and plan for expansion as needed during the remaining years of construction and operations. The construction of the Pawnee II 7

Plant is a project of considerably less scope than Pawnee I because there is very little site development involved and the construction work force will be about half. Initial housing needs from the SSC and Pawnee II together will be close to the housing needs generated by Pawnee I which we have experience dealing with.

Public Safety

8 Public safety has been a stated concern in several paragraphs. Since 1985, Morgan County has spent 5.7 million dollars of capitol funds for public safety with construction of a new jail, court system and a new sate-of-the-art communication center. Morgan County is unique in that the County does all of the dispatching for all the law enforcement agencies in the county, fire departments and all other emergency services in the county. The county communications center has an annual budget of approximately $400,000. We could, at this very moment, expand our communications service, public safety and emergency services to the SSC site through an Intergovernment Agreement with Adams County and Washington County.

Circulation and Transportation

9 Access to the SSC site in the initial stages of the SSC development and prior to major road construciton is available in Morgan, Adams and Washington counties. In Morgan county, Roads 19 and F provide direct access to the SSC campus area. Through the Colorado Bridge Fund, Morgan County has plans to replace a 1.2 million dollar bridge across the Bijou Creek on County Road F which leads to the SSC site. Also, the State of Colorado has committed to build County Road 20 as well as upgrading other county roads during the early stage of construction for future use at the site.

10 In terms of public transportation, Morgan County is a part of the Northeast Colorado Tansportation Authority which supports a public bus system and can transport anyone who wants to use it. This system is not targeted for only the elderly and persons with disabilities.

Aggregate Resources

11 There was a concern expressed in the DEIS that Colorado won't have enough aggregate (sand, gravel, cement) to build various large projects in the Denver metropolitan area and the SSC, too. This is inaccurate and officials of the State of Colorado will comment on this in great detail. In terms of Morgan County, there are large reserves of sand and gravel available in the South Platte River basin in the county for many applications during the construction of the SSC and its support facilities. The number of current sand and gravel permits in the county does not reflect the reserves because operators do not permit without a market because of Colorado property tax laws. These laws require that once a gravel pit is permitted, the owner is immediately taxed on the reserve in that permit.

Mitigation Plan

12 Morgan County is and will be in full support of the mitigation plans the State of Colorado devises for the SSC. We have experience dealing with rapid influxes of people in the past and can use this experience to our advantage in dealing with impacts from the SSC. For us this project is welcomed and will be a challenge that we can meet successfully.

225-775 88 - 6 (BOOK 6)

APPENDIX

Foxfire

Community Planning & Development

September 12, 1988

MEMORANDUM

TO: Mr. Steve Norris, Director
Colorado Joint Review Process
Department of Natural Resources
1313 Sherman Street, Room 718
Denver, Colorado 80203

FROM: Fred Fox, Planning Consultant
Morgan County, Colorado

SUBJECT: Comments on SSC-DEIS Document

A. Introduction

This is a response to your memo of August 22, 1988 regarding *comments on* the SSC-DEIS. I have reviewed Vols. I & II and numerous appendicies paying particular attention to land use, transportation and socio-economic impacts. In general, the report tends to emphasize the distance of the SSC from the metro Denver area, thereby loading heavy impacts on Fort Morgan and
13 Brush. Since these two communities and Morgan County have small, rural oriented populations, they tend to be portrayed in a negative light when it comes to accomodating *impacts. Terms like* "boom-town" have a negative connotation because it implies disorganization, lack of ability to handle growth and the *potential for a "bust"* cycle. This notion is repeated over and over in the report in the land use and socio-economic sections. In fairness, the report states that Morgan County and its various municipalities could recover from the boom over time and the whole process would be positive. This qualification is overshadowed by the initial negative impressions of the report.

I can't figure out where the growth *splits are coming from* other than possibly from the Pawnee experience. Even then, over 60% of the construction workers commuted from Denver. As for the local contractors ability to accomodate new growth, the reality will be that it won't all fall on their shoulders. Developers from the metro Denver area will take up the lion's share of the new construction market in Morgan County. It is
14 hard to counteract the DEIS's assumptions about the growth splits quantitatively because we have never undertaken a baseline study on growth induced by the SSC. This DEIS assumes much more growth going to Morgan County than is realistic. In *my view, the metro* area and Adams County will get more than 50% of the growth impacts. With the growth of the metro area tending toward the northeast and east, resulting from the development of the new

Market Center — Suite 208, 1624 Market Street, Denver, CO 80202 (303) 893-9144

Denver airport, the distance between the SSC campus and urban amenities is shortened considerably over time. The DEIS does not take this into account.

Volumes I and III over-simplify the data in the appendicies in some key areas for Colorado. What appears negative to
15 Colorado in these volumes is actually much more accurately and positively stated in the appendicies. Somehow, this problem needs to be addressed.

B. Problem Areas - Specific Sections

1. Volumes I & III

16 a. Table 3-7, p. 3-52

Bald eagle as result of road; table not labeled right; down-play black-footed ferret - this animal is associated with prairie dogs along road - no sightings in Colorado

b. P. 3-65, Sec. 3.7.1 Regional Population Growth

Why is Colorado singled out as having an impact on local housing markets? This will be true at almost all sites.
17 The DEIS assigns too much growth to Fort Morgan/Brush area, then implies that the county and the communities will have trouble handling it. This is not true, i.e. use Pawnee Plant construction as an example.

c. P. 3-65, Sec. 3.7.2 Construction materials:

Aggregate is available and the Resource Assessment Study said so. This study has been used to substantiate that
18 Colorado will have a problem doing all of the projected projects. This is not true and it implies that we can't deliver. Besides, implementation schedules of all the projects are changing.

P. 5.1.1-5: These conclusions are unfounded and inaccurate
19 in terms of the aggregate sources available.

d. P. 3-69, Sec. 3.7.10 Land Use:

20 The greatest disturbance to existing land use will be in Illinois which is not mentioned in this section. Once again, Colorado is singled out.

e. P.3-69, Sec. 3.7.11 Prime Farm Lands:

Not all of the acreage listed in this section are prime
21 farmlands. Some of this is dryland farms with low yields per acre per year compared to farms on midwest soils with good rainfall. A clear distinction between prime and generally productive farmlands needs to be clarified here.

f. P. 4-75, Sec. 4.8.6 Prime Farmland Inventories at the Proposed SSC Sites:

22 Land that could be productive if irrigated implies that only water is needed. There are economic and hydrologic *reasons why they are not irrigated and,* therefore, should not be classified as "prime" when they are actually only "potentially prime". P. 4-76: Their estimates of prime farmlands is too large and not well substantiated.

g. P. 4-89, Sec. 4.9.2.1 Transportation:

23 C. Air - No mention of Fort Morgan Airport and its capabilities.

h. P.5.1.2-6, Sec. 5.1.2.2 Floodplain Impacts:

24 FEMA Flood Hazard Boundary Maps are available for Morgan County and Adams County, but not Washington County for the SSC site drainages. It is true that the drainages are "of low potential for flood hazards and flooding."

i. P. 5.1.5-10, Sec. 5.1.5.2 Threatened and Endangered Species:

25 B. Colorado - Mentions of whooping crane must always be couched in indirect terms, from what I understand. They migrate north and south through Nebraska and stop on the South Platte there. Only the hydrology of the river effects the whooping crane, not the SSC.

j. P. 5.1.7-4, Sec. 5.1.7.1-C Evolution of Development
26 Implications - Regional Impact:

This section omits any discussion of Colorado.

k. P. 5.1.8-28, Table 5.1.8-9:

27 The apparent contradiction between a LOS of "C" and a "yes" notation related to "disruption of traffic patterns" for Colorado in this table needs to be addressed by the Colorado Highway Department. Why not a "no"? Illinois got an LOS of "D" and a "no". The same problem occurs in Table 5.1.8-10.

l. P. 5.1.10-2, Table 5.1.10-1 :

28 There is nothing in the Colorado column. This implies no information supplied which is not true. The word "none" *should be used in this column.*

m. P. 5.2-4, Sec. 5.2.7 Wetlands:

29 Is there a breeding pair of whooping cranes at Barr Lake?

LETTER 1068 (CONTINUED)

ELIZABETH E. GILBERT
CITY CLERK

RONALD V. EDWARDS
MAYOR

GLENN CALVERT
CITY SUPERINTENDENT

IMPACT STATEMENT RESPONSE

CITY OF FORT MORGAN

SUPER CONDUCTING SUPER COLLIDER

RESPONSE TO THE ENVIRONMENTAL IMPACT STATEMENT

Ronald V. Edwards
Mayor, City of Fort Morgan

September 29, 1988

COMMENTS: E.I.S. VOLUME 4 - 5

E.I.S. 4.2, 5.1, 2.3

30 WATER QUALITY. Fort Morgan has an ample supply of potable water for present population and future anticipated growth from the SSC proposed project and other growth we anticipate. The water has a hardness of 47 grains, is healthful for drinking, and suitable for household use.

31 The water system is in excellent condition due to an ongoing upgrade of groundwater wells, control system, hydrants and water mains, and standby power units in an effort to obtain an I.S.O. reduction in fire ratings for insurance purposes.

32 Fort Morgan has purchased 3806 units of Colorado Big Thompson water to begin upgrading the quality of water. This is enough water to supply the consumptive use for Fort Morgan's present consumptive use and anticipated growth. We will also continue to purchase more units of C.B.T. or other water units for ample water reserves for future growth.

E.I.S 4.6.3, 5.1.11

33 WASTE MANAGEMENT. A. Domestic Sewage, Solid Wastes, "Commercial Industrial":

Fort Morgan owns and operates a WasteWater Treatment Plant for treatment of commercial, industrial and domestic sewage for the corporate population. The WasteWater Treatment Plant has a design capacity of 3.6 M.G.D. Present loading is 2.4 M.G.D.

34 Fort Morgan operates under a N.P.D.E.S. permit with discharge to the South Platte River. We have consistently met the requirements of the permit which is administered by the State of Colorado Health Dept.

35 B. Fort Morgan has a solid waste collections system in operation for the commercial, residential, and industrial patrons of Fort Morgan. This system adequately handles the present need and could accommodate immediate and future growth.

36 Morgan County operates the land fill the City delivers to. The life of the landfill is anticipated to be 25-50 years. Morgan County and the municipals in Morgan County work closely together to support the landfill.

E.I.S. 4.9, 5.1.8, 5.2.12

37 SOCIOECONOMICS Growth - Fort Morgan's growth pattern has been very stable under normal economic conditions, (about 1 1/2% over a 10 year average). Several periods of "Boom Town" atmosphere have occurred, discovery of oil, oil industry, and Pawnee Power Plant, the short term and long term effects were handled without great complication.

Housing is available for purchase, or rent and ample mobile home parks are in place. Zoning for land development, rules and regulations and simple annexation policies are in place. Fort Morgan has a master street plan and airport master plan on record with Morgan County. Fort Morgan has submitted a chapter into the Morgan County Comprehensive plan. Fort Morgan and Morgan County work together effectively on planning and land use.

E.I.S. 4.9.2.2, 5.1.8.7-9

38 UTILITIES: Fort Morgan is an all service community supplying Electricity, Natural Gas, Water, Sanitation, and Solid Waste Collection inside and outside the City Corporate boundaries. The infrastructure is in excellent condition and very capable of serving the present population, and any immediate growth that would occur from the SSC project, at very reasonable costs and immediate service.

E.I.S. 4.9.2.1, 5.1.8.6

39 TRANSPORTATION: Fort Morgan is serviced by I-76 Interstate Highway, Highway 34, Highway 52, Highway 144, Burlington Northern and Union Pacific Railroads, Greyhound and Arrow Bus Lines, and numerous truck lines. Taxi service and car rental service is available.

40 Streets within Fort Morgan are in good condition. Fort Morgan is in the 7th year of a complete renovation program of the streets system and will continue this program until completed. Fort Morgan maintains a street department capable of street rebuild, repair and maintenance.

SOCIOECONOMICS

4.9, 5.1.8, 5.2.12

41 The E.I.S. concerns itself in several sections with the impact on the local housing industry. This problem seems to be both short term and long term. The impact however should not be as great as perceived. At present there are approximately 175 single family units available for sale within the Fort Morgan community. Additional to this is the fact that Fort Morgan has four (4) fully serviced mobile home parks within the city limits. Spaces are available on a regular basis. These are short term concerns only.

42 In the long term impact it's something that Fort Morgan can handle. During the late 1970's a boom type atmosphere existed in all of Morgan County because of the construction of Pawnee Power Plant. Since Fort Morgan had annexation, subdividing and zoning regulations in place, additional housing was built without any strains on the City infrastructure. In fact, the fallout of the housing boom was a more readily available, affordable housing to the permanent citizens. Prior to the boom, housing had become slow and stagnant. The boom breathed new life into the old local industry creating a new youthful exuberance.

This type of impact is always welcome to any rural community.

43 The economic activity of the City of Fort Morgan has its basis in agriculture and energy production. Both have suffered a lull in recent history causing local businesses to suffer lower profits. The type of impact expected to be produced because of the SSC project is anticipated and welcomed with open arms by the local business community.

44 In light of the present economic lull in agriculture and energy production (oil & gas), the City of Fort Morgan has begun an aggressive Economic Development program. An Industrial Park has been purchased and all services are being put in place prior to putting the park on the market at $.30 a square foot. Further the City is an active member of the Morgan County Economic Development Association, whose sole

purpose is to promote the healthy Business/Industrial climate of Morgan County.

The work force in the area is very mobile, in that commuting to and from the front range for jobs has become commonplace. Since the SSC is only 20 minutes from Fort Morgan both construction and fulltime SSC staff will not find any negative impact or undue hardships in transportation. 45

The City of Fort Morgan has developed a long range plan that identifies the needs of the City should it grow to a population of 25,000 in the next ten to fifteen years. We are very comfortable with those projections. We feel the quality of life in Fort Morgan would not be adversely affected in any manner. 46

Such cultural activities and entities such as our Recreation Programs and Library/Museum Complex are easily adaptable to a higher population base. Civic groups such as the Heritage Foundation and the Morgan County Arts Council would welcome additions to the community because a broader base of interest would be identified. 47

Brush!

September 28, 1988

Morgan County Commissioners
P. O. Box 596
Ft. Morgan, CO 80701

Dear Sirs:

The Environmental Committee has met to review the Environmental Impact Study for the SSC and finds the following:

48 - In general, we agree that there is very little impact on Morgan County by the SSC.

49 - Regarding the bald eagles at Barr Lake, we hear that they are no longer nesting there. Also, the access highway to the SSC will be further from Barr Lake than I-76. Therefore, we would doubt that there is much impact on them by the access road.

50 - We feel there has not been enough investigation on the black footed ferret but it should not be of great concern. Even though there are prairie dog towns within the ring, there has only been one "supposed" siting of a black footed ferret in the last fifteen years.

51 - The EIS states a concern about other endangered species on the South Platte and the Colorado Rivers. Most of the water for the SSC will come from Morgan County Quality Water District wells in the Hay Gulch area west of Wiggins. These wells are not a tributary to the South Platte River and therefore have no impact on the South Platte. If any of the water comes from Morgan County Quality Water wells near Goodrich, it must be replaced in the South Platte River according to Colorado water laws. Even if this water is replaced by using Big Thompson water, there would not be any additional impact on the Colorado River because that water is already being removed from the Colorado River.

Therefore, we do not feel that the SSC water use would have any impact on the endangered, or nearly endangered species of either the South Platte or Colorado Rivers.

FOOD AND ENERGY HUB OF THE HIGH PLAINS
City of Brush / Edison at Carson / Box 363
Brush, Colorado 80723 / Telephone 303: 842-5001 Office of The Mayor

Brush!

52 - Concerning historical and paleontological sites, we do not feel enough study has been done to determine if any Indian burial grounds are located in the area. Also, the EIS

53 indicates two historical sites in the area, as referred to in Table 15-4 as well as in the text. However, Table 15-4 is a table relating to the State of Illinois, not Colorado.

54 - The concern over a shortage of sand and gravel in Colorado is not based on recently obtained facts. We feel the spoils from the boring of the tunnel could be put through a kiln, dried and then used to make cement to line the tunnel. This would eliminate two problems:

1) Lack of sand; and
2) Disposal of spoils.

55 This is only a summary of our findings. The State has added some comments on their own and neither the State nor the Committee feel that we need to testify at the hearing on these items. We will, of course, send a combined statement from the State and the Committee to the Department of Energy.

Sincerely,

Lawrence J. Coughlin

Lawrence J. Coughlin
Mayor

LETTER 1068 (CONTINUED)

Mr. Richard Neb, Chairman
Morgan County Commissioners
Morgan County Court House
Fort Morgan, Colorado 80701

William K. Bramlich, Chairman
SSC, Local Employment Opportunities
932 Carol Street
Fort Morgan, Colorado 80701

Subject: Local Employment Opportunities Review
SSC - Environmental Impact Study

Dear Mr. Neb:

56 The lead person from my committee and I have examined the portion of the EIS relating to local employment opportunities. In our opinion, the information we submitted appears to have been used properly. Nothing that we reviewed would indicate information was used falsely or withheld to the detriment of Morgan County.

Sincerely,

William K. Bramlich

William K. Bramlich, Chairman
SSC Employment Committee

WKB/wg

LETTER 1068 (CONTINUED)

EDUCATION

MORGAN COMMUNITY COLLEGE

September 19, 1988

Morgan County Commissioners
Morgan County Administration Building
Kiowa and Ensign
Fort Morgan, CO 80701

Commissioner Neb
Commissioner Bass
Commissioner Eisenach

The education sub-committee of the local SSC taskforce has reviewed pertinent citations of the Department of Energy Environmental Impact Statement and have the attached comments.

Each commentary sites volume, page and paragraph reference.

Sincerely,

Maggie Goodwin

Maggie Goodwin, Chairman
Gene Boubacher
Bob Datteri
Jack Geckler
Larry Holloway
Joe Renshaw
Larry Stukey
Bill Vincze
Bill Weatherill
Homer Wickham

TELEPHONE (303) 867-3081 17800 ROAD 20 FORT MORGAN, COLORADO 80701

GENERAL EDUCATION COMMITTEE
SUPERCONDUCTING SUPER COLLIDER
September 19, 1988

CONCERNS:

The lack of specific situation of impact on higher education located in Morgan County other than passing reference in Volume 1, Chapter 4: 4.9 Socio Economic and Infrastructure, Section 4.9.1.3 Public Service A. General Education -
General Education includes all services related to primary, secondary, and higher public education provided at the local level.

The same citation makes a statement that general education includes
57 all services related to primary, secondary, and higher public education provided at the local level. The reference to "general education" in Table 4-27 leads to a conclusion that all personnel required to deliver these services is an aggregate number.

However in Volume 4, Appendix 14, Tales 14.1.3.2-12, 14.1.3.2-11 and 14.1.3.2-10 utilize a heading general education which does not appear to be an aggregate of elementary/secondary teachers and appears to exclude reference to higher education. Lacking clarification of services defined included in this general education number, it is difficult to evaluate accuracy.

Volume 4. Appendix 14 -
14.1.3.2 Colorado, page 58
58 The need for provision of expanded local public services during the construction and operation phases of the project would (substantially) impact existing services within communities neighboring the proposed SSC site.

Volume 4. Appendix 14 -
14.1.3.2 Colorado, page 72
It is unlikely that this predominantly rural county would be able to absorb such growth without a substantial, focused effort.

Both citations appear to be strongly worded opinions doubting the
59 ability to provide adequate and quality services. The education community objects to the word "substantially" and the concept of "unlikely to absorb such growth" as it pertains to educational services.

A projected increase of approximately 700 people in the 5-17 age range will not have a substantial impact on public services in the area of education. The four districts in Morgan County have served substantially greater numbers in the past with existing facilities.

For example, Fort Morgan currently has 2,730 students. that district has previously accommodated 3,400 students with existing facilities. If Fort Morgan enrolled 60% of the projected increase in students, that would only amount to a numerical increase of 420, and a total enrollment of 3,150. This would leave a cushion of 250.

Wiggins School District could double enrollments before additional buildings would be needed.

Brush School District can accommodate approximately 2,000 with extended sessions with existing facilities. They now have an enrollment of 1,245.

We totally concur with the statement found in Volume 4, Appendix 5a, Affected Environments at Site Alternatives, Colorado, page 114:
b. Morgan County -
60 These communities are currently regional centers and could serve a much larger population if they experienced rapid growth with the development of the SSC. Public education levels of service provided by the four school districts within the county are better than those (national) averages.

LETTER 1068 (CONTINUED)

TOWN OF LOG LANE VILLAGE

P.O. BOX 920 • FT. MORGAN, CO 80701 • 303-867-8027

September 16, 1988

Honorable Rich Neb
Morgan County Commissioner
Morgan County Administration Building
Ft. Morgan, Colorado, 80701

Dear Commissioner:

After attending the Coordinating Committee meeting at Morgan Community College on Thursday, September 15, 1988, at 5:30 P.M., the Town of Log Lane Village has compiled the attached information for your use as needed regarding the proposed SSC project.

The Town of Log Lane Village is located approximately one and one-half miles northwest of Fort Morgan, Colorado. Access to the Village is on S.H. 144, and also from U.S. Interstate 76, approximately .8 mile from the entrance to the town.

61 We are a self-governing municipality, with a Mayor, Board of Trustees, Town Clerk, and Town Manager as principals. The over-all atmosphere of our town is of busy, hard-working residents trying to maintain family-oriented lives.

We recognize the tremendous impact that a "boom-town" situation would create, however, we stand willing to accept this challenge and will do whatever is required to serve our town residents.

Should you require any additional information from us, please contact our Town office - 867-8027.

Sincerely,

Thomas A. Smith

Thomas A. Smith
Mayor

Enclosure

RECEIVED
SEP 19 1988
MORGAN COUNTY

- HOUSING AVAILABLE:

Green Meadows First Addition, Log Lane Village, Fort Morgan, CO
79 trailers in place - 100% complete
All utilities are in place

Green Meadows Second Addition, Log Lane Village, Fort Morgan, CO
90 lots plated - 80% complete
60 of these have trailers 30 lots are vacant
Streets are complete - Sewer and Water, gas and electric
Trailers and houses

62 Green Meadows Third Addition, Log Lane Village, Fort Morgan, CO
44 lots plated - 90% complete
All utilities on lots
Trailers only

Green Meadows Fourth Addition, Log Lane, Fort Morgan, CO
6½ acres - 10% complete
Pre-plated into 40 lots
Streets are in - Water in streets and sewer tap up to 6½ acres
Trailers and Houses

Graff-Shuman Replat
5 lots all utilities are in place

Hayes Addition, Log Lane Village, Fort Morgan, CO
9 acres or 32 pre-plated lots - 5% complete
Sewer and water on acreage
Houses only

THE TOWN OF LOG LANE VILLAGE OPERATES UNDER THE FOLLOWING:

- FIRE PROTECTION:

63 Furnished by the City of Fort Morgan Fire Department. This has proved to be effective for the town. Long-range plans are for a Town Volunteer Fire Dept. adjacent to the present Community Building, which is located at 109 Maine St. Historically the City of Fort Morgan Fire Department has responded to calls in the Town of Log Lane Village within five (5) minutes after receiving the call.

- POLICE PROTECTION:

64 Currently one (1) full-time Marshall, and one (1) part-time deputy is available. Application for funding for one additional full-time officer has been made. This department could be increased as needed for the protection of the lives and properties of Log Lane residents. Backup assistance is constantly available from the Morgan County Sheriff's Department, and the Log Lane Marshall's office is currently tied into the Morgan County Communication Center, Sheriff's Dept.

UTILITIES:

- Water Department:
65 The Town of Log Lane Village has state-tested potable water, available through town-owned and town-operated wells, in sufficient quantity to handle an additional 100 to 150 households. Upgrade of domestic water system is in the planning stage and will be completed as funds become available.

- Sewer Department:
66 The Town of Log Lane Village currently maintains a lagoon system for sewage treatment, which was increased by 33.3% during 1987-88. This facility is capable of handling additional volume which could be initiated by an influx of the above-mentioned number of households. This facility has been approved by the State of Colorado, and the town has on staff a Certified Operator constantly available, as well as a Certified Professional Engineer on a consultant basis.

- LIGHTS & GAS:

The Town of Log Lane Village is presently supplied electrical and natural gas by the Public Service Co. of Colorado.

67 - Cable television service is also available in the Town of Log Lane Village.

- Telephone service is provided by U. S. West Communications.

- All school children are bussed to Fort Morgan School District RE-3 facilities which is approximately 1-1/2 to 2 miles distance.

- The Town of Log Lane Village pays Morgan County for periodic trash collection from town-maintained central collection facilities.

68 - Public streets are 99% paved, with maintenance provided by the Town of Log Lane Village.

LETTER 1068 (CONTINUED)

HOUSING

Sept. 19, 1988

Dr. Wilmot Hess, Chairman, SSC Site Task Force
ER-65/GTN, Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attention: SSC Draft EIS

Dear Dr. Hess,

After reading and discussing the EIS Statement on housing availibility in Morgan County, Co., it is the findings of our committee that Ft. Morgan and Brush were expected, according
69 to the Statement, to experience sizeable impact in regard to housing demand. This was found not to be the case with other possible sites in different states. We would like to address this issue.

Morgan County has historically been able to handle large influx of population growth and construction increases caused by the demands of the oil industry, utility industry and meat packing industries in previous years. Because of these experiences, we feel Morgan County will be able to absorb the increased demands in housing.

In the early 1950's the oil industry brought an influx
70 of over 500 families to this area within a 2 year period. Most of these people became permanent residents. In the early 1970's our meat packing industry brought in 400 new employees. This peaked in the early 1980's to 1100 new employees all within a 6 month period. Even at this rate there was ample available housing. The modular housing industry introduced 350 employees to our community in less than a year. Most of these people became permanent residents, as well. In 1978 to 1979, the peak years of the Pawnee power plant, over 1800 workers were introduced and absorbed into the community.

An economic downturn experienced in the early 80's brought virtually all new construction to a halt. Demand for new building slowed, as there wasn't a need. We were overbuilt and could supply needed housing in the existing market. This would account for only 350 permits for construction of housing units in the '80-'87 period according to the U.S. Bureau of the Census(1983, 1985, 1987b) referred to in the EIS Statement. Prior to this economic downturn, Morgan County was issuing over 125 housing permits annually.

71 In the EIS Statement pg. 267 of the EIS Vol IV Appendix 14, states if the expansion of the proposed (but postponed) Pawnee power plant were to occur during construction of the SSC, the towns of Fort Morgan and Brush would experience great difficulty in absorbing the substantial impact. It is doubtful that the second phase of the power plant will be constructed and peak at the same time as the SSC. If they were to be constructed simultaneously, there is a great deal of excess electricity projected for future years with present facilities. Some constructed plants are not even running at the present time, waiting for customer demand.

72 According to pg. 78 of DEIS Vol. IV Appendix 14, Morgan County will require an additional 950 units in 1992 and 650 units by the year 2000. The information obtained from the Morgan County Assessors office on the 1988 tax records show that presently there are 1166 total residential vacant lots of which 147 are rural. Of these, approx. 603 lots are complete all utilities intact. The remainder of the 1166 lots are platted, but incomplete, with utilities available nearby.

73 Morgan County has several large farms bordering city limits that can be annexed into the city when future development warrants it.

LETTER 1068 (CONTINUED)

74 Fort Morgan is equipped with a modular housing factory that can produce many fast, permanent housing units required by SSC workers. According to the Colorado Division of Housing, Century Modular Housing is capable of producing 5 factory units per day and can operate on a double shift when necessary.

75 In conclusion, we feel the DEIS statement has been wrong in its conclusion about housing in our community. We hope this information will help in making the final choice for the proposed site. If the SSC were to come to Colorado, Morgan County can handle the growth and can supply the housing requirements necessary for its workers.

Sincerely,

Ryan Covelli

Ryan Covelli
Chairman, SSC local housing committee
Fort Morgan, Co.
(303) 645-2484 or (303) 867-4908

Dave Graff

Dave Graff
Spokesman, SSC local housing committee
Fort Morgan, Co.
(303) 867-3500

LETTER 1068 (CONTINUED)

SUPER CONDUCTING SUPER COLLIDER

RESPONSE TO THE ENVIRONMENTAL IMPACT STATEMENT

Ken McCloud
Director Parks-Recreation, Leisure

September 29, 1988

ELIZABETH E. OLDERR
CITY CLERK

RONALD V. EDWARDS
MAYOR

GLENN CALVERT
CITY SUPERINTENDENT

Thank you for this opportunity. My name is Fen McCloud. I work for the City of Fort Morgan as Parks, Recreation, & Leisure Director. I wish to address the impact of the SSC on the quality of life in Fort Morgan. Section 5.2.11.1 of Appendix 5a concerns itself with Fort Morgan's capabilities to handle a large population. We feel it necessary to support this statement especially as it relates to the cultural and recreational climate in Fort Morgan, Morgan County, and Colorado.

Fort Morgan should show no adverse effect from the construction and operation of the Super Conducting Super Collider. In fact, any impact, from our view, will be of a positive nature, adding to the quality of life not detracting from it.

Fort Morgan has always provided cultural events to its citizens thru either its Recreation programs or Library/Museum Functions. We provide, on a local level, such summer recreational activities as Adult Softball, a Top Notch Municipal Golf Course, Square Dancing, Aerobics, Tennis, and Volleyball. For the youth such events are Boy's Baseball (both competitive and recreational), Girls Softball, Red Cross Swimming Lessons, Tumbling, Archery, Soccer, Tennis Lessons, Golf Lessons, and so on. More importantly the City provides four (4) fullservice parks with picnic and playground facilities. We have two (2) swimming pools open to the general public. At present there is no charge for the use of this Recreation Facility. The City operates and maintains eight (8)

Baseball/Softball Fields. These also are available for public use when scheduled events are not taking place.

The only weakness in the Fort Morgan Recreation Program at the present time is a lack of winter facilities, primarily gymnasium space. The City works very closely with School District RE-3 to make full use of available facilities but we do fall short of the space that could be used for community activities. A remedy to this problem does exist however and has been under consideration prior to any mention of the SSC siting in Northeast Colorado. An impact by the SSC on our Winter program is viewed as an aid to build the Winter/Indoor Recreation Facility needed because it should provide the additional population base to make such a project practical.

The City also has a first rate Library. It provides some 40,000 volumes of reading and reference materials. A number of youth and adult programs to encourage its usage are implemented each year.

The City Museum is operated in conjunction with the Fort Morgan Heritage Foundation. It provides to the public an insight to the local history of the area and updated exhibits to keep the community abreast of the rest of the world.

Local functions occur on an annual basis that add to our community pride. Two (2) functions are the Festival-in-the-Park (a community arts & crafts fair) and the Annual Blue Grass Festival. The former is a total community involvement volunteer program while the latter is sponsored by the Morgan County Arts Council.

All of the programs and facilities I have just mentioned are in place at present. They are designed to accomodate today's citizens but also with an eye to the future. Expansion or greater utilization of any item has been anticipated long before the SSC became a consideration.

An important point to keep in mind here is that while Fort Morgan provides very well for itself, the Public wishes certainly go beyond our local programs. Fort Morgan is a gateway to the Rocky Mountains. Because Colorado is so wide open we don't think in terms of numbers of miles to areas, but rather the time frame. Within 30 minutes the local citizens can use any of several major reservoirs for both summer and winter recreation. 45 minutes puts the resident at the new Denver Airport Site from there the entire world will be available. 60 minutes will place people in the Metro Denver area with all its resources. For those people wishing symphony or theatre it's available within the hour, both in the Denver Metro Area, as well as the Union Colony Civic Center in Greeley. Professional sports are at our finger tips with the Denver Broncos and Nuggets. Retail and wholesale shopping is provided with little effort in commuting time. 90 - 120 minutes puts people in the heart of Ski Country USA.

My last point concerning the SSC Impact is to stress its positive effect it could have on the children of Fort Morgan. The present economic base of Fort Morgan and Morgan County is agriculture and oil exploration. When the SSC is built a scientific community will establish itself offering new opportunities to the youths of the area, broadening career fields that at present are not available on the local level.

As you can see, any impact placed on our community by the SSC is more positive than negative. As Section 5.2.11.1 states, "These communities are currently regional centers and could serve a much larger population if they experienced rapid growth with the development of the SSC." We wholeheartedly support this statement.

Thank you for your time and interest. I will gladly answer any questions you may have.

ELIZABETH E. GILBERT
CITY CLERK

RONALD V. EDWARDS
MAYOR

GLENN CALVERT
CITY SUPERINTENDENT

Welcome Dr. Hess and Panel!

I am Ron Edwards, Mayor of Fort Morgan. I wish to address two points of concern identified by the Super Conducting Super Collider Impact Statement. They are (1) Industrial Development Capabilities and (2) Housing.

Section 5.2.12.2 of the E.I.S. suggests that these two items, along with other Socioeconomic factors, may suffer greatly, due to the impact of the Super Conducting Super Collider construction. I wish to address those concerns in the following statement.

The Citizens of Fort Morgan feel that our desire to grow industrially has prepared us for any impacts created by the Super Conducting Super Collider. The recognition of our own desires for growth have allowed us to identify those problems addressed in the "E.I.S." with respect to the Socioeconomic fiber of Fort Morgan.

The City of Fort Morgan has been preparing for major industrial impact for several years, prior to the Super Conducting Super Collider Project proposed siting in Northeastern Colorado. Since the economy has been in a downward spiral due to the fall of the Agriculture and Oil exploration industries, the City has been looking to broaden its industrial base. We realized early-on that in order to attract industry more than just "well paved streets" would be needed. The economic climate needed a push to get off the ground so Fort Morgan, Brush, and the rest of the county governments formed the Morgan County

Economic Development Association. Fort Morgan not only funded this organization to the greatest extent of any municipality, it also provided the office space and secretarial staff to handle the work generated by the Economic Development Director. Also, as pointed out earlier, our City has been continually improving our entire utility and infrastructure to meet any form of sudden impact that may result from possible sudden growth and impact.

In 1986 the City decided that, in the best interest of Planning and Zoning and Economic Development, an Industrial Park should be purchased and developed. 1987 saw that purchase materialize and 1988 will see its complete development. All utilities and infrastructure will be in place, ready for prospective clients.

This enthusiastic effort has also been turned toward the rest of the city services. A long range plan projecting population growth to 25,000 is in place. Copies of this plan were presented to the DOE at the Scoping hearings and again are being submitted as evidence here today. This document not only recognizes the utilitarian needs of a community of that size, but also the cultural requirements of the same city. This plan identifies the needs and gives us the roadmap to ensure their implementation.

The second concern is housing. At present the City has approximately 175 homes on the market in the Fort Morgan Area. Rental units are somewhat less. We realize that should the Super Conducting SuperCollider choose Northeastern Colorado as the site a tremendous number of people would move to this area. This would range from short term construction people to the longer term operational staff. The City has in place annexation, subdivision, and zoning laws to promote a

quality growth. They require little time to follow and allow building lots to become readily available. We also have filed with Morgan County a Master Street Plan and a Master Airport Plan. Both documents allow for an orderly growth as the boundaries of Fort Morgan expand further into the county.

The Master Street Plan recognizes major traffic patterns. It clearly defines arterial and collector streets as they leave the City Limits. Further it reserves these rights-of-way for the future growth of the City while not yet part of the corporate boundaries.

The Master Airport Plan addresses both proposed expansion of the airport service and the surrounding land use. This document allows Fort Morgan to ensure to the City and County residents that a quality airport facility will always be available.

Lastly, we are very fortunate in Fort Morgan to have a highly skilled group of construction craftsmen capable and willing to answer housing needs as they arise. Further, National Pre Built Mfg. Corporation's, Century Division, is located in the Fort Morgan Industrial Park. This "Factory Built" housing firm can manufacture every type of home from mobile homes to custom built houses in a very short time. The result is always a high quality product.

Thank you for your time today. Copies of this statement, as well as our long term Planning Document will be made available to you in hopes of clarifying any points left unclear.

SUPER CONDUCTING SUPER COLLIDER

RESPONSE TO THE ENVIRONMENTAL IMPACT STATEMENT

Glenn W. Calvert
City Superintendent

September 29, 1988

LETTER 1068 (CONTINUED)

Public Safety

Mr. Phil Davey
400 Warner Street
Fort Morgan, CO 80701

September 23, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Re: SSC DEIS Comments

Dear Mr. Hess:

I have reviewed the draft Environmental Impact Statement and find the following citations need clarified:

5.1.8.3 - (2nd paragraph) "Rural eastern Adams County in Colorado would require a major expansion of its services, and services in Morgan County also would require expansion."

5.2.12.2 - (2nd paragraph, last line) ". . . these small towns would experience even greater difficulty absorbing the substantial impacts expected."

11.1.3.2 - (1st paragraph, section 3, last line) ". . . would likely create substantial impacts to local public services and facilities in the county."

11.1.3.2 - (3rd paragraph, section 3, last sentence) ". . . to accommodate a greatly increased demand generated by in-migration."

11.1.3.8 - (2nd paragraph, section 8, last line) ". . . difficulty absorbing the substantial impacts expected."

Within the past five years, the public safety agencies in Morgan County have projected needs for the future and funded several major capital expense projects. 5.7 mil.

The Morgan County Government Criminal Justice Center was occupied in January, 1987, this facility includes a modern state of the art detention facility, sheriff's department, courts, probation and district attorney's offices. The facility also houses a highly technical, modern county-wide communications center with radio, telephone, and computer services for the public safety system. The City of Fort Morgan completed a $1.2 million police building in 1986. This building has the capacity to house the department should it grow by three times.

This area has experienced two major growth cycles with our oil boom in the 1950's and the construction of the Pawnee Power Plant in late 1970. Local law enforcement agencies are adequately prepared to deal with a growth environment. In fact, during the construction of the Pawnee Plant (peak year construction total of 2,239 jobs), the City of Brush only added one (1) full-time officer to its staff and the City of Fort Morgan did not have to add any officers to its police force. Many of the officers and all of the current police administrators were administrators during the Pawnee construction period.

Having the major fixed assets in place now will reduce the financial impact drastically, should major personnel expansion be necessary.

Morgan County has a communications system that is on the "cutting edge" of communications technology with highly trained communications personnel and modern equipment. The system includes a county-wide computerized police management system for police records as well as access to state records (CCIC) and national computer access (NCIC). With this communications system in place and functioning, the community is able to handle SSC growth impacts and extend service areas.

Based on the above factors, the above citations should be clarified.

Our public safety agencies are well prepared to handle the projected in-migration of people and are quite experienced in this type of population boom.

If I can further clarify this comment, please contact me.

Sincerely,

Phil Davey
Director of Communications

rh

SSC for Fermilab

[illegible]

TESTIMONY OF KRISTIN DEAN
EXECUTIVE DIRECTOR, SSC FOR FERMILAB, INC.
BEFORE THE SSC SITE TASK FORCE
ENVIRONMENTAL IMPACT STATEMENT HEARING

OCTOBER 6, 1988

Thank you for the opportunity to speak briefly with you today. I am the director of an organization called SSC for Fermilab, a genuine public-private partnership consisting of major corporate, institutional and academic leadership of the state along with officials of government at all levels. The enthusiasm and unanimity of opinion amongst these leaders about the importance of winning the SSC has made this effort an effective one, and I believe it is an enduring model of the sort of business-government cooperation that our times demand. If your department chooses Illinois, I will be delighted to share with you a well-delineated list of commitments and areas of expertise that will considerably strengthen the massive construction and operation effort you will begin next year.

My board decided last month that we would not subject you to hour upon hour of testimony from the area's business leadership. We could have paraded over 100 such leaders to urge you to consider our proposal. Instead, we have asked many of our supporters to write to Dr. Wilmot Hess, detailing both their response to the E.I.S. and their general feelings about our bid. Most of them sent their letters to me, and I present these letters to you today for inclusion in the record.

Let me quickly summarize their thoughts. Several noted that the draft E.I.S. revealed no environmental consequences prevented by the Illinois ring location that could not be mitigated quickly and at reasonable cost to the Illinois taxpayer. Many praised the remarkable infrastructure that is available to you in western DuPage and Kane counties. James O'Connor, chairman of Commonwealth Edison, notes in his letter that his company is "the only electric utility in the nation that has operating experience serving a load similar in nature to the SSC." The load he refers to is, of course, Fermilab.

Many of the corporate leaders noted the Chicago region's experience in major industrial and public works construction. Franklin A. Cole, chairman of the Croesus Corporation, points out "Chicago's history and record of success in building large complicated projects is unrivaled. One need only look around the city from McCormick Place to Sears Tower to Amoco Oil to the new United Airlines terminal to recognize Chicago's leadership in construction." Vernon Loucks, the chairman and CEO of Baxter Travenol, remarks "our tunneling expertise has been demonstrated by the remarkable TARP ("Big Tunnel") project. The incentive package in our proposal, which offers to build the SSC tunnel for DOE, is backed by TARP's success." Gerard Kenny, of Kenny Construction Company which just completed underground tunneling projects in both Illinois and Texas writes: "The advantages from a cost, schedule, and quality analysis all indicate that Illinois should be selected as the site. Illinois has the necessary trained and skilled workforce having just completed the Deep Tunnel Project. The workforce is not available in Texas to complete in a timely fashion a project as large and complex as the SSC."

Others note the talent and expertise of the Chicago area worker, and the resource this level of skill represents for the Department. Several leaders point out that Fermilab itself was completed ahead of schedule and under budget, a rare occurrence in public construction and a history lesson we must pay attention to in these budget-conscious times.

Most writers focused on Fermilab and the terrific asset it represents to DOE, the scientific community, and the American people. Many cited the savings the American taxpayer would enjoy by building the machine at Fermilab, quoting the valuation study which my organization developed last year showing total savings of 3.2 billion dollars. Many of these leaders feel that Fermi's talent would be dissipated and its spirit destroyed if the new instrument is built elsewhere. The president of the University of Illinois, Stan Ikenberry, noted that "the onus of closing down a major installation has never been welcomed by the U.S. Government. That onus can be effectively avoided...by locating the SSC at the Fermilab site."

There is a sense in the Chicago business community that locating the SSC at Fermilab is simply common sense -- and good business sense. We believe that the federal government cannot expect business people to seriously enter into future partnerships with government if uneconomical and/or political considerations are going to hold sway on important national investments like the SSC. (We applaud the above-board and completely non-political siting process you have conducted thus far. However, if the economies of Fermilab are not figured in the equation and it is located elsewhere, taxpayer enthusiasm for the SSC may wane.)

Charles H. Shaw, one of the nation's top commercial builders, points out that he has agreed to lead a public/private effort to build an "international village" at cost on the SSC grounds to house visiting scientists and dignitaries. He concludes that Chicago "is a 'can-do' community. When we set our sights on a goal, we get the job done."

Stan Cook, the president of the Tribune Company, owner of the Chicago Tribune, WGN radio and television and the Chicago Cubs, writes "Chicago has always been and continues to be America's frontier town, a fertile center of spirit and creativity where new and exciting ideas come to life and flourish. Our city is one of the world's main streets, a place that thrives on hard work and is quite comfortable under the bright lights of international scrutiny this project is certain to attract."

Finally, many correspondents gave us their thoughts on the socioeconomic and cultural advantages of our area -- we are not building a machine for other machines, we are building a tool for human beings. And human beings have needs in their lives beyond the working hours and I don't mean goat-roping and cow-poking. Wes Christopherson, the eloquent chairman of the Northern Trust, put it this way: "Chicagoland is a wonderfully fine place in which to live and in which to pursue professional and business interests. Many of the resources we [Chicagoans] take for granted will be of enormous benefit to the people who will constitute the SSC family. Some of the country's most distinguished research and teaching universities are located here and available not only from the professional perspective of those who will work at the SSC but for their personal enrichment and that of their families. (We have world renowned cultural attractions.) We have a great variety of residential choices. Our transportation facilities are second to no other large city in the country. This is one of America's most interesting and hospitable cities and a genuinely nice place to live and work. The people drawn to the SSC will find life here to their liking."

In summary, I'd like to say that I represent members of the corporate, academic, scientific, labor and government communities when I say that we want the SSC to be a successful national project as much as you do. We will do everything we can to help you see that this dream becomes a reality right here at the most logical home for the SSC, Fermilab.

Thank you.

LETTER 1069 (CONTINUED)

Commentary

THURSDAY, SEPTEMBER 22, 1988

Chicago Sun-Times
An Independent Newspaper

Don't let Texas clout claim SSC

No matter which party captures the White House, a Texan will be on the winning ticket this fall, and you can only wonder what that portends for Illinois' chances for getting the superconducting super collider.

Current speculation indicates that of the two states with the best chance of getting this mega-science bonanza—Illinois and Texas—you know-who will get it, based on political clout.

And that would mean that a fair and objective search by the Department of Energy for the best site was a charade. That, of course, would be too bad, because the site west of Chicago by objective standards ought to have a fair chance, in the interests of good science and in the interests of the taxpayers. The very presence of Fermilab, the world's most powerful accelerator, gives the Illinois site a powerful advantage over Texas and the sites in five other states on the department's short list of finalists.

The Illinois site (we prefer to call it the Fermilab site) passed another test when DOE recently issued an analysis of the potential environmental impacts of putting the SSC at the seven locations. The Fermilab site would require only 8 miles of new roads and 2 miles of new power lines. Some 210 residences and businesses would have to be relocated, but they and other affected homes and businesses would be well compensated. About 650 acres of wetlands would be "threatened," but much of it only in the sense that the extensive wetlands now preserved on Fermilab property, safe and sound from rapacious developers, is "threatened."

Too much solid, objective work already has been done on the site selection by DOE for it to be wasted in an 11th-hour political blitz. The Reagan White House by most accounts has been scrupulously fair and hands-off in the process. That policy must be continued, and that requires a pledge of neutrality by both Texas candidates—George Bush and Lloyd Bentsen. Let's hear it.

The Columbus Dispatch, Sunday, September 11, 1988

The Columbus Dispatch

An Independent Newspaper Serving Ohio Since July 1, 1871.
JOHN F. WOLFE, Publisher, President and CEO
LUKE FECK, Editor

EDITORIALS

Super collider site

Seven states are on the "short list" as potential sites for the superconducting super collider. Geological considerations eliminated Ohio as a location for construction of the 53-mile-long subterranean tunnel, in which atoms would be smashed and, presumably, important breakthroughs made in understanding our origins and our destiny in the field of accelerator physics.

While physicists were poetic at the potential for discovery inherent in this multi-billion-dollar project, political realities and regional competition cloud the horizon.

Representatives from Fermilab, the Fermi National Accelerator Laboratory, in Batavia, Ill., made an impressive case last week as to why this "scientific crown jewel" should be located there. Other states in contention are Michigan, Arizona, Colorado, North Carolina, Tennessee and Texas.

Beyond the obviously provincial considerations — Fermilab spends more than $200,000 a year on the purchase of goods and services from Ohio companies, and 12 Ohio scientists, supporting technicians and graduate students work in the laboratory — these hard economic facts favor Fermilab:

- Its proven accelerator could be used as an injector to the more powerful machine, saving an estimated half-billion dollars off the estimated cost, now placed at between $4.4 billion and $5 billion.
- Its staff of accelerator physicists, among the best in the world, is in place and already pursuing important experiments involving accelerator physics. Fragmenting that staff, a likelihood if the super collider is located elsewhere, would do a disservice to the Illinois laboratory, whose accomplishments have been formidable, and to the larger project, which still would have to hire a team of physicists.

N. William Reay, an experimental physicist at The Ohio State University who spends about half his time at Fermilab, summed up the competition for dollars and technical personnel this way: "It's like a war out there. . . . We've got three or four national laboratories now, and they're always fighting each other. To develop another national laboratory would be a terrible mistake."

In November, the Department of Energy will recommend a site to President Reagan. The politicking in the meantime is likely to involve more super collisions of its own. Some environmental considerations come into play, but even in considered formulation. Geological concerns are not a problem in Illinois, where the state has agreed to build the tunnel.

These considerations aside, it is important to realize that the Midwest has fared poorly, measured with other regions, in its return on federal tax dollars. (Ohio, for example, ranks eighth on the list of states receiving the least.) That's another persuasive argument for locating the super collider in Illinois.

Accelerator physics is expected to hold the key to scientific and technological secrets of significance to industry, the medical profession and other areas of historical and scientific inquiry. Quantum mechanics applies to 25 percent of the nation's gross national product. Extensions of that mathematical theory rooted in energy and atomic structure are expected to have a dramatic impact.

Some argue that the United States ought to join forces with the European competitors, rather than embarking alone on so costly a scientific venture. With the pursuit of professions in science and engineering on the decline in this country, the super collider could stir interest where less and less now exists.

The super collider offers a chance to reaffirm U.S. prominence in an area of inquiry believed to hold the key to discoveries of important social and economic consequences.

The superconducting super collider ought to be built in the United States, and common sense suggests it ought to be built in Illinois.

LETTER 1069 (CONTINUED)

THE WALL STREET JOURNAL TUESDAY, SEPTEMBER 6, 1988

Super Collider Competitors Play for Big Stakes

Business World

By George Melloan

"When you want to look at something smaller and smaller you have to have bigger and bigger machines," says James W. Cronin, a Nobel-laureate particle physicist at the University of Chicago. Indeed you do, and few science projects have ever exceeded in size and scope the Superconducting Super Collider (SSC), a machine that will accelerate subatomic particles around a 54-mile "race track" until they reach nearly the speed of light. Particles going opposite directions will be crashed together. Physicists hope that the result will be the smallest bits of nature ever discovered, unlocking a new knowledge of the building blocks of all matter.

But meanwhile, there is a more mundane discovery process afoot. The Department of Energy is trying to decide where to put this incredible $4.4 billion machine. From an original 40-some states in the running, seven competitors now remain, Arizona, Colorado, Illinois, Michigan, North Carolina, Tennessee and Texas. The project is expected to provide about 4,000 jobs during construction and 1,000 permanently, with an annual operating budget of $300 million. Total lifetime investment in the project is estimated at some $11 billion.

Secretary of Energy John S. Herrington will make a site selection this fall based on the recommendation of a committee of science and business leaders named by the National Science Foundation and the National Academy of Engineering. President Reagan will be consulted by the secretary on the final choice and will announce it sometime about the first of the new year.

Not surprisingly, competition for the SSC is fierce. States see this not only as a federal spending plum but also as a tremendous boost to prestige. There are very few state development departments that have not set their sights on a high-tech future of some sort. One key to a high-tech future is to develop a high-powered research center, or more than one if possible. The SSC fits the bill perfectly.

As it happens, basic research in the U.S. is enjoying something of a renaissance. An article in the Feb. 1 issue of Fortune by Stuart Gannes noted that over the past decade the federal government—which finances some two-thirds of basic research—increased its appropriations for that purpose by 60% in real dollars. Business spending rose 70%, compared with declines during the previous nine years averaging 2.3% annually. The U.S., wrote Mr. Gannes, is the world's leading producer of basic research, with Americans responsible for about 25% of all scientific and technical articles published. But American scientists are quick to point out that spending on basic research in some other countries—Germany and Japan in particular—is rising even faster.

The argument that the U.S. should not allow itself to be scooped in the field of particle physics has helped sway Congress and the administration to support the SSC. Prof. Cronin believes that the movement of the Europeans toward large-scale research in high-energy physics is "somewhat more focused" than that in the U.S. It has been concentrated in two facilities, known by the acronyms CERN and DESY, and spending in 1986 totaled about $780 million, compared with $537 million in the U.S. by the Department of Energy and the National Science Foundation.

There obviously is a great deal of public enthusiasm for the SSC in the U.S. Texas voters last year approved bond issues totaling $1 billion to reinforce their bid to bring the SSC to their state. The money, $500 million in general obligation and $500 million in revenue bonds, is being offered to the Energy Department as a supplement to federal construction funds.

Arizona, another active bidder, wants to put the SSC on a site 35 miles southwest of Phoenix and hasn't lost any opportunity to solicit the support of California on grounds that the site wouldn't be very far from the California border. Arizona also has worked up a private-sector construction-financing scheme to try to relieve Congress of the need for initial appropriations. It has hired lobbyists to promote its bid on Capitol Hill. Other states are adopting their own tactics for winning the project. Supposedly politics will play no role in the final selection process, but that is a bit hard to imagine with the money and prestige at stake.

Congress has not yet appropriated any money for construction. Funding so far has been for project studies. But scientists seem to think that they have convinced Congress of the importance of going ahead with SSC.

Prof. Cronin is a member of the team trying to bring the SSC to Illinois. That team makes its case partly on the basis of a state aid of some half a billion dollars—mostly to build the 22-foot-diameter tunnel that will house the tubing containing the moving particles and the 10,000 refrigerated superconducting magnets needed to accelerate them. Among other things, the SSC will be the world's largest refrigerator.

But it also argues that Illinois has a head start on the SSC. Its Fermilab near Batavia, 30 miles west of Chicago, has the most powerful particle accelerator now extant, a machine called the Tevatron. Prof. Cronin argues that the Tevatron could be used to speed up the particles before feeding them into SSC to achieve superspeeds. Moreover, it is argued, Fermilab has 2,000 scientists and technicians trained in the field of high-energy physics. And Fermilab already has involved a public investment of some $1.34 billion.

Another member of the team is Charles Baltay, a professor of physics at Yale. When the team visited the Journal's offices last week, Prof. Baltay focused most of his remarks on the argument in favor of proceeding as quickly as possible to build the SSC. Basic science sometimes has difficulty getting public support because it involves discoveries that might not have practical applications for 50 to 60 years. But the payoff, when it comes, can be revolutionary. He cites, for example, the discovery by the Scottish physicist James Clark Maxwell of the field theory of electricity and magnetism in the mid-19th century:

"Maxwell's equations, four little equations that you could put on a postage stamp, have summarized all electromagnetic theory and united electricity and magnetism. The benefits of that I wouldn't even calculate. It has shaped the world. We live in an electromagnetic society."

Prof. Baltay thinks science is at a critical point in particle physics just as it was in electromagnetic theory in Maxwell's time. "We now have something we call a standard model, which unifies this whole thing into a very simple theory which almost explains everything you see. But at the moment the theory has one flaw. It predicts that these particles ought to have zero mass, which is not true. It's almost like having a jigsaw puzzle missing some key pieces."

If the SSC does produce a unifying theory of matter, what will it lead to in a practical sense? That same question also could be asked of other "big science" projects that will be competing with the SSC for funding—the proposal to decipher the 100,000 genes of the human body at a 15-year cost of $3 billion, or to build a $14.4 billion space station or a $1.5 billion space telescope. But recorded history suggests that discovery always leads somewhere. To particle physicists, small is beautiful even as it becomes superexpensive.

LETTER 1069 (CONTINUED)

Chicago Tribune

Supercollider study buoys Illinois

The U.S. Energy Department's assessment of the environmental impact of the superconducting supercollider was careful not to pick winners or losers among the seven states still in the running for this rich scientific prize. Its findings, though, seem to strengthen the case for Illinois.

Oh, why be modest: They clinch the case for Illinois.

All along, this state's toe-to-toe-hole in the competition for the high-energy atom smasher has been Fermi National Accelerator Laboratory near Batavia. Illinois officials have proposed building the supercollider beside Fermilab and using its accelerator as an injector for the larger machine, which will be 20 times more powerful. They think this will shave a half-billion dollars off the cost of the supercollider, now estimated by the Energy Department at close to $6 billion. In addition, Illinois has offered to provide $570 million in site improvements.

The new federal environmental impact statement doesn't pinpoint the dollar savings in Illinois, but it does recognize that Fermilab would cut the necessary amount of new construction.

Because of the existing infrastructure, Illinois would need only eight miles of new roads and two miles of new powerlines to support the supercollider. By contrast, about 100 miles of new roads and 40 miles of new powerlines would be needed in Arizona, and 94 miles of roads and 99 miles of powerlines in Colorado. Michigan, North Carolina, Tennessee and Texas also would require more new roads, pipelines and powerlines than would Illinois.

In one of the few Illinois negatives, the Energy Department said construction here would affect 320 water wells and 850 acres of environmentally sensitive wetlands. In Arizona, no wells or wetlands would be touched, and only a small number in Colorado and Texas. But those states are dry as plasterboard compared with Illinois. They would lose few water resources because they have so few to begin with.

In another apparent drawback, the federal report concludes that 160 residences and 59 businesses would have to be relocated in Illinois, while only a handful would be moved in Arizona or Colorado. More relocation would be required in Michigan and Texas than in Illinois.

State officials are convinced the federal report is far too pessimistic in its wells assessment; by their estimate, only 31 would actually be lost. And they note that three-quarters of the wetlands acreage that supposedly would be affected is on Fermilab property, under protection, and would continue to be protected.

Obviously, any uprooted residents and businesses must be fairly compensated and adequately relocated. And a new state law compensates homeowners and communities in the area from any resulting drop in property values, something the state and federal governments believe won't happen.

Opponents of the supercollider will find material in this environmental study to bolster their fight. But the negatives are minor compared with the major gains this area would realize in its economy and in something difficult to quantify—worldwide prestige as a science and research center, and the prospects that holds for still more growth.

Wednesday, August 31, 1988

LETTER 1069 (CONTINUED)

THE INDIANAPOLIS NEWS

Put it in Illinois

There may be only one thing more high-energy than the proposed Superconducting Super Collider — the politicking surrounding it.

When the federal government began drawing the map for the Super Collider — a huge science research construction project designed to study high-energy physics — and its long trip from idea to reality, almost every state in America wanted to be the destination. The process of bidding, begging and badgering among congressional delegations and lobbyists was fierce.

That's because the Super Collider is big — big prestige and big money.

Whichever state lands the multi-billion-dollar Super Collider definitely will become the high-energy physics research and development center for the United States and probably for the Western World. That state also will have a huge government project dropped in its lap, a project that will provide many high-tech, highly skilled jobs for its residents.

Is it any wonder the competition has been so fierce?

Even so, Indiana passed on the Super Collider hunt from the beginning — and for a good reason. The ideal location for the Super Collider, the one that makes the most sense for both Indiana and the United States, is right next door in Illinois.

Fermilab, in Batavia, Ill., currently is the largest high-energy physics laboratory in the United States. It also stands as Illinois' entry in the Super Collider derby.

The arguments for making Fermilab the Super Collider site are persuasive.

There are five stages to building the Super Collider, four of which already exist at Fermilab. Taking advantage of those four existing stages makes it far more likely that the Super Collider will be in operation by its starting date early in the next century. And, of course, it will make building the Super Collider less expensive.

The competition for the Super Collider has narrowed the field. Besides Illinois, the other states still in the contest are Texas, Colorado, Michigan, Tennessee, North Carolina and Arizona.

Those close to the battle, however, say that the two most serious contestants are Illinois and Texas. Texas is attempting to counter the advantage of Fermilab with a combination of inducements (the state government is offering a big cash package plus tax set-asides) and political pressure (one member of the Texas congressional delegation has vowed the Super Collider will be built in the Lone Star state "or nowhere") to offset the Illinois advantage of Fermilab.

In November, the Department of Energy will recommend a site to President Reagan, who will then make a recommendation to Congress. The politicking for the project will be furious between now and then.

Indiana, and its congressional delegation, should support Illinois' bid for the Super Collider. Regional self-interest and national common sense both dictate that Fermilab is the best spot for it.

Tuesday, August 30, 1988

LETTER 1069 (CONTINUED)

Chicago Tribune

12 Section 1 Tuesday, May 10, 1988

Push ahead with the supercollider

The first dash for the grand $6 billion superconducting supercollider is being dampened by lawmakers unwilling to pay for the project and by scientists fearful of losing their own research money to the mammoth particle accelerator.

The supercollider is far too valuable to the nation's future to be sunk by petty politics, a lack of visionary leadership and a failure to find less destructive ways to cut the federal deficit.

Last week, a House subcommittee approved $160 million for it, less than a third of what President Reagan had requested for fiscal 1989. Chairman Tom Bevill, a Democrat from Alabama, made it clear that Congress doesn't want to commit to building it if the entire cost will be put on the federal credit card.

Some scientists are arguing that big, expensive projects should be delayed or canceled in favor of research that will produce more immediate, practical results. Former presidential science adviser Frank Press recently urged scientists to set spending priorities for Congress and downgrade projects like the supercollider in order to pay for university research, national laboratories, AIDS and the space shuttle.

If that thinking prevails, the United States could lose the international race to develop new technology such as superconductivity and relinquish its world leadership in high-energy physics and other frontiers of science. If the supercollider can't built in America, it will be built elsewhere. But on it. The Europeans, for example, are waiting to see what the supercollider's fate will be in the United States before embarking on their own project.

Some lawmakers argue that if the supercollider is built, it must be partially financed through international cost-sharing agreements. But foreign governments will be reluctant to commit money for it until America demonstrates its resolve to go ahead. Wherever it's built, it's certain that the best high-particle physicists and other top scientists will move to be near this latest and most powerful machine in their field.

These scientists contend they need the supercollider to learn more about the nature of subatomic matter and, perhaps, to solve the mystery of how the universe was created. Beyond this quest for greater fundamental knowledge and thousands of construction and permanent scientific jobs, other rich, long-range benefits are certain to emerge from supercollider research.

The national budget for scientific programs must have limits, but the United States is still far from reaching them. This country must continue to fund innovative research, big and small—projects such as the supercollider and those Frank Press advocated. All are crucial to driving the economy and ensuring that America will be competitive for years to come. Of course, clear goals and priorities are needed to ensure that the research will be as productive as possible. That direction will have to come from strong leadership in government and the private sector.

Meanwhile, Congress should decide whether it wants to relegate this nation to a second-rate status in high-energy physics. If it does, it can continue stalling and cutting corners. If it doesn't, it should commit to building the supercollider and get on with selecting other worthwhile projects to which to invest.

LETTER 1069 (CONTINUED)

THE INDIANAPOLIS STAR

The Super Collider

Indiana was among the few states that did not bid on what is to be the largest science research construction project in the world — the Superconducting Super Collider. But the location of the mammoth underground project is still of major significance to Hoosiers.

Two Indiana neighbors, Illinois and Michigan, are among the seven states still in the running for the proposed 20-trillion electron volt colliding beam accelerator.

To be housed in a 100-mile-long tunnel ring, it would collide sub-atomic particles at nearly the speed of light, allowing scientists to look far beyond their present capabilities at the forces which mold the universe.

Such accelerators are to particle physicists such as Andrej Zimmerman what telescopes are to astronomers and microscopes are to biologists. Dr. Zimmerman says he came to teach at Indiana University because he was within a few hours drive of the Fermi National Accelerator Laboratory at Batavia, Ill.

Known as Fermilab, it is currently the largest accelerator in the world and is similarly important to the work of scientists at Purdue University, the University of Notre Dame and Ball State University. A total of 65 physicists from these four schools are now working on projects there.

The value to Indiana of having Fermilab near can also be measured by the $903,000 in its current contracts with 210 Indiana companies for goods and services.

If the new accelerator project were to be located around the present Fermilab project, as proposed by Illinois, the benefit to Indiana would probably be even greater. Certainly it would provide continued and improved research facilities for Indiana scientists.

It is doubtful that Fermilab could continue if the new accelerator were located elsewhere. Operating two such accelerators would probably be too costly for the U.S. government.

Other states in the running are Arizona, Colorado, North Carolina, Texas and Tennessee. The leading contenders are Illinois, Colorado and Texas. The Department of Energy is scheduled to select a site in November.

While there are other attractive bids, it is the Illinois proposal which makes the most sense, not just for Hoosiers, but for taxpayers all across the nation.

The existing Fermi accelerator is needed as an injector for the new project and would have to be duplicated at any other site. That means hundreds of millions of dollars could be saved by building the new Superconducting Super Collider at Batavia, just west of Chicago and near the center of the United States.

Since than any other site, the Illinois location would save tax money and make scientific sense. It deserves Indiana's support.

