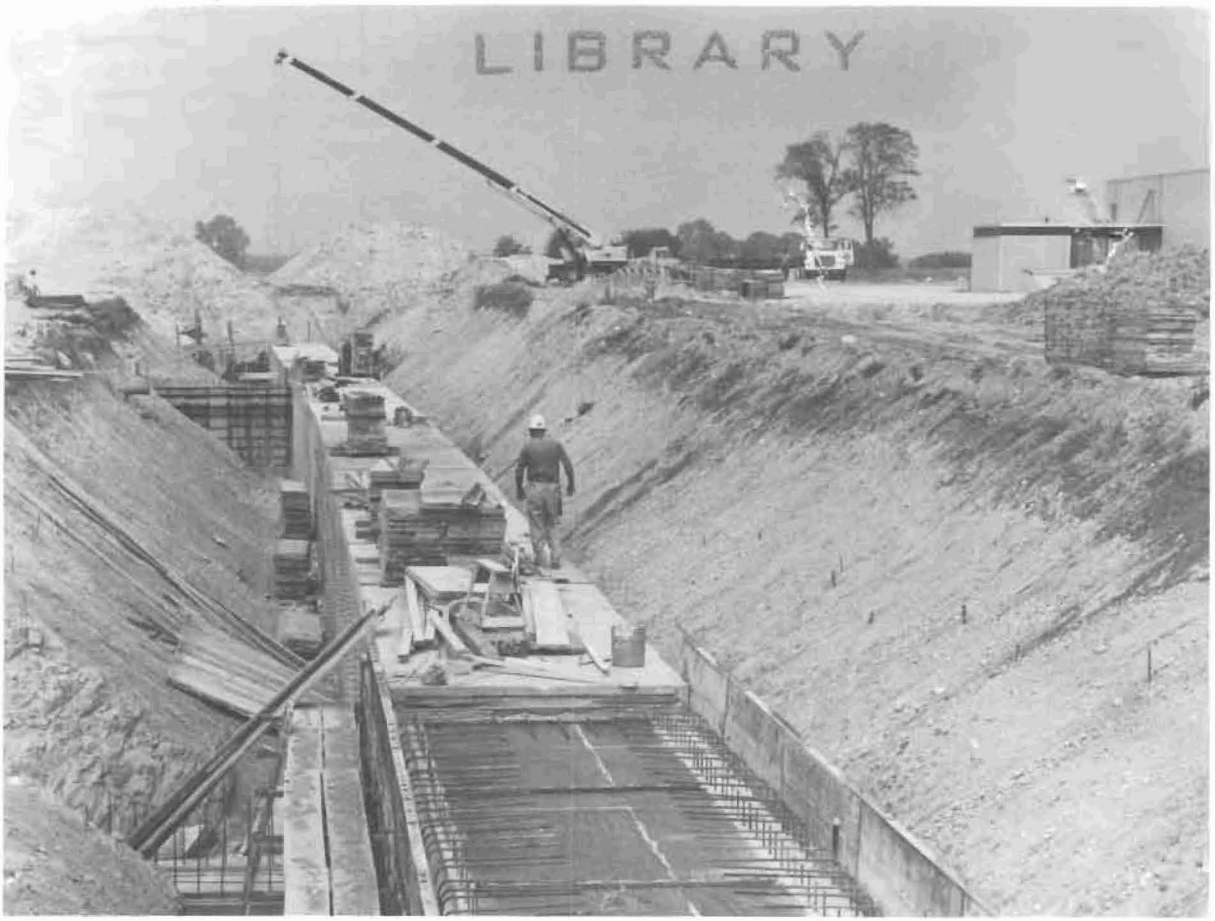
NALREP



Monthly Report of the Fermi National Accelerator Laboratory

September 1976

Fermi National Accelerator Laboratory

NALREP is published monthly by the Fermi National Accelerator Laboratory, P. O. Box 500, Batavia, Illinois 60510.

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Contributions, comments, and requests for copies should be addressed to the Publications Office.

