



**Fermi National Accelerator Laboratory**

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**A Chronology:  
VBA (ICFA) → SSC (US-DOE)**

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The idea of a multi-TeV (trillion electron volts) proton accelerator has been being discussed for many years. How did this concept begin? Who first put forth the proposal of such an enormous accelerator? What is it? What physics would it do? Why now? How can this be done? Where to build it?

This historical chronology links the early ideas of international collaboration with current rapidly-evolving developments of the Superconducting Super Collider, now seen as a national effort. The ultimate decision on the fate of this endeavor has not been made. The scientific community is working to satisfy the Department of Energy request for information to justify the SSC project from all perspectives. This chronology may be useful in providing background historical information on meetings and developments leading to construction of the SSC.

All source material cited in this report is available in the Milton G. White History of Accelerators collection of the Fermi National Accelerator Laboratory Library.

1. 7/59 International Conf. on HEP (Kiev, USSR) IUPAP committee on HE decided to hold meeting on 9/15/59.  
(“Origins and Early Years of the International Committee for Future Accelerators (ICFA)”, W. O. Lock, Second Draft, December 1982, Unpublished.)
2. 9/15/59 Meeting at CERN of scientists from USA (W. Panofsky), USSR and Europe to form study committee on questions related to international cooperation in field of HE Accelerators.  
(W. O. Lock, CERN Yellow Report 75-7 (1975).)
3. 11/24/59 J. A. McCone (USAEC) and V. S. Emelyanov (USSR Main Administration for the Utilization of Atomic Energy) correspondence regarding joint (US and USSR) enterprise...high energy accelerators....  
(USAEC Memorandum, 11/24/59.; R.R. Wilson, “Toward a World Accelerator Laboratory,” FNAL TM-811, 8/16/78.)
4. 1960 “Serious discussion of a World Accelerator began...100 GeV proton synchrotron....”  
(R. R. Wilson, *Scientific American*, 1/80, Vol. 242, No. 1, pp. 42-57.)
5. 8/28/60 Informal session at 10th Conf. on HEP at Rochester-“Super High Energy Accelerator Physics”-attended, amongst others, by L. Alvarez, H. Bethe, R. Feynman, W. Heisenberg, E. McMillan, J. R. Oppenheimer, W. Panofsky, R. R. Wilson, and USSR scientists.  
(Correspondence; 8/28/60; R.R. Wilson, FNAL TM-811, 8/16/78.)
6. 9/16/60 AIP Meeting (NYC) US and USSR scientists met to plan study of energy greater than 300 BeV. Attended, amongst others, by R. R. Wilson, K. R. Symon, L. J. Haworth.  
(Correspondence, 9/16/60.)
7. 1961 “As a result of the Atoms for Peace movement, an exchange of particle physicists was worked out between the US and the USSR for the discussion of undertakings in the [their] mutual interest. The possibility of a ‘World Accelerator,’ to be supported by the pooled resources of many nations, was one of the topics considered.”  
(See note 4.)

8. **1959-1962** CERN-Dubna collaboration--attended by scientists from W. Europe & USSR.  
(E. L. Goldwasser, "Report on the Status and Plans of the ICFA," 1978, Proceedings of the XIX Int. Conf. on HEP, Tokyo, Japan; see also note 2.)
9. **7/29-30/64** IAEC organized a meeting in Vienna, Austria. Group (chaired by V. Weisskopf) felt that world-wide collaboration should be expanded but that accelerators up to 300 GeV shouldn't require an international effort.  
(See note 1.)
10. **1965-67** CERN-Serpukhov collaboration--attended by scientists from W. Europe & USSR.  
(See note 8.)
11. **1965-68** NAL being designed.  
(200-BeV Accelerator Design Study, University of California Lawrence Radiation Laboratory Report UCRL-16000 (Berkeley, June 1965); Design Report, National Accelerator Laboratory, (Fermilab, January 1968).)
12. **6/67** Riga, USSR meeting - CERN and JINR organized "Future Perspectives in HEP" [FP in HEP] seminar. Attended, amongst others, by B. Gregory, W. O. Lock, L. VanHove.  
(See notes 1 and 8.)
13. **9/68** Semmering, Austria meeting to follow up Riga seminar. V. Weisskopf attended from CERN with B. Gregory, W.O. Lock, and others.  
(Ibid.)
14. **9/69** Tbilisi, USSR - another follow-up meeting to FP in HEP (tripartite). Attended, amongst others, by V. Weisskopf, W. Panofsky, R. R. Wilson from US; B. Gregory, W. O. Lock, H. Schopper, J. B. Adams, E. Amaldi from CERN and USSR scientists.  
(Ibid.)
15. **9/17-18/71** Morges, Switzerland - another FP in HEP meeting. Attended, amongst others, by R. R. Wilson, E. L. Goldwasser, E. McMillan, W. Panofsky and V. Weisskopf.  
(Ibid.)

16. 1971 R. R. Wilson announces intention to request authorization to build Energy Saver/Doubler at NAL.  
(“Energy Saver Chronology”, Dedication of the Energy Saver, FNAL, 4/28/84.)
17. 9/72 Energy Doubler Working Group established at NAL.  
(Ibid.)
18. 2/73 AEC gave NAL permission to spend up to \$1.5M for design study and model tests of Doubler (during calendar year 1973).  
(1973 Annual Report, URA, 1/21/74.)
19. 11/73 Meeting at CERN to decide to hold seminar in USA in early 1975. W. Panofsky among those attending. Purpose: informal coordination of national HEP plans and to discuss possible multi-lateral joint large projects.  
(See note 1.)
20. 1972-74 ISA in initial planning design stage.  
(Proposal for Construction of a Proton-Proton Storage Accelerator Facility ISABELLE, BNL 18891 (5/74).)
21. 2/74 US-USSR Joint Committee on Cooperation in Peaceful Uses of Atomic Energy meeting. (Washington, D.C.) Nixon-Brezhnev Agreement (6/73) eased international tension and allowed the setting up of this group, thereby starting international discussions again.  
(See note 1.)
22. 7/10-11/74 Abingdon (near Oxford), England - informal tripartite planning meeting; title given to early 1975 conference. Attended by R. R. Wilson, V. Weisskopf, B. Richter, J. B. Adams, W. O. Lock and others.  
(Ibid.)
23. 3/75 “International Seminar on Future Perspectives in High Energy Physics,” chaired by V. Weisskopf. Held in New Orleans, LA. Attended, amongst others, by W. Panofsky, R. R. Wilson, L. Lederman, E. L. Goldwasser, M. Gell-Mann, B. Gregory, W. O. Lock, Y. Yamaguchi. “VBA” suggested as new facility to be unobtrusively studied over 10 years for accelerator so large...beyond the reach of any individual nation or region.  
(See notes 1 and 8.)

24. 10/75 Organizational meeting at CERN to establish agenda for next meeting in 5/76. Attended, amongst others, by L. Lederman, R. R. Wilson, V. Weisskopf. Nations participating from E. Europe, Japan, USA, USSR, W. Europe.  
(See note 1.)
25. 11/75 Organizational meeting at CERN to plan agenda and coordinate arrangements for Serpukhov meeting. Attended, amongst others, by L. Lederman, R. R. Wilson, V. Weisskopf, J. B. Adams, W. O. Lock, V. Yarba, K. Lanus.  
(Ibid.)
26. 11/75 "1 TeV" mentioned in R. R. Wilson *Physics Today* editorial regarding a world laboratory.  
(R. R. Wilson, *Physics Today*, "A World Laboratory and World Peace," 11/75, p. 120.)
27. 5/17-25/76 Serpukhov organizational meeting attended, amongst others, by R. R. Wilson, L. Lederman, V. Weisskopf, R. Diebold, J. Bjorken. VBA scale discussed; greater than or equal to 10 TeV fixed target proton accelerator and/or 100 GeV  $e^+e^-$  collider decided appropriate for consideration. Three conclusions: 1) new generation of intermediate range facilities required and individual regions are capable of building them; 2) past regional and inter-regional collaboration provides basis for extending and strengthening the collaboration in the new generation; 3) need for VBA requiring international collaboration of all regions. Four recommendations: 1) coordinate design and construction of new regional facilities and joint studies of technology and joint design/construction; 2) availability to all regions essential to take advantage of facilities with complementary research potentialities; 3) collaboration should provide for studies leading to realization of superhigh energy facilities (so large only possible by pooling resources of all regions) in about 10 years; 4) subcommittee appointed by IUPAP needed to organize working groups and future meetings.  
(See notes 1 and 8.)
28. 7/20/76 Tbilisi, USSR - IUPAP Commission on Particles and Fields met and agreed to sponsor activities of new committee = ICFA (International Committee for Future Accelerators). Responsibilities: wants stronger emphasis on VBA than on coordination of regional facilities. L. Lederman among those attending.  
(Ibid.)

29. 1976 Congress includes \$1.9M in FNAL funding for Doubler.  
(1976 Annual Report, URA, 11/1/77.)
30. 3/77 L. Lederman-NYC/VBA concept (witty comment).  
(Particle Accelerator Conference Proceedings (3/16-18/77), IEEE Transactions on Nuclear Science, Vol. NS-24, No. 3, 6/77; *Physics Today*, p. 19-20, 5/77.)
31. 6/77 ISA and Tevatron (Energy Doubler/Saver) recommended by HEPAP sub-panel.  
(Report of the 1977 Subpanel on New Facilities of the HEPAP, 6/77, ERDA 77-71.)
32. 8/30/77 Hamburg- 1st meeting of ICFA (provisional until next day); chaired by Bernard Gregory. R. R. Wilson, L. Lederman, V. Weisskopf among those attending. Two groups created: 1) regional facilities collaboration study group and 2) super high energy study group.  
(See notes 1 and 8.)
33. 8/31/77 Hamburg- IUPAP Commission Annual Meeting; chaired by Bernard Gregory. Approves ICFA committee membership and retains previous (7/20/76) statement of ICFA responsibilities.  
(Ibid.)
34. 12/77 B. Gregory died; E. L. Goldwasser became temporary chairman of IUPAP and, therefore, ICFA.  
(See note 1.)
35. 1/27/78 CERN- 2nd ICFA Meeting -It was decided that a series of VBA workshops was necessary. Meeting chaired by J. B. Adams. Four areas of interest relating to VBA and regional facilities: 1) physics, 2) accelerator possibilities and limitations, 3) detector possibilities and limitations, and 4) how to build and use VBA. Attended, amongst others, by R. R. Wilson, E. L. Goldwasser, L. Lederman, J. B. Adams, W. O. Lock, K. Lanus, Y. Yamaguchi and V. Yarba.  
(Ibid.)
36. 7/17/78 P. V. Livdahl appointed Acting Director of FNAL.  
(Ferminews, 7/20/78)

37. 8/24-30/78 Tokyo, Japan - XIX International Conference on HEP - ICFA report by E. L. Goldwasser.  
(See note 8.)
38. 10/78 Energy Saver became official construction project by being included in DOE FY1979 legislation. \$12M for Doubler/Saver.  
(1978 Annual Report, URA, 1/1/79.)
39. 10/15-21/78 ICFA Workshop on Possibilities and Limitations of Accelerators and Detectors - (FNAL) Organized by L. C. Teng. Three-fold purpose: 1) to be technical, 2) to investigate general accelerator and experimental technology and techniques available for super-high [more than 5 TeV protons/more than 100 GeV electrons] energies, and 3) to be a true workshop - studying and solving problems at super-high energies. Attended, amongst others, by R. R. Wilson, L. Lederman, B. Richter, J. Sandweiss, M. Tigner, P. McIntyre, E. Courant, U. Amaldi, N. Samios, R. Diebold, G. Charpak, B. Barish, J. Sanford, E. L. Goldwasser, B. McDaniel, C. Rubbia, A. Tollestrup and G. Trilling.  
(L. C. Teng, Proceedings of the Workshop on Possibilities and Limitations of Accelerators and Detectors 10/15-21/78 (FNAL, 4/79).)
40. \*\*\* J. B. Adams in Les Diablerets proceedings says energy for VBA was raised at this meeting to 20 TeV proton fixed target accelerator and 350 GeV per beam for  $e^+e^-$  collider.  
(J. B. Adams, Proceedings of the Second ICFA Workshop on Possibilities and Limitations of Accelerators and Detectors, Les Diablerets, Switzerland 4-10 October 1979 (CERN, 6/80), p. XI.)
41. 10/20/78 3rd ICFA Meeting - after or during FNAL workshop. It was decided to hold follow-up workshop hosted by CERN in 1979; a workshop in 1980 on high-field superconducting magnets and superconducting rf cavities is planned. Attended by L. Lederman, R. R. Wilson, E. L. Goldwasser, B. Richter, Y. Yamaguchi, J. B. Adams and W. O. Lock.  
(Teng, see note 39.)
42. 6/1/79 L. M. Lederman becomes Director of FNAL.  
(Ferminews, 10/26/78)



43. 10/4-10/79 ICFA-2nd Workshop on Possibilities and Limitations of Accelerators and Detectors -held at Les Diablerets, Switzerland (near CERN). Organized by U. Amaldi; purpose was to complete the work done at FNAL (concentrating on those subjects not fully covered at FNAL, i.e., experiments to be performed at future colliders).