WEDNESDAY, JANUARY 16, 1991

LETTER 1069 (CONTINUED)

Chicago Sun-Times

Commentary THURSDAY, MAY 5, 1988

SSC brings far more than jobs

Funding for the Superconducting Super Collider is running into so much trouble in Congress that a few of its critics are suggesting that the entire project be put out of its misery. The malady afflicting the SSC is a badly mistaken perception that this country, in these troubled budgetary times, cannot afford the SSC. Considering the huge federal deficits the country faces, the argument deserves an answer.

The facts are these: The Reagan administration and congressional supporters of the SSC have asked for $263 million to fund SSC-related research and to start pre-construction activities next year—things like engineering design, site preparation and purchase of long lead-time collider components. But many lawmakers are considering a much smaller amount, perhaps as low as $90 million. A House subcommittee Wednesday, for example, endorsed a $100 million appropriation, which is too low to permit significant construction-related activities to begin next year.

In other words, the SSC opponents would have us believe that this country, with a $1 trillion federal budget, is unable to afford another $300 million for this project.

And that reasoning gives us laughing fits. For most members of Congress, $300 million is as significant as the dust balls that collect unnoticed behind their living room couch. No, opposition to the SSC doesn't have anything to do with this year's or any year's budget.

Opposition has more to do with ignorance about the effect of this magnificent science project. And, more realistically, it has more to do with the fact that 26 states used to be in the running for the $4-billion-plus project and now only seven are.

Consider Rep. Vic Fazio (D-Calif.), who, when his state was in the running a year ago, said his enthusiasm for the SSC "far exceeds . . . mere parochial interests." Now that his state no longer is one of the finalists, Rep. Fazio calls the SSC's costs "mind-boggling." Congressional Quarterly noted that in 1987 before the seven finalists were announced, there were 52 floor speeches and insertions into the Congressional Record, all of them supportive. But since Jan. 19, when the seven finalists were announced, a mere two speeches have been given.

SSC supporters, especially those in the science community, always have feared that the engine propelling SSC through Congress was the jobs and contracts that would be reaped by the state that wins the project. And now that fear appears to be realized.

We can only hope that Congress will look beyond the patronage and the plums to fully understand the value of the super collider: the contribution to man's understanding of matter, from the smallest particles to the nature of the universe; the unforeseen advances achieved by pushing basic science to new frontiers, and the preservation of America's scientific leadership.

We acknowledge that such a statement carries little weight coming from a state still in the running for the SSC. But that's how we feel, and that's how we'll continue to feel even if Illinois is not selected.

LETTER 1069 (CONTINUED)

Chicago Sun-Times

Wednesday, March 30, 1988

Relax! Super Collider won't end all life

Dennis Byrne

Just as I was stepping from my local high school the other night, the soup factory across the street let loose a horrible stench. It made me think of some opponents of the proposed Superconducting Super Collider in the western suburbs and beyond.

That's because the factory and the collider are both the sort of thing that wouldn't get built if they had been put to a vote of nearby residents. They both would be depicted as a threat to property values and western civilization; but they both would end up as nothing worse than nuisances whose presence ultimately is necessary or beneficial.

Many other things in my community are like this: the freight trains that rumble through the middle of town; the superhighway and its roaring trucks a mile away; the last big garbage dump in the northern suburbs on the south end of town, and, beyond, the military airport and its noisy planes.

Adding it all up, this may sound like a *lousy* place to live. But judging by my property tax bill, the tax assessor doesn't think *so. Nor do the many* people who keep wanting to move here, inflating my home equity beyond my wildest dreams.

People, in other words, tend to overlook what's already there. But, nowadays, try to build any of these and you would face an angry crowd passing around petitions, demanding public hearings, flooding the press with letters and threatening elected officials.

Take the bogeymen conjured up by some of the super collider opponents: it'll ruin property values, poison water supplies, unleash radiation, despoil the countryside and endanger children's lives.

I've covered fights of this kind between residents and public officials for two decades—from the proposed Crosstown Expressway to commuter parking lots—and mostly I've been skeptical of officialdom's statements and promises. But never in those years have I heard so many inaccuracies and outrageousness coming *from the residents' side.*

One complainer's letter spoke about the collider being pieced "over" schools and subdivisions when, in fact, it will be a 52-mile ring built entirely far below ground. A caller complained that the tunnel would be a quarter-mile in diameter. If so, he would have a right to worry about schools dropping into the void, but the tunnel's diameter actually will be only a dozen feet. A village board member opposed the collider because "we don't need any more *nuclear reactors here.*" True, we don't, but this isn't one.

Hobgoblins have been raised about PCBs (none will be used), new high-energy electric lines that disputedly cause childhood leukemia (no new high-energy lines will be installed), threats to the environment from the spoils excavated from the tunnel (they're about as dangerous as the gravel in your driveway or the clay excavated for your house foundation), lack of places to put the spoils (four times as much, generated by the incomplete Deep Tunnel project, already has been disposed of without the kinds of problems predicted by collider critics), and dangers from the truck convoys hauling away the spoils (almost as many trucks as haul away the corn crop). I've run out of room—and breath—to describe the other apparitions.

Yes, I sympathize with the 170 or so households and 40 businesses that will be moved (at state expense). But as for those predicting the end of life as it is known in the western suburbs: Before any more whining, please visit the Southeast Side, home of the state's worst toxic dumps, to see how a community truly can be devastated.

Dennis Byrne, whose column appears on Wednesdays, is a member of the Chicago Sun-Times editorial board.

LETTER 1069 (CONTINUED)

Chicago Sun-Times
Commentary
MONDAY, FEBRUARY 22, 1988

Don't let handful endanger collider

Sen. Alan J. Dixon (D-Ill.) was booed last week by a small but vociferous minority of the audience when he spoke in Batavia on the enormous advantages Illinois offers as a site for the proposed superconducting super collider. The booing, at a public hearing with a panel of experts convened by the U.S. Energy Department, was a frightening example of ignorance in action.

It has been explained again and again that the collider—which Sen. Dixon correctly calls the crown jewel of high-energy physics—can pose absolutely no health or safety hazard to its surrounding community. But what will it take to persuade those who persist in protesting the government's consideration of locating the $4.4 billion collider in Batavia?

Sen. Dixon says, of course, that protests will in no way diminish his commitment to Illinois' all-out effort to win the collider. He, along with Gov. Thompson and other state officials of both political parties, are not about to abandon a quest on which the state already has spent millions in project promotion. But their enthusiasm and dedication cannot contain the potential for damage that can be exerted by protesters able to magnify their imaginary fears beyond what their small numbers should be able to signify.

For example, the morning after the public hearing, a wire service story being fed to the nation's news outlets highlighted the booing of Sen. Dixon, mentioning the protest in the story's lead paragraph. Anyone in another state hearing the first few paragraphs of that story on a radio or television news broadcast would have thought Illinois to be bitterly divided on whether it wants the collider.

That is not so. Every measure of public sentiment indicates widespread support for the project. After all, isn't Fermilab (with which the collider would share a campus) already the world's largest and most powerful particle accelerator? It is, and it has been a tremendous boon to the western suburbs since its development three two decades ago.

But the noisy protest heard here echoed the kind of demonstrations in New York that grew into a political squabble eventually forcing that state to withdraw its bid for the collider. Illinois, now in competition with only a handful of states, remains the leading contender for the collider, and it would be tragic to lose it solely on the basis of irrational fears that the collider somehow is equivalent to a nuclear power plant.

The collider, which would be built in solid bedrock hundreds of feet under 16,000 acres of farmland in DuPage, Kane and Kendall counties, also poses no threat of disruption to or devaluation of homes or businesses.

However, to minimize fears in that regard, Gov. Thompson last week indicated the state would be willing to legislate a program guaranteeing no financial loss to the property owners due to the collider's proximity.

If that's what it takes, then the Legislature should enact such a program. The stakes are too high for minor obstacles at this point.

And the enormous potential for the Illinois economy is too vast for officials to allow flickers of protest to derail their efforts.

LETTER 1069 (CONTINUED)

Commentary

Chicago Sun-Times TUESDAY, FEBRUARY 16, 1988

Super collider no threat

Unfortunately, some people in the far western suburbs are under the impression that they may get fried by radiation from the proposed Superconducting Super Collider. It's not true, of course, but it is the type of misinformation that could doom this worthwhile program.

Misinformation exists because some people understandably don't closely follow developments in high-energy physics and pure science, which is what the collider is all about. That's why we receive an occasional letter to the editor that confuses the collider with nuclear power plants, or whatnot. One confused village trustee in the suburbs even went so far as to vote against a resolution supporting the collider because "we don't need any more nuclear power plants."

This kind of confusion is, happily, rare. There is little, if any, of the kind of organized opposition to the collider that caused New York to withdraw from the competition for the site. Instead, wide support for the collider here comes from both the public and private sectors.

That's because people here have learned from the happy presence in Batavia of Fermilab, currently the world's most powerful collider, that such atom smashers pose no threat to life, health, property or the environment. People know that Fermilab, unlike many government and private institutions, does not hide behind guarded gates and barbed-wire fences. They know that Fermilab welcomes visitors, that its "campus" is among the most hospitable of settings for wildlife.

Fermilab should also comfort the very few worried that a super collider somehow will devalue property. Fermilab, with its staff and many visiting scientists, has enhanced the region's economy and quality of life.

The public understanding nurtured under Fermilab is simply another reason why the federal government should locate the collider in the Chicago area. People here well appreciate the contribution that a super collider will make to man's fundamental understanding of the universe.

And that's why we will continue to support the construction of the Superconducting Super Collider, even if it is not built here.

We would hope that other states in the competition for the collider could or would say as much.

LETTER 1069 (CONTINUED)

Chicago Tribune

FOUNDED June 10, 1847

24 Section 1 Thursday, February 11, 1988

Protect Illinois' lead in collider race

Now that Illinois is one of seven finalists for the coveted $6 billion superconducting supercollider, a few faint voices of protest and concern are rising. Some residents of rural Kaneville fear their homes will be displaced, and the mayor of West Chicago sees no benefit from the project for his town. In fact, he maintains it may even stop economic development there.

Big public projects—new expressways, transit systems, colleges, technology parks, expanded airports—almost always cause some disruption and inconvenience. The question is whether they will produce permanent benefits to the community at large that outweigh the drawbacks. The proposed sports complex on Chicago's Near West Side, for example, will mean moving about 275 families to new homes a few blocks from where they now live. But the development will spark an economic renaissance in a depressed, largely vacant area that ultimately will improve life for those 275 relocated families, create hundreds of new jobs and feed tax money into city, state and school district treasuries. The entire area will be better off.

If Washington decides to build the supercollider in Illinois, it will mean digging a 53-mile tunnel 300 to 500 feet under parts of Du Page, Kane and Kendall Counties. Land also will be needed for work stations and support structures, but the state believes its site plan will affect owners of only 168 homes. Those families, of course, must be adequately compensated. But if Illinois is fortunate enough to get the project, every taxpayer in the state will reap benefits for years to come. This giant research machine will create 6,000 jobs, generate $1.4 billion in income and produce $116 million in extra state tax revenue during its six or seven years of construction.

Once built, it will have a staff of 2,500 scientists and technicians, an operating budget of $270 million a year and minimal impact on the environment. And building it as an extension of Fermi National Accelerator Laboratory near Batavia not only will save U.S. taxpayers many millions of dollars but will also safeguard their investment in what is now the world's largest and most powerful particle accelerator, and ensure that the United States—and Illinois—will remain the leader in high-energy physics.

The supercollider also will enhance the prestige and property values of many communities in northeastern Illinois, including West Chicago, just north of Fermilab. But West Chicago's Mayor Eugene Reineds, though not formally opposing the project, fears his community's tax base will be gobbled up by government authorities. His concern is understandable, but if he would look beyond the short term he would realize that West Chicago can get handsome returns from the supercollider. Meantime, his narrow views can provide fodder for rival states who are only too eager to convince federal officials that if they pick Illinois they will have to deal with dissension and obstructionism.

Last month New York Gov. Mario Cuomo withdrew his state from the race because of organized opposition in the Rochester area, where 700 homes would have been razed for the project. That drove home to Illinois' remaining competitors—Texas, Michigan, North Carolina, Arizona, Colorado and Tennessee—the critical importance of mobilizing local support and political unity.

So far, Illinois officials have worked hard to make sure residents understand the project and its impact. They have held public meetings and made their plans available in community libraries. Fortunately, reservations like those expressed by Mayor Reineds do not appear to be widespread. More than 160 resolutions supporting the project have been offered by local governmental bodies, business organizations and service groups. A poll by Northern Illinois University showed that 77 percent of residents in the vicinity who know about the project want it situated at Fermi.

It's normal for people whose lives will be disrupted by a project to be unhappy, even though they will receive fair compensation. But it would be inexcusable for politicians or developers to do anything that could jeopardize an undertaking that means so much for the entire state. The competition for the supercollider in this final stretch is fierce. Don't give Illinois' rivals an advantage now.

LETTER 1069 (CONTINUED)

Los Angeles Times

Tuesday, February 3, 1987

Superboost for Science

The decision of the Reagan Administration to ask Congress to authorize the construction of a huge atom smasher worth billions of dollars is a boost for theoretical physics and for all of science. If Congress goes along, as it should, this nation's commitment to research and to scientific enterprise will be supported into the next generation.

To be sure, $6 billion (the final cost of the supercollider after a decade of construction) is a lot of money to come up with, especially when budgets are pressed and the deficit continues out of control. But, the United States cannot expect to remain the world leader in science and technology without investing large sums of money. This investment would repay dividends in direct knowledge and in new, uncharted areas that cannot be forecast.

The one danger of the supercollider project is that Congress would pay for it by taking money out of the rest of the science budget. Scientists in other disciplines are understandably concerned that this is exactly what is going to happen, and that physics' gain will be their loss. If that does occur, it will be a serious mistake, for all the other sciences will be decimated to pay for the new cyclotron.

No, the present science budget must be retained at least at its present level, and the supercollider should be added to it, taking money from elsewhere in the federal budget. The Pentagon would not miss $6 billion over 10 years.

There is also the very serious question of where to put the new machine, which would be in an oval-shaped tunnel 52 miles in circumference buried under ground. Twenty states, including California, are vying for this prize, but if the decision is made on the merits, the machine should most probably be sited at Fermilab in Batavia, Ill., near Chicago, where the country's largest cyclotron (4 miles in circumference) already exists.

In order to use the 52-mile supercollider, atomic particles would first have to be revved up in a smaller machine, like the one at Fermilab. If the supercollider is built somewhere else, a new starter machine will also have to be built—at a cost of about $500 million. Other than the federal pork barrel, there is no apparent reason to build the supercollider anywhere but Fermilab, which is surrounded by flat and lightly populated farmland with solid limestone beneath it.

The decision to locate the existing 4-mile cyclotron in Illinois was made in 1968 after the consideration of 200 proposals from virtually every state. Fermilab has been a great success. Much as we would love to have the new machine in California, no argument that has been advanced so far outweighs the claims of Illinois.

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LETTER 1069 (CONTINUED)

The Beacon-News

Sunday, January 31, 1988

An editorial

Start petition favoring SSC

More than 170 years ago, when the Industrial Revolution brought machines to the textile shops of 19th century England, the increased productivity and machineries-driven growth that inevitably produced a healthier economy with even more jobs almost didn't occur.

That's because groups of ungrowth, unchange textile workers — taking their name from Ned Ludd, a late 18th century workman who was reputedly by destroying the industry's first stocking frames — smashed and destroyed their new machines.

These workers were so fearful technology would eliminate their jobs that they sought to stop its onslaught by irrationally pretending it didn't exist.

Unfortunately, the Luddites, as they came to be known, are not unique to human history; they and their philosophical cousins have turned up with every major change in every social age, and so it is today.

TODAY, IN THE FOX VALLEY, for instance, scores of people have shown up at state-run information sessions the past two weeks to argue against Illinois as a site for the U.S. Energy Department's planned Superconducting Super Collider — on grounds it "might change our way of life."

While scores more expressed support for the SSC — a 53-mile, underground, particle accelerator to be attached to Fermilab near Batavia if Illinois wins the current siting competition — the modern-day Luddites called for a petition drive to have the name removed from consideration.

The prospect of such an effort is alarming, especially considering that a similar drive, netting 30,000 signatures, recently led the state of New York to withdraw itself as a finalist.

Yes, the SSC, should the Fox Valley land it, no doubt will "change our way of life," but to what?

"Our way of life" community is undergoing change, no matter how much we do to delay the inevitable, and it is only those foresighted enough to accept the inevitability of change who wind up reaping its maximum benefits.

SURE, A FEW AREA FAMILIES stand to be uprooted and relocated in the process of purchasing the 3,700 above-ground acres, and rights of use for 5,100 underground acres, necessary to construct the 53-mile-circumference, 10-foot-wide accelerator ring, but they number only a hundred or so and all will be amply compensated and assisted.

Beyond that, location of the ring in tunnel lines 400 feet underground means that, except for those few above-ground facilities to be built every 2.5 miles or so on its circumference, no one likely even will know it is there.

Of greater importance, however, is what the SSC can do for all of the Fox Valley's residents, including those who are disrupted.

For starters, there would be an immediate surge of 11,000 construction jobs for the expected seven-year period it will take to build the ring.

Then, creation of an additional 5,000 manufacturing, services, retail, wholesale, financial and other jobs a year, pumping up to an added $12 billion annually into the local economy, also is forecast, an infusion of funds likely to be near what will become the world's high-tech cutting edge.

FURTHERMORE, WINNING THE SSC would $8 million of travelling upgrading to Northern Illinois highways and all manner of improved public services, all paid for from new tax revenue produced by rapid growth.

Finally, there is the down side — should Illinois lose out and the SSC go elsewhere, Fermilab would phase down, with the loss of 2,000 jobs plus the income generated by all those thousands of scientists who currently visit this prestigious research facility.

Given these propositions and the reality of the Fox Valley's economic history of the past decade, it's hard to see how anyone logically could be against the SSC development. Which, the words of Dick VanBogaert, a Campton Township man who lost his job in August:

"I don't want to dig a tunnel," he said at the SCC promoters' recent informational meeting in St. Charles, "but, if we don't accept change, many others will be like me."

Maybe all who, like VanBogaert, recognize the positive value of this change ought to band together to start a petition drive IN FAVOR of Illinois as the SSC site.

Only then can we ensure that those 20th century Luddites among us don't ruin a positive note for everyone.

LETTER 1069 (CONTINUED)

Chicago Tribune Final Edition

Perils of a supercollider frontrunner

Coming out of the final turn in the race for the superconducting supercollider, seven states including Illinois are still in the running for the scientific prize. The U.S. Department of Energy sees the race as a dead heat. Illinois officials maintain they've got the lead, primarily because of Fermilab, which they say could save taxpayers nearly $3.3 billion toward the $6 billion storm number.

Are these people watching the same race? Well, yes—sort of. The Energy Department, which is expected to announce the preferred site late this year, says the competition is neck-and-neck because it has to say that. Its primary goal right now is to stay as much above the political fray as it can and to talk up the project as critical to the nation's competitive and scientific future. If its staff does otherwise, it risks turning the collider into a political football that could be deflated by a budget-conscious Congress.

Illinois, on the other hand, may be guilty of inflating its savings calculations to emphasize that Fermilab, which houses the world's largest particle accelerator, should give it a clear scientific and cost advantage. The state has pressed this edge from the start. And from the beginning, lawmakers and scientists from other states have tried to chip away at the Illinois advantage.

But after whining about the inconveniences of O'Hare and moping about the quality of the Fermilab staff, most scientists concede that using the existing accelerator as a warm-up track for the supercollider would save money. A study done for Illinois estimates that the federal government could save $539 million off the bus in construction and start-up costs. Add annual operating and financing savings and the state's contribution for tunneling and site improvements, and the total of savings reaches nearly $3.3 billion.

Energy Department officials yawn at these numbers, claiming that the cost differences for the various sites in the seven states are insignificant and will not be a decisive factor in site selection. But the federal government already has invested $3.4 billion in Fermilab. If it builds the supercollider elsewhere, it will have to pay for two major accelerator projects or walk away from a substantial investment in Fermilab.

Illinois must continue to press its case, not only because it means so much in jobs, tax revenue and prestige for the state, but also because it makes economic sense for the federal government, and the taxpayers who fork up nearly $1 trillion a year to support it, to put the supercollider here.

A few residents in the target area are worried about displacement, loss of tax revenue and lower real estate values, but Gov. Thompson showed to allay most of those fears with his proposal for a state-guaranteed fund to insure property values. Mr. Thompson and the state legislature should move quickly to set up such a fund to reimburse any owner who may be adversely affected by the project.

Meanwhile, Illinois should take heart in the fact that it, more than any other state, has been and continues to be the leading target of political propaganda and scientific squabbling on the supercollider. After all, the frontrunner always makes the most inviting target in a political race.

LETTER 1069 (CONTINUED)

St. Charles Chronicle
Insights

Wednesday January 27, 1988

Stakes are high in SSC game

We were surprised, to were many Kane County residents, to learn how close to Kaneville the Superconducting Super Collider would come if the giant project is built in Illinois.

Indeed, we had been told all along that the the collider would run underneath "rural Kane County" and affect few property owners.

Now we learn as many as 22 to 25 residents in Kaneville could be forced to leave their homes to make room for the SSC.

The project, if built in Illinois — and that's a big "if" — could very well change the face of that 150-year-old community.

While this is disappointing, and certainly we would never advocate the state confiscating homes for frivolous reasons, we believe the state's effort to land the SSC at Fermilab deserves all of our support.

We know from experience that being forced from our homes is tragic. Nothing can ease the pain of losing the memories and heritage of elements that develops wherever we live.

However, the stakes involving the super collider are so enormous as the project itself. If the SSC is not built in Illinois, we stand to lose much more than the thousands of jobs and the hundreds of millions of dollars in construction and operating funds the project would generate.

The current accelerator at Fermilab eventually will become obsolete. If the SSC is not built in Illinois, the area will lose the 3,500 jobs already at the laboratory.

Kane County — including Kaneville — lies in the path of burgeoning development, with or without the SSC. A scientific laboratory could very well provide the type of development that is compatible with the rural environment of western Kane County. It certainly would be a far cry from strip malls, subdivisions and fast-food restaurants.

Our public officials have a choice: Seek the super collider or lose Fermilab. The state has rightly chosen to aggressively seek the SSC.

The state has assured us that any resident losing his home will be "fairly" compensated.

We believe residents facing forced relocation should receive more than fair compensation as they will make the ultimate sacrifice for the good of the entire state.

The compensation also should make up for the six to 12 months of agonizing uncertainty those residents face prior to any firm decisions made by the U.S. Department of Energy.

We believe if residents receive more than fair treatment, they will support the state's efforts to land the $4.4 billion, 53-mile-in-circumference atom smasher project.

We also believe it's much too early to get emotional about who will be moved and who will not. A relocation plan may include an option for persons in Kaneville to move their homes to another location on their property, or there may be no need to move any homes at all if it is proven scientifically that there is no vital need for the "west campus," or Congress trims the collider cost by eliminating that west campus.

There is no guarantee that Illinois will get the collider project, and the question of Congress OK'ing full or partial funding remains unclear.

This goes much deeper than Illinois, and this area in particular, sending the SSC to keep Fermilab in operation. The nation's high-energy physics role in the world is at stake. America has always been at the top of this game and the SSC promises to usher in a new era of science and technology. If history is any guide at all, it tells us that the SSC will develop new industries and technology that we cannot even imagine at this point.

It is clear that we need the SSC. It is clear that some people may be hurt by this progress. We hope that the state takes the necessary measures to ease some of that pain.

LETTER 1069 (CONTINUED)

Chicago Tribune

FOUNDED June 10, 1847

October 2, 1988

Voice of the people

Facts vs. fears on supercollider

BATAVIA—The Tribune recently printed a Voice of the people comment written by an opponent of the most important research-economic development project Illinois has ever had the opportunity to win: Fermilab—the superconducting supercollider.

The writer devoted most of his attention to an unprecedented legislative package designed to safeguard a community. He also echoed criticisms of other SSC opponents whose complaints are easily answered by an examination of the facts.

As Illinois has worked to bring the SSC and its 6,000 construction and 2,500 permanent jobs here, people from government, business, labor, education and many other areas have worked together to inform the residents of the Fox River Valley. Consider:

- An SSC Project Office was opened in Batavia more than a year ago and has responded to thousands of requests for information from residents.
- The state conducted a series of five well-attended public hearings that provided information on the SSC.
- More than 70 speeches and other public appearances, ranging from League of Women Voters forums to service club presentations to Saturday morning coffee-and-doughnut discussions, were made either by SSC Project Office personnel or others who provided information on the SSC.
- Copies of the Illinois SSC application, federal documents and volumes of other detailed material are available at area public libraries.
- Information booths were visible and vigorous in answering questions about the SSC at countless fairs and festivals this summer.
- Mailings to homeowners who may be affected by SSC construction provided them with facts about the project and invited them to call the SSC Project Office for additional information.
- Coverage of SSC-related issues has been intense in the Fox River Valley and Chicago media.

Those are just some of the ways the state has provided information on the SSC. To say otherwise is to ignore the facts at the expense of informed debate.

Furthermore, during this unprecedented effort to inform the public about the SSC, the legislature unanimously approved a program never before offered Illinoisans who may be affected by a government project. Under this plan, Illinois has taken steps to protect a homeowner's equity. But according to the Illinois Association of Realtors, such a program may not be needed since "overall [home] values would be increased by the presence of the SSC."

Illinois has guaranteed to replace any revenues local governments might lose before economic benefits from the SSC are felt, a step that explains why more than 220 government bodies and other organizations have endorsed the SSC.

Illinois will pay more than current fair market value for farm and receipt when prices were higher. No catches. The law means what it says.

Illinois will offer an insurance program to homeowners in the unlikely event that SSC construction damages their homes.

The public effort to bring the SSC to Illinois has included Fox River Valley residents, both by soliciting their support and encouraging their questions. They have had ample opportunity to learn more about the SSC, what it means to Illinois and how Illinois is preparing for it by approving a legislative package unprecedented for our state.

With the entire Illinois congressional delegation, the Illinois General Assembly, the state Republican and Democratic Parties and more than 38,000 area residents who have signed petitions supporting the SSC, obviously information is available for those who want it.

The SSC is a public project, and we welcome the public's participation.

Bill Kempiners

Director of intergovernmental relations, SSC Project Office

LETTER 1069 (CONTINUED)

Chicago Tribune

FOUNDED June 10, 1847

October 9, 1988

Texas trips in supercollider race

After years of preparation and months of running, the finish line in the race for the $6 billion superconducting supercollider is in sight. And as you might expect in this pressure-packed contest with its high economic and scientific stakes, the cheering is reaching hysterical pitch.

Texas Gov. Bill Clements, whose state is one of seven still in the running, proclaimed with not a shred of evidence the other day that he has "good reason to believe we're in the No. 1 position."

To assure victory for Texas, he said, "It's terribly important that we elect George Bush."

Clements is a Republican, but that crack must have been drafted by a Michael Dukakis speechwriter.

He's suggesting that the Vice President is for sale, ready to trade an immensely important federal project for electoral college votes.

He also put Bush in an awkward position with political leaders and voters in six other states, some of which have almost as many electoral votes as Texas.

Gov. Thompson responded by buttonholing the Vice President during an Illinois campaign swing, forcing him to cross his heart and hope to die before he'd steer this public work prize to his adopted state.

No one ever said that politics won't play a role in placing the collider, but to use it to put Bush on the spot is unfair to him and the selection process. Government scientists and engineers have been examining the finalists in minute detail, making on-site visits and comparing the costs and feasibility of the states' proposals. The giant atom smasher should go to the site that offers minimum costs and maximum potential gain in scientific and economic spinoffs.

That narrows the finalists to one: Illinois.

Crain's Chicago Business, October 10, 1988

Joe Cappo

Yes, even Illinois needs a few leptons

There is a touch of irony in high-energy physics: The smaller the particles that scientists are probing, the larger the machines they need to probe them.

I do not pretend to be an expert in this field; but I recently spent an illuminating week immersed in high-energy physics, talking with people devoted to delving into the basic building blocks of matter.

The language got so technical at times that I needed a translation. Even then, some of the concepts escaped my comprehension. What do you expect from a business journalist?

In a world that has become familiar with Big Business, Big Labor and Big Government, we now have Big Science. And I mean that literally.

Joe Cappo

There I was, standing at CERN, the particle physics laboratory that sits on the French-Swiss border near Geneva. CERN is a collaboration of 14 European nations and is the largest particle physics lab in the world.

I was not standing on the ground at CERN; I was under it. About 300 feet below the surface is an experimental hall. This is a huge research cavern about the size of a domed football stadium.

In front of me was a device used to detect the characteristics of electrons and positrons that will be collided at high speeds through the use of a particle accelerator. This device, actually a giant magnet, is about 50 feet high, wide and deep. It weighs 3,500 tons and contains as much steel as the Eiffel Tower.

The monstrous hunk of machinery eventually will be used to study particles as tiny as .0000000000000001 millimeters wide (give or take a zero or two). It is one of eight way stations along a 27-kilometer circular subway-sized tunnel that houses the particle accelerator.

Scientists say the machine's size and the tunnel's length are necessary because they make it possible to study these tiny particles. This equipment is to physicists what the Challenger spaceship is to astronauts. Like a spaceship, the accelerator takes the physicists into a galaxy of sub-atomic particles with names like quarks, leptons, mesons and neutrinos.

Physics research demands not only substantial equipment and real estate, but also pleiades of highly trained professional and technical people. Physicists joke that the Nobel Prize cannot be awarded to a team of more than three scientists—illustrating any major high-energy physics projects.

And now that my total amount of scientific knowledge has been expanded, it is time to return to my introductory premise. In terms of high-energy physics—just as with space research—there is no low-cost alternative to Big

LETTER 1079

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springfield illinois state museum

October 14, 1988

SSC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Dear Sir,

Please find attached my comments to the DOE meeting in Aurora, Illinois, October 6 and 7, 1988. Also included are five tables that illustrate the distribution of cultural resources at Illinois' proposed SSC site. These tables reflect the results of field work conducted after the EIS submittal. We have now examined approximately 60% of potential impact areas.

The table headings require explanation. The P-ring is Illinois' proposed ring alignment. The candy stripe and corridor-5 categories represent buffer areas that may be impacted by ring rotation or realignment. We have focused on the P-Ring alignment.

Sincerely,

Michael D. Wiant

Michael D. Wiant, Ph.D.
Chairman, Anthropology Section

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Attachments

IIA.1- 2217

Presentation to the Department of Energy Public Hearing

October 7, 1988

Michael D. Wiant, Curator of Anthropology

Russell W. Graham, Curator of Geology

My name is Dr. Michael Wiant. I am the Curator of Anthropology at the Illinois State Museum, whose director, Dr. R. Bruce McMillan, I represent at these proceedings. The museum's role in Illinois' effort to host the Superconducting Super Collider (SSC) is the identification and documentation of cultural and paleobiological sites, resources which are protected by a variety of federal laws and executive orders. Specifically, we have searched historical documents, interviewed landowners and tenants, and conducted fieldwork throughout Illinois' proposed SSC site to identify cultural resources, such as prehistoric and historic archaeological sites and historically and/or architecturally important standing structures, and paleobiological sites, locations where fossil-bearing deposits are found.

We have continued our studies since we submitted information for the Environmental Impact Statement and I would like to take this opportunity to provide you an update on our investigations.

To date we have examined approximately 60% of the land that would be affected by the construction and operation of the proposed SSC, including land affected by proposed upgrades of local infrastructure and other activities that will

facilitate this construction project. In addition, in an effort to maximize the flexibility of Illinois' site if subtle design changes are required, we have examined buffer areas around the site of each proposed SSC facility.

We have documented 78 prehistoric and 11 historical archaeological sites in areas that may be affected by SSC construction and operation. In addition, archival research indicates that there may be as many as 79 potential historical sites, which are locations where historically documented structures are no longer standing.

We co-sponsored an architectural survey of standing structures in unincorporated areas of Kane, Kendall, and DuPage counties in cooperation with the Illinois Historical Preservation Agency, hereafter referred to as IHPA, and the Kane County Development Department. A total of 185 pre-1945 structures were identified and their architectural character documented.

Cultural resources are protected by the provisions of several federal laws including Section 106 of the National Historic Preservation Act of 1966 as amended. This law also establishes criteria by which cultural properties are determined significant. A preliminary assessment of the cultural resources documented thus far indicates that none of the archaeological sites appear eligible for nomination to the National Register of Historic Places. Most of the prehistoric sites are spatially small scatters of stone artifacts representing short term occupations. The historical archaeological sites, mostly the remains of residential or farm structures, range in age from 1830 to the early 20th century. Documentation of the architectural character and/or history of the standing structure is ongoing.

Cultural resource information gathered through the museum's efforts is forwarded to the State Historic Preservation Office (SHPO), which is part of the IHPA. A final determination of the significance of all cultural resources is the responsibility of the SHPO. If any site or structure is deemed significant, we will, of course, recommend avoidance of the property. Recognizing that avoidance is not always possible, the scientific and aesthetic value of cultural resources can be preserved by systematic investigation through excavation and detailed study. Another alternative can be described as adapative use. At the Fermilab, standing structures can be used to house laboratory staff without significantly modifying the structure's architectural character.

The Illinois State Museum has also conducted a field survey and literature search for paleobiological resources in the SSC study area. A total of 82 high probability areas, primarily bogs and natural depressions, were visited. These sites were evaluated for their potential to produce paleontological resources by examination of natural and artificial outcrops. In addition, sediment samples were collected and processed for microfaunal and microfloral remains. Hand coring and a mechanical hydraulic coring machine were used to investigate subsurface deposits. During this survey six vertebrate sites and five pollen sites were located in the study area. One 15m core from Nelson Lake that contains a late Pleistocene and Holocene vegetational record was collected. In addition we have two 5m cores from Spring and Island lakes that contain a complex late Quaternary record.

All potential construction areas within the corridor were assessed and sampled when possible. None were found to contain any paleobiological resources.

In closing, it is important to understand that the State of Illinois, recognizing the value of its scientific resources, has made every effort to insure that significant cultural and paleobiological resources will not be unnecessarily disturbed or destroyed by construction and operation of the SSC. Although our effort is not finished, judging from what we now know about cultural and paleobiological resources in the area, construction and operation of the SSC will not seriously impact these valuable scientific resources.

Prehistoric Sites

	Site frequency/% surveyed	Lancy stripe.	Corridor-S	Total
Intermediate areas				
E1	0/no access	0		0
E2	1/100%	3 (stratified fee)		4
E3	0/100%	0		0
E4	0/100%	0		0
E5	0/100%	0		0
E6	0/100%	0		0
E7	0/no access	0		0
E8	0/forest	0		0
E9	0/grass-forest	0		0
E10	0/100%	0		0
Service areas				
F1	0/100%	0		0
F2	0/no access	0		0
F3	0/100%	2		2
F4	0/100%	1 (stratified fee)		1
		1		1
F5	0/pasture	0		0
F6	0/100%	0		0
F7	0/100%	0		0
F8	0/100%	0		0
F9	0/100%	0		0
F10	0/100%	0		0
Intersection points				
K2	0/100% (Fermilab)	0		0
K3	0/Not examined	0		0
K4	0/100%	0		0
K5	0/Not examined	0		0
K6	0/Not examined	0		0
Beam access				
J1	0/No access	0		0
J2	0/50%	0		0
J3	0/100%	0		0
J4	0/No access	0		0
J5	0/Not examined	0		0
J6	0/100% (Fermilab)	0		0
Stratified fee	3/42%			3
Far cluster		5		5
Fee simple	25/70%	0		25
Near cluster		4		4
Fee simple	2/42%	0		2
Fermilab	24/90%	0		24
Corridor-S			7	7
TOTAL	55	16	7	78

1 Land potentially impacted by P-ling rotation, <1% surveyed.

Historical Archaeological Sites
Visits verified - as of 15 May 1995.

	Owing	Dandy Bridge	Corridor-5	Total
Intermediate areas				
E1	2	0		2
E2	1	0		0
E3	2	0		
E4	1	0		
E5	2	0		0
E6	2	0		2
E7	0	1		1
E8	0	0		0
E9	0	0		0
E10	0	0		0
Service roads				
F1	0	0		0
F2	0	0		0
F3	0	0		0
F4	0	0		0
F5	0	0		0
F6	0	1	stratified rec.	1
F7	0	0		0
F8	0	0		0
F9	0	0		0
F10	1	0		1
Interaction zones				
K1	Terminus.	0		0
K2	0	0		0
K4	0			0
K5	0	0		0
K6	0	0		0
Base areas				
J1	0	0		0
J2	0	0		0
J3	0	0		0
J4	0	0		0
J5	0	0		0
J6	0 (Terminus).	0		0
Stratified rec	0			0
Rec cluster		0		0
Rec single	1	0		1
Mear cluster		0		0
Rec single	0	1		1
Peraslea	0	0		0
Corridor-5			2	2
TOTAL	4	5	2	11

Potential Historical Archaeological Sites
(documentary evidence only - field verification ongoing)

	P-line	Sandy strata	Corridor-S	Total
Intermediate areas				
E1	0	0		0
E2	0	1		1
E3	0	0		0
E4	0	3		3
E5	0	0		0
E6	0	0		0
E7	1	1		2
E8	0	1		1
E9	0	0		0
E10	0	0		0
Service areas				
F1	0	0		0
F2	0	0		0
F3	0	1		0
F4	-	1		1
		1 (stratified fee		1
F5	0	0		0
F6	0	4		4
F7	1	2		3
		1 (stratified fee)		1
F8	0	1		1
F9	1	0		1
F10	0	0		0
Interaction points				
K2	0 (Fernilab)	0		0
K3	0	0		0
K4	0	0		0
K5	0	0		0
K6	0	0		0
Beam access				
J1	0	1		1
J2	0	0		0
J3	0	2		2
J4	1	3		4
J5	0	2		2
J6	0 (Fernilab)	0		0
Stratified fee	7			7
Far cluster		2		2
Fee simple	12	0		12
Near cluster		18		18
Fee simple	3	0		3
Fernilab	6	0		6
Corridor-S:				
TOTAL	33	46		79

* Information collected but not presented in this table.

Pre-1950 Standard Structures

100% survey of unincorporated areas and rural corridors

	Public	Lease/Service	Formula-B	Total
Interpolate areas				
E1				1
E2				1
E3	0	1		1
E4	0	4		4
E5	0	0		0
E6				0
E7	0			3
E8	0	5		5
E9	0	0		0
E10	0	0		0
Service areas				
F1		0		0
F2	0			0
F3	0	2		2
		1 (stratified fee)		1
F4	0	4		4
		2 (stratified fee)		2
F5	0	0		0
F6	0	4		4
		1 (stratified fee)		1
F7	0	4		4
		1 (stratified fee)		1
F8	1	0		0
F9	0	0		0
Interaction points				
K2	0 (Formulas)	0		0
K3	0	0		0
K4	0	0		0
K5	0	0		0
K6	0	0		0
Base access				
J1	0	1		1
J2	0	0		0
J3	0	0		0
J4	0	0		0
J5	0	0		0
J6	0 (Formulas)	0		0
Stratified fee	42			42
Far cluster		3		3
Fee simple	24	0		24
Near cluster		41		41
Fee simple	37	0		37
Formulas		0		0
Corridor-51				
TOTAL	124	91		185

1 Information collected but not presented in this table.

Cemeteries

	P-Ring site frequency	Canby-strip.	Corridor-5	Total
Intermediate areas				
E1	0	0		0
E2	0	0		0
E3	0	0		0
E4	0	0		0
E5	0	1		1
E6	0	0		0
E7	0	1		1
E8	0	0		0
E9	0	0		0
E10	0	0		0
Service areas				
F1	0	0		0
F2	0	0		0
F3	0	0		0
F4	0	0		0
F5	0	0		0
F6	0	0		0
F7	0	0		0
F8	0	0		0
F9	0	0		0
F10	0	0		0
Interaction points				
K2	0	0		0
K3	0	0		0
K4	0	0		0
K5	0	0		0
K6	0	0		0
Base access				
J1	0	0		0
J2	0	0		0
J3	0	0		0
J4	0	0		0
J5	0	0		0
J6	0	0		0
Stratified fee	1			1
Far cluster		0		0
Fee simple	0	0		0
Near cluster		0		0
Fee simple	0	0		0
Fee:lat	1	0		1
Corridor-5			6	6
TOTAL	2	2	6	10

(Lands potentially impacted by P-Ring rotation, 1% surveyed.

LETTER 1086

Illinois Environmental Protection Agency P.O. Box 19276, Springfield, IL 62794-9276

217/782-2113

October 13, 1988

SSC Draft EIS Comments
Dr. Wilmot Hess, Chairman
SSC Site Task Force
Office of Energy Research, ER-65, GTN
Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

In my testimony provided before the Task Force (copy attached) in Chicago on October 7, I made reference to ozone monitoring data that showed compliance of the ozone ambient air quality standard. After my testimony, I was asked by a member of the task force if the referenced ozone data had been provided to the contractor preparing the final E.I.S. and I indicated that it has been. The purpose of this letter is to provide Table I SSC Summary Ozone Data as a supplement to my testimony and as additional comment for the record.

I appreciate the opportunity to provide testimony and information in this very important matter before you. If I can provide any clarification or addition information, please advise me.

Sincerely,

Terry A. Sweitzer, Manager
Permit Section
Division of Air Pollution Control

TAS:lj:01/051

Encl.

Testimony before: U.S. Department of Energy
Subject: Superconducting Supercollider (SSC)
Draft Environmental Impact Statement
Air Quality Assessment
Date: October 7, 1988
By: Terry A. Sweitzer, P.E.
Manager, Permits Section
Illinois Environmental Protection Agency
Division of Air Pollution Control

I am testifying today on behalf of the Illinois Environmental Protection Agency's Division of Air Pollution Control and for it's review of the Air Quality Assessment portions of the SSC's Draft Environmental Impact Statement.

As indicated in the Draft E.I.S., the construction and operation of the SSC would result in emissions of all six of the criteria air pollutants. Our assessment of the air quality impact of these emissions is consistent with the findings for the Illinois site in the Draft E.I.S. that for all pollutants except total suspended particulates there would be an insignificant impact of the project on air quality. With respect to total suspended particulates, during the construction phase of the project fugitive dust emissions could impact the localized area. It would be envisioned however that standard industrial practices would be required to minimize fugitive dust emissions. These mitigation measures would include; maximized use of paved roads, watering of the construction site and unpaved roads, controlled excavation activities (e.g., wind screens, enclosures, application of dust suppressants and heavy duty covers), use of covers on vehicles hauling materials and construction scheduling. The proper application of these measures would reduce off-site concentrations to an extent necessary to achieve compliance with ambient air quality standards. Under normal operation, the SSC would have insignificant emissions of total suspended particulates and therefore have a negligible impact on air quality.

One issue raised in the Draft E.I.S. concerned the location of the SSC at sites in Illinois, Michigan and Tennessee within areas that are designated nonattainment for ozone and carbon monoxide and that commuter traffic emissions could further degrade

air quality. The Metropolitan Chicago Area is classified as nonattainment for ozone. However, the location of the proposed Illinois site is well outside of the urban traffic corridors and lies over 30 miles from downtown Chicago. Ambient air monitoring data collected around the proposed site over the last five years has not shown a violation of the ozone air quality standard. An analysis of the SSC emissions with it's associated vehicular traffic, consistent with the information contained within the Draft E.I.S., would show an insignificant impact on ozone air quality both at the SSC and on a region-wide basis. With respect to carbon monoxide, this area of Illinois has an unclassified status. Unclassified areas are treated as attainment and available information would indicate that carbon monoxide concentrations around the proposed Illinois site are well below the standard. The Draft E.I.S. provided an air quality assessment for carbon monoxide which projected a small concentration above the background. These worst case contributions by the SSC project would still provide ambient concentrations of carbon monoxide well below the standard.

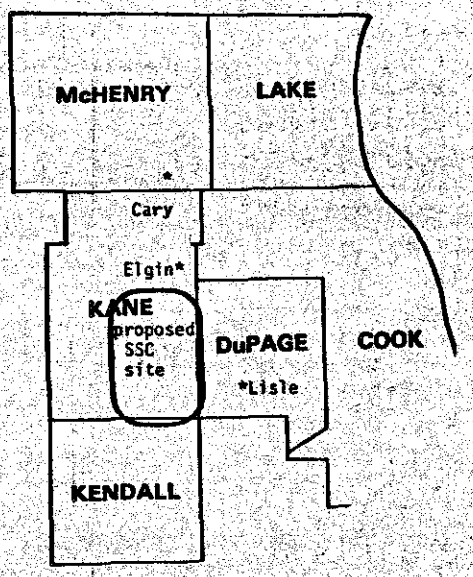
In summary, the Illinois E.P.A. finds that the construction and operation of the SSC in Illinois could be accomplished with adequate protection of the ambient air quality standards.

TABLE I
Illinois
SSC Ozone Data Summary

Site**	Number of Days Greater than 0.125 ppm*				
	1984	1985	1986	1987	1988
Elgin	0	0	0	0	0
Cary	0	0	0	1	0
Lisle	1	0	0	2	1

*Attainment determined as a 3 year average not to exceed 1.0 day per year. All these sites average 1.0 or less across the period of 1984-1988.

**The Elgin site is approximately 2 miles from the proposed Illinois SSC site, while Lisle and Cary are located at some 5 miles distance.



LETTER 1093

Illinois State Water Survey

Telephone (217) 333-2210
2204 Griffith Drive
Champaign, Illinois 61820-7495

October 11, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Dear Dr. Hess:

I have enclosed my comments on the SSC DEIS which were read into the record at the public hearing in Aurora, Illinois on October 7, 1988. These comments are germane to the issue of regional ground-water overdrafts in the area of the proposed Illinois site. In particular, the comments are intended to clarify the statement in Table 1-1 in Volume I, Chapter 1 that the construction and operation of the SSC will result in an incremental increase to ground-water overdraft. You will note that my comments place this technically correct statement in a proper perspective to the historical water use patterns in the region and our interpretation of the available data show that the water resources in the region are more than adequate to meet the demand of the SSC during construction and for operation.

I hope you find these comments useful in preparing the final EIS for the project.

Sincerely,

Richard G. Semonin

Richard G. Semonin
Chief

dkm

ENR A Division of the Illinois Department of Energy and Natural Resources

Richard G. Semonin
Chief
Illinois State Water Survey
2204 Griffith Drive
Champaign, IL 61820

Comments on the SSC Draft Environmental Impact Statement:

REGIONAL GROUND-WATER OVERDRAFTS

My name is Richard Semonin and I am Chief of the Illinois State Water Survey in Champaign - a Division of the Illinois Department of Energy and Natural Resources. The Water Survey has been monitoring the quantity and quality of Illinois' waters for nearly 100 years. Since 1895, we have continuously helped solve water resource problems for individual homeowners, municipalities, and industries in this area of Illinois. Quite naturally our long-term records have been extremely important in providing technical information for the Illinois SSC proposal and in addressing environmental impact issues.

The Draft Environmental Impact Statement (DEIS) makes numerous references to the potential impacts that the SSC tunnel will have on the regional ground-water resources at the Illinois site. While the text of the report generally dismisses the magnitude of these impacts (and rightfully so) as being negligible, a review of only the summary tables would lead the casual reader to draw nearly the opposite conclusion. The tables suggest that the project would cause an "incremental increase to a regional overdraft". At least three points ought to be made in order to put these statements into perspective.

First, there is indeed a regional overdraft of the Cambrian-Ordovician or "deep sandstone" aquifer system in the eight-county area. Pumpage from this huge aquifer system has exceeded the estimated safe yield for about 30 years. As a consequence

of accelerated pumpage, water levels have fallen more than 900 feet since 1860 in deep wells in northern and western Cook, northeastern DuPage, and northwestern Will Counties. These three counties, incidentally, account for about 70% of the regional deep pumpage. In 1985, for the first time since detailed water levels have been recorded, a significant number of wells in the Chicago region showed a rise in water levels.

Some of this rise has been a result of declines in industrial pumping rates. In addition, however, recent studies by the State Water Survey indicate that Lake Michigan allocations will also result in large recoveries of water levels as deep wells are shut off. Projected deep pumpages for the area, although still in excess of the safe yield, will be reduced substantially because of the lake allocations, and the situation in the deep system will clearly be one of improvement.

A second observation about the deep sandstone aquifer is that in the SSC area, the trend is away from dependence on that system and toward utilization of both surface water and shallow aquifers. Elgin, for example, now procures about half its water supply from the Fox River, while Aurora is proceeding toward a three-source system that includes the Fox River, glacial and shallow bedrock aquifers, and the deep sandstone. The State Geological and Water Surveys are concluding a study of the shallow aquifers of Kane County that suggests that substantial quantities of ground water can be developed from these shallow aquifers.

Second, there is also a local overdraft in the shallow dolomite aquifers in DuPage County, to the east of the SSC site. However, Lake Michigan allocations will soon begin to improve the situation there, also, as the pipeline from Chicago is completed. Water from the lake will be distributed under the administration of the DuPage Water Commission and the DuPage County Public Works to 34 public water supply systems in the county.

Finally, as for the SSC itself, Fermilab derives its potable water supply from wells finished in the shallow dolomite aquifer and can easily meet future potable water needs from these wells. Cooling water at the lab comes from the Fox River. Cooling needs around the ring (about 125 gpm) will initially be provided from the anticipated ground-water seepage into the tunnel. Eventually, as the seepage rate declines, cooling water supplies will be supplemented by shallow wells and from three public water supplies.

In summary, the total water resource picture for the SSC area is excellent, both at the present time and as projected into the next four decades. Water supplies from shallow aquifers are relatively undeveloped in the areas, and the needs for the SSC can be easily met. As the draft EIS itself states in the text, the impact of the project, both during construction and operation, will be negligible.

LETTER 1099

Mr. Wilmot Hess
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

September 22, 1988

Attn: SSC DEIS Comments

Dear Mr. Hess:

The purpose of this letter is to convey my strong conviction that the SSC should not be built in Illinois. I am not against the SSC project per se and have no qualm with the recommendation that the project be pursued. I simply believe that Illinois is a poor choice for a proposed site.

The most significant disadvantage is that the citizens of Illinois, more than any other state, DON'T WANT IT! If Texas or some other state wants to be the SSC site, why not direct it to them? As you know, Illinois citizens have been the most vocal in their opposition to our state as the SSC site. Therefore, please honor our request and site the SSC project elsewhere.

I also wish to comment concerning various points in the draft of Environmental Impact Statement. All pertain to items in Volume 4 of the EIS.

2.1 par. 2 (p.1)

The land acquisition cost is not included in the cost estimate. I recognize that the land will not be a federal cost. Nevertheless, the cost picture would be much more accurate if shown detailing the total cost including land acquisition. I believe this will result in Illinois looking less attractive as a site due to the comparatively higher land value in the Chicago metropolitan area.

2.43 (p.10)

The EIS should show the cost by state of the anticipated site costs and not an average or a range. Hundreds of millions of dollars swings are important enough to be disclosed on a state-by-state basis.

3.1-4

The Decommissioning discussion makes no mention of returning areas to their pre-SSC habitat. For example, will a former building site be reseeded along with the

planting of trees and shrubs or will it be left with concrete pads? This must be addressed.

1.1.2.1.0

The bulk of the landscaping is going to the campus and injector areas. Exactly how much is going toward the service areas? My home is only 200 yards from a proposed service area and I refuse to stare at huge storage tanks with only a handful of shrubs to hide their grotesque sight.

14.1.2.e.2.b.

Travel time for migrant workers for Illinois is based on the typical distribution of fermilab employees. There is no reason to believe this same distribution to be accurate. No evidence was given to conclude the distribution to be reasonable. Therefore, the distribution should have been determined as it was for the other test sites. I am confident that the result would be a greatly increased travel time and cost.

14.1.2.3.e.2.c.3

Public service employment impacts are based on 1982. DATA This is old data considering the rapid growth (and resulting public service needs) in the DuPage and Kane County areas. Therefore, the assumptions are flawed.

14.1.3.3.E

A "survey" performed in 1987 is cited in which Illinois residents allegedly responded favorably concerning Illinois as a proposed SSC site. The study data was *not* revealed. 1987 was a premature period to perform the study inasmuch as the ring location (let alone service facilities, etc.) were not even known until 1988. I seriously doubt the randomness of the samples, the objectivity of the questions asked and the interpretation of the results. It should be thrown out.

The SSC is not for Illinois. Illinoisans are not for the SSC. I hope this letter leads you to a similar conclusion.

Cordially,

Robert G. Sabolich

Robert G. Sabolich
5 N. 538 Hidden Springs Dr.
St. Charles, Il. 60175
(312) 584-8145

LETTER 1101

Comment on the SSC Draft EIS, for SSC Site Task Force
Office of Energy Research
U.S. Department of Energy

October 8, 1988
Glencoe, Illinois

My name is Themis Klotz. I live at 1168 Carol Lane, Glencoe, Illinois, on Lake Michigan, in Cook County and about [illegible] [illegible]. I also live at 14 Jacques Cove Road in Woods Hole, Massachusetts, an international scientific center that includes study sessions by the National Academy of Sciences, the summer homes of presidents of the NAS, the Woods Hole Oceanographic Institution, which has a joint Ph.D. program with MIT. And more. I am a retired scientist and have spent all of my adult life with this divided residency. I am 63 years old, which means that I have known life before Enrico Fermi's successful chain-reaction at the University of Chicago. My degrees in chemistry, BS 1946, MS 1951 are from Northwestern University, historically the location of one of the original Materials Science Centers, the other two being at Cornell and Stanford.

Before I run out of time, let me start by saying that I favor the No Action Alternative, that is, do not build a super-collider. Second choice: the programmatic alternative of international cooperation. I won't attempt a full defense of those recommendations.

It would be hard to avoid being focused on the DEIS. There is reference to 60 years of physics history and history of Man's curiosity about fundamental nature of the universe back to ancient times, and stops in between and off to the side. I received the document Saturday, read the foreword, summary and part of the Appendix on decommissioning. Immediately I started in with my red pencil. The result was filled-in margins in just a few pages, like the large roll presented earlier in these hearings. I notice a MORRIS pennant (on the wall) and recall, perhaps with you, the Nuclear Regulatory Commission hearings in nearby Morris, Illinois regarding the decommissioning of Dresden I. Memorable hearings. Decommisstioning SSC would probably only have an on-paper solution.

So I shall focus less in the document than about it as a whole. I have never, in decades of living among scientists, heard praise for such reports. On the contrary, the assessments have created--I shall use some D-words-- disillusion, disgust, depression among some of our finest scientists and engineers. Students are even more vulnerable. Indeed since the DEIS invokes physics history back 60 years and we keep hearing the name Fermi, let's review some historical biography. In his wife's biography, published in 1956, she points out that the new young quantum physicists in Italy in the '20s did physics to escape the depressing politics of Mussolini. My experience tells me that is still a powerful driving force, as much as irresistable curiosity as to what happened in the first 45 seconds after The Big Bang, or hunger for a Unified Field Theory.

Before coming here to oppose a supercollider anywhere--for a primary reason I shall come to--I wish to point out that I had no knowledge of the group C.A.T.C.H., no knowledge of the siting details. Their behavior here reminds me to mention that there probably has been a "paradigm shift". I am pleased to find the opposition is not in a state of psychological numbing, a condition that has received international recognition through the work of Dr. Helen Caldicott, recently of Harvard Medical School. They exhibit normal protective behavior. To do otherwise in their predicament would not be normal.

Which brings us to Quo Warranto--by what authority? Rightly we usually focus on our Constitution's Bill of Rights. In the era of the paradigm shift we must not overlook Article I, Sec. 2. I quote: . . ."To promote the Progress of Science and useful Arts"... The Constitution does not mandate tax support for fascination. It creates a machine without brakes. We do not distinguish between that which is remedial and something relentlessly unidirectional that we invariably label PROGRESS. We have deified TECHNOCRACY at the expense of the democracy we hypocritically invoke on the world stage. Hi tech, low tech reminds me of High Church, Low Church. (Fermi was nicknamed "The Pope" in his Rome days.) See Appendix I.

Accountability has been submerged in a special kind of undesireable wetland called a morass. Town and gown have become jointly rapacious. The machine-without-brakes is lubricated by the morally-neutral patent system. We had an example today of an unaccountable consortium from Chicago(and where else?) among government, business, industry and its resulting foundations.

I need only 1 page of a small but significant book to give one essential reason for opposing the "world's largest instrument". We seem to be in a period full of 19th-century-style hokum(A recent article in the journal Experientia dealt with some of it.). The probable consequences are the impossibility of teaching research. Dreams, magic, wonder, possibility, and no doubt back we go to perpetual motion machines. Sen. Quayle said that his grandmother advised him that all he had to do was decide on a goal and work at it. Presto! Star Wars and fantasies unlimited. The 1 page I call your attention to gives Professor Mortimer Taube's series of questions involving the term "possible".It is page 9 of a short chapter entitled "Possibility As A Guide To Research Activity", from Taube's Computers and Common Sense: The Myth of Thinking Machines (1961) Columbia University Press. See Appendix II.

Any public library in the nation has enough information

for an informed opinion even regarding particle physics. I chose to bring along to the hearing a few books from a public library and a few from my personal library, total pages about 3400, in case I should encounter anyone with an interest in Big Science and Big Government. In no special order they are:

A History of the Warfare of Science With Theology in Christendom by A. D. White, in 2 vols. (1896) Dover Edition 1960

Scientists and War: The Impact of Science On Military and Civil Affairs by Sir Solly Zuckerman Harper & Row

Science and Imagination: Selected Papers of Warren Weaver with a Foreword by George W. Beadle Basic Books (1967)

Science and Ethical Values by Bentley Glass University of North Carolina Press (1967)

Atomic Energy for Military Purposes by Henry D. Smyth Princeton University Press (1945)

Final Program and Abstracts, 1982 Annual Meeting Materials Research Society, Boston, November 1-4

Scientific Basis for Nuclear Waste Management VIII Vol 44 Materials Research Society Symposia Proceedings 1985

Communications on the Materials Science and Engineering Study Materials Research Society 1986

Even without comparing the over-4000-pages of the DEIS to any other publication, it is surprisingly sophomoric, as though it were given to an undergraduate class, albeit Harvard or Dartmouth, as a class "hands-on" exercise. Nonetheless, I plan to finish reading it. I like to read with an eye to what might be omitted. I don't recall comment during the hearing on the magnets and the Conducting seems to get much too little attention

I have saved for last reference to Sr. Rosalie Bertell's book No Immediate Danger: Prognosis for a Radioactive Earth (The Book Publishing Company, Summertown TN 1985). I met Dr. Bertell at the Eighth World Congress of the International Physicians for the Prevention of Nuclear War in Montreal last June. It is noteworthy that her immediate reaction to learning

that I live in the Chicago area was "Thorium dump". So the people at the hearing are not alone in lacking confidence in assorted assurances. The lack of confidence is to be found far and wide, including beyond our national borders.

In connection with my comments about destructive influences regarding the teaching of research, my suspicions were corroborated by Dr. David Parnas at the IPPNW Congress, on grounds other than the ones I have chosen to mention.

I have come to recognize physics and finance as the twin twined snakes of the caduceus. Physicists have outrageously sugar-coated their demands for equipment and other support with the sure-fire medical-advances argument. The proliferation of User's groups within the various Communities, all acquiring standing by some mysterious process, leaves the public in a pitiable state. I had with me a copy of an article from the Eleventh Varian Users' Meeting entitled "The Current Use of Total Lymphoid Irradiation as Immunosuppressive Therapy for Non-Malignant Diseases". Quite an empire, that. Which brings me to the fact that there is no mechanism for our great advisers to say far and wide, loudly and clearly, "I was wrong." Dr. John Gofman seems to remain an exception, for which we should all be grateful.

I shall close with two pieces of sociological data that I think define our times and condition better than some more erudite sources. I enclose two sheets with illustrations one can choose to add to one's bank checks. They differ by a dozen years. The recent one is most interesting. There is a category "Hobbies" In it one finds the well-known symbol orbiting electrons!

Some hobby, a superconducting supercollider. Some have suspected as much.

Themis A Klotz
October 17, 1988
(noon CDT)

Based on oral comment at the public hearing at Waubonsie High School, Aurora, Illinois Friday evening October 7th

Appendix I

over

Committee to Commemorate
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The Constitution of the United States of America

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Appendix I

Section. 7. All Bills for raising Revenue shall originate in the House of Representatives; but the Senate may propose or concur with Amendments as on other Bills.

Every Bill which shall have passed the House of Representatives and the Senate, shall, before it become a Law, be presented to the President of the United States; if he approve he shall sign it, but if not he shall return it, with his Objections to that House in which it shall have originated, who shall enter the Objections at large on their Journal, and proceed to reconsider it. If after such Reconsideration two thirds of that House shall agree to pass the Bill, it shall be sent, together with the Objections, to the other House, by which it shall likewise be reconsidered, and if approved by two thirds of that House, it shall become a Law. But in all such Cases the Votes of both Houses shall be determined by yeas and Nays, and the Names of the Persons voting for and against the Bill shall be entered on the Journal of each House respectively. If any Bill shall not be returned by the President within ten Days (Sundays excepted) after it shall have been presented to him, the Same shall be a Law, in like Manner as if he had signed it, unless the Congress by their Adjournment prevent its Return, in which Case it shall not be a Law.

Every Order, Resolution, or Vote to which the Concurrence of the Senate and House of Representatives may be necessary (except on a question of Adjournment) shall be presented to the President of the United States; and before the Same shall take Effect, shall be approved by him, or being disapproved by him, shall be repassed by two thirds of the Senate and House of Representatives, according to the Rules and Limitations prescribed in the Case of a Bill.

Section. 8. The Congress shall have Power To lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States; but all Duties, Imposts and Excises shall be uniform throughout the United States;

To borrow Money on the credit of the United States;

To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes;

To establish an uniform Rule of Naturalization, and uniform Laws on the subject of Bankruptcies throughout the United States;

To coin Money, regulate the Value thereof, and of foreign Coin, and fix the Standard of Weights and Measures;

To provide for the Punishment of counterfeiting the Securities and current Coin of the United States;

To establish Post Offices and post Roads;

To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;

To constitute Tribunals inferior to the supreme Court;

To define and punish Piracies and Felonies committed on the high Seas, and Offenses against the Law of Nations;

To declare War, grant Letters of Marque and Reprisal, and make Rules concerning Captures on Land and Water;

To raise and support Armies, but no Appropriation of Money to that Use shall be for a longer Term than two Years;

To provide and maintain a Navy;

To make Rules for the Government and Regulation of the land and naval Forces;

To provide for calling forth the Militia to execute the Laws of the Union, suppress Insurrections and repel Invasions;

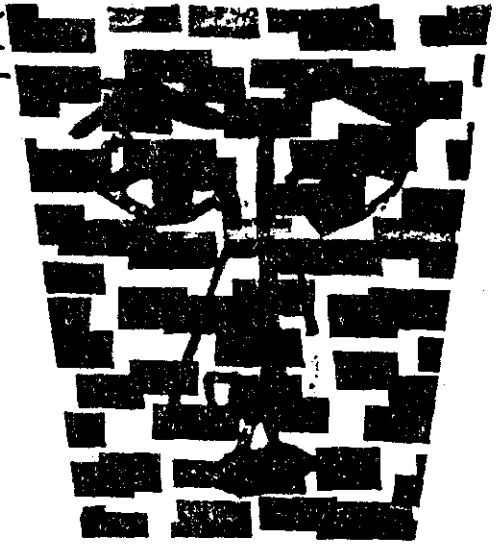
To provide for organizing, arming, and disciplining, the Militia, and for governing such Part of them as may be employed in the Service of the United States, reserving to the States respectively, the Appointment of the Officers, and the Authority of training the Militia according to the discipline prescribed by Congress;

To exercise exclusive Legislation in all Cases whatsoever, over such District (not exceeding ten Miles square) as may, by Cession of particular States, and the Acceptance of Congress, become the Seat of the Government of the United States, and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be, for the Erection of Forts, Magazines, Arsenals, dock-Yards and other needful Buildings;—And

To make all Laws which shall be necessary and proper for carrying into Execution the foregoing Powers, and all other Powers vested by this Constitution in the Government of the United States, or in any Department or Officer thereof.