FERMILAB-76/9 0090.01

THE COVER: The cover photograph shows construction progress on the Pion Lab in the Proton Area. The photograph is taken looking downstream. (Photograph by Rick Fenner)

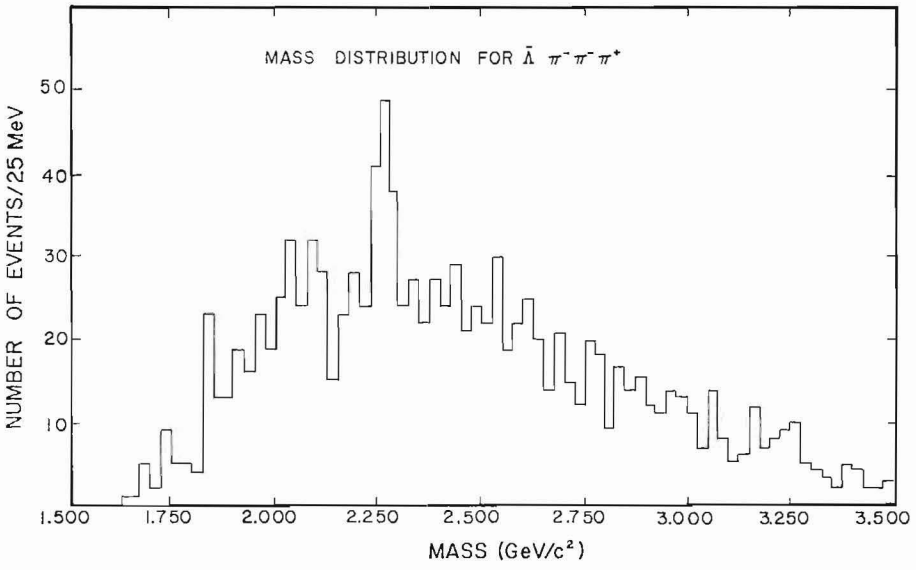
Operated by Universities Research Association, Inc., under contract with the United States Energy Research and Development Administration

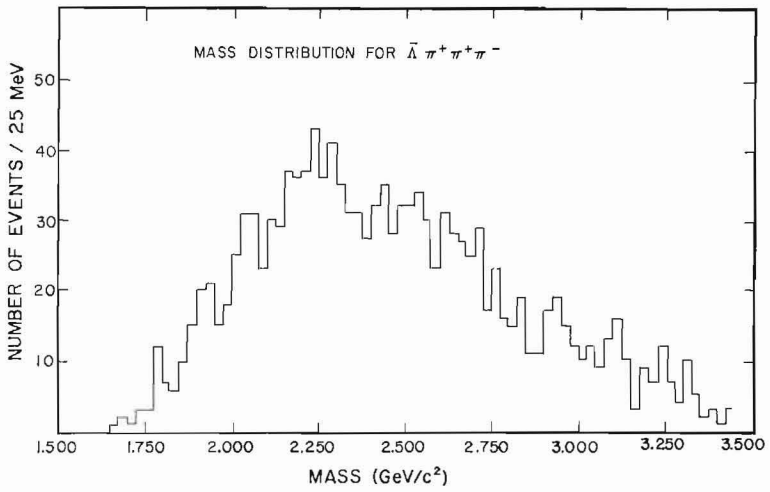
CONTENTS SEPTEMBER 1976

CHARMED ANTIBARYON

John Peoples

The discovery of a narrow antibaryon resonance that the members of E-87 interpret as evidence for a charmed antibaryon was announced on August 19. The resonance was identified through its decay into $\bar{\Lambda}^{o}\pi^{-}\pi^{-}\pi^{+}$. Its mass was 2.26 ± 0.01 GeV/c^2 and its measured width was less than 75 MeV/c^2, consistent with zero width. The experimenters did not observe a resonance in the final state of $\bar{\Lambda}^{o}\pi^{+}\pi^{+}\pi^{-}$ at a mass of 2.26 ± 0.01 GeV/c^2. Since the final state of the resonance has isospin of at least 1, the absence of the additional members of the charged multiplet suggests a weak decay in which isospin changes. A resonance that decayed strongly would conserve isospin in its decay. Both mass distributions are shown below.





Glashow, De Rújula, and Georgi predicted that the lightest charmed baryon Λ^+_c, would have a mass of 2.25 ± 0.05 GeV/c^2. The Λ^+_c is the charmed analog to the Λ^o, wherein the strange quark is replaced by a charmed quark. The predicted mass was based by the aforementioned authors on a single neutrino event in a Brookhaven Bubble Chamber experiment. The Λ^+_c has isospin zero and its non-leptonic decay will lead to an isospin -1 final state. Since these features were observed experimentally, the members of E-87 identified the resonances as the isospin-zero charmed baryon.

The experimenters have also presented evidence for the existence of a charmed antibaryon with a mass of 2.5 GeV/c^2, which decays strongly with the emission of a soft pion into the $\bar{\Lambda}_c$. This resonance, denoted as the Σ_c, would be analogous to the Σ.

Participants in E-87 are from Columbia University, the University of Illinois, and Fermilab. Wonyong Lee is the spokesman.

WHO ANSWERS THE PHONE AT EXTENSION 3333?