(U. Amaldi, Proceedings of the Second ICFA Workshop on Possibilities and Limitations of Accelerators and Detectors Les Diablerets, Switzerland 4-10 October 1979 (CERN, 6/80).)

44. 10/11/79 4th ICFA Meeting -held at CERN. Purpose was to decide what future workshops should be arranged. Those discussed: polarized beams workshop to be held at DESY in Spring, 1980; superconducting magnets workshop to be held at Serpukhov in Fall, 1980 [W. O. Lock says this was to be scheduled for Summer '80 but didn't take place until 10/81].

(See note 1; J. B. Adams, see note 40; Lee Teng, oral communication.)

45. 2/80-6/80 DOE had appointed subpanel (S. Treiman, Chairman) of HEPAP to: 1) review quality and scope of HE Accelerator R&D (M. Tigner, Subgroup Chairman) effort in US and compare with those abroad, and 2) recommend priorities and appropriate funding levels. Report (6/80) recommends within present funding guidelines: 1) FNAL 400 GeV Accelerator, PEP, and CESR must be used as fully as possible; 2) Energy Saver and ISABELLE must proceed rapidly; 3) Tevatron I and II should proceed together - TeV II must be authorized and get started; 4) R&D for future options crucial; 5) university-based groups should receive increased support to assure vitality of efforts on experiments now [and on developments in future; 6) preliminary research should start now for construction of very large accelerator in late 1980's; and 7) "Woods Hole Subpanel" should be convened (1981-82) to assess status of construction, new developments, new opportunities. 15% increase in support would allow major improvements in entire program. Also recommended no action be taken on SLAC-SLC proposal at this time.

(*Physics Today* 2/80, p. 92; Report of the Subpanel on Review and Planning for the US HEP Program (6/80).)

46. 7/9/80 5th ICFA Meeting -held at CERN. Guidelines were proposed for interregional utilization of major regional experimental facilities for high-energy particle physics research.

(See note 1.)

47. 7/13-24/81 L.M. Lederman talk at FNAL Summer School, "HEP-Where we are and where we are going." He discusses VBA and the need for discoveries, R&D, and technological breakthroughs to reduce costs for HEP advances.  
(AIP Conference Proceedings, No. 92, AIP, New York, 1982.)
48. 8/81 HEPAP subpanel on Long Range Planning formed (George Trilling chaired). Charge: to develop plan for US program in next decade at various funding levels and evaluate ISABELLE priority.  
(Report of the Subpanel on Long-Range Planning for the US HEP Program of the HEPAP (1/82.) pp. 1-4.)  
\*\*\*9/18/81 L. Lederman letter to G. Trilling "...think ahead...for next 10 years...."  
(Lederman correspondence.)
49. 10/81 6th ICFA Meeting - 3rd Workshop on Possibilities and Limitations of Superconducting Magnets for Accelerators - held at Serpukhov (IHEP). Purpose: to stimulate more effort on AAR&D for machines of 1990's.  
(See note 1.)
50. 11/1/81 Interim Report of HEPAP subpanel on Long-Range Planning submitted to HEPAP in Washington, D.C. Recommendation: ISA should be finished by end of 1980's; it requires \$440M. If that support doesn't come through, ISA cannot be completed. Report unanimously endorsed.  
(See note 48.)
51. 2/10/82 G. Trilling sends Final Report of subpanel to S. Drell (Chairman of HEPAP). It includes a set of recommendations for two budgetary support levels: Higher - (\$440M/DOE and \$35M/NSF) completion of ISA by end of 1980's; adequate use and upkeep of existing accelerators and storage rings; quickly finish Doubler/Saver at FNAL; TEV II implementation in all three experimental areas; completion of TEV I with major detector; continue R&D at SLAC on SLC; pursuit of other AAR&D... Lower - (\$360M/DOE and \$32M/NSF) ISA cannot continue at large scope.  
(Ibid.)
52. 2/19-20/82 HEPAP Meeting at Germantown, MD; recommendations endorsed.  
(Ibid.)

53. 2/26/82 S. Drell sends HEPAP Report to A. Trivelpiece at DOE.  
(Ibid.)
54. 6/28-7/16/82 DPF Summer Study on Elementary Particle Physics and Future Facilities held at Snowmass, CO. C. Baltay, chairman of organizing committee. Purpose was to: 1) assess future of HEP, 2) explore limits of technological capabilities, and 3) consider nature of future facilities. "Desertron" coined. Want to study the physics but not arrive at specific conclusions. Finding: need for multi-TeV pp collider to explore HE region. (10 TeV on 10 TeV p-p accelerator possible for less than \$1B).  
(*Physics Today*, 1/83, pp. 19-20; SSC Reference Designs Study, 5/8/84, p. 3; Proceedings of the 1982 DPF Summer Study on Elementary Particle Physics and Future Facilities, Snowmass, CO, 1982, p. V.)
55. Lederman talk, "Slermihaven II".  
(Snowmass '82 Proceedings, see note 54, pp. 125-7.)
56. 7/26-28/82 Informal (7th) ICFA meeting of ICFA and Laboratory Directors held in Paris, France to discuss issue of how to organize effort of long term development of very high energy machines. Guidelines for setting up an inter-regional body for advancing high energy accelerator R&D were proposed. L. Lederman among those attending.  
(See note 1; Correspondence, J. B. Adams to Laboratory Directors, 10/18/82.)
57. 12/7/82 L. Lederman begins planning for an early 1983 FNAL Workshop on design of Desertron, including list of open questions to be addressed. Subsequent correspondence results in meeting being moved to Cornell.  
(Correspondence, L.M. Lederman to M. Tigner, 12/7/82.)
58. 1/13,20,26/83 W (intermediate vector boson) discovered at CERN (UA1).  
(*Physics Today*, 4/83, p. 17.)
59. 2/25-26/83 1983 Subpanel on New Facilities of the HEPAP formed and an organizational meeting was held in Washington, D.C. Charge: Make recommendations on: construction for FY85, CBA at BNL, estimate funding of recommendations and give priorities of recommendations for a forefront US HEP program in next 5-10 years. (S. Wojcicki, Chairman)  
(Report of the 1983 HEPAP Subpanel on New Facilities for the US HEP Program, (7/83).)

60. **2/28-3/4/83** DPF Workshop on Collider Detectors: Present Capabilities and Future Possibilities held at LBL. "...addressed the issues of detector technologies in the face of the multiplicities and secondary energies expected from...the SSC. The general conclusion was that while difficult, the required experiments will be possible."  
(SSC Reference Designs Study, 5/8/84, p. 4.)
61. **3/28-4/2/83** 20 TeV Hadron Collider Technical Workshop held at Cornell. Findings: "1)...several viable approaches to building 20 TeV collider with useful luminosity, 2) superconducting magnets needed to reduce energy usage, 3) magnets with more than 7 tesla require exploitation of new materials now in pilot-production stage, 4) no apparent fundamental accelerator physics problems to prevent successful operation of collider, 5) cost likely to be \$70-110M/TeV of beam energy, including new laboratory. Conclusions: It's time for accelerator physics community to intensify engineering development of magnet systems, leading to accurate design and cost study for construction to begin in four years."  
(Ibid.)
62. **6/1/83**  $Z^0$  discovery announced at CERN by UA1.  
(*Physics Today*, 11/83, p. 17.)
63. **6/2/83** Beam first injected and makes a full turn around Doubler/Saver. 100 GeV.  
(See note 15.)
64. **6/5-11/83** HEPAP subpanel meets at Woods Hole, MA (S. Wojcicki, chairman).  
(*Physics Today*, 5/83, p. 21; see note 59.)
65. **6/29-7/1/83** HEPAP subpanel meets at Nevis Laboratory, Columbia University (NYC).  
(See note 59.)
66. **7/3/83** Doubler/Saver reaches 512 GeV.  
(See note 16.)

67. 7/8/83 S. Wojcicki sends subpanel Final Report to J. Sandweiss, Chairman of HEPAP. Recommendations: 1) immediate initiation of a multi-TeV high-luminosity p-p collider ("SSC") with the goal of physics experiments at this facility at earliest possible date, 2) rapid completion of construction projects (Tevatron and SLAC linear collider), upgrading CESR and associated detectors, thorough utilization of all existing facilities, 3) FNAL not proceed with Dedicated Collider, 4) CBA at BNL not be approved, 5) technology R&D, particularly AAR&D, be strongly supported.

(See note 59.)

68. 7/12/83 J. Sandweiss sends HEPAP subpanel report on to DOE (A. Trivelpiece, Director, OER).

(Ibid.)

69. 7/15/83 UA2 reported  $Z^0$  found.

(See note 62.)

70. 8/10,13/83 8th ICFA Meeting (FNAL) L. Lederman, J. Bjorken, B. McDaniel and B. Richter among those attending. Discussion of HEPAP Subpanel recommendation. W. European delegation considers the recommendation a threat to their HEP facilities plans. Plans begin for FP in HEP meeting in Japan (KEK) in 5/84. 3 topics: 1) present plans, 2) future needs, and 3) international collaboration. (V. L. Telegdi, ICFA Chairman)

(Private Correspondence.)

71. 8/11-16/83 XII International Conference on High Energy Accelerators held at FNAL. Noteworthy:

(a) M. Tigner, "Toward a Big Machine"

(b) Panel Discussion on Magnets for a Big Machine

(G. Danby, R. Palmer, R. Huson, R. Lundy, C. Taylor)

(c) Panel Discussion on Beam Dynamics

E. Courant (BNL) "Crossing Beams vs. Head-On Collisions"

D. Edwards (FNAL) "Magnet Winding Errors and Multipole Fields"

L. Teng (FNAL) "Aperture Considerations"

A.A. Garren (LBL) "20 TeV Collider Lattices with Low- $\beta$  Insertions"

B. Sadoulet (UA1-CERN) "Large Detectors for Hadron Colliders: Experience and the Future".

- (Proceedings of the XII Int'l Conf. on High-Energy Accelerators, Fermilab, 8/83, FNAL, 1984.)
72. **8/16-18/83** Argonne National Laboratory-SSC Magnet Meeting - General technical discussion.  
(Joanne Day (ANL), oral communication.)
73. **8/15/83** Energy Doubler/Saver accelerates to 700 GeV.  
(See note 16.)
74. **8/ /83** A. Trivelpiece asks W. Panofsky to chair HEPAP [AAR&D] subpanel to advise and recommend on content and implementation of FY1984 R&D effort prior to start of formal program.  
(SSC Reference Designs Study, 5/8/84, p. 5.)
75. **8/23/83** L.M. Lederman appoints Bruce Winstein to manage PSSC Meetings.  
(Lederman Correspondence.)
76. **9/7-9/83** AAR&D subpanel holds first meeting at SLAC. Recommendations: 1) interim manager be selected for R&D program and prepare design report, 2) workshops should begin immediately.  
(SSC Newsletter, APS/DPF, 10/26/83, p. II. 1-2.)
77. **9/30/83** 1st PSSC (FNAL)-focus on scientific capability for SSC as determined from experimental and theoretical results, and the requirements for detector instrumentation. Formed 5 task force groups:
- (a) Fixed Target/Internal Target Physics - Stewart Loken
  - (b) Large  $4\pi$  Experiments - Hugh Williams
  - (c) Specialized Experiments - Frank Sciulli
  - (d) Detector Development - Bernard Pope
  - (e) Intersection Region - Robert Diebold
- (See note 74; PSSC Notice, 10/10/83.)
78. **10/1/83** Energy Doubler/Saver doing fixed-target physics with extracted beams.  
(See note 16; SSC Reference Designs Study, 5/8/84, p. 42.)