Section. 9. The Migration or Importation of such Persons as any of the States now existing shall

LETTER 1101 (CONTINUED)



COMPUTERS AND COMMON SENSE

THE MYTH OF THINKING MACHINES

BY MORTIMER TAUBE

COMPUTERS AND COMMON SENSE TAUBE Columbia

APPENDIX II

COMPUTERS AND COMMON SENSE

The Myth of Thinking Machines over

By Mortimer Taube

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"Taube indicates that there are inherent limits in formalizing other than a small part of what we call the thinking process. . . . The pretensions of mechanical translation, in particular, are dissected in a kind of unholy glee. . . . This is a valuable work. . ."
—John W. Bowling, *Foreign Service Journal*

". . . [the] book is a refreshing counteragent to the huffing and puffing about the marvels of computers."—*Scientific American*

COLUMBIA UNIVERSITY PRESS
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IIA.1- 2243

APPENDIX II

2 *POSSIBILITY AS A GUIDE TO RESEARCH ACTIVITY*

This chapter will be concerned with the use of the term "possibility" in reference to scientific beliefs or research activities; and the use of the notion of possible success as the justification for a research program.

In order to indicate this usage, there can be set down a series of questions involving the term "possible."

(1) Is it possible to translate by machine from one language to another?
(2) Is it possible to build a perpetual motion machine?
(3) Is it possible to measure exactly the position and velocity of an electron?
(4) Is it possible to see God?
(5) Is it possible to have extrasensory perception?
(6) Is it possible to increase our understanding of the nature of combustion?
(7) Is it possible to set up a platform in space?
(8) Is it possible that the combined proposition "p and not p" is true?
(9) Is it possible to prove that the set of axioms of arithmetic is both complete and consistent?
(10) Is it possible for a machine to think?

It will be seen from a study of the above questions that

over

ization or mechanization would admit that none of these ends has yet been achieved, they must be considered, if they are considered at all, as *possibilities*. Hence, we must turn in the next chapter to a look at this most difficult and refractory concept.

LETTER 1101 (CONTINUED)

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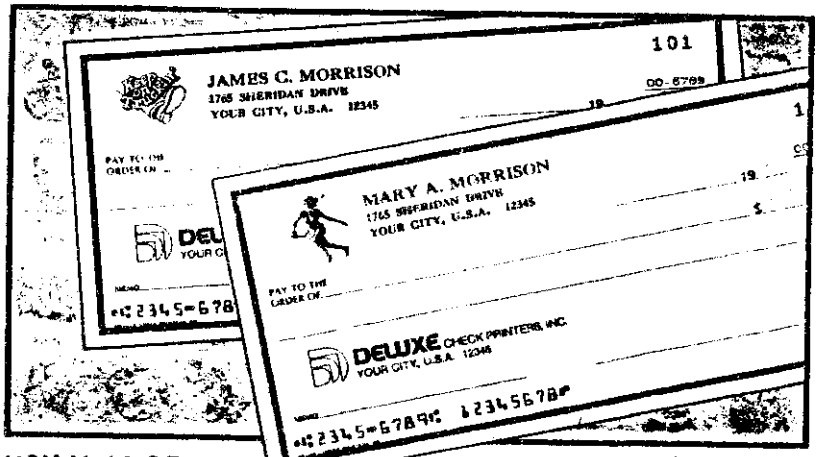

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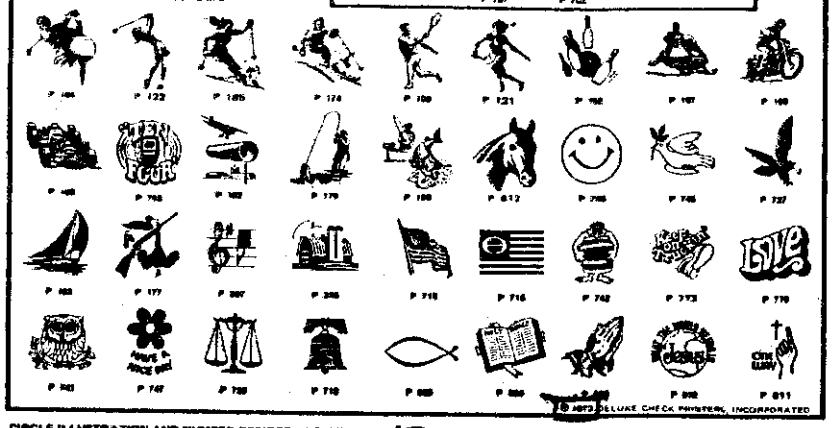

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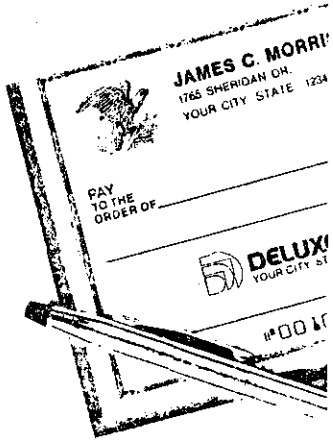

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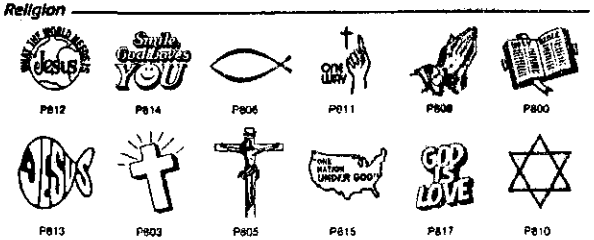

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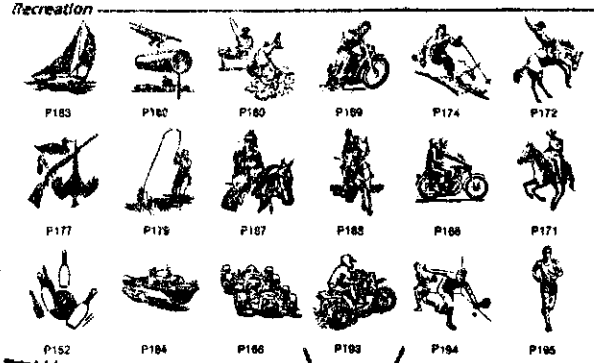

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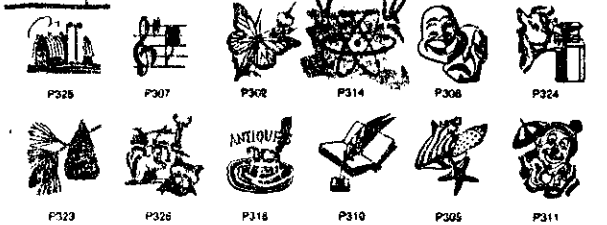

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SSC

LETTER 1104

SUPER COLLIDER

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments---Tunnel Groundwater Leakage

Dear Sir:

The EIS talks at great length about the quantities of water that they expect to leak into the tunnel during the construction phase of the SSC. However, there is absolutely no discussion about the amount of water that will leak into the tunnel once it's completed. Does this mean that the DOE does not expect it to leak? If so, this is in direct contrast to what was indicated in the Illinois SSC Site Proposal. That document along with the Illinois State Water Survey and the Illinois State Geological Survey have all indicated that they expect the tunnel to leak at the rate of 50 gallons/minute/mile throughout the operational life of the SSC. This amounts to over 3.8 million gallons of water that the Illinois ENR and other agencies anticipate will leak into the tunnel day in and day out. Why is none of this information mentioned in the EIS?

Is this information left out because the DOE would prefer to ignore the fact that this tunnel will leak if placed in Illinois? Is it perhaps because the DOE doesn't want to create any concerns about flooding of the tunnel as occurred over in CERN? Or is it because the DOE doesn't want people to become overly concerned about where this leaking groundwater will be pumped to? Will it be pumped out of the tunnel and stored at the 19 - 22 ponds located around the ring near the E and F access shafts? Will this water contain contaminants such as sedimentation or chemicals from within the working areas of the tunnel? Or more importantly, will this water be radioactive? We aren't asking will the radiation be limited or minute. We are asking whether or not this tunnel inflow water will contain any increased levels of radiation whatsoever? And, will this water be placed in those ponds? If not, where will it end up?

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

One thing is clear, this leaking groundwater will have to be removed from the tunnel, otherwise normal operations of the complex machinery located within the tunnel and the experimental halls will not be able to continue. The book Scientific Temperaments: Three Lives in Contemporary Science by Philip J. Hilts clearly indicates that when the tunnel at Fermilab was originally constructed, there was a tremendous problem with magnets being burned out because of excessive moisture being present within the tunnel. Scientists assumed that water would not cause failures, but it did. Thousands of volts of electricity shot through the magnets and to the floor of the tunnel, causing hundreds of magnets to explode or burn up. In fact, over 350 magnets blew and over 7 months of time was lost making necessary repairs.

If it happened in Illinois once before, what makes the DOE think that the geology of the Illinois site will not allow it to occur again? The Illinois site is not above the water table as is true at the Arizona and the Texas sites. This geology problem with the Illinois site is one of it's major flaws. The Illinois SSC proposers obviously expect the Illinois tunnel to be wet. Why doesn't the DOE or the EIS confront this problem? The EIS could be making some very costly mistakes both time-wise and dollar-wise when it assumes that the Illinois tunnel will not leak or that water won't pose a problem anyway.

Ignoring these possibilities is blind ignorance and should not be accepted from anyone. But more importantly, this method of thinking and operating cannot be accepted from you scientists within the DOE. The lack of preparation in the EIS is evident. If the DOE intends to continue this sloppy method of operation once the SSC is sited and funded, then major problems can be expected to surround the entire SSC project from beginning to end.

Sincerely,

Donna Bryski
38W738 Fremsey Rd.
St. Charles, Il
60175

LETTER 1106

STATE OF NORTH CAROLINA
OFFICE OF THE GOVERNOR
RALEIGH 27603-8001

JAMES G. MARTIN
GOVERNOR

Board of Science and Technology
Room 2009 Q
116 West Jones Street
Raleigh, NC 27611

10 October 1988

Dr. Wilmot N. Hess, Chairman
SSC Site Task Force
ER-65/CTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments

Dear Dr. Hess:

Enclosed are the following sets of comments on the Draft Environmental Impact Statement for the Superconducting Super Collider, received through the N.C. Department of Administration State Clearinghouse:

- N.C. Department of Crime Control and Public Safety
- Planning, Zoning & Inspection Dept., County of Durham, N.C.

Referenced in the comments from the County of Durham and appended thereto is a copy of the comments submitted by the City of Durham Dept. of Water Resources in March 1988 as part of the EIS scoping process.

Sincerely,

Susan Dakin

Susan Dakin
N.C. SSC Project Deputy Director

Enclosures

cc: Dr. William Dunn

LETTER 1106 (CONTINUED)

North Carolina Department of Crime Control and Public Safety

James G. Martin, Governor

Joseph W. Dean, Secretary

October 5, 1988

OCT 7 [illegible]

MEMORANDUM

TO: Clearinghouse

FROM: Nathaniel H. Robb
Assistant Secretary

RE: Draft EIS-SSC

1 This project may have an impact on the use of some or all of the facilities of Camp Butner, North Carolina, by the National Guard. So long as provisions are made to provide substitute facilities for the use of the Guard, this department supports this project.

NHR/ls

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LETTER 1106 (CONTINUED)

County of Durham
PLANNING, ZONING & INSPECTION DEPT.
Durham, North Carolina

RECEIVED
OCT 7 1988
SECRETARY'S OFFICE - DOA

October 5, 1988

Ms. Chrys Baggett
Department of Administration
State Clearinghouse
116 West Jones Street
Raleigh, N.C. 27611

Dear Ms. Baggett:

This letter conveys specific concerns of the administration for the City of Durham and the Durham County Board of Commissioners on the Draft Environmental Impact Statement for the proposed siting of the Superconducting Super Collider in Durham County, North Carolina. Although these points were included in the
2 public record at the public hearing in Butner on October 3, 1988, by William V. Bell, Chairman of the Durham County Board of Commissioners, and Gerald E. Kelley, Assistant Director for the Durham City/County Planning Department, it is important that the following comments be recorded in the State Clearinghouse process of North Carolina.

1. The potential fiscal impact of the SSC is an estimated annual loss of tax revenues of $53,000 from "fee simple" acquisitions alone. A greater financial concern raised by the Draft EIS is the projected need for an additional 154 full time public service employees. Those positions would represent total salary and benefit costs of over $4 million to be split among City
3 government, County government, and the school systems. The EIS does not provide enough detail to calculate costs to each unit of government, but the most efficient means of raising the $4 million for new employees (on the county-wide tax base) would require an increase of more than six cents on the current 65 cent tax rate. If North Carolina is selected, direct aid would be critical in order for Durham County to provide SSC related public services without levying a substantial property tax increase.

Ms. Chrys Baggett
October 5, 1988
Page 2

4 2. Regarding land use regulation, the EIS dismisses regulatory measures as minor adjustments, but in fact Durham County would require rezoning from Rural District to Research and Research Application Districts, submission of site plans for Special Use Permit consideration, satisfy water quality basin standards of the zoning ordinance, and enforce local sedimentation/erosion control regulations for the SSC.

5 3. The City of Durham is evaluating four site locations for a future water supply on the Flat River. What long range water supply implications confront the City of Durham if the SSC is built? (See attached letter dated March 14, 1988, to Dr. Hess from A. T. Rolan.)

4. The following citations from the Draft EIS will require approval from either the Durham City Council or the Durham County Board of Commissioners via policy changes or ordinance amendments.

6 a. In Appendix 10, p. 7, the State proposes sewerage from the far cluster, service area 5, and the emergency service building would be pumped to the City of Durham Eno Treatment Plant.

b. Volume 1, Chapter 3, p. 28, the State proposes water be taken from Lake Michie to serve the far cluster, service area 5, and the emergency service building.

7 5. The East End Connector transportation project should be included between U.S. #70 and the East-West (Dean) Expressway to provide a suitable route from the SCC campus to Research Triangle Park and the Raleigh-Durham Airport. This important roadway was omitted from Appendix 14, p. 54.

8 Thank you for the opportunity to share these points, and I trust the Final EIS and the Concurrent Resolution Document in the Final EIS will clarify the issues raised by the City of Durham and Durham County if North Carolina is selected as the designated site for the SCC.

Sincerely,

Gerald E. Kelly
Assistant Director

GEK/o

LETTER 1106 (CONTINUED)

CITY OF DURHAM
NORTH CAROLINA

Department of Water Resources

CITY OF MEDICINE

RECEIVED
OCT 7 1988
SECRETARY'S OFFICE - DOA

March 14, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, D. C. 20545

SUBJECT: SSC EIS Scoping Comments for North Carolina Site

Dear Dr. Hess:

As Director of Water Resources for the City of Durham, I would like to provide comments for your consideration during the above EIS process. The City of Durham is dependent on the Flat River and Little River Watersheds for its municipal water supply. The combined water supply of Lake Michie and Little River Lake is 42 MGD and is projected to meet the water needs of Durham for the next 15-20 years.

Because of the time required to develop a new water supply reservoir, the City of Durham currently has engineering studies underway to identify a future reservoir on the Upper Flat River. THe Upper Flat River area has been considered as a future water supply for Durham for many years. We currently have four dam sites under consideration on the Flat River above Lake Michie.

9

The potential dam sites are shown on the attached copies of USGS maps and are labeled as Site A, B, C and Site 1471. I have also attached maps which show the approximate areas to be flooded by the various alternatives.

As you can see, if we assume a maximum surcharge of water over the dams of 10 feet, then dam Site A would have a maximum water elevation over the SSC tunnel location of 440 feet MSL. For Sites B and C this elevation would be 450 feet MSL. I am obviously concerned about whether or not any of these alternative water supplies could be developed to serve Durham if the SSC is constructed here.

101 CITY HALL PLAZA, DURHAM, NORTH CAROLINA 27701
(919) 683-4301

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

Dr. Wilmot Hess
Page Two
March 14, 1988

Although the 1471 Site is above the SSC location and would not flood land over the tunnel, I am concerned that the close proximity of this site (less than 1/2 mile) could prevent the City from constructing this dam due to limits on blasting of rock during construction if the SSC is constructed first.

If none of the above concerns would technically prevent the construction of one of these dams, I am still concerned about whether or not the Federal Government would allow land which it owns to be flooded. There also appears to be a potential conflict between access point J-2 and the construction of a dam at Site C, as well as possible flooding of J-2 by a dam at Site A, B or C. Also, there may be a conflict with dam Site B and the southern most Soil Disposal Site.

10 Although I have not yet seen the road improvements which may be planned to serve the SSC, I feel that the EIS and the plans for these road improvements should address the impacts on the City's future water supply developments. I would like to know if the Flat River or any of its tributaries will be crossed by these roads and what would be the elevation of those crossings?

11 I understand that there would be a significant volume of cooling water used by the SSC. Although the cooling water discharges would normally be considered to be non-polluting, I am concerned that the cycles of concentration in cooling towers could result in a 20 fold increase in concentration of such parameters as fluoride in treated water and lead, mercury, chromium and selenium in the raw water used. Information on the water quality of Mayo Reservoir and Lake Butner would be helpful in evaluating this potential problem.

12 Finally, I would like to know if any consideration could be given to using the SSC tunnel as a water supply conduit after it is decommissioned for research purposes. It would appear that the 53 mile tunnel would provide an opportunity for exchange of water between communities close to the tunnel.

LETTER 1106 (CONTINUED)

Dr. Wilmot Hess
Page Three
March 14, 1986

13 I hope you will consider these comments in the EIS. I would also like to know, what, if any, restrictions the SSC would place on Durham's future water supply plans. Your consideration of these comments will be greatly appreciated.

Sincerely,

DEPARTMENT OF WATER RESOURCES

A. T. Rolan
Director

ATR/cgb

Attachments

cc: Mr. Orville W. Powell, City Manager, City of Durham, 101 City Hall Plaza, Durham, North Carolina 27701
Mr. Donald L. Cordell, Manager, Hazen and Sawyer, P.C. Post Office Box 2875, 2024 W. Main Street, Durham, North Carolina 27705
Mr. William L. Dunn, Board Science & Technology, 116 West Jones Street, Raleigh, North Carolina 27611
Mr. John F. Dodd, III, County Manager, Durham County Judicial Building, Sixth Floor, 201 East Main Street, Durham, North Carolina 27701

LETTER 1106 (CONTINUED)

March 8, 1988

Terry,

This package contains three maps which show potential inundation levels which might affect the Superconductor Supercollider. They are all copied from the USGS map at a scale of 1"=2000'. They show the normal pool elevation for three dams in the Hill Forest area (sites A,B,C) and the site at SR 1471:

1) The first map shows the approximate locations of the four dam sites at this point of our study. Normal pool elevations are indicated in parentheses.

2) The second map shows the location of site A dam with the inundation perimeter in blue (El. 430.0).

3) The third map shows the location of dam sites B and C with the inundation perimeter marked in red (El. 440 for both dam sites). The blue line shows the water level for the SR 1471 site (El. 452.0).

14

These elevations are not set in stone, but are estimates for normal pool elevations at this stage of our study.

The other site we are considering on the Flat River is at Lake Michie. The normal pool elevation of this dam would be in the range of El. 360-370. This elevation on the Flat River occurs nearly two miles south of SR 1471, and will not impact on the Supercollider site.

If I can be of further assistance, don't hesitate to call.

Sincerely,

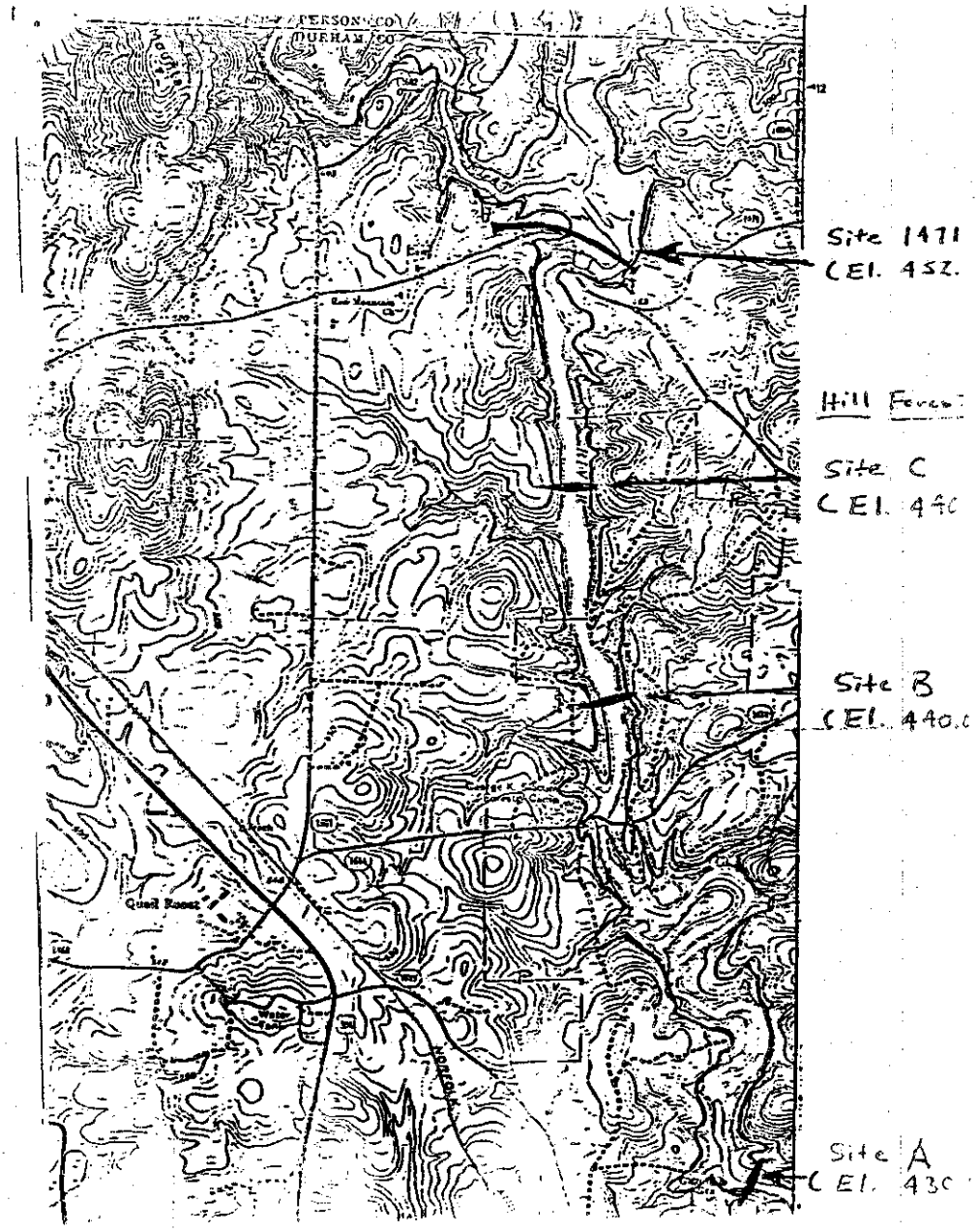
HAZEN AND SAWYER, P.C.

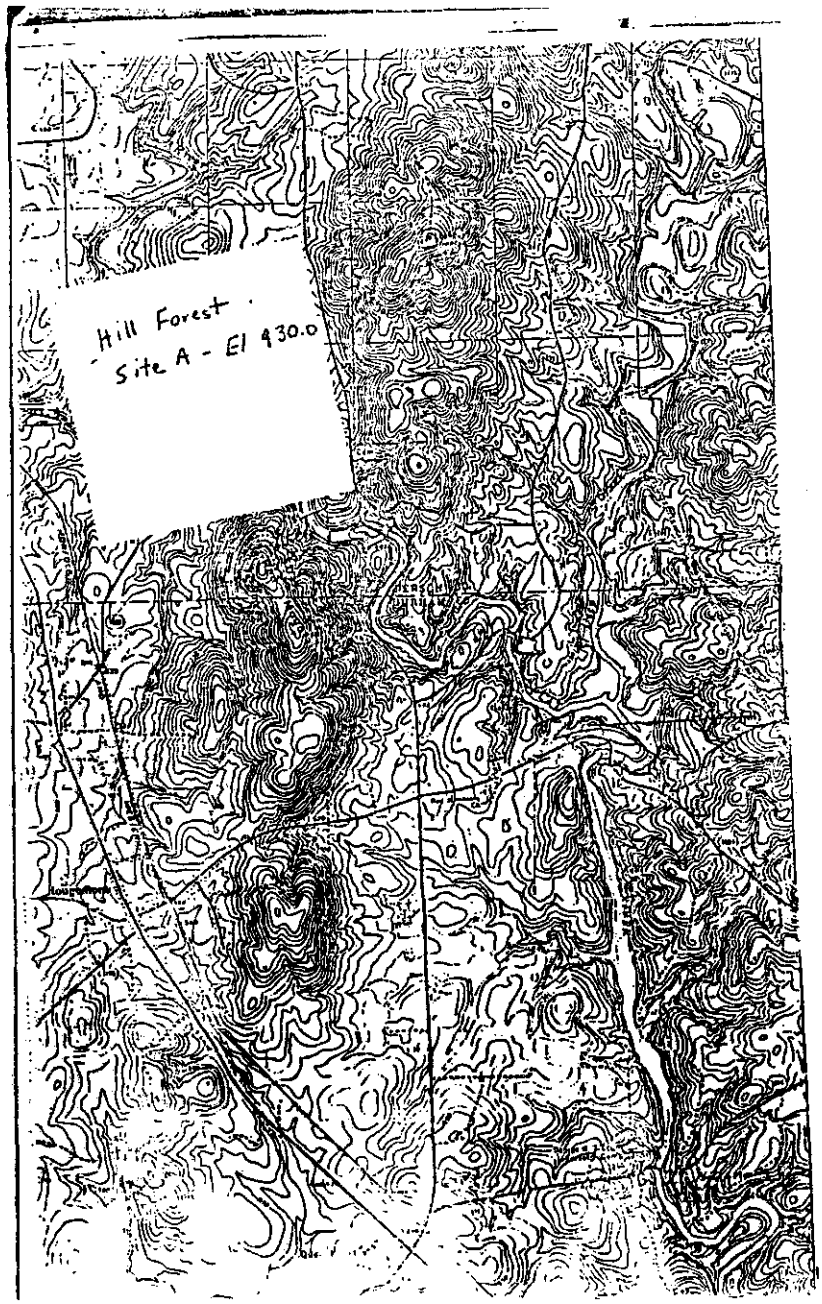
Russell Jones

Russell E. Jones, E.I.T.

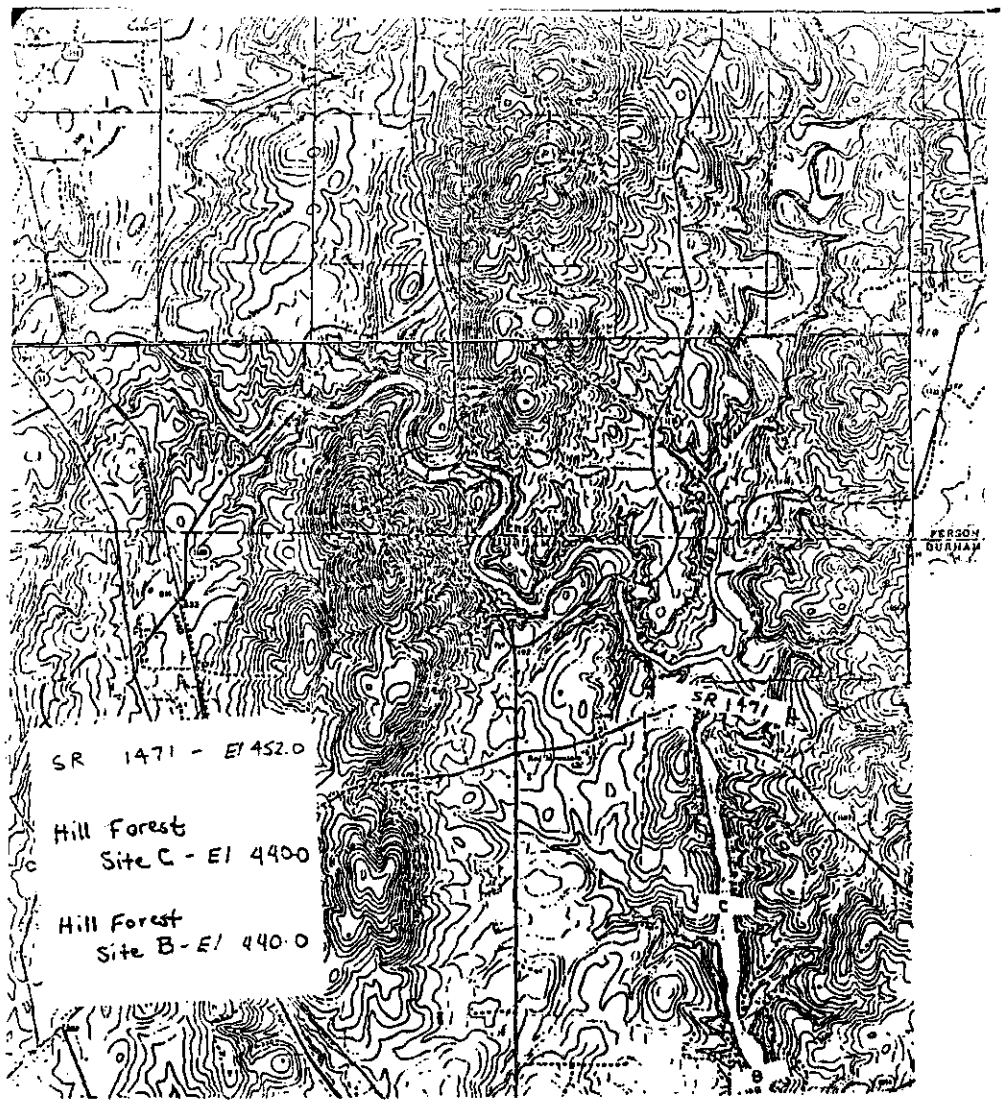
REJ/vp

LETTER 1106 (CONTINUED)




Hill Forest
Site A - El 430.0

LETTER 1106 (CONTINUED)



LETTER 1121

October 6, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S.Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments--- Groundwater Concerns

Dear Sir:

Table 4-4 of the EIS is in error when it indicates that groundwater usage by municipalities is projected to decrease due to future planned replacement by Lake Michigan surface water. DuPage County does have plans to eventually shift over to Lake Michigan water because of their well publicised groundwater problem. However, only a very small portion of western DuPage County is in the region of influence of the SSC. In fact, only a small portion of only one municipality (West Chicago) lies in both DuPage County and on the ring.

What is a more important question is what are the plans of Kane County cities? The Manager of the Northern Regional Office of the Illinois State Water Survey, Mr. William Baker, has indicated that absolutely none of the cities in Kane County have any plans to switch over to Lake Michigan water. The cities of St. Charles, Geneva, Batavia, North Aurora, and Aurora all plan to continue to use groundwater wells for their complete source of water supplies. The fact that Table 4-4 assumes that Lake Michigan water will eventually be in use is a misrepresentation of the truth. In fact, it is in direct conflict with statements made on page 5.1.2-29 of the EIS. This portion of the EIS specifically indicates that since plans and schedules for cities switching wholly or partially to surface water sources are not definitive, it is assumed that a worsening of the groundwater overdraft problem cannot be mitigated. This is the number one problem with the SSC in Illinois--our overdrafted groundwater supplies can be expected to dwindle if the SSC is sited in Illinois. This is but one example of how the EIS is often self-contradictory.

The Illinois State Water Survey has also indicated that there are very specific local groundwater problems within the region

of the SSC tunnel--especially in Campton Township in the entire northern arc of the ring. That area alone contains over 20,000 residents all of whom depend upon private groundwater wells. William Baker has indicated that Kane County Officials are very concerned with this existing local problem, and that they are examining plans to limit further development of private wells in that region. Any new developments may be required to provide their own local municipal water supply such as the one now existing at the Windings Subdivision. Would Kane County Officials be thinking along these lines if there weren't already a problem? Why make matters worse with the SSC?

Campton Township and all of Kane County will not have Lake Michigan water during the life of the SSC. The error that exists in Table 4-4 clearly indicates that the DOE has been presented with facts that simply are not true. The regional overdraft cannot be expected to be relieved, it can only be expected to worsen---continued rapid development in the Fox Valley vertually guarentees it. Current statistics indicate that Kane County's population growth rate is the highest in northeastern Illinois--even greater than that of DuPage County. The EIS clearly shows that the proposed Illinois SSC site is the only site where this continued change in land use from rural to urban/industrial is expected to occur. This fact alone should preclude you gentlemen from selecting Illinois as the home of the SSC. The shear numbers of human receptors who may be adversely affected by the SSC in Illinois makes our state the most illogical location of all. Don't listen to Governor Thompson, Leon Lederman, or SSC for Fermilab when they say that Illinois is the logical choice. Their mouths talk about pride and progress while their hearts are full of greed and jealousy. Illinois is not the logical choice for one basic reason--people. If you scientists can't comprehend this fact, then your hearts must also be full of greed and jealousy.

Sincerely,

Sherry Keely
38W740 Silver Glen Rd
St Charles, Il
60175

LETTER 1123

Edward Kist
6N520 Denker Road
St. Charles, Illinois 60175

October 10, 1988

Dr. Wilmot Hess
Superconducting Super Collider
SSC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

Attached please find my comments given at the Illinois Hearings on October 6th.

Very truly yours,

Edward Kist

Edward Kist

Dr. Wilmot Hess

My name is Ed Kist and I live on Denker Road in Campton Township just west of St. Charles. My home is directly on top of the ring and it appears that service area E8 is sited directly across Denker Road from my front door, yet we have not received any notification from the Illinois Dept. of Energy and Natural Resources. I even called the Department in early February and asked that they notify us, but they still have not. I said it appears that E8 is directly across the street because the EIS has E8 sited at several points on Denker Road in various sections of the report. In Appendix 10 Section 5b of 16 p. 120, the E8 site is described as being crossed by Denker Road with approximately 25% of the site lying west of the road. If that is true then this site is directly on my front yard. This tells me you will be taking my house; is that true? Elsewhere in the EIS, specifically Volume IV Appendix 1-3 of 16 p. 29 of the chapter called Site-Specific Adaptations-Illinois, E8 is described as adjacent to the east side Denker Rd. with no mention of any intrusion upon the western boundary. Well guys, which description is correct? Are you taking my front yard and home or aren't you? The fact that I don't know, thatI've received no notification whatsoever, supports our argument that the number of affected parcels is significantly understated in the EIS. It is exactly this kind of arrogance and incompetence on the part of the State of Illinois and the DOE that has made these past nine months a kind of living hell for people like my wife and me.

You've changed the description of the E8 site in another volume of the ELS, specifically Volume I Chapter 5 page 5.1.10-3 in the chapter titled Environmental Consequences and Mitigative Measures. There you describe the site as "abutting the entrance to the subdivision" with those exiting the subdivision aimed directly at the facility. That is impossible. Directly across from the Denker road exit is a private lake and directly across from the only other exit is a large corn field on Silver Glen Road. In fact, the site lies between the Denker Rd. exit and the intersection of Denker and Silver Glen on ground higher than the majority of the subdivision. It is fully in view of the majority of the subdivision. The only thing you've got right in your description is that this site will be highly sensitive to us human receptors in the area.

I can also tell you as a matter of fact that at least ten of my neighbors directly on the ring have received no notification from the state. Yet the former Director of ENR, Don Etchison, has repeatedly said in public that all affected landowners have been notified. Well that is a bold-faced lie. No wonder Mr. Etchison is the former director of ENR.

The sad fact of the matter is that the way the state and the DOE have handled the Illinois site proposal is an absolute disgrace. Our elected officials have publicly tried to discredit us and repeatedly refused to meet with us. They've called us misguided, uninformed and irresponsible.

Governor Thompson, Congressman Hastert, Don Etchison - you've blown it. You've blown it because you've placed more importance on the pork barrel than the concerns of your constituents. Virtually every concern we've raised during the past nine months has been verified in the EIS.

I'll leave it to my colleagues to attack the issues of acquifer overdraft, closing of wells, loss of wetlands, loss of tax base, etc., etc., etc. I've focused my few minutes on one intermediate service area, E8. You can't get your story straight on this single access shaft. Your incompetence on this single aspect of the Illinois site proposal has disrupted the lives of many families in my community. We don't trust you. You are not welcome here. I look forward to bidding you good riddance from our community.

LETTER 1132

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6,1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Use of Outdated Information

Dear Sir:

The EIS can be faulted for its failure to provide the DOE and the public with accurate information about the proposed Illinois SSC site. All data pertaining to the numbers of parcels, property owners, wells,businesses, and people affected by the siting of the SSC in Illinois are grossly understated. This is due to the fact that the Illinois ENR has provided the DOE with out-of-date information. All of the Illinois statistics pertain to conditions as they existed on January 1, 1986. This is due to one totally illogical assumption make by the Illinois ENR. They assumed that by using 1986 tax maps, they could accurately reflect existing conditions at the proposed Fox Valley SSC site. However, in their haste to prepare an SSC bid, the ENR was either unaware of the rapid development taking place at the proposed site, or they simply didn't care.

The truth is that they really didn't care, for during March of 1988, Illinois provided the DOE with the state's own environmental assesment of the Fox Valley site. Specific changes in the Illinois proposal were discussed in order to limit or mitigate growing concerns of the local citizens. The ENR could have used that new document to update their affected parcel list---however, they chose not to do so. The 1987 tax maps were available at that writing, but the ENR never even attempted to indicate any parcel count changes to the DOE. Why did the ENR choose to keep the DOE and the public in the dark about the growing parcel count, the growing well count, and the growing population count at the Fox Valley site? Why has it been so necessary for Illinois to try and deliberately conceal the facts?

The answer to that question can be found in the book Polecide by Lowi and Ginsberg. This book describes in detail the creation of Fermilab and the land acquisition process that was involved which literally wiped the town of Weston off the map. From reading this book, it becomes obvious that

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the demise of Weston and the birth of Fermilab occured because of the devious and sneaky political moves which occured behind the scenes. The people of Weston were purposefully fed misinformation and led down a primrose path to oblivion. Many of the political players involved in the Weston scenario remain politically active today, and it is no coincidence that Governor Thompson and the State ENR have basically operated under the same guide lines that were followed over 20 years ago.

In any case, there has been a deliberate attempt by the state of Illinois to withhold the true facts from the DOE and the public in general. Our state is the only SSC finalist that has failed to make the list of affected property owners public. Ours is the only state that has failed to supply accurate detailed maps to the public so that anyone could determine whether or not their property was located within the ring alignment. And even more importantly, it is only Illinois that has not properly notified all of the directly affected property owners to let them know that their house, or farm, or business, or well, or underground easement may be required for the sake of the SSC.

This withholding of information by the State of Illinois in essence makes these EIS hearings a sham. What value can these proceedings have when many of the people who will be directly affected have never been notified and are therefore unable to comment on their behalf? A question which you gentlemen from the DOE should be asking yourselves is whether or not it's legally prudent to continue to include Illinois among the SSC finalists.

Sincerely yours,

Lucie J. Thompson
6N755 Murray Rd.
St. Charles, Illinois 60175

LETTER 1134

Dr. Wilmot Hess, Chairman
SSC Draft EIS
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Dear Sir:

My name is Billy Hannemann. I am seven years old. I am here to tell you why I don't want the SSC built in my neighborhood.

My grandpa and I like to fish in the Welsh Creek just down stream from the F4 site. When they dump the spoils from digging on the ground it will only have to travel 200 feet to the creek. I think that the suspended solids will kill all the fish and the insects that they eat. Then my grandpa and I can't do that together anymore.

While they dig and when the compressors run this will be a very noisy. It will disturb the deer and other wildlife. In Big Rock it is very quiet and any noise travels a long way. I hope that I will be able to study with all the noise. In the big blue book my dad says when they talk about people and noise we are called receptors but I know that I am a little boy, a human being, not a receptor.

LETTER 1134 (CONTINUED)

If the SSC comes to my town. There will be lots of people coming here to live. I hope my school will not become overcrowded and the classes to big to learn anything.

I live near one of the four quarries that are OK to take the limestone. In my township there are no sidewalks to ride my bike on. We have to ride on the roads. I don't want to die because a one of the 290 big trucks that will carry the limestone each day doesn't notice me. Would the people that work for the Department of Energy be willing to sacrifice there children for the SSC? I hope not, but maybe they don't love there children.

Why don't you put the Superconducting Super Collider some place where there are no houses?

Sincerely,

Billy Hannemann

William R. Hannemann IV
45W682 Marie Street
Big Rock, Illinois 60511

LETTER 1137

October 10, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Dear Sir:

You cannot be allowed to locate your SSC project in Illinois because too many lives will be adversely impacted. Our state officials have not been forthright in providing both we affected property owners and you the DOE with the true facts about the Illinois site. Their use of 1986 tax maps as the basis for their affected property owners list has created a situation where many of those people who will be directly affected have never been notified. We can tell that we are affected because we can see our property on the Land Acquisition Maps at the back of the EIS booklet that was sent us We were sent that book and yet it never specifically stated that we were affected property owners. The local SSC office and the State refuse to clarify my families status. Are we Affected or not? For if we are, I can assure you that we will do whatever it takes to see that your project does not get built in Illinois. Our state leaders cannot be allowed to get away with this charade and neither can you.

Respectfully yours,

Terry A Ziegler
6N827 Old Homestead Rd.
St Charles, Ill.
60175

LETTER 1137 (CONTINUED)

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

October 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Draft EIS is a Fraud

Dear Sir:

Do you Know what the net result is of these thousands of pages? That all seven states are still in the running. Every state has problems with its proposal and yet no problem appears great enough to elliminate any site from the running. This is exactly what the DOE wants. They want every state to remain in the running so that failing interest in Washington won't errode any further. They want every state to think that they still have a chance to win the SSC so that their respective political deligations will continue to support the project before Congress. Each state may not realize it, but they're all being manipulated very carefully by the DOE.

This EIS document clearly indicates that whatever problem exist at whatever site, the DOE can fix it. Everything under the sun is mitigatable to the DOE. No potential health problem, no potential accident problem, no ecological problem, no archeological problem, no radiation problem, no environmental problem, or no social problem is beyond the capabilities of the DOE to fix. Everything is deligated to a level of insignificance. The DOE can and will mitigate anything and everything.

The DOE and all of its highly sophisticated personnel are all that matters---everything else is insignificant. The SSC is without a doubt the most necessary and most vital research project that the U.S. government has ever undertaken. Without the SSC the DOE sees the U.S. losing stature wordwide and continuing its fall into disgrace and degradation. There is absolutely no alternative to the SSC. Every scientific alternative, every anticipated technological advancement has been considered, and the SSC is our one and

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only savior. We must have the SSC or else, and most importantly of all, it must be on line by 1996. Everything else is absolutely, unequivocally, irrevocably insignificant. That's what this EIS book and all of its appendices say--- and believe me, it's a bunch of bullshit!

The real truth is that the EIS is full of inaccuracies, discrepancies, subjectivity, double standards, errors, illogical arguments, outdated information, and is a complete sham to the decision making process that it's suppose to represent. And I resent the fact that I and thousands of other people are being forced to read it and comment on it in order to protect our families and homes. But since I must, I will specifically speak about the EIS and the Illinois SSC proposal.

If you turn to the Illinois Land Aquisition Maps at the back of this book, the first thing that you will notice is that each piece of property has a number on it. If you add these numbers up sector by sector, you will discover that a new parcel count of 3826 pieces of property are directly affected at the Illinois SSC site. This new count results from the fact that these new maps are 1987 tax maps rather than the 1986 maps that were originally used when the Illinois proposal was first presented. This is the first time that either the Illinois ENR or the DOE has admitted that the original 3305 parcel count was too low. However, the Draft EIS still fails to incorporate this new information into any of its lengthy analysis.

What does this new parcel count really mean? For one thing, it means that the Illinois SSC site has more parcels and more property owners envolved than at all the other sites combined. This also means that the Illinois site offers the most difficult land aquisition process of any site available. The ENR's job will be made even more difficult due to the fact that many of us have already taken steps to cloud title on our property. If the DOE thinks that eminent domain is going to make this an easy process, you're sadly mistaken. Without a doubt, your precious time table will be delayed if Illinois becomes the home of the SSC.

This new parcel count indicates one more very important fact. There are more adversely affected people in Illinois than at all the other sites combined, and this explains why we have more opposition towards this SSC project than in any other state. Something which the proponents have failed to realize is that Illinois is the only state which has tried to impose this project on such a large number of its residents. Every other state has basically placed the SSC ring in an area that is desolate in comparison to our Fox Valley site. Stop and

think about it---there are more property owners involved at the Illinois site than at all the other sites combined. With this being true, it's not very difficult to understand why the local affected property owners are so adamantly opposed to the SSC in Illinois. Quite frankly, wherever people are being forced to live above or near this project, the local people oppose it. They oppose it in North Carolina, they oppose it in Tennessee, and they oppose it in Michigan. There is no opposition in Colorado, Texas, or Arizona because few if any people are being forced to live on or near it in those states. There is nothing unique about us opponents in Illinois other than our numbers are larger and our committment is greater.

We are not interested in mitigation, we want litigation. We are fully prepared to meet you gentlemen in court. I can guarentee you that if you're dumb enough to site the SSC in Illinois, your project is doomed.

Sincerely yours,

Terry A Sigler
6N727 Old Homestead Rd.
St. Charles Ill 60175

LETTER 1143

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments--Water Usage & Disposition of Tunnel Spoils

Dear Sir:

1 In Appendix 7, Table 7-4 shows the estimated off-site domestic water use expected over the years ahead for the SSC region of influence. Estimates for water use appear for DuPage and Kane County through the year 1995. However, these statistics were compiled using 1983 estimates. The tremendous surge in growth for Kane County was not anticipated back in 1983. In fact, current growth statistics place Kane County as the fastest growing county in northeastern Illinois. Therefore all water usage figures that are shown in Table 7-4 *are outdated and underestimated.* As a result, the SSC's direct and indirect water usage will have a much greater impact upon groundwater supplies than the statistics in the EIS tend to indicate. This is an extremely important issue to the residents of the Fox Valley and use of outdated statistics on the part of the Illinois ENR should not be allowed to influence the DOE's decision making process.

2 Section 10.2.3.3 of the Draft EIS indicates that there are four quarries which are located around the SSC ring for disposition of excavated tunnel material or spoils. One of these is Quarry # 1 located on Rt. 31 and McLean Blvd. in South Elgin. The EIS indicates that spoils from shafts E7, F7, E8, F8, E9 and F9 will all be transported to Quarry #1. As many as 290 semi-trucks are expected to be dumping material at this site on any given day. C.A.T.C.H. had previously indicated that 95 truckloads per day would be highballing down our country roads. Once again, we are proven wrong! It's not 95, it's 290!

3 What is of greater importance though is the fact that management at this quarry indicates that it is currently handling about 300 trucks per day right now. How will it be possible for this quarry to double its service capabilities once SSC

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construction begins? Will it be able to handle 600 trucks? Either it will have to eliminate some of its previous activities or you can anticipate high traffic jams at the quarry as trucks wait in line to load or unload. This is not going to lead to smooth tunneling operations and could actually increase the length of time necessary to dig the Illinois tunnel.

4 As a result, it is very likely that additional quarries will be used for disposition of spoils besides the four mentioned in the EIS. If this is the case, concerns over siltation of our streams and contamination of our vital groundwater supplies again becomes a reality.

5 The State of Illinois and the DOE thought that they eliminated concerns over the disposition of tunnel spoils in Illinois by reducing the number of quarries being used. But congestion, time constraints, and common sense all indicate that there is a high probability that other sites will be used as well. In fact, this is exactly what Mr. Joseph Lach, from the State and Fermilab, indicated would occur when questioned about this subject at a recent State Mitigation Planning Committee meeting. If this is allowed to occur, then all of the local residents concerns about where tunnel spoils will be disposited will still go unanswered. The EIS appears to be designed to eliminate valid concerns without really considering what might actually occur. We cannot allow this travesty to be sited in Illinois.

Sincerely,

Diane L. Stickle

Diane Stickle
48151 Dawson Lane
St. Charles, IL 60175

LETTER 1145

Oct 12, 1988

Mr. Wilmot Hess
Chairman, SSC Site Task Force
U.S. Dept of Energy
Washington, D.C. 20545

Dear Mr. Hess

My family and I live in rural Kane County, Illinois. Our lives will be greatly impacted by the siting of the S.S.C. in our county.

1

I ask you to please not site the S.S.C. in Illinois. Kane County is too populated for such a large device. I and my neighbors draw our water from deep wells. The extensive tunneling for the S.S.C. will endanger our precious water supply. Without our ample supply of water, we could not live in our homes.

2

There are so many negative aspects of the S.S.C. that I cannot see it being built in Kane County. Please do not risk the safety and health of my family.

3

Sincerely yours
Lucille H. Kokumas

IIA.1- 2278

LETTER 1148

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

October 6, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Sightlines and F8

Dear Sir:

Appendix 16 which concerns scenic and visual resource assessments fails to consider every E and F site which will actually affect individual's sightlines. For example, Sec.16.3.3.2 identifies key viewing points along roads, railroads or bike paths where individuals may become annoyed if confronted with continually having to view the industrial yard nature of the compressor stations. This section of the Draft EIS fails to indicate that compressor station F8 will be located immediately adjacent to Randall road, a main north-south highway. Not only will this site be fully visible on all four sides, it will be located directly at the entrance to the newly developed Red Gate Subdivision. How can the EIS fail to realize this is a problem when it earlier states "Residential land uses are not visually compatible with the proposed project because of the obvious functional and structural contrasts between project features and residences."?

F8 will be constructed right in the midst of an area of estate homes. Logically, sightlines towards F8 would have a measurable longterm negative impact and would be non-mitigable, and yet the EIS very conveniently ignors this.

This proposed F8 site happens to be one of the sites where the State Department of Energy and Natural Resources has purchased options on land in order to move the facility further away. The ENR has purchased an option on 10 acres of land at $20,000 per acre slightly further west on the north side of Bolcum road. This new location for F8 is still in full view from Randall and Bolcum roads and from the Red Gate Subdivision. What the ENR apparently does't know is that this optioned land lies adjacent to a piece of property owned by the Christ Community Church of St. Charles. Also, this optioned property is within 700 feet of another site owned by Saint Patrick's Church of St. Charles. The Catholic

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

Church
intends to begin construction on their new church next spring, while the Christ Community Church has delayed their plans to build until it is clear that the SSC project will go to Texas. Whatever the outcome, the EIS makes it perfectly clear that niether the EIS writers or the DOE is aware of this potential unmitigable SSC facility siting. They are once again unaware because the State ENR has failed to notify them of this situation.

How can an industrial complex be allowed to be built at the entrance to a residential subdivision, adjacent to two churches, and in full view of a major highway without the Draft EIS even mentioning it? Does the ENR or DOE feel this problem will simply go away by not drawing attention to it? This is a totally unacceptable location for your tank farm facility. Not only will it be an eye sore for everyone passing it or living near it, but what about the noise? Are the church PA systems going to have to be abnormally load in order to compete with the drone of the compressor station? Are the church windows going to have to remain closed forever? How can anyone be expected to attend church in the atmosphere that the DOE and the collider are going to create at this location?

Your failure to realize that this situation exists is just another example of your arrogance and unconcern for the quality of human life that surrounds you. It's quite clear that all that matters to you is your precious collider---everything else is relegated to a level of insignificance. This cannot and will not be accepted. The Fox Valley site is not the logical choice for the SSC project. Put it where Dr. Lederman originally planned for it to go---out in the desert where it belongs!

Sincerely yours,

Lawrence J. Callan
President
Field Users Energy Assoc. Inc.
Wasco, IL. 60183-0285

LETTER 1151

October 12, 1988

Dr. Willmot Hess
SSC Draft EIS
SSC Site Task Force
ER-65-GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. - 20545

Dear Dr. Hess:

I wish to be included in the scoping process that is to respond to the Draft Environmental Impact Statement. After reviewing the Draft EIS, what I have known for a long time is rather obvious -- the SSC DOES NOT belong in Illinois! Far too many people would be adversely impacted. Following is a discussion of some of my many reasons:

1

2 More acres of prime farmland are being removed from production in Illinois than at any other side. (Table 4-23 DEIS)

3 More property owners are involved in Illinois than in all other states combined. (Table 4-2 and parcel count from Land Acquisition Plans A-3C thru A-3Y).

4 More businesses will be closed or relocated in Illinois than at all other sites combined. (Table 4-2).

5 Because of the great amounts of farmland, property owners and businesses being taken, Illinois will have the most difficult land acquisition process of any site.

6 The Illinois site has the largest number of people living adjacent to proposed SSC facility sites (E, F, and J sites). As a result, more people in Illinois will be adversely impacted by noise pollution, air pollution, exposure to airbourne radionuclides, adverse visual impacts, and noise and vibration impacts due to dynamiting than at any other site. (Appendix 4, Section 4.5.1, Page 4-29).

7 Lastly, because of the large number of human receptors at the Illinois site and their closeness to SSC facilities, a greater amount of mitigation changes will be required versus alternate sites. This equates to increased cost and increased construction time. (Figure 5.1.4-3 DEIS).

8 The great number of people being affected at the Illinois site is a very critical factor. Surely a state that has fewer people being affected would be the wiser choice. And you can be sure that by the time the SSC project is even completed, Kane County will have near the number of people that DuPage County has now. The SSC designers dared not place the ring east of Fermilab because of the density of DuPage County -- why then build it to the west of Fermilab when it will be just as dense? Keep the SSC out of Illinois! It does NOT belong here!

Sincerely,

Phil and Carol Hadanik
39 W. 371 Deer Run Dr
St Charles Illinois 60175

LETTER 1152

SUPER COLLIDER

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attention: SSC DEIS Comments

Dear Sir:

The following list of facts are negatives of the Illinois site proposal as found in the EIS:

1. Page 4-29 admits that Illinois has the greatest number of human-based receptors (people) close to project facilities. In other words, Illinois has the largest number of people who will become annoyed with the visual and noise impacts provided by the SSC facilities at the E, F and J sites.

2. Table 4-12 gives a comparison of concentrations of radionuclides in surface waters. Illinois did not include any information about this to the DOE. Are the radionuclide concentrations high for Illinois? Without the information, we and the DOE can only guess.

3. Table 4-13 shows that Illinois has an extremely high radium concentration in the groundwater at the site. Page 64 of appendix 5b indicates that wells in excess of 1,000 feet deep are an important source of public water supplies. All of the major municipalities in the region except Elgin obtain portions of their water from these deep sources. And, it is this deep source which has values for dissolved radium that exceed EPA standards.

4. Table 4-14 on page 4-39 clearly shows that Illinois is already the site with the greatest number of sources of man-made radioactivity.

5. Page 68 of appendix 5b indicates that the Illinois site already has two sources which contribute to an increase in the natural background radiation levels. They are Fermilab for one, and the Kerr-McGee Chemical Plant in West Chicago. We don't need another.

6. The Illinois site is within a 50 mile radius of 10 nuclear powered electrical plants. This is not true at any other site.

7. Illinois is already the site with the greatest number of potential hazardous/toxic materials sources. Illinois is the only site that already has two such possible sources of hazardous or toxic materials

P.O. Box 104, Wasco, Illinois 60183 Phone 312-584-4244

within the perimeter of the ring. Adding a third simply increases the risks of a potential accident occurring. If an insurance actuarial were to determine the likelihood of an accident occurring at any of the seven sites, Illinois would have the highest insurance rates by far.

8. Illinois is the only site within a region that is designated as in nonattainment for both ozone and carbon monoxide levels. In other words, the region of influence cannot meet Federal or State guidelines for air quality for both ozone and carbon monoxide. The addition of the SSC will only add to an already existing problem. Just because we already have the worst air of any site, should we be subjected to a further reduction in quality? This does not represent logic or progress.

9. Total Suspended Particulate levels (TSP) at the local E, F, and J sites in Illinois will exceed the National Ambient Air Quality Standards. This too is not acceptable when they are placed in residential settings. We did not build our beautiful homes to be situated next to industrial complexes.

Very truly yours,

Karen Smith

Karen Smith
39W870 Prunetree Lane
St. Charles, Ill. 60175

LETTER 1157

Box 432 • Warrenville, IL 60555 • 312/393-0080

Chamber of Commerce
WARRENVILLE, ILLINOIS

October 11, 1988

SSC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Gentlemen:

On October 6, 1988 I presented a talk in favor of the SSC for Illinois. I spoke at 2:55 p.m. in the Auditorium of Waubonsee High School. The moderator was Mr. Lawson.

We were told that we could submit our comments in writing before October 17. Mr. Lawson indicated we should send them to his attention. Unfortunately, I did not get his full name.

Enclosed please find my "speech" written up for your reference. Attached is a list of 215 groups in the area who have passed resolutions in favor of the SSC for Illinois. This list was provided me by the SSC For Fermilab Committee. I have handwritten Warrenville Chamber of Commerce because we drafted a letter of support in March of 1988 but sent it to Dr. Joe Lack instead of to the SSC for Fermilab Committee.

Thank you for giving our Chamber an opportunity to speak up in favor of the project.

Sincerely,

WARRENVILLE CHAMBER OF COMMERCE

Olivia Diaz

Olivia Diaz
Director
OD:s

enclosures

Box 432 • Warrenville, IL 60555 • 312/393-9080

Chamber of Commerce
WARRENVILLE, ILLINOIS

October 6, 1988

As Executive Director of the Warrenville Chamber of Commerce, I'd like to take this opportunity to address the economic benefits of the Superconducting Super Collider and Fermilab's contributions to the community.

It's obvious to me that the economic impact of the SSC is one that any resident would like to see come to Illinois. The more than 7,000 construction and 3,500 permanent positions that will be made available to Illinois residents as a result of the SSC represent a potential 42,000-person years of labor. The personal disposable income generated by this project would be the single largest piece of federal money this state has ever been offered.

Illinois, and the Fox Valley-area in particular, also will benefit from spin-off opportunities from the SSC. Construction workers and other SSC-related workers will need gasoline, breakfast, lunch dinner, and other necessities that will be purchased locally. The potential gains for area businesses are tremendous.

The opportunities are so overwhelming that more than 220 school districts, labor groups, unions, chambers of commerce, and other professional associations and organizations have whole-heartedly endorsed Illinois' bidd for the SSC. In our area alone, over 200 groups have publicly supported the project. See attached list. One of the great advantages of the Illinois proposal is Fermilab. Outside of the estimated $1.3 billion savings this facility represents, is the positive impact Fermilab has had on its host communities.

One of the most visible aspects of Fermilab is the restored prairies. The grounds of Fermilab are open to all residents, and with the walking and bike trails, the grounds are a testament to prairie conservation. Also, the bison herd on-site enables young and old alike to view a fascinating creature that was once on the brink of extenction. more importantly, Fermilab has contributed to the educational well-being of northern Illinois.

The Friends of Fermilab, an independent, non-profit organization, has developed a national model for incorporating federally funded research programs into educational tools for area physics teachers and students. More than 2,000

gifted science students have participated in Fermilab's Saturday physics workshops. Teachers have benefited from the availability of Fermilab physicists and specialized teacher's clinics to better teach their students.

In fact, one of this year's MacArthur Grant winners was Fermilab physicist, Helen Edwards. Dr. Edwards, in a post-award interview, indicated that some of the money she received from the grant will be donated to area high school students interested in a career in high-energy physics. Dr. Edwards is just one example of the type of dedicated, hard working individuals that call this area home as a result of Fermilab.

As the race to decide the most appropriate state to host the SSC comes to an end, I hope you'll consider that Illinois is the only state that has something to lose: Fermilab. Although the DOE has indicated that Fermilab will remain open during the SSC's operation, federal budget constraints and other factors may indeed close down the facility. As a resident of Warrenville and a neighbor of Fermilab, I would hate to see the loss of our good friends, educators and community-minded individuals as they move to follow the SSC.

Illinois offers the SSC some of the best schools, housing opportunities, utilities and human resources in the country. In turn, the SSC would offer Illinois the continuation of a 20-year relationship with Fermilab and its employees. Fermilab has been a model citizen, neighbor and friend. I don't think any other state could accept and integrate a federally-funded research center into its communities better than Illinois. It truly would be a shame to lose the relationship we as residents have developed with Fermilab.