Operations Center Staff

Almost anyone who has been to Fermilab has seen the Laboratory Operations Center in its conspicuous location just east of the atrium in the Central Laboratory Building. Nearly as many are aware of the video display of the main-ring ramp and beam intensities that the Operations Center Group distributes on the Laboratory-wide closed-circuit cable television system (Channel 13). The members of the Fermilab staff on duty at the Operations Center on a round-the-clock basis are the Operations Coordinators, who are known to experimenters as their agents for contact with Accelerator Operations and as a source of technical information about the Laboratory and its research program. Despite the Center's visibility and a reasonably detailed treatment of its services and functions in the Procedures for Experimenters booklet, many experimenters have remained rather unfamiliar with the functions of the Operations Center Group. A discussion of these functions may serve, it is hoped not only to introduce those that are less familiar but also to account for the practices the Operations Coordinators have evolved in handling the responsibilities of their role.

The fundamental mission of the Operations Center Group is to implement the Current Operations Schedule developed at the weekly Experimental Planning Meeting and to document quantitatively the actual course of the research program. The responsibility for carrying out this mission on a shift-by-shift basis falls to the Operations Coordinator, and even though his approach to implementation is usually limited to communication

and coordination, the multitude of activities that must be handled and dispatched systematically to realize the intended program involves him in a wide variety of actions. Even under ideal running conditions, the duties at the Operations Desk at times require responses at a hectic pace. Given the unpredictability of high-energy physics experimentation and the less-than-perfect reliability of the complex hardware systems that make up the accelerator and each user group's experimental apparatus, the status of the overall program is subject to change at any moment. The Operations Coordinator must therefore be alert to the current situation at all times and prepared to make appropriate changes in running conditions and the program as required. A complicated series of decisions and actions is often required to discharge his basically simple mission and complete success in this endeavor is rarely, if ever, achieved. Thus the Operations Coordinator must judge his success in the vague, relative terms of how much he helps to minimize the effect of the unscheduled but inevitable problems that arise in running the Fermilab research program.

For the greater part of his time, the on-duty Operations Coordinator can be found at the Operations Desk in the Center. From this vantage point he seeks to keep the running experimenters informed of present and impending developments within the Laboratory by providing notices of immediate significance on CCTV Channel 13 and the schedule channel, Channel 12. The latter is used to publicize information of future or continuing effect and includes an up-to-date version of the operating program schedule. If he becomes aware of developments that may be especially important for a particular experiment or experiments, he will usually try to pass such news

along by telephone. He also attempts to maintain an awareness of the current intensity and beam-quality parameters in the various areas in order to call problems to the attention of the accelerator operators and also to judge, for record-keeping purposes, whether or not the beam is up to the requirements of the several experiments. Experimenters frequently call to request information about operating parameters or for detailed information on accelerator status and the prospects for short- or long-term future running. Calls are also made to draw attention to problems with the delivered beam. The Coordinator informs the accelerator main control room of these problems or deviations from desired running conditions, taking into account the priority of activities and mutual compatability of experimenters' desires. If an experimenter wants a change in the intensity or position of the primary beam, his request is properly made through the area Crew Chief who will then seek out the opinions of other users in that area. If by mistake the experimenter does call the Operations Center directly, the area Crew Chief is first contacted to avoid possible conflicts. A canvass of affected experimenters will then be arranged to be carried out by either the Operations Coordinator or the area Crew Chief, depending on who has the better opportunity.

When the beam goes off for some reason that is not evident from the monitoring instruments at the Center, the Operations Coordinator lets people know the cause as soon as he can ascertain it. Inasmuch as the accelerator operators themselves may not instantly know what has happened and furthermore are often likely to get somewhat involved in trying to diagnose the problem, the Coordinator normally waits about three minutes before

calling the main control room to request a report on what is happening. This gesture toward reducing the harassment of the accelerator operators sometimes leads to a brief delay in posting the precise nature of the failure and its probable duration, but it is believed that experimenters can normally easily tolerate such a delay. For this reason, calls to the Operations Desk within three minutes after the beam goes off will usually not yield much useful information. It should be emphasized here that the Coordinator does attempt within the three minutes to make a preliminary report, noting the system or area in difficulty if he can, based on his own monitoring capability or any clues that he may pick up while waiting to hear from the main control room. This frequently leads to a series of updated messages and estimates as diagnosis and repairs progress. Downtime estimates are based on reports from Accelerator Operations, the Coordinator's own knowledge about the trouble and his past experience with similar failures.