79. **10/1/83** Some R&D preliminary to SSC-guidance from HEPAP subpanel on AAR&D.  
(L. Lederman, SSC Key Activities and Milestones, 1/17/84.)
80. **10/21/83** 2nd PSSC (FNAL)-discuss the physics and detector issues for machine designers.  
(PSSC Notice, 10/10/83.)
81. **10/27-28/83** AAR&D Subpanel-2nd meeting. URA named as best choice for management contractor for SSC R&D (Phase 1). SSC management must be kept separate from FNAL management.  
(SSC Newsletter, APS/DPF, 2/15/84.)
82. **11/18/83** 3rd PSSC (FNAL)-Monthly Progress Reports of 5 task force groups given.  
(See note 81, p. III. 1.)
83. **11/21-22/83** 9th ICFA Meeting (CERN) B. Richter, P. Reardon and K. Strauch attended. Purpose: to discuss program and agenda for FP in HEP seminar in Japan (5/84). Meeting should focus on interregional collaborations in depth.  
(Private Correspondence.)
84. **12/ /83** National SSC Reference Designs Study chartered by HEAL directors to review technical and economic feasibility of options for creating SSC and to identify its specific R&D needs.  
(SSC Reference Designs Study, 5/8/84, p. iii.)
85. **12/5-8/83** Physics of the 21st Century (Tucson, AZ)-conference to bring into focus the goals of HEP, within framework of SSC.  
(SSC Newsletter, APS/DPF, 11/8/83, p. III. 5.)
86. **12/12-17/83** AAR&D subpanel/DPF Workshop on Accelerator Issues for SSC (Univ. of Mich., Ann Arbor)-to identify crucial accelerator physics to show feasibility of SSC, to identify key R&D needs, to guide engineering design of technical components and systems.  
(See note 74.)

87. **12/19/83** Congressional approval to reprogram FY1984 funds for R&D preliminary to SSC.  
(See note 79.)
88. **12/19/83** 4th PSSC (BNL)-2 new task force groups added: 1) ep Option Group - Charles Prescott, 2) Theoretical Group - Frank Paige; Monthly Progress Reports of task force groups given.  
(PSSC Announcement, 11/30/83.)
89. **12/20/83-1/5/84** Funding allocated to participating laboratories for \$19.5M program of preliminary R&D.  
(See note 79; SSC Newsletter, APS/DPF, 3/15/84; SSC Newsletter, APS/DPF, 2/15/84, p. 2.)
90. **1/9/84** Sec. of DOE D. P. Hodel starts Phase 0.  
(DOE-MBO, 1/9/84.)
91. **1/13/84** SSC Meeting (Washington, D.C.) between DOE HQ staff and RDAG (J. Leiss says RDS high priority for HEP, RDS critical for 8/84 DOE decision).  
(SSC Newsletter, APS/DPF, 3/15/84.)
92. **1/17-19/84** DPF Cryogenic Workshop (BNL)-to address cryogenic issues most pertinent to design of large-scale accelerator with superconducting magnets. Five Workshop Groups: 1) Magnet Cooling System, 2) Magnet Cryostat, 3) Refrigeration Cycles, 4) Simulation, Controls & Instrumentation, and 5) Refrigeration Machinery.  
(See note 74; Proceeding of the Workshop on Cryogenics for the SSC, BNL 35842 Informal Report; W.B. Fowler, "Workshop on Cryogenics for the SSC," SSC Newsletter, APS/DPF, 2/15/84.)
93. **1/23-26/84** Physics at Energies Greater Than 100 GeV (UCSB-ITP).  
(L. Lederman, SSC Related Workshops, 1/17/84.)
94. **1/26-31/84** DPF/APS, Houston Area Research Center Fixed Target Physics and Accelerator Topics Workshop held at The Woodlands, north of Houston, TX. Work focused on assessing physics capabilities with fixed target beams using the SSC. Three groups: 1) Accelerator Physics, 2) Lepton Physics, 3) New Particle Beams. A Task Coordination Group (TCG) of RDS meets for 1st time. They recommended key parameters for reference designs. TCG Leaders:



- (a) D. Edwards (FNAL) - Accelerator Physics
- (b) P. Limon (FNAL) - Accelerator Engineering Group
- (c) T. Elioff (LBL) - Cost Analysis
- (d) J. Sanford (BNL) - Architecture and Engineering
- (e) L. Teng (FNAL) - Injector
- (f) J. Marx (LBL) - Report

(SSC Newsletters, APS/DPF, 2/15/84 and 3/15/84.)

95. 1/29-30/84 5th PSSC (The Woodlands) Monthly Progress Reports of task force groups given.

(Schedule, PSSC Meeting, The Woodlands, TX, 1/18/84; see note 94.)

96. 2/1/84 High Energy Physics Meeting (San Antonio) R. Weinstein (During APS/AAPT Meeting, 1/30-2/2/84).

(See note 93.)

97. 2/2/84 Symposium on SSC (San Antonio) W. Panofsky (During APS/AAPT Meeting, 1/30-2/2/84).

(Ibid.)

98. 2/8/84 2nd TCG Meeting (LBL).

(See note 94.)

99. 2/10-11/84 M. Tigner and Architecture/Engineering staff (Parsons, Brinckerhoff, Quade and Douglas, Inc.) and A/E Task Group visit FNAL (largest existing HEP facility).

(Ibid.)

100. 2/13-17/84  $\bar{p}p$  options for SSC (Univ. of Chicago & ANL) meeting. Goals: study and compare physics investigated in  $\bar{p}p$  and  $pp$  collisions, study limitations of luminosity of  $\bar{p}p$  SSC and document results of these studies for use at Snowmass, '84. Findings: differences expected to be small, at least  $10^{32}\text{cm}^{-2}\text{sec}^{-1}$  achievable without drastic new technology but may be insufficient to study some of the rare processes discussed.

(APS/DPF Newsletter, 10/26/83, p. III. 4; "Overview and Executive Summary," Proceedings of  $\bar{p}p$  Options for the Supercollider (2/84), pp. i-ii.)

101. **2/15/84** Tevatron [Energy Saver] project reaches 800 GeV (design energy).  
(SSC Reference Designs Study, 5/8/84, p. 45.)
102. **2/23/84** TCG Meeting (LBL)—working drafts of technical aspects of SSC Reference Design presented by Accelerator Physics Design & A/E TCG leaders; work breakdown structure, to provide framework for cost estimates, has been developed for each magnet design.  
(SSC Newsletter, APS/DPF, 3/15/84.)
103. **3/84** Activation of Interim Management Arrangement — URA. DOE implemented this body to develop R&D and management plans for preconstruction R&D and proposal development phase of SSC activity.  
(See notes 76, 79, 81 and 102; *Physics Today*, 6/84, p. 17; SSC Reference Designs Study, 5/8/84, p. 6; *Physics Today*, 8/84, p. 69.)
104. **3/13-16/84** Tracking Requirements for HE Hadron-Hadron Collisions (SLAC) meeting. Conclusions: current tracking limitations were determined and further study of certain tracking items was recommended.  
(M.G.D. Gilchriese and H. H. Williams, PSSC Summary Report, 6/84, pp. 129-133.)
105. **3/16/84** 6th PSSC (SLAC) Monthly Progress Reports of task force groups given and discussion meeting held.  
(PSSC SLAC Meeting Announcement and Schedule, 2/27/84.)
106. **4/ /84** George Keyworth, Presidential Science Adviser, invites Japanese to participate in SSC collaboration.  
(*Science* 225, 8/3/84, pp. 490-491.)
107. **4/23-26/84** APS Meeting (Washington):—1 session (4/26) held for progress reports on planning R&D for SSC. G. Stever of URA described progress of management development. M. Tigner gave status report on reference design.  
(J. Peoples, Jr., SSC Newsletter, APS/DPF, 3/15/84; *Physics Today*, 6/84, p. 17.)
108. **4/27/84** 1st Draft—Reference Design Study.  
(SSC Reference Design Study Group Draft I, 4/27/84.)

109. 4/28/84 Dedication of Tevatron (Energy Doubler/Saver) FNAL.  
(See note 16.)
110. 4/29-30/84 7th PSSC (FNAL) Summary Meeting, Task Force leaders gave presentations, M. Tigner gave Reference Design Report.  
(PSSC Summary Meeting Agenda, 4/30/84.)
111. 5/1/84 Reference Design due.  
(See note 79.)
112. 5/8/84 Final Draft of Reference Designs Study.  
(SSC Reference Designs Study, 5/8/84.)
113. 5/14-19/84 ICFA Seminar on Future Perspectives in High Energy Physics held at KEK in Japan. L. Lederman among those attending. Conclusions: ICFA role is facilitating construction of new high energy accelerators, not arbitrating national or regional options; will promote international collaboration stressing open access to all major accelerators; will sponsor panels on topics and ensure wide distribution of panel reports; panels should have widest international representation; seminars to be held regularly (every 2-4 years) to review past and anticipate future. H. Schopper (CERN) endorses p-p collider (LHC) as a "cost-effective alternative."  
(Private Communication, "Conclusions of ICFA" 5/19/84.)
114. \*\*\*\*\* "International collaboration hopes for 20 TeV  $\bar{p}p$  seem dead."  
(Private Conversation.)
115. 5-6/ /84 International collaboration idea furthered by the London Economic Summit decision of HEP being a good scientific area of cooperation. Earlier Williamsburg Summit (6/83) formed working group on Technology, Growth and Employment which had concluded that HEP would benefit from international collaboration.  
(See note 106, *Science* 220, 6/10/83, pp. 1134-6.)
116. 5-6/ /84 DOE Review of SSC Reference Designs Study.  
(See note 79.)

117. 6/1/84 R&D Plan and Management Plan for Phase 1 due to DOE; Review through 6/84.  
(Ibid.)
118. 6/4/84 Reference Designs Study to Sec. of DOE D. P. Hodel.  
(*Physics Today*, 6/84, p. 17.)
119. 6/4-22/84 Theoretical SSC Workshop (LBL). Purpose: to study ways in which hard collisions with cm energy in the TeV region could probe the mechanism responsible for electroweak symmetry breaking, and to clarify the general arguments that new physics must occur at or below this energy scale.  
(SSC Newsletter, APS/DPF, 11/8/83; Proceedings of the Workshop on Electroweak Symmetry Breaking, LBL-18571, 10/84.)
120. 6/20/84 Announcement that Maury Tigner has been selected to direct the Central Design Group by the SSC Board of Overseers. M. Tigner names S. Wojcicki as Deputy Director. B. McDaniel selected as Chairman of SSC Board of Overseers.  
(See note 156; *Physics Today*, 8/84, p. 69; B. D. McDaniel, "SSC Management," DPF News Bulletin, 7/30/84.)
121. 6/23-7/13/84 DPF Summer Study on SSC (Snowmass, CO) Three subjects addressed: 1) Physics, 2) Detectors, and 3) Accelerator Design. Conclusion: further progress in understanding elementary particles requires experimental study of 1 TeV mass scale and pp collisions at 40 TeV cm will produce this; this area can be explored with luminosity determined at  $\bar{p}p$  options for SSC meeting (2/13-17/84); detail revealed there justified effort in extending detector technology. Current technology can be extrapolated to needed parameters for detector design but R & D required along with accelerator R & D. Participants: 1) reviewed Reference Designs Study for DOE, 2) saw need for SSC performance evaluation with computer simulation before final magnet design decision, 3) recommended that extensive program of computer simulations be started and experimental measurements be carried out on Tevatron for computer model evaluation, and 4) noted that the 1 TeV booster design must accommodate calibration beams of each detector. The complete analyses results will be published in the proceedings.  
(J. Peoples, Jr., "Snowmass '84," APS/DPF Newsletter, 7/30/84; Proceedings of the 1984 Summer Study on the Design and Utilization of the SSC.)