Olivia Diaz

Olivia Diaz
Executive Director
Warrenville Chamber of Commerce

LETTER 1157 (CONTINUED)

SSC FOR FERMILAB
August 3, 1988

RECEIVED 4/5/88

(1) RESOLUTIONS OF SUPPORT

I. COUNTIES

Cook
DuPage
Kane
Will
Kendall
Lake
DeKalb

II. TOWNSHIPS

Kane County:

Elgin Township
Hampshire Township
Batavia
Aurora Township
Plato Township
St. Charles Township
Dundee Township
Geneva Township
Blackberry Township

Will County:

DuPage Township
Troy Township
Joliet Township
Plainfield Township

DeKalb

Afton Township
Cortland Township
Kingston Township
Malta Township
Sycamore Township

Kendall:

Oswego Township
Lisbon Township
Na-Au-Say Township
Little Rock Township

DuPage County:

Wayne Township
Naperville Township
Downers Grove Township
Milton Township
Winfield Township
Addison Township

Cook County:

Hanover Township
Schaumburg Township

III. MUNICIPALITIES

Cook County:

Chicago
Streamwood
Morton Grove
Winnetka
Prospect Heights
Crestwood
Lincolnwood
Elk Grove Village
Wheeling
Arlington Heights
Park Ridge

Kane County:

Sugar Grove Village
Elgin
St. Charles
Montgomery
Elburn
Maple Park
S. Elgin
North Aurora
Geneva
Hampshire
Sleepy Hollow
Carpentersville
Aurora
Batavia
E. Dundee

DuPage County:

Warrenville
Itasca
Downers Grove
Willowbrook
Roselle
Winfield
Hanover
Wheaton
West Chicago
Naperville
Bloomingdale
Clarendon Hills
Villa Park
Darien

Dekalb County:

Somonauk
Dekalb
Genoa
Sandwich
Sycamore
Shabbona

Kendall County:

Oswego
Plano
Newark
Yorkville

Lake County:

Winthrop Harbor

Will County:

Shorewood
Plainfield
Bolingbrook (DuPage Cnty.)
New Lenox

IV. PRIVATE INDUSTRY/ASSOCIATIONS/INSTITUTIONS

A. CHAMBERS OF COMMERCE

Warrenville Chamber of Commerce
Illinois Chamber of Commerce
Batavia, Kane County
Greater Aurora, Kane County
Dundee, Kane County
Geneva, Kane County
Charleston Area, Coles County
Belvidere Area Chamber, Boone County
Sycamore, DeKalb County
Wheaton, DuPage County
Lisle, DuPage County
Naperville Area, DuPage County
Quad-City, Rock Island County
Marshall Area, Clark County
Ottawa Area, LaSalle County
Salem, Marion County
Waukegan/Lake County
N. Chicago, Lake County
O'Hare Assoc. of Industry & Commerce, Cook County
Morton Grove, Cook County
Niles, Cook County
Northbrook, Cook County
Park Ridge, Cook County
Skokie, Cook County
Uptown, Cook County
West Suburban, Cook County
Lincolnwood, Cook County
Jefferson County
Morton, Tazewell County
Pekin Area, Tazewell County
Plano Commerce Assoc., Kendall County
Yorkville Area, Kendall County
Sterling, Whiteside County
McClean County
Urbana, Champaign County
Lombard, DuPage County
Greater Palatine, Inc., Cook County
McHenry Area, McHenry County
City of DeKalb, DeKalb County
Oswegoland, Kendall County
Elgin Area, Kane County

B. OTHER

Civic Committee of the Commerical Club of Chicago
Chicago Association of Commerce and Industry
Northern Illinois Painting and Drywall Institute
DuPage County Building Trades Council and the
Fox Valley Building Trades Council
Kane County Farm Bureau
Valley Industrial Association
Illinois Engineering Council

B. OTHER (CONT.)

Consulting Engineers Council of Illinois
Illinois Manufacturers' Association
Carpenters Local #195-Ottawa
Carpenters Local Union 558-Glen Ellyn
Carpenters Local 1889-Downers Grove
Carpenters Local #916
Iron Workers-Local #393
United Brotherhood of Carpenters-Local 638
Illinois State Council of Carpenters
Northwest Illinois District Council of Carpenters
Millwright Local Union 2158
Will County Economic Affairs Commission
Illinois Groundwater Association
ACCESS Committee of Batavia
Residential Construction Employers Council
Home Builders Association of Greater Chicago
Joliet/Will County Center for Economic Development
The Illinois Jaycees
Sheet Metal Workers' International Assoc., Local Union 265
Chicago Regional Section of Society of Women Engineers
Milwrights Union #1693
Plumbers & Pipefitters Local Union #319, Aurora
Prestbury Citizens Association
Painters Local #1285
Painters Local #448
Painters Local #97
Painters District Council #30
Aurora Optimists
American Society of Civil Engineers, Illinois Section
Aurora Township Republican Central Comm.
International Brotherhood of Electrical Workers, L.U. #701
International Brotherhood of Electrical Workers, L.U. #117
Local #461
Illinois Registered Land Surveyors Association
McHenry County Building Trades
Laborers Local #149
Building & Construction Trade Council,
Will & Grundy Counties
International Union of Operating Engineers, Local #150
Meyer Material Company
Northern Illinois Ready Mix & Materials Association
Teamster Local Union 423
LaVerne Weber Enterprises, Inc.
Quality Assurance Testing
Mc Cann Construction Specialties Company
Builders Association of Chicago
Underground Contractors Association
Kankakee & Iroquois Counties Building Trades Council
McHenry Area Economic Development Commission
The Democratic Party of the State of Illinois
Illinois Society of Professional Engineers, DuKane Chapter
Northern IL Painters, Decorators & Dry wall Finishers JATC

V. GOVERNMENT, PUBLIC INSTITUTIONS/ASSOCIATIONS

Illinois Mathematics and Science Academy
Regional Transportation Authority
RTA-PACE
RTA-METRA
West Suburban Regional Academic Consortium
Governor's Commission on Science and Technology
State of Wisconsin
Illinois State Legislature
Waubonsee Community College
DuPage County Regional Planning Commission
Northwest Municipal Conference
DuKane Valley Council
Kane County Economic Affairs Committee
DuPage Mayors & Managers Conf.
DuPage County/Water Supply System
Oswego Fire Protection District
Aurora Sanitary District Board
Bristol-Kendall Fire Protection District
Batavia Park District
Waubonsee Community College
Naperville Community School District 203
College of DuPage

LETTER 1158

Senator Anna Belle O'Brien
12TH SENATORIAL DISTRICT
CROSSVILLE, TENNESSEE 38555
LEGISLATIVE OFFICE
SUITE 9, LEGISLATIVE PLAZA
NASHVILLE, TENNESSEE 37219
(615) 741-3654

Senate Chamber
State of Tennessee
NASHVILLE

Senate Majority Floor Leader
MEMBER OF COMMITTEES:
EDUCATION
SUBCOMMITTEE CHAIRMAN K-12
ENERGY — VICE CHAIRMAN
SUBCOMMITTEE CHAIRMAN NATURAL RESOURCES
JUDICIARY
SUBCOMMITTEE SUPREME COURT/LAW EXAMINERS

October 3, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force ER-65/GTN
Office of Energy Research
U. S. Department of Energy
Washington, D. C. 20545

Dear Dr. Hess:

I represent as State Senator the 12th Senatorial District of Tennessee. I currently serve as Vice-Chair of the Senate Energy and Natural Resources Committee for the Tennessee General Assembly. During my elected political career, I have been an avid supporter of strong environmental laws and regulations. With this background, I want to share my full support for the SSC project to be sited in Tennessee as proposed in the Draft EIS dated August, 1988.

I believe the Tennessee proposal has provided a siting for the SSC which gives responsible consideration for a safe elevation for the tunnel and minimizes any environmental impact to the groundwater, surface streams, wetlands, glades and other significant land features. I believe that Tennessee has demonstrated our ability to regulate major construction to fully assure the quality of the air and waters of the state are not degraded. Our enforcement on the construction and operation of the SSC will be consistent and equitable as we apply to industries and units of government in Tennessee and thereby will assure a maintenance of our good air and water quality. I feel the SSC project as proposed will in the long term cause an improvement in our environment as certain acreages will be controlled and given governmental protection which it may not have received if allowed to be over developed or mismanaged by private ownership.

Again I support the Tennessee proposal and I believe the EIS properly addresses the environmental issues and any negative impact will be insignificant. I urge you to select Tennessee as the preferred site.

Sincerely,

Anna Belle O'Brien
12th Senatorial District
Cumberland, Fentress, Morgan, Overton, Pickett and Scott Counties

ABO/1

LETTER 1169

Enclosed is a copy of the speech I presented to the DOE panel, for the Draft EIS for the SSC, given at 8:00 p.m., October 6, 1988, at Waubonsee Valley High School. At this time I also want to thank the DOE panel for their patience and undivided attention to each speaker, since Illinois' hearings were more on an emotion level, leaving your job, I'm sure, a bit harder to get through. I would also like to thank the moderator, (in the gymnasium), Mr. Roy Eiguren. His humor and extreme patience helped to form a more relaxed, (but very controlled) atmosphere for all.

LETTER 1169 (CONTINUED)

October 6, 1988

Department of Energy
Washington, DC 20545

Attention: Wilmot Hess
Chairman
SSC Site Task Force

My Name is Anita Hough. I live at 2S. 296 Elm Ct., Kaneville, IL 60144.

My husband and I have lived in Kaneville for over 3 years. Our house will be one of the homes purchased by the State of Illinois, in order for the SSC to be built in Illinois. My original thoughts when I found this out were anger and a feeling of helplessness. However, when discussing this with others in the situation, I realized more importantly, that it was not just myself and my home at stake, but rather the community of Kaneville, and all the other communities involved along the 53 mile tunnel site. In my area alone, the relocation of many families and businesses has been discussed. Prime farmland is being taken away from people who have farmed that same land for over four generations and would like to continue to do so. Unfortunately, they cannot ever successfully relocated their heritage, nor their rich land, if the state takes it from them.

Earlier this year, I joined a group called CATCH, opposing the SSC project in Illinois, because I feel strongly that the quality of life is of great concern here as well. Kane County is unique in itself, because we still have large parcels of farmland, and industry has not been an overdeveloped situation as it has been for instance in Dupage County. I lived in Dupage County for 25 years: I saw its rapid growth and expansion until it was ready to burst at the seams. And just now, people who live there are starting to reject all the progressive growth and its repercussions. Recently the mayor of St. Charles, IL, has questioned the ability of Kane County to grow at an accelerated rate. He has grave doubts now about the growth and expansion of Kane County, should the SSC come to Illinois. He feels that that type of quick growth will have a great disadvantage for all of us.

I am not against progress of a normal nature. However, if the SSC is built in Illinois, I feel that the Kane County area, particularly Kaneville and the surrounding area, will be subjected to an unnatural growth at an accelerated rate: Not 15 to 20 years down the road, but realistically in 5 to 10 years. I beleive that type of growth will have a strong negative impact economically, sociologically, and environmentally.

My home and my community are very important to me. I have come to love and fully enjoy where I live. My husband and I have saved for many years to be able to have what we have now. Our home and our property is our investment for the future. And now we may face the State of Illinois, telling us we may have to give it all up and relocate somewhere else, starting over again. Where do we know where to go where this won't happen again? Is this really a democracy? I would like to be able to move when I choose, not when the government tells me I have to.

Until a decision is made about the SSC siting, our lives are virtually on hold. We don't dare make any plans, because we don't know what the future will hold for us here.

I do know one thing for certain. If the State of Illinois is selected for the SSC project, and I am forced to leave my home and community, I will also plan on leaving the State of Illinois. I will not live, or pay revenue, in a state that has no recourse in recognizing human rights. Thankyou for allowing me the time to speak this evening.

LETTER 1171

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

October 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-64/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments---Illinois Location/Safety

Dear Sir:

1 The scope of this report centers around one of Illinois' most important resources-human life. The proposed location for the SSC in Illinois is located in the fastest growing area in the state and right in the middle of one of the biggest population booms in the midwest. These are facts-facts the State of Illinois refuses to address.

2 As tables 5.1.8-9, 10 on pages 5.1.8-28-30 indicate, the traffic impacts due to the SSC are letter F. This means that there will be a "forced or breakdown flow with traffic demand exceeding the capacity; unstable stop and go traffic." Illinois is the only state where this condition will exist. Please note also that the statistics in this table are based on the "lowest level of service." And yet within the same table 5.1.8-9 the state claims that there will be no disruption to existing traffic patterns. Not even the State of Illinois could misinterprut the horrendous traffic problems created by the thousands of vehicles already in this area. As page 5.1.8-27 states, areas around the SSC facility might experience an "increase in traffic of between 200 and 1250 vehicles per day."

3 The State of Illinois is very quick to point out to the DOE in table 5.1.8-9 on page 5.1.8-28 that Illinois will only have to add 8 miles of new roads to accomodate the SSC. This is the

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

least number of new roads of any of the seven states competing for the SSC. This simply means that all excess traffic, as much as an additional 1250 vehicles, will be using and sharing the existing roads which have already exceeded their design capabilities.

Using all of these facts, how can it be determined on page 5.4-2 that the State of Illinois will have an increase of only 10 injury/accidents per year due to the SSC? Common sense alone tells one that when you add 200 to 1250 more vehicles (the majority of which will be huge trucks) to an already overburdened traffic area, a massive increase in accidents will occur. Once again the State of Illinois has done a masterful job of tricking the DOE. As is explained in table 5.1.5-4 on page 5.1.5-18 the way the injury/fatality accidents were determined was by "including all types of vehicles and is a statewide average value." Illinois has thousands of small sparsely populated towns and hundreds of miles of roads with only country traffic. Yet these areas were used to lower the Illinois injury/fatality accident rate considerably. Such facts dealing with human life have to come from the area directly involved.

4

95% of the SSC will be located in Kane County, Illinois. According to the State of Illinois Accident Reports Division (1-217-782-4516) in 1987 Kane County had 44 fatal accidents with 54 deaths. They also had 3,598 injury accidents with 5,447 injuries during 1987. These facts seem to be a contradiction to the facts given to the DOE by the State of Illinois.

There are absolutely no mitigating strategies that can cope with the enormous increase in injuries and death created by building the SSC in the State of Illinois. Life is too precious to gamble with statistics.

Sincerely,

Joe Blick

106 Highgate Course
St. Charles, IL 60174

LETTER 1172

SUPER COLLIDER

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments---Errors in the EIS

Dear Sir:

Page 4-21 is in error when it indicates that only 320 wells fall within the 1,000 foot zone of the collider ring in Illinois. This number is artificially low because it only reflects conditions as they existed as of Jan. 1, 1986. The real truth is that over 650 wells lie in the 1,000 foot path and hundreds more are in extremely close proximity to the ring boundary. The Illinois ENR has refused to upgrade their information, and further lawsuits can be expected to result from the fact that hundreds of potentially affected individuals have never been notified by the State or the DOE.

Page 4-21 of the DEIS is also in error when it makes the broad generalization that groundwater is not projected to increase significantly at any proposed site. Current growth statistics indicate that Kane County's population may double by the year 2010. If these projections are accurate, wouldn't it seem logical that groundwater use would also increase, or isn't a doubling of residents significant to the DOE? Once again, subjectivity on the part of the EIS writers is evident. This erroneous assumption is based upon two things: 1) The use of outdated population growth statistics as presented in the Illinois proposal, and 2) The erroneous assumption that municipalities in Kane County will switch over to Lake Michigan water.

The land acquisition maps for Illinois that appear at the back of Appendix 4 of the DEIS are totally inadequate for the purpose that they were intended. Each state was asked by the DOE to supply detailed up-to-date property maps for their inclusion in the DEIS. Upon examining the maps from each state, you will notice that every state shows the collider ring superimposed upon the parcels that are going to be affected through surface-take or underground easement acquisition. However, you will notice that the maps for

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

Illinois don't show any of the property that is adjacent to the ring. Every other state very conveniently shows the DOE how the ring lies in relation to the property adjacent to it. The Illinois maps are the only ones which try to mask the density of population and development that exists next to the collider path and adjacent to SSC facilities such as E, F and J sites. In fact, numerous access shaft sites, such as E8, F8, E9, F9 and J sites 1,3, and 4 are all very conveniently left off the maps. The DOE requested specific detailed maps, and yet Illinois failed to comply. Once again, the State ENR can be faulted for trying to obscure the public knowledge of where these facilities will be located.

Upon talking with the Land Management Division of the Department of Energy in Washington, C.A.T.C.H. has learned that even the DOE is appalled by the quality of the maps as presented by the State of Illinois. The normal procedure for any entity that is trying to win a project such as the SSC, is for that organization to present as much and as detailed information as possible in the hopes of coming out on top. Illinois, however, has chosen to deal in misinformation, secrecy and inaccuracies. The land acquisition maps provided by Illinois are simply another example to us and the DOE that Illinois does not want to win the SSC based on merit --- they want it handed to them on a silver platter!

Sincerely,

Gilman Panasewicz
40W 726 Long Shadow Ln.
St Charles IL 60175

LETTER 1174

BARBARA MILLER
Attorney at Law

Regional Offices, Inc.
The Anvil Building
1920 Highland Avenue, Suite 300
Lombard, Illinois 60148
(312) 916-8788 Telefax (312) 620-0674

Dear Mr. Hess:

This letter is to indicate my strong support for locating the SSC in Illinois at Fermilab. I believe locating the SSC in Illinois will result in a cost saving to the Federal government because of the facilities already available in Illinois not only at Fermilab but the suppliers + technology businesses located here.

1

Thank you for your consideration.

Very truly yours,

Barbara Miller

LETTER 1190

BERMAN, TRACHTMAN & MALEK, P.C.
ATTORNEYS AT LAW
100 NORTH LA SALLE STREET-SUITE 2218
CHICAGO, ILLINOIS 60602

MICHAEL H. BERMAN
STEVEN B. TRACHTMAN
EDWARD J. MALEK

TELEPHONE
(312) 726-0591

October 10, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

Pursuant to my oral comments before Mr. Nolan and others of your Site Task Force on October 7, 1988, I am herewith enclosing the final draft of said oral comments.

Very truly yours,

BERMAN, TRACHTMAN & MALEK, P.C.

Edward J. Malek

EJM/mrm
Enclosure

LETTER 1190 (CONTINUED)

BERMAN, TRACHTMAN & MALEK, P.C.
ATTORNEYS AT LAW
100 NORTH LA SALLE STREET - SUITE 2215
CHICAGO, ILLINOIS 60602

MICHAEL H. BERMAN
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TELEPHONE
(312) 726-0531

October 7, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attention: DEIS Comments

Dear Dr. Hess:

Since yesterday, you have heard many people come before you to comment on your Draft Environmental Impact Statement. Those opposed to the project told you of the adverse environmental impact this project would cause to our community, as well as pointing out the numerous deficiencies and half-truths of the document.

If the SSC is sited in Illinois, the State has talked about how they would mitigate the impact. This morning, I am going to discuss with you how the people will litigate. Litigate the selection of this state and your final EIS, litigate the state and federal violations to our pollution standards and litigate safety violations. You can be assured that if you site the SSC in Illinois, your department and the citizens I represent will be in court for the next 35 years.

Your draft EIS is devoid of any consideration of compliance with federal and state statutes concerning the environment. If sited in the State of Illinois, we guarantee you that there will be close monitoring during construction as well as operation of compliance with the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act and the Quiet Communities Act of 1978 and their rules and regulations. Furthermore, your document admits that it does not meet the pollution standards as enunciated by the Illinois Pollution Control Board.

The Draft EIS does not discuss compliance with Illinois' Groundwater Protection Act and the Prime Farmland Preservation Act. Dewatering may result in violations and causes of action pursuant to the Illinois Water Use Act of 1983.

Dr. Wilmot Hess, Chairman
SSC Site Task Force
Attention: DEIS Comments
October 7, 1988
- Page Two -

With regard to land acquisition, my team of legal experts is preparing a constitutional challenge to the use of eminent domain proceedings in acquiring stratified fee estates. The "quick take" provisions of this State are unconscionable and do not meet the minimal requirements of the federal Land Acquisition Policy Act of 1969.

Most importantly, however, you cannot, as a matter of law, site the Superconducting Super Collider in the State of Illinois due to the substantial direct and indirect adverse impact to our communities' wetlands and waterways.

On June 8th of this year, the 2nd Circuit of the U.S. Court of Appeals decided the case of Bersani vs. Robichaud, which is cited 850 Fed.2d, 36. This decision sets a legal precedent that unequivocally disqualifies the Illinois Site Proposal.

In interpreting the rules and regulations of the Clean Water Act, this court states that you must determine whether an alternative site is available that would cause less adverse impact to our nation's wetlands. If such an alternative site is a practicable alternative, then that site must be selected.

It is clear based upon the Draft EIS that Illinois has the second highest acreage of wetlands directly affected, and in all likelihood the largest area indirectly affected due to the proposed dewatering and siltation of the Fox River Valley waterways during construction. It is also very clear from your document that there exists five distinct practicable alternative sites that would have a far less adverse impact to our nation's wetlands. This recent U.S. Court of Appeals case instructs you to select one of those five other sites. Your failure to do so will result in litigation by the citizens in this community opposed to the SSC and in all likelihood, due to the keen competition for this project, in litigation in other jurisdictions. This is not a threat. This is not a myth. This is a fact. A fact of the resolve of my clients to keep this project out of their lives. Furthermore, you can be assurred that this recent case has been distributed to the other states vying for this project, or will be in the very near future.

Finally, Bersani vs. Robichaud instructs you that a 404 Clean Water Act study must be conducted and practicable alternative sites determined at the time you entered the market to search for a site, and not after a site is selected. As of this date, you have failed to conduct such an in depth study pursuant to the applicable Code of Federal Regulations (40 C.F.R. 2310 et seq.) and you have so admitted in the Draft EIS (See 5.1.5-17).

Dr. Wilmot Hess, Chairman
SSC Site Task Force
Attention: DEIS Comments
October 7, 1989
- Page Three -

In conclusion, I must caution you concerning the resolve of my clients. They have been and will continue to be steadfast in their resolve to have the SSC sited anywhere but in their community. They are articulate, intelligent and highly sophisticated people who have the resources available to continue in their goal of opposing this project. Don't be as foolish as our local and state officials to underestimate them. If you are and you select this State as the site of the SSC, you can be assured of legal and political confrontations. They are not opposing this project waiting to cut the best deal. They are opposing it because it is the right and just thing to do.

Very truly yours,

BERMAN, BRACHTMAN & MALEK, P.C.

Edward J. Malek

EJM/mrm

LETTER 1191

Oct. 10, 1988

SUPERCONDUCTING SUPER COLLIDER
SSC DRAFT EIS
SSC SITE TASK FORCE
ER-65 GTN
OFFICE OF ENERGY RESEARCH
U.S. DEPT. OF ENERGY
WASHINGTON D.C. 20545

DEAR GENTLEMEN;

I APPOSE THE SSC FOR ILLINOIS WITH
THE MANY THOUSANDS OF RESIDENTS. WE ARE TO EXPENSIVE
OF STATE IN REAL ESTATE. THE SSC SHOULD BE LOCATED
IN A STATE THAT HAVE LESS DISPLACEMENT OF (PEOPLE.)
1 WE DO NOT WANT TO BECOME ANOTHER
WESTIN & IT WILL ALMOST WIPE OUT ONE HALF OF
KANEVILLE. ILLINOIS CANT EVEN SUPPORT & BACK UP
OUR SCHOOLS. WE CANT AFFORD TO FURNISH WHAT
IS REQUIRED IN THE EIS SPECIFICATIONS.

PLEASE GIVE THE SSC TO A STATE THAT
WILL NOT DISPLACE SO MANY HOMES, BUSINESS &
2 PEOPLE. CORET IS A PLACE I DO NOT WANT IN MY
LATE AGE BUT I WILL FIGHT THE SSC FOR ILLINOIS

SINCERELY.

A. L. Suggett

The Suggett's Box 155 Kaneville, Illinois 60144

LETTER 1192

cc: DOE Post Fame

1 OCTOBER 1988

DR. WILKOT HESS
CHAIRMAN
SSC SITE TASK FORCE
ER-65/GTN
OFFICE OF ENERGY RESEARCH
US DEPARTMENT OF ENERGY
WASHINGTON, DC 20545

DEAR DR. HESS:

PLEASE EXCUSE THE RED INK! IT IS 1:30 A.M. AND I DARE NOT WAKE MY CHILDREN TO INTERROGATE THEM ABOUT THE WHEREABOUTS OF EVERY BLACK AND BLUE PEN THAT WAS IN PLAIN SIGHT AT 5:30 THIS AFTERNOON, FOR FEAR THEY'LL STAY UP THE REST OF THE NIGHT AND DISABLE ME FROM COMMUNICATING WITH YOU.

ONE OF THE MAJOR REASONS WHY ILLINOIS SHOULD NOT BE THE SITE OF THE SSC IS DUE TO THE EXTENSIVE DEGREE OF DEVELOPMENT WHICH EXISTS AT THE ILLINOIS SITE. PAGE 4-12 AND TABLE 4-21 BOTH INDICATE THAT ILLINOIS HAS THE MOST COMPLEX PATTERN OF CURRENT LAND USES AVAILABLE. ALSO, PAGE 4-16 STATES THAT "OF ALL SEVEN SITES, ONLY ILLINOIS PRESENTS A SITUATION WHERE GROWTH IS TRIGGERING NOT ONLY AN INTENSIFICATION OF CURRENT USE, BUT ALSO MAJOR DEVELOPMENT CLASSIFICATION. THE REMAINING SIX SITES DO NOT PORTRAY THIS KIND OF FUTURE GROWTH".

1 OCT 88 DR. W. HESS

THIS IS A KEY STATEMENT BY THE EIS AUTHORS. ONLY IN ILLINOIS ARE CURRENT LAND USES LEADING TO PROPERTY MOVING FROM ONE LAND CLASSIFICATION TO A HIGHER CLASSIFICATION. AS A CONSEQUENCE, THE LAND AVAILABLE AT THE ILLINOIS SITE HAS POTENTIAL ALTERNATE USES. THIS IS NOT TRUE AT THE OTHER SIX SITES. THE FACT THAT THE PROPERTY AT THE ILLINOIS SITE COULD BE USED FOR OTHER PURPOSES ACTUALLY MAKES THIS PROPERTY MORE VALUABLE THAN THE LAND LOCATED AT THE OTHER SITES. THE EIS INDICATES THAT NO FUTURE LAND USE CHANGES ARE EXPECTED TO OCCUR AT THE OTHER BASICALLY REMOTE AND UNDEVELOPED SITES. ONLY ILLINOIS STANDS OUT AS HAVING ALTERNATIVE LAND USES AVAILABLE FOR THE PROPOSED SSC ACREAGE.

THE OPPORTUNITY COST ASSOCIATED WITH THE ILLINOIS ACREAGE IS NEVER TAKEN INTO CONSIDERATION BY THE EIS, OR BY ANY OF THE ECONOMIC STUDIES PREPARED BY THE ILLINOIS ENR, SSC FOR FERMILAB, OR BY THE DEPARTMENT OF ENERGY.

THE ILLINOIS SITE IS UNIQUE IN ITS ECONOMIC POTENTIAL, YET THIS FACT IS COMPLETELY IGNORED BY THE PROPONENTS OF THE ILLINOIS PROPOSAL. ALL ECONOMIC DISCUSSIONS HAVE CENTERED AROUND THE ECONOMIC BENEFITS THAT WILL BE DERIVED FROM

10 OCT 88 DR. W. HESS

THE SSC PROJECT WHILE IGNORING MANY OF THE COST COMPONENTS WHICH MUST BE CONSIDERED IN A TRUE COST BENEFIT ANALYSIS. EITHER THE ECONOMISTS INVOLVED IN PREPARING THE EIS HAVE MADE A MAJOR MISTAKE, OR THERE WERE NO ECONOMISTS INVOLVED AT ALL!

ANOTHER FACTOR THAT IS OBVIOUSLY MISSING FROM THE EIS IS AN ANALYSIS OF THE PSYCHOLOGICAL IMPACT WHICH THE SSC PROJECT IS ALREADY HAVING UPON THE AFFECTED RESIDENTS AT EACH ALTERNATIVE SITE. IN ILLINOIS, FOR EXAMPLE, THERE IS NO DISCUSSION ABOUT THE DEGREE OF INVOLVEMENT NECESSARY FOR PEOPLE TO FIGHT THIS PROJECT. NOWHERE DOES IT DESCRIBE THE ANIMOSITY WHICH HAS DEVELOPED BETWEEN AFFECTED PROPERTY OWNERS AND THE GOVERNMENT OF THE STATE OF ILLINOIS. NOWHERE DOES THE EIS DESCRIBE THE TREMENDOUS DEGREE OF MISTRUST WHICH THE LOCAL COMMUNITY HAS TOWARDS OUR GOVERNOR, OUR LOCAL POLITICAL LEADERS, THE DOE, AND ESPECIALLY TOWARDS FERMILAB. THE EIS IS DEFICIENT IN DESCRIBING LOCAL ATTITUDES AND FEELINGS TOWARD THE SSC AND ITS PROPOSERS. AS A RESULT, THE SCIENTISTS DON'T UNDERSTAND THE COMPLETE HATRED AND REVULSION WHICH WE AFFECTED PROPERTY OWNERS HAVE TOWARDS THE SSC IN GENERAL. NOR DO YOU UNDERSTAND, FROM THE EIS, THE RESOLVE THAT WE PEOPLE HAVE TOWARDS INSURING THAT THE SSC WILL NOT

LETTER 1192 (CONTINUED)

7 OCT 88 DR. W. HESS

BE SITED IN ILLINOIS.

WE ARE PREPARED TO DO WHATEVER IS LEGAL TO IMPRESS UPON YOUR SCIENTISTS THAT THEY ARE NOT WELCOME HERE IN A PROFESSIONAL CAPACITY. EVERY LEGAL MEANS WILL BE EXPLOITED IN AN ATTEMPT TO FORCE YOU TO SITE THIS INTRUSION ELSEWHERE. THE EIS HAS FAILED MISERABLY IN ITS JUDGEMENT OF LOCAL ATTITUDES, AND I WANT TO MAKE IT PERFECTLY CLEAR THAT THE ONLY WAY THE SSC CAN COME TO ILLINOIS IS THROUGH THE COURTS.

RESPECTFULLY,

HILDI SMITH
6N 486 SPLITRAIL LANE
ST. CHARLES, IL 60175
312-584-9346

LETTER 1192 (CONTINUED)

Oak Park Force

14 October 1992

The Honorable John Herrington
Secretary
U.S. Department of Energy
1000 Independence Avenue
Washington, D.C. 20585

Dear Sir:

Thank you for this opportunity to bring to you one of my concerns regarding the possible siting of the SSC in Illinois.

The DEIS Volume 4 Appendix 9 page 2 states:

"There is an absence of any legal consensus on acceptable levels of noise at residences"

It goes on to state:

"Therefore this assessment develops criteria for noise impacts where none are applicable."

The arrogance of this statement by the authors of the DEIS is simply mind-boggling to me. How can they be objective in their assessment when they have not lived here, where the loudest thing we're accustomed to is the thunder of crickets in the evening and the symphony of birds in the morning?

page 2 of 4

14 OCTOBER 1988 HON. J. JEFFREY

IN DEIS 5.3.5.1 C PAGE 53 PROXIMITY TO SENSITIVE AREAS IT STATES:

"SENSITIVE RECEPTORS IN THE VICINITY OF SSC SURFACE FACILITIES INCLUDE RESIDENCES, SCHOOLS, CEMETERIES, OPEN SPACE RECREATIONAL AREAS, AND A FOREST PRESERVE."

WHAT OTHER AMENITIES OF A COMMUNITY DO YOU FEEL TO SEE IN THE LIST TO ENABLE YOU TO RECOGNIZE THAT THIS IS AN INAPPROPRIATE PLACE TO SITE A SCIENCE LABORATORY? SCIENTISTS MAY FEEL THE SSC WILL BE ADEQUATELY CONTAINED AND SECURE, BUT THOSE OF US RAISING FAMILIES HERE WILL ALWAYS FEAR DANGER TO OUR CHILDREN.

THE DEIS CONTINUES BY LISTING INTERMEDIATE ACCESS AND SERVICE AREAS WHICH WILL BE LOCATED CLOSE TO CONCENTRATED RESIDENTIAL DEVELOPMENTS. BUT E8 IS NOT LISTED AMONG THEM. THE OMISSION IS UNFORTUNATE BECAUSE E8 IS SITUATED BETWEEN TWO ADJOINING FRONT YARDS OF MY NEIGHBORS ONE YEAR OLD HOMES. THESE HOMES ARE BUILT ON A TWO HUNDRED ACRE SUBDIVISION BEING DEVELOPED INTO NINETY-NINE (99) HOMESITES, WITH A CURRENT OCCUPANCY OF FORTY-SIX (46) HOMEOWNERS. THE INK ON THEIR MORTGAGE COMMITMENTS IS BARELY DRY. ON THE DISGRACEFULLY INADEQUATE ILLINOIS MAP OUR LOCAL POLITICIANS FURNISHED YOU, THE TWO HUNDRED ACRE SUBDIVISION IS

1-SE-8-15-2

14 Oct '88 Hon. John Herrington

SHOWN AS ONE DOT. THIS ONE DOT PRESENTLY REPRESENTS 173 PEOPLE. THAT'S ONE HUNDRED SEVENTY THREE PEOPLE.

IN THE R.I.S.S B.1.a. THE DOE STATES:

"HUMAN RECEPTORS NEAR F8, E7, F9, E1, F1, E2, F2, E4, F4, F5, E6, E7, F7, AND E8 WILL BE HIGHLY ANNOYED (Ldn greater than 60 dBA)."

THIS MEANS THAT THE ACTIVITIES AT SEVEN OF THE TEN INTERMEDIATE ACCESS SITES AND SEVEN OF THE TEN SERVICE AREAS WILL BE HIGHLY ANNOYING TO HUMAN RECEPTORS. SINCE E10 AND F10 REPRESENT THE FERMI LAB LOCATION, WE KNOW THOSE HUMAN RECEPTORS HAVE CHOSEN TO BE THERE FOR JOB/CAREER REASONS, AND DO NOT NEED TO TOLERATE THE NOISE LEVEL OUTSIDE OF BUSINESS HOURS, BUT WE HOMEOWNERS NEAR THE SITES WOULD BE PRISONERS OF THE NOISE LEVEL AND HIGHLY ANNOYED. SO WE'RE DOWN TO EIGHTEEN SITES, AND WE KNOW HUMAN RECEPTORS AT FOURTEEN SITES WILL BE HIGHLY ANNOYED. ANOTHER WORDS, HUMAN RECEPTORS AT 78% OF THE SITES WILL BE HIGHLY ANNOYED. DO YOU OR ANYONE AT THE DOE KNOW HOW MANY HUMAN PERSONS WILL BE HIGHLY ANNOYED?

I AM INFURIATED THAT OUR COUNTRY'S TAX DOLLARS HAVE BEEN SO IRRESPONSIBLY MISSPENT

PAGE 2 OF 2

LETTER 1192 (CONTINUED)

14 OCT '88 HON. JOHN FERRIBSTON

AT THE LOCAL, STATE, AND FEDERAL LEVEL IN THIS RIDICULOUS ATTEMPT BY ILLINOIS POLITICIANS TO HOODWINK YOU, VIA DECEPTION AND OMISSION OF ALL THE FACTS, INTO BELIEVING THIS IRREVERSIBLY INAPPROPRIATE AREA COULD BE THE SSC SITE. THIS IS NOT VAST FARMLAND AS IT WAS IN THE RECENT PAST. VISIT THIS AREA TO SEE THE COMMUNITIES THAT HAVE MUSHROOMED IN THIS NATURALLY BEAUTIFUL FOX VALLEY. I'LL BE HAPPY TO SHOW YOU THE SIGHTS, BUT I WON'T TAKE YOU FOR A RIDE LIKE OUR LOCAL POLITICIANS DID DURING YOUR SUMMER VISIT TO THIS SITE.

RESPECTFULLY,

Heidi Smith

HEIDI SMITH
6N486 SPLITRAIL LANE
ST. CHARLES, IL 60175
312-584-9346

LETTER 1196

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmont Hess, Chairman
SSC Site TAsk Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Problems with the EIS & SSC

Dear Sir:

Table 3-7 indicates that Illinois has the most historical sites which may be affected by the invasion of the SSC. Also this same chart shows that Illinois has the most prehistoric or archaeological sites that may be affected by the SSC project.

Table 3-7 indicates that the Fox Valley area will experience an increase in school enrollments by 2004 students by the first year of operations should the SSC come to Illinois. An additional 99 teachers are expected to be needed by that time. This places an additional tax burden upon the local tax payer-- a burden that we are already finding is too heavy a load. Our local communities are being asked to subsidize too much of this National project.

Table 4-27 indicates that Illinois already has the next worst student/teacher ratio of the seven states. If in fact we can't afford to hire these 99 new teachers, then our local student/teacher ratio becomes even worse. Is this the beautiful socio-economic atmosphere that the State of Illinois has painted for you scientists?

Table 3-7 also gives the false impression that a very small amount of acreage in Illinois will receive adverse noise levels while the SSC is under construction. The small acreage figure is misleading because due to the density and development of the Illinois site, the background noise is already the highest. As a consiquence, even though the SSC construction will make it even higher, the degree of increase is not as great as those for other states. However, you scientists cannot ignore the fact that the overall noise level will be the greatest in Illinois and that the greatest numbers of people will be the most annoyed in Illinois. The vast numbers

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

of annoyed human receptors in Illinois should be your major concern when comparing noise level statistics between states.

Chart 3-7 page 3-57 indicates that Illinois will experience a net loss of over 6.5 million dollars during the peak year of construction in the primary counties where the SSC will be located. Yet all along, we have been told by the SSC proponents that this is suppose to be such an economic boom to the area. Only the State of Afizona shows a larger anticipated loss than Illinois and that can be explained by the large amount of infrastructure improvements which must be built and financed by that State. We might therefore ask SSC for Fermilab Inc. to explain why this fiscal loss will occur right during the peak of construction.

Of perhaps even greater significance, is that Table 5.1.8-8 shows that Kendall County will lose $400,000 during the first year of construction and an additional $300,000 per year for the remainder of the life of the project. Kendall County is one of only 2 counties among all counties involved at the seven sites that will experience this negative financial impact. Just why has this never been mentioned by the state or Governor Thompson, and why is this project being portrayed in such a positive light when there are so many glaring negatives involved for the Illinois and local taxpayers?

Kathleen Kennedy
41W493 Silver Glen Rd.
St Charles, Ill. 60175

LETTER 1196 (CONTINUED)

KBR

Bob & Kathy Bennett
41W403 Silver Glen Rd.
St. Charles IL 60175

October 7, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments - - - Problems with the EIS and the SSC

Dear Sir:

Table 3-7 indicates that Illinois has the most historical sites which may be affected by the invasion of the SSC. Also this same chart shows that Illinois has the most prehistoric or archaeological sites that may be affected by the SSC project.

Table 3-7 indicates that the Fox Valley area will experience an increase in school enrollment by 2004 students by the first year of operation should the SSC come to Illinois. An additional 99 teachers are expected to be needed by that time. This places an additional tax burden upon the local tax payer-- a burden that we are already finding too heavy a load. Our local communities are being asked to subsidize too much of this National Project.

Table 4-27 indicates that Illinois already has the next worst student/teacher ratio of the seven states. If in fact we can't afford to hire these 99 new teachers, then our local student/teacher ratio becomes even worse. Is this the beautiful socio-economic atmosphere that the State of Illinois has painted for you scientists?

Table 3-7 also gives the false impression that a very small amount of acreage in Illinois will receive adverse noise levels while the SSC is under construction. The small acreage figure is misleading because, due to the density and development of the Illinois site, the background noise is already the highest. As a consequence, even though the SSC construction will make it even higher, the degree of increase is not as great as those for other states. However, you scientists cannot ignore the fact that the overall noise level will be the greatest in Illinois and that the greatest numbers of people will be the most annoyed in Illinois. The vast numbers of annoyed human receptors in Illinois should be you major concern when comparing noise level statistics between states.

Chart 3-7 page 3-57 indicates that Illinois will experience a net loss of over 6.5 million dollars during the peak year of construction in the primary counties where the SSC will be located. Yet all along, we have been told by the SSC proponents that this is suppose to be such an economic boom to the area. Only the State of Arizona shows a larger anticipated loss than Illinois and that can be explained by the large amount of infrastructure improvements which must be built and financed by that State. We might therefore ask SSC for Fermilab Inc. to explain why this fiscal loss will occur right during the peak of construction.

Of perhaps even greater significance, is that Table 5.18-8 shows that Kendall County

will lose $400,000 during the first year of construction and an additional $300,000 per year for the remainder of the life of the project. Kendall County is one of only two counties among all counties involved at the seven sites that will experience this negative financial impact. Just why has this never been mentioned by the state or Governor Thompson, and why is this project being portrayed in such a positive light when there are so many glaring negatives involved for Illinois and the local taxpayers?

In conclusion, I would like to mention that my house is not on the ring, but as an Illinois taxpayer and resident of the Fox Valley Area I am definitely affected.

The State of Illinois does not have the right to be spending tax monies on a project like this, when it can't afford the existing projects in the budget, such as the education of its future citizens. I ask you, where is Governor Thompson's fiscal responsibility?

The construction of the SSC would be like Illinois buying the DOE a Cadillac when Illinois can only afford a Volkswagon and because of congressional funding the DOE could not afford the gas to run the Cadillac.

THE STATE OF ILLINOIS CANNOT AFFORD THIS PROJECT AND THE CITIZENS DON'T WANT IT.

Sincerely,

Kathy Bennett

Kathy Bennett

LETTER 1199

KBR

Bob & Kathy Bennett
4197493 Silver Glen Rd.
St. Charles Il. 60175

October 7,1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments - - Problems with the DEIS and the SSC

My name is Bob Bennett. My family and I live in Campton Township about six miles west of St. Charles. We have lived there for fifteen years.

I am one of the authors of the C.A.T.C.H. document entitled "Detrimental affects of locating the Superconducing Supercollider (SSC) in Illinois". I sincerely hope that you have read that report because it seems that the Draft Environmental Impact Statement (DEIS) was modified to skirt many of the issues brought up in that document.

If you remember, the Illinois DOE originally had identified 46 dump sites around the ring in order to dispose of the excavated material. The DEIS has now identified four quarries as dump sites per volume IV, appendix 10, pages 13 & 14. Unfortunately, in doing so, the DOE has compounded the traffic and road maintenance problems by increasing the tonnage-miles that our local roads must withstand. Of course the State of Illinois will repair our local county roads - - -, or will they? They seem to have a somewhat shabby history of budgeting for highway maintenance.

In the Socio Economic area - a major argument used by the supporters of the SSC, both in Illinois and the Federal Government, is that there will be numerous spinoff industries developed in Illinois by the SSC project. I strongly disagree. I certainly cannot identify an industry in Illinois which was born as a result of the technological advances at Fermilab.

Regarding the claim that great advances in technology will occur, James Krumhansl, Cornell University professor and president of American Physical Society, has stated that the SSC does not have "any immediate relevance to our technological or economic competitiveness".

Many scientists feel that more economically productive small science is being crowded out by big irrelevent science projects.

Over the past day and a half of hearings we've heard numerous evidence of discrepancies and contradictions in the assumptions made in the DEIS. I'll add my own small contribution. In volume I, section 5.1.6.2, page 5.1.6.5 states that the depth of the tunnel in Arizona varies from 50 to 810 feet, in Colorado from 75 to 250 feet, in Michigan from 80 to 210 feet, in North Carolina from 35 to 274 feet, in Tennesee from 290 to 615 feet, and in Texas from 65 to 230 feet. Only one state, Illinois, has a tunnel which does not vary in depth below the surface, the depth is stated as a

2constant 432 feet. This is obviously an error in which the average tunnel depth replaced the range of tunnel depth (good luck in designing a magnet system which would cause the beam to follow the surface of the Fox Valley area at a fixed depth). The problem is that I sincerely doubt that anyone in the DOE has edited their own document.

This is not a "typo" gentlemen, it is another basic error in the data. As scientists you must realize that many of us now regard the DEIS as theoretical science - a wish list - rather than a factual study. You must realize that there are too many discrepancies and discontinuities in the document. At this point the document reflects poorly on the competence and credibility of the DOE.

I advise and implore you to correct these inadequacies in the final document - get the facts straight - do some investigation. Do not rely on the data from the State of Illinois.

A decision to select Illinois as the site for the SSC based on the existing data and analysis would be foolish. The next report must be correct in every way because a study, using the correct data, would not recommend Illinois as the site for the SSC.

Sincerely,

Robert W. Bennett

Robert W. Bennett

LETTER 1201

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct.6,1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Opportunity Cost

Dear Sir:

The state and the DOE gloat about the number of jobs that will be created in Illinois by the SSC. But what if the resources that the taxpayers of Illinois are being told to commit to the SSC were spent elsewhere in the public sector or by the private sector?

Would there not be jobs created in this case as well? There most certainly would. And they would be jobs producing goods and services that meet the test of the competitive marketplace, not bureaucratic boondoogles such as this proposed SSC.

Increasing land value for residential and for industrial and commercial purposes in the Illinois site area is recognized by the following statement from the DEIS, Vol 1, Chapter 4, page 76: "Of the seven sites, only Illinois presents a situation where growth is triggering not only an intensification of current use, but also major changes from one category of land use to a new higher development classification. The remaining six sites do not portray this kind of future growth." This means that only the Illinois site has alternative land uses beyond the SSC. Land at the Illinois site has an opportunity cost associated with it that does not exist at the other sites. As a result, the Illinois hand is much more valuable and potentially productive.

In one particular case alone, 500 acres of industrial zoned land will be taken for the SSC project. This 500 plus acres in the St. Charles and West Chicago Industrial Parks has an inherent value due to the fact that it is located immediately adjacent to other commercially zoned property which currently provides over 10,000 jobs for the Fox Valley area, and provided thousands more during its construction over the past 20 years. This land to be siezed, would support over 8000 permanent jobs. These potential jobs will

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

be lost to provide just 500-3200 permanent jobs at the SSC, provided on whether you accept the estimates of the state or of the DOE.

Proponents claim that Dupage County Airport expansion will be allowed on this surface take area, but site specific mitigations listed in the DEIS do not deal with this 500 acres. It is said that leaseback of agricultural lands for purposes which do not conflict with the SSC might be allowed. But this is preceded by the statement: "These mitigations may or may not be feasible or even desirable, depending on the outcome of final project design."

But even though the DOE recognizes the facts presented above concerning development in the proposed Illinois site area, these facts are not considered in their socioeconomic assessment. They only discuss positive employment impacts and not the employment opportunities lost because of SSC land seizure. This failure renders their socioeconomic assessment invalid.

Why would the state want to forfeit the industrial area jobs for the lesser employment projected for the SSC? Why do they want to subject the Fox Valley to the environmental catastrophy that will undoubtedly ensue if the SSC is sited here?

The answer lies in political ego. Take an objective look at this project Illinois! Consider all the facts DOE! Illinois is losing more than it is gaining.

Sincerely yours,

Donna Brzski
38W 738 Murray Rd.
St. Charles, IL 60175

LETTER 1205

To:
SSC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington D.C. 20545

From:
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Statement to Draft Environmental Impact Statement (DSIS) Hearing
On The Proposed Superconducting Super Collider In Illinois
Waubonsie Valley High School, Aurora, IL
October 7, 1988
by John P. Ross

(Documentation Enclosed)

Today, we meet to discuss the future of the Fox Valley and the welfare of this nation.

Not much has been made of the arena of science and politics. The need for the "pure" scientist to sell the politician, by giving him a "pork barrel" - instead of a direct result, is the same tactic used to create Fermilab and destroyed the village of Weston. But merits of this project are lost in the idea of job creation. Who is for sure the direct beneficiary? Not the general public! No, this will be a benefit for "pure" science at the cross of the "applied" scientist and the general public. Will America be ahead of our foreign competitors because of the SSC? The answer is a big NO! They want us to build it and then only a small group of physicists reap any benefit. A look at the flags at the front of Fermilab shows who are some of some its beneficiaries, eg. Poland, China, etc. The returns to Illinois and the United States are doubtful! We will have spent money to improve a small segment of the scientific

community to the detriment of the whole. This project will not save American jobs, it will not help create new small industries, it will not improve health care or cure AIDS, it will not raise the minimum wage, it will not improve OSHA or EPA standards, it will not help public housing or feed the hungry, and it will not give Illinois and America economic security for the 21st century. I have joined this political arena and I am opposed to this project in Illinois and the nation.

I now must address three areas of personal concern: 1. the radioactive dump at Fermilab, 2. the SSC's generating of radioactive waste and 3. the future expansion site for the SSC in Illinois.

Your DEIS in Volume 4 Appendix 5 on page 78 fails to address the Fermi facility as storage dump for radioactive waste. I must raise the concern of the SSC as an on-site storage dump for low-level radioactive and radioactive/hazardous mixed waste by DOE. With tighter controls of radioactive/hazardous mixed waste, off-site storage is a problem for Fermilab. Also old radioactive parts from other DOE sites (eg.,Brookhaven and Argonne, even maybe Oak Ridge) along with Fermilab parts are dumped on-site. This dump area at Fermilab is called the "Boneyard". Fermilab's *CY 1987 Site Environmental Report* states "The primary radioactive waste storage area on-site - the Boneyard - is also the primary source of off-site gamma radiation. Activated accelerator components and shielding, primarily iron and concrete, are stored at the Boneyard for future disposal or reuse following

radioactive decay...In addition, there was an area nearby designated for radioactive material storage for future use. A large amount of low-level radioactive material was placed in that area.". The exact amount of this radioactive waste dumped on-site at Batavia's Fermilab should be made public by DOE and the state at this Environmental Impact Statement (EIS).

I must also note that DOE's estimate of 8,000 cubic feet of low-level radioactive waste for the SSC (using the Fermilab model) is disputed by Lawrence R. Jacobi of the Texas Low-Level Radioactive Waste Disposal Authority. In June 11, 1987 issue of *Nuclear Waste News*, Jacobi puts the figure at around 30,000 cubic feet of radioactive and radioactive/hazardous mixed waste. Jacobi in other correspondence notes "First of all, the SSC is 12 times as large as Fermilab ...Second, the 8,000 cubic feet of waste reported by the Fermilab is the average volume shipped annually, not the volume produced." A high guess of 65,000 cubic feet was gained by Jacobi in his conversations with Charles Zonick, Fermilab's Manager of Waste Services. With a range of 8,000 - 65,000 cubic feet, Ross expressed concern that the SSC would produce between 3.5% to 29.6% of the Illinois' total (6,433 cubic meters) low-level radioactive waste. I feel that the SSC's volume of low-level radioactive waste could have a severe impact on the future Central Midwest Compact site.

I would also challenge Governor Thompson and the state of Illinois to issue a statement to the public and to the Department of Energy (DOE) that would state that the

Butterfield homes would not be purchased by the state now or in the future for the expansion of the SSC. Both Volume 4 Appendix 5 page 114 and table 5.3.10-1 in Volume 4 Appendix 5 page 112 raise my concerns about the Butterfield area. Both the state and the DOE templates for the SSC show the south Butterfield area as the site for future expansion of the SSC. I must note that this purchase for future expansion is last on the SSC'S acquisition timetable. The state has only made oral assurances that this area is not in the state's proposal. As noted your DEIS still mentions this area in tables and comments for future expansion and this DEIS does not have any reference to a state withdrawal of the Butterfield area. The Butterfield question should be out on the table and not under the table! These Butterfield residents deserve an answer.

Now I will close with this statement from the book of Proverbs, chapter 29 verse 4. I will also interchange the word "government" for "king". "When a government (king) is concerned with justice, the nation will be strong, but when it (he) is only concerned with money, it (he) will ruin that (his) country."

LETTER 1205 (CONTINUED)

Nuclear Waste News

Generation • Packaging • Transportation • Processing • Disposal

Vol. 7 No. 24 June 11, 1987 Page 155

- Super Collider May Produce Significant Amounts of LLW..... Page 156
- Texas LLW Siting Process Is Back to Square One..... Page 157
- Bill Would Use Defense Funds for DOE Site Cleanup..... Page 159
- Army Nerve Gas Lab Said to be Mishandling Radwaste..... Page 159

SLANTS & TRENDS

A PROPOSED LIFTING of the tonnage cap imposed by Congress on the first-round HLW disposal site -- outlined by Sen. William Proxmire (D.-Wis.) and others to the Senate Energy and Natural Resources Committee last month -- has raised the ire of all six senators from three Western states. In a strongly worded letter sent to the Senate Energy and Natural Resources Committee on June 11, Texas Sen. Lloyd Bentsen (D.) wrote, "we pointedly question" suggested expansion of the 70,000 metric ton limit and suspension of work on the second repository.

"THE CALL TO LIFT THE CAP should have very little support at the Energy Department and even shallower support in Congress," the letter continued. "The assurance of regional equity was essential" to enactment of the Nuclear Waste Policy Act, and without the first-round volume limit "the critical consensus of NWPA begins to unravel quickly," the letter remarked. Likewise, it said, "it would seem appropriate to defer action on any bill to authorize a single repository." Sen. Phil Gramm (R.-Texas) signed the letter with Bentsen, as did Washington senators Brock Adams (D.) and Daniel Evans (R.) and Nevada's Chic Hecht (R.) and Harry Reid (D.).

• • •

DOE'S FY'88 FUNDING BILL was marked up in the House Appropriation's Energy and Water Development Subcommittee on June 9 but details of the measure were embargoed from release because of weapons provisions in the bill. Aaron Edmondson, a committee staffer, told NWN that the bill is still forming, however, and "this was sort of a tentative markup." He added, "If there's some drastic change in appropriations there may be another markup," but would not elaborate. In either case, the full committee is expected to consider the bill next week. "Everything is on schedule," Edmondson said, denying reports that the recent illness of subcommittee chairman Rep. Tom Bevill (D.-Ala.) had delayed the vote.

• • •

STATES VYING FOR DOE'S SUPER COLLIDER should consider estimates that the massive high energy physics facility could generate 30,000 cubic feet of low-level radioactive waste and radioactive/hazardous mixed waste per year (see story, p. 156). Anything in the beam tunnel must be handled as a radioactive waste, said a spokesman for Texas' LLW authority. For Texas and other states competing for the lucrative SSC, LLW management will have to be factored into their plans. For many LLW compact commissions, disposal siting questions remain unresolved and SSC's waste disposal price tag adds another element to those negotiations.

Leonard A. Ehrer, Publisher
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DOE'S PLANNED SSC WILL PRODUCE LLW AND MW; QUANTITIES STILL UNCERTAIN

The "best estimates" now available indicate that the Superconducting Super Collider (SSC), the Department of Energy's planned world-class high-energy physics facility, will produce about 30,000 cubic feet of radioactive and radioactive/hazardous mixed waste per year, Rick Jacobi from the Texas Low-Level Radioactive Waste Disposal Authority told NWN.

Exact estimates of projected waste volumes from SSC have been very difficult to obtain, Jacobi said, and the problem has been exacerbated by tighter controls on information put in place when DOE moved into its procurement cycle during which a state will be selected to host SSC. August 3 is the deadline for site proposals from states competing for the facility.

"You hear figures that range between 7,000 ft.^{3}/yr and 65,000 ft.^{3}/yr.," Jacobi said, "but 65,000 appears to be the upper limit." Before the DOE procurement process was in place, Jacobi and the TLLRWA had been working with the Fermi National Accelerator Laboratory, Batavia, Ill., to obtain some working estimates of the potential wastes involved.

Texas is one of the states involved in a heated competition for the $4 million to $6 million particle accelerator. The completed SSC will consist of an underground ring of over 10,000 superconducting magnets 52 miles in circumference, with a beam tunnel approximately 10 feet in diameter. The facility will employ more than 3,000 scientists and technicians.

Fermi Lab's Tevatron, with a four-mile circumference, produces some 25,000 ft.^{3}/yr. of radioactive and mixed waste. The amount of waste that is actually shipped off-site in any one year ranges from about 7,500 ft.^{3} to 22,000 ft.^{3}. Fermi has an extensive program of waste volume reduction, including compaction and a solar evaporator facility for liquid wastes, and an on-site storage facility for high-radiation waste and some mixed wastes. Waste that is shipped off-site goes to DOE's Hanford, Wash., low-level radioactive waste disposal facility.

Anything in the Beam Tunnel Will Be Activated

Basically, Jacobi said, anything in the beam tunnel will become activated. Items such as beam line components, magnets and magnet components, copper cladding, electrical instruments and other equipment taken out of the beam tunnel must be handled as radioactive waste. At Fermi, a significant quantity of mixed waste is produced from discarded lead shielding, contaminated oils, lead-acid batteries used to power emergency lights in the tunnels and sodium chloride and other salts used in water treatment. Fermi is storing MW on-site, because none of DOE's LLW disposal facilities can meet the Resource Conservation and Recovery Act (RCRA) requirements to accept this material.

TLLRWA's discussions with Fermi Lab personnel indicated that the volume of waste anticipated for SSC would be at least equivalent to those produced at Fermi. The facility will be approximately 12 times the size of Fermi's Tevatron. While SSC, unlike the Tevatron, is a supercolliding facility that will not collide the beam into fixed targets -- a process that produces larger quantities of waste -- it will contain more experimental components that are likely to require changes and repairs. Jacobi stressed that waste volume predictions for SSC are still "somewhat speculative." No one, he said, has yet built an accelerator this big.

There is interest among other states and regions in discovering the quantity and types of waste associated with the SSC, a consultant to a number of state governments told NWN. However, getting exact predictions from DOE has proved difficult. DOE is coordinating all SSC information through its site selection task force. At press time, NWN was unable to get comments from the task force.

LETTER 1205 (CONTINUED)

Texas Low-Level Radioactive Waste Disposal Authority

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March 9, 1987

Ed Bingler, Ph.D.
Texas National Research
Laboratory Commission
Sam Houston Building, Room 412-N
Austin, Texas 78711

Dear Dr. Bingler:

I talked to Mr. Charles Zonick, Manager of Waste Services at the Fermi Laboratory in Batavia, Illinois, about the amount of radioactive waste potentially produced by the SSC. According to Mr. Zonick, the Fermi Lab produces 15,000 to 20,000 cubic feet per year and a SSC would be projected to produce 30,000 to 65,000 cubic feet depending on how it is designed and operated.

The Fermi Laboratory produces about 20,000 cubic feet of radioactive waste annually. By carefully sorting each can of waste, and by compacting with a 6:1 compactor, the waste is reduced to about 5000 cubic feet. This is composed of noncompactible beamline components such as beam tubes, magnets, activated metal components, and discarded copper cladding; and compactible material such as coveralls, gloves, wipes, plastics, and paper.

Mixed hazardous chemical and radioactive waste is becoming a problem for them. Vacuum pump oil becomes contaminated with radioactivity. Tunnel emergency light batteries are activated by neutrons and when replaced, the radioactive lead is a problem. Beamline capacitors with PCB's are also a tough waste problem. Mercury used as targets, in barometers, and in flashlight batteries have been a problem in the past. They also have problems with cadmium and beryllium. All radioactive waste disposal sites require testing before they will accept this material. The Hanford, Washington site recently prohibited mixed waste of any kind.

Typical isotopes in the waste stream are Mn-54, Fe-55, Co-60, Ni-63, Ne-22, and Cu-64. Other isotopes are produced depending on the type of experimental configuration used. Most of these are merely "nuisance isotopes," none are particularly long-lived or biologically hazardous. Copper-64 is a special problem because workers pilfer the copper to sell for scrap. More than once, the Fermi staff has had to retrieve radioactive copper from local scrapyards.

Because the machine is underground, every time a magnet fails and a beam is lost, the soil around the tunnel is irradiated. The DOE has a decommissioning and decontamination staff that carefully documents each failure so that the soil, if radioactive, can be excavated.

The Fermi Laboratory has accepted many old components from Brookhaven and Argonne. These old parts are radioactive and need to be disposed of. But, because of the expense, they are being stored at the Fermi Laboratory. Mr. Zonick jokingly suggested the SSC was needed so that the Fermi Laboratory could be dismantled and shipped to Texas like the old Brookhaven accelerator was shipped to Illinois.

The Fermi Laboratory waste disposal budget is $100,000 per year not including labor or overhead. Zonick expects this to escalate rapidly as the cost of disposal goes up because of surcharges at waste disposal sites.

Scaling up to the size of the SSC, Zonick estimates waste volumes of 30,000 to 65,000 cubic feet. The radionuclides to be expected will depend on the final facility configuration, the beam intensity and energy, and the use factor. He estimates the waste disposal budget would range from $250,000 to $1,000,000 annually depending on the operating process and the future cost of disposal.

I have not verified any of this information. It is all speculative because no one has ever built an accelerator as large as the SSC. We will continue our analysis, including a trip to the Fermi Laboratory to observe their problems firsthand.

Let me know if we can help you in any way.

Sincerely,

Lawrence R. Jacobi, Jr., P.E.
General Manager

LRJ/rwd

LETTER 1205 (CONTINUED)

Texas Low-Level Radioactive Waste Disposal Authority

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July 7, 1987

Gerald Hill, Ph.D.
Texas National Research
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Austin, Texas 78711

Dear Dr. Hill:

I have reviewed the DOE responses to questions 583, 584, 597, 598, 599, 600, 601, and 602 regarding the production and disposal of low-level radioactive and hazardous chemical waste produced by the SSC. Although no one can know precisely how much waste will be produced by the SSC, I still believe the DOE estimates are too low.

The DOE estimates are a rehash of the data from Fermilab that we presented to you by our memo of March 18, 1987. While Fermilab is a target collider, and the SSC will be a proton-proton collider, this does not mean that machine component activation will be equal to or less than the SSC.

First of all, the SSC is 12 times as large as Fermilab. The large number of experimental, state-of-the-art magnets and beam definers will dictate a beam loss occurrence higher than that experienced at a smaller, conventional accelerator. Each time a beam is lost activation of the beam line components, electronic modules, and tunnel equipment will occur. At Fermilab, for instance, neon lights and batteries from the tunnel lighting system are activated and treated as radioactive waste upon disposal. Silicon based vac-ion pump oils are a problem because they fall into the mixed chemical and radioactive waste category. Water conditioning resins become radioactive when activated ions are removed from the cooling water. The sheer size and experimental nature of the SSC will dictate that there will be more of this type of waste, not less.

Second, the 8000 cubic feet of waste reported by the Fermilab is the average volume shipped annually, not the volume produced. The staff at the Fermilab stores large amounts of the more troublesome (high gamma, and mixed) waste at the lab. Although this gives the appearance of on-site processing to reduce

waste volumes, what is really happening is the staff is merely postponing to a later date the disposal of these wastes. In some years, waste shipments have been as high as 26,000 cubic feet. If the lab has a 6:1 reduction ratio, as they claim, that year 120,000 cubic feet of wastes were produced.

Third, although DOE dismisses mixed waste as a minute problem (see response to question 601), my own discussions with DOE hazardous waste managers clearly reveals this is a major concern that is growing more complex everyday. I know you are personally familiar with this problem.

Fourth, at the end of life, the amount of waste generated by beam interactions and secondary particle interactions such as neutrons must be considered. Particles of this energy have a large range (400 GeV muons have a 700 meter range in soil) and tend to produce many secondary and tertiary particles in slowing down. As an example, if a magnet were to fail, causing the circulating beam to exit the beam line, hot spots in the structural shield walls and irradiation of the soil beyond the tunnel should be investigated.

In summary, there are a lot of details that have been glossed over by the DOE in their answer, and there are unknowns that should be evaluated more thoroughly by reputable health physicists with experience in high energy accelerator performance.

I don't believe these problems are insurmountable. In fact, they are quite manageable, IF they are acknowledged early and dealt with during design, construction, and operation of the accelerator.

Sincerely,

Lawrence R. Jacobi, Jr., P.E.
General Manager

LRJ/rwd

4.2.2 Neutrons

Neutrons penetrated the shielding in the most easterly of the external experimental areas (Proton East line in Fig. 5) in the Proton Area in CY-1982.[16,19] However, in CY-1983 additional shielding was added to this area resulting in negligible site boundary dose rates from neutrons since that time.

4.2.3 Gamma Rays

The primary radioactive waste storage area on-site - the Boneyard - is also the primary source of off-site gamma radiation. Activated accelerator components and shielding, primarily iron and concrete, are stored at the Boneyard for future disposal or reuse following radioactive decay. As shown in Fig. 5, the Boneyard, which is a secure area, lies close to the site boundary. In 1987 radioactive material was moved into a new cave constructed at the southwest corner of the Boneyard. In addition, there was an area nearby designated for radioactive material storage for future use. A large amount of low-level radioactive material was placed in that area. The site boundary dose for CY-1987 was determined using thermoluminescent dosimeters (TLDs), the large volume ion chamber (Hippo), and a hand held NaI (Tl) scintillator (to measure the rate of decrease with distance). The radiation level at the nearest site boundary was 2.5 mrem for CY-1987. The maximum exposure to the individual living closest to that point on the site boundary would have been 0.5 mrem for 1987, assuming 24 hour per day occupancy and a dose rate inversely proportional to the square of the distance from the source. The distance from the site boundary to the residence was 550 m (1800 ft).

4.3 Airborne Radioactivity

Radioactivation of air in measurable concentrations will occur wherever the proton beam or the spray of secondary particles resulting from its interactions with matter passes through the air. Along most proton beam lines (paths of the protons from the accelerator) the protons travel inside evacuated pipes. Thus, radioactivation of air is now usually caused by secondary particles. Monitoring of such activation is carried out for purposes of personnel exposure control. Under no circumstances is the off-site concentration of airborne radioactivity expected to approach the limits for uncontrolled

LETTER 1205 (CONTINUED)

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"LOW-LEVEL" NUCLEAR WASTE FACTSHEET

What Is "Low-Level" Nuclear Waste ?

"Low-Level" Nuclear Waste is one of the most misleading terms ever created. It is everything that is not legally high-level nuclear waste or transuranic waste.

High-Level Nuclear Waste is:
1. the irradiated fuel that comes out of the cores of nuclear reactors,
2. the liquid and sludge wastes that are left over after irradiated fuel has been reprocessed (a procedure used to extract uranium and plutonium),
3. the solid that is intended to result from efforts to solidify that liquid and sludge from reprocessing.

Transuranic Waste is material contaminated with radioactive elements heavier than uranium, such as plutonium, neptunium, americium, and curium. These elements
1. have extremely long hazardous lives--hundreds of thousands to millions of years and
2. emit a type of radiation (alpha) that is especially dangerous if inhaled or swallowed.