In addition to maintaining a log book and the worksheets that document the minute-by-minute progress of the research program, the Operations Coordinator prepares a JIM recording (Ext. 3546) at least once per shift (more often when the situation is changing rapidly) that summarizes the current schedule, accelerator status and progress on the physics research program. He is also called upon to respond to any number of situations that arise and that could be categorized as emergencies. These range from checking out PREP electronics equipment during "off hours" to Laboratory staff or visiting experimenters, in accordance with current research program requirements, or monitoring FIRUS utility-system alarms and

power-usage readings to providing technical direction and information to the Fermilab Emergency Coordinator when a serious incident, such as a fire, explosion, personal injury, radiation accident, etc., occurs on site that impacts on or is affected by continued running of the research program. In such instances, the Operations Coordinator is empowered to modify or shut down the program, if in his judgment the situation makes such an action advisable. In other words, he is the "front-line" person on site at any given time charged with the responsibility of coordinating and directing the overall aspects of the Fermilab research program effort.

Experimenters frequently question the location of the Operations Center in the Central Laboratory as opposed to the Cross Gallery where the Coordinator would have more direct knowledge of accelerator running conditions and closer contact with the accelerator crew. Indeed, during accelerator startup and other periods when accelerator operation is highly variable, the Operations Coordinator often moves into the main control room where he can keep up with developments and still handle his telephone and television communications. Such a relocation is one of the reasons that, despite the assertion in the Procedures for Experimenters that the Operations Center is manned around-the-clock, the atrium location is sometimes deserted. Business in the experimental areas may also draw the Coordinator away from his regular post. In this case, people calling the Operations Desk extension may find their call answered by the Fermilab telephone switchboard operator or relayed by a somewhat awkward radio-telephone system that requires a bit of patience for any detailed conversation. In either event,

once contact has been made, the Coordinator is alerted and will follow up on any unfinished business. Under some circumstances, particularly when he expects to be away from the desk for a limited time, it may be necessary to page him via the radio paging system (Pageboy number 279). If his responsibility were narrowly defined to be simply the expediting of experimenters' communications with the main control room, the Coordinator would doubtless do best by spending all his time there. In terms of the experimenters' and the Laboratory's long-term interests however, it is felt that the primary emphasis of the Operations Coordinator's effort ought not to be related to Accelerator Operations and its problems. Without minimizing the importance of this interaction, he should nevertheless be even more sensitive to and knowledgeable about developments in the experimental areas. He must be prepared to make appropriate priority decisions that reflect the Laboratory's research policy and physics-program objectives, taking into account the overall ability to carry out that program in the most efficient and effective way at any given moment.

Because of this broader commitment to both understanding and facilitating the progress of the research program, the Operations Coordinator may also leave the Operations Desk to visit running experiments, either to deal directly with an experimenters who is particularly affected by a current problem or simply to improve his knowledge and information on running experiments. Time for visiting the experiments is more likely to be available during the early morning hours and is associated in many experimenters' minds with the gathering of information for the "Morning Report" which the

Operations Coordinator writes on weekdays. The intention in having the Coordinators familiar with the experimental areas, the experiments, and the experimenters is actually more general, however. The experimenter who takes the time to discuss his special problems and particular requirements is likely to find either at that time or later that the Operations Coordinator can provide help by alerting accelerator operators to the problem, by recommending consultation with an expert from the Laboratory staff, or by paying close attention to some particular monitor or beam property or special concern to the user.

With the experiments as numerous and dispersed as they are, it is natural that the Operations Coordinator's information on the current situation may, in some aspects, at times be a bit stale. Because the Operations Center is the most general and available source of information for the directorate, timely contributions from the experimenters may help to promote informed program planning. Accurate information also reduces the chance of confusion and the lost time that can result when one of the laboratory's support groups makes an improper or even a wrong response to a need for assistance, based on outdated information on the status of the research program.

As individuals the Operations Coordinators are usually holders of a Bachelors or Masters degree in physics with a variety of specialties; some are continuing their formal education and training. Their involvement as part-time participants in the physics-research program or working on projects of personal interest in other technical areas, which is done on their

own time over and above their normal work assignments, gives them sympathy for the experimenters' needs and a degree of immunity from bureaucratic tendencies. The maturing of these interests has led to some turnover in the group, since several of the original members of the Operations Center staff have moved to other jobs within Fermilab. This turnover has, in fact, been a favorable development at the level evidenced to date because it has resulted in a group that appeals to capable and imaginative people, thereby holding out the chance that the Operations Center can continue to deal with experimenters needs in a flexible, informed, and yet responsive way. Furthermore, an improvement in communications and a better understanding of specific operational problems has resulted from interacting with Operations Center "alumni" in other operating departments.