122. 7/2-3/84 1st meeting - Summit (7 nations) Working Group on HEP, Brussels, Belgium (chaired by A. Trivelpiece). 3 subpanels created: 1) long-term planning; 2) technical collaboration; 3) administrative issues. Report due by 6/85 at Summit Meeting in Bonn.  
(See note 106.)
123. 7/3/84 UA1 announces six candidate events suggesting top quark.  
(*Physics Today*, 8/84, p. 17.)
124. 8/6/84 DOE decision due on proceeding with Phase 1.  
(See note 90.)
125. 8/10/84 A. Trivelpiece reports DOE Review results and OER Review results which support Reference Designs Study's cost estimates to DOE Secretary D. P. Hodel.  
(*Physics Today*, 10/84, p. 21.)
126. 8/13-24/84 U.S. Summer School on Particle Accelerators (FNAL). Noteworthy Sessions:
- (a) "Accelerators of the 1990's" Symposium  
(B. McDaniel, R. Billinge, B. Richter, L. Lederman)
  - (b) "The World-Wide Growth of HEP--Competition or Collaboration?"  
Round Table Discussion (B. McDaniel, R. Billinge, B. Richter, M. Veltman, S. Wojcicki, L. Lederman)
  - (c) "Accelerators of the 1980's" Symposium  
(J. Peoples, E. Picasso, G. Fischer, V. Soergel, S. Ozaki)
  - (d) "View from Snowmass"  
(J. Peoples, L. Pondrom, T. Collins, I. Hinchliffe)
- (*Ferminews*, 9/6/84.)
127. 8/16/84 D. P. Hodel approves Reference Designs Study, DOE and OER Reviews, and authorizes release of \$20M for FY1985 for SSC R&D [Phase 1 begins]. D. P. Hodel urges A. Trivelpiece to encourage international collaboration for SSC via Economic Summit Process.  
(See note 125.)

128. **Summer '84** - Research on SSC model magnets underway at BNL, FNAL, LBL and TAC.  
(SSC Highlights enclosure to APS/DPF Newsletter, 7/30/84)
129. **9/ /84** LBL selected as center for design effort of SSC.  
(San Francisco *Chronicle*, 9/17/84)
130. **10/ /84** \$20M for SSC R&D from DOE for FY85.  
(*Physics Today*, 3/85)
131. **11/84** HEP working group met at Abingdon, England. A. Trivelpiece (leader), appointed a subpanel (H. Atkinson, head) to identify the most important major research facilities. Conclusion: Need for a regional machine, not a world machine.  
(Ibid.)
132. **11/30/84** A. Trivelpiece asked R. M. White, Pres. of NAE, for assistance in the site selection process.  
(*Physics Today*, 3/85)
133. **Winter 84-85** B. D. McDaniel asks DOE to double support to \$40M for FY1986 but DOE budget calls for freeze.  
(Ibid.)
134. **1/85** Reagan moves Hodel from DOE to Department of Interior.  
(Ibid.)
135. **1/14-18/85** Workshop on Commissioning and Operations of the SSC held at Berkeley, CA.  
(*The Lattice*, 1/85)
136. **1/16-17/85** 3rd Workshop on NbTi Superconductors held (LBL).  
(*The Lattice*, 2/85)
137. **2/1/85** Gov. James Thompson announces initiative for SSC in Illinois and formation of SSC/Illinois task force, a non-profit organization.  
(Governor's Office Press Release, 2/1/85)

138. 2/ /85 J. S. Herrington named new Secretary of DOE.  
(*Physics Today*, 3/85))
139. 2/23/85 Inter Mountain Site Study Group meeting at Salt Lake City. Tom Elioff explained milestones.  
(*Physics Today*, 9/85)
140. 2/26/85 National Governors Association passes resolution "...urging DOE and Congress to proceed quickly in authorizing and building the SSC...insuring US preeminence in HEP."  
(*The Chronicle of Higher Education*, 10/16/85)
141. 2/26-27/85 Meeting of the Task Force on Commissioning and Operation of the SSC (FNAL).  
(*The Lattice*, 1/85)
142. 3/7-12/85 Orbital Dynamics and Applications to Accelerators Meeting (LBL). Sponsored by DPF and DOE.  
(*The Lattice*, 1/85)
143. 3/18 → 6/ /85 Workshop on Super High Energy Physics held at Eugene, OR. Sponsored by DPF.  
(*The Lattice*, 2/85)
144. 3/25/85 APS Meeting in Baltimore, MD. Sponsored by DPF. Session on SSC.  
(*The Lattice*, 1/85)
145. 3/26-27/85 Meeting of the Task Force on Commissioning and Operation of the SSC.  
(*The Lattice*, 1/85)
146. 3/28-29/85 Meeting of the Task Force on Photodesorption held in Washington, DC.  
(*The Lattice*, 2/85)
147. 4/1-5/85 Quench Protection and Power Supply Workshop.  
(*The Lattice*, 3/85)

148. 4/4-6/85 Muon Detection in the Multi-TeV Energy Region for SSC Experiments meeting held at Madison, WI. Sponsored by DPF.  
(*The Lattice*, 1/85)
149. 4/8/85 Interim Report due for the Aperture Task Force.  
(*The Lattice*, 3/85)
150. 4/16-18/85 Loeb Symposium on the SSC held at Harvard.  
(*The Lattice*, 1/85)
151. 4/22-23/85 Aperture Task Force Summary Meeting at Berkeley.  
(*The Lattice*, 3/85 and 5/85)
152. 4/24/85 Aperture Task Force Coordinators Meeting.  
(*The Lattice*, 3/85)
153. 4/ /85 Final Meeting of the Task Force on Commissioning and Operation of the SSC held at LBL.  
(*The Lattice*, 3/85)
154. 5/6/85 Meeting of SSC Board of Overseers of URA.  
(Report mentioned in *Science and Government Report*, 2/15/87.)
155. 5/85 Bonn Summit Meeting.  
(See note 106.)
156. 5/13-16/85 11th Particle Accelerator Conference (IEEE) held at Vancouver, BC.  
(*The Lattice*, 1/85 and 5/85)
157. 5/17/85 Low Temperature Operation Task Force Meeting held at CDG.  
(*The Lattice*, 4/85)
158. 5/20-21/85 SSC Users Meeting held at Berkeley.  
(*The Lattice*, 1/85 and 5/85)
159. 5/23-24/85 HEPAP Working Groups on  $e^+e^-$  Annihilation and the SSC (SLAC).  
(*The Lattice*, 4/84--see attached letter)



160. 5/26-31/85 AAAS Meeting held at Los Angeles, CA. Two sessions on the SSC.  
(*The Lattice*, 1/85)
161. 5/29/85 L. M. Lederman talk on SSC at AAAS Meeting.  
(*The Lattice*, 1/85)
162. 6/1 → 8/15/85 Workshop on Super High Energy Physics held at Eugene, OR.  
Summer program and mini-conference (8/9-10/85) sponsored by DPF.  
(*The Lattice*, 1/85)
163. 6/2-8/85 HEPAP Study held at Coolfont Conference Center in Berkeley Springs,  
WV "to gain better understanding of US high-energy physics program, includ-  
ing a reassessment of the goal of building the SSC." J. Peoples among those  
participating.  
(Report of the 1985 HEPAP Study of the US HEP Program 1985-1995, (9/85).)
164. 6/10-15/85 Workshop on Polarized Beams at the SSC held at Ann Arbor, MI.  
(*The Lattice*, 1/85)
165. 6/11/85 SSC Board of Overseers/URA held at SLAC.  
(*The Lattice*, 4/85)
166. 6/14/85 A. Trivelpiece sent letter and "Siting Parameters Document" to gov-  
ernors of states.  
(*Physics Today*, 9/85)
167. 6/15/85 CDG offers "Siting Parameters Document."  
(*Ibid.*)
168. 6/16/85 Aperture Task Force Meeting at FNAL on Linear Aperture.  
(*The Lattice*, 5/85)
169. 6/20-21/85 DOE Annual Review of SSC/CDG.  
(*The Lattice*, 5/85 and 6-7/85)
170. 6/26-27/85 Impedance Workshop at CDG.  
(*The Lattice*, 5/85)

171. **7/1-2/85** Technical Magnet Review Panel at TAC.  
(*The Lattice*, 5/85)
172. **7/11-12/85** Technical Magnet Review Panel at BNL.  
(*The Lattice*, 5/85)
173. **7/15-26/85** 5th US Summer School on High-Energy Particle Accelerators held at SLAC. Sponsored by DOE and NSF.  
(*The Lattice*, 2/85)
174. **7/24-25/85** 4th Workshop on NbTi Superconductors held at Madison, WI.  
(*The Lattice*, 3/85)
175. **8/8/85** SSC Board of Overseers meets at Chicago.  
(*The Lattice*, 6-7/85)
176. **8/9-10/85** Oregon Mini-Conference (DPF).  
(*The Lattice*, 5/85)
177. **8/12/15/85** Annual Meeting of DPF held at Eugene, OR.  
(*The Lattice*, 3/85 and 5/85)
178. **8/19-24/85** International Symposium on Lepton & Photon Interactions at High Energies held at Kyoto International Conference Hall, Japan.  
(*The Lattice*, 5/85)
179. **8/25-30/85** Magnet Type Selection Advisory Panel held at CDG.  
(*The Lattice*, 6-7/85 and 8-9/85)
180. **9/1/85** Magnet Selection Report due.  
(*The Lattice*, 6-7/85)
181. **9/4-6/85** Clustered Interaction Region Study Group meets at URA Design Center.  
(*The Lattice*, 8-9/85)
182. **9/10-11/85** Workshop on Compensated Calorimetry held at Caltech.  
(*The Lattice*, 8-9/85)

183. 9/16-27/85 Advanced Accelerator Physics CERN School at Oxford, England.  
(*The Lattice*, 8-9/85)
184. 9/18/85 Selection of magnet design from 5 choices. M. Tigner says "...a major milestone...." Rubbia says "...proposal is fantastic."  
(*NY Times*, 9/19/85. See also *CERN Courier* 11/85.)
185. 9/26-27/85 Task Force Meeting on Detector R & D for SSC held at CDG.  
(*The Lattice*, 8-9/85)
186. 10/7-10/85 International Workshop on Accelerator Control Systems held at Los Alamos National Laboratory.  
(*The Lattice*, 8-9/85)
187. 10/11/85 DOE Secretary John S. Herrington dedicates the Proton-Antiproton Collider, Tevatron I, at FNAL.  
(Dedication Program, 10/11/85)
188. 10/13/85 Proton-Antiproton collisions in FNAL Tevatron detected at record energies of 1.6 TeV.  
(FNAL News Release 85-11, 10/13/85; *Chicago Tribune*, 10/14/85; *Physics Today*, 12/85; *Chicago Sun-Times*, 10/14/85; *New Scientist*, 10/17/85; *Science*, 11/1/85)
189. 10/14-18/85 Workshop on SSC Environmental Radiation Considerations held at CDG.  
(*The Lattice*, 8-9/85 and 1-2/86)
190. 10/21-22/85 DOE Quarterly Review at CDG.  
(*The Lattice*, 8-9/85)
191. 10/23-25/85 IEEE Nuclear Science Symposium held in San Francisco, CA.  
(*The Lattice*, 5/85)
192. 10/28-30/85 Workshop on New Solid State Devices for HEP held at LBL.  
(*The Lattice*, 8-9/85)

193. 10/29/85 House Sub-Committee on Energy Development and Applications Meeting. H. Schopper and C. Rubbia of CERN both endorsed SSC, saying "...Large Hadron Collider [LHC at CERN] would be a stepping stone, not a replacement." J. Sandweiss (HEPAP chairman) urges 10% boost in DOE support.  
(*Science*, 11/15/85)
194. 11/2/85 SSC Board of Overseers Meeting at MIT.  
(*The Lattice*, 8-9/85)
195. 11/11-14/85 Triggering, Data Acquisition, and Computing for High Energy, High Luminosity Hadron-Hadron Colliders Workshop held at FNAL.  
(*The Lattice*, 6-7/85)
196. 1/8-9/86 Magnet Systems Integration Meeting held at CDG.  
(*The Lattice*, 1-2/86)
197. 1/10/86 DOE Quarterly Review at CDG.  
(*The Lattice*, 1-2/86)
198. 1/13-15/86 Detector R&D Task Force Meeting at CDG.  
(*The Lattice*, 1-2/86)
199. 1/16-17/86 Workshop on Radiation Damage to Wire Chambers held at LBL.  
(*The Lattice*, 8-9/85)
200. 1/15-24/86 Observable Standard Model Physics at the SSC: Monte Carlo Simulation and Detector Capabilities Meeting held at UCLA.  
(*The Lattice*, 1-2/86)
201. 1/31/86 SSC Board of Overseers Meeting held at the Woodlands, TX.  
(*The Lattice*, 1-2/86)
202. 2/5-6/86 Magnet Systems Integration Meeting held at FNAL.  
(*The Lattice*, 1-2/86)
203. 3/6/86 Magnet Program Advisory Panel meets at CDG.  
(*The Lattice*, 3-4/86)