A certain amount of transuranic waste is allowed in the "low-level" nuclear waste category. In 1983, when the Nuclear Regulatory Commission adopted its regulations on land disposal of "low-level" nuclear waste, it INCREASED the amount of transuranic concentration allowed in the "low-level" waste category.

Transuranic waste with concentrations greater than "low-level" is sent to dumps in Idaho and New Mexico.

Uranium Mill Tailings are not usually included in the "low-level" waste category, but these also pose serious health problems.

SO WHAT IS "LOW-LEVEL" NUCLEAR WASTE ?

"Low-Level" Nuclear Waste includes:

Irradiated Components and Piping - reactor hardware and pipes that are in continual contact with highly radioactive water for the 20 to 30 years the reactor operates. The metal becomes "activated," or radioactive, itself from bombardment by neutrons that are released when energy is produced. Also

Control Rods from the core of nuclear power plants - rods that regulate and stop the nuclear reactions in the reactor core,

Poison Curtains which absorb neutrons from the water in the reactor core & irradiated fuel pool,

Shielding,

Resins, Sludges, Filters and Evaporator Bottoms from cleansing the water that circulates around the irradiated fuel in the reactor vessel and in the fuel pool, which holds the irradiated fuel when it is removed from the core,

Entire Nuclear Power Plants if and when they can be decommissioned. This includes, for example, from a typical 1000 megawatt nuclear reactor building floor: over 13,000 cubic feet of contaminated concrete and over 1,400 cubic feet of contaminated reinforcing steel bar.

These highly radioactive and long-lived wastes are included in the "low-level" waste category along with the much less concentrated and generally much shorter-lived wastes from:

medical treatment and diagnosis and
some types of scientific research.

CONCENTRATION vs. VOLUME

The nuclear industry and government insist on describing "low-level" waste in terms of volume despite the fact that there can be a tremendous concentration of radioactivity in a small package and a small concentration of radioactivity in a big package.

The concentration of radioactivity is measured in CURIES* which indicate the amount of radioactive energy being emitted by the waste. (* 1 CURIE = 37,000,000,000 or 37 Billion disintegrations or radioactive emissions per second from a radioactive material.)

All of the medical waste from diagnosis and treatment shipped in one year from most states usually gives off A FRACTION OF ONE CURIE of radiation.

In contrast, each nuclear power plant generates HUNDREDS and THOUSANDS OF CURIES in "low-level" waste every year.

The nuclear reactor waste is much more concentrated:

Solidified Liquid emits	~2 Curies/cubic meter
Filter/Demineralizer Sludges emit	~10 Curies/cubic meter
Cartridge Filters emit	~20 Curies/cubic meter
Demineralizer Resins emit	~160 Curies/cubic meter
Primary Components average 1000 to 5000 Curies/cubic meter.	

One millionth of a curie of plutonium can be lethal if inhaled. And ALL of this material is legally considered "low-level."

HALF-LIFE and HAZARDOUS LIFE

Reactor waste remains hazardous for a very long time.
Most medical waste from treatment and diagnosis remains hazardous for a very short time.
Research and industrial waste can contain small amounts of some long-lived radioactive materials.

Since some nuclear reactor "low-level" waste comes from contact with the reactor core and high-level waste, it contains many of the same radioactive elements as high-level waste. These wastes, and the activated metals in reactor components and pipes must be isolated from the environment for as long as they remain hazardous.

Radioactive elements decay by emitting energy in the form of radioactive particles and rays. As radiation is given off, other elements are formed, some which are radioactive and some which are stable.

A Half-Life is the time it takes for HALF of the radioactive element to decay (give off half of its radioactivity). Different radioactive elements have different half-lives.

The Hazardous Life of a radioactive element is about 10 or 20 Half-Lives. (It is best to measure the amount of radioactivity remaining after the 10 to 20 half-lives to be sure the material is no longer emitting radiation before releasing it from active institutional control.)

Some radioactive elements found in common
Nuclear Reactor "Low-Level" Waste:

Element	Half Life	Hazardous Life
Tritium (Radioactive Hydrogen)	12 years	120-240 years
Iodine-131	8 days	2.6 to 5.3 months
Strontium-90	28 years	280-560 years
Cesium-137	30 years	300-600 years
Cobalt-60	5 years	50-100 years
Niobium-94	20,000 years	200,000-400,000 years
Nickel-59	76,000 years	760,000-1,520,000 yrs
Technetium-99	212,000 years	2.1 to 4.2 MILLION yrs
Iodine-129	16,000,000 years	160-320 MILLION years

The United States Nuclear Regulatory Commission requires an institutional control period of only 100 years for these wastes!

Some radioactive elements found in common
Medical Treatment and Diagnosis "Low-Level" Waste:

Element	Half-Life	Hazardous Life
Technetium-99m	6 hours	60-120 hours= 2.5 - 5 days
Iodine-131	8 days	80-160 days= 2.7 - 5.3 months
Gallium-67	78 hours	150-300 hours= 0.9 - 1.8 weeks

The vast majority of medical waste is hazardous for less than 8 months. Yet, it is in the same category as reactor waste which must be isolated from the environment for hundreds of thousands of years.

Clearly, the definition of "Low-Level" Nuclear Waste must be changed. It would make sense to redefine the more concentrated and longer-lived waste as high-level.

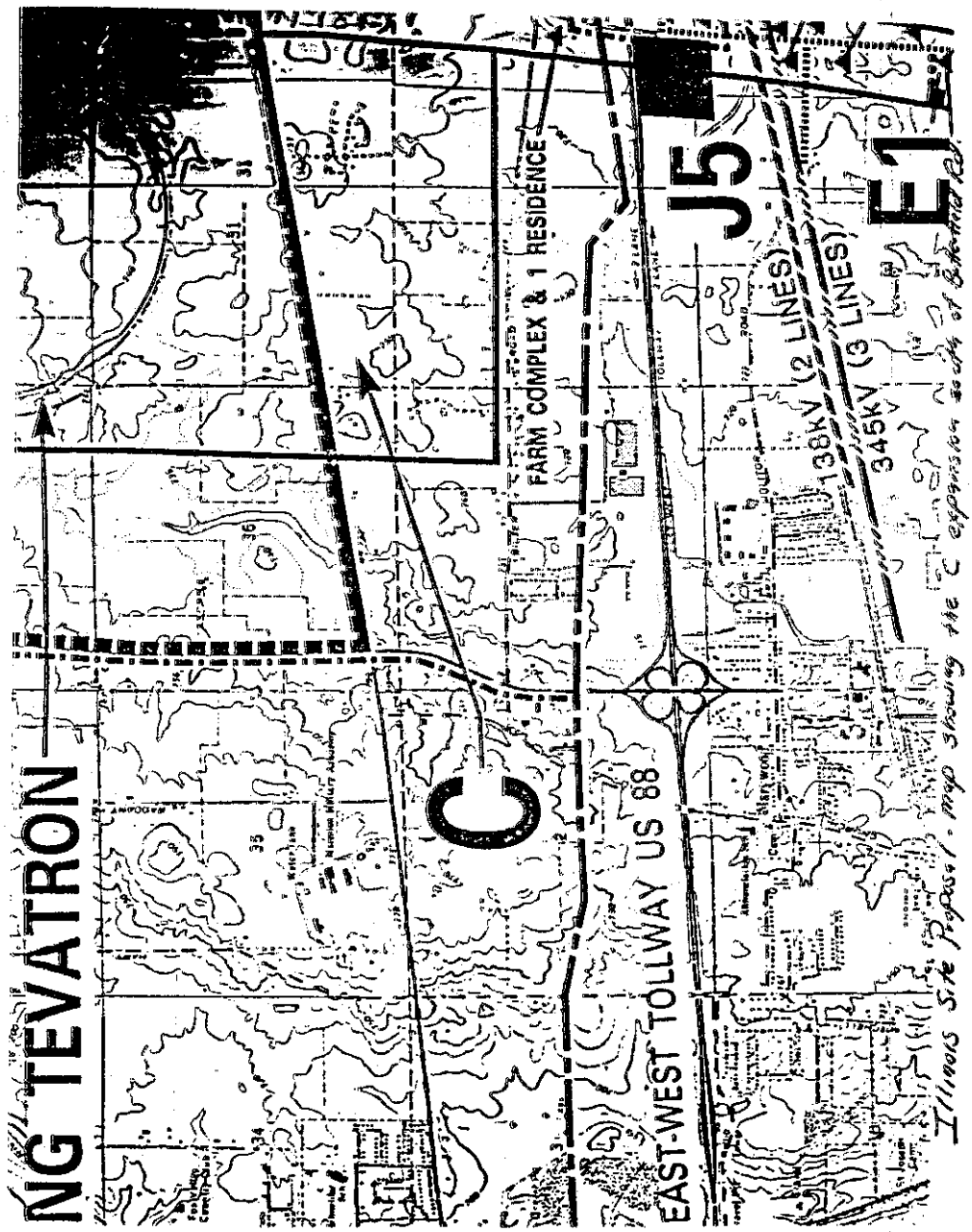
The active control period must be extended for the entire hazardous life of the waste, and every possible attempt made to isolate (without leaks) the material from the environment for that time.

The waste containers will obviously not last as long as the waste itself, so it is responsible to leave the material in a condition with a procedure in place that will facilitate recontainerization and guarantee the possibility of continued isolation from the environment in the future. If the waste is "disposed of" as the Nuclear Regulatory Commission (NRC) currently demands, it will not be isolated from the environment. The NRC has what it considers an "acceptable" leakage rate and public exposure level. These levels are based on political, not scientific criteria. To avoid leakage, above-ground, engineered, storage, at or near the source of generation would allow responsible monitoring and repair. States have the right and responsibility to protect their citizens' health.

In 1980, Congress gave the states the responsibility for "low-level" waste. How states choose to take on that responsibility will be reflected indefinitly into the future.

May 1987, Diane D'Arrigo

Reference: Technology, Safety and Costs of Decommissioning a Reference Low-Level Radioactive Waste Burial Ground, NUREG/CR-C570, June 1980.



Illinois Site Proposal. Map showing the 2 expansion sites of Fermilab

Twenty years ago, Fermilab was among a few research organizations in the western DuPage and eastern Kane County area. Today, the stretch between Chicago and Fermilab is known as the Illinois Research and Development Corridor. Allied research and development facilities in the general vicinity include major research-oriented institutions and universities such as Argonne National Laboratory, Northwestern University, University of Chicago, Illinois Institute of Technology, IIT Research Institute, and others. Private research organizations such as Bell Laboratories, Amoco Research and Development Center, and many other support and service facilities provide a desirable and fertile intellectual center of productivity.

The Illinois SSC site, as proposed, is closely integrated with the existing facilities at Fermilab in western DuPage County. Early on in the site analysis, it was recognized that alternatives to the proposed alignment of the ring would enable avoidance or minimization of adverse effects on terrestrial resources. Consequently, alternatives were evaluated on a preliminary basis to begin the process of optimizing the locations of surface facilities to minimize adverse effects. This preliminary evaluation was based on a Geographic Information System (GIS) model presented in an attachment to the Illinois Proposal.

A basic assumption of the initial GIS model analysis was that the locations and orientations of SSC surface facilities are fixed relative to the alignment of the collider tunnel. In order to minimize adverse effects on surface resources and to avoid additional construction costs associated with less desirable geological orientations, the alignment of the collider tunnel was rotated plus or minus five degrees. This allowed analysis of the range of possibilities so that a minimum impact alignment would be identified. This resulted in the collider position shown in the Illinois Site Proposal as the preferred collider ring alignment. The surface area inscribed by the tunnel and surface features as a result of this rotation delineates a corridor within which all project facilities will be located. Since the tunnel will be 300 to 500 feet below the surface, the corridor defined by rotating the tunnel alignment was modified to include only those surface areas directly affected by the surface facilities.

A significant portion of the land needed for the SSC is currently owned by the U.S. DOE to house the Fermilab facilities. Fermilab property is 6,800 acres in area. This land can be used for the main campus and injector facilities and includes much of the area necessary for any future expansion of the project. It would also accommodate a portion of the near cluster area and some of the intermediate access, service, and abort/external beam access areas.

To meet surface land requirements, approximately 3,700 acres will be acquired by the State as unconditional fee simple (outright purchase) and then donated to the U.S. DOE. These areas will include surface facilities at the service areas (F), intermediate access points (E), abort/external beam access areas (J), portions of the near cluster area (G), the far cluster, and far cluster bypass area (H) (see Figure 3).

To provide for the majority of the collider arc tunnels (D) and the abort/external beam areas (I), Illinois will acquire stratified fee estate ownership. This is equivalent to underground mineral rights or to an underground easement and will minimize surface area uses of the property. The area of the stratified fee estates for the collider arcs

State of Illinois
Supplement to the Site Proposal
12.1.9

northern portion. The general industrial zone (IZ) in the city of Batavia is found on the northwest corner and the western portion in Kane County is zoned FD. The injector area is primarily federally owned property.

c. Future Expansion Area C

The future expansion area land use consists largely of either the Fermilab facility or prime farmland agriculture. North of Highway 56 is the Fermilab main accelerator ring, which includes vacant and agricultural land that is part of Fermilab's property. South of the highway is prime agricultural farmland and small patches of single-family residential development. Future land use plans anticipate continued development of the residential areas and institutional-office-research facilities eliminating the agricultural uses. The area lies in unincorporated DuPage and Kane counties as well as the city of Aurora. The Fermilab site is federally owned property; the remainder is privately owned. Zoning for the unincorporated portion of DuPage and Kane counties is R-3 and FD respectively, with an area of DuPage county zoned R-2 on the southern edge. The city of Aurora intersects the southern third of the site, and that area is basically all zoned PDD (Planned Development District) with a small R-1 residential zone and B-3 commercially zoned area.

d. Buffer Area and Buried Beam Zone I

1) North Buffer Area and Buried Beam Zone I
Including Buried Beam Zone Access Areas J3 and J4

The north buffer area and buried beam zone I is located on unincorporated areas of DuPage and Kane counties as well as the cities of St. Charles and West Chicago. Land use consists mainly of prime farmland agricultural, transportation (DuPage County Airport), and industrial/manufacturing uses. Planned future land use is mainly office and industrial (manufacturing) with small sections of residential use in the north and south. This planned urbanization will eliminate agricultural uses from this area but will maintain and support the DuPage County Airport at a higher level of development than is currently experienced. Aside from the publicly owned airport, Area I is privately owned. Zoning throughout the site is mixed consisting mostly of residential and industrial.

Existing land use for proposed sites J3 and J4 is agricultural on prime farmland, although J3 borders manufacturing uses. Both areas are privately owned and located in DuPage County. J3 is in the city of West Chicago and J4 is on unincorporated land. Future land use plans for both sites call for office-research-development uses. Current zoning for J3 and J4 is I-2 (General Manufacturing District and R-4 (Single Family Residential) respectively.

2) South Buffer Area and Buried Beam Zone I, Including Buried Beam Zone Access Areas J1 and J2

The south buffer area and buried beam zone I is located in unincorporated parts of DuPage County as well as the city of Aurora. The majority land

Affected Environments at Sites Alternatives
Illinois

Table 5.3.10-1

LAND USE DATA
ILLINOIS SSC SITE

SSC Project Facility	City/ County Location	Ownership Patterns	Existing Zoning	Existing Land Use	Future Planned Land Use
Near Cluster Quadrant					
Campus area A	DuPage/Kane	Public	R-3/FD	Inst/rech	Same
Injector area B	DuPage/Kane[a]	Public/private	Mixed	Inst/agr	Inst/rech
Future expansion C	DuPage/Kane[b]	Public/private	Mixed res/FD	Inst/mixed	Mixed urban
ESSBC area I	DuPage/Kane[c]	Public/private	Mixed urban	Agr/mixed	Mixed urban
J1	Aurora[d]	Private	PUD	Agr	Res/Mfg
J2	DuPage/Aurora	Private	PUD/I-2	Agr	Mfg
J3	West Chicago[d]	Private	I-2	Agr	Office/rech
J4	DuPage	Private	R-4	Agr	Office/rech
Near Cluster Ring	DuPage/Kane[e]	Public/private	Mixed urban	Agr/mixed	Mixed urban
E1	DuPage/Aurora	Private	R-4/PUD	Agr	Res
E10	DuPage/West/Chicago	Private	B-2/B-2	Agr	Comm
F1	DuPage/St. Charles	Private	PUD	Agr	Res
F9	DuPage	Private	M-1/No zoning (Airport)	Agr	Office/rech
F10	DuPage	Public	R-3	Inst/rech	Same
J5	Aurora[d]	Private	PUD	Agr	Office/rech
J6	DuPage	Public	R-3	Inst/agr	Office/rech
K1	DuPage	Public	R-3		
K2	DuPage	Public	R-3		
Far Cluster Quadrant					
Far Cluster Ring H	Kane	Private	FD/Mixed res	Agr/rural	Same
E5	Kane	Private	FD	Agr	Same
E6	Kane	Private	FD	Agr	Same
F5	Kane	Private	FD	Agr	Same
K3	Kane	Private	FD	Agr	Same
K4	Kane	Private	FD	Agr	Same
K5	Kane	Private	FD	Agr	Same
K6	Kane	Private	FD	Agr	Same
Lower Arc Quadrant					
Lower Arc Ring D	Kane/Kendall[f]	Private	Mixed	Agr/rural	Agr/mixed
C2	Kane/Kendall	Private	M-2/FD	Forested	Mfg
C3	Kendall	Private	A-1	Agr	Mfg
C4	Kendall	Private	A-1	Agr	Same
F2	Oswego[g]	Private	R-5	Agr	Residential
F3	Kendall	Private	A-1	Agr	Same
F4	Kane	Private	FD	Agr	Agr/open space
Upper Arc Quadrant					
Upper Arc Ring B	Kane	Private	Mixed res/FD	Agr/res	Res
E7	Kane	Private	FD	Agr	Res
E8	Kane	Private	PUD/FD	Agr/res	Res
E9	Aurora[d]	Private	VI	Res	Same
F6	Kane	Private	PUD/E-2A	Agr/res	Res
F7	Kane	Private	FD/PUD	Agr	Agr/res
F8	Kane	Private	E-2	Agr	Res
South end exit	DuPage/Kane/Kendall	Private	Mixed	Agr/mixed	Same
Westline	DuPage/Kane/Kendall	Private	Mixed	Agr/mixed	Same

a. Also includes part of the city of Batavia.
b. Also includes part of the city of Aurora.
c. Also includes portions of the cities of Aurora, St. Charles, and West Chicago.
d. Located in DuPage County.
e. Also includes portions of the village of Oswego.
f. Located in Kendall County.
g. Located in Kane County.

Table 3-5

SUMMARY OF SITE-SPECIFIC LAND ACQUISITION PLANS - ACREAGES[a]

	TSP Area Required		Arizona		Colorado		Illinois[g]		Michigan		North Carolina[h]		Tennessee		Texas	
	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total	Acres	% of Total
PROPOSED ACREAGES																
Total Acreage	15,830	100.0	15,830	100.0	15,830	100.0	18,648	100.0	15,025	100.0	15,897	100.0	15,900	100.0	18,748	100.0
Fee Simple	7,690	48.6	15,830	100.0	7,690	48.6	10,508	56.3	7,885	49.2	7,950	50.0	7,750	48.7	9,650	51.6
Strat. Fee	8,140	51.4	0	0	8,140[c]	51.4	8,140	43.7	8,140	50.8	7,947	50.0	8,150	51.3	8,098	48.4
LAND OWNERSHIP																
Federal Land, Total			9,746[i]	61.6	0	0	6,800	36.5	0	0	0	0	0	0	310	1.9
Fee Simple			9,746[i]				6,800								104[j]	
Strat. Fee			0				0								206[k]	
State Land, Total			1,007	6.3	780	4.9	b		285	1.8	1,389	8.7	0	0	208	1.2
Fee Simple			1,007		240				0		1,132				166	
Strat. Fee			0		540[d]				285		257				42	
Local Govt. Land, Total			0	0	0	0	b		77	0.5	71	0.4	0		67	0.3
Fee Simple									0		1				21	
Strat. Fee									77		70				46	
Private Land, Total			5,075	32.1	15,050	95.1	11,848	63.5	15,663	97.7	14,437	90.8	15,900	100.0	15,823	94.5
Fee Simple			5,075		7,450		3,708		7,885		6,817		7,750		9,167	
Strat. Fee			0		7,600[e]		8,140		7,778		7,620		8,150		7,656	
Other Land, Total			0	0	0	0	0		0	0	0	0	0	0	350[l]	1.1
Fee Simple															189	
Strat. Fee															160	
ADDITIONAL AVAILABLE LAND																
Potentially Available Acreage			267		2,800		f		f		f		f		f	

a. Areas A.L. only, based on proposal data, see paragraph 4.4
b. Areas not provided; included in private property
c. One school site
d. State and county road right-of-way
e. The State of Colorado has proposed to acquire 62,640 acres but will furnish only that reported to DOE
f. Amount of acreage undetermined
g. Number of affected parcels and ownerships may vary by as much as 20% and numbers of relocations by 50%
h. Number of parcels and ownerships may vary by as much as 10% and number of relocations by 70%
i. Right-of-way and/or withdrawal
j. Transfer from Corps of Engineers
k. Permit from Corps of Engineers
l. Pending Congressional withdrawal of the total portion of the required fee simple lands

IGUP2A2380831

IA1-2340

LETTER 1208

SCENIC VIEWS I

The definition of mitigate includes the following: To make milder, to lessen in force or intensity; to moderate the severity of anything distressing; to lessen the gravity of an offense. When this definition is applied to what will happen to the scenic views involved in the SSC project, we must recognize that the affects of the SSC will be distressing, intense and gravely offensive. The information and solutions offered to the public in Appendix 16 of the ELS are an attempt to mitigate the offenses or lessen the blow that the SSC will have on the scenery on and near the proposed site. Appendix 16 has, admitted that there are many inconsistencies, decided what is signifigant, decided how sensitive the public was in the area and offered decisions based on opinions by people who are not in aesthetic professions.

Appendix 16 makes two important admissions:

"Residential land uses are not visually compatible with the proposed project because of the obvious functional and structural contrast between project features and residences."

"The industrial appearances of most of the proposed structures is not in keeping with the predominantly agrarian look of the land, nor are the facilities compatible with the natural-appearing lands."

These are very strong statements concerning what will be built if the SSC comes to Illinois. However, despite these statements every situation in Illionis is said to be mitigable. It is as if the writers of Appendix 16 forget about these statements.

If the SSC comes to Illinois, Appendix 16 lists some of the impacts of construction. This list speaks for itself. This is what the Fox Valley should expect to live with during construction:

SCENIC VIEWS I

-"the appearance of cut-and-fill slopes;"
-"cleared areas before they are revegetated;"
-"excavated areas prior to building construction;"
-"temporary roads;"
-"stockpiles of dirt, sand and gravel;"
-"spoils disposal areas;"
-"temporary water supply(s)"
-"utilities (including night lighting);"
-"waste systems;"
-"fenced laydown areas for building materials;"
-"equipment yards;"
-"Contractors' offices."

Appendix 16 shrugs off the impacts of construction by saying that they "can be expected to occur for less than 2 years." The writers of Appendix 16 obviously have underestimated the impact of truck traffic and constant construction noise on residents nearby. The disturbance of the dynamiting alone much less the view of endless streams of truck traffic is case enough to site the SSC in an area of low population. An intrusion of this magnitude is unacceptable. The impacts of the construction sites are inexcusable for 2 minutes, much less 2 years.

Appendix 16 discusses the sensitivity of the public. How did the DOE decide how sensitive the Illinois public was to the SSC? Texas was allowed to vote on wether they wanted the SSC. Did the state of Illinois or the DOE take a poll or a survey to determine how sensitive the Illinois public was near the proposed site? If this was done, it was not mentioned. The only attitude we can be sure of is the lack of sensitivity of our area politicians to the voice of the Fox Valley. These politicians must have been the ones to decide how sensitive the Fox Valley was.

In discussing the screenings done at individual construction sites, Appendix 16 states: "...best professional judgement was used..." Those mentioned as contributors to Appendix 16 were listed as: A Quality Control Technician, an Administrative Assistant, and a secretary. Do these persons have the

LETTER 1208 (CONTINUED)

SCENIC VIEWS I 3

qualifications to render judgement on visual aesthetics? The definition of an Aesthete is: One in whom the artistic sense or faculty is highly developed. The decisions concerning the effected scenery near the proposed ring have been made by people who are not in aesthetic professions. This is a clear demonstration of the lack of importance attributed to how our scenery could be blighted by the SSC.

Appendix 16 admits that the structures connected with the SSC will not be compatible with our scenery, and leaves important decisions about what will render signifigant visual impacts and the sensitivity of the public up to people who are not professionals in the field. Appendix 16 does not mitigate the effects of the SSC. The effects of the SSC will be distressing, intense and gravely offensive. The DOE must realize that the citizens of the Fox Valley are highly sensitive and will resent in the long term the presence of the SSC in Illinois.

Judith M Hemingway
40 NOLO Rd Hewitt
St. Charles, IL
60175

LETTER 1209

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Groundwater

Dear Sir:

Page 5.1.2-29 of the EIS indicates that impacts to groundwater resources during the operational phase of the SSC will be greatest at sites which have currently overdrafted groundwater resources and/or where increased groundwater use would create or worsen an already existing groundwater overdraft. Both of these conditions exist at the Illinois site and we can therefore expect the day to day operations of the SSC to have a greater impact at our proposed site compared to the other alternative locations.

Our regionally overdrafted groundwater situation is well documented in the EIS. However, the local groundwater situation is not. The EIS only replys to information as presented to the DOE in the individual site proposals presented by each state. It is an error on the part of the EIS and on our State Department of Energy and Natural resources not to have included the fact that a groundwater supply problem exists in Campton Township on the Northern arc of the ring.

The State Water Survey, members of the Kane County Board, and the Kane County Building and Zoning Department are all well aware of this local groundwater shortage situation which is developing. Numerous individuals have recently been forced to either dig entirely new wells into the underlying sandstone aquifer or have had to redrill their existing well to a depth where the pump could be lowered into a more adequate source. This can be verified by talking to any of the well drillers in the local area. Indications from the State Water Survey are that further development in the northern Campton Township area may have restrictions on the number of private wells which can be drilled. Instead, developers may find it necessary to provide a common water source for any new subdivisions which may be proposed in the future. This information has not been provided by our state to the DOE and it's about time you scientists became aware of the truth. The EIS is completely lacking any information about this very real local groundwater problem.

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

The DOE must be required to verify the true existing conditions at each and every alternative site. You must ask questions. You cannot assume that the wonderful State of Illinois has provided you with all the pertinent information about our Fox Valley site. In fact, it should be quite obvious by now that the State of Illinois has very obviously attempted to keep the DOE and the citizens in the dark about the SSC.

Sincerely yours,

Carl A Williams
7N140 Nancy Lane
St Charles Il 60175
312-464-4025

LETTER 1213

My name is Stephen Jones. I live in campton town ship. I'm 8 years old. My famley is veary much against The super conductoing Super Collider. It would go under my house. Look how many chances you people are taking! I have a friend that lives near a lake, and if this S.S.C. goes in it truly will dry up! If This proget goes in it will ruin our wells. And if it does go in our proprty value will go down alot! Look how many dollars this SSC will take. 500 billon dollars! And 290 trucks a day. Going up priver rodes. And our butiful homes will be nothing, ruied. We all have nice houses and trees and they will be ruined. I wrote this speach my self.

Thank You

This is a transcript of a speech given at Waubonsie Valley High School on Oct. 7th at 3:20.

LETTER 1216

Village of Hanover Park

Municipal Building
2121 West Lake Street
Hanover Park, Illinois
60103-4398
312.837.3800

Sonya A. Crawsh
Village President
Sherry L. Craig
Village Clerk
Marc G. Hummel
Village Manager

Hanover Park

October 10, 1988

SSC Draft EIS Comments
Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65 GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Dear Dr. Hess:

As an elected official in a community nearby the proposed SSC site in Batavia, Illinois, I strongly support the siting of the facility at, or adjacent to, Fermi Laboratory. The SSC project is supported by residents of the Village of Hanover Park.

It is my belief the draft Environmental Impact Statement (EIS) overstates environmental concerns of the project. Due to the existing Fermilab, much of the required infrastructure for a facility, the magnitude of the SSC, already exists. This pre-existing facility and infrastructure, tied with known geological data, should make the Batavia, Illinois site the designated choice.

I strongly urge selection of Illinois as the superconductor supercollider site.

Sincerely,

David A. Berkey, Trustee
Village of Hanover Park

DAB:jb

IIA.1- 2347

LETTER 1223

Dr. Wilmot Hess, Chairman
SSC Site Task Force
U.S. Dept. of Energy
Washington, D.C. 20545
Attn: SSC Deis Comments

Dear Sir:

1 Thank you for including me in the list of those who received the SSC IMPACT STATEMENT. I have devoted five days toward reading and digesting the material in this statement. As a result, I have come to an appraisal of the contents. The report is comprehensive, as to the facts involved in constructing the SSC, but plays down the effects as they relate to the individuals directly involved, namely the home and land owners. It represents a rape of the land, water supply, wetlands and the environment.

2 We are told the cost will be 4½ billion dollars. What will the cost of the overruns amount to? Past history discloses that the Federal Government never has completed any project within the prescribed budget. I venture to say the final figure will be closer to 20 billion and to what end?

It will offer an opportunity to a select group of designated scientists to experiment with the nebulous, taking away precious funds which would be put to better use improving the quality of life for many thousands of American citizens.

3 This country has many needs and I believe we have our priorities out of order. I offer the following for consideration: Crime, Drugs, the Homeless, Illiteracy, AIDS, Toxic waste, etc. The money earmarked for the SCC would be more productive if applied to solve some of the many problems which confront us today.

4 There is at present, an ever increasing ground swell of opposition to the SSC being constructed in Illinois. It is to be seen if the people and their wishes are to be heard or will the powers that be, in their infinite wisdom, prevail as usual?

Respectfully,

Al G. Nona

Al G. Nona
5 N. 273 Bluff Dr.
St. Charles, Il. 60175

C.C. Gov. J. Thompson
Sen. P. Simon
Sen. A. Dixon
Rep. D. Hastert

LETTER 1224

Mr. Hen.

I wrote to you once
opposing the SSC here in
Illinois - my home
being in the middle of
proposed sing. After
reading the volumes sent
to me on Environmental
1 impact, I more than ever
do not want the SSC
here. Do not let Texas
be politicians, and there
business men here who
only desire for the SSC
is money. After reading
the volumes, I believe
Texas would be the
best place.

Thank you
D. Jancuta

IIA1 2349

LETTER 1225

P.O. Box 152
Kaneville, Il. 60144
October 9, 1988

SSC Draft EIS
SSC Site Task Force
ER-65,GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Gentlemen:

1 On October 6 and 7 I spent many hours listening to testimony being given to the DOE, supposedly on the Draft EIS. Much of the testimony that I heard from the proponents of the siting of the SSC here in Illinois seemed to come from politicians, labor people/leaders and various members of a variety of Chambers of Commerce. Rarely did these proponents speak in regard to the Draft EIS other than in regard to the perceived economic benefits. Little thought was ever given to the water overdraft problem in the area, nor to the air quality problems, nor to the overwhelming detrimental impact on the people (relegated as human receptors) in this area.

2 But, at approximately 9:40 p.m. on October 7 in the gymnasium session my limits were reached. A proponent of siting the SSC here devoted much of his testimony to name calling and spurious remarks in regard to those who oppose the siting of the SSC here and CATCH, Illinois members in particular. I believe and strongly recommend that his testimony be stricken from the record as it did not relate to the Draft EIS. I deeply resent being referred to as a "yuppy" with all its negative connotations. My husband and I are no more yuppies than the siting of the SSC is environmentally or economically feasible here. At age 46 we are very much "middle-aged" and we are also very middle-class. Our 1978 Pontiac LeMans would no more pass for a BMW than we would pass as a couple of "yuppies". It seems to me that the proponents had to resort to name calling as they had nothing to say in regard to the very real, very negative impacts on the community should the SSC be sited here.

3 Those of us who spoke against the siting of the SSC in Illinois (myself included) did so on the basis of the Draft EIS. We are not looking at the siting of the SSC in Illinois with greedy little dollar signs in our eyes. I should think that the DOE would be concerned as to the ability of the state it chooses to be able to afford the price tag of putting the SSC here. In a recent newspaper article, State Comptroller, Roland W. Burris complained that some $47 million dollars have been siphoned from the general revenue fund to the so-called Build Illinois fund. Our government has failed to provide revenue for state mandated programs to our local school boards causing many fiscal problems. Our state has failed to provide Medicaid funds to hospitals causing them to close. Since many of these hospitals serve the poor perhaps the state doesn't care. According to Mr. Burris the state already is very heavily into Bonds and can ill afford more such "credit card" spending. The SSC would cause more Bonds to be issued and eventually paid for. But, do you care? It seems doubtful when such vindictive name-calling was allowed to continue at the hearings on October 7.

4 Those of us who oppose the siting of the SSC here in Illinois, whether CATCH members or not resent this type of name-calling and derogatory labeling to remain a part of the official testimony.

Very truly yours,
Linda Benson
Linda Benson

LETTER 1226

October 10, 1988

Dr. Wilmot Hess
Chairman
SSC Draft EIS/Site Task Force ER-65, GTN
Office of Energy and Research
U.S. Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

As I am sure you are aware of by now, the Draft EIS meeting recently held at Waubansee High School, in Aurora, Illinois, became quite a shouting match between Local 150, which is the operating engineers out of Aurora, Illinois, and anyone who is opposed to the project. As a matter of fact, several times during the hearings there were verbal threats shouted by Local 150 members and directed to the homeowners. One threat was yelled out after a female finished talking against the SSC in Illinois, which was, "Let's rape her".

1 If it isn't already blatant and obvious, there is no way that this group of people could possibly spend five or six years building this project through residential communities. There is no conceivable way that this group of union members could possibly get along in peace and harmony over the five or six years it would take to build this project. One thing that was blatantly clear to me in these hearings is the union members are adamantly fighting for this project, and in the course of their fight they will take no hostages. It is incredible the amount of hatred, threats, and intimidation that these people attempted to exert over anyone that did not share their point of view at these hearings. Several people had to be escorted to their cars after the hearings were held, as union members had surrounded their cars and were making threatening gestures.

Please allow this letter to be entered into the record that this project cannot successfully be built in Illinois.

Very truly yours,

William A. Tardy
President - C.A.T.C.H./ILL
P O Box 104
Wasco, IL 60183

WAT:jl
cc: C.A.T.C.H./Ill, Wasco, Illinois

Cy to Shirley, 10/12

HA.1 2351

LETTER 1227

October 10, 1988

Dr. Wilmot Hess
Chairman
SSC Draft EIS/Site Task Force ER-65, GTN
Office of Energy and Research
U.S. Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

1. Please allow this letter to serve as my correction to my verbal and written comments that were entered into the record at the Draft EIS Comment Hearing, recently held in Aurora, Illinois. During that comment and the submission of my written comments, I inadvertently stated the number of parcels, the correct figure should be 3,826. I repeat my corrected comment, "If one were to count all the parcels on the Illinois maps that are included in the DEIS, Appendix IV, Volume IV, Pages A-3A to A-3Y, one would come up with a total of 3,826 parcels." Thank you for making this correction and I apologize for the mis-statement.

Very truly yours,

William A. Tardy
President - C.A.T.C.H./ILL
P O Box 104
Wasco, IL 60183

WAT:jl
cc: C.A.T.C.H./ILL, Wasco, Illinois

Cy to Shirley, 10/12

LETTER 1228

STATE OF ILLINOIS
OFFICE OF THE GOVERNOR
SPRINGFIELD 62706

JAMES R. THOMPSON
Governor

SAI# 88-09-02-39

SUBJECT: Environmental Impacts of the DOE's proposed action to site the SSC

TO: Dr. Wilmont Hess
SSC Site Task Force
Office of Energy Research
US Dept. of Energy
Washington, D.C. 20545

1 The Illinois State Clearinghouse has reviewed the reference subject pursuant to the National Environmental Policy Act of 1969. State agencies which are authorized to develop and enforce environmental standards have been given the opportunity to comment on this subject. At this time no comments have been received.

Illinois State Clearinghouse

October 4, 1988

IIA.1-2353

LETTER 1229

October 7

Hello, Dr. Hess--

I just got back from the public hearings on the SSC in Illinois where I was cheered by C.A.N.H. people and jeered by pro-SSC people at a local high school. I went as a private citizen; not a member of either group. I'd like to share with you what I said to them today.

I asked first, how would YOU like to live on top of something that has been described in the following words:

1 "This machine would be capable of accelerating two beams of subatomic particles (or protons) to an energy of 20 trillion electron volts. The two beams would then be made to collide at 40 trillion electron volts, and the results of these collisions would be studied by scientists."

Explaining that I read these words in the Environmental Impact Study I said that I was worried. Assuming that such experiments are perfectly safe, why would anybody want to live on top of one?

If two homes of equal size and value were for sale and one of them is atop this experiment and the other isn't it's easy to see that the majority of prospective buyers would prefer the home that is not located in a questionable area. The only way they might consider purchasing there would be if the home were offered at a considerably

2 lower price than the one in the safe area.

In other words, I explained, the SSC will reduce the property values of homeowners in its path. I also said that those who are in favor of this thing think they will reap some kind of financial benefit from it, either directly or indirectly.

My interests were self-serving, I said, but I stand to lose something from the SSC coming to Illinois. Those in favor of it are trying to enrich themselves at the expense of long time residents like me.

3 My neighbors and I are not against progress, but only wish to preserve a way of life that we value, and homes that we value, and neighborhoods that we value. The SSC is not like a new highway that is needed because traffic warrants its flow through an area. The SSC could easily be built somewhere else. Better sites are available in other states.

I won't go into a lot of detail about the middle of the speech, but as I was finishing up I reminded the panel that growth will come to our area with or without the SSC. The governor and other politicians view this as bringing a lot of money and jobs to

4 our area. But what about the rights of the people who are already living here, I asked. I reminded them they were in Illinois, the Land of Lincoln. It was Lincoln who spoke of "government of the people, by the people, FOR the people." We have not had this when it comes to this SSC controversy. I said I hoped the panel, which consisted of Mr. Temple, Mr. Hayes, Mr. Nielsen, and one other man whose name I didn't get would remember Lincoln's words and arrive at a decision reflecting the will of the people; NO SSC IN ILLINOIS.

Sincerely,

Jeff Kelso

IIA.1- 2354

LETTER 1230

October 10, 1988
~~April 28~~, 1988

Mr. Wilmot Hess
Chairman
SSC Site Task Force
Department of Energy
EIC - 65
Washington, DC 20545

Dear Mr. Hess,

We the people of the state of Illinois, many of which are
1 residents of Kane County, are strongly opposed to the intended
government project, the S.S.C. to be constructed in our area.
2 Not only are we concerned with the obvious problems of this
experimental project, such as health and safety factors; but we
3 are also very concerned about the psychological and environmen-
tal damage. We have listened and heard many of the facts, and
still are opposed and believe that the S.S.C. should be con-
4 structed in one of the other sites studied. We have always
regarded our area as very unique in its beauty, and we would
like to keep it that way.

Agnes M. Heisley
4N844 Burr Road
St. Charles, IL 60178

Sincerely,

Agnes M. Heisley

Also Enclosure on Wetlands

P.S. Having now attended, participated, spoken and listened to all the arguements — and those last Sessions (Oct. 6 & 7) in Aurora — I beg
5 you again to re-consider your position in Illinois. We really feel we do not need this here. My Speech is part of the record Oct 7 - 3:10 Pm. Ed H

LETTER 1230 (CONTINUED)

LAKE & PRAIRIE

Volume 29
Number 5
Sept/Oct 1988

The publication of the Great Lakes Chapter of the Sierra Club

CONSERVATION NOTES

Mary Vieregg
Conservation Chairperson

CHAPTER CONSERVATION RETREAT HELD

Thirteen group and chapter conservation leaders from around the state spent a warm but breezy day in June sharing conservation and organizational concerns and developing conservation priorities and goals for the Sierra Club in Illinois. We met among the prairie flowers and in the woods near Henry owned by the family of our staffperson, Carolyn Raffensberger. It was a productive meeting that needs your follow-up.

In sharing group conservation activities, we were not only able to think about effective conservation action, but also to find common ground and clear the air on past misunderstandings and miscommunications within the Chapter. Additionally, we were able to develop a better shared ideal of what group/chapter interactions should be.

In the afternoon portion of the retreat we hashed out from a long list of local, statewide, and national conservation concerns a set of five priority issues the Chapter will be focusing on. We were also able to delineate specific quantitative goals for each priority so that we have a way to measure our progress. This set of goals is a boost to everyone because it comes from shared concerns and gives direction to us all over the coming months.

We have already begun to act on achieving these goals, and we would like your help. Read them through, think about your priorities, and get involved. We need your specific ideas and suggestions for action plans and timetables. We want to know your thoughts on which goals should be expanded (or deleted). We need your individual energy and resourcefulness to achieve these goals.

continued on page 3

SHAWNEE NATIONAL FOREST AGREEMENT REACHED!

After more than three months of meetings with the forest service and other parties over our appeal of the Shawnee National Forest Plan, a settlement agreement was reached on August 15. The agreement is better than we dreamed possible, incorporating features found in no other forest plan in the nation. We got everything that was important, or agreed to a process to come up with new appealable decisions further down the road (i.e., pesticides, ORVs, and harvesting in forest interior management units).

"The agreement is better than we dreamed possible."

Chapter members were first alerted to problems with the Forest Service's draft management plan for Shawnee in the fall of 1985. At that time, the Executive Committee authorized a special mailing to elicit comments on the plan from interested members. When the 'final' plan was issued in November 1986, the Sierra Club, along with several other organizations, deemed it environmentally unacceptable, and decided to file an appeal.

There will be a full article about the settlement—and our plans for securing Wilderness status for nine designated areas in the Shawnee—in the next issue.

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LETTER 1230 (CONTINUED)

Environmental News & Notes

Please read

GREAT LAKES CHAPTER
Conservation Priorities and Goals

Illinois Wild Places
- Obtain Congressional protection in the National Wilderness Preservation System for the nine identified areas in the Shawnee National Forest.
- Locate, identify, create, and protect additional wild areas in Illinois.

River and Wetland Issues
- Encourage, solicit, and demand IDOT and DWR regulation of construction in Illinois waterbodies.
- Identify and lobby for expanded monitoring and enforcement of water quality standards by the IEPA.
- Demand and lobby for the promised funding for environmental management along the Mississippi River equal to that spent on Lock and Dam 26.
- Lobby for full funding and implementation of the soil conservation provisions of the Illinois Conservation Enhancement Act and the Build Illinois Program (about $25,000,000).
- Identify and train wetland stewards for each group in the Chapter.

Solid Waste Issues
- Assist counties and municipalities in achieving the state's 25% recycling goal.
- Include in the Chapter newsletter a regular article on waste reduction in homes and businesses.
- Target specific waste reduction projects, e.g. Jewel Foods, McDonald's, Child Care (diapers).
- Provide legal assistance to people opposing unsuitable landfills.
- Encourage passage of national packaging legislation through the national solid waste committee.

Pesticides
- Gather accurate information through the groups on mosquito abatement and lawn care procedures and ordinances.
- Form a chapter pesticide committee to evaluate other states' legislation and determine Illinois' legislative needs.
- Prepare a pesticide legislative package for introduction in the next legislative session.
- Evaluate and develop a policy on pesticide use on Illinois public lands.

Sensitivity to Nature
- Establish a Chapter environmental education committee.
- Develop awareness programs such as:
  - School programs
  - Legislative tours of special areas
  - Club slide show of Illinois natural areas
  - Natural area photos for legislaive gifts
  - Public environmental awareness outings
  - Awards for excellence in environmental education
- Budget $1000 in Chapter budget for environmental education.
- Develop a regular environmental education column in the Chapter newsletter.
- Move interpretation and other environmental education programs higher in DOC spending priorities.

Conservation Notes
continued from page 1

Because Illinois is large, and the interests and perspectives of the local groups are diverse, the need for ongoing communication is all the more important. Please continue to talk and write to me and other group and chapter officers. We need to hear from you.

WETLANDS PROJECT:
Volunteers Needed

The Chicago District of the U.S. Army Corps of Engineers and Region V of USEPA have recently begun to crack down on developers and others who destroy wetlands without securing a permit under Section 404 of the Clean Water Act. Unfortunately, it is often the case that the Corps and USEPA do not know that a wetland is being destroyed until the damage is already done. A fine against the culprit will not cure the destruction and the Corps has not generally sought to compel restoration of the wetland even where that might be possible.

The Chicago District and USEPA have limited staff and cannot regularly patrol the numerous wetland areas in Northeast Illinois whose preservation is vital for wildlife, water quality, and mitigating the effects of heavy rains and drought. This is a field where organized volunteers might be able to make a difference.

Some bad projects are now stopped when a neighbor or other bystander observes someone beginning to fill a wetland. In June a group of Sierra Club volunteers got together to explore ways

"organized volunteers might be able to make a difference"

to improve the reporting rate by organizing a network of wetlands stewards who each could be responsible for "patrolling" a few wetlands.

The biggest obstacle to establishing a wetlands stewardship network is to find enough volunteers. Though each wetland is important, the range and number of them in Northeast Illinois is vast. It will take a lot of people willing to check occasionally on wetlands in a small area if the program is to cover an appreciable number of even the most critical wetlands.

Being a wetlands steward will not require a lot of expertise. If one finds a bulldozer or a sign saying "Beautiful 3

bedroom condos to be built here, beginning at $80,000, no money down", it's clear there's a problem that requires checking to see if a permit has been obtained.

If you are interested in becoming a wetlands steward or learning more about the idea, please call the Chapter Office at (312) 431-0158.

225-775 88 - 12 (BOOK 6)

ADVENTURES IN EDITING

TOM PAUGH

SPORTS AFIELD AND THE CANDIDATES

In an attempt to get answers to *questions of particular interest to* readers of this magazine, a *Sports Afield* questionnaire was sent to Governor Michael S. Dukakis and Vice President George Bush, giving them ample time to respond (six weeks). Being able to publish these exclusive, revealing and divergent replies, however, *was well worth the wait. If the candidates' positions on gun* legislation, the environment, the future of hunting and fishing in America, and public lands will affect your vote this November, then you will want to digest these responses before going to the polls.

The Sports Afield Questions

1. Comment on any solutions you may have to the growing problems of land, air and water pollution. For example: waste disposal, acid rain and shrinking wetlands.

2. What is your position on present firearms legislation?

3. What are your views on the future of recreational hunting and fishing in the United States?

4. What is your position on the utilization of public lands?

VICE PRESIDENT GEORGE BUSH:

1. I want to be remembered as the president who did more to help preserve and protect America's environment than any president since Teddy Roosevelt, who was known as "The Great Conservationist."

The United States of America is a land of incomparable beauty—of vast open spaces and magnificent mountains, of majestic rivers and shining lakes, of rolling plains and splendid seacoasts. This is our heritage, and this is the legacy we should pass on to our children and our children's children.

Frankly, I don't think we have done enough to protect the environment in recent years. As president, I will do more.

A Bush administration will enforce environmental laws aggressively, putting the responsibility for cleanup where it belongs—on those who caused the problem in the first place—but we will also understand that micromanagement from Washington leads only to paralysis. OCT

Many communities in America are afflicted with the problem of toxic waste. We have put major funding into the Superfund Program, yet it is still seriously lagging. Any further delay where there is a threat to public health is simply intolerable. A Bush administration will also encourage the private sector to create new technology to prevent future dumping of those wastes and clean

(Continued on page 15)

GOVERNOR MICHAEL S. DUKAKIS:

1. In my judgment there are a number of overriding considerations that are coming together to make environmental issues critical for the United States at this time. Due to the inaction or ill-considered action of this administration, more groundwater has been contaminated, more forests have been destroyed, more of our coastlines imperiled. Meanwhile, this same administration continues to advocate nuclear power despite the unresolved problems of waste disposal and emergency evacuation.

Good laws and goodwill are not enough to protect the environment. The private and public sectors must provide the resources, and elected and appointed officials must carefully manage our protective programs to ensure they are carried out. We have had laws on the books to protect against toxic waste hazards for years, but the failure to implement them intelligently leaves our people and environment no safer.

A consensus is developing that a clean environment and a strong economy complement one another, replacing an earlier notion that economic and environmental interests were always and fundamentally in conflict. Sustained economic growth is possible in the long run only in a healthy and safe environment. The environment has recently been called "America's Issue."

(Continued on page 15)

VICE PRESIDENT GEORGE BUSH:

up whatever toxic waste already exists.

Closely related to the problem of toxic waste is the growing threat of contamination of our nation's groundwater. More than half of the American people depend on this source for their drinking water.

The safety of our groundwater is threatened by cancer-causing chemicals from toxic waste dumps, industrial wastes, agricultural runoff and septic systems. Once groundwater is contaminated, the damage can be almost irreversible. We must give a high priority to groundwater protection, with federal leadership and state implementation. We must take strong action immediately.

Clean air is also high on my environmental agenda. We have made good progress in reducing emissions from cars, factories and power plants. We have the toughest automobile emission standards in the world, but nearly 80 metropolitan areas are flunking federal standards.

To help clean America's air, I have championed greater use of oxygenated fuels, such as ethanol and methanol, which hold the promise of significantly reducing smog and acid rain caused by automobile emissions. As head of the President's Task Force on Regulatory Relief, I've reduced regulatory barriers to these fuels.

With regard to acid rain, we can no longer afford simply to study the problem—we must begin to take effective action. As president, I will forge a national commitment to reduce emissions of sulfur and nitrogen oxides.

I support our $5 billion program to develop new clean-coal technology and other pollution control incentives. We should pursue the initiatives that have emerged from our dialogue with Canada, and if they do not produce results, establish specific emission reduction goals that promise steady progress toward cleaner air.

My position on wetlands is straightforward: All existing wetlands, no matter how small, should be preserved.

2. As a life-member of the NRA, I have always opposed federal gun registration or licensing of gun owners.

I strongly supported passage of the McClure-Volkmer bill because it reduced government harassment of gun owners, while protecting legitimate law enforcement interests.

Likewise, I support legislation now in Congress that resolves the potentially disastrous problem of undetectable plastic guns. This compromise bill was hammered out, in a bipartisan spirit, with law enforcement officials and gun owners. Its emphasis on stricter sentences for crimes committed with a gun place the burden where it should be: on the criminal.

Some people confuse gun control with

GOVERNOR MICHAEL S. DUKAKIS:

Public opinion polls find broad and deep support for protecting our air, water and land. Voter initiatives in several states (including my own) have brought about tighter controls on hazards or set timetables for action. The environment will be high on the next president's agenda.

People are waking up to the fact that there is no place called "out." Remember "out"? That's where we used to throw things when we were done with them. All the things we dispose of—trash, chemicals, radioactive materials—are costing us much more to discard, or are piling up for lack of safe places to put them. A combination of new technologies, waste minimization and changes in the materials we use will be necessary if this crisis is not to become worse over the next few years.

In the last few years, more and more people have come to understand one of the key early insights of the environmental movement: We're all in this together. In the years ahead, I believe that we will cease to think of environmental issues as "domestic" and will instead think of them as overarching concerns in the same way we now think of foreign and defense policies. The dissolving ozone layer, global warming, overpopulation, deforestation and the loss of species are all aspects of the same phenomenon: As our aggregate effect on our environment increases, so too does the interdependence of the world's peoples. Future presidents will need to understand this in a way that past presidents have not.

Protecting the environment will be a major concern of my administration, and, in controlling spending, we will have to be careful not to withhold or reduce funding for important environmental programs. It would be unrealistic, however, to suggest that the next administration will soon be able to afford to do *all* of the things that we might wish it to do for the environment—and in many other areas—until we have gained control over our economic problems. A sound economy and a healthy environment depend on each other. Each must be preserved and nurtured for the other to exist. That is the true challenge.

2. Millions of honest, law-abiding Americans enjoy the recreational use of firearms for hunting and target shooting. I think government should respect that right.

I also support the right of responsible citizens to own firearms to protect their homes and businesses, subject to the regulation of state and local governments. But there are too many illegally owned handguns across this nation, and we must act to control use of handguns by criminals.

I support minimum sentences for those who carry a gun without a valid license.

I support additional efforts to keep guns

LETTER 1231

October 5, 1988
2901 W. 71st Street
Prairie Village,
Kansas 66208

Dr. Wilmot Hess, Chairman,
SSC Site Task Force,
ER-65/G-304
Germantown Office of Energy Research
U.S.Department of Energy
Washington, D. C. 20545

Gentlemen:

Attention: SSC EIS Scoping (or SSC Draft EIS)

1 I am writing this letter to express my opposition to having the proposed Superconducting Super Collider located as a part of Fermilab in Illinois.

2 My great grandfather homesteaded our farm in Kane County, Illinois, near Sugar Grove, Illinois. It was originally about 500 Acres; then the four lane highway, Route 56, separated my land into two parcels. Next, the Kane County Forest Preserve condemned 55 acres in 1984 to provide a wildlife preserve (which has not been developed yet) for the area. Now, if the Super Collider is built here, my farm will be within the ring.

This land is probably the most fertile of all Illinois soil and this farm has, since 1932, raised corn which was fed to yearling steers and we still do.

3 The surrounding area is enjoying a business boom unheard of in that area, especially around Naperville, so that there's no need for additional business incentives to encourage businesses or to increase employment for there is a shortage of people in all building trades.

4 The farmers in this area have suffered financial devastation due to the drought but they don't need the additional problems that accompany the acquisition and implementation of this type of activity on their land. The future development of this area will be seriously altered if this type of activity exists on this ground, and all of us within this ring could suffer from having the value of our land substantially reduced.

5 There are so many, many open, vacant tracts of land in this United States that have no production whatsoever and would have no ill effects on the economy and would, on the other hand, improve the economy, that it makes no sense at all to disturb this productive farm land and place the Supercollider plant in the middle of a very populated area, disrupting many, many people and businesses.

6 I strongly urge you to look to other states that desperately need some help in their economy and to find an area that hasnt been developed and locate the Super Collider project there.

Sincerely,

Harriette S. McVay

Harriette S. McVay

913-3 2-2628

IIA.1- 2360

LETTER 1232

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

October 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-64/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments---Errors Found in the EIS

Dear Sir:

1 1. Table 3-6 shows Texas has 224 relocations. This is inaccurate and misleading because the bulk of these relocations are due to the fact that people residing in a trailer park situated in the surface take area will have to move. They don't own the property which they are being moved from. You cannot compare an inconvenienced trailer home owner to those in all the other states who must sell their land and home or business because of the SSC.

2 2. Paragraph #1 of section 3.4.3 states that in Illinois the entire tunnel would be constructed by tunneling methods in dolomite below the water table. This is a blatant error and lie perpetrated by the Illinois ENR. In fact, the tunnel happens to lie directly in the water table, not below it. Information contained in the water survey material from the Illinois site proposal and from the Illinois Geological Survey Division clearly indicates that hundreds of wells in the region of the ring obtain their water supply directly from the same depth as the proposed tunnel. Using the logic of the EIS preparers, does this also mean that we are obtaining our water supply from below the water table? More logically, it means that the Illinois ENR and the DOE are going to encounter more water in digging this tunnel than they anticipate. This again is a potential creator of lengthened tunneling construction time.

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

The Draft EIS does not alleviate any of our previous fears about siltation of our streams or wetlands areas here in Illinois. The tunnel boring machines which will be in use during excavation of the tunnel will create a finely ground rock with as much as 17% of material being less than 1/200 inch in diameter. Since the EIS indicates that vast amounts of water will be infiltrating the tunnel and shafts during construction, this finely ground rock will become mixed with the water as it is pumped up to the 22 retention ponds located around the ring at the E and F access shafts.

In other words, this finely ground material will not be trucked away, but will likely work its way into the surrounding natural waterways and eventually into the Fox River. This will occur because the EIS admits that these retention or siltation ponds are inadequate as designed to properly remove all of the silt within them.

Nowhere in the EIS does the DOE discuss how this undesirable excess sediment will be controlled. With the vast number of creeks, rivers, streams, lakes and wetlands adjacent to the E and F sites, irreparable harm to our surface waters and the wildlife in them is bound to occur. The Illinois site is unique in that it is bisected twice by the largest river with the largest watershed area of all seven proposed sites. 3

As a consequence, any adverse affects which may occur due to this siltation problem will be even more pronounced in Illinois because of the Fox River. This again is a major disadvantage of the Illinois site and must not be ignored.

Sincerely,

Mike Panasenko.
40W726 Long Shadow Lane
St Charles IL 60175.

LETTER 1233

Keith Johnson
2 S 640 Wembly
Warrenville, IL
60555

Dr. Wilmot Hess
Chairman
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

October 9, 1988

Dear Dr. Wilmot Hess:

I am writing to you to express my support for the SSC and for its location at Fermilab. My support of the SSC at Fermilab must be considered as somewhat valuable for I own a home less than one mile from Fermilab.

1 I believe the site of Fermilab is the best, safest, most logical, and cheapest, place to put the Super Collider. My family and I visit Fermilab frequently and use the bikes trails extensively. I feel safer having the SSC at my back door than any other place. Fermilab is environmentally the most sound site for the SSC out of the Seven states running for the SSC and Fermilab will also save the Federal Government an estimated $3.28 billion while preserving the research capability of Fermilab.

Please value this support letter for the SSC at Fermilab highly, especially when you cannot own a home to much closer to Fermilab than we are and feel so strongly about wanting the SSC at Fermilab!

Sincerely,

Keith Johnson

Keith Johnson

IIA.1- 2363

LETTER 1234

Mrs. DAVID WERDIN
2 S 540 DAUBERMAN RD.
ELBURN, ILLINOIS 60119

Oct. 9, 1988

Dr. Wilmot Hess, Chariman
SSC Site Task Force
U.S. Dept. of Energy
Wash, D. C., 20545

Dear Dr. Hess,

An interesting pattern emerged last week at the SSC-DOE hearing in Illinois. As I, and others who oppose the siting of the SSC here, discovered when we talked to the Illinois officials after they testified, they aren't very sure this is a good thing for Illinois, either!

We asked them why they testified for the SSC in Illinois, when they really had many reservations about it. Their answer, "I had to speak for it. I couldn't do anything else." (I wish I dared give you names. I think it prudent that I do not.)

1

I'm afraid if you confronted them with this, they publically would have to maintain their pro-stance. Their jobs, unfortunately, depend on it. What a farce their testimony was, and what a dangerous effect it could have on our state.

It seems important that you are aware of the insincere words you recorded at the Illinois hearings. The state of Illinois employees could not state their true feelings.
Sincerely,

Lynette P. Werdin

HA1-2364

LETTER 1235

Dr. Hess:

Volume IV appendix 6-9 of 16
Page 14 6.3.3.1 Topography. Spoils (including 2.6 million yd^3 of dolomite) will be stockpiled in existing quarries for later
1 resale by quarry owners. Does that mean the State of Illinois or Department of Energy is giving the dolomite to these owners for a cost of zero? Why give it away?

Page 34 on the Illinois Resource Assessments notes that the entire SSC region in Illinois has been included in the national insurance program. Of concern is the potential flooding of Welch and Kress Creeks. Page 35 states that Facility J6 has a measurable impact as a result of flooding problems arising from Kress Creek. Further it
2 says "This may be a significant, long term impact on a local scale if mitigation is not possible. More detailed evaluation of this problem should be made during final site design if the Illinois site is selected. Why wasn't this thought up at this time? Additionally on page 39 says "The most disturbed watershed would be Kress Creek, which contains the Campus area, the injector/booster excavation, and two buried

LETTER 1235 (CONTINUED)

access areas for a total approximately 200-230 acres. This certainly appears to be a severe problem in sighting this project herein Illinois.

Sincerely

Rodger Franklin Lauder
2 S 260 Locust Ct
Elbrun Il 60119

LETTER 1236

10/9/85

DEAR DR. HESS,

AFTER WATCHING THE LOCAL NEWS, AND SEEING A FEW LOCAL PEOPLE EXPRESS FEARS AGAINST ILLINOIS SITE FOR SSC, I WANT

1 TO ESTABLISH A BALANCE.

I'M FOR THE ILLINOIS SITE. ILLINOIS HAS A WELL-ESTABLISHED SYSTEM OF SUPPORT RESOURCES, GOOD GEOLOGY & WEO.

SINCERELY,

LETTER 1237

October 6, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
Office of Energy Research
US Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments--Dewatering

Dear Sir,

1 I will address the topic of dewatering, that is, the removal of undesired water which leaks into the tunnel. This will occur during both construction and operation phases. The next three paragraphs mention sections and locations around the 53 mile ring. Letters "E" and "F" denote shaft access sites and there are 20, 2.65 mile sections between shaft sites.

2 The section on dewatering during construction (documented in Volume IV, Appendix 10.2, pages 14-16) indicates a severe design flaw if, and I repeat if, the stated figures are valid. The three, two acre ponds proposed at site F3 would have to be over 1000 feet deep to accomodate the daily input of water from the tunnel during construction in that area. This would be required because at the stated infiltration rate of 5200 gal/min/100ft over 2 billion gallons per day or over 6400 acre-ft of water per day must be pumped from the tunnel in the E3 to E4 section. This enormous leakage may not be realistic but I can only make calculations using published data from the EIS report.

3 Also during construction, fifteen of the total of twenty sections along the 53 mile ring have a significantly lower leakage rate, that of 5 gal/min/100ft or "only" 15 million gal/day which is over 46 acre-ft per day. However, using this "low" rate, during a one year period the leakage would amount to over 17,000 acre-ft. This amounts to 44% of the actual ground water used by all of Kane County in 1986. The EIS has stated that in 1986, 32,300 acre-ft of groundwater was used in Kane County (documented in Volume IV, appendix 5, pg 38). I want to emphasize that this 17,000 acre-ft of leakage water assumes the low 5 gallon rate and not the 5200 gallon rate. In summary, two of the twenty sections will have an enormous leakage, fifteen are as discussed above and three are assumed to have zero leakage.

4 The section on water levels/overdraft during operation (documented in Volume IV, Appendix 7, pages 114-115) reveals another significant issue. Quoting the EIS,

LETTER 1237 (CONTINUED)

"Uncontrolled groundwater inflow into the tunnel would probably be only on the order of a few to a few tens of gal/min/mi....". Using 50 gal/min/mi we find that the leakage would be 3,816,000 gal/day or 4,274 acre-ft/yr. This is 11% of the actual groundwater used by all of Kane County in 1986.

CATCH has been accused of being overly alarmed by the amount of water that the SSC will remove from our water supply. In fact, SSC for Fermilab has told us not to be concerned because the amount of water leaking into the tunnel will be equivalent to 6 small garden hoses being left runing every mile around the ring. The figures stated above clearly point out what liars these SSC proponents have been and how they try to downplay probably the most important issue about the SSC. The SSC is a direct threat to our local well water supplies and as a consequence, a dirct threat to the values of our homes and property. You don't have to be in the 1000 foot easement area to feel threatened, all you have to be is a resident of Kane County.

It's interesting to note that the rate of leakage during construction for only 15 of the 20 sections along the ring is about two times greater than originally indicated by the Illinois Site Prososal. SSC for Fermilab and the Illinois ENR should be chastised for their misrepresentation of the facts to the public. Taxpayer money has been spent for false ads which have propagated false facts and figures about the SSC. Erroneous water useage figures is merely one example.

Over 30,000 people in the Fox Valley obtain their water supply from private wells, therfore the water supply issue cannot be ignored. Many scientists and politicians praise the SSC for the good it will provide the human race, yet you blatantly trample on the rights and freedoms guaranteed to the citizens under our Constitution. It is a sham that the people of the Fox Valley must sacrifice for the "good of all" when there are many other locations where people will not have to suffer the potential adverse consequences of the SSC. Illinois is not the logical place for this project.