The generality of its mission and the fact that its primary role is to coordinate the work of carrying out the Laboratory's physics-research program on a day-by-day basis between the Accelerator and Research Divisions accounts for the placement of the Operations Center as a management function within the Directorate of Fermilab. The Operations Center Group is one portion of the Operations Section under Halsey Allen, which also currently includes the Communications Center and the Operations-Plant Support staff who are responsible for utility systems and physical-plant equipment that relate closely with the ongoing program of the Laboratory. Because of their shared responsibility for twenty-four hour a day coverage of emergency response and program progress, the Communications Center and Operations Center personnel and duties have recently become fairly well integrated, and

this trend is expected to evolve even further as time goes on. Jim MacLachlan is Halsey Allen's deputy in charge of the Operations Center Group and its activities and Dee Ray serves as secretary for the office. Other members of the Centers' staff include Anthony Malensek, Bryant Henry, Paul Brindza, Dave Burkhart, Ken Shafer, and Ed Stout. These are the people who answer the phone when you dial extension 3333. They are continually striving to learn some new aspect of Fermilab geography, support services, user roster, program status or any one of the countless other facts that may be the exact piece of information you need at any given moment to carry out effectively your own objectives in the Fermilab research effort.

NOTES AND ANNOUNCEMENTS

A REMINDER OF FORTHCOMING PAC-RELATED MEETINGS. . .

We wish to remind our readers of three forthcoming PAC-related meetings: the Proposal Presentation Meeting (October 14-15), the Autumn PAC Meeting (November 11-12), and the Multiparticle Spectrometer Workshop (December 9-10).

The deadline for the receipt of material to be considered at the November PAC meeting is Friday, October 1. It is our present intention to schedule as many of the oral presentations of new proposals as possible for the Proposal Presentation Meeting in October. (This Presentation Meeting is an open one, and all interested physicists are welcome to attend and to participate in the discussion to the extent time permits.) Opportunities for oral presentations at the November meeting will be very limited.

The Multiparticle Spectrometer (MPS) Workshop in December will provide an opportunity to discuss the future experimental program for that facility. Tentative plans call for a review of what has been learned to date during the course of Hadron Jets #260 with regard to both operating experience and the physics potential of the facility. A review of the future plans of the Meson Laboratory as they relate to the MPS will also be included. Groups having an interest in next-generation experiments for the use of this facility should submit proposals in advance of the November 15 deadline. Additional information pertaining to the arrangements for this workshop will be announced in future issues of NALREP.

Questions about any of these meetings should be addressed to T. Groves in the Director's Office.

RESEARCH ACTIVITIES DURING AUGUST 1976

Halsey Allen

Operation of the accelerator for the current 400-GeV high energy physics research program was resumed toward the end of the first week in August and continued through the remainder of the month. During the first few days in August, work on the main-ring primary-power feeder cables and modifications to the Capacitor Tree were completed, checked, and successfully tested while startup of the linac and booster was in progress. Main-ring startup was then begun with 400-GeV acceleration achieved by Thursday evening, August 5. Operation continued through that weekend with somewhat unstable beam but no significant interruptions, indicating that most of the work projects completed during the shutdown were in reasonable operating condition.

With a few alterations, the program that was suspended in mid-July because of the budgetary shutdown has been continued, using slow-spilled beam from a 2-second flattop in the external experimental areas. The major change in operating mode has been the addition of pinged beam in the Neutrino bypass line in order to work on a backlog of commitments to the 30-in. bubble chamber research program.

Although almost a full month of running was scheduled for HEP research (nearly 550 hours), progress on the program has been slowed by an abnormally large number of accelerator failures interspersed with many short periods of unstable operation while trying to achieve high intensity. Nominal accelerated-beam intensity was gradually increased from about 1×10^{13} protons/pulse immediately after startup from the $2\frac{1}{2}$ week shutdown, to 1.6×10^{13} protons/

pulse by the end of the month. Although beam was delivered for over 360 hours of scheduled time, a 66% reliability factor, this running time was, in general, considerably less efficient in terms of physics research usefulness. Major contributors to accelerator downtime were a series of difficulties with the main extraction septa, booster radio-frequency accelerating-system problems and a massive failure of the ceramic beam pipe for one of the fast-extraction kickers. The overall performance and output from the accelerator during the month of August can definitely be characterized as below par.