204. **3/86** Conceptual Design Report of the SSC issued by CDG.  
(*The Lattice*, 3-4/86)
205. **3/31/86** Conceptual Design Report submitted to DOE.  
(*The Lattice*, 3-4/86)
206. **3/86** Reps. Fazio and Packard (CA) had 91 congressmen sign petition urging Reagan to support the SSC.  
(*Science*, 7/25/86)
207. **4/3-4/86** Detector R&D Task Force Meeting at CDG.  
(*The Lattice*, 3-4/86)
208. **4/86** Letter to DOE from TAC (R. Huson and P. McIntyre) asking F. Sciulli panel to reconsider superferric magnet. A. Trivelpiece asks HEPAP subpanel to review magnet selection decision of 9/85.  
(*Physics Today*, 7/86)
209. **4/28 → 5/3/86** DOE Review of Conceptual Design Report.  
(*The Lattice*, 3-4/86 and 5-6/86)
210. **4 → 5/86** HEPAP subpanel (chaired by B. Richter) met and decided to stand by original recommendation of 9/85, the high-field  $\cos\theta$  magnet design. TAC then decides to stop working on superferric design.  
(See note 208.)
211. **4 → 6/86** DOE Review of SSC Conceptual Design Report. Recommendations: See Temple Report.  
(*Physics Today*, 7/86.)
212. **5/5/86** SSC Board of Overseers Meeting at FNAL.  
(*The Lattice*, 3-4/86)
213. **5/5-16/86** Workshop on Physics Simulations at High Energies held at Madison, WI.  
(*The Lattice*, 3-4/86)
214. **5/12-16/86** ICFA Meeting on Collider Magnets held at BNL.  
(*The Lattice*, 3-4/86)

215. 5/15-16/86 HEPAP Meeting at LBL.  
(*The Lattice*, 3-4/86)
216. 6/16/86 DOE Quarterly Review of SSC R&D held at CDG.  
(*The Lattice*, 3-4/86)
217. 6/86 B. Barish Committee Report of L. M. Lederman  $\bar{p}p$  proposal for less expensive SSC.  
(See *Physics Today*, 7/86)
218. 6/17-18/86 Magnet Program Advisory Panel Meeting at CDG.  
(*The Lattice*, 3-4/86)
219. 6/23 → 7/11/86 Snowmass '86 Meeting sponsored by APS/DPF.  
(*The Lattice*, 8-9/85 and 7-9/86; Proceedings of the 1986 Summer Study on the Physics of the SSC)
220. 7/14-15/86 SSC Board of Overseers Meeting at LBL.  
(*The Lattice*, 3-4/86)
221. 7/16-23/86 XXIII International Conference on High Energy Physics (Rochester Conference) held at Berkeley.  
(*The Lattice* 5-6/86)
222. 7/18/86 ICFA Meeting held at Berkeley.  
(*The Lattice*, 3-4/86)
223. 8/86 DOE budget to OMB.  
(*Science* 233, 7/25/86)
224. 8/11/86 W. N. Hess becomes DOE Associate Director for High Energy and Nuclear Physics.  
(*Physics Today*, 11/86)
225. 8/ /86 HEP Meeting at Berkeley.  
(*The Chronicle of Higher Education*, 8/13/86)
226. 9 → 10/86 White House Reviewing SSC.  
(*Science*, 2/6/87)

227. 9/15-16/86 Magnet Program Advisory Panel Meeting at CDG.  
(*The Lattice*, 7-9/86)
228. 9/17-18/86 Cell Lattice Workshop at CDG.  
(*The Lattice*, 7-9/86)
229. 9/17-18/86 Hadronic Cascade Workshop at CDG.  
(*The Lattice*, 7-9/86)
230. 9/22-23/86 HEPAP Meeting at Germantown.  
(*The Lattice*, 7-9/86)
231. 9/25/86 Quadrupole Preliminary Design Review Meeting at FNAL.  
(*The Lattice*, 7-9/86)
232. 10/22-23/86 DOE Annual Review of SSC R&D program at CDG.  
(*The Lattice*, 7-9/86)
233. 10/30-31/86 Cryostat Requirements Design Review at Fermilab.  
(*The Lattice*, 7-9/86)
234. 11/7//86 SSC Board of Overseers Meeting at BNL.  
(*The Lattice*, 7-9/86)
235. 11/ /86 Ezra D. Heitowit became Vice President of URA.  
(*Physics Today*, 11/86)
236. 11/86 Funding crunch at national laboratories.  
(*Science*, 12/5/86)
237. 11/24/86 W. R. Graham becomes new Presidential Science Adviser and Director of Office of Science and Technology Policy replacing G. A. Keyworth.  
(*Physics Today*, 11/86)
238. 1/ /87 Tevatron Collider at FNAL sets new energy level record, 1.8 TeV.  
(*Chicago Tribune*, 2/12/87)
239. 1/29/87 Cabinet voted to endorse SSC after briefing by A. W. Trivelpiece.  
(*Science*, 2/6/87)

240. 1/30/87 "President Reagan supports SSC...will ask Congress to support the \$4.5B Project," announced by DOE Secretary J. S. Herrington.  
(*Physics Today*, 3/87; *New York Times*, 2/2/87; *Wall Street Journal*, 2/2/87; *Chicago Tribune*, 1/31/87)
241. 2/10/87 Site selection timetable announced at press conference by Herrington. SSC budget discussed also.  
(*Chronicle of Higher Education*, 2/11/87; *Chicago Tribune*, 2/12/87; *Physics Today*, 3/87; *Science and Government Report*, 2/15/87)
242. 2/14-18/87 AAAS Meeting in Chicago.  
(*Chicago Tribune*, 2/8/87)
243. 2/20/87 Site Parameters/Criteria Information issued.  
(*Science and Government Report*, 2/15/87)
244. 3/18/87 "Special Panel Discussion on Novel Materials and High-Temperature Superconductivity" during APS Meeting held in New York City.  
(*Science*, 3/27/87)
245. 3/23-26/87 Meeting of the Task Force on Collision Hall Limitations held at CDG.  
(*The Lattice*, 3-4/87 and 8-9/87)
246. 4/1/87 Invitation for Site Proposals released by DOE. Proposals originally would be due by 8/3/87 but this date was pushed back to 9/2/87.  
(*Science and Government Report*, 2/15/87; *Physics Today*, 8/87; *The Lattice*, 6-7/87)
247. 4/7-9/87 House Science, Space & Technology Committee and Senate Energy & Natural Resources Committee hearings. H. Schopper, Director-General of CERN, is not supportive of US-SSC hopes for international collaboration; rather he thinks US should support LHC/LEP as the existing resource.  
(*The Scientist*, 5/4/87; *Physics Today*, 8/87)
248. 4/14-16/87 International Advisory Committee on Generic Detector R&D for the SSC Meeting held at CDG.  
(*The Lattice*, 3-4/87 and 6-7/87)



249. 4/27/87 Trivelpiece resigns as Director of Energy Research for DOE to become Executive Director of AAAS. James Decker becomes Acting Director of ER for DOE.  
(*The Scientist*, 5/18/87)
250. 4/29/87 SSC Proposal Conference held in Washington, DC.  
(*The Scientist*, 5/4/87)
251. 5/4-6/87 Workshop on Radiological Aspects of SSC Operation held at CDG.  
(*The Lattice*, 6-7/86)
252. 6/17/87 House of Representatives agrees to 1988 Energy and Water Development Appropriation Bill including \$10M for SSC construction.  
(*Physics Today*, 8/87)
253. 6/18/87 NAS/NAE Panel for Site Selection named.  
(*The Scientist*, 7/13/87; *Physics Today*, 8/87)
254. 6/19/87 Thirty-one governors send letter of support to Rep. Robert Roe (D-NJ) and Sen J. B. Johnston (D-LA).  
(*Science & Government Report*, 7/1/87)
255. 6/24/87 House of Representatives Appropriations Committee approves \$25M for SSC R&D but not \$10M for construction.  
(*Ibid.*)
256. 7/7-17/87 Workshop on Experiments, Detectors, and Experimental Areas for the SSC held at UC-Berkeley. Sponsored by DPF/APS, DOE, NSF, CDG and URA.  
(*The Lattice*, 3-4/87, 6-7/87 and 8-9/87)
257. 7/11/87 Supplemental Appropriations Bill signed by Reagan in Domenici Amendment 97.  
(*Physics Today*, 8/87)
258. 7/14/87 DOE extends proposal deadline to 9/2/87.  
(*Chicago Tribune*, 7/16/87; *The Lattice*, 8-9/87)

259. 7/20-21/87 International Advisory Committee on Generic Detector R&D for the SSC meeting held at CDG.  
(*The Lattice*, 6-7/87 and 8-9/87)
260. 8/7-8/87 SSC Board of Overseers meeting at LBL.  
(*The Lattice*, 6-7/87)
261. 8/7/87 Legislation introduced in House of Representatives for \$10M construction funds.  
(*Science*, 8/21/87)
262. 9/2/87 43 proposals for sites in 25 states are submitted to DOE.  
(*Science* 237, 9/11/87; *Nature* 329, 9/10/87)
263. 9/9-10/87 HEPAP Meeting held at Germantown, MD.  
(*The Lattice*, 6-7/87)
264. 9/24-28/87 Workshop on Detector Simulation for the SSC held at ANL.  
(*The Lattice*, 10-11/87)
265. 9/30/87 Deadline for FY88 construction funding decisions.  
(*Chicago Tribune*, 9/3/87)
266. 10 → 12/87 Evaluation of site proposals by NAS/NAE panel.  
(*Science and Government Report*, 2/15/87)
267. 10/1/87 Seven sites ruled out by DOE for "not meeting the basic qualifications criteria."  
(*Science and Government Report*, 10/1/87; *The Lattice*, 10-11/87)
268. 10/5/87 John Peoples (FNAL) to join CDG as Head of Magnet Division.  
(*The Lattice*, 1-2/88)
269. 10/13-14/87 Workshop on Distributed Multipole Correction Coils held at BNL.  
(*The Lattice*, 10-11/87 and 1-2/88)
270. 10/16/87 Informal meeting on pixel detector arrays held at CDG.  
(*The Lattice*, 1-2/88)

271. 10/ /87 ICFA Meeting held at BNL.  
(*Science* 238, 11/20/87)
272. 10/ /87 House Science, Space and Technology Committee approved Bill 3228 to construct the SSC. Bill sets out 3-yr. spending plan in accord with Pres. Reagan's schedule.  
(*Science*, 10/23/87)
273. 10/25-27/87 International Advisory Committee on Generic Detector R&D for the SSC held at CDG.  
(*The Lattice*, 8-9/87 and 1-2/88)
274. 11/9-12/87 Task Force on Radiation Levels in the Experimental Halls at the SSC meeting held at CDG.  
(*The Lattice*, 10-11/87 and 1-2/88)
275. 11/20-21/87 URA Board of Overseers meeting at Chicago.  
(*The Lattice*, 8-9/87)
276. 12/3-4/87 SSC Status Report to the Nation - A National Symposium on the SSC, held in Denver, CO and sponsored by DPF/APS.  
(Meeting Announcement and *The Lattice*, 1-2/88)
277. 12/5/87 URA Board of Trustees meeting at LBL.  
(*The Lattice*, 10-11/87)
278. 12/29/87 Best qualified sites announced: AZ, CO, IL, MI, NY, NC, TN, and TX.  
(*Chicago Tribune*, 12/30/87 and *The Lattice*, 1-2/88)
279. 1/4-6/88 Intermediate Mass and Extended Gauge Theory Higgs Bosons at the SSC Meeting held at UC-Davis.  
(*The Lattice*, 10-11/87)
280. 1/14/88 New York withdraws from further consideration as SSC site.  
(*Chicago Tribune*, 1/15/88)
281. 1/21-22/88 DOE Annual Review of the SSC R&D Program held at CDG.  
(*The Lattice*, 1-2/88)