Sincerly yours,

Ray Nordbrock

Ray Nordbrock
40 W 040 Red Hawk Ct.
St. Charles, Illinois
60175

LETTER 1238

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Dewatering

Dear Sir:

The Section on Dewatering in Appendix #10 pages 14-16 indicates that an enormous amount of water will leak into the tunnel during the construction phase of the SSC. In fact, using the EIS figures the tunnel is expected to leak at the rate of 5 gallons/minute/100 feet, or over 34 mil. gallons/day. It's interesting to note that this rate of leakage is 4-5 times greater than was originally indicated by the Illinois Site Proposal.

CATCH has been accussed of being overly alarmed by the amount of water that this SSC tunnel will remove from our water supply. In fact, SSC for Fermilab, Inc. has told us not to be concerned because the amount of water leaking into the tunnel will be equivalent to 6 small garden hoses being left running every mile around the ring. The figures in the EIS clearly points out what liars these SSC proponents have been and how they have tried to downplay probably the most important issue about the SSC. The SSC is a direct threat to our local well water supplies, and as a consequence, a direct threat to the values of our homes and property. You don't have to be in the 1,000 foot easement area to feel threatened either. The regionally overdrafted groundwater supply threatens us all. 1

SSC for Fermilab, Inc. and the Illinois ENR should rightfully be chastised for their misrepresentation of the facts to the public. State monies (meaning our taxpayers money) have been specifically used for ads which have propagated false facts and figures about the SSC. Erroneous water usage figures are just one of many examples of facts being improperly presented.

Turning back to the EIS dewatering section, it is important to note that although figures are provided for the construction phase of the SSC, we are never told how long this infiltration

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

will occur at this enormous rate, nor are we told what the rate of tunnel leakage will be during the operation's phase. Is the rate of tunnel leakage during operations also 4-5 times greater than the figures presented in the Illinois Site Proposal? We Can't tell, because the EIS very conveniently ignors that this tunnel will leak day by day, year in and year out throughout the life of this project. And as a consequence the EIS ingores the fact that our well water supplies will be adversely affected throughout the entire life of the SSC and even beyond. Why aren't we told how much water will be drained from the tunnel? Are the figures too big to admit to? Whatever the case, their absence is another error in the EIS.

Over 30,000 people obtain their water supply from private wells, thus treatment of the water supply problem cannot be ignored. You scientists and politicians praise the SSC for what it will provide for the human race, when you blatantly trample upon our human rights and individual freedoms guaranteed by the Constitution. The Dichotomy present in your personal value systems is absurd. We need not be sacrificed at your altar of greed and jealousy when you have six other sites to choose from. Your sham that people must sacrifice for the good of all need not apply when you have locations for the SSC where little if any people will suffer the adverse consiquences of the SSC. Illinois is not the logical place for this project.

Ray Hoelbrock

Sincerely yours,

40W 040 Red Hawk Court
St. Charles, Ill.
60175

LETTER 1239

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct.6, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Tunnel Leakage,Radiation, Number of Wells

Dear Sir:

1 Table 4-1 page 4-4 indicates that the Illinois site will experience minimal groundwater inflows into the tunnel. However, page 16 of Appendix 10 shows that a 5 mile stretch of the tunnel between E3 and E4 near the southern end of the ring will leak at the rate of 5200 gallons/minute/100 feet during construction. This is nearly 20 million gallons of water per day over just a 5 mile stretch of tunnel. This rate of groundwater inflow must surely be considered more than minimal. In fact, no other site specifically points out any anticipated water problem areas like this area near Big Rock, Illinois. The Michigan site and the North Carolina site will both experience greater general amounts of tunnel inflow than Illinois. But no stretch of their tunnels are expected to leak at the rate that is anticipated for our 5 mile Big Rock Sector.

2 Another question--Is the DOE aware that there is quicksand in the marshes around Big Rock and site F4?

3 On page 3-61 the EIS specifically states that the SSC project would be designed to limit radiation exposure to the general public. The key phase here is that they will limit it--not eliminate it. There is radiation involved with the SSC project no matter how you look at it. Other states may be willing to put up with your limited radiation dose, but we residents of the Fox Valley will not tollerate it. We want to emphasize that the acceptable standards set for radiation should not be interpreted as safe doses or safe releases. H.J. Muller who discovered that ionizing radiations create mutations in living organisms, was the first person to realize that there is no safe dose of ionizing radiation. And this is exactly the type of radiation which the dense population in and around the Fox Valley is going to be exposed to by the SSC. According to Dr. Muller, even the lowest dose of ionizing radiation has the potential to induce a mutation. That being the case, we don't want the DOE, Fermilab, or our

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LETTER 1239 (CONTINUED)

elected officials to tell us that radiation will be limited---- We don't want anything over and above what we're being exposed to already. Take your machine and put it in a labratory setting where it belongs, not here in Illinois.

4 Page 4-21 of the EIS indicates that there are 320 wells within the 1000 foot zone of the collider ring. This number is far smaller that the true number because it only reflects conditions as of January 1, 1986. The true number is far in excess of 500 wells, and it grows day by day as new homes continue to be built. Without a doubt, Illinois has the largest number of wells within the 1000 foot zone of the collider.

5 The Illinois EPA has presented the DOE with updates on their own environmental assessments of conditions in Illinois as recently as late March, 1988. However, they have very conveniently failed to update the DOE on the number of wells and the number of parcels which fall under the shadow of the SSC. This has been contrived by the EPA from the beginning and makes one sick to think that their own governmental officials can act so irresponsibly. We might ask the DOE if these are truely the kind of people you want to deal with over the next 25 to 30 years? If you're satisfied with secrecy and deceit, you DOE officials will feel right at home with our state government.

Sincerely yours,

LETTER 1240

SSC Project Office

101 N. Island Ave.
Batavia, IL 60510
(312) 879-7220

William L. Kempiners
Director of
Intergovernmental Relations

October 14, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65 GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

Last Friday at the public hearing in Illinois, Kane County Board Chairman Frank Miller submitted petitions containing 12,866 signatures in behalf of locating the SSC in Illinois. We had already submitted 26,124 signatures, bringing the total to 38,990 people who have expressed their support for locating the SSC at Fermilab in Batavia.

Enclosed find an additional 216 signatures, which we have received since the conclusion of last Friday's session. This brings the final total to 39,206 signatures.

I also want to thank you personally for all the courtesies you and your staff have extended and to say I have enjoyed working with you and your staff throughout the siting proces. Obviously, I look forward to a continued, long-term relationship with the U.S. Department of Energy.

Sincerely,

William L. Kempiners

William L. Kempiners
Director, SSC Project Office

WLK:ls
encl.

LETTER 1240 (CONTINUED)

PETITION TO PRESIDENT REAGAN

TO: President Ronald Reagan
The White House
Washington, D.C.

We, the undersigned residents of Illinois support the construction of the Superconducting Super Collider (SSC) adjacent to the Fermi National Accelerator Laboratory (Fermilab) near Batavia, Illinois. Linking the SSC to Fermilab will save the federal government nearly $500 million. The geology of the area is proven suitable for the SSC. The location is near a major transportation center and offers abundant supplies of both water and power.

Construction of the SSC is needed to maintain the leadership of the United States in the area of high-energy physics and high technology. Our area of Northeastern Illinois offers the most logical and economical site for the SSC.

BA.1- 2375

ILLINOIS: BEST LOCATION FOR THE SSC

At least 25 states are competing to become the site of the new Superconducting Super Collider (SSC). Illinois is the best location for the SSC.

Why should the decision makers choose Illinois?

- The Fermi National Accelerator Laboratory in Batavia contains the world's most powerful accelerator. Using this existing accelerator for the SSC will save at least $400 million in construction costs plus $60 million in operating costs for the SSC.

- The geological conditions at the Fermilab site are excellent for the continued excavation of underground tunnels needed to house the SSC. If the SSC is built at Fermilab, Illinois will excavate the tunnel for the SSC as part of a general infrastructure improvement program.

- No other high energy physics research facility in the world has operated as successfully in meeting the goals of its mission as Fermilab.

- Illinois has an abundance of natural and man-made resources necessary to support the construction and operation of the SSC.

THE SSC: BEST FOR ILLINOIS

- As the home of Fermilab and Argonne National Laboratory, Illinois is considered the world's leader in high-energy physics research. Construction of the SSC will assure that Illinois remains first in high technology.

- The construction of the SSC would bring 6,000 jobs a year to Illinois during the six year construction. After completion, the SSC will require a work force of 3,000 scientists and related support service workers.

- The Illinois Department of Energy and Natural Resources estimates that the project will generate $1.4 billion in real disposable income and $116 million in state tax revenues.

- Locating the SSC at Fermilab will strengthen the base of the High-Technology Corridor along the East-West Tollway. The world's most important scientific facility, the SSC will serve to attract more high-technology businesses to our area.

LETTER 1241

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Use of Inaccurate Parcel Counts

Dear Sir:

1 The information provided to the DOE by the Illinois Department of Energy and Natural Resources is extremely outdated and therefore does not allow you gentlemen to make accurate decisions in determining the final SSC site selection. The most flagrant misuse of statistics occurs because of their failure to indicate the true existing parcel counts and well counts. All of their information is only accurate as of Jan. 1, 1986 and has never been updated for this most recent Draft EIS presentation.

2 The EIS indicates that there are 3305 parcels involved in Illinois, 320 wells being closed, and 59 businesses being relocated. It can be proven through the use of 1988 tax maps that have just been published, that over 4300 parcels, 650 wells, and 65 businesses will in fact be affected by the siting of the SSC in Illinois. This is all due to the tremendous amount of development that has occurred throughout the Fox Valley since Jan. 1, 1986. The Illinois ENR has deliberately ignored the fact that this development has occurred; however, you gentlemen from the DOE cannot.

The use of inaccurate information in the EIS fails to show some very interesting and vital facts. There are more property owners affected in Illinois than in all other sites combined. More wells will be closed in Illinois than in all other sites combined. More businesses will be closed in Illinois than in all other sites combined, and more people will be directly affected by the siting of the SSC in Illinois than in all other sites combined.

3 What this should mean to you members of the DOE is that

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the Illinois site represents the most difficult, the most expensive land aquisition process of any of the proposed sites. It also means that far more mitigation will be required at the Illinois site than at any other. More changes to the original design concept will be required in Illinois than in any other location. More changes will be required at E sites, F sites, and J sites because of necessary mitigation measures. All of this can be translated into increased cost and increased time of construction at the Illinois site.

The failure of the Illinois proposal to include up-to-date parcel counts, well counts, and other facts has led to a distorted pictuee about the true nature of the Illinois site. This lack of forthrightness and outright deceit on the part of Illinois officials cannot be overlooked by you gentlemen. We residents of the Fox Valley are being misrepresented by our own elected officials who intend to win this project based upon lies and misinformation. There has been a concerted effort on their part to conceal the depth and sincerety of our opposition. However, we will not be ignored, and you can expect us to remain the most vocal, the most determined opposition that you have towards the SSC project. 4

We number over 20,000 adults in the immediate vicinity of the Fox Valley. Illinois may try to ignor us, Govenor Thompson may try to ignor us, but you cannot. For you see, they actually represent you. It is your site selection process and your lack of guidelines that have allowed this travesty to occur. We don't blindly blame Illinois---we blame you! We will do whatever is necessary to stop the SSC from coming to Illinois. The DOE can expect further litigation to originate from the Illinois SSC opposition. Our intent is to see to it that if Illinois is selected, then your very important 1996 deadline will be impossible to meet. The only way the SSC can come to Illinois is through the courts! 5

Sincerely yours,

Mary Battle
273 Denker Rd.
St. Charles, Ill 60175

LETTER 1242

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmont Hess, Chairman
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Politics and Scientists

Dear Sir:

1 The EIS makes it very clear that you scientists have but two goals---The SSC must be built as designed at all costs, and it must be on line by 1996. This is all that counts to you, and everything else is totally insignificant. You scientists can be faulted for using your highly regarded station in life as a means to influence public opinion towards a project such as the SSC, wherein the public basicsily has very little knowledge or concern. You overstep your bounds as scientists and enter the political arena to influence national policy decisions.

2 The book Policide by Lowi and Ginsberg is a unique description of the process involved in the creation of Fermilab and the demise of the town of Weston. A large part of this book describes how scientists can fall into the trap of actually believing that the ends justify the means. The authors state the following with regards to the criteria used in determining site selection for Fermilab:

"the scientists soft criteria left open a vast area of discretion, first because these soft criteria were concerned only about amenities for scientists and their families, and second, because no criteria... were concerned with broader social values that might be affected by a scientific facility of such size and expense." In effect, the scientists were saying,"Give us our site, but don't tell us how you got it."

3 This was the attitude of you scientists towards the public over 20 years ago, and as far as we affected property owners are concerned, this is your attitude to this day. It's obvious from the EIS that any and all problems that occur at any of the seven sites is delegated to a level of insignificance by you scientists. No problem is insurmountable. Everything can be mitigated. Your lack of concern for our families and our homes is well documented throughout the EIS. You couldn't care less that the SSC facilities fall directly in residential neighborhoods. All local building and zoning

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restrictions which would prohibit the existance of your "tank farms" near our homes, have been conveniently illiminated. You couldn't care less that thousands of people in the Fox Valley are dependent upon private wells as their only source of water.

What is important though, is that you and your families must *have all the necessary social amenities at your disposal.* This type of attitude cannot and will not be tollerated. You were able to get away with it back when Fermilab was created, because the local townspeople were actually fooled into believing that Weston would live on and prosper. Let
4 me quarentee you gentlemen that this will not happen again. Your opposition here in the Fox Valley is too great, and we will not back down. We will continue to fight you and thwart your efforts to site this project here in Illinois. We have as many People, if not more, opposing this project as opposed it in New York. Their Governor had the common sense and decency to withdraw New York's bid. Shamefully, our doesn't.

Let me conclude with another quote from Poliscide:
"The story of Weston reveals a great deal about the requirements of proper exercise of power. It is an illustration of how institutions can be the enemy of rational men of goodwill, because it is a story of how such rational men of good will
5 were led, by their own responsibilities, to abuse public authority or to allow its abuse on their behalf."

You gentlemen have that same responsibility and authority. Don't abuse it. Don't select Illinois as the site of the SSC. Put it where it belongs; in one of the other sites where people's lives don't have to be sacrificed for your scientists and your families well being.

Sincerely yours,

[illegible]

LETTER 1243

Oct 9, 1988

Dr. Wilmont Fess
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Dept. of Energy
Washington, D.C. 20545

Dear Mr. Fess:

1 I am against the Superconducting Super Collider being placed in Michigan.

Sincerely,

Lorna Berge
Scott Berge

P.O. Box 100
Stockbridge, MI
49285

IA1-2381

LETTER 1244

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF CONSERVATION
701 BROADWAY
NASHVILLE, TENNESSEE 37219-5237
615/742-6716

October 7, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U. S. Department of Energy
Washington, D. C. 20545

Re: Draft Environmental Impact Statement, Superconducting Super Collider, Multi-County

Dear Dr. Hess:

The above-referenced document is being reviewed with regard to National Historic Preservation Act compliance by the participating federal agency or its designated representative. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (51 FR 31115, September 2, 1986)

1 Based on available information, we concur with your agency's finding that the Sanders Farm, located within the Tennessee SSC future expansion area and the historic archaeological site referred to as the "Thomas Spain Farm" (incorrectly listed in the DEIS as the "Spain Ranch"), located in the campus area are to be considered eligible for listing in the National Register of Historic Places. We further concur that while an intensive field inventory and evaluation of standing structures within the project impact area have been conducted no such intensive archaeological surveys have been performed. It is therefore not possible accurately to predict numbers or locations of prehistoric and historic archaeological sites in the project impact area. Should Tennessee be selected for this project, such a survey would have to be carried out.

2 This office further concurs with your agency's proposed mitigation measures should Tennessee be selected. These measures will be defined after consultation between your agency and our office, and will be implemented as stipulations in a project Memorandum of Agreement and will include such measures as additional archaeological surveys and testing and evaluation of discovered sites; and appropriate treatment of cultural resources affected by the project which might include any and all of the following: avoidance of the site or property; recovery, analysis and curation; documentation prior to demolition or removal; and construction monitoring.

LETTER 1244 (CONTINUED)

Dr. Wilmot Hess
October 7, 1988
Page Two

3 Please note that in the case of Tennessee, it is the opinion of this office that no cemeteries within the project area are eligible for listing in the National Register of Historic Places. Also please note that while Tennessee SHPO staff do not consider the main house on the Thomas Spain Farm to be National Register-eligible, the archaeological remains of slave cabins and the cotton gin building site could be significant to historical research.

Questions and comments may be directed to Joe Garrison (615)742-6720. Your cooperation is appreciated.

Sincerely,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

xc: Mr. Fred Weinhold

LETTER 1245

Mrs Linda Voelker
231 S Glenwood
Aurora, Ill. 60506

SSC Draft EIS
SSC Site Task Force
ER-65, GTV
Office of Energy Research , U S Depart
of Energy
Washington, D C

Dear Sirs::

I n appose the siting of the SSC in Illinois. I appose the siting here for many reasons.

I am a Certified Clinical Social Worker. I am Certified by the State of Illinois. I am employed in our communitys' social service system. Because of this, I know our community of a very unique and personal way.

We are a community beset with extremely serious social problems. I am concerned about the negative impact which th e SSC would have on our community's social problems and upon our social service system.

This community is the dumping ground for Elgin Mental Health Center. This includes the mentally ill and the criminally insane. This community has the third highest rate of reported child abuce in the State of Illinois. I could go on to discuss our community's high rate of drug abuce, drug dealing, alcoholism crime, and the finantial B crisis in our sch ools. However, time and space do not permit.

According to the Depart of Energy, ten thousand, nine hundred ninety six persons would be required to build the SSC. Many of these persons would be coming from outside

our Social Service Area. They would be bringing with th em their own set of personal and social problems. The SSC would change our communities. Change translates into stress; stress translates into increased demand upon a social service system which is all ready burdoned down and struggling to maintain itself.

This is a troubled community. This is not the community for the SSC.

I am enclosing a picture of Welsch Creek. As you can see, our beloved Welsch Creek is all most dry. At this time of the
1 year, in this spot, there is usually 2 to 3 feet of lovely flowing water. As you can see here, we can not spare reduction in surface water. Even aside from any question of a SSC, we who live in DuPage and Kane Counties have an ongoing concern about water shortage.

I am a life long Republican. I have always voted a straight Republican ticket. I don't know all the Governor Jim Thompson has told you about the Fox River Valley. However, I do want to tell you that far away in Wash ington, you might not know that here in Illinois, we have learned the hard way that Jim Thompson is not to be trusted.
2 I was born a Republican and it hurts me to say it, but Jim Thompson is not honnest in his dealing with the people of Illinois. You can not expect him to be honnest with you. He will say whatever promotes him and whatever he th inks you want to sayPerhaps I do not even need to mention this factor. Perhaps you have all ready found this out for yourselves.

This is not the area for the SSC. The
3 SSC needs space. This is a bust, populated, congested area. Other states are far better

suited. I am telling you the truth. I am not on a State of Illinois pay roll.

If you have questions, please feel free to contact me. 312-8598392.

Sincerely,
Linda Voelker

Linda Voelker
(Clinical Social Worker

(I am legally blind. This is why I use this type writer. I have two master's degrees from the University of Illinois in Urbana. I mention this so you can understand me better. I know that my syping and my spelling are not perfect)

LETTER 1246

Dr. Hess

Appendix IV Appendix S.

Page 122 Soil

Such soils, although with a high potential for Crops, require special drainage management operations. An example of such soil is the Drummer soil that covers close to 1/3 of the fee simple acreage at the site.

1 When drained, this soil has an excellent potential for crops and is categorized as prime farmland. How will the ssc effect these tiles for Drainage? Who will pay for these expenses? The D.O.E, state or farmers out of their own pocket?

Sincerely

Maria Leal

1061 Rainwood Drive
Aurora, Il 60506

LETTER 1247

Village of Sugar Grove
85 Main Street, P.O. Box 49
Sugar Grove, IL 60554
(312) 466-4507

October 10, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force, ER65, G-304
Germantown, Office of Energy Research
U.S. Department of Engery
Washington, D.C. 20545

Dear Dr. Hess:

After reviewing all the information and assessing the data that has been presented in the Environmental Assessment Report that I have received, I concur that the SSC would be an asset to the nation and best placed in Illinois. In my opinion, with the presence of Fermi Lab, many on-site experts, favorable building conditions, experienced and qualified local labor forces, and the least costly site to the tax payers of the nation all make Illinois the best site.

1 The State of Illinois has taken steps to protect area resident's property values as well as the tax base of local governments. More action may be needed and I am confident that, together with other local officials, we can work with the State of Illinois to take the necessary steps to help mitigate any negative impact that may arise from the siting of the SSC in this area. I will continue to work with area officials to assure that local residents who are affected by the SSC siting are treated fairly with dignity and respect as well as work to assure that the least amount of land be acquired to do the SSC project at this siting.

The real work of assuring a successful project with the least disruption of the surrounding area and at the lowest possible cost will begin after the site is selected. Based on all the information I have received, Illinois is that site. I believe that by working together with the State, Federal and Local officials we can accomplish the above task.

Sincerely,

Mario F. Tolomei

Mario F. Tolomei
Village President

MFT/id

LETTER 1248

Midlothian Development Company
BOX 221
Midlothian, Texas

P. M. BAXTER
President
775-3142

H. B. PATTON
Vice President
775-3142

October 5, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
Office of Energy Research, ER-65, GTN
Department of Energy
Washington, D.C. 20545

Dear Dr. Hess:

This letter is written to reply to the Draft Environmental Impact Statement concerning the possible location of the Superconducting Super Collider (SSC) in Ellis County, Texas.

We strongly support a Federal decision to locate the SSC in Ellis County, Texas. The positive economic impacts of the building and operating this facility here will benefit not only the region but Texas as a State. We look forward to being host State to the research and the scientific breakthroughs which the SSC will generate.

We here in Texas are rightfully known for our "can-do" spirit and work ethic. These qualities of our people and our businesses will insure not only timely, quality construction and operation of the SSC by the skill pools here in Texas, but also long-term public support for the SSC program for years to come.

1

The beneficial impacts of the scientific community which will grow with the SSC are important to the Metropolex region and to Texas also. By affiliating Texas's universities and our private sector research capabilities with SSC programs, a mutual benefit both to SSC development as well as for our technology base will result.

We also believe that Texas is the best location nationally for the SSC because our right-to-work tradition, our young workforce, and our rapid growth as a high-tech region will guarantee the Department of Energy the most productive, qualified staffing which could be found. We believe another plus is our geographic location near major highways, railways, and of course DFW Airport.

Another plus factor for us is that the predicted impacts of the SSC on the natural environment in Ellis County are minimal and can be mitigated without difficulty.

Please record our favorable response to the socioeconomic impact of the SSC being sited in Ellis County, Texas. We will do all that we can to give our full support not only to the construction but to the continued operation of this great facility here in our state.

Sincerely,

Phillip M. Baxter

Phillip M. Baxter
President

PMB1b

LETTER 1249

Sept. 13, 1988

Dr. Wilmot Hess, Chairman
SSC. Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Dept. of Energy
Wash. DC. 20545

Dear Dr. Hess,

I am writing to you in behalf of my husband, sons and myself. I am against the building of the super collider in the Fox Valley Area of Illinois. There are many reasons why I am against it.

As my home is situated a little over 2000 ft. from the site of Sector service station (F7) at Prairie Dr. + Empire Rds., I am concerned that the digging and blasting will hurt & crack my home's foundation, as well as be noisy and create excess dirt and dust. The constant hauling of stone from the tunnel will promote heavy congestion and wear and tear of our roads.

After reading the Environmental Impact Statement we received, I also believe that our water supply in this area will be severely depleted. Once this service station is built, I believe that my property value will drop considerably.

I am even more concerned about the total impact of the SSC on our area, especially since the mayors of St. Charles and West Chicago are also having second thoughts about the supercollider running through their towns.

I would rather see Illinois use the money that they would spend on the SSC for the education of our children. Our area is so much need of funding for new facilities, upgraded teaching aids, more teachers, better programs for all children. This is where our future lies.

Please consider my plea to put the SSC elsewhere and the plea of the over 20,000 residents of Illinois who say 'NO' to the SSC in Illinois.

Thank you,

Mrs. Susan Schubert

Alfred H. Schubert

Resolutions are sent to committees

By Katherine Seigenthaler and Patricia M. Szymzak

The mayors of two west suburban towns introduced resolutions in their city councils Monday night asking that the State of Illinois reconsider certain aspects of its superconducting supercollider proposal, particularly those that would remove land from the cities' tax rolls.

Both councils voted to send the resolutions to committees for review.

The City Council of West Chicago unanimously voted to send the resolution to the Zoning and Planning Committee, asking them to report back with recommendations at the next meeting on Oct. 3.

The St. Charles City Council referred the resolution to the Finance Committee to review whether the proposal should be rewritten as an amendment to a similar collider resolution passed in June.

In his motion to refer the collider proposal, St. Charles Ald. William Martin objected that the new resolution was too similar to one passed this summer.

St. Charles Mayor Fred Norris, who agreed to the decision to refer the resolution to committee, said, "There are some [people] definitely for the collider and some definitely against. I thought this resolution might address the specifics of some of these ongoing concerns."

The resolution was drafted jointly by the mayors of St.

See Collider, pg. 2

Collider

Continued from page 1

Charles in Kane County, and West Chicago in Du Page County, both of whom have expressed concern that construction of the giant particle accelerator in Illinois could have a negative impact on their communities.

The mayors' five-point resolution asked that the state:

- Reconsider its decision to buy above-ground rights to large chunks of property beyond the boundaries of Fermi National Accelerator Laboratory in Batavia. The state plans to buy a total of 3,700 acres in addition to Fermi, 1,400 of which would be in or near the St. Charles/West Chicago area.
- Clarify what would be done if the purchased property is no longer needed, and that the property involved is never subject to public auction but reverts to the previous private owners.
- Reconsider its plan to remove several hundred acres of wetlands in the area.
- Attempt to conceal operating compressors located in residential areas.
- Increase from 5 years to at least 20 years the statute of limitations that guarantees that the taxing districts would receive payment to make up for lost tax revenues.

"It certainly seems foolish to take land unnecessarily," St. Charles' Norris said before the council session. "And since the state is now working on mitigation, we'd like to have a record of the things we'd like to see mitigated."

Because of vocal opposition to construction of the collider in Illinois, the state is in the process of setting up a mitigation task force to help resolve local residents' objections.

If the federal government chooses Illinois as the site for the 53-mile underground tunnel, it will be built as an extension of Fermilab.

The state has proposed to purchase underground easements for most of the property along the oval ring and would burrow under thousands of homes in Kane, Du Page and Kendall Counties to build the facility.

It also plans to buy the 3,700 acres above ground, either outright or through eminent domain procedures.

West Chicago Mayor Eugene Reinecke has estimated that about 1,100 acres of land would come off the tax rolls of West Chicago, costing the city about $250,000 in annual tax revenue.

LETTER 1250

OCT. 7,1988

Dr. Wilmot Hess, Chairman,
SSC Site Task Force
ER-69, G-304
Germantown, Office of Energy Research
U.S. Dept. of Energy
Washington, D.C. 20545

Dear Dr. Hess;

During the past 6 months I have followed the planning and site selection for the SSC with great interest. After a fair amount of review and reading of much information in local papers I feel that the SSC is necessary project and will be best placed in Illinois. Illinois has the Fermi Lab, good building site, expert labor force, excellent educational and technical schools as well as the social aspects that are necessary to support a major project like the SSC.

1 The overwhelming majority of people support the project that I have talked to about the project. The State of Illinois has shown its willingness to be a good neighbor, which is more than I can say for the minority group that oppose the SSC in Illinois. Illinos has the ability to work with the area residence to mitigate many of the so called negetive aspects of this project and I feel they have taken some goof faith steps to show they are truly concerned about the area residence. More may need to be done and I feel that the most
2 important thing to do is only take the amount of land that is absolutely necessary for siting the SSC in Illinois. I would be happy
3 to have the Fermi Lab or SSC as a neighbor rather than the Aurora Municipal Airport that now borders my community. I support the SSC in Illinois.

Sincerely yours
Sharon Tolomei

Sharon Tolomei
92 Neil Rd.
Sugar Grove Il. 60554

IIA.1- 2304

LETTER 1251

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments---Subjectivity

Dear Sir:

One of the major flaws of the EIS is that it is very subjective in its approach to some very basic problems. Many times it is evident that the writers involved used their personal subjective reasoning to obtain a very illogical solution to a problem, and in many instances, a set of double standards resulted. For example, on page 5.1.10-7 the EIS writers indicate that "the industrial-yard character and large scale of the sector service areas, buildings, and tank farms (this is their term, not ours) are incongruous with the character of residential neighborhoods and country residences." Just two sentences later, though, these same writers say "rural residential areas, however, are often associated with out buildings or are near farmlands and pastures where utility sheds are not uncommon. Here the access areas would usually go unnoticed."

In one instance these tank farms are considered out of character and then suddenly the EIS writers reverse themselves and say they'll go unnoticed. Which is it? Are they obnoxious looking or aren't they? Why should it be left up to the writers or observers to determine which local areas are truely affected when it's obvious they don't have set standards upon which to judge or evaluate a decision. As a result, subjectivity becomes important and personal viewpoints play far too large a role in determining the fate of people who will be forced to live next to these tank farms. Writers or field observers cannot determine objectively the impact that local residents will experience living next to loud obnoxious looking tank farms.

When field observers went to each shaft site area (to kick the tires), did they view each area under similar circumstances? Were sites in one state viewed during early spring when little

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

or no plant growth appeared? Were others conducted when plant growth already limited sight lines? Were some viewed on cloudy days while others were viewed in full sun light? In any case, without conditions being equal, subjective reasoning had to come into play and that has led to unfair and unequal evaluations.

For example, it should be clear to everyone that Illinois is the most heavily populated region now under consideration for the SSC. Numerous E, F, and J sites happen to be located right in the midst of residential areas. This is especially true at F7, E8, F8, E9, F3, and F4. The EIS writers indicate that there are definite problems associated with each of these shaft sites and their surrounding residential setting; but in each case, they indicate that the situation is judged insignificant because it can supposedly be mitigated. And I stress the word judged. However, if you turn to the visual affects section for North Carolina, you will find a completely similar set of circumstances has resulted in totally different judgements. North Carolina also has E and F sites located in or near residential areas. They too are deemed potentially highly significant of local nature. However, in this case, the EIS writers judge that in three circumstances, the problem cannot be mitigated. How could similar situations in two different states possibly be judged differently if it weren't for the subjective reasoning of the observer teams in these two states. Whatever the facts are, this is but one example among many where the EIS loses credibility because of the subjective reasoning employed.

When a project of this magnitude and scope can have the dramatic affect that it will on thousands of people, there can be absolutely no room for value judgements by those who are helping to determine the final site location. Selection should be based upon fact and not viewpoints. The EIS writers and your DOE scientists very unscientific approach in choosing the SSC site is something which we residents of the Fox Valley are not going to tollerate. You can anticipate law suits being filed if you choose to place your labratory in our front yards, under our homes, next to our wells and under our schools. Take your machine where it belongs---out in the desert where Dr. Lederman originally planned for it to go!

2

Sincerely yours,

Sandra Sullechan
39W851 Prairietown Lane
St Charles, Il 60175

LETTER 1252

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments---Illinois is not a Logical Choice

Dear Sir:

The following is a list of just some of the reasons why Illinois is not the logical choice for the SSC.

1 1) The presence of methane gas is a potential safety hazard and can be expected to slow down tunnel construction in Illinois.

2 2) The entire Fox Valley site is covered by Flood Rate Insurance Maps and shows a high probability for damage due to flooding. This is not true at other sites.

3 3) The air quality of the Illinois site is already the worst of all seven sites.

4 4) Illinois is the only site to be designated as in nonattainment for levels of both ozone and carbon-monoxide.

5 5) Total suspended particulate levels (TSP) at local E, F, and J sites in Illinois will exceed the National Ambient Air Quality Standards.

6 6) The proposed service areas will not comply with State of Illinois Rules and Regulations, Title 35, Subtitle H, as regards noise levels for residential settings.

7 7) Illinois shows the lowest levels public services available at all sites. Our student/teacher ratios are the worst, our health care levels are the worst, and fire and police protection in DuPage, Kane and Kendall Counties are below the national average.

8 8) The roads at the Illinois site are the most congested of any site and are the only roads subject to stop and go traffic. As a result, more travel time will be required to move from point to point around the Illinois site than at any other.

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9 9) The winter weather problems in Illinois can be translated into increased time devoted to tunneling and to the disposition of tunnel spoils. This, coupled with the extreme depth of the Illinois tunnel means that tunneling completion will take longer in Illinois than at other sites where year-round construction activity is the norm.

10 10) The extremely large number of parcel owners means that Illinois will have the most difficult land acquisition process. The fact that many of us have already taken steps to cloud title on our properties will only make the job for you more difficult.

11 11) Illinois is already the site with the greatest numbers of sources of hazardous or toxic waste materials. Why add more?

12 12) Illinois is the only site located in an area where there are already two sources that add an increase to the natural background radiation level -- Fermilab and the Kerr-McGee Chemical Plant site.

13 13) Illinois is already the site with the greatest number of man-made sources of radioactivity.

14 14) Illinois already has the highest background noise levels adjacent to the proposed E and F access shafts.

15 15) Perhaps most importantly of all is that Illinois is the only site where land use patterns are expected to change if the SSC does not come. Only in Illinois are land use patterns going from agricultural to residential or commercial/industrial. As a result, the Illinois site is the most valuable because it is the only site that has potential for alternate uses. This opportunity cost is completely ignored by the EIS and all of its economic arguments.

Sincerely,

Cheryl A. Hansen
5N 512 Buckskin St.
St Charles, Il 60175
(312) 377-5609

LETTER 1253

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments--Illinois is not a Logical Choice

Dear Sir:

These are just some of the reasons why Illinois is not the logical place for the SSC. They are all discussed in the EIS.

1 1) More wells will be adversely impacted or closed in Illinois than in all other states combined.

2 2) More property owners are involved than in all other states combined.

3 3) The Illinois site has the largest number of people living adjacent to proposed SSC facilities. As a result, more people will be adversely impacted by noise pollution, air pollution, exposure to airborne radionuclides, adverse visual impacts, etc. in Illinois than at any other site.

4 4) More businesses will be closed or relocated in Illinois than at all other states combined.

5 5) More acres of prime farmland are being removed from production in Illinois than at any other state.

6 6) Illinois has the second largest number of wetlands that may be adversely impacted.

7 7) The Illinois site and its proposed tunnel depth make this the most difficult tunneling project of all the sites.

8 8) Water leakage into the access shafts and tunnel will be the highest of all sites.

9) The Illinois site has the worst water leakage problem encountered at any of the proposed sites. The 5-mile stretch of tunnel between E3 and E4 is expected to leak during construction, at the rate of 5,200 gallons/minute/100 feet or nearly 20 million gallons per day.

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9 10) Of major importance is the fact that Illinois has a regional groundwater overdraft.

10 11) Of equal importance is the fact that Illinois has a local groundwater overdraft in the populated area of the northern arc. Numerous wells as deep as 300 - 400 feet went dry this past summer. This cannot be blamed on the drought.

11 12) The glacial geology of the Illinois site has created a situation where there is a direct hydrological connection between surface water supplies and groundwater supplies. Therefore, any pollutants generated by the SSC and its construction may find their way into our well water supplies through our surface waters.

12 13) The surface water quality of the Illinois site is already the worst of the seven sites.

13 14) Illinois is the only site with an existing groundwater quality problem. We are already exposed to higher levels of radiation due to the elevated levels of radium in our groundwater drinking supplies.

14 15) And perhaps most importantly of all, is that Illinois has the largest number of people who oppose the placement of the SSC under or through their homes. This project is doomed in Illinois because we will not give up. We will fight the Illinois ENR, Governor Thompson, and the DOE until the Illinois proposal is voluntarily withdrawn. We will not go away and will fight all the way to the Supreme Court, if necessary. In fact, we promise to make so much noise over this project that you scientists are likely to see that funding may never be approved in Washington. The only way we will back down is to have Illinois withdrawn from consideration.

Sincerely,

Martha E. Tarzynski
39W716 Buckskin Tr.
St Charles, Il 60175

LETTER 1254

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments---Groundwater Usage

Dear Sir:

Table 4-4 on page 4-19 is in error by indicating that there is only a minor amount of groundwater usage by rural domestic and commercial/industrial users at the Illinois SSC site. If over 30,000 people using private wells can be termed minor, then why not place the SSC to the east of Fermilab rather than to the west -- after all, there's only a minor amount of people in that region also. What is important is that anticipated growth in the Fox Valley area will only continue to add to this so-called minor use. It's obvious that the DOE still is not aware of the numbers of people and the numbers of private wells in the region of influence. This can only be due to the failure of our own State officials to keep the DOE informed. You simply cannot ignore the numbers of people involved at the Illinois site.

1 Page 4-21 of the EIS states that "groundwater use locally exceeds recharge to the most heavily developed aquifers in Arizona, Colorado, Illinois and Michigan". It then goes on to say that overdraft is not large or extensive in areas in Arizona, Colorado or Michigan. This portion of the EIS doesn't specifically mention Illinois, but by leaving Illinois off of this last list, it naturally means that the overdraft in Illinois is large and is extensive in the area that it covers. This is a very significant point and is one of the major reasons why Illinois should not be selected. Not only does the Fox Valley region have a major overdraft to its water supply, we are the only state to have the extreme numbers of people living in the shadow of the SSC who will be affected by any further drawdown to their precious water source.

Page 4-21 is also wrong in stating that a decrease in groundwater use is expected in the future for Illinois as some municipalities transfer to surface water sources. We have

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

previously pointed out that no city in Kane County has any plans to transfer over to Lake Michigan water as Table 4-4 suggests. This can be verified through the Illinois Water Survey. The EIS is blatantly wrong in assuming groundwater usage will decrease in the SSC region. In fact, due to anticipated growth patterns for Kane County, the only logical conclusion is the groundwater usage will continue to expand. The most recent figures released by the Northeastern Illinois Planning Commission indicate that population numbers for Kane County are expected to nearly double by the year 2010. This is without the SSC being built. To a large extent, this growth is expected to occur in the unincorporated rural regions of Kane County. This automatically means increased use of private individual wells. Growth in St. Charles, Geneva, Batavia and especially Aurora is predicted to be substantial. All of these communities obtain their water supply from groundwater sources. And it must be pointed out again that they have absolutely no plans to switch over to Lake Michigan supplies. The EIS is clearly in error and the DOE better get verification of facts before it believes everything that the Illinois ENR presents them. An increase in groundwater usage will occur at the Illinois site. The already overdrafted regional water supply can only be expected to worsen if the SSC is allowed to invade our communities.

Sincerely,

Christine Davis
1741 Marseillaise
Aurora, Illinois 60506

LETTER 1255

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

October 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-64/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments---Cost to Illinois Taxpayers

Dear Sir:

In all the hoopla over the number of jobs which this project would supposedly create, the State of Illinois and the DOE have avoided discussion of the costs to Illinois taxpayers.

Those costs are significant and should be considered in evaluation of the project. They include the publicly known subsidy of $570 million from the State of Illinois to the Federal government plus its financing cost, plus costs of lost property tax base, local government committments and lowered property values.

The value of the secret sealed incentive should also be included, but of course only James Thompson supposedly knows that amount and is not telling.

The result is that the State of Illinois will be paying $1.7 Billion for this project, plus the value of the secret sealed incentive and its financing cost.

But most of this amount is not considered in the socioeconomic section of the DEIS. The cost of the publicly known incentive and the secret incentive are not part of the DOE assessment. DOE answers that they are not allowed to consider these costs, even if they are public knowledge, because of the Dominici amendment.

This being the case, I submit that this process of site evaluation is flawed because of the obvious inconsistancy and is therefore invalid.

P.O. Box 104, Wasco, Illinois 60183 Phone:312-584-4244

If a valid socioeconomic assessment is to be made, it must consider all costs, including the publicly known incentive and the secret incentive. To hold that a comprehensive review of socioeconomic effects has been made when these costs are omitted is lack of rigor and outright dishonesty

The Dominici amendment supposedly protects the small states in this siting evaluation. But in fact, the effect is just the opposite. This amendment allows the large states to make huge incentive offers, and allows them the luxury of not having to reveal the amounts of these incentives to the taxpayers that will pay them.

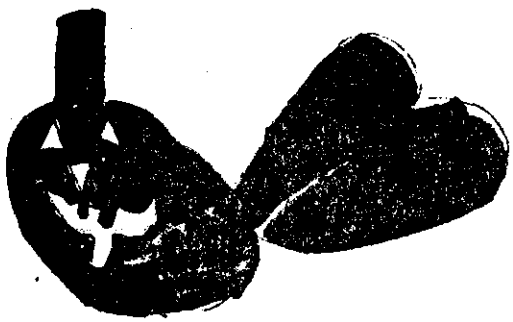
This situation is an outrage. It is a result of the combined efforts of the states seeking the SSC and the DOE to deprive the taxpaying citizens of their homes, their land, their privacy, and even their right to know how many of their tax dollars are to be taken for this dubious project.

Sincerely,

Janet Fiel
6N550 Splitrail Lane
St. Charles, Ill 60175

LETTER 1256

Dear. Dr. Wilmet Hess,
Please don't let the
S.S.C. come to Illinois.
No S.S.C in Illinois.
LOVE Brad Hadomik (age 5)



LETTER 1257

Sierra Club Great Lakes Chapter
506 S. Wabash | Suite #525 | Chicago, IL 60605 | (312) 431-0158 October 10, 1988

David Scheibelhut
5539 E. Lake, Unit B
Lisle, Ill. 60532

Dr. Wilson Hess
Chairman
SSC Site Task Force
ER-65, GTN
Office of Energy Research
US Department of Energy
Washington, D. C. 20545

Dear Sir:

1 The Great Lakes Chapter of the Sierra Club offers its comments on the SSC EIS as it relates to the Illinois proposal. We believe that the SSC can be safely located in Illinois, but only if built and operated with appropriate environmental safeguards. For that reason we neither endorse nor oppose the Illinois proposal, but only offer comments on how to do it properly.

Wetlands

2 Our main environmental concern is impact to wetlands. The EIS is currently too general to come up with an accurate estimate of wetland impact. It does not show off-site impacts to wetlands by access roads, construction easements, and the like. It presumes that current wetland maps are accurate; unfortunately, everything in these maps must be field checked before being used.

3 The 850 wetland acres estimated by the EIS for Illinois is much too high because most of the facilities will be underground. Because there is considerable flexibility in siting surface facilities for the SSC, most if not all wetlands can be avoided. We believe that the DOE should set as its goal to have no impact to wetlands, and expect that they will come close to that goal. The federal government and the state of Illinois have strict wetland and flood control regulations which DOE must follow.

4 Wherever it is finally located, the SSC must receive a Section 404 permit before any modifications to wetlands take place, even on DOE property. The current EIS does not contain sufficient information for such a permit. Before applying we expect DOE to have field checked impacted areas. We will oppose any permits for the destruction of high quality wetlands and expect appropriate mitigation plans for the rest. If it is possible to move a surface facility to eliminate a wetland impact, we will insist that it be moved. Wetland studies should therefore be completed before land is acquired by the government. It is not acceptable to destroy a wetland just because the state condemned the wrong land.

Flooding

5 The standard for flood control in the EIS seems to the 100-year flood level used by FEMA. This 100-year level is used to control access to federal flood insurance but is a poor standard for the SSC and other new construction. Over the proposed life the the SSC there is a better than one third chance of a hundred-year flood. A better standard for crucial facilities is to avoid a "project flood" rather than the "100-year flood."

Conclusion

6 The current EIS is not adequate for judging how the different proposals impact wetlands. The EIS can better estimate wetland impacts by eliminating areas with only underground facilities and by including impacts due to construction easements and road improvements. The siting process would also be helped by superimposing wetland maps over the map of the SSC ring in the EIS. The EIS should also consider which sites should be located well above the 100-year flood level. Regardless of the state selected, a section 404 permit application will have to investigate these issues in much greater detail.

Sincerely,

David Scheibelhut

DMS-mm

David Scheibelhut
Great Lakes Chapter Sierra Club

LETTER 1258

NC Draft EIS
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U.S. Dept. of Energy
Washington, D.C. 20545

Dear Sir:

I am writing to protest the possible siting of the SSC project in the State of Illinois. Illinois is the worst possible site for many reasons, the two most prominent being; the number of modifications needed to accommodate the project as cited on
1 the table of section 3-3 in the EIS, second being the unacceptably large number of relocations required
2 by the project as cited in table 3-6 of the same report. I also wish to protest the inclusion of the testimony
3 of a Fred Ullrich at Waubonsee High School on Oct 7, 1985 Mr Ullrich's testimony in no way related to the EIS but was a vile attack on those speaking

against the project. There were some others who also spoke in support of the SSC but in no way related their comments to the EIS. I also request that their testimony be stricken from the record of the hearing. Thank you for your consideration in this matter.

Yours truly

28432 Cedar Ct
Elburn, Ill. 60119

LETTER 1259

Oct. 10, 1988

Dear Sirs:

After attending the Hearings on the S.S.C. in Decatur, I decided I should write you and
1 let you know why I'm opposed also to the S.S.C. being sited here.

I'm a wife of a farmer who is being totally wiped out of one farm site on the Heat Corridor. It's been a "terrible" ordeal in our farming community the
2 past 8 months. I've never seen so many neighbors emotionally upset about anything such as this. (And I've gone through lots of things in the past 50 years).

I respect alot of peoples opinions why they do want it, but the majority people are strictly looking for jobs around here. Don't they realize it's only temporary? Besides our area is growing very
3 fast and I'm sure there will be plenty of jobs elsewhere. But my main point is, it's a temporary job for them, but yet it's okay to displace how many farmers of their "life-time" work! America is really in trouble cause the people don't care who they hurt anymore.

(Page 2)

I just hope our D.O.E. thinks more highly of us.

Even if we weren't in farming and lived here, I still wouldn't want it around this populated area. It will totally affect our water and how can you say it won't. And it will effect it in diverse ways. Besides possibly drying up
4 wells, it could contaminate others. Also, we already have drainage problems running off to the Big Rock area. What will happen to little Helch Creek when it can't handle the over-flow of water? I've seen it when we just get a 3" rain, how it swells into the farm land adjacent to it.

Please locate the S.S.C. in
5 another state and let us live the rest of our lives in this lovely farming area in peace.

Thank-you for letting my opinion be heard.

Mrs. Marion Long
Dauberman Rd.
Kaneville, Ill. 60144

LETTER 1260

Dr. Hess

5.3.3 Climate and meteorology

Please note that winter temperatures are extreme. However, since these statistics (National Oceanic and Atmospheric Administration 1974) we have had the coldest winter and hottest summer (1988) on record.

1 The First Penetration records are over 46 years old. Precipitation records 13 years old. Maximum 1hr & 6hr rainfall 26 years old. The Wind tables are 20 years old. This is old data. Why weren't the last 20 years input put into these statistics? Is it because we have greater extremes in the past 20 years?

Sincerely,

Connie Leal
1061 Ramwood Drive
Aurora, Il 60506

LETTER 1261

Dear Sir:

I am writing to register my opposition to locating the SDC located in Illinois.

Our property may be directly affected by the construction of the tunnel. However, my primary opposition concerns the impact on the environment – the loss of prairie and wetlands, prime farmland, water and the lack of public services available to an increase in population.

Also, I wonder what the tunnel will be used for when it becomes obsolete.

Sincerely,
Carol Pascher

1 October

IIA.1- 2413

LETTER 1262

9831 Seymour Road
Grass Lake, MI 49240
October 10, 1988

Dr. Wilmont Hess, Chairman
SSC Site Task Force
Office of Energy Research ER-65, GTN
Department of Energy
Washington, DC 20545

Dear Dr. Hess,
I am opposed to locating the Super Collider in Michigan.

1 After reviewing the draft environmental impact statement and attending the public hearings, I'm not convinced that the valuable wetlands and other natural resources can be preserved and I think the claim that they can be replaced is ridiculous.

2 Individuals who think they will benefit from it's construction have created loud support for it. However, everything has its price. Information concerning the trade-offs have been ignored. The price is too high, especially considering the fact that potential benefits to our society are questionable. Rustrum Roy, Director of Science, Technology, and Society Program's at Penn State and a professor in solid state physics, testified before the House Science and Technology Committee. He referred to it as a super toy which would benefit only a fraction of the engineering and science community. He stated that it would create competition rather than international cooperation with Europe.

3 I, also, do not think that the compensation offered to residents is fair. Many people who own farms and homes will be selling their property at a premium. The rest of us who reside in the area will experiance loss of land value and higher taxes. My home is only a few miles from the "abort" area a proposed radioactive dump. Although the DOE may feel that there is no threat, that is not the public preception. It is the public preception which effects land value.

4 In reality, the outcome of such a dramatic change is unknown. It is unfair to provide only for expected changes. We need provisions to compensate for all losses, even those that are not anticipated at the outset.

Sincerely,

Joanne Buckley

cc: Gov. J. Blanchard
Sen. C. Levin
Sen. D. Riegle
Rep. C. Purcell
Rep. P. Hoffman
Sen. N. Smith

IIA.1- 2414

LETTER 1263

9601 Seymour Road
Grass Lake, MI 49240
October 10, 1988

Dr. Wilmont Hess, Chariman
SSC Site TASK Force
Office of Energy Research ER-65, GTN
Department of Energy
Washington, DC 20545

Dear Mr. Hess,

1 The Super Collider should not be built in Michigan. The benefits do not outweigh the risk. The DOE does not have a good track record with ground water and wetland protection. I do not think, after listening to the public debate of the issue, that we have adequate knowledge and technology to build such a project and safeguard wetlands and resources at the Stockbridge site.

2 High energy physcists hoping to build their dream tool claim it will expand our knowledge of the cosmos or will change our view of ourselves. That is not good enough; it is not worth the risks. Any area of study, even studying the plants and animals already in the Waterloo area, will do the same. They want to have bigger facilities then those in Europe. The scientific community strives to be an international cooperative community. We should not let them, at such great risk to our resources move in the wrong direction. Other scientists, such as Phillip Anderson, a Nobel Prize winning physicist, and Micheal J. Moravscik, a Professor of Theoretical Physics at Oregon State University have stated that such big, competitive projects are not productive. I agree with them.

3 Furthermore the process of encouraging public support has been unfair. Many residents, hoping to benefit from the sale of their land, have created a vocal support for the project and negative effects have been ignored. There is no plan for compensating those of us who live near the ring and may experience decline in land value. Everyone suffering loss will eventually have to be compensated, if you expect to be fair. We cannot afford this project.

4 Public discussion and the environmental impact statement raises too many unknown. which simply cannot, realistically, be addressed. I doubt if the project should be built and am certain it does not belong at Stockbridge.

Sincerely,

Dawn R. Grabemeyer
Dawn Grabemeyer

cc: Gov. J. Blanchard
Sen. C. Levin
Sen. D. Riegle
Rep. C. Purcell
Rep. P. Hoffman
Sen. N. Smith

LETTER 1264

Oct. 5, 88

To Dr. William Ness:

I couldn't be present at the recent SSC hearing.

I would, however, like to express my disapproval of utilizing Illinois as a site. I am convinced this project would negatively affect the environment and cause crowding and congestion in our rural Oswego and immediate vicinity. Put the project in another state where more people want it. I don't want a cent of my money allocated to such a project here. Jan Radin

LETTER 1265

Village of Hanover Park

Municipal Building
2121 West Lake Street
Hanover Park, Illinois
60103-4398
312 837 3800

Sonya A. Crawshaw
Village President
Sherry L. Craig
Village Clerk
Marc G. Hummel
Village Manager

Hanover Park

October 10, 1988

SSC Draft EIS Comments
Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65 GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Dear Dr. Hess:

As an elected official in a community nearby the proposed SSC site in Batavia, Illinois, I strongly support the siting of the facility at, or adjacent to, Fermi Laboratory. The SSC project is supported by residents of the Village of Hanover Park.

1 It is my belief the draft Environmental Impact Statement (EIS) overstates environmental concerns of the project. Due to the existing Fermilab, much of the required infrastructure for a facility, the magnitude of the SSC, already exists. This pre-existing facility and infrastructure, tied with known geological data, should make the Batavia, Illinois site the designated choice.

I strongly urge selection of Illinois as the superconductor supercollider site.

Sincerely,

David A. Berkey, Trustee
Village of Hanover Park

DAB:jb

IIA.1- 2A16-A

LETTER 1265 (CONTINUED)

LETTER 1266

Dr. Hess: Volume IV Appendix 5b.
After the hearings in Illinois on
October 6-7th it is noted that Common-
wealth Edison has the highest utility
1 rates in the nation. Won't this cost
the D.O.E and the U.S. Taxpayers the
highest energy cost of all seven sites
This information was published in the
Chicago Tribune Oct 8, 1988

Sincerely

John Lial

LETTER 1267

5 Circle Court
Montgomery Il 60538
October 11, 1988

Dr Hulet Hess Chm
SSC Task Force
Dept of Energy
Washington, DC 20545

Dear Sir:

I would like to be counted along with the many others who feel there are better locations for the SSC project than in Illinois. Illinois does not need the SSC!! There are all too many building programs, highway projects and what have you, already going on & the inconvenience to the citizens is being felt by these activities. We do not need further inconvenience and or damage to properties, communities or roadways, that would occur because of this "scientific experiment". The benefits would be minimal & only to a select few rather than to the majority of taxpayers.

1

Put the SSC somewhere in a location where fewer people would be inconvenienced & have their lives

2

and families disrupted. It is said to be safe, but in case of an unlikely accident it would affect far fewer people if it were somewhere else than in Kendall County, Illinois.

Also, I think its very poor that all the advocates of the project are those who live in areas not directly involved. Gov. Thompson has grievances of other states backing the SSC for Illinois, it doesn't concern those grievances or affect their citizens so what do they care where it is built!?

We live in an area where the project would go under our house or at least close by & our access area is nearby also & we are very uncomfortable with all this.

Please give the SSC to a state where fewer people would be affected.

Thank you for reading our letter.

Sincerely
Victoria & Stanley Borucki

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1988 OCT 14 PM 3 06

225-775 88 - 14 (BOOK 6)

LETTER 1268

(1-) Dear Sir, Oct 5, 88

I am testing against the SSC in the state of Illinois. I have spent 3 years in the Army and I have worked on nuclear intercontinental missile station in Germany. I know what nuclear radiation can cause. Not only death but also, cancer as well as breathing problems.

What good will the SSC cause when the radiation leaks and people die like the people in Russia. People from other states like my sisters will be afraid to visit me because of the SSC. And, yet I should give up my nearly purchased home and move to another state just so my children can live a normal life.

As a former member of the DOD (Dept of Defense) to a member of the DOE

1

(2)

If you can please put this SSC on the moon. Why use people like myself and my family as test objects. After the [redacted] russian news seen Moscow and hundreds of people dying and suffering why does the United States have to do the same thing? Back in 1977 a helicopter was lifting a nuclear warhead and dropped it accidently. I ran as fast as I could and prays as I ran. A day luck just happen to be on our side that day. The warhead was dright but, I did question myself that Nuclear Energy was not the answer. I felt that someday it would hurt us and it did in Russia.

I say again please do not put this SSC in Illinois /or/ in any other state. Put this SSC on the moon.

(-3-)

If Illinois does become the site for the SSC. My family as well as other family will most likely move far far away from Illinois. My family comes first and remember that because a lot of us Veterans feel the same way.

I could say more but, I won't because I feel I said enough to get my point across.

But, do me one favor please, take a poll with veterans especially the young ones who are at this moment working on Nuclear warfare and see how they feel about the SSC. 3/4 of them will vote against it because of the danger of radiation.

Sincerely yours,

Phil Powers.

402 North Kendall St.
Aurora, Ill 60505

LETTER 1269

SSC Draft EIS Comments
Dr. W. Hess, Chairman, SSC site Task Force
Office of Energy Research, E R-65
C T N Department of Energy, Washington
D.C. 20545

Dear Mr Hess:

I are writing this letter as a final plea to place site the SSC in another state, not Illinois. For the last nine months, my family, life style, and energy has gone to fighting the SSC from coming to the Fox Valley area. You have pitted neighbor against neighbor, friend against friend on this issue. It is not welcomed. Do you know what is so funny about this, all the people that want it in Illinois go tell tell them, oh, we'll put it in your town, I bet they would have a fit!!! It should be placed in a state who will welcome it. If the people voted on it, like in Texas, they want it. We had no say. Even our precious Gov. Thompson was quoted saying if it were his house he'd be screaming, too.

LETTER 1269 (CONTINUED)

If you read this letter, which I find hard to believe that you will - please sir, people are involved, 20,000 are against it, not a handful. I, myself, will continue to fight this SSC legally so it will not come to the Fox Valley Area

Thank you

Bonnie Jacob
36W315 Barton Dr.
St. Charles, Il 60175

RECEIVED
1986 OCT 14 PM 3 08

LETTER 1270

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

Oct. 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
EM-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, DC 20545

Attn: SSC DEIS Comments - Siltation of Streams

Dear Sir:

Just as we've expected, the EIS makes it very clear that siltation of our streams and waterways will occur if the SSC is sited in Illinois. Appendix 7 page 40 indicates that sedimentation ponds will be required to partially control the water removed from the shafts and tunnel during the dewatering and construction process. The key word here is that this water will be partially controlled and not completely controlled.

1

A total of 22 ponds will be located around the ring at the various E and F access shaft areas. The EIS states that each pond site may not be large enough to allow sediments to properly settle out. Why is this so? Why will sedimentation occur and why won't the Illinois ENR's design of these ponds properly handle the large volumes of water removed from the tunnel?

To begin with, sediments can be expected to occur in the infiltration water because of the nature of the tunneling process. The use of tunnel boring machines actually breaks up the shale and dolomite deposits into small chunks - results of similar boring operations indicate that as much as 17% of the excavated rock will be less than 1/200 inch in diameter. Crushed rock of this small size can easily be held in suspension by the water that will be entering and covering the tunnel floor. Removal of this water carries the suspended particles up into the sedimentation ponds. This problem is anticipated, and that is why the sedimentation ponds exist. Their sole purpose is to allow all sediments to be removed from the water prior to allowing it to enter the normal drainage pattern of the surrounding countryside. However, the EIS says they may not be large enough to allow enough time for proper settlement to occur. Why?

2

There are 19 ponds designed to be 1/3 acre in size which hold approximately 500,000 gallons each. The exception is at site F3 where 3 ponds each 2 acres in size are planned. This allows for 10 million gallons of storage at just this one site. This larger holding area is required because of the massive amount of water that is expected to infiltrate the tunnel over the 5 mile stretch between E3 and E4. As much as 5,200 gal/minute/100 feet is expected to flood the tunnel in that area during construction. If you multiply this rate by the 5 mile distance involved, you can calculate that as much as 20 million gallons of water will be pumped from the tunnel and into these three 2 acre ponds. However, they only hold 10 million gallons of water. What happens to all the excess water that cannot be held by those ponds? And how can the Illinois ENR expect the finely ground silt to be removed when this water can't possibly remain motionless long enough for proper sedimentation to occur?

3

P.O. Box 104, Wasco, Illinois 60183 Phone 312-584-4244

This same problem exists at the other smaller 19 ponds. They are designed to hold only about 1/2 the volumn of water that can be expected to flow into them day in and day out. How can proper sedimentation occur? Simple, it can't. Will this water be allowed to overflow the ponds and enter the natural drainage system around each E and F site? If so, suspended particles of finely ground dolomite and shale can be expected to infiltrate our many gullies, creeks, lakes and streams and eventually even find their way into the main drainage channel of the entire area - the Fox River.

4 After the preliminary EIS hearings held in February, the DOE mentioned that one of the problems of the Illinois site was the possible siltation of streams which may occur. Now that we know more about the Illinois geology and design it becomes clear that siltation of our streams is a strong possibility. This cannot be accepted, and is simply one more explanation of why DOE personnel term the Illinois SSC proposal as "dirty".

Sincerely yours,

Richard A. Smith

Richard A. Smith
39W870 Pruntree Lane
St. Charles, IL 60175

LETTER 1271

2395 Goldenrod
Aurora, Il.
60506

October 10, 1988

Dear Dr. Hess,

As a strong supporter of the SSC, I believe that the most logical and cost effective site is in Illinois. I am a Registered Professional Engineer in the State of Illinois, an employee of Fermilab and a volunteer for the SSC project office in Illinois. I have not read the entire EIS document, but have read the summary and other various parts of the statement. I believe I understand the major advantages and disadvantages relevant to construction at all seven sites.

I am aware that those who oppose the siting of the SSC in Illinois have some valid, if personal, concerns about this project. However, the benefits to general population mitigates these concerns. If the SSC were to be sited elsewhere, I have no doubt the economic consequences to this area would be devastating. I moved to this area from another state to work for a company which has since filed Chapter 11. Unfortunately this has not been an uncommon occurrence in the Fox Valley region. I have also seen my father, who is a Northern Illinois Dairy farmer, have to work a full time job as well as farm, out of economic necessity. The unemployment rate in Illinois exceeds the national average, and the Fox Valley area has one of the highest rates in this state.

Based on the EIS alone, you will find Illinois to be the best site location. If the benefits to the area are taken into account as well, there is no doubt that Illinois must be your choice.

Katharine Jaeber

LETTER 1272

CITY OF DURHAM
NORTH CAROLINA

Department of Water Resources

CITY OF MEDICINE

October 4, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65, GTN
Office of Energy Research
U. S. Department of Energy
Washington, D. C. 20545

Subject: SSC DEIS Comments for North Carolina Site

Dear Mr. Hess:

1 According to Page 2 of Volume 1 of the DEIS document, approximately 2100 letters of comments were received by the Department of Energy (DOE) on the scoping of the SSC. All these, plus the oral comments received by DOE at the public meetings, were considered in the preparation of the DEIS document.

2 In reviewing the DEIS, I did not find any reference or consideration given to the Water Resources aspect with regard to the North Carolina site and how the SSC project may impact the City of Durham's future intention of impounding the Upper Flat River. I wrote you on March 14, 1988, about the City's plan and the four dam sites under consideration. I am re-submitting my March 14, 1988, letter (attached) to you for consideration and hope that you will address my comments in the Final EIS documents.

3 In addition, I would also like to bring to your attention that our Eno Wastewater Treatment Plant's planned expansion has been held up by the requirement of an EIS. Our interim up-grade from 1.5 MGD to 2.5 MGD was completed in July, 1987. Further expansion from 2.5 MGD to a permanent 10 MGD plant may be delayed until the mid or late 1990's. In the DEIS, under 5.5.8.1, the Sewage Facilities Section shows completion date for the 10 MGD permanent Eno WWTP to be 1990. In light of what is ongoing, 1995 would be a more realistic target date.

101 CITY HALL PLAZA, DURHAM, NORTH CAROLINA 27701
(919) 683-4381

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

Dr. Wilmot Hess
October 4, 1988
Page -2-

4 Beside the Eno WWTP, information on the same page concerning the City's Northside WWTP is also incorrect. Our present Northside up-grade, due to be completed by the end of 1988, involves no capacity increase. The plant will remain as a 10 MGD plant with refined treatment processes to produce a better quality effluent. The present dry weather flow is about 7 MGD with the remaining plant capacity projected to be taken up in 12 to 18 months.