The muon program received top-priority emphasis during the August running, with Muon #398 using the N1 beam for the first two weeks of operation, followed by a week for Muon #319. After nearly 18 months of inactivity since their last run, the Muon #398 group spent the time getting their apparatus operational, calibrated, triggers set and generally ready for data taking beginning in October. Muon #319 then took over the beam and, after a few shifts of tuneup and calibration, began collecting high-energy data at +275 GeV in the final data run for the experiment. Elsewhere in the Neutrino Area, the 30-in. bubble chamber was filled with deuterium during the accelerator startup period in preparation for resuming work on that part of the research program. In parallel with the muon running, pinged beam was set up to provide 100-GeV protons, 360-GeV negative pions, and 100-GeV antiprotons for successive runs by the 30-in. p-d @ 100 GeV #194, 30-in. π^--d @ 360 GeV #338 and 30-in. $\bar{p}$-d @ 100 GeV #345 experiments. Six ping pulses per accelerator cycle were directed down the N7/N3 bypass beamline for these runs, with some 50,800, 52,600, and 32,400 pictures taken respectively for the three groups.

The Proton Area research program centered around three major experiments, with two other groups accumulating data parasitically. After about a week of tuning and timing their beam and apparatus, Photon Total Cross Section #25A began taking data at the Tagged-Photon Laboratory in the Proton-East beamline. A photon beam produced by 90 GeV/c electrons was used on various targets for the first segment of the run, while a 135 GeV/c electron beam has been in use for high momentum data since about August 28. Nuclear Fragments #466 parasitically irradiated one target in the P-East pre-target area during the first two weeks of the month, while Detector Development #498 also ran parasitically in the tagged electron-photon beam for about one week at mid-month. In Proton-West, Particle Production #284 has been collecting hydrogen-target data under various configurations with 400-GeV incident protons after a short startup period, while Di-Hadron #494 has been accumulating both di-hadron and di-electron data in Proton-Center when beam stability and spill conditions have permitted such work.

No less than nine user groups were actively participating in the five major secondary beams at the Meson Area, not to mention the parasitic target bombardments in the Meshall incident proton beam by Nuclear Chemistry #81A. Hadron Jets #260 used beam to calibrate their calorimeters and subsequently took data at ±200 GeV in the M6 multiparticle spectrometer while the Hadron Dissociation #396 group tested their experimental apparatus and got preliminary data at an upstream location in the same beam. K^{O} Regeneration #226/#486 spent most of the month getting set up and collecting some preliminary data in the M4 beam pit. In the M3 neutral beam, Particle Search #397 completed the data taking

phase of their experiment by August 18, running upstream of Neutron Elastic Scattering #248, who were in the process of setting up for a data run for most of the month. In M2, Particle Search #472 was also tuning, doing trigger studies and preparing for steady data taking with some preliminary runs. The M1 West beam was shared by Form Factor #456 and Inclusive Scattering #324. In the first two weeks of running, the Form Factor group was testing their apparatus and the running feasibility of the experiment using new drift chambers, while the last week in August was used for changeover and startup work by the E-324 group.

There was spirited competition for use of the beam at the Internal Target Area throughout August. Both p-p Polarization #313 and p-N Scattering #198A had only limited running time available for data taking with the spectrometer facility, primarily because of recurrent problems with the helium liquifier required to provide cooling for the spectrometer magnets; unfortunately, many of these failures occurred during accelerator running time. The two groups shared the facility by being alternately scheduled as primary and parasitic users. There was a one-week period during the latter half of the month when, due to interferences, the spectrometer was scheduled to be off to permit test running of a new Russian cold jet by p-N Scattering #381. During this time and also later for several days when the liquifier was being repaired, Nuclear Fragments #442 started up and took preliminary data using a warm jet with their detectors mounted on the spectrometer arm. p-p Inelastic #321 ran in a parasitic mode to the several primary users throughout the month and collected data, pulsing their warm jet at various energies from 8 to 350 GeV.

FACILITY UTILIZATION SUMMARY -- AUGUST 1976

I. Summary of Accelerator Operations

		Hours	
A.	Accelerator use for physics research		
	Accelerator physics research	24.7	
	High energy physics research	360.8	
	Research during other use	(52.8)	
	Subtotal		385.5
B.	Other activities		
	Accelerator setup and tuning to experimental areas	51.4	
	Scheduled interruption	118.7	
	Unscheduled interruption	188.4	
	Subtotal		358.5
C.	Unmanned time		
	Total		744.0

II. Summaries of High Energy Physics Research Use

		# of Expts.	Hours	Results
A.	Counter experiments	18	2985.7	-
B.	Bubble chamber experiments	3	218.2	135,906 pictures
C.	Emulsion experiments	-	-	-
D.	Special target experiments	2	154.7	4 target irradiations
E.	Test experiments	1	66.7	detector test
F.	Engineering studies and tests	1	17.5	1629 pictures
G.	Other beam use	-	63.5	tuning
		25	3506.3	2 experiments completed