282. **1/25-28/88** General Meeting of the APS held in Crystal City, Virginia.  
(*The Lattice*, 1-2/88)
283. **1 → 7/88** "Preferred Site Selection" by the DOE Site Selection Task Force and the Energy System Acquisition Advisory Board.  
(*DOE This Month*, 1/88)
284. **2/12/88** URA Council of Presidents Meeting held in Washington, DC.  
(*The Lattice*, 1-2/88 and 3-5/88)
285. **2/13-14/88** SSC Board of Overseers Meeting in Washington, DC.  
(*Ibid.*)
286. **2/18/88** President Reagan asks for \$363M for construction of SSC.  
(*Chicago Tribune*, 2/19/88)
287. **2/23/88** Selection of preferred site postponed by DOE from July to late November, 1988  
(*Chicago Tribune*, 2/24/88)
288. **3/1-2/88** HEPAP Meeting held at BNL.  
(*The Lattice*, 1-2/88)
289. **3/7-9/88** Meeting on the Radiation Effects at the SSC held at CDG.  
(*Ibid.* and *The Lattice* 3-5/88)
290. **3/10-11/88** URA Board of Trustees Meeting held in Washington, DC.  
(*Ibid.*)
291. **3/21-25/88** General Meeting of the APS held in New Orleans, LA.  
(*The Lattice*, 1-2/88)
292. **4 → 7/88** DOE examining geological and environmental conditions at 7 remaining sites.  
(*Physics Today*, 5/88)
293. **4/8/88** SSC Users Executive Committee Meeting held at CDG.  
(*The Lattice*, 1-2/88)

294. 4/18-21/88 General Meeting of the APS held in Baltimore, MD.  
(Ibid.)
295. 6/27-29/88 Task Force on Radiation Hardened Electronics for the SSC meeting held at CDG.  
(*The Lattice*, 3-5/88 and 6-8/88)
296. 6/27-7/15/88 DPF Summer Study on High Energy Physics in the 1990s held in Snowmass, CO.  
(*The Lattice*, 1-2/88, 3-5/88 and 6-8/88)
297. 7/5-7/88 Future Directions in Detector R&D for Experiments at pp Colliders held in Snowmass, CO.  
(Ibid.)
298. 7/8-9/88 Meeting of the International Advisory Committee on Generic Detector R&D for the SSC held in Snowmass, CO.  
(Ibid.)
299. 7/10/88 European physicists say US should postpone construction of the SSC until new technology is developed.  
(*Chicago Tribune*, 7/10/88)
300. 7/16-17/88 HEPAP Meeting held in Snowmass, CO.  
(*The Lattice*, 3-5/88)
301. 8/3/88 DOE announces "Request for Proposals" for private sector management of design, construction, and operation of SSC in *Commerce Business Daily*, 8/3/88. Proposals are due 11/4/88.  
(*The Lattice*, 6-8/88 and UOSSC Newsletter 3, 9/12/88)
302. 8/15/88 SSC Users Organization Annual Meeting held at Univ. of CT in Storrs, CT.  
(*The Lattice*, 3-5/88 and UOSSC Newsletter 3, 9/12/88)
303. 8/15-18/88 Annual Meeting of the APS-DPF held at the Univ. of CT in Storrs, CT.  
(Ibid.)

304. 8/16/88 SSC Users Executive Committee Meeting held at Univ. of CT in Storrs, CT.  
(Ibid.)
305. 8/ /88 Congress appropriates \$100M for SSC R&D in FY89. Bill signed by Pres. Reagan.  
(*The Lattice*, 6-8/88)
306. 9/1/88 John Peoples returns to FNAL as Deputy Director. Tom Kirk becomes Head of Magnet Division at CDG.  
(*The Lattice*, 9-12/88)
307. 9/13-15/88 DOE Quarterly Review of the SSC R&D Program held at CDG.  
(*The Lattice*, 6-8/88)
308. 10/31-11/1/88 SSC Board of Overseers Meeting held at LBL.  
(Ibid.)
309. 11/2-4/88 International Advisory Committee on Generic Detector R&D for the SSC met at CDG to review proposals for detector R&D for FY89.  
(*The Lattice*, 9-12/88)
310. 11/10/88 Announcement (two days after the election of George Bush) that Waxahachie, Texas site will be awarded the SSC.  
(*Chicago Tribune*, 11/11/88; *The Lattice*, 9-12/88)
311. 11/14-16/88 Workshop on Scintillating Fiber Detector Development for the SSC held at FNAL.  
(*The Lattice*, 6-8/88)
312. 12/19-20/88 Workshop on Cryostat Systems for Liquid Argon Calorimetry held at Univ. of CO in Boulder, CO.  
(*The Lattice*, 9-12/88)
313. 1/16-19/89 Workshop on Triggering and Data Acquisition for Experiments at the SSC held at the University of Toronto.  
(*The Lattice*, 6-8/88)

314. 1/18/89 URA selected as management organization to design, construct and operate the SSC. Roy Schwitters is URA's candidate to direct the project.  
(*Physics Today*, 2/89)
315. 1/19/89 HEPAP Meeting in Hilton Head, SC endorses R. Schwitters as Director of SSC.  
(*Ibid.*)
316. 2/8-10/89 International Industrial Symposium on the SSC to be held in New Orleans, LA.  
(*The Lattice*, 9-12/88; *Physics Today*, 2/89)
317. 3/13-17/89 Workshop on Calorimetry for the SSC to be held at the Univ. of AL in Tuscaloosa, AL.  
(*The Lattice*, 9-12/88)

## ABBREVIATIONS AND ACRONYMS

AAR&D	Advanced Accelerator Research and Development
A/E	Architecture/Engineering
AIP	American Institute of Physics
ANL	Argonne National Laboratory (IL)
APS	American Physical Society
BNL	Brookhaven National Laboratory (NY)
CBA	Colliding Beam Accelerator (NY)
CDG	Central Design Group (LBL)
CERN	European Center for Nuclear Research (Switz.)
CESR	Cornell Electron Storage Ring (NY)
DOE	Department of Energy
DPF	Division of Particles and Fields
ERDA	Energy Research and Development Administration
FNAL	Fermi National Accelerator Laboratory (IL)
FP in HEP	Future Perspectives in High Energy Physics
GeV	Billion Electron Volts
HE	High Energy
HEAL	High Energy Accelerator Laboratory
HEP	High Energy Physics
HEPAP	High Energy Physics Advisory Panel
IAEC	International Atomic Energy Commission
ICFA	International Committee for Future Accelerators
IEEE	Institute of Electrical and Electronics Engineers
IHEP	Institute for High Energy Physics (USSR)
ISA	Intersecting Storage Accelerator (aka ISABELLE)
IUPAP	International Union of Pure and Applied Physics
JINR	Joint Institute for Nuclear Research (USSR)
KEK	High Energy Physics Institute (Japan)
LBL/LRL	Lawrence Berkeley Lab/Lawrence Radiation Lab (CA)
MBO	Memo of Business Order
NAL	National Accelerator Laboratory (now FNAL) (IL)
NSF	National Science Foundation
OER	Office of Energy Research
PEP	Positron-Electron Project (SLAC-CA)
PSSC	Physics at the Superconducting Super Collider
R&D	Research and Development
RDAG	Reference Designs Advisory Group



RDS	Reference Designs Study
SLAC	Stanford Linear Accelerator Center (CA)
SLC	SLAC Linear Collider (CA)
SPS	Super Proton Synchrotron
SSC	Superconducting Super Collider
TAC	Texas Accelerator Center
TCG	Task Coordination Group
TeV	Trillion Electron Volts
TM	Technical Memo
UA1	Experiment at Underground Area 1 of CERN SPS Collider
UA2	Experiment at Underground Area 2 of CERN SPS Collider
UCRL	University of California Radiation Laboratory
UCSB/ITP	University of California, Santa Barbara/Institute for Theoretical Physics
URA	Universities Research Association
USAEC	United States Atomic Energy Commission
VBA	Very Big Accelerator



# Fermi National Accelerator Laboratory

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A CHRONOLOGY: VBA (ICFA) → SSC (US-DOE)

Adrienne W. Kolb

January 1985



## A CHRONOLOGY:

VBA (ICFA) → SSC (US-DOE)

Adrienne W. Kolb

The idea of a multi-TeV (trillion electron volts) proton accelerator has been being discussed for many years. How did this concept begin? Who first put forth the proposal of such an enormous accelerator? What is it? What physics would it do? Why now? How can this be done? Where to build it?

This historical chronology links the early ideas of international collaboration with current rapidly-evolving developments of the Superconducting Super Collider, now seen as a national effort. The ultimate decision on the fate of this endeavor has not been made. The scientific community is working to satisfy the Department of Energy request for information to justify the SSC from all perspectives. This chronology provides background historical information on meetings and developments leading to the SSC proposal, which may be of use providing such justification.

All source material cited in this report is available in the Milton G. White History of Accelerators collection of the Fermi National Accelerator Laboratory Library.

1. 7/59 International Conf. on HEP (Kiev, USSR) IUPAP committee on HE decided to hold meeting on 9/15/59.  
  
(Private Communication.)
2. 9/15/59 Meeting at CERN of scientists from USA (Panofsky), USSR and Europe to form study committee on questions related to international cooperation in field of HE Accelerators.  
  
(W. O. Lock, CERN Yellow Report 75-7 (1975).)
3. 11/24/59 J. A. McCone (USAEC) and V. S. Emalyanov (USSR Main Administration for the Utilization of Atomic Energy) correspondence regarding joint (US and USSR) enterprise...high energy accelerators....  
  
(USAEC Memorandum, 11/24/59.; R.R. Wilson, "Toward a World Accelerator Laboratory," FNAL TM-811, 8/16/78.)
4. 1960 "Serious discussion of a World Accelerator began...100 GeV proton synchrotron...."  
  
(R. R. Wilson, Scientific American, 1/80, Vol. 242, No. 1, pp. 42-57.)
5. 8/28/60 Informal session at 10th Conf. on HEP at Rochester--"Super High Energy Accelerator Physics"--attended by Alvarez, Bethe, Feynman, Heisenberg, McMillan, Oppenheimer, Panofsky, R. R. Wilson, and USSR scientists.  
  
(Correspondence; 8/28/60; R.R. Wilson, FNAL TM-811, 8/16/78.)
6. 9/16/60 AIP Meeting (NYC) US and USSR scientists met to plan study of energy greater than 300 BeV. Attended by R. R. Wilson, K. R. Symon, L. J. Haworth.  
  
(Correspondence, 9/16/60.)
7. 1961 "As a result of the Atoms for Peace movement, an exchange of particle physicists was worked out between the US and the USSR for the discussion of undertakings in the [their] mutual interest. The possibility of a 'World Accelerator,' to be supported by the pooled resources of many nations, was one of the topics considered."  
  
(See note 4.)
8. \_\_\_\_\_ CERN-Dubna--attended by scientists from W. Europe & USSR.  
  
(Goldwasser, "Report on the Status and Plans of the ICFA," 1978, Proceedings of the XIX Int. Conf. on HEP, Tokyo, Japan.)

9. \_\_\_\_\_ CERN-Serpukhov--attended by scientists from W. Europe & USSR.  
(Ibid.)
10. 7/29-30/64 IAEC organized a meeting in Vienna, Austria--group (chaired by V. Weisskopf) felt that world-wide collaboration should be expanded but that accelerators up to 300 GeV shouldn't require an international effort.  
(Private Communication.)
11. 1965-1968 NAL being designed.  
(200-BeV Accelerator Design Study, University of California Lawrence Radiation Laboratory Report UCRL-16000 (Berkeley, June 1965); Design Report, National Accelerator Laboratory, (Fermilab, January 1968).)
12. 6/67 Riga, USSR meeting - CERN and JINR organized "Future Perspectives in HEP" [FP in HEP] seminar. Attended by B. Gregory, W. O. Lock, L. VanHove.  
(Private Communication; see also note 8.)
13. 9/68 Semmering, Austria meeting to follow up Riga seminar - V. Weisskopf attended from CERN with B. Gregory and W.O. Lock.  
(Ibid.)
14. 9/69 Tbilisi, USSR - another follow-up meeting to FP in HEP (tripartite) - Attended by V. Weisskopf, W. Panofsky, R. R. Wilson from US; B. Gregory, W.O. Lock, H. Schopper, J. B. Adams, E. Amaldi from CERN and USSR scientists.  
(Ibid.)
15. 1971 Morges, Switzerland - another FP in HEP meeting - Attended by R. R. Wilson, Goldwasser, McMillan, Panofsky and Weisskopf.  
(Ibid.)
16. 1971 R. R. Wilson announces intention to request authorization to build Energy Saver/Doubler at NAL.  
("Energy Saver Chronology", Dedication of the Energy Saver, FNAL, 4/28/84.)
17. 9/72 Energy Doubler Working Group established at NAL.  
(Ibid.)