Sincerely,

DEPARTMENT OF WATER RESOURCES

A. T. Rolan
Director

ATR/dg

Attachment

cc: Mr. Orville Powell
Mr. Donald L. Cordell
Mr. William L. Dunn
Mr. John P. Bond

LETTER 1273

10/8/88

Dear Sir -

If you truly investigate North Carolina you will find mistrust of Government, poor education (we're 49th to bottom on S.A.T scores & we won't let your kids have our spots at school of Math & Science) racial inequality &

IIA.1- 2430

racial problems, road problems and distrust of D.O.E. due to accidents & outright lies that have been exposed. Not to mention drug use in the D.O.E – We have record of it all! Martin is a lying SON OF A bitch!!!!!!
AND THIS COMES FROM A REPUBLICAN.

From North Carolina

N.C. Infant Mortality Rate Increased 4.3% During '87

RALEIGH (AP) — The death rate for babies in their first year of life in North Carolina increased last year after four years of mild improvement, state officials said Wednesday.

The 1987 death rate rose 4.3 percent, from 11.6 to 12.1 deaths per thousand births. The rate for black babies—already nearly twice as high as for whites—worsened more dramatically than it did for whites.

"So many people are not getting prenatal care," said David Flaherty, secretary of human resources, at a news conference. "Some of it is because they don't have money for it. Some of it is because they don't know how important it is."

There were more births to women who received limited prenatal care, to teen-agers and to women who had less education and were not married. All these factors are associated with increases in premature births and infant deaths.

"We will not get a handle on this problem until all infants and pregnant women receive early and high-quality prenatal and infant health care," Flaherty said.

In 1984, North Carolina had one of the worst infant-mortality rates in the country, ranking 46th among the 50 states. More recent national data are not yet available.

The total number of babies who died before their first birthday in North Carolina was 1,134 in 1987—85 more than the previous year. There were 93,431 babies born in the state during 1987.

The increase in infant deaths comes despite a recent expansion of Medicaid benefits to pregnant women. The expansion provided health care coverage for more pregnant women too poor to afford medical care but previously unable to qualify for Medicaid, the government-financed program that pays medical bills for poor people.

State health officials struggled Wednesday to explain why fewer women are receiving prenatal care despite the Medicaid expansion. Among the factors they cited:

Fewer doctors are delivering babies in rural areas. Many family practice doctors have stopped serving prenatal clinics in 21 of the state's 100 counties because of soaring malpractice premiums and the rise of lawsuits associated with complicated deliveries.

Some low-income, working women may not have health insurance to cover the cost of prenatal visits. Dr. Ron Levine, state health director, said he was hearing anecdotal reports that more women have jobs that do not provide health benefits.

Dr. Richard Nugent, perinatal care director for the Division of Health Services, said he was not able to obtain data on income levels of women whose babies had died last year. Some women may not have been able to arrange transportation to a doctor or clinic for care.

"Poverty is a big explanatory factor," Nugent said.

Supreme Court Decision Sparks Disagreement On N.C. Sentences

RALEIGH (AP) — A U.S. Supreme Court decision this week should compel the state Supreme Court to reverse a ruling upholding the state's death-sentencing procedure, some lawyers and law professors said.

But a top lawyer in the state attorney general's office strongly disagreed, arguing that if the U.S. justices thought the state's procedure was invalid, they would have said so.

The U.S. Supreme Court ordered the state court Monday to reconsider the death sentence of a North Carolina inmate in light of a ruling in June that struck down Maryland's death-sentencing procedure.

The lawyers and law professors said the decision signaled the U.S. justices' opinion that the Maryland ruling also invalidated North Carolina's sentencing system.

"I think there is no other way of reading it," said Ann B. Petersen of Chapel Hill, who represents Oscar Lloyd, the death row inmate involved in the case.

If she is right, the sentences of some or all of the 80 inmates on North Carolina's death row could be overturned.

But Andrew A. Vanore Jr., chief deputy attorney general, said the state court should reaffirm North Carolina's procedure.

"Of course, the other side feels differently about it, and that is always going to happen when the court leaves room for some argument," Vanore said. "We don't allow there's any room here, but we don't say the order was crystal clear."

The U.S. Supreme Court set aside a state Supreme Court decision upholding the death sentence for Lloyd, who was convicted in 1985 of beating and stabbing his former boss at a Cherokee County laundry. The U.S. justices sent the case back to the state court for reconsideration in light of the U.S. Supreme Court's ruling in the Maryland case, known as Mills vs. Maryland.

"If a legal issue has to do with whether a requirement of that jurisdiction agree unanimously on mitigating factors is constitutional, Mitigating factors are circumstances, such as age, that tend to make a defendant less culpable.

The state Supreme Court ruled 6-2 in September that North Carolina's procedure did not have the defects that concerned the U.S. Supreme Court in Mills vs. Maryland. But Ms. Petersen said the ruling Monday was a message to the state justices that the decision, State vs. McKoy, was wrong and should be overturned.

"I don't think the order directs them to do anything except reconsider [Lloyd's death sentence] in light of Mills, but I think it is a clear signal to them that what they did in McKoy was wrong," Ms. Petersen said.

That assessment was shared by Richard A. Rosen and Louis D. Bullock, law professors at the University of North Carolina at Chapel Hill, and by Robert S. Mabley, director of the N.C. Death Penalty Resource Center.

In the McKoy ruling, they said, the state justices noted that the U.S. Supreme Court had refused, in the wake of the Mills decision, to overturn the death sentences of two North Carolina inmates while setting aside a Maryland death sentence. The different treatment of these cases, the state justices said, made it impossible for them to conclude with certainty that Mills invalidated the North Carolina procedure.

J. Gregory Wallace, clerk of the state Supreme Court, said the state justices would decide in a conference what procedure to follow in reconsidering Lloyd's death sentence. He said he expected the U.S. court's order to arrive at the state court in three or four weeks.

Union Charges Sexual Harassment At Plant In Raeford

RAEFORD (AP) — With the first union vote ever at the House of Raeford scheduled for Friday, a group of union representatives and one employee have charged that supervisors at the plant sexually harass women workers.

Plant Personnel Director Erick Woods said the company knows nothing about harassment of workers and has never had any formal sexual harassment complaints.

He said the union's charges are simply a way for it to get people's votes during a Friday election which will determine if the United Food and Commercial Workers Union can represent the 1,000 workers at the plant.

Tina Bethea, who has worked on the line at House of Raeford for more than [illegible] years, said she has been sexually harassed by her supervisors.

"I've experienced it myself and seen it happen to other people, too," Ms. Bethea said Tuesday at a news conference outside the gates of the plant. "They [supervisors] don't care. They let us right out in front of people."

When asked exactly what she meant by sexual harassment, Ms. Bethea said, "The supervisor asks you 'What are you doing this evening? Let's go get a motel tonight.' He'll come up behind you and rub . . . against you. He might go down the line and kiss each female."

She said the women who go along with the supervisors' suggestions get the easier jobs. Those who resist get the more difficult tasks, said Ms. Bethea, who makes $4.40 an hour working the day shift.

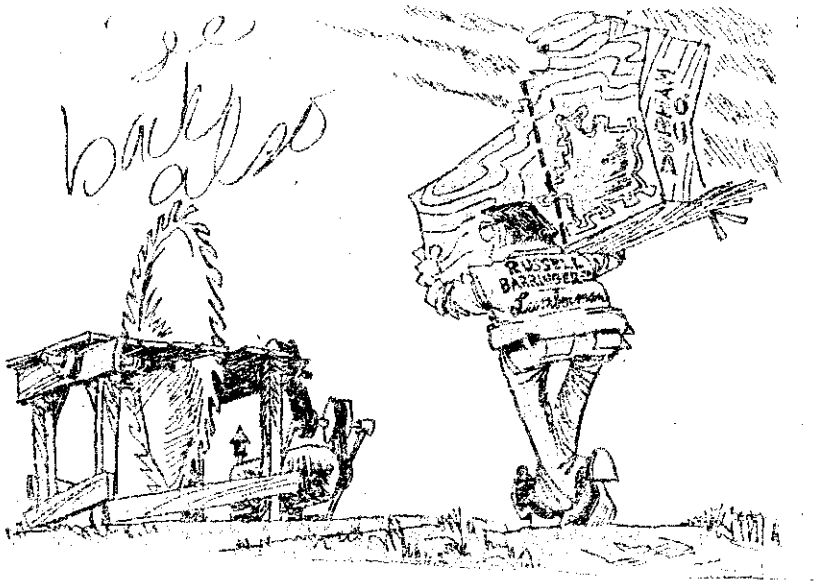
Officials from the food union and other unions around the area raised a point done at the plant [illegible] Ms. Bethea's statements.

Norma Jeanne Campbell of the Communications Workers union said 54 percent of 150 workers polled at House of Raeford said stopping sexual harassment is "a top priority."

UNDER FAIL

The Bull's Eye
Every Monday
Durham Morning Herald

LETTER 1273 (CONTINUED)



Daily Alto

From Alto Paso

SUNDAY, OCTOBER 9, 1988

Science/Medicine

Space Station Should Precede D

Now that we are back on track with the shuttle, where do we go from here? It's important to have our future in space planned, for the road is an expensive one and we cannot afford to fumble.

The obvious dream goal is that of a manned flight to Mars and its exploration. If we successfully do, we will explore a world that is not too far away and that in some ways is like the Earth. It is smaller and cooler, but it has a thin atmosphere, a 24-hour day and seasons. And it has mysteries, too—dried-up river-beds that once may have flowed with water, volcanoes that once may have spewed lava, a vast canyon that may betoken a one-active crust.

Yet the task of sending human beings to Mars and bringing them back alive is so enormous and so barely within the realm of possibility that neither the United States nor the Soviet Union can undertake it without back-breaking effort and unimaginably suspenseful fears for the safety of the astronauts. It becomes marginally less dangerous if the United States and the Soviet Union pool their resources and expertise, making the Mars Project a global effort rather than a national one. That might encourage cooperation in other directions, too; and since the problems we now face on Earth are global in nature and require global solutions, that might be an even bigger result of this difficult project than the exploration of Mars would be.

Still a trip to Mars from Earth-base is found to be a disaster not easily repeated. It would be like the trips to the moon 20 years ago, which, however spectacular, seemed to lead to nothing beyond and deeper.

It is absolutely necessary that we build a base other than Earth for our ventures into space—a base with a lesser gravity and one without an interfering atmosphere.

The logical beginning is with a space station, one larger and more versatile than the Soviets have set up in space, one that would be continuously inhabited by crews working in shifts. To the space station, the parts could be brought out of which new space vessels can be built. The intact vessels could not be lifted off Earth without vast rocketry, but the parts could be brought up much more cheaply and safely. The vessels, once built, taking off under weaker gravitational pull than they would from the more distant Earth, and with the initial kick of the space station's orbital velocity, would need less fuel and would carry larger payloads.

With space-station-as-base, it could be far easier to reach the moon and set up a permanent base there. The moon could then serve as a huge mine. Suitable chunks of the moon's surface can be fired into space by means of "mass-drivers" that use electromagnetic forces for propulsion. This would be relatively

Isaac Asimov

U Science

LETTER 1273 (CONTINUED)

Durham Morning Herald

DOE Official Calls Collider Hearing Extremely Helpful

By BLAIRE THOMAS
Herald staff writer

BUTNER — A public hearing on potential environmental effects of the Superconducting Super Collider proved "extremely helpful," a U.S. Department of Energy official said.

Richard H. Nolan complimented participants including a group opposing the project. Citizens Against the Collider Hurting CATCH, for speaking in concrete issues such as relocations and residential wells.

"There was the inevitable rhetoric but a lot of useful information was exchanged and that's what we were here for," Nolan said after the two-day hearing ended Tuesday evening.

"The anti-collider group proved that the forum was useful. They are very pleased," said Joe Gaston, the group's president. "DOE did a good job of having an open and fair hearing."

With 37 percent of the speakers opposed to the collider Haenn said he thinks the hearing would help the the anti-collider group's cause, although the organization will not cease its efforts.

"I can never relax until the final decision is made," Haenn said.

The hearing on a draft environmental impact statement released in August was part of the site selection process for the $4.4 billion federal science project.

Energy Department officials said all remarks on the draft statement would be considered in a final statement to be published in December after a preferred site is selected in November.

Seven states are competing for the project and the final site will be announced in January 1989.

A sparse crowd attended the final hearing session Tuesday with about a dozen people speaking.

"I am opposed to the SSC in this very sensitive area," said Rocky Herndon, vice chairwoman of the Durham County commissioners.

Mrs. Herndon said the Triangle J Council of Governments has not been consulted about the project by the state.

The draft statement includes plans for a seven Transportation Improvement Program approved for the area, which means the present road system would have to accommodate construction traffic for the project at least until the 1990s.

Some of the existing roads "are already worn, very badly," Mrs. Herndon said.

She also questioned the collider's effects on the Eno wastewater treatment plant and the loss of 593 acres of prime farmland if the project is placed in Durham, Granville and Person counties.

Wade Ellis, chief of the Morish Fire Department, said the department would be responsible for more than half the campus area in the state's proposal but does not have sufficient equipment or hazardous material training.

Nolan said the collider administration would be responsible for its own fire protection and emergency medical services.

Written comments on the draft environmental statement can still be made. They should be mailed to the Energy Department and postmarked no later than Oct. 17.

DURHAM, N. C., WEDNESDAY, OCTOBER 12, 1988 NO. 12

Durham Morning Herald

Richard J. Kosper
President And Publisher

William E. H. Hawkins, Executive Editor
Jon C. Horn, Managing Editor
John H. Adams, Editorial Page Editor

Editorials

Helms Could Be Key To Collider Decision

Not much has been said about this, but here's a hunch that U.S. Sen. Jesse Helms, R-N.C., could become the key player in the determination of whether the Superconducting Super Collider lands in North Carolina.

The final decision on the project will be made by President Reagan, probably as one of his final acts in office. He will be have the recommendation of the U.S. Department of Energy, which might not choose North Carolina, but he will not be bound by it.

Furthermore, it's silly to think that politics will not enter the picture, especially inasmuch as all of the seven sites being considered in the final countdown are suitable.

If politics does play a role, Sen. Helms' influence could be pivotal. Sen. Helms has been one of the president's strongest backers. Probably more than any other U.S. senator, Sen. Helms lit the torch for political conservatism across the nation.

Nonetheless, Sen. Helms has not tried to wheedle favors out of the president—at least not the big ones. Their friendship has been ideological and deep. Thus, Sen. Helms might ask in a position to call the president, "I have carried water for you for eight years. I have not asked for much, but you owe me this one."

Should Sen. Helms do that and should President Reagan acquiesce, the state's senior senator would accomplish for North Carolina more in a single act than in his 16 years in the Senate.

He could also be giving himself a retirement present. Sen. Helms has already talked about the possibility of not running for a fourth term. If he does not run for re-election, he will leave public office at the low point of his political career. His Congressional Club, once powerful nationally, is a mere shadow of its former glories. Hard-line conservatism does not stir the national soul as it once did. Retiring in 1990 might be virtually unnoticeable.

But leaving a monument, the world's most sophisticated scientific tool that might affect future technology in dramatic ways, would be hard to resist. ■

HQ-3811

Inges To Delay Restart Of S.C. Nuclear Plant

WASHINGTON (AP) — Seeking to "rectify past sins" in the operation of weapons reactors, Energy Department officials Tuesday announced new safety procedures that they said would delay the reopening of the Savannah River Plant but would not jeopardize the nation's nuclear deterrent.

Energy Secretary John S. Herrington told a news conference that the department "will not operate unsafe reactors. We will meet the defense needs of this country in a safe manner and an environmentally sensitive manner."

"We are about to embark on a program to restart, to move back to a safe operating level, these reactors . . . at the end of the year," he said.

Department officials had planned to restart one of three reactors at Savannah River as early as November, but now plan to begin a four-week "phased restart" that will begin in December, said Herrington's deputy, Joseph F. Salgado.

Salgado sought to calm fears about possible shortages of the nuclear weapons material produced at Savannah River, especially of tritium, which decays more quickly than plutonium, the other fuel produced there.

"We are comfortable that Savannah River will operate at a sufficient level to meet the tritium needs of the future," Salgado told reporters.

The news conference was called to defuse criticism of the Energy Department not only over the Savannah River Plant, located in Aiken, S.C., but also over radioactive contamination at another facility in Rocky Flats, Colo., and over allegedly lax security at weapons laboratories in New Mexico and California.

In related developments Tuesday:

■ President Reagan voiced concern about the safety problem during a meeting with top officials of the departments of Defense and Energy, chief of staff Kenneth Duberstein said.

Duberstein, in an interview with the wire services, quoted Reagan as telling the administration officials that "we are most concerned and most committed to making sure that all safety precautions are taken and that all rules and regulations be followed."

■ The chairman of E.I. du Pont Nemours and Co., which operates Savannah River under contract for the Energy Department, reacted angrily to charges that company employees had a lax attitude about nuclear safety. R.H. Heckert charged that du Pont was "caught in a political crossfire" between the Energy Department and Capitol Hill.

■ Officials said the shutdown of the Rocky Flats' main plu-

See Nuclear Plant/7A

LETTER 1273 (CONTINUED)

VOL. 95 DURHAM, N. C., SUNDAY, OCTOBER 9, 1988 NO. 9

Durham Morning Herald

Richard J. Kesner
President And Publisher

William E. N. Hawkins, Executive Editor
Jon C. Ham, Managing Editor
John H. Adams, Editorial Page Editor

Editorials

County Should Make New Watershed Maps

Anyone who doesn't mind getting his shoes muddy can walk on water—across the northwestern part of Falls Lake, that is.

For too long, the nonexistent headwaters of the lake have been a barrier to reasonable development in the watershed. Last week, the Durham County School Board, conducting its own assessment, convinced the Durham City-County Planning Department that what has been considered lake shoreline at all.

HQ-3811

he school board resulting fees but may have saved it about $1.8 million—the amount the school board would have had to spend to buy additional land to meet watershed rules for an expanded Chewning Junior High School.

The conclusion reached by the school board and planning department underscores two problems:

1. The county does not have the data it needs to enforce its watershed ordinance fairly.

2. Only a few landowners, such as the school board, have enough money to dispute what is known to be flawed.

Here's the problem:

When the U.S. Army Corps of Engineers mapped out Falls Lake, Raleigh's principal water supply, it envisioned a lake much larger than it is, particularly that portion of the lake northwest of I-85.

In fact, the lake north of I-85, even during flood stages, is nothing like the lake as mapped out by the Corps. Yet the old Corps maps were used as guidelines for the Durham County ordinance and are still in effect, unless protested and proved wrong, such as the school board did.

The county has recently made some new aerial photographs. But Paul Norby, director of the City-County Planning Department, says those photographs were taken from too great a height to be useful in fine-line distinctions. In other words, the county still does not have the maps it needs to know what land is outside the critical watershed area.

Therefore, property owners who dispute the old Falls Lake shoreline maps must go to the expense of proving their cases—which requires them to have their own aerial photographs made. The ordinance allows them to exercise that option—but it's an unreasonable requirement.

Falls Lake has cost Durham property owners hundreds of thousands of dollars by limiting the use of their land in order to protect Raleigh's drinking water. Furthermore, the county has known for years that the U.S. Army Corps of Engineers erred seriously in its shoreline maps.

The county should correct that error by paying for new and usable maps of the lake. It would not be that expensive—maybe $30,000 to $40,000. But it would be a much-needed reassurance to Durham property owners that the county is as concerned about their plight as it is Raleigh's drinking water.

A County's Growing Pains

The Chewning Junior High School controversy that has generated a bit of bad feeling between Durham County school board members and the county commissioners can't be serious enough to forfend cooperation if the county's request for construction figures is taken into consideration.

Superintendent Larry Coble of the county schools says that officials have asked for a detailed list of his system's building needs and cost estimates in preparation for a bond referendum next spring.

Stating that it needs more time to determine such a list, the school board nevertheless came up with a preliminary figure of $82 million, then tabled it for further study.

Indeed, a great deal of thought must go into it.

But Jack Bond, Durham County manager, denies that his request for such figures were preliminary to a bond referendum. He maintains that "we have to go to the bond market again Nov. 1. We needed an update on the information about the county school capital improvement needs as part of the bond package."

Dr. Coble isn't backing down. He still seems to think a bond referendum is in the works. Clearly confusion abounds—stand by.

The fact that a school bond referendum is possible serves, however, as a reminder of the costs of a growing community.

Rue as some will the rapid growth of the Triangle, it is a fact of life, and, while the tax base grows, expenses do, too. They will have to be faced. Schools should be primary. Water, sewer and roads, too.

But there are other amenities that speak of a dynamic, forward-looking city, and they cost money. A new baseball stadium, for example.

When the "wish list" is firm and taxpayers are asked to pay, they should consider a twist on former President John F. Kennedy's oft-quoted admonition: Ask not what your community can do for you, but what you can do to make your community the best it can be.

LETTER 1273 (CONTINUED)

____boro Land Dispute Is Unresolved

ROXBORO — Lawyer Walter Cates presented these demands from residents of the Lake Roxboro area to the City Council Tuesday.

Cates said the residents would like a dispute resolved. The dispute is with the city of Roxboro over attempts to sell surplus property surrounding the lake.

A few months ago landowners in the area became angered when they learned of a request by City Attorney R. Michael Carden that the council declare land around the lake surplus so he could buy it for a proposed development.

Cates said the landowners want the land surveyed. Secondly, they want the city to offer to sell all unneeded land above the high water mark back to the original owners or to new owners who purchased land with the idea it would remain lakefront property. Thirdly, they would like the city to seek impartial legal counsel in the matter.

Because the city attorney is also a property owner in the lake area he also is not be offering advice to the council, Cates said.

Mayor Jim Wilkerson and Councilman Samuel Spencer told the landowners they had met earlier Tuesday in Chapel Hill with officials from the Institute of Government.

However, they said they have not reached a decision and would not have a recommendation for the City Council until its November meeting.

The meeting will be held Nov. 15 at 7 p.m. instead of the regularly scheduled date of Nov. 8 because of the general election.

Another problem remaining unresolved is overcrowding of storm drains with rainwater cut-off in the Clayton Avenue and Broadus Boulevard area.

Henry Newell, a property owner, said he has received word from the N.C. Department of Transportation that larger pipes might help with the flow.

Newell said he will provide information from the department of Transportation to the Roxboro City Council.

The board also authorized an engineering study so parking, curbing and gutter ring can be done on a number of streets next year. Streets involved are Martin Street, Long Street, Bennett Street and Hampton Lane.

Person Schools To Send Letters About Asbestos

ROXBORO — Parents of students in Person County schools will soon receive letters telling them where asbestos is located within their child's school.

The Person County Board of Education was informed Tuesday about a management plan for dealing with asbestos remaining in school buildings.

Dan Pleasant and R. Frederick Eberle presented the information for Desherry and Davis, an engineering firm in Danville, Va.

Pleasant said the asbestos remaining in the buildings is not friable and not a threat to public health. About 85 percent of it is insulation around boiler pipes and the remainder in tiles, he said.

The plan's deadline for asbestos removal is 1992 with an estimated cost of $184,000. Eberle said it will cost about $[illegible] $120,000 to replace the insulation with safer [illegible]

FROM NORTH CAROLINA

'Monkey Business' Ads Hit Martin

ASHEVILLE (AP) — Still trailing a month before the gubernatorial election, Lt. Gov. Bob Jordan continued pounding Gov. Jim Martin's record Saturday and launched a television advertisement criticizing Martin for "monkeying" with the state budget.

The 30-second commercial shows four chimpanzees attired in shirts, pants and ties seated in an office around a table cluttered with papers, an adding machine, telephones, notebooks and other paraphernalia.

As old timey piano music plays mildly in the background, an announcer asks: "Who came up with Jim Martin's [illegible] budget? It was the worst one ever — $[illegible] billion in the red. And it was the first unbalanced budget ever proposed by a North Carolina governor.

"Martin's own budget director [illegible] said the governor's [illegible] budget. No kidding. But Jim's [illegible] neighbors, trying to get [illegible] by monkeying with the budget. Had enough monkey business? Bob Jordan for governor."

As the announcer speaks, one chimp frantically punches the adding machine's keys; another "talks" on the phone; another thumbs through a black notebook labeled "State Budget." The fourth turns berkrimps on the table.

There also are more subtle jabs at Martin: framed photographs of the governor hang on the walls, and a chimp at one point holds up a sailing magazine. Martin is an avid sailor and Democrats have criticized him for taking a sailing trip to the Virgin Islands during the 1987 legislative session.

The spot is designed to be an attention-getter, Jordan campaign manager John Crumpler said.

"It's designed to deliver a very serious message in a way that will be heard," Crumpler said. "People like to laugh. Politicians shouldn't be so dour as not to be able to laugh at themselves."

But the Martin campaign didn't see it that way.

"It's an insult, not only to the office of governor but to the governor personally," said Tim Pittman, Martin's campaign spokesman. "It's a direct, personal attack — goes far beyond anything we've seen ... and I think it will cost them the election."

Crumpler said the ad was not meant to insult anyone.

"Of course we're not saying they're monkeys," Crumpler said. "But we are saying that these monkeys help us tell a story about an administration either so inept or so politically motivated that it perpetrated as with the first unbalanced budget in the history of North Carolina."

Jordan defended the ad, saying it was "innovative" and that Martin's proposed budget had been a "fiasco."

Shortly after Martin submitted his 1988-89 budget, the legislature — also a Democratic — leaders charged he had proposed spending about $[illegible] million more than was available.

Martin called the criticism "a charade" but later acknowledged revenue collections were lower than he expected and offered to trim about $70 million from the budget.

The commercials were produced by Mike Belasco (R), Jordan's media consulting firm. They were reviewed statewide this week, Crumpler said.

Whether the ads will cause Jordan or not, they certainly increase the talk of the race. Democratic Party chairman Thomas Lacock [illegible] a stream of statements filed by Crumpler's camp in the statewide state Rock has to view the ads.

Jordan, who was to deliver the keynote speech at the [illegible] banquet, was [illegible] on the stage at an [illegible] rally.

About 150 people showed [illegible] $25 a [illegible] dinner with Jordan and other Democratic leaders.

Jordan, who acknowledged he is trailing Martin, said he is an [illegible] and stepped up campaigning in the last three weeks.

"There's no question that we're coming back [illegible]," Jordan said.

He vowed to continue "talking about this bad administration ... we're going to be on TV and radio and in the newspapers ... to point out [illegible] the record of Jim Martin's bad administration."

LETTER 1273 (CONTINUED)

From N.C.

VOL. 96 DURHAM, N. C., WEDNESDAY, OCTOBER 5, 1988 20

Durham Morning Herald

Richard J. Kaseer
President And Publisher

William E. N. Hawkins, Executive Editor
Joe C. Ham, Managing Editor
John H. Adams, Editorial Page Editor

Editorials

Supercomputer Deal Invites Public Distrust

Many people have played this game before. People sit around in a circle. One person whispers something into the ear of the person beside him. The message is passed along until it travels full circle. Then the last person discloses to the group what he heard. Invariably, it is nothing like the beginning. Everyone has a belly laugh.

So it has been with the whispered accounts of the State Computer Commission's secret purchase of a supercomputer for the Microelectronics Center of North Carolina. But this was no laughing matter. It was a violation of the state's Open Meetings Law.

The messages about this purchase sound so garbled that even the minority of commission members who voted on the contract do not seem to have the same story. One said the supercomputer cost $14 million, another $9 million and another $11.2 million.

Come again? What are these people playing with, Monopoly money? Not at all. This is your money—your tax money—and they are spending it secretly with the flimsiest of excuses. Says Don Bellman, president of the Microelectronics Center: If the prices paid by the center were publicly revealed, the manufacturers would be forced to charge the center the same prices they charge other university research centers.

Well, let's hear it from the manufacturers:

• John Swenson, a spokesman for Cray Research Inc. of Minneapolis, which won the contract, says Cray Research did not mind revealing the price of its supercomputer.

• A spokesman for IBM said he knew of no one in the company who would object to public disclosure of its bid, which was lower than Cray Research's. (If you can unscramble the garbled whispers, IBM's supercomputer was smaller than Cray Research's.)

So there you have it. The paranoia over secrecy came not from the private sector, where you might expect it, but from the public officials who ought to know better.

This newspaper joined a suit to force public disclosure of what took place. It did so not simply because it is our desire to know what is going on, but because it is our responsibility to bring light to public policy and spending. More important, though, it is your right to know what is going on. You pay for that right every time state income taxes are deducted from your paycheck.

If this deal sneaks by without public accountability, what of the next deal, say, a highway that benefits a legislator or member of the state administration? Or a toxic waste site secretly dumped into your neighborhood?

Those who insist on conducting the public's business secretly may be doing nothing illegal. But it is too much to expect the public to trust those who do not trust the public. ■

LETTER 1273 (CONTINUED)

From North Carolina

Man Waiting For Bus To New York Arrested On Armed Robbery Charge

HENDERSON — Henderson police Wednesday arrested a man who was waiting at the Henderson bus station with a one-way ticket to New York City and charged him with a Monday night armed robbery.

The man was identified as Waverly Williams, 39, of 219 High St., Henderson.

Cynthia Steele, a clerk at Curin's Minute Mart on West Andrews Avenue, had reported to Henderson police earlier that a man wearing a black ski mask had entered the store while she and Rhonda Person, another employee, were behind the counter at the cash register Monday night.

The man brandished a pistol and told them that they had 15 seconds in which to fill a bag with money. The robber took all of the money, except for $20 and food stamps, and left on foot.

Police said the amount taken was undetermined.

Police said Williams' arrest came after Miss Reavis telephoned them at 7:50 p.m. Wednesday, saying she had seen the same man standing in front of the bus station across the street from the store and gave patrolmen David Adcock and S.M. Parnell a description of the suspect.

The officers went to the bus station and picked up Williams. He was identified by Miss Reavis as the man who had robbed the store, police said.

When Williams was searched after being arrested, he had $1,200 on him. He told officers his mother had sent him the money to buy a house. The bus for which he had a ticket was scheduled to leave within 10 minutes of the time he was arrested.

Williams was jailed under $20,000 bond after being charged with armed robbery.

Zoning From 1C

The map will reflect a county land-use inventory conducted by two student interns during the summer.

A mobile home park will be defined as any tract or parcel of land divided into three or more lots for lease or rent to tenants of mobile homes.

The definition does not include mobile or manufactured homes placed by lot owners on lots within residential subdivisions developed pursuant to the Granville County subdivision ordinance, which was adopted in September 1987.

Also not included are mobile classrooms on public school grounds, or individual lots sold to people who will occupy a mobile home placed on them.

When printed, 75 copies of the zoning ordinance will be available to the public for $1 each through the county planning department.

The map will be displayed in the county administration building when it is printed so the public can examine it, Tunstall said.

The land-use plan also will be made available to the public through the planning office when printed.

Sections in the zoning ordinance pertaining to mobile homes are not designed to prohibit manufactured or mobile homes in Granville County, Tunstall said, but only to set up appearance standards for a viable form of housing.

Appearance standards for mobile homes include exterior finishes in good repair, uniform foundation enclosure, permanent or precast steps, removal or screening of the towing hitch, at least two off-street parking spaces and suitable landscaping.

Durham Man Missing At Deep River

MONCURE (AP) — A Durham man who works for the U.S. Geological Survey was reported missing by the Lee County Sheriff's Department Thursday.

James Estes, administrative assistant to the sheriff's department, said James West of Durham, about 45, arrived at the Deep River behind Creech's Dairy Farm at 9 a.m. Wednesday to measure the depth of the river.

In his work, West used a cable with a trolley car attached to the cable to cross the river.

When West did not return, he was reported missing to the sheriff's department at 2 a.m. Thursday by Kathy Hill of Raleigh, West's co-worker.

West's white van was discovered and the cable was found broken with the trolley car missing.

A military helicopter was called to assist in the search.

Break-In Reported In Watkins Community

HENDERSON — Ronnie Watson of Rt. 8, Henderson, in the Watkins community reported to the sheriff's department Thursday that his residence had been entered after a glass in the door was broken.

The door received $100 damage. He listed a missing a microwave oven, a videocassette recorder and a double-barreled shotgun with a total value of $7,050.

Speaker At SSC Hearing Was From Raleigh

BUTNER — One speaker during a two-day public hearing on an environmental study related to the Superconducting Super-Collider was identified as being from Granville County but lives in Raleigh.

Kitty Fried said Thursday that media coverage of the U.S. Department of Energy hearing on Monday and Tuesday identifying her as a Granville County resident was "a misunderstanding."

Mrs. Fried lives in Raleigh but owns property in southern Granville County, she said.

When she spoke on Monday in favor of the collider being located in North Carolina, she identified herself as Kitty Fried of Granville County.

LETTER 1273 (CONTINUED)

THURSDAY, OCTOBER 13, 1988 DURHAM MORNING HERALD

Southern States Use Confusing Variety Of Tests

Associated Press

The standardized tests used by Southern states are anything but standard, which makes it impossible to compare the results state-by-state, says a regional education agency.

"There doesn't seem to be any consensus about when we should test," said Stephanie Korcheck, a researcher for the Southern Regional Education Board. "There doesn't seem to be any consensus on what type of test we should use. There is a real lack of unity of this together into something that is meaningful for parents."

A study released Tuesday by the non-profit agency shows that 15 Southern states are using a confusing variety of tests and publishing results in statistical jargon difficult for parents to understand, Ms. Korcheck said.

Some Southern states, such as Kentucky, give statewide standardized tests in every grade, whereas others, such as North Carolina, give these tests only in three grades. The 15 states also used different tests, and almost half have changed tests since 1985, making it impossible to do state-by-state comparisons.

The results of standardized tests are further complicated by comparisons to national averages that are updated only about every six years. All United States students taking the test scores appear higher.

Because of this, all 15 Southern states boasted student test scores in 1987 that were at or above the national average at every grade level in every subject, according to the Southern Regional Education Board study.

The agency is urging the 15 states it serves to review why they are testing and whether they are providing important information to teachers, students, parents and political leaders.

Meanwhile, testing has spread through the South as states struggle to measure their education reform efforts over the last five years.

The board says Mississippi is to take part in a national testing effort planned to begin with eighth grade math in 1990. The federal National Assessment of Educational Progress will for the first time provide state-level, by-state comparisons and national benchmarks that will be updated every year, Muick said.

The North Carolina Board of Education has voted to participate, and at least 35 other states are expected to do the same.

Meanwhile, testing has spread through the South as states struggle to measure their education reform efforts over the last five years.

"I think we are going through a period of time in which there is considerable infatuation with the power of these numbers," Thomas Fisher, Florida's testing director, told reporters.

Florida gives kindergartners standardized tests to see if they are ready for first grade. In addition to its national standardized tests, North Carolina also gives state-mandated science, social studies and writing tests in grades three, six and eight.

The state Board of Education in June voted to expand statewide high school achievement testing to include eight more courses. Beginning the number of tests to 14. Further, high school students must pass a competency test to graduate.

The number of tests has caused some Southern states to revise their testing programs. In 1987, North Carolina banned standardized tests in first and second grades. Mississippi had done the same. Virginia dropped its high school graduation test, and Florida and North Carolina are considering doing the same.

Fisher said policymakers and the public will never allow education to give up testing. But education can provide the information politicians need with less testing by using representative samples of students at selected grade levels, he said.

Textbook Panel Members Deny Any Wrongdoing

GREENSBORO (AP) — Members of a group that selects textbooks for North Carolina's 1.4 million students emphatically denied efforts to re-evaluate the book selection process that has drawn criticism from the press and parents.

The N.C. Textbook Commission, whose 14 members are appointed every four years by the governor, questioned the motivation of a special committee that was appointed in July by the State Board of Education to study the book selection process.

North Carolina spends $44 million a year on textbooks.

The committee of this kind formed in Iredell, Davie, Brevard, Blaine, Inc., said a member and an elementary principal in Fayetteville. "We're the only group to be studied, at this point."

Appointment of the committee came after reports that employees of the state Department of Public Instruction and the textbook commission had received favors, such as dinners or gifts, which may have compromised the selection process.

Meeting in Greensboro Tuesday, commission members vehemently denied any wrongdoing.

"We have been stepped on, kicked around and slapped at," said Logan Darnsburg, a bush seaman from Sanford. "Not only is the commission's integrity at issue, my integrity is at issue."

The group decided to read a committee complaining about the Thursday when examination on texts in Greensboro for two days of hearing.

The textbook commission also will present several recommendations it drafted to improve the textbook adoption process, which has been used for 20 years.

Lina

Deep-Space Voyages

easy on the moon, where the surface gravity is only one-sixth that of Earth. In space, the lunar ore could be smelted and from it all structural metals could be obtained, as well as concrete, glass and soil.

It is with moon materials that we will be able to build structures in space — power stations that make use of solar energy and relay it to Earth; automated factories that would take advantage of the special properties of space, and help lift the pall of industry and pollution from Earth itself; settlements that may each be large enough to house 1,000 human beings in orbit about Earth under conditions that closely mimic the environment we are used to.

It may take us the better part of the 21st Century to build up, and put into use, the space between Earth and moon. But once that is done, we will have, at last, a firm base for operations in space beyond; one that is far superior to Earth itself.

The inhabitants of the settlements will be accustomed to space as Earth people can never be. They will be used to living inside an artificial world. They will be accustomed to changes in apparent gravitational pull as they move about their small worlds. They will take for granted the necessity to recycle tightly all the air, water and food they use.

When a settler steps into a spaceship, he will be moving into a world that is smaller than the one he is used to, but its properties will remain familiar. What would be impossibly foreign to an Earth person would be home-sweet-home to a settler.

The settlers, then, being much better suited, psychologically, to life on a spaceship, will be better equipped to face long voyages through space. It is they who will be the Phoenicians, the Vikings, the Polynesians of the future, making their way into the 22nd Century through a space-ocean far vaster than the water-ocean traversed by their predecessors.

It is from the settlements-as-base that repeated voyages to Mars and its satellites can be made. That will be only the start too, for other trips can be made to the asteroids, to the satellites of Jupiter and eventually to all the solar system. And beyond that are the goals of the 23rd Century—the nearer stars.

2 and SSC's

DURHAM MORNING HERALD From North Carolina THURSDAY, OCTOBER 6, 1988

S.C. Nuclear Near Disaster Detailed

By MATTHEW L. WALD
N.Y. Times service

AIKEN, S.C. — A foreman's error in 1965 *nearly turned an accident at a military* nuclear reactor at the Savannah River Plant into a catastrophe that would have destroyed the atomic weapons plant, according to a memorandum.

The accident, described in documents given to Congress as "a very significant leak," would have become an explosion that would probably have spread the reactor core's radiation into the environment, according to the seven-year-old memo on *file in a public document room at the University of South Carolina in Aiken.*

The error was prevented by a supervisor, according to the internal memorandum, which was written by an engineer who was in the control room at the time on the afternoon of May 10, 1965.

The memorandum was written, with evident frustration, when the engineer took early retirement in 1981.

The 1965 accident is only one focus of the memorandum, which points to several flaws in management and operations at the plant.

The incident began with a small leak of cooling water from a pipe sleeve and resulted in the spill of 2,100 gallons, from a system with tens of thousands of gallons.

Workers in the control room saw from their instruments that there was a drop in the level of the water that keeps the fuel *from melting, and a foreman wanted to* close the valves that limit the cooling water supply to the reactor.

According to the internal account, written in a blunt, informal tone, "closing the rotovalves under these circumstances would have destroyed the reactor."

The threat, according to engineers familiar with the technology, is that it would have stopped the removal of heat while the core continued making heat, causing the cooling water to boil, which could make the reactor explode like a stopped-up kettle.

Such a steam explosion destroyed a research reactor operated by the Army in Idaho in the 1950s.

The foreman was stepped by a senior supervisor, according to the internal memorandum.

"Some of your seniors are not so well trained" as the one who prevented the accident, the memorandum said.

"One trained man stood between us and disaster," said the internal document, which was written by Frederick B. Christensen, an engineer with E.I. du Pont de Nemours & Co., which built the Savannah River Plant in Aiken and has operated it for 35 years.

Wednesday, a Du Pont engineer at the plant said that the idea that the reactor would have exploded if the rotovalves were closed was "a premature conclusion."

"Certainly if you lose all cooling, some degree of bad news is coming, on some time scale," said Gerald F. Merz, a technical supervisor. But, he said, he did not know whether Christensen had gone through the calculations necessary to reach his conclusion.

In addition, Merz said, the emergency core cooling system could have provided cooling.

As do civilian reactors, the plants used by the Department of Energy to make fuel for nuclear bombs have such an emergency system.

Running that system would not have been without problems, however. Activating it would have meant dumping the radiation-contaminated cooling water into a pond.

Christensen stressed the importance of well-trained personnel, underlining in his memo the sentence, "Only trained operators can save our bacon."

From North Carolina

Judge Seals Verdict In Civil Rights Case

Plaintiff Withdraws Name From Suit As Jury Deliberates

By JERRY SCHWARTZ
N.Y. Times service

ATLANTA — A federal jury returned a verdict Wednesday in a civil rights lawsuit against 10 present and former members of the Ku Klux Klan, but the judge immediately ordered the verdict sealed.

Federal District Judge Charles Moye gave no explanation for his order, which came after an Atlanta City councilman, Hosea *Williams, a longtime civil rights* worker who is one of two men who brought the suit, asked to withdraw from the case as the six-member jury was beginning its deliberations.

The case stemmed from a clash between civil rights marchers and white counter-demonstrators in rural Forsyth County, Ga., in January 1987.

It was not clear what action the judge might be contemplating and how Williams's action might influence the outcome.

Williams, an organizer of the march, asked Moye to remove him from the lawsuit because, he said, he had decided it was improper to seek money damages from the Klan members.

Williams and a Georgia State representative, James W. McKinney, another march participant, had initiated the lawsuit on behalf of "all black persons living in Georgia." McKinney told Moye he wished to continu his role in the suit.

"As a Christian, I had to as myself what Jesus would do," Williams said during a recess Williams said he recognized that most of the Klan members had relatively little money. "All they have are their homes and their cars and their jobs," he said, adding that a money judgment against them "would hurt their *families*."

Williams, who is black, is considered something of a maverick, even among his fellow rights activists, and has previously expressed sympathy for the rights —thought not the aims—of Klansmen.

Although Williams asked to withdraw from the lawsuit altogether, *the judge allowed him* only to remove his name as a plaintiff but said Williams would continue to be a member of the class action.

Moye ordered the multi-page verdict sealed and told the jurors they could be summoned for further action in the case. He instructed them not to talk to journalists or parties to the suit and said proceedings might continue "for several weeks."

Jeffrey Sliz, an attorney for one of the defendants, said Williams's withdrawal could have a major impact on the defense case.

Sliz said the defense had been surprised by Williams's decision. As for the future of the case, Sliz said, "We are all thinking on our feet here."

Now that Williams has withdrawn as a named plaintiff, Sliz said, the defense may be more likely to call him as a witness.

LETTER 1273 (CONTINUED)

Associated Press

Pinning The President

President Ronald Reagan receives a Government Leaders Against Drunk Driving (GLADD) lapel pin from N.C. Gov. Jim Martin. Martin presented the pin in the Oval Office Wednesday. Watching are Martin's wife, Dottie, and Frances G. Wells, right, director of the N.C. Mothers Against Drunk Driving (MADD)

FROM N.C

Granville's Chamber Cites Highway Needs

Around The Area

OXFORD — The Granville County Chamber of Commerce has asked the General Assembly not to overlook the needs of small towns and rural areas in planning for highway construction.

Charlie Richards, chamber of commerce executive director, told a highway study commission created by the 1987 General Assembly that Granville County has "many miles of unpaved rural roads and small towns that still have major highways using local streets."

Richards spoke to the study commission Monday in Greensboro. Similar meetings about highway needs are being held throughout the state.

Richards delivered a letter from the city of Oxford about long-delayed projects and a resolution from the Granville commissioners asking for more money to pave rural roads.

North Carolina is said to have an $11B billion backlog in highway needs, and the General Assembly is expected to consider alternative sources of money to meet those needs.

Bra[illegible]rself For Eastern Quake, Expert Says

WASHI[illegible] — A major earthquake is nearly certain to strike the eastern two-thirds of the nation in the next 20 years, threatening havoc in a region unprepared for such a disaster, the head of the national earthquake engineering center said Tuesday.

Robert L. Ketter declined to pin down a specific location for the temblor, but he said likely sites include the areas of Memphis, Tenn., Charleston, S.C., Boston and New York City.

The probability of a destructive quake occurring at any particular spot is low, he said.

"However, the probability of one occurring somewhere in the eastern United States before the year 2000 can be considered better than 75 percent to 95 percent. Before the year 2010, nearly 100 percent," he told a symposium on the federal response to earthquakes.

"Terra firma is an illusion . . . ," added Russell Christesen, chairman of the board of Ebasco Services Inc., an engineering company which sponsored the gathering.

Ketter, director of the National Center for Earthquake Engineering Research at the State University of New York at Buffalo, noted that, unlike California, residents of the states east of the Rocky Mountains have paid little attention to the danger of quakes.

"There are no building codes calling for quake-resistant buildings in the East, he pointed out.

"The major problem is lack of awareness that there is a problem," Ketter said.

"The public is not concerned because people have not felt a quake in their lifetime. This [meeting] is an effort to shake up that complacency."

From [illegible]

What A Difference

IIA.1-2441

LETTER 1273 (CONTINUED)

From North Carolina

Lawyers Seek Release Of Hatcher, Jacobs On Bond

RICHMOND, Va. (AP) — Lawyers for two American Indians on trial in North Carolina on hostage-taking charges asked an appeals court Tuesday to immediately release their clients on bond while the case is being heard.

But the prosecutor in the federal trial of Eddie Hatcher and Timothy Jacobs told judges on the 4th U.S Circuit Court of Appeals that they should do no more than allow a magistrate to determine whether bond is appropriate for the defendants.

"They're not entitled to automatic release," said Assistant U.S. Attorney John Bruce.

Hatcher, 31, and Jacobs, 20, are on trial in U.S. District Court in Raleigh on charges of taking up to 20 hostages on Feb. 1 during a 10-hour confrontation at a Lumberton newspaper.

There was no immediate ruling on the bond question from the appeals court. But one of the judges, J. Harvie Wilkinson III, noted that the issue would become moot as soon as the jury reaches a verdict in the trial, which opened Sept. 26.

The Indians used the hostage incident to draw attention to charges of corruption in Robeson County, including their claims of having evidence linking law enforcement officers to drug trafficking.

The day after the confrontation, Hatcher and Jacobs went *before a magistrate for a pretrial* detention hearing, a procedure required by the federal Bail Reform Act.

Bruce contended the men waived the bond procedure because they wanted to remain in custody for fear of violence against them if they were set free.

But William Kunstler, one of three lawyers who appeared before the appeals court on behalf of Hatcher and Jacobs, questioned whether the federal law allows such a waiver.

Even if it does, Kunstler said, the Indians could not have made an intelligent waiver because the magistrate did not explain to them the importance of the right they were giving up.

The men were later denied bond twice by a federal magistrate and once by a federal judge. They were jailed until July, when a three-judge panel of the Richmond-based appeals court ordered them released on bond with conditions. The Indians were then freed on $100,000 unsecured bond.

On Aug. 26, the full appeals court revoked the bond pending Tuesday's arguments on the panel's ruling.

Kunstler said the men had complied with all the terms of their bond during their release, although Hatcher failed to surrender to U.S. marshals after his bond was revoked Aug. 31. Hatcher was declared a fugitive and was arrested Sept. 19 when he surfaced with an attorney.

Kunstler also said giving the men their freedom would help "dispel the aroma that they are some kind of wild animals" who have to be confined.

U.S. District Judge Terrence Boyle suspended the trial until Thursday so the bond arguments could be heard by the appeals court. Bruce said testimony is expected to conclude by the end of next week.

Kunstler, who is involved in a *New York case, has not appeared* at the Raleigh trial. Boyle refused to continue the trial and ruled that Hatcher is acting as his own counsel and has refused to participate in questioning witnesses, selecting jurors or bench conferences.

Ron Kuby, an associate of Kunstler in New York, said the judge in Kunstler's New York trial gave him Tuesday morning off to make the appeals court appearance. The same judge had earlier refused to release Kunstler *so he could defend Hatcher.*

"The difference is between getting a morning off and three weeks off," Kuby said. "The judge up here was willing to give him one, but not the other."

From North Carolina

Report: South's Illiteracy Costs Rising

Problem 'Threatening To Consume The Region's Prosperity'

WASHINGTON (AP) — The economic and human costs of adult illiteracy are rising in the South, and Congress must help *local governments if the situation* is to improve, a report for the Sunbelt Institute says.

"The fires of illiteracy still burn in the South, threatening to consume the region's prosperity," says the report written by *MDC Inc., a non-profit research* group based in Chapel Hill.

It was commissioned by the Sunbelt Institute, a bipartisan, Washington-based organization of government leaders from the South and Southwest.

Rep. David Price, the Democratic congressman from North Carolina's 4th District, was co-chairman of the effort and already is touting it as he campaigns for re-election next month.

The report concludes that "educational attainment in the South has improved substantially over the course of this century," but "the costs of inadequate literacy in the South continue to mount—the result of rising skill demands brought on by *automation and increasing* competition from low wage labor in the Third World.

"The South's response to the literacy problem is seriously inadequate," says the report, obtained by *The Raleigh Times*. "*Barely 1 million* of the 18.7 million adults in the South without high school credentials are in the process of upgrading their literacy skills and seeking a high school degree or equivalency."

Spending more money on existing *programs is not the answer*, the report says. Rather, it says, the federal government must:

• Improve existing adult literacy programs by providing more and better "data, program research, training, effective use *of technology, support for alter*native literacy providers and accountability."

• Promote more public-private literacy programs in the workplace.

• Heighten public awareness of the problem, which will result in greater financial support.

A preface written by Price and the other co-chairman, Rep. Harold Rogers, a Republican from Kentucky, says: "In the Research Triangle area, where the unemployment rate is less than 3 percent, *the* few adults available for work tend to be poor and undereducated, ill-prepared for the high technology, information-age jobs which open up each day in the area's booming economy. Local officials at IBM say that soon even entry-level jobs at their facilities will require two years of post-secondary education, but the dropout rates in local high schools continue at 25-35 percent."

"Functional literacy is the *South's number one competitive*ness issue," the preface says.

The report says head counts of illiterate adults are virtually impossible, partly because "America has no standard definition of literacy."

But, it says, "The South's literacy challenge is concentrated more and more among high *school dropouts with limited lit*eracy skills rather than grade school dropouts who never learned to read, write, and or subtract."

The costs of illiteracy are growing, it says. "In 1967, more than 40 percent of all jobs in the U.S. were held by individuals who lacked a high school diploma. Today, dropouts hold less than 18 percent of all jobs. And by 1990, three out of every four new jobs in America will *require* education or training beyond a high school degree.

"An accountable, responsive and comprehensive system for teaching undereducated adults will not evolve in the South or elsewhere unless Congress reshapes the federal role in literacy and sets more specific goals for its literacy programs."

IIA.1 - 2442

Schools In N.C. Short $6.2 Million Needed For Adult Bus Drivers

Associated Press

North Carolina school systems say they're having trouble making the financial transition from student bus drivers to adults and that they are short $6.2 million needed to pay benefits to the adult drivers.

The shortfall comes after rural drivers mistakenly thought they were going to get a 26.10 [illegible] wage this year, instead [illegible] was the average wage.

Drivers have since accepted this as a misunderstanding of the state's promised pay increase and called off threats of strikes.

Norfleet Gardner, director of transportation with the Department of Public Instruction, admits the state promised to pay benefits for some adult drivers. But he said it slipped up by not setting central standards saying how much an employee had to work to earn benefits.

Legislators expected the cutoff to come at eight hours a day for full-time employees, and appropriated money based on that assumption.

But many systems, trying to attract more drivers after the wage skirmish, have set full-time status as low as four to six hours a day. That made employees working as little as two or three hours daily eligible for partial benefits in many systems.

"Of course if they do that, it's going to put just about everybody where they qualify," Gardner said.

That's why the Legislature underestimated, by 4,100 positions, the number of bus drivers who would earn paid sick leave, holidays and vacation with permanent part-time status, and why they came up more than $6 million short in what they've appropriated, Gardner said.

Gardner said that the State Board of Education next year set minimum guidelines about who receives state benefits.

"The main thing will be clearing up for the local boards what the state is willing to do," Gardner said. "You've got ones saying six, seven or eight hours [for full-time], and the state is covering all of it. That's not fair to the one that said eight hours. There's no consistency to it."

Local administrators have heard that such standards might be coming. But many still hold the state responsible for paying this year's debts.

"The state's the one that promised the benefits, and we feel it's the state's responsibility to come through with it," Ed Carroll, director of transportation for Guilford County, said of the estimated $400,000 his system needs to pay benefits.

High Point city schools also will use $20,000 of local cash to cover the cost. But many others cannot stretch dollars, such as Rockingham and Alamance counties, which together need an estimated $95,000.

"We are not alone in this," Ira Trollinger, superintendent of Rockingham County schools, told his board of education earlier this week.

Trollinger believes the widespread need will prompt the state to make good on its promise.

Gardner agreed. "The state will have to address that somewhere down the road," he said. "If it's a realistic figure, I think it will at least be looked into."

Gardner said he hoped the money would come from local dollars and some additional state money, perhaps taken from dollars saved when higher-paid employees retire and are replaced by lesser-paid workers. He called the benefit mistake growing pains, but wished the state had thought to set limits this year.

"The result is we've got different counties setting different rules so there is no consistency from one system to another," Gardner said. "We're looking into at least minimum standards for what the state can fund."

LETTER 1273 (CONTINUED)

N.C. Case Sparks Review Of Civil Rights Decision

By AARON EPSTEIN
Knight-Ridder service

WASHINGTON — Some 122 years after Congress passed its first civil rights law for newly freed slaves, the Supreme Court grappled anew Wednesday with arguments on how much protection that statute provides for minorities.

The extraordinary, high-stakes conflict was provoked by the court's five most conservative justices, who invoked civil rights organizations last April by voting —without being asked—to consider overturning a 12-year-old precedent permitting damage suits for private racial bias under the 1866 law.

Ironically, the most conservative justice of all, Antonin Scalia, expressed disappointment by the arguments presented Wednesday for overturning the precedent, Runyon v. McCrary, which has become a major legal weapon in the arsenal of civil rights organizations.

The dispute over Runyon arose in the case of a black woman, Brenda Patterson, who says she was subjected to repeated racial harassment by her white employer in a Winston-Salem, N.C., credit union.

Lower courts dismissed her claim, ruling that the 1866 civil rights law does not cover private racial harassment. A Supreme Court decision in Patterson v. McLean Credit Union is expected by next June.

Scalia asked Roger S. Kaplan, a New York lawyer arguing against the Runyon decision, what makes Runyon so special that the court should overcome its traditional reluctance to nullify its own precedents.

Dissatisfied by Kaplan's answer, Scalia repeated his question. Kaplan tried again. Still unhappy, Scalia leaned forward in his chair and asked his question a third time.

"We've had others wrong but we don't fool with them any more," Scalia said of other precedents. "What if it's wrong? So what?"

Kaplan answered again: The 1976 Runyon ruling was an infringement on the powers of Congress.

"If that's all you have, Mr. Kaplan, it's nothing," Scalia snapped.

Kaplan argued that the 1866 civil rights law was intended to remove state discrimination, not private acts of racial bias. Yet the Runyon ruling had allowed it to grow into "a general anti-discrimination device" without limits.

On the contrary, countered NAACP Legal Defense Fund director Julius Chambers. Congress meant to eradicate all of the "pervasive practices" of private and public discrimination that had the effect of "putting blacks back into slavery" after the Civil War.

If that's true, Scalia wanted to know, why Congress waited "almost immediately" after passage of the 1866 law.

Because, Chambers replied, blacks in the South feared retribution and had difficulty finding lawyers.

In a friend-of-the-court brief, seven historians said Congress acted to protect ex-slaves who faced "terror and violence, and the flat refusal of Southern whites, in and out of government, to acknowledge that blacks had any legal status or individual rights."

The Civil Rights Act of 1866 gives all citizens equal rights "to make and enforce contracts." The Supreme Court's 1978 Runyon decision interpreted the act to bar racial discrimination by private schools.

Since that time, lower courts have ruled that the post-Civil War statute permits damage suits for racial discrimination in employment and a wide variety of commercial transactions.

Civil rights leaders fear, and conservatives hope, that a new court majority—Scalia, Chief Justice William H. Rehnquist, Sandra Day O'Connor, Byron R. White and Anthony M. Kennedy —may be signaling a broad retreat from several civil rights milestones of the past three decades.

Indeed, Kaplan said during Wednesday's arguments that if the court rescinds the Runyon ruling, the 23-year-old precedent of Jones v. Mayer would be in jeopardy. In the Jones case, the justices applied another provision of the 1866 civil rights law to bar all racial discrimination, private and public, in the sale or rental of property.

IIA.1- 2444

DISTRUST IN North Carolina

Durham Morning Herald

DURHAM, N. C., WEDNESDAY, OCTOBER 5, 1988 DAILY 25¢

N.C. Supercomputer Mystery Cost Unveiled

By MYRA KNIGHT
and DANNY LYNDERSBY
Herald staff writers

Under pressure from elected state officials and the news media, the Microelectronics Center of North Carolina revealed Tuesday the price it will pay for the state's first supercomputer.

The machine will cost taxpayers $19.8 million, more than to its manufacturer, Cray Research Inc. of Minneapolis.

The contract covers a Cray Y-MP mainframe supercomputer and associated start-up costs. Installation of the machine is scheduled to be completed by Sept. 30, 1989 at the N.C. Supercomputing Center in Research Triangle Park. That center will be built at a cost of $4.1 million at 2 Hayes Dr. in the park.

The center announced a purchase agreement with Cray last month but had declined to reveal the cost and other details of the contract. Its officials said the contract had to remain a secret because it contained "proprietary information" the manufacturer did not want its competitors and other customers to know.

The decision to withhold the price, however, appeared to violate the state's public records law. Several members of the N.C. Computer Commission, which approved the contract, called the center to complain. On Saturday, the *Durham Morning Herald* announced its intent to sue for release of the information.

The decision of Cray and the Microelectronics Center to reveal the price of the computer, but not to provide copies of the contract, and the legal issues involved are under consideration, *Herald* Executive Editor William Hawkins said Tuesday.

The price was made available to reporters about 4 p.m. Tuesday, shortly after state Attorney General Lacy Thornburg ruled that the purchase price was public information.

George Howe, a spokesman for the center, said the decision to release the information was Cray's and was "totally dictated" by the attorney general's decision.

Robert Gaertner, vice president for communications at Cray, said Tuesday that portions of Cray's proposal to sell the computer had been marked "proprietary," but "it's always been our policy to discuss the cost price and our customers are aware

See Supercomputer / 10A

LETTER 1274

C.A.T.C.H.-Illinois

Citizens Against the Collider Here

October 6, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-64/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments---Jobs vs. total output of goods and services

Dear Sir:

Much has been made by proponents of the SSC of the jobs this project will generate during the construction and operation periods. But is this jobs issue an appropriate focus?

Should not the emphasis be on the value of the knowledge that will be obtained from SSC research? Emphasis on jobs indicates that basing support of the project on the value of its output is a weak argument.

In fact, Nobel physicist, James W. Cronin, of the University of Chicago has said "It is difficult to argue that there are any immediate benefits to be felt by the whole population."

Tornados and earthquakes create jobs. World War II created jobs. Should we wish for similar events to occur simply because they generate jobs?

Of course this is absurd. But where is the error in this argument? What would be wrong with spending all our money on SSCs? The answer is that there would be little or no output that we could eat or wear or live in. The problem is that we are focusing on the labor involved and not on what is produced.

P.O. Box 104, Wasco, Illinois 60183 Phone 312-584-4244

Output of useful goods and services is what is important - not maximizing the labor involved in producing them. And that brings us back to the main point: focusing on the jobs argument creates a bias for more and larger projects, since more labor is involved. It also creates a bias for less efficient, higher labor cost projects, since more labor is involved.

The jobs arguments of the state and the DOE are no less absurd than the "lets spend all our money on SSCs argument I have presented." Focusing on jobs and not on what is produced is avoiding the issue of whether or not the output of the SSC project is really useful.

The governments of Poland and the USSR focus on jobs in their national economic policy. As a result, practically everybody has a job - but the economic output of these nations is catastrophically below their potential, the USSR being among the richest nations in the world when considering natural resource endowments.

Businessmen make investments not because they will generate jobs, but because anticipated revenue exceeds anticipated costs, that is, because they foresee profit. The same standard should apply to society's investments. They too, should meet the test of the market place.

The SSC must be justified on the basis of value of output exceeding costs; not because it creates jobs. This has not been done. It has not even been attempted.

Sincerely,

Mr. Arthur W. Blake
34W.676 Country Club Rd.
St. Charles, Il. 60174

LETTER 1275

P.O. Box 152
Kaneville, Il. 60144
October 12, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Re: SSC DEIS Comments

Dear Sir:

On October 6 and 7 I was in attendance at the DEIS hearings here in Illinois. The following is, in essence, what I presented to the Task Force members who were accepting testimony on the Draft EIS.

1 Here is just a minor list of the negative problems associated with the SSC at the Illinois site:

2 1. Illinois is only 1 of 2 states that will have prairie lands adversely impacted.

2. Illinois has the second largest number of wetlands (850 acres) that may be adversely impacted.

3 At a time when the government, scientists and the general population are beginning to worry about the Greenhouse Effect it seems ludicrous that the Department of Energy would even continue to contemplate siting the SSC in Illinois. Although Illinois is not an area to be classified as a rain forest, it has a steady record of decline as to wetlands. How much more raping of our environment are the people of Illinois suppose to accept?

3. More wells will be closed at the Illinois site than at any other.

4 Illinois officials seem to differ greatly as to the number of wells. But, considering that the Illinois officials are not fully aware of the exact number of people who will be sitting on the ring this difference in numbers is not surprising. There are still people who have not been notified by either the state or the DOE that their property will be affected by the SSC tunnel. Exactly how are the people who potentially stand to lose their wells going to deal with the loss of water? And, when water is lost who will pay for it?

4. More property owners are involved at the Illinois site than at all other sites combined.

5 Again, it is beyond comprehension to think that Illinois would still be in the running as a potential SSC site since the numbers of "quiet people" (to quote Vice President Bush) will be so adversely impacted. We, in Illinois have already paid our dues in Government land takeovers in the form of Fermilab - I do not see how or why we should be expected to once again make the large sacrifice of losing our homes and our lands.

5. More businesses will be closed at the Illinois site than at any other.

6 Once again, the common-folk are being asked to give. Has the DOE even bothered to check with these businesses to ascertain whether or not they will easily be able to relocate and also as to where they will be able to relocate to and at what cost? Has the DOE considered the potential loss of over 600 jobs?

6. Prime farmland will be lost at the Illinois site.

7 Again, I strongly suspect underestimation as to the amount of farmland that will be lost - and lost forever if the takeover of farmlands at Fermiland is an example. How much more are we going to ask of our farmers?

8 7. Groundwater inflows into the shafts and tunnel are expected to be the third highest of all the sites.

8. Due to the regional groundwater overdraft situation and the local groundwater overdraft situation in northern Campton Township, groundwater supplies will be more adversely affected in Illinois than at any other site. The resulting affect upon wells and individuals will also be the most pronounced in Illinois.

9 I fail to see how the proponents of the SSC in Illinois are going to mitigate the water situation. To even suggest that Lake Michigan water be piped into the area is ridiculous. If the Great Lakes States were to agree to such a usage of Great Lakes water in the first place at exactly what cost and whose cost is this project to depend? Exactly how long is the feat going to take?

10 9. The presence of methane gas at the Illinois site is a potential safety hazard and can be expected to slow down tunnel construction.

10. The entire Fox Valley Illinois site is covered by Flood Rate Insurance maps and shows a high probability for damage due to flooding. This is not true at other sites.

Just one year ago in the late summer/fall of 1987 the people in this area experienced a very serious flooding problem. I doubt, very much if anyone in this area totally escaped some impact due to the flooding. We spent many many hours trying to dry out our basement and moving things in the basement to higher ground.