III. Number of Protons Accelerated and Delivered at 400 GeV ($\times 10^{18}$)

A.	Beam accelerated in Main Ring			1.11
B.	Beam delivered to experimental areas			
	Meson Area		0.18	
	Neutrino Area			
		Slow Spill	0.59	
		Fast Spill	0.00	
	Proton Area		0.20	
		Total		0.97

IV. Beam Utilization by Experiment

	Hours	Results
A. Meson Area		
Nuclear Chemistry #81A	-	3 Targets
K^{o} Regeneration #226/#486	272.5	Preliminary data
Neutron Elastic Scattering #248	133.5	Setup
Hadron Jets #260	248.0	Data
Inclusive Scattering #324	56.0	Setup
Tests for Hadron Dissociation #396	131.5	Test data
Particle Search #397	108.0	Data; complete
Form Factor #456	158.3	Test data
Particle Search #472	289.3	Data
B. Neutrino Area		
30-in. p-d @ 100 GeV #194	102.0	50,850 pictures
Muon #319	136.7	Data
30-in. π^{-}-d @ 360 GeV #338	63.5	52,635 pictures; complete
30-in. $\bar{p}$-d @ 100 GeV #345	52.7	32,421 pictures
Muon #398	154.2	Setup; preliminary data
C. Proton Area		
Photon Total Cross Section #25A	323.7	Data
Particle Production #284	314.9	Data
Nuclear Fragments #466	154.7	1 Target irradiation
Di-Hadron #494	249.6	Data
Detector Development #498	66.7	Test data
D. Internal Target Area		
p-N Scattering #198A	12.8	Data
p-p Polarization #313	36.3	Preliminary data
p-p Inelastic #321	213.4	Data
p-N Scattering #381	74.7	Tests
Nuclear Fragments #442	72.3	Preliminary data
Total	3425.3	

ANNUAL REPORT OF THE CHAIRMAN OF THE USERS EXECUTIVE COMMITTEE

L. N. Hand
Cornell University

A number of topics were discussed this year and various recommendations transmitted to the Director's Office. The list which follows is a partial list and is not in any order of importance or time spent.

Housing

Following a severe shortage of on-site housing in the summer of 1975, the Committee spent much time considering alternative ways to finance more housing, through either the refurbishing of farmhouses or the conversion of Village houses. Partially through the Users Executive Committee's efforts, work was authorized on five farmhouses to create a total of eleven new apartments. A plan to allow university contributions to the conversion of a Village house seems feasible and is still under investigation. Finally, several trailers were installed in a special area which was created for the purpose near the Village shops.

Users Center and Recreation

New members were appointed by R. R. Wilson to the Users Center Advisory Committee after consultation with the Users Executive Committee. Alvin Tollestrup is the new chairman of this committee. A severe shortage of capital-improvement funds for the Users Center was noted by the UEC and an additional housing charge of 25 cents per person per night recommended to the Director as a means of creating such a fund. The general opinion was that much work remains to be done to improve the atmosphere of the Center and that having available capital for this purpose was an essential first step. There was also considerable discussion of covering the swimming pool, or adding a tennis court, or other major improvements in the recreational facilities. A widely distributed questionnaire to the Users revealed a lack of support for the covered swimming pool and the project was dropped.

Computer

The Committee continued its efforts, begun some years ago, to aid in the approval of a 7600-level computer for the Laboratory. A letter written to ERDA by Uriel Nauenberg had been very effective in helping to get ERDA priority for this computer in the FY '77 budget, but the item was removed at a later stage. We understand through Senator Percy (Ill.) that the Office of Management and Budget plans to carry out a comprehensive purchase vs. lease analysis for the FY '78 budget.

A presentation was made by Nauenberg to HEPAP in July in favor of adequate computer facilities at Fermilab. There was no apparent disagreement with the statement that Fermilab has about one-sixth the computing capacity of CERN and has a severe shortage of computing facilities for a Laboratory of this size and scope. The UEC regards the next few months as critical and will continue to join the Laboratory in pressing for inclusion of the computer in the FY '78 budget.

It was also recommended by the UEC that the Laboratory revise its policy of free computing and allocate this scarce resource in a careful manner. The recommendation was accepted and a new policy of granting computer time implemented August 2. This includes charging for computer time in excess of the allocated amount to an experiment. The UEC will continue to monitor and discuss the level of these charges and is interested in User opinion on the subject.