18. 2/73 AEC gave NAL permission to spend up to \$1.5M for design study and model tests of Doubler (during calendar year 1973).  
  
(1973 Annual Report, URA, 1/21/74.)
19. 11/73 Meeting at CERN to decide to hold seminar in USA in early 1975. Panofsky attended. Purpose: informal coordination of national HEP plans and to discuss possible multi-lateral joint large projects.  
  
(Private Communication.)
20. 1972-74 ISA in initial planning design stage.  
  
(Proposal for Construction of a Proton-Proton Storage Accelerator Facility ISABELLE, BNL 18891 (5/74).)
21. 2/74 US-USSR Joint Committee on Cooperation in Peaceful Uses of Atomic Energy meeting. (Washington, D.C.) Nixon-Brezhnev Agreement (6/73) eased international tension and allowed the setting up of this group, thereby starting international discussions again.  
  
(Private Communication.)
22. 7/10-11/74 Abingdon (near London), England - informal planning meeting; title given to early 1975 conference. (Tripartite) Attended by R. R. Wilson, Weisskopf, Richter, Adams and Lock.  
  
(Ibid.)
23. 3/75 "International Seminar on Future Perspectives in High Energy Physics," chaired by V. Weisskopf. Held in New Orleans, LA. Attended by Panofsky, R. R. Wilson, Lederman, Goldwasser, Gell-Mann, Gregory, Lock, Yamaguchi. "VBA" suggested as new facility to be unobtrusively studied over 10 years for accelerator so large...beyond the reach of any individual nation or region.  
  
(Private Communication; see also note 8.)
24. 10/75 Organizational meeting at CERN to establish agenda for next meeting in 5/76. Attended by Lederman, R. R. Wilson, Weisskopf. Nations participating from E. Europe, Japan, USA, USSR, W. Europe.  
  
(Private Communication.)
25. 11/75 Organizational meeting at CERN to plan agenda and coordinate arrangements for Serpukhov meeting. Attended by Lederman, R. R. Wilson, Weisskopf, Adams, Lock, Yarba, Lanisus.  
  
(Ibid.)

26. 11/75 "1 TeV" mentioned in R. R. Wilson Physics Today editorial regarding a world laboratory.
- (R. R. Wilson, Physics Today, "A World Laboratory and World Peace," 11/75, p. 120.)
27. 5/17-25/76 Serpukhov organizational meeting attended by R. R. Wilson, Lederman, Weisskopf, Diebold, Bjorken. VBA scale discussed; greater than or equal to 10 TeV fixed target proton accelerator and/or 100 GeV  $e^+e^-$  collider decided appropriate for consideration. Three conclusions: 1) new generation of intermediate range facilities required and individual regions are capable of building them; 2) past regional and inter-regional collaboration provides basis for extending and strengthening the collaboration in the new generation; 3) need for VBA requiring international collaboration of all regions. Four recommendations: 1) coordinate design and construction of new regional facilities and joint studies of technology and joint design/construction; 2) availability to all regions essential to take advantage of facilities with complementary research potentialities; 3) collaboration should provide for studies leading to realization of superhigh energy facilities (so large only possible by pooling resources of all regions) in about 10 years; 4) subcommittee appointed by IUPAP needed to organize working groups and future meetings.
- (Private Communication; see also note 8.)
28. 7/20/76 Tbilisi, USSR - IUPAP Commission on Particles and Fields met and agreed to sponsor activities of new committee = ICFA (International Committee for Future Accelerators). Responsibilities: wants stronger emphasis on VBA than on coordination of regional facilities. Lederman attended.
- (Ibid.)
29. 1976 Congress includes \$1.9M in FNAL funding for Doubler.
- (1976 Annual Report, URA, 11/1/77.)
30. 3/77 Lederman--NYC/VBA concept (witty comment).
- (Particle Accelerator Conference Proceedings (3/16-18/77), IEEE Transactions on Nuclear Science, Vol. NS-24, No. 3, 6/77; Physics Today, p. 19-20, 5/77.)
31. 6/77 ISA and Tevatron (Energy Doubler/Saver) recommended by HEPAP subpanel.
- (Report of the 1977 Subpanel on New Facilities of the HEPAP, 6/77, ERDA 77-71.)

32. 8/30/77 Hamburg--1st meeting of ICFA (provisional until next day); chaired by Bernard Gregory. R. R. Wilson, Lederman, Weisskopf attended. Two groups created: 1) regional facilities collaboration study group and 2) super high energy study group.
- (Private Communication; see also note 8.)
33. 8/31/77 Hamburg--IUPAP Commission Annual Meeting; chaired by Bernard Gregory. Approves ICFA committee membership and retains previous (7/20/76) statement of ICFA responsibilities.
- (Ibid.)
34. 12/77 B. Gregory died; Goldwasser became temporary chairman of IUPAP and, therefore, ICFA.
- (Private Communication.)
35. 1/27/78 CERN--2nd ICFA Meeting--It was decided that a series of VBA workshops was necessary. Meeting chaired by J. Adams. Four areas of interest relating to VBA and regional facilities: 1) physics, 2) accelerator possibilities and limitations, 3) detector possibilities and limitations, and 4) how to build and use VBA. Attended by R. R. Wilson, Goldwasser, Lederman, Adams, Lock, Lanius, Yamaguchi and Yarba.
- (Ibid.)
36. 8/24-30/78 Tokyo, Japan - XIX International Conference on HEP - ICFA report by Goldwasser.
- (See note 8.)
37. 10/78 Energy Saver became official construction project by being included in DOE FY1979 legislation. \$12M for Doubler/Saver.
- (1978 Annual Report, URA, 1/1/79.)
38. 10/15-21/78 ICFA Workshop on Possibilities and Limitations of Accelerators and Detectors - (FNAL) Organized by L. Teng. Three-fold purpose: 1) to be technical, 2) to investigate general accelerator and experimental technology and techniques available for super-high [more than 5 TeV protons/more than 100 GeV electrons] energies, and 3) to be a true workshop - studying and solving problems at super-high energies. Attended by R. R. Wilson, Lederman, Richter, Sandweiss, Tigner, McIntyre, Courant, U. Amaldi, Samios, Diebold, Charpak, Barish, Goldwasser, McDaniel, Rubbia, Tollestrup and Trilling.
- (Lee Teng, Proceedings of the Workshop on Possibilities and Limitations of Accelerators and Detectors 10/15-21/78 (FNAL, 4/79).)



39. \*\*\*\*\*Adams in Les Diablerets proceedings says energy for VBA was raised at this meeting to 20 TeV<sub>+</sub> proton fixed target accelerator and 350 GeV per beam for e<sup>+</sup>e<sup>-</sup> collider.
- (J. B. Adams, Proceedings of the Second ICFA Workshop on Possibilities and Limitations of Accelerators and Detectors Les Diablerets, Switzerland 4-10 October 1979 (CERN, 6/80), p. XI.)
40. 10/20/78 3rd ICFA Meeting -- after or during FNAL workshop. It was decided to hold follow-up workshop hosted by CERN in 1979; a workshop in 1980 on high-field superconducting magnets and superconducting rf cavities is planned. Attended by Lederman, R. R. Wilson, Goldwasser, Richter, Yamaguchi, Adams and Lock.
- (Teng, see note 38.)
41. 10/4-10/79 ICFA--2nd Workshop on Possibilities and Limitations of Accelerators and Detectors--held at Les Diablerets, Switzerland (near CERN). Organized by U. Amaldi; purpose was to complete the work done at FNAL (concentrating on those subjects not fully covered at FNAL, i.e., experiments to be performed at future colliders).
- (U. Amaldi, Proceedings of the Second ICFA Workshop on Possibilities and Limitations of Accelerators and Detectors Les Diablerets, Switzerland 4-10 October 1979 (CERN, 6/80).)
42. 10/11/79 4th ICFA Meeting--held at CERN. Purpose was to decide what future workshops should be arranged. Those discussed: polarized beams workshop to be held at DESY in Spring, 1980; superconducting magnets to be held at Serpukhov in Fall, 1980 [Lock says this was to be scheduled for Summer '80 but didn't take place until 10/81].
- (Private Communication; Adams, see note 39; Lee Teng, oral communication.)
43. 2/80-6/80 DOE had appointed subpanel (S. Treiman, Chairman) of HEPAP to: 1) review quality and scope of HE Accelerator R&D (M. Tigner, Subgroup Chairman) effort in US and compare with those abroad, and 2) recommend priorities and appropriate funding levels. Report (6/80) recommends within present funding guidelines: 1) FNAL 400 GeV Accelerator, PEP, and CESR must be used as fully as possible; 2) Energy Saver and ISABELLE must proceed rapidly; 3) Tevatron I and II should proceed together - TeV II must be authorized and get started; 4) R&D for future options crucial; 5) university-based groups should receive increased support to assure vitality of efforts on experiments now and on developments in future; 6) preliminary research should start now for construction of very large accelerator in late 1980's; and 7) "Woods Hole Subpanel" should be convened (1981-82) to

assess status of construction, new developments, new opportunities. 15% increase in support would allow major improvements in entire program. Also recommended no action be taken on SLAC-SLC proposal at this time.

(Physics Today 2/80, p. 92; Report of the Subpanel on Review and Planning for the US HEP Program (6/80).)

44. 7/9/80 5th ICFA Meeting--held at CERN. Guidelines were proposed for interregional utilization of major regional experimental facilities for high-energy particle physics research.

(Private Communication.)

45. 7/13-24/81 L.M. Lederman talk at FNAL Summer School - "HEP--Where we are and where we are going." He discusses VBA and the need for discoveries, R&D, and technological breakthroughs to reduce costs for HEP advances.

(AIP Conference Proceedings, No. 92, AIP, New York, 1982.)

46. 8/81 HEPAP subpanel on Long Range Planning formed (George Trilling chaired). Charge: to develop plan for US program in next decade at various funding levels and evaluate ISABELLE priority.

(Report of the Subpanel on Long-Range Planning for the U. S. HEP Program of the HEPAP (1/82.) pp. 1-4.)

- 9/18/81 ~~\*\*\*\*~~ Lederman letter to Trilling-"...think ahead...for next 10 years...."

(Lederman correspondence.)

47. 10/81 6th ICFA Meeting - 3rd Workshop on Possibilities and Limitations of Superconducting Magnets for Accelerators - held at Serpukhov (IHEP) - Purpose: to stimulate more effort on AAR&D for machines of 1990's.

(Private Communication.)

48. 11/1/81 Interim Report of HEPAP subpanel on Long-Range Planning submitted to HEPAP in Washington, D.C. Recommendation: ISA should be finished by end of 1980's; it requires \$440M--if that support doesn't come through, ISA cannot be completed. Report unanimously endorsed.

(See note 46.)

49. 2/10/82 Trilling sends Final Report of subpanel to Drell (Chairman of HEPAP). It includes a set of recommendations for two budgetary support levels: Higher--(\$440M/DOE and \$35M/NSF) completion of

ISA by end of 1980's; adequate use and upkeep of existing accelerators and storage rings; quickly finish Doubler/Saver at FNAL; TEV II implementation in all three experimental areas; completion of TEV I with major detector; continue R&D at SLAC on SLC; pursuit of other AAR&D...Lower -- (\$360M/DOE and \$32M/NSF) ISA cannot continue at large scope.

(Ibid.)

50. 2/19-20/82 HEPAP Meeting; recommendations endorsed.

(Ibid.)

51. 2/26/82 Drell sends HEPAP Report to Trivelpiece at DOE.

(Ibid.)

52. 6/28-7/16/82 DPF Summer Study on Elementary Particle Physics and Future Facilities held at Snowmass, CO. C. Baltay, chairman of organizing committee. Purpose was to 1) assess future of HEP, 2) explore limits of technological capabilities, and 3) consider nature of future facilities. "Desertron" coined. Want to study the physics but not arrive at specific conclusions. Finding: need for multi-TeV pp collider to explore HE region. (10 TeV on 10 TeV p-p accelerator possible for less than \$1B).