11 11. The proposed Illinois site has the largest surface water channel in the presence of the Fox River, and the Illinois site also involves the greatest watershed area. Any impacts due to siltation or pollutants being placed in the natural water drainage system will therefore have a greater negative impact in Illinois than at any other collider site.

The siting of the SSC here could further jeopardize our safety as to flooding situations and as to the quality of our water supply.

12 12. The surface water quality at the Illinois site is already the worst of all states. We already have the worst levels of lead, total dissolved solids, nitrate and fecal coliforms.

13 13. Illinois has the largest number of people who will be adversely affected by noise levels associated with operations at the E access areas and the F tank farm areas.

14 Again I fail to see how the mitigating of these very important issues will be done. At what cost? The E and F sites, as planned are extremely ugly visually and totally unacceptable as to noise levels. What steps must be taken to change the ugly and unacceptable to acceptable and at what cost? Cost to whom? The State of Illinois taxpayer or the U.S. taxpayer?

15 14. The only significantly negative and unique groundwater quality feature to exist at any site is the naturally elevated radium levels which occur at the Illinois site. Why should our population be exposed to further levels of radiation from the SSC when the presence of radium in our water-supply already exposes us to levels not experienced at the other six sites?

How many more times must we, the people, be expected to give? How many more risks are we expected to take? Why should this risk even be contemplated by the DOE when any of the other six sites still in contention expose the population to far far less?

15. The negative affect of dynamiting which the EIS says will be used at the E and F access shafts will impact more homes and more people at the Illinois site than at any other.

16 Does the DOE even care what impact this will pose to the people of Illinois? Does the DOE concern itself with the fact that the so-called "Good Neighbor" legistlation recently signed by our Governor does not have any funding behind it and even with funding does not cover all of the homes and people that could be detrimentally impacted?

17 16. Illinois is one of only three sites where there is a direct hydraulic connection between surface water bodies and the underlying aquifers. Once again the potential for negative impacts upon groundwater supplies becomes more pronounced if pollutants or contaminents enter the diverse natural water drainage system of our rivers, creeks, lakes and streams. This is <u>not</u> true at other potential site locations.

17. Illinois is the only site within a region that is designated as in nonattainment for both ozone and carbon monoxide levels.

18 18. Total Suspended Particulate Levels (TSP) will exceed the National Ambient Air Quality Standards.

Once again the people of Illinois are being asked to make sacrifices they cannot be asked to make. The siting of the SSC here in Illinois threatens our water and now it is threatening the very air we breathe!

19 19. Perhaps most importantly of all, is the fact that the Illinois site is located below and within the groundwater aquifers in this region. In contrast, the tunnel at the Arizona and Texas sites would be completely above the existing water tables. Nearly, but not quite, every problem associated with the SSC involves water and people. That's why either Arizona or Texas stand out as the preferred site.

The people of Illinois are sick and tired of the State and Federal Government, in concert with the press trying to trivialize our concerns. We are tired of the deceptions of our own State Government. We do not want to pay for a project that we do not want in our own area. We do not want to subject ourselves to the potential dangers of the SSC both during the building phase and during the operational phase. The DOE's safety track record has come under attack via the incidents at the Savannah River Plant in South Carolina and the security problems that occured at a variety of nuclear facilities. We do not trust your assurance that all will be "safe" - we do not want to become part of a scientific experiment without our full and informed consent. And, there is your key word - you do not have our "consent".

20 I do not know how the DOE feels about all the press coverage of a so-called "short list" that puts Illinois and Texas in top contention for the SSC project. It seems apparent that Illinois and Texas are behind all these "leaks". I would think that the DOE would be wise to really think about the repercussions and the loud yelling of "fix-fix" that would occur should either of these states be selected.

As you are reviewing the tapes of the various hearings I would hope that you would make time to listen to the testimony that Christy, a young teen that would be displaced should the SSC be sited here in Illinois. Christy spoke on Friday afternoon some time between 3 and 4 p.m. Christy got to the heart of the matter, and the key word here is "heart" - perhaps you scientists would benefit greatly from a good dose of "heart". If you listen to no other testimony from Illinois, please listen to this one small part.

Please know that we are very serious when we tell you that we do not want the SSC sited here, and should you disregard the common sense that tells you that Illinois is not the ideal place to site the SSC, than please know that we will fight you. We will not be silenced, and at a time when I should suspect that funding of the project is in jeopardy (considering our huge Federal deficit) it seems ill-advised to go where you know you are not wanted and where you know that the opposition has no intentions of rolling over and playing dead. You did it once with Weston, you will not do it again.

Very truly yours,

Linda Benson

Linda Benson (Mrs. James)

LETTER 1276

HENRY J. HYDE
6TH DISTRICT, ILLINOIS

COMMITTEES:
JUDICIARY
FOREIGN AFFAIRS
INTELLIGENCE

2104 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-4561

Congress of the United States
House of Representatives
Washington, DC 20515

October 14, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Re: SSC Draft EIS Comments

Dear Dr. Hess:

I would like to commend the SSC Site Task Force for a fair and thorough review of the seven final site proposals for the SuperConducting Super Collider that are detailed in the Draft Environmental Impact Statement.

If the United States wishes to remain at the forefront of high energy physics research through the next century, it must go forward with the SSC project. Success of this project depends upon adequate financing, construction of facilities, and the selection of an appropriate site. My letter is concerned with this last point.

I urge the adoption of the Illinois site. The draft EIS has given Fermilab a clean bill of health. Moreover, building the SSC here will save the government millions of dollars because the already existing Tevatron, research facilities, and skilled work force can be readily converted for SSC use. This will be significant if federal funding for scientific research is curtailed in the deficit-reducing years that lie before us.

The Fermilab area will also provide a quality of life that can not only attract, but keep, scientists from around the world who come to research at the SSC. The vibrant attractions of downtown Chicago, combined with the excellent schools already in place for the existing research community, make western Chicago an attractive place to live and work.

Finally, the experience found at Fermilab is a built-in hedge to guard against the innumerable pitfalls that will inevitably arise during this project's construction and operation. The emerging high-tech community, the proximity of many premier research universities, and a labor force skilled in tunneling work will all ensure the SSC is operational on time and within budget.

Again, I strongly endorse the Fermilab site in Illinois. Considerations of economy, quality-of-life, and experience all point to Fermilab as the best choice for the SSC. I urge the Task force to locate the project there.

Very truly yours,

Henry J. Hyde

HJH/ajn

HA.1 2451

225-775 88 - 15 (BOOK 6)

LETTER 1277

American National Can

FRANK W. CONSIDINE
Chairman of the Board

September 29, 1988

Dr. Wilmot Hess, Chairman
SSC Site Task Force
Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Dr. Hess:

Permit me to point out some of the advantages our company experiences as a result of having our headquarters in Chicago. By way of introduction, we are the world's largest packaging company, operating 112 facilities, 22 of which are located overseas. We believe benefits similar to those we experience would accrue to the SSC if located in Illinois.

Our customers, suppliers, bankers, overseas personnel and visitors see us regularly and efficiently with Chicago's time-saving air services. Emergency air cargo facilities often save down time for our factories in the area. Locating the SSC at Fermilab would provide a central U.S.A. location, with superior air transportation services and an excellent highway system for use by the SSC's various constituencies.

From a personnel point of view, our people find attractive living conditions for their families, fortified by outstanding higher education and cultural institutions.

The Chicago area is the world's leading air transportation hub. Along with attractive living conditions and appealing cultural and educational opportunities, the Chicago area is the most convenient, efficient and desirable area in which to operate the Super-Collider.

Sincerely,

American National Can Company/8770 W. Bryn Mawr Ave., Chicago, Illinois 60631-3504 (312) 399-1500

LETTER 1278

United States
Environmental Protection
Agency

External Affairs (A-100AE)
Washington DC 20460

EPA

Federal Activities

Dr. Wilmot Hess, Chairman
SSC Site Task Force
ER-65/GTN
Office of Energy Research
U.S. Department of Energy
Washington, D.C. 20545

Attn: SSC DEIS Comments

Dear Dr. Hess:

1 In accordance with Section 309 of the Clean Air Act and our responsibilities under the National Environmental Policy Act, the U.S. Environmental Protection Agency (EPA) has reviewed the U.S. Department of Energy's (DOE) Draft Environmental Impact Statement (EIS) for the Superconducting Super Collider (SSC). This Draft EIS analyzes the environmental impacts of construction and operation of a proton particle accelerator at seven potential sites. The proposed facility would be an oval tunnel 53 miles in circumference. Most of the facility is located underground, with support facilities above ground at several points around the circumference. The Draft EIS presents and analyzes a large quantity of information concerning the proposed facility and sites; however, given the early stage of design and planning, DOE has also committed to the preparation of a site-specific Supplement to this analysis. EPA supports this approach, because much needed information of a site-specific nature is not presented in this document.

2 EPA believes that significant air pollution impacts may result from this proposal. In all likelihood, the facility will be subject to Prevention of Significant Deterioration (PSD) review and Part D New Source Review (NSR). The Final EIS needs to explain the applicable requirement for each state for that state's air pollution control program. In most cases, these programs have been delegated to the states by EPA. Similarly, the need for a permit for the emission of radionuclides under 40 CFR 61 needs further discussion, since it will trigger PSD and NSR. Further, the Draft EIS shows apparent violations of particulate standards (PM10) under the National Ambient Air Quality Standards during construction. Such violations are not allowed even for temporary construction activities. As a result of these air pollution concerns, major mitigation action is needed and consultation with EPA regional offices and state air pollution control programs is required.

3 EPA believes that impacts to wetlands at proposed SSC sites also present a major environmental issue. Several of the sites (Michigan, Illinois, and North Carolina) involve substantial impacts from filling wetlands. To receive a permit under Section 404 of the Clean Water Act, these activities must comply with the Section 404(b)(1) Guidelines. If one these sites is selected, major mitigation action will be necessary. In most cases, this mitigation would be the functional replacement of the

filled wetland. This mitigation need should be presented in the Final EIS for two reasons: first, the needed mitigation presents the environmental impacts at the individual sites more clearly; and second, the cost and technical feasibility associated with replacing hundreds of acres may be an important criterion for selecting or not selecting sites. The Draft EIS does not present mitigation plans for these impacts, and EPA strongly recommends that this information be presented in the Final EIS.

4 In accordance with EPA's policies, we have rated this Draft EIS EO-2 (Environmental Objections--Insufficient Information). EPA's environmental objections do not involve the concept of the SSC itself, but the potential unmitigated impacts connected with several of the sites. EPA believes that, from an environmental perspective, the choice of sites should consider the potential and cost for complete mitigation of the impacts.

5 I am enclosing detailed comments that more fully explain EPA's concerns regarding the proposal. I have asked Dr. W. Alexander Williams (382-5909) of my staff to contact your staff to arrange a follow-up meeting for the discussion of EPA's comments.

Sincerely,

Richard E. Sanderson
Director
Office of Federal Activities

Enclosure

cc w/enclosure:
Ms. Carol Borgstrom
Director
Office of NEPA Project Assistance
Department of Energy (EH-25)
Washington, DC 20585

Detailed Comments of the
U.S. Environmental Protection Agency
concerning the U.S. Department of Energy's
Draft Environmental Impact Statement
for the Superconducting Super Collider

Air and Radiation Issues:

6 1. The SSC is probably subject to Prevention of Significant Deterioration (PSD) review or Part D New Source Review (NSR) under the Clean Air Act.

7 2. Some states may not exempt fugitive and secondary emissions from applicability determinations, and, if they do not, the SSC is subject to PSD and NSR because of the 100 ton per year (tpy) threshold in non-attainment areas and the 250 tpy threshold in attainment areas. Some states have lower cut off levels for major sources than the federal requirements. The Final EIS should explain the applicability requirements for each site.

8 3. The SSC emits airborne radionuclides to some extent. This emission will trigger PSD review and NSR for the facility. Although the emissions appear to meet all applicable regulations for radioactivity, the Draft EIS does not show that the emissions are as low as reasonably achievable. This discussion should also be presented.

9 4. The potential emissions from the emergency diesel generators must also be counted when determining if the SSC is subject to PSD or Part D NSR.

10 5. Even if the SSC is exempt from PSD review, it consumes increment in all attainment areas where the PSD baseline has been set. Construction activities are not exempt from increment consumption, since they last more than two years. In some states, the construction emissions as reported in the Draft EIS would violate the TSP increment even if there were no other increment-consuming activities in the area. Consequently, mitigation measures should be discussed in the Final EIS, as well as in the site specific Supplement.

11 6. National Ambient Air Quality Standards (NAAQS) violations are not allowed, even if they are temporary. Even if the SSC is exempt from PSD and Part D NSR, the general NSR still applies. The Draft EIS shows apparent violations of the PM10 NAAQS, and possibly other NAAQS, due to construction-related emissions. Violations are not allowed even if the emissions are "temporary" (which they are not in this case since the construction period is seven years). This problem might be solved if NAAQS exceedances are in areas from which the general public is precluded (i.e., is not considered "ambient air"), or if mitigation measures or offsets are obtained.

12 7. All emission increases of non-attainment pollutants in areas that are designated non-attainment must be accounted for either by case-by-case

offsets or a growth allowance. There are no "de minimis" levels for sources locating within a non-attainment area.

13 8. References to and comparisons with the total suspended particulates (TSP) NAAQS should be eliminated, since the TSP NAAQS was revoked last year. TSP emissions and air quality estimates should be retained, since it is still pertinent under the PSD program and in states that have their own TSP ambient standards.

14 9. There should be some assurance that the most up-to-date version of the Industrial Source Complex Short Term (ISCST) air pollution modeling code was used for the analysis. There have been several recent changes in this guideline model. The Final EIS should reference the particular version of the code that was used.

15 10. If the project includes renovation or demolition of existing structures, then a survey to determine the location and presence of asbestos should be undertaken in advance. If asbestos is found, the asbestos must be removed in compliance with the National Emission Standards for Hazardous Air Pollutants (NESHAPS) for asbestos.

Water-related Issues:

16 1. EPA urges that DOE closely coordinate with various state water pollution control agencies to ensure that all project activities are consistent with the states' new non-point source water management programs. In 1987 the Clean Water Act was amended by adding Section 319, which requires states to assess non-point source water pollution problems, develop non-point source pollution management programs, and implement controls to protect and improve water quality. Controls should be implemented for any project activities that could result in non-point source water pollution problems. Once final rules are developed by state water pollution control agencies, DOE should coordinate its planning activities with the state agency.

17 2. The Draft EIS does not provide information on specific wetland impacts for any of the sites. The document addresses only general types of impacts anticipated to occur, such as permanent losses, temporary losses, and unavoidable impacts due to construction and operation. Pursuant to Section 404(r) of the Clean Water Act, a Federal proposal to Congress to fund a specific project must provide appropriate documentation within the EIS. For this reason, the Final EIS must include sufficient information to determine if a proposed discharge into the waters of the United States, including wetlands, complies with the Section 404(b)(1) guidelines. Similar information is required if DOE seeks a Section 404 permit without utilizing Subsection 404(r). Specifically, the Final EIS or the site-specific Supplement must include the following information:

18 a) Alternative analysis-- The SSC is not dependent on water. The Section 404(b)(1) Guidelines state that alternatives to filling in of wetlands are presumed to be available for a non-water dependent project, unless clearly demonstrated otherwise. The justification of the

preferred site in the Final EIS must clearly state how SSC impacts to wetland resources would be avoided.

19 b) Impact minimization-- The Draft EIS presents a conceptual design plan for the SSC. The Final EIS or the Supplement must clearly demonstrated minimization of impacts to wetlands in the development off the final site design. Construction plans for surface facilities should be flexible to the extent practicable in minimizing filling of wetlands. Best management practices to control erosion should be presented in the Final EIS or the Supplement, along with implementation plans. Measures for minimizing hydrologic impacts to surface water and wetlands due to pumping and seepage during shaft construction should also be addressed.

20 c) Mitigation-- The Draft EIS does not present any specific mitigation plans for wetland impacts. The Section 404(b)(1) Guidelines state that habitat development and restoration techniques can be used to compensate for destroyed habitats. The need for mitigation at all sites needs to be addressed in the Final EIS, as well as the cost of mitigation. This may be significant at the Michigan, Illinois, and North Carolina sites, where 2800, 850, and 258 acres (respectively) would be lost.

21 3. In volume IV, Appendix 7, use of an evaporation pond to handle cooling water blowdown water is discussed. In several of the states, evaporation rates, averaged throughout the year, are negative. This means that these ponds would accumulate more water than they evaporate in a given year. It appears that evaporation ponds would not be a feasible method for handling the blowdown at all the sites. Alternate methods, as well as the impacts associated with them should be discussed in the Final EIS.

Hazardous Waste Issues:

22 1. In Volume IV Appendix 4, #4.6.1, Environmental Radiation-- This section should also address the net results of additional radioactivity generated by the SSC. This could result in RCRA regulated wastes becoming radioactive (i.e., radioactive mixed waste) or long lived radionuclides leaching into groundwater.

23 2. Volume IV Appendix 4, #4.6.2.1, Hazardous/Toxic Materials-- This section should address hazardous residual waste generated during the construction and operating phases with respect to the fate and transport of hazardous materials in the underground environment.

24 3. Volume IV, Appendix 10-- Since industrial solvents and chemicals would be used within the SSC tunnel during the operation phase, the section also needs to discuss the impact of the projected tunnel shaft depth to groundwater. This includes the effects of activated soil and groundwater surrounding the SSC tunnel with regard to radioactivity and the fate and transport of hazardous substances both onsite and offsite.

25 4. Chapter V (Environmental Consequences and mitigative measures) needs to discuss in depth cumulative impacts/residual impacts in conjunction

with the 40 CFR 261.33 list of hazardous substances (P, U, and Appendix VIII).

26 5. Estimates of the hazardous waste produced by the SSC is shown in Volume IV, Appendix IO, page 109. The annual quantity is estimated at IO,000 gallons per year. The SSC would be considered a hazardous waste generator under RCRA and must comply with 40 CFR 262 and permit regulations at 40 CFR 262 and 270. In the Final EIS, the RCRA status of the SSC should be determined and the basis of the determination should be discussed.

27 6. Disposal of sewage and wastewater is discussed in Volume IV, Appendix 10. The Draft EIS did not indicate whether hazardous wastes would be part of the waste stream sent to the wastewater treatment plant. If hazardous wastes are part of the waste stream, then any sludge generated from treatment onsite would be regulated under RCRA.

28 7. Prior to construction at any of the sites, DOE should contact EPA to determine the presence and locations of hazardous waste sites in the vicinity of the project so that potential impacts can be determined and mitigated.

29 8. All solid waste, trash, and the like must be disposed in a State permitted landfill or other facility.

30 North Carolina Site:

1. The facility would impact an estimated 258 acres of wetlands. If these impacts cannot be avoided, then mitigation including replacement in kind will be necessary.

31 2. Since the facility would be located in the headwaters of the Neuse and Eftrie River drinking water sources for the Durham/Raleigh Metro Area, great care will have to be taken to deal with the construction and post-construction runoff from the project. Mitigation measures should be outlined in the Final EIS or the Supplement to deal with potential spills and sedimentation problems.

32 3. More detail on the disposal of spoils is needed.

33 4. The area is currently experiencing rapid growth with resultant impacts on the water and sewer systems, air and water quality. The secondary impacts of the SSC are of real concern and need additional detail. In particular, sewage capacity is strained and waste load allocations in the area's surface water is a further problem.

34 5. Measures to reduce TSP and particulates are needed since the Draft EIS predicts exceedances from construction activities.

35 6. Noise mitigation measures to address impacts from blasting and other construction need further attention.

36 7. The impacts of the high number of road miles should be discussed as

it relates to noise, air quality, and non-point source water pollution.

37 8. The discharge of cooling tower water needs to be addressed.

38 9.The maps of the area should identify the Little River Reservoir and Falls Lake, two major reservoirs in the region.

39 Tennessee Site:

1. Mitigation should be planned for the 10 acre wetland impact.

40 2. More detail concerning the 364 acre spoil disposal area should be provided.

41 3. The consequences of the loss of 350 water wells in the 1000 foot restrictive zone should be discussed.

42 4. Mitigation measures to reduce airborne particulates should be implemented during construction activities.

43 5. Further discussion of secondary impacts from road construction and induced growth should be provided.

44 Michigan Site:

1. As discussed previously, substantial efforts are needed to mitigate the impacts on 2800 acres of wetlands.

45 2. We are concerned about the potential drawdown of the aquifer at this site, even though the impacts from drawdown are not as severe as at some of the other sites. The specifics of which homes, businesses, and wells will be affected needs to be presented in the Final EIS or the Supplement. The effect on wetlands from drawdown also needs to be discussed.

46 3. The disposal of the tunnel spoils is also a concern at this site, and more details of the spoil disposal need to be given.

47 4. The exceedances of air quality standards need to be mitigated and mitigation approaches require discussion. The potential violation of these standards need to be discussed with the State air quality staff, as well.

48 Illinois Site:

1. Mitigation measures need to be presented and implemented for the affected wetlands, as discussed in more detail previously.

49 2. The Draft EIS acknowledges that the bedrock aquifer near Fermilab is currently overdrawn, and the proposed tunnel will add to the drawdown of the aquifer. The impacts will be significant near the tunnel.The Final

EIS or the Supplement should provide more specific information concerning which homes, businesses, and wells will be affected, which can utilize existing public water supplies, and which will have to dig deeper wells. Estimated costs, as well as the source of payment, should also be provided. The Draft EIS estimates water infiltration rates into the tunnel at 10-15 gpm per 100 feet of tunnel. It is likely that the bedrock in the vicinity of the construction site is more fractured than the bedrock surrounding the Deep Tunnel project in the Chicago area. We would expect more grout and concrete lining will be necessary at the Fermilab site, and cost estimates should reflect this need for additional grouting. The effect of the aquifer drawdown on wetlands also needs to be considered.

50 3. Disposal of spoils is again a concern, and disposal options need to be addressed in more detail.

51 4. The projected exceedances of air quality standards require mitigation, as discussed previously. Particular emphasis needs to be placed on dust suppression and reduction of other particulates.

52 5. If the Illinois site is selected, there may be (as the draft EIS notes) surface deposits of thorium-contaminated soils throughout the City of West Chicago, Kress Creek, and the DuPage River area. Monitoring for thorium and its decay products should be undertaken for any excavation in these areas. If concentrations above background levels are encountered, EPA should be notified concerning the handling and disposal of the soil.

Texas Site:

53 1. The emissions of dust and other particulate matter need mitigation to avoid violation of air quality standards.

54 2. We note that the number of days in 5 years that would have high air pollution potential for Texas is "0" (4.4.1). Based upon past monitoring data, especially ozone data showing exceedances of the ozone standard, this assertion does not reflect measured conditions. Texas also has the lowest ambient air quality data for site alternatives for TSP, both 24-hour average and annual geometric mean.

55 3. Texas also has the highest ambient ozone concentration for all seven sites. This measurement was taken in North Dallas, which reflects both localized ozone formation and transport from downwind. It is reasonable to assume that the value in Ellis County will be lower. Ellis County is currently unclassified for ozone. While the worst case ambient air concentrations (Table 5.1.3-3) for TSP 24-hour and annual are expected to exceed NAAQS limits, the exceedances only occur during construction. Since the construction period is seven years long, mitigation measures are needed to prevent violations of the applicable standards.

56 4. Combustion products from construction equipment and the increase in vehicle miles are predicted to cause emissions increases of nitrogen dioxide and volatile organic compounds, which are precursors of ozone formation. However, no inference can be drawn on the impact to ozone

formation in Dallas or Tarrant Counties without a very extensive analysis. We encourage DOE to consult the Texas Air Control Board, so these emissions can be estimated in future emission inventory projections for the area.

Colorado Site:

57 1. NPDES permits would be required for point source discharges of domestic wastewater, cooling tower blowdown, and construction dewatering. In Colorado EPA administers the NPDES program for federally-owned or federally-operated facilities. However, if the contractor were to be the permitee for the discharge of the water from construction activities, the State would issue the permit. EPA does not require NPDES permits for domestic wastewater land application systems that do not have a stream discharge, but the State does and if the State were to be authorized to issue permits for federal facilities, the State would require a permit. Colorado does regulate sludge disposal at federal facilities. If the sludge is going to be disposed of on land for beneficial use then an application must be filed with the Department of Health. If the sludge is to be disposed of as a solid waste then the site will need a Certificate of Designation from the County Board of Commissioners.

58 2. DOE is strongly encouraged to work with the State to obtain the required water supply from existing diversions of surface waters such as the Colorado Big Thompson Project. Additionally, the issue of groundwater recharge should be addressed in the supplemental EIS if the Colorado site is selected.

59 3. Construction of the proposed SSC access highway to I-76 would involve loss of important wetlands just north of Barr Lake State Park. Although the specific number of impacted wetlands at the SSC site is noted the Draft EIS, the loss of wetlands due to the construction of the access corridor is not specified. Discharge of dredged or fill material to these wetlands will be subject to individual permit requirements under the Clean Water Act Section 404 permit program. EPA recommends that DOE examine either use of an alternative route or a structure which will avoid the impacts to the inter-connected wetland complex north of Barr Lake.

60 4. There will be increases in air pollutants from expansion of transportation to the site as a result of approximately 9,000 construction jobs and 5,000 operational jobs. Under the Clean Air Act, EPA is considering extending the definition of non-attainment areas to county boundaries. If this happens, then the western edge of the proposed site including the campus, injector, and beam access area which are in Adams County would be in the non-attainment area for carbon monoxide and particulates. As such DOE would have the affirmative responsibility under section 176(c) of the Clean Air Act to assure that its actions did not cause a delay in attainment of NAAQS. Although it appears that only a small increase in vehicle-miles-traveled would occur within the Denver air quality non-attainment area as a result of the SSC, it would be appropriate to consider the use of carpools, vanpools, and bus to reduce air emissions.

Arizona Site:

61 1. The description of each state's approach to antidegradation in Volume I, Chapter 6 of the Draft EIS is confusing and possibly inaccurate. For example, it is unclear what the statements "Arizona and Colorado propose limits" and "Arizona provides flexibility through a reclassification procedure" mean. In addition, the statement "Arizona plans to have standards effective prior to the SSC operations" appears to be inaccurate. Arizona's Water Quality Standards already include antidegration provisions at R9-21-202. Arizona's procedures for implementing the antidegradation provisions of its water quality standards are, however, still under development.

2. EPA strongly encourages DOE to implement the mitigation measures described on pages 17 and 18, Volume IV, Appendix 7 of the Draft EIS to minimize the impacts on surface water quality of non-point source pollution from the construction activities. Specifically, DOE should:

62 a. schedule construction to limit the area of a watershed that is disturbed,

b. promptly regrade and restore excavations,

c. provide diversions around heavily constructed areas,

d. use surface protection, and

e. staging construction activities such as excavation in smaller amounts.

LETTER 1279

Comments on the DEIS for the

Superconducting Super Collider in

ILLINOIS

Chapter 1
General Comments

IIA.1- 2463

LETTER 1279 (CONTINUED)

Illinois Department of Energy and Natural Resources

325 W. Adams Street, Room 300
Springfield, IL 62704-1892
217 785-2800

October 13, 1988

Dr. Wilmot N. Hess, Chairman
SSC Site Task Force
U.S. Department of Energy
ER-65 GTN
Washington, D.C. 20545

Dear Dr. Hess:

Enclosed are the State of Illinois' written comments on the Draft *Environmental Impact Statement (DEIS) for the Superconducting Super Collider.* We in Illinois are pleased to see confirmation that there are no environmental impacts that would jeopardize the SSC project and, more importantly, there are no significant impacts which would preclude selection of Illinois as the site for the SSC.

326

These extensive comments are the product of a painstaking review of the DEIS by the experts working on the SSC for the State and represent our belief that Illinois is the best site for the SSC. We enjoyed this opportunity to further the SSC project and look forward to continued involvement.

Sincerely,

Don Etchison
Director

DE/jb

1000sy

CHAPTER INDEX TO THE ILLINOIS
COMMENTS ON THE SSC DEIS

Chapter	Subject
1	General Comments
2	Detailed Technical Comments
3	Mitigation Strategies
4	Environmental Assessment
5	Single Campus Design
6	Cost Study
7	Citizens Advisory Task Force Report
8	Good Neighbor Legislation

LETTER 1270 (CONTINUED)

STATE OF ILLINOIS

COMMENTS ON THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE
SUPERCONDUCTING SUPER COLLIDER

October, 1988

Chapter 1
General Comments

PREFACE

In August, 1988 the U.S. Department of Energy (DOE) published the Draft Environmental Impact Statement (DEIS) for the Superconducting Super Collider (SSC). The DEIS presents impact assessments of the seven sites selected by DOE as the best qualified for the SSC. One of these is the Illinois Site.

This series of documents presents State of Illinois (the State) comments on the DEIS. Developed during the State's review of the DEIS, they include both general, or overview comments (Chapter 1) and specific technical comments (Chapter 2), as well as relevant supporting chapters. These supporting chapters are: 3) Mitigation Strategies for the Illinois SSC Site, which provides the most recent thinking by the State on ways to mitigate major impacts, 4) the Environmental Assessment report, prepared by the State and previously provided to DOE as part of the BOL data submittal, 5) the Lederman and Teng report on a single campus SSC, 6) the A. T. Kearney report on cost savings possible with Fermilab, 7) The Citizens Advisory Mitigation Report, and, 8) The Illinois Good Neighbor Legislation.

327

As indicated above, in Chapter 2 the State has prepared specific technical comments on the DEIS, which it requests the DOE address and incorporate into the Final EIS. To aid DOE in ensuring that each comment is addressed, they have been organized into topic areas. Each comment is identified by an alphanumeric code that includes a three-letter identifier for the topic area followed by a three digit number. In alphabetical order, the topic areas and identifier codes used are:

Topic Area	Code
Aesthetics	AES
Agricultural Production	AGR
Air Quality	AQL
Biological Resources	BIO
Blasting and Vibration	BLS
Costs	CST
Cultural and Paleontological	CUL
Excavated Material	EXC
Geology and Geoengineering	GEO
Ground Water	GWT
Health and Safety	HEA
Land Acquisition	LND
Land Use	LUS
Natural Depletable Resources	NDR
Prime and Important Farmland	PRI
Proposed Action	PRP
Radiation	RAD
Socioeconomics	SOC
Surface Water	SWQ
Threatened and Endangered Species	TES
Transportation	TRN
Utilities	UTL
Waste	WST
Wetlands	WET

The comments within each topic area are numbered consecutively from the beginning to the end of the DEIS. Each comment is indexed to the location and subject of the DEIS document referenced.

To further assist DOE, cross referencing of comments is also provided by DEIS section and by specific subject.

This chapter (1) presents a general comment on the DEIS. This general comment represents the State's overview assessment of the DEIS and points out actions the State recommends DOE take in revision of the DEIS and production of the Final EIS document.

References used in developing the comments are provided with the respective comment. Where material not previously provided DOE has been used, these new materials have been sent to DOE under separate cover.

GENERAL COMMENTS

The State has reviewed the DEIS with special attention to the following three points:

1. Compliance with the National Environmental Policy Act (NEPA)
2. Protection of the rights and interests of the State of Illinois and its citizens
3. Accurate characterization of the Illinois site and the supporting environmental data base.

328

As discussed below, and detailed in the supporting technical comments, this review has identified a number of areas of concern. The State requests that DOE address each of these areas in its revision of the DEIS.

These areas of concern are presented below in overview fashion. Comments on specific sections of the DEIS are presented in the technical comment chapter.

NEPA Compliance

The spirit and intent of NEPA clearly require that the impacts and benefits of all reasonably identified alternatives be considered and the differences between alternatives be discussed in an EIS. Specifically, the Council on Environmental Quality's (CEQ) NEPA guidelines (40 CFR 1502.14) state that agencies shall "(a) rigorously explore and objectively evaluate all reasonable alternatives ...".

329

While the DEIS does present comparative data for the seven sites in many categories, in several key areas this information is lacking. In large part this reflects differences between Illinois and the other six sites. These differences result from

Illinois' unique ability to site the SSC at an existing high energy physics research facility, Fermilab.

Because these differences are significant and make the Illinois site a unique alternative, and because their careful analysis is clearly mandated under NEPA, the State requests that DOE include appropriate comparative analyses of the following topics:

330 Cost. The DEIS acknowledges that cost estimates were prepared for each of the seven sites but presents a single cost for the SSC, based on summing and averaging costs from all seven.

331 The CEQ (40 CFR 1502.23) states: "If a cost-benefit analysis relevant to the choice among environmentally different alternatives is being considered for the proposed action, it shall be incorporated by reference and appended to the statement as an aid in evaluating the environmental consequences." CEQ (1502.23) further states ". . . an environmental impact statement should at least indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision." Since DOE's Invitation for Site Proposals of 1 April, 1987 (ISP) stated that cost considerations were important and would be used in conjunction with the technical evaluation criteria, the cost estimates for each site should be provided as an aid in evaluating the consequences of selecting a specific site. If DOE has any cost studies on which it intends to rely in making the final site selection, those studies must be made public as part of this process.

332 In developing these site specific cost estimates, the State requests that DOE confirm and use the data supplied by the State in February 1988 at the EIS public Scoping meeting for the SSC. This data is contained in the A.T. Kearney Inc. report entitled

Siting the Superconducting Super Collider at Fermilab - An Independent Cost Study (see Chapter 6). In presenting this cost analysis the DOE should evaluate cost savings possible due to:

- Use of the Tevatron as the injector for the SSC without interfering with other Tevatron functions.
- Maximizing use of the Fermilab campus and associated infrastructure to serve the SSC.
- Use of Fermilab scientific, technical and support staff to support both the SSC and Tevatron.
- Faster start-up time for the SSC due to in-place staff and infrastructure and an operating injector facility.

333 Further, the State requests that DOE also recognize cost savings of $38.5 million associated with decomissioning only a single site (Fermilab) rather than two sites should Fermilab not be selected. 334 The State further requests that DOE recognize benefits gained by extending the useful life of Fermilab by siting the SSC at this existing facility. 335 Finally, the State strongly suggests that DOE evaluate both the quality and completeness of the geotechnical data base, the amount of tunnel construction experience, availability of an experienced work force and the existence of appropriate infrastructure available for each site; and adjust the cost estimate associated with each site by adding an appropriate contingency that reflects the degree of uncertainty associated with each of these factors.

336 Consideration of Fermilab. In comparing the various sites DOE does recognize the existence of Fermilab and considers its advantages in some of its analyses. However, DOE has not clearly addressed many of the more significant environmental and other non-monetary advantages associated with selection of the Fermilab site for development of the SSC. These include:

337 1. Minimum acres of land required to be dedicated to the Project. Because Fermilab lands are already dedicated to high energy physics research the Federal Government need not acquire or convert the existing use of these lands to a new purpose. The Illinois site requires that only 3,708 acres of land be dedicated to a new use. All other states must dedicate at least 7,690 acres of land currently used for other purposes to use as a high energy physics research facility. Even Arizona's site, located partially on Federal land, which will require the purchase of only 5,075 acres of non-federal land, will still necessitate conversion of the Federal lands currently under multiple use management by the Bureau of Land Management (BLM) to single purpose use by the SSC.

338 2. Reduction in irreversibly committed natural and depletable resources. There are several factors that will allow significant conservation of cement, glass, steel, asphalt, wood, and other depletable resources if the SSC is sited in Illinois. They include committing less land to a new use and maximizing use of Fermilab's existing campus (see above), along with the facts that; many Fermilab structures can be used to serve the SSC, the Illinois tunnel will not require concrete lining and the Illinois site will require the least new or upgraded infrastructure (roads, railroads, electric, gas, sewage and water lines, etc) of any of the seven sites.

339

340 3. Fewer construction and operation impacts. To the degree that existing Fermilab infrastructure can serve the SSC as well, overall construction impacts (noise, dust, traffic, erosion etc.) are reduced for the project. Similarly, water use, power consumption, waste generation, induced growth and almost all other operational impacts are also reduced.

4. Avoidance of the need to decommission two sites. As previously mentioned, selection of Fermilab as the site for the SSC will mean that no new high energy physics facility will require decommissioning in the future. While safe and reliable decommissioning is possible for the SSC, it is perhaps one of the more significant of the impacts associated with the project. In addition to the $38.5 million cost, previously mentioned, decommissioning will require a serious commitment of time and resources by future generations. No such commitment of future resources can be made lightly. Because the injection facilities (ie. the Tevatron) are among the major components that require careful treatment and care during decommissioning, Fermilab already represents one such future commitment. Selection of Fermilab avoids unnecessary duplication of this burden on future generations.

341

5. Extension of Fermilab's useful life. Siting the SSC at Fermilab, with the Tevatron serving as the injector complex for the SSC while still meeting its original purpose as a proton-antiproton collider, will have a positive synergistic effect on the useful life of both the Tevatron and the SSC. In contrast, siting the SSC elsewhere, at best, will significantly shorten the useful life of the Tevatron (and thus Fermilab) and, at worst, will result in early abandonment or the need for complete rededication of Fermilab to other programs, with concomitant costs. In either case, failure to maximize the useful potential life of this existing facility is not in the best interest of the Nation.

342

6. Faster start-up and more rapid return on investment. Fermilab, with an existing, operating accelerator, a functioning scientific, technical, clerical and support staff, and an in-place infrastructure will allow for a significantly faster start-up time for the SSC. Faster start-up means

343

more rapid return on investment, not just in monetary terms, but more importantly in terms of scientific discovery.

344 The State requests that DOE include an evaluation of these differences between the Illinois site and all other sites in the Final EIS.

Protection of the Citizens of Illinois

345 As specified in the CEQ NEPA guidelines (40 CFR 1502.14 and 1502.16) an EIS shall "Include appropriate mitigation measures not already included in the proposed action or alternatives." (1502.14) and shall ". . . include discussions of: ..... (h) Means to mitigate adverse environmental impacts (if not fully covered under 1502.14(f))." (1502.16).

346 The DEIS does contain some discussion of mitigation measures for the various sites, but does not include or discuss many of the specific mitigation measures already proposed by the State of Illinois. In particular, the DEIS does not appear to recognize the mitigation proposals presented in the State's environmental assessment of the SSC (Volume 3 of the March 15, 1988 BOL data submittal resubmitted herein as part of Chapter 4). The Final EIS also should present a discussion of alternative layouts to the standard template presented in the TSP as reasonable alternatives to be considered.

347 The State has devoted (and continues to devote) considerable effort to develop alternative mitigation actions for consideration by DOE. Because of the importance these actions will have to citizens of the State, particularly those living in and near the proposed SSC site, the State requests that DOE consider all the mitigation options presented and include them in the Final EIS. In particular, the State requests that DOE clearly recognize those mitigation actions to which the State already has committed

within its area of responsibility for property acquisition, tunnel and shaft excavation, and various other infrastructure improvements.

The State has prepared a mitigation strategies summary that presents the possible options identified to-date. To aid the DOE in incorporating these mitigation options this summary is submitted to the DOE as Chapter 3 of these comments, for consideration and inclusion in the Final EIS. The mitigation strategies prominently include alternative design layouts initially conceived during the State's Site proposal preparation process, and subsequently refined following submittal of the BQL data requested by DOE. These layouts were developed in more detail as a result of the State's ongoing public involvement activities, a basis for serious assessment of the Illinois site following its selection as the preferred site for the SSC. 348

A major set of alternatives, suggested by citizens concerns, are to eliminate some or all of the West Campus of the SSC. The State requests that DOE include a complete evaluation of this alternative in the Final EIS. Recent thinking by the theoretical physics community (Lederman and Teng, 1987) favors the concept of a single campus facility, partially for reasons of efficiency of operation, and the existence of Fermilab serving as the East Campus greatly facilitates this alternative. The Nation would realize significant land acquisition, construction and operation and maintenance cost savings from this alternative. Based on the State's analysis, the single campus alternative using the existing Fermilab facility as the East Campus, is not only the best environmental alternative (based on significantly less land and property impacts) but is the most cost-effective and technically efficient alternative as well. The State's analysis of this alternative is presented in Chapter 3, entitled Mitigation Strategies for the Illinois SSC Site. The design alternative on which this is based is presented in Chapter 5. 349

Characterization of the Illinois Site

350 The State's review of the DEIS has also identified specific subjects where the DOE appears to overstate impacts and/or misinterpret the Illinois data base. These areas of concern are treated in the detailed technical comments chapter and are summarized below.

351 Significant Impacts. The first table of the DEIS (Volume I, Table 1-1) presents a site by site comparison of what are characterized as Major Impacts for the SSC. The Illinois site database does not support the characterization of these impacts as major impacts. Neither are many of these impacts as severe as presented. At the same time, this table does not present, except indirectly, those few impacts which clearly would be "major" at alternative sites. That is, the permanent conversion of land to single purpose use as part of a federally owned high energy physics research facility (including land for infrastructural support and the commitment of future generations to decomissioning the project).

352 Regarding the specific impacts for Illinois, as presented in Table 1-1, the State's exhaustive review indicates that as few as 6 and no more than 14 wells would be effected by the SSC in Illinois, not 320 as stated. This is due to the depth at which the Illinois tunnel is to be constructed and the fact that it is to be excavated in an aquitard. The State has publicly committed to replacing those few wells affected.

353 Similarly, the characterization of Illinois as a State having a groundwater supply problem completely ignores the fact that plans are firmly in place to deliver Lake Michigan water to 37 suburban communities in the amount of 96,475 acre feet (ac-ft) per year by 1992 and 115,484 ac-ft per year by 2000. This water, which will mainly supplant groundwater, represents a reduction in regional

use of over fifty times the 2,178 ac-ft per year of industrial and potable water required for the SSC. Many other surface water supplies are available in the area as well. Further, the current overdraft is in deep sandstone aquifers. The water needs of the SSC could easily be met using shallow acquifers. In short, any characterization of Illinois as a State with water supply problems at all similar to those of states such as Colorado or Arizona, where long and hard fought legal battles over scarce water rights are common, is a serious misrepresentation of actual conditions.

354 The implication that 850 acres of wetlands will be negatively impacted by the SSC in Illinois is also inaccurate. Of the total wetland acres in the SSC area, less than 6.58 acres could potentially be affected. Of these, 5.69 acres have been previously altered and only 0.89 acres are identified as being unaltered. Significantly, the best wetland habitat in the project area is that found on Fermilab property and exists in its restored high quality, state only because agricultural use was discontinued after the land was acquired by DOE.

355 The assertion that the SSC could have significant impacts to either the prairie bush clover or Indiana bat also overstates the reality. This is clearly recognized in Appendix 2 to the DEIS which states: "There are no designated critical habitats for threatened (T) or endangered (E) species .... at the proposed site." Prairie bush clover occurs in the general area of Northeastern Illinois, but it has not been found (nor has suitable habitat) in any area to be impacted by SSC construction or operation. The Indiana bat is unlikely to occur in Northeastern Illinois.

356 Overstatement of impacts occur at other places throughout the DEIS and supporting appendices. These are detailed in Chapter 2

of these comments. However, one overstatement is serious and deserves special comment here.

In Volume IV, Appendix 10, page 16, paragraph 1, the DEIS states that three ponds of two acres each will be required because infiltration of water into the tunnel of 5,200 gal/min/100 ft would occur, near shaft F3. The State finds this value to be at least three orders of magnitude too high. No data in the State's extensive files would indicate an infiltration rate of more than 75 gal/min/100 ft as an initial inflow rate. Such high initial infiltration rates might occur occasionally in very localized segments of the tunnel but would rapidly drop off. Infiltration rates in the tunnel are expected to be in the range of 0-10 gal/min/100 ft, as correctly presented on Table 10.2.3-3 of Appendix 10. Perhaps more importantly, experience in over 72 miles of existing tunnel in the Chicago area has been that average initial inflows are approximately 100 gpm/mile (less than 2 gpm/100 ft). 357

The State requests that DOE review our technical comments on the accuracy of presentation of the Illinois data base and revise the impact analyses accordingly. Particularly the State suggests that: (a) the permanent commitment of land to the project, (b) the commitment of other depletable resources to construct the SSC and supporting infrastructure, (c) commitment of future generation's to decommission the project, and (d) induced growth due to development of new infrastructure all be included as major impacts and compared among all seven sites. 358

Finally, the State requests that DOE carefully examine the quality of the data base for each of the sites and adjust the impact assessments accordingly. 359

The DEIS recognizes variations in the quality and quantity of data available. It notes specifically in the second paragraph of 360

Section 6.2.2, page 4, Volume IV, Appendix 6, that each site was given equal treatment insofar as data permitted and that "... data availability influenced the process to some degree. Where data deficiencies existed for a site, these were identified and reasonable efforts made to fill the gaps." Although the preceeding quote is specific to that section of Appendix 6, it is reasonable to assume that it characterizes the procedure used throughout the DEIS.

361 Illinois' comprehensive data base may have allowed DOE personnel to more specifically pinpoint problems, identify shortcomings, and make definitive assessment of environmental impacts. A comprehensive and quality-assured data base also implies that future problems are less apt to surface and will be more easily mitigated should they arise. For example, the DEIS tabulates the data from each state and, for Illinois, this represented 62 tables and 23 figures. This is 25 percent more data display than the average for all of the BOL sites. This suggests a high level of completeness for Illinois data specific to the proposed SSC site. In addition, a comparison of the type of data available demonstrates the approach of the Illinois proposal to be comprehensive and specific to the SSC site conditions in response to each siting parameter.

362 Illinois' Geotechnical and natural history data are, generally, more complete than any other submitter. Apparently, geotechnical data were not standardized among the various sites, a fact which carries implications for site selection. An example of this is that 16 various geotechnical characteristics (parameters) for rock units were identified and reported in the DEIS for the several sites. Illinois reported on 9 of those characteristics and data for another, though available, were not used. No other site provided that range of data for the units in which the tunnel and chambers are proposed to be located. Similarly, Illinois

geotechnical data on overburden soils was not used, although reported.

363 It is standard practice in performing environmental impact assessments to do a "worst case" analysis where the data base is incomplete or lacking but to calculate or estimate impacts more precisely (but less conservatively) where reliable and sufficient data are available.

364 While Illinois apparently has provided the most complete data base of all the seven competing states, the impact analysis does not always reflect this. In many cases it appears that the Illinois site, with its extensive, high quality data, was evaluated on a worst-case basis while other sites, where few data were available, are presented as having minimal or no impacts.

365 One example of this type of presentation is the treatment of historic, archaelogical and paleontologial resources. Colorado, Michigan, North Carolina, Tennessee and Texas have apparently done only limited investigations of these resources, in contrast to Illinois (Volume 1, Table 3-7, footnotes 10-14). Yet the DEIS speculates that only "a few sites" may be found for all these states, save Michigan. In fact, without reliable and sufficient data it would be more appropriate to make a worst-case assumption about the potential impact to these resources.

366 The State recommends that DOE examine the data base for each site, and where data are lacking, provide a contingency in the form of worst-case analyses to account for this uncertainty and/or as appropriate, include a contingency in the specific site cost estimate to cover additional studies, delays or need for design and construction modifications to cover unforeseen environmental or geotechnical problems.

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2	Detailed Technical Comments
3	Mitigation Strategies
4	Environmental Assessment
5	Single Campus Design
6	Cost Study
7	Citizens Advisory Task Force Report
8	Good Neighbor Legislation

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Chapter 2: Technical Comments

This Chapter presents, by topic area, the State's detailed technical comments on the DEIS. Preceding the topic files is a cross reference of the comments by location in the DEIS. The topics are identified by a three letter code, as given below.

Topic Area	Code
Aesthetics	AES
Agricultural Production	AGR
Air Quality	AQL
Biological Resources	BIO
Blasting and Vibration	BLS
Costs	CST
Cultural and Paleontological	CUL
Excavated Materials	EXC
Geology and Geoengineering	GEO
Ground Water	GWT
Health and Safety	HEA
Land Acquisition	LND
Land Use	LUS
Natural and Depletable Resources	NDR
Prime and Important Farmland	PRI
Proposed Action	PRP
Radiation	RAD
Socioeconomics	SOC
Surface Water	SWQ
Threatened and Endangered Species	TES
Transportation	TRN
Utilities	UTL
Waste	WST
Wetlands	WET

225-775 88 - 16 (BOOK 6)

STATE OF ILLINOIS
SUPERCONDUCTING SUPER COLLIDER
DRAFT ENVIRONMENTAL IMPACT STATEMENT
TECHNICAL COMMENTS

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Comments on the DEIS for the

Superconducting Super[illegible]nder in

ILLINOIS

Chapter 2
Technical Comments

Technical Comment AES 001

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Aesthetics

LOCATION IN DEIS: Vol. I Chapter 4 PP 4-103 Paragraph 1

COMMENT IN REFERENCE TO: Visual impact absorption related to forested

TECHNICAL COMMENT:

1 While forested lands tend to screen long views. Visual impacts from construction of facilities in homogeneously forested areas can often be much more noticeable due to the disruption or cutting of the vegetation. A good example of this is a transmission line cut through a forested area. From a distance, the transmission line itself may not be visible, but the right-of-way is easily discernable because of the visual contrast created between the forest and the cleared area.

This would not be significant at the proposed Illinois SSC site because the area is not covered with a homogeneous forest cover and is presently crisscrossed with road, transmission line, and rail rights-of-way. Thus, further disruption to the landscape will not significantly change the present visual resource. However, other proposed SSC sites having a more homogeneous forest cover could be significantly impacted.

Technical Comment AES 002

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Aesthetics

LOCATION IN DEIS: Vol. 1 Chapter 5 PP 5.1.10-7 Paragraph 5.1.10.3

COMMENT IN REFERENCE TO: Visual impacts

TECHNICAL COMMENT:

2 The DEIS states that: "The industrial-yard character and large scale of the sector service areas, buildings, and tank farms are incongruous with the character of residential neighborhood and country residence." This statement implies that mitigation through architectural treatment is not being considered. The DEIS should acknowledge that cost effective architectural treatment can mitigate most of the concerns with visual impacts.

Illinois' data submittal for Best Qualified Sites (BQL), Volume 3, Environmental Assessment, pages 120-124, (Chapter 4 of this document) presents mitigation alternatives for these sites. See also Chapter 3 - Mitigation Plan Strategies.

Technical Comment AES 003

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Land Use

LOCATION IN DEIS: Vol. I Chapter 3 PP 3-64

COMMENT IN REFERENCE TO: Policy to preserve farmland

TECHNICAL COMMENT:

3 Agricultural land can be preserved for agricultural uses by minimizing/reducing surface land requirements for the SSC. In the case of Illinois optimizing use of Fermilab would allow significant preservation of farmlands.

Technical Comment AES 004

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Aesthetics

LOCATION IN DEIS: Vol. IV Appendix 16 PP 2 Paragraph 3

COMMENT IN REFERENCE TO: Assumptions used in scenic/visual assessment

TECHNICAL COMMENT:

In developing the conceptual basis for the scenic and visual resource assessment, the DEIS assumed that the baseline condition of the potentially affected landscapes would remain stable, e.g., the condition of the landscape without the project in the year 2030 is expected to be the same as it is today.

4 This is not the case as trends for rapid growth in these areas are quite apparent. DuPage and Kane Counties are some of the fastest growing areas in the State and the country with respect to residential development. The last twenty years has seen significant reductions in the rural landscape surrounding Chicago. This trend is continuing at even faster rates and there is no reason to expect that it will not continue into the future. Sections 4-10 and 4-11 of the Illinois Site Proposal presents background to the rapid growth taking place in DuPage and Kane Counties.

The visual resource assessment should take this trend towards greater urban/suburban growth into account. Many of the areas surrounding SSC sites which are now rural, will not be that way in the next five or ten years, with or without the SSC.

Technical Comment AES 005

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Aesthetics

LOCATION IN DEIS: Vol. IV Appendix I6 PP 25

COMMENT IN REFERENCE TO: Scope of impact F2 site

TECHNICAL COMMENT:

5 Discussion of the impact of F2 site on adjacent existing and proposed residential development suggests including proposed F2 facility in future residential Public Utility District, allowing proposed residences to surround and screen F2. While it is true that this will minimize the total number of homes with direct visual relation to F2, the homes themselves should not be implied as screening elements. Discussion of including F2 in the Public Utility District planning process should stress the opportunity for comprehensive mitigation of F2 facility, removing the extent to which individual homes are intended as visual barriers. Methods to screen the residences from the site should be emphasized.

LETTER 1279 (CONTINUED)

Technical Comment AES 006

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Aesthetics

LOCATION IN DEIS: Vol. IV Appendix 16 PP 13 Paragraph 1

COMMENT IN REFERENCE TO: Order of section - information repeated from preceding page

TECHNICAL COMMENT

6 The first paragraph on page 13 duplicates the last four lines of the last paragraph on page 12.

Technical Comment AES 007

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Aesthetics

LOCATION IN DEIS: Vol. IV Appendix 16 PP 25

COMMENT IN REFERENCE TO: Scope of impact, F2 site

TECHNICAL COMMENT

5 Discussion of the impact of F2 site on adjacent existing and proposed residential development suggests including proposed F2 facility in future residential Public Utility District, allowing proposed residences to surround and screen F2. While it is true that this will minimize the total number of homes with direct visual relation to F2, the homes themselves should not be implied as screening elements. Discussion of including F2 in the Public Utility District planning process should stress the opportunity for comprehensive mitigation of F2 facility, removing the extent to which individual homes are intended as visual barriers. Methods to screen the residences from the site should be emphasized.

LETTER 1279 (CONTINUED)

Technical Comment AES 008

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Construction

LOCATION IN DEIS: Vol. IV Appendix IB BP 25

COMMENT IS REFERENCE TO: Mitigation of F2 Facility

TECHNICAL COMMENT:

Discussion of mitigation should be broadened in the following fashion:

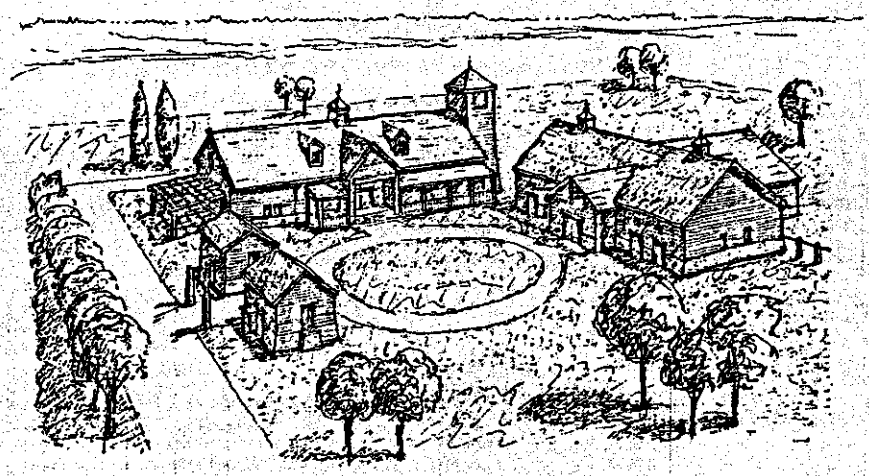
1. If F2 site and facility is included in a future residential Public Utility District Agreement, emphasis should be given to extent to which this allows for a comprehensive effort to integrate the facility into the overall plan.

2. In addition to landform and landscape methods of mitigation Illinois has proposed in its data submittal for Best Qualified Sites, Volume 3, Environmental Assessment architectural treatments for facilities which use building arrangement and massing, materials, control of circulation onsite, and treatment of tanks, cooling towers and other elements, which de-emphasize technical qualities and treat constructions in a manner consistent with residential context. Please refer to the attached exhibit and the Mitigation Plan Strategies in Chapter 3 of this document.

7

3. The state of Illinois is exploring methods of land use for F2 site which could incorporate the facility in a larger, parklike or similar type of setting. Mitigation through those means should be noted.

4. In addition to suggested berming and planting measures, mitigation involving landscape elements should include planting of local vernacular landscape species, treatments such as hedgerows, wood lots and groves of trees, copses, planted swales and other locally characteristic features.



"F" type facility
reconfigured
semi residential treatment

Technical Comment AES 008

LETTER 1279 (CONTINUED)

Technical Comment AES 009

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Aesthetics

LOCATION IN DEIS: Vol. IV Appendix 46 IV 2A, 27

COMMENT IN REFERENCE TO: Mitigation of P4 Facility

TECHNICAL COMMENT:

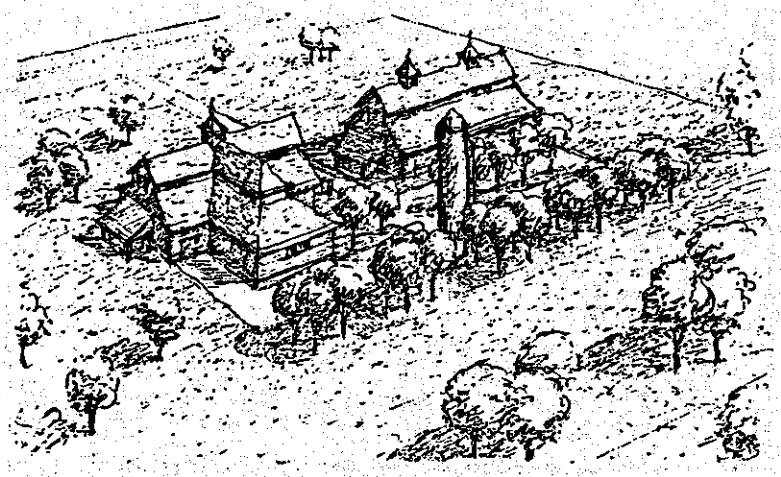
Discussion of mitigation of P4 Facility should be expanded to include:

1. Refer to Technical Comments AES 008 on F2 site for notes on berming and landscape, and alternate land use methods.

8

2. The State of Illinois has proposed site and architectural treatments for P4 which employ materials, massing, building arrangement, site traffic circulation, and adjacent elements to create a facility design integrated into and approximately sympathetic with an agricultural context. Please refer to the attached exhibit and the Mitigation Plan Strategies in Chapter 3 of this document.

HA.1- 2501



"F" type Facility
agricultural treatment

Technical Comment AES 009

Technical Comment AES 010

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Aesthetics

LOCATION IN DEIS: Vol. IV Appendix 16 PP 27, 28

COMMENT IN REFERENCE TO: Mitigation of F7 facility

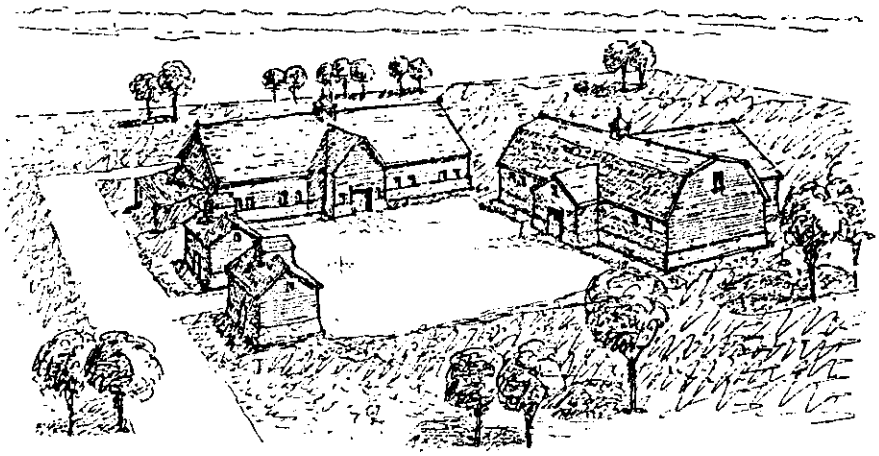
TECHNICAL COMMENT.

Discussion of Mitigation for F7 should be expanded to include the following:

9

1. Landscape materials and landforms used in screening F7 should follow comments for F2 site (Technical Comment AES 008). They should be as natural and as locally derived as possible. Berming and other shaping should be as integrated into site topography as possible. Landscape species should be as regionally indigenous as possible.

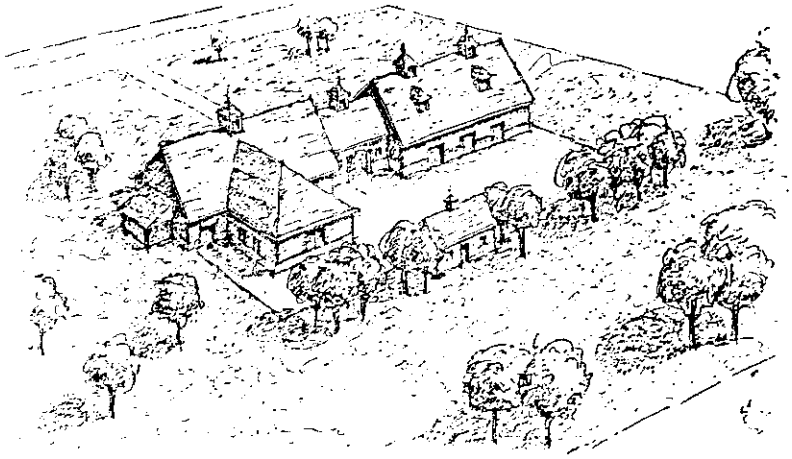
2. Please refer to the attached exhibits for illustrations of Illinois' proposed architectural and site planning treatment and mitigation plan of F7. This proposal attempts to comprehensively integrate the proposed facility into the surrounding context. and create an appearance which diminishes the technical character of the facility.



"F" type Facility
reconfigured
agricultural treatment

Technical Comment AES 010

LETTER 1279 (CONTINUED)



'F' type facility
semi agricultural treatment

Technical Comment ATS 010

Technical Comment AES 011

STATE OF ILLINOIS

SUPERCONDUCTING SUPER COLLIDER

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TECHNICAL COMMENTS

TOPIC AREA: Aesthetics

LOCATION IN DEIS: Vol. IV Appendix 16 PP 28, 29

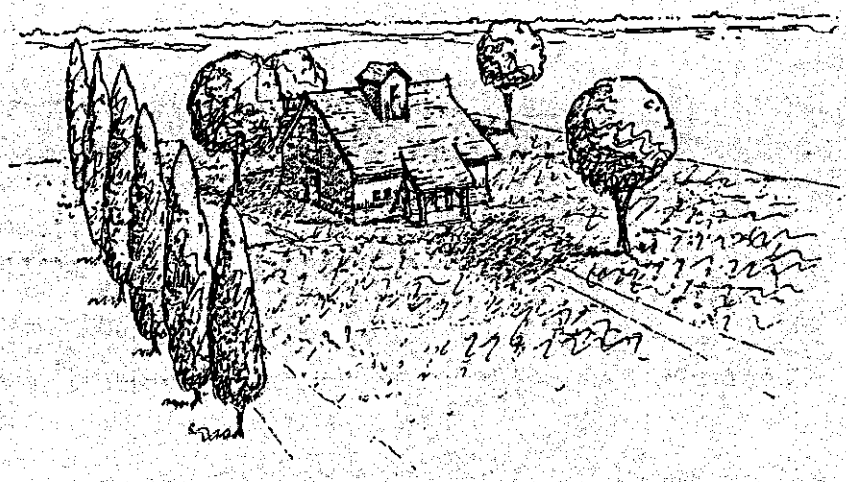
COMMENT IN REFERENCE TO: Mitigation of E8 facility

TECHNICAL COMMENT:

10 As with mitigation efforts for "F" type facilities (see Technical Comments AES 007, AES 008 and AES 009), the State of Illinois has proposed treatment of the architecture, landscape, and plan for the "E" type facility which allows for the greatest possible integration of the facility into the local context. This has involved materials, arrangements, access and landscape which allow the facility to appear to be of a completely residential character. Please refer to attached the exhibits and Mitigation Plan Strategies in Chapter 3 of this document.

Technical Comment AES 011

5 type facility residential treatment



Technical Comment AES 011

"E" type facility
agricultural treatment