ERDA Permission for Soviet-Bloc Visitors

Following an earlier resolution passed unanimously by the UEC, the Chairman wrote to Dr. Seamans of ERDA explaining our view that the policy of ERDA approval for Soviet-Bloc visitors to Fermilab discriminated against high-energy physics with respect to other fields of pure science. The Chairman also investigated in a preliminary way whether the National Academy of Sciences could handle these visits, as is done in other fields. Dr. Seamans' answer was that ERDA does not plan to revise this policy at this time and considered it to be a part of our agreement on technological exchange with the USSR, rather than in the realm of pure science.

Open Minutes

A new policy of mailing the minutes to all the membership was adopted and initially, at least, has been well received.

Energy Doubler/Saver

At many of the meetings the progress of the Energy Doubler/Saver was discussed with R. R. Wilson. The main topic of the November UEC meeting was a series of reports on the technical progress of this project and similar reports figured prominently in the May Annual Users Meeting.

Experimental Areas

Improvements suggested from discussions at the last (1975) Annual Users Meeting were discussed with the Directorate at several meetings and reports from the area subcommittees considered. Details can be found in the minutes. There was little pressure for major changes prior to those needed to make full use of the Doubler, although an exception to this might be the millisecond spill for the neutrino horn. Implementation of the approved neutrino program for the 15-ft bubble chamber was also discussed but no recommendation made.

Drickey Memorial Fund and Lecture

As a memorial to the late Darrell Drickey, former UEC Chairman, the Users Executive Committee recommended establishing a fund to be used to support a yearly "Drickey Memorial Lecture." Through the assistance of the Laboratory, Luis Alvarez gave the first lecture May 14 on the history of accelerators at Berkeley under Lawrence. The lecture was very well attended and we hope to have another one next year. The fund was established by the URA Board of Trustees, and we urge that contributions to this fund be made to URA. Suggestions for other lectures should go to L. Hand (Cornell).

Other Topics

An interesting discussion with George Trilling of Berkeley, PAC Chairman, was held on broad questions concerning the Users and the role of the PAC and other matters. The interested reader is referred to the minutes of specific meetings for more detail.

At the most recent meeting, held August 2, six new members (L. Leipuner, BNL; N. Reay, Ohio State; R. Rubinstein, Fermilab; P. Slattery, Rochester; A. Slaughter, Yale; and R. Yamamoto, MIT) were welcomed to the UEC.

A new Chairman, Donald Reeder from Wisconsin, was elected and J. Pine reappointed Secretary.

Subcommittees and their current members are as follows:

Computer:	Hand, Leipuner, Slattery, Stutte
Bubble Chamber:	Lubatti, Widgoff, Yamamoto
Doubler/Saver and other Future Projects:	Busza, Leipuner, Lubatti, Reay, Slaughter
Housing, Recreation, and Site Improvements:	Reay, Rubinstein, Pine, Sazama

Experimental Areas:

C-0 -	Busza, Widgoff
Proton -	Hand, Slaughter
Meson -	Pine, Slattery, Rubinstein
Neutrino -	Lubatti, Yamamoto

PROPOSALS RECEIVED DURING AUGUST AND SEPTEMBER 1976

No.	Title	Submitted By
501	Proposal for a Measurement of the Transition Rate for CL(37) to Ar(37) Induced by Muons at Fermilab Energies	K. Lande
502	Search for Monopoles Above the 15-Foot Bubble Chamber	D. F. Bartlett
503	Multiparticle Production in High Energy Pion Nucleus Interactions	T. Ogata
504	A Proposal to Study Inelastic Interactions of $\pi^{\pm}$ Mesons and Protons with Neon in the 30-Inch Bubble Chamber	U. G. Guljamov V. A. Nikitin
505	A Search for Proton Polarization in Inclusive Production at 300 GeV/c	P. Yamin
506	Cascade Showers Originated in Jet Showers Due to Negative Pions	S. Dake
507	Proposal to Study Channeling at Fermilab	W. Gibson E. Tsyganov

DATES TO REMEMBER

October 1, 1976	Deadline for receipt of all new proposals and other written materials to be considered at the November meeting of the Program Advisory Committee.
October 2, 9, and 16, 1976	Prairie seed harvesting at Gensberg-Markham Prairie in Markham and at The Morton Arboretum in Lisle for Fermilab Prairie Restoration Project.
October 8, 1976	Fermilab Auditorium Arts Series: Simon Estes, Bass-Baritone. Admission $3.00; tickets available in Guest Office. Performance at 8:30 p.m.
October 14-15, 1976	Proposal Presentation Meeting.
November 11-12, 1976	Autumn meeting of the Fermilab Program Advisory Committee.
November 15, 1976	Deadline for receipt of written materials to be considered at the Multiparticle Spectrometer Workshop.
December 9-10, 1976	Multiparticle Spectrometer Workshop.