(Physics Today (1/83) pp. 19-20; SSC Reference Designs Study, 5/8/84, p. 3; Proceedings of the 1982 DPF Summer Study on Elementary Particle Physics and Future Facilities, Snowmass, CO, 1982, p. V.)

53. \*\*\*\*\*Lederman talk, "Slermihaven II".

(Snowmass '82 Proceedings.)

54. 7/26-28/82 Informal (7th) ICFA meeting of ICFA and Laboratory Directors held in Paris, France to discuss issue of how to organize effort of long term development of very high energy machines. Guidelines for setting up an interregional body for advancing high energy accelerator R&D were proposed. Lederman attended.

(Private Communication; Correspondence, J. B. Adams to Laboratory Directors, 10/18/82.)

55. 12/7/82 Lederman begins planning for an early 1983 FNAL Workshop on design of Desertron, including list of open questions to be addressed. Subsequent correspondence results in meeting being moved to Cornell.

(Correspondence, L.M. Lederman to M. Tigner, 12/7/82.)

56. 1/13,20,26/83 W (intermediate vector boson) discovered at CERN (UA1).

(Physics Today, 4/83, p. 17.)

57. 2/25-26/83 1983 Subpanel on New Facilities of the HEPAP formed and an organizational meeting was held in Washington, D.C. Charge: Make recommendations on: construction for FY85, CBA at BNL, estimate funding of recommendations and give priorities of recommendations for a forefront US HEP program in next 5-10 years. (Wojcicki, Chairman)

(Report of the 1983 HEPAP Subpanel on New Facilities for the U. S. HEP Program, (7/83).)

58. 2/28-3/4/83 DPF Workshop on Collider Detectors: Present Capabilities and Future Possibilities held at LBL. "...addressed the issues of detector technologies in the face of the multiplicities and secondary energies expected from...the SSC. The general conclusion was that while difficult, the required experiments will be possible."

(SSC Reference Designs Study, 5/8/84, p. 4.)

59. 3/28-4/2/83 20 TeV Hadron Collider Technical Workshop held at Cornell. Findings: "1)...several viable approaches to building 20 TeV collider with useful luminosity, 2) superconducting magnets needed to reduce energy usage, 3) magnets with more than 7 tesla require exploitation of new materials now in pilot-production stage, 4) no apparent fundamental accelerator physics problems to prevent successful operation of collider, 5) cost likely to be \$70-110M/TeV of beam energy, including new laboratory. Conclusions: It's time for accelerator physics community to intensify engineering development of magnet systems, leading to accurate design and cost study for construction to begin in four years."

(Ibid.)

60. 6/1/83 Z<sup>0</sup> discovery announced at CERN by UA1.

(Physics Today, 11/83, p. 17.)

61. 6/2/83 Beam first injected and makes a full turn around Doubler/Saver. 100 GeV.

(See note 16.)

62. 6/5-11/83 HEPAP subpanel meets at Woods Hole, MA (Wojcicki, chairman).

(Physics Today, 5/83, p. 21; see note 57.)

63. 6/29-7/1/83 HEPAP subpanel meets at Nevis Laboratory, Columbia University (NYC).  
(See note 57.)
64. 7/3/83 Doubler/Saver reaches 512 GeV.  
(See note 16.)
65. 7/8/83 Wojcicki sends subpanel Final Report to Sandweiss, Chairman of HEPAP. Recommendations: 1) immediate initiation of a multi-TeV high-luminosity p-p collider ("SSC") with the goal of physics experiments at this facility at earliest possible date, 2) rapid completion of construction projects (Tevatron and SLAC linear collider), upgrading CESR and associated detectors, thorough utilization of all existing facilities, 3) FNAL not proceed with Dedicated Collider, 4) CBA at BNL not be approved, 5) technology R&D, particularly AAR&D, be strongly supported.  
(See note 57.)
66. 7/12/83 Sandweiss sends HEPAP subpanel report on to DOE (Trivelpiece, Director, OER).  
(Ibid.)
67. 7/15/83 UA2 reported  $Z^0$  found.  
(See note 60.)
68. 8/10,13/83 8th ICFA Meeting (FNAL) Lederman, Bjorken, McDaniel and Richter attended. Discussion of HEPAP Subpanel recommendation. W. European delegation considers the recommendation a threat to their HEP facilities plans. Plans begin for FP in HEP meeting in Japan (KEK) in 5/84. 3 topics: 1) present plans, 2) future needs, and 3) international collaboration (V.L. Telegdi, ICFA Chairman).  
(Private Correspondence.)
69. 8/11-16/83 XII International Conference on High Energy Accelerators held at FNAL.  
Noteworthy papers: M. Tigner, "Toward a Big Machine"  
Panel Discussion on Magnets for a Big Machine (Danby, Palmer, Huson, Lundy, Taylor)  
Panel Discussion on Beam Dynamics  
"Crossing Beams vs. Head-On Collisions", E. Courant, BNL  
"Magnet Winding Errors and Multiple Fields," D. Edwards, FNAL  
"Aperture Considerations," L. Teng, FNAL  
"20 TeV Collider Lattices with Low- $\beta$  Insertions," A.A. Garren, LBL  
"Large Detectors for Hadron Colliders: Experience and Future," Sadoulet, UAL, CERN.

(Proceedings of the XII Int'l Conf. on High-Energy Accelerators, Fermilab, 8/83, FNAL, 1984.)

70. 8/16-18/83 Argonne National Laboratory--SSC Magnet Meeting - General technical discussion.  
  
(Joanne Day (ANL) oral communication.)
71. 8/15/83 Energy Doubler/Saver accelerated to 700 GeV.  
  
(See note 16.)
72. 8/\_\_\_/83 Trivelpiece asks Panofsky to chair HEPAP [AAR&D] subpanel to advise and recommend on content and implementation of FY1984 R&D effort prior to start of formal program.  
  
(SSC Reference Designs Study, 5/8/84, p. 5.)
73. 8/23/83 L.M. Lederman appoints Bruce Winstein to manage PSSC Meetings.  
  
(Lederman Correspondence.)
74. 9/7-9/83 AAR&D subpanel holds first meeting at SLAC. Recommendations:  
1) interim manager be selected for R&D program and prepare design report, 2) workshops should begin immediately.  
  
(SSC Newsletter, APS/DPF, 10/26/83, p. II. 1-2.)
75. 9/30/83 1st PSSC (FNAL)--focus on scientific capability for SSC as determined from experimental and theoretical results, and the requirements for detector instrumentation. Formed 5 task force groups:  
1) Fixed Target/Internal Target Physics - Stewart Loken  
2) Large  $4\pi$  Experiments - Hugh Williams  
3) Specialized Experiments - Frank Sciulli  
4) Detector Development - Bernard Pope  
5) Intersection Region - Robert Diebold  
  
(See note 72; PSSC Notice, 10/10/83.)
76. 10/1/83 Energy Doubler/Saver doing fixed-target physics with extracted beams.  
  
(See note 16; SSC Reference Designs Study, 5/8/84, p. 42.)
77. 10/1/83 Some R&D preliminary to SSC--guidance from HEPAP subpanel on AAR&D.  
  
(L. Lederman, SSC Key Activities and Milestones, 1/17/84.)
78. 10/21/83 2nd PSSC (FNAL)--discuss the physics and detector issues for machine designers.

(PSSC Notice, 10/10/83.)

79. 10/27-28/83 AAR&D Subpanel--2nd meeting. URA named as best choice for management contractor for SSC R&D (Phase 1). SSC management must be kept separate from FNAL management.

(SSC Newsletter, APS/DPF, 2/15/84.)

80. 11/18/83 3rd PSSC (FNAL)--Monthly Progress Reports of 5 task force groups given.

(See note 79, p. III. 1.)

81. 11/21-22/83 9th ICFA Meeting (CERN) B. Richter, P. Reardon and K. Strauch attended. Purpose: to discuss program and agenda for FP in HEP seminar in Japan (5/84). Meeting should focus on interregional collaborations in depth.

(Private Correspondence.)

82. 12/\_\_\_/83 National SSC Reference Designs Study chartered by HEAL directors to review technical and economic feasibility of options for creating SSC and to identify its specific R&D needs.

(SSC Reference Designs Study, 5/8/84, p. iii.)

83. 12/5-8/83 Physics of the 21st Century (Tucson, AZ)--conference to bring into focus the goals of HEP, within framework of SSC.

(SSC Newsletter, APS/DPF, 11/8/83, p. III. 5.)

84. 12/12-17/83 AAR&D subpanel/DPF Workshop on Accelerator Issues for SSC (Univ. of Mich., Ann Arbor)--to identify crucial accelerator physics to show feasibility of SSC, to identify key R&D needs, to guide engineering design of technical components and systems.

(See note 72.)

85. 12/19/83 Congressional approval to reprogram FY1984 funds for R&D preliminary to SSC.

(See note 77.)

86. 12/19/86 4th PSSC (BNL)--2 new task force groups added: 1) ep Option Group - Charles Prescott, 2) Theoretical Group - Frank Paige; Monthly Progress Reports of task force groups given.

(PSSC Announcement, 11/30/83.)



87. 12/20/83-1/5/84 Funding allocated to participating laboratories for \$19.5M program of preliminary R&D.
- (See note 77; SSC Newsletter, APS/DPF, 3/15/84; SSC Newsletter, APS/DPF, 2/15/84, p. 2.)
88. 1/9/84 Sec. of DOE Hodel starts Phase 0.
- (DOE-MBO, 1/9/84.)
89. 1/13/84 SSC Meeting (Washington, D.C.) between DOE HQ staff and RDAG (J. Leiss says RDS high priority for HEP, RDS critical for 8/84 DOE decision).
- (SSC Newsletter, APS/DPF, 3/15/84.)
90. 1/17-19/84 DPF Cryogenic Workshop (BNL)--to address cryogenic issues most pertinent to design of large-scale accelerator with superconducting magnets. Five Workshop Groups: 1) Magnet Cooling System, 2) Magnet Cryostat, 3) Refrigeration Cycles, 4) Simulation, Controls & Instrumentation, and 5) Refrigeration Machinery.
- (See note 70; Proceedings to be published; W.B. Fowler, "Workshop on Cryogenics for the SSC," SSC Newsletter, APS/DPF, 2/15/84.)
91. 1/23-26/84 Physics at Energies Greater Than 100 GeV (UCSB-ITP).
- (L. Lederman, SSC Related Workshops, 1/17/84.)
92. 1/26-31/84 DPF/APS, Houston Area Research Center Fixed Target Physics and Accelerator Topics Workshop held at The Woodlands, Houston/San Antonio, TX. Work focused on assessing physics capabilities with fixed target beams using the SSC. Three groups: 1) Accelerator Physics, 2) Lepton Physics, 3) New Particle Beams. A Task Coordination Group (TCG) of RDS meets for 1st time. They recommended key parameters for reference designs. TCG Leaders:
- |                  |                                 |
|------------------|---------------------------------|
| D. Edwards, FNAL | - Accelerator Physics           |
| P. Limon, FNAL   | - Accelerator Engineering Group |
| T. Elioff, LBL   | - Cost Analysis                 |
| J. Sanford, BNL  | - Architecture and Engineering  |
| L. Teng, FNAL    | - Injector                      |
| J. Marx, LBL     | - Report                        |
- (SSC Newsletters, APS/DPF, 2/15/84 and 3/15/84.)
93. 1/29-30/84 5th PSSC (The Woodlands) Monthly Progress Reports of task force groups given.
- (Schedule, PSSC Meeting, Woodlands, TX, 1/18/84.)



94. 2/1/84 High Energy Physics Meeting (San Antonio) R. Weinstein (During APS/AAPT Meeting, 1/30-2/2/84).  
(See note 91.)
95. 2/2/84 Symposium on SSC (San Antonio) W. Panofsky (During APS/AAPT Meeting, 1/30-2/2/84).  
(Ibid.)
96. 2/8/84 2nd TCG Meeting (LBL).  
(See note 92.)
97. 2/10-11/84 Tigner and Architecture/Engineering staff (Parsons, Brinckerhoff, Quade and Douglas, Inc.) and A/E Task Group visit FNAL (largest existing HEP facility).  
(Ibid.)
98. 2/13-17/84 pp options for SSC (Univ. of Chicago & ANL) meeting. Goals: study and compare physics investigated in pp and pp collisions, study limitations of luminosity of pp SSC and document results of these studies for use at Snowmass, '84. Findings: differences expected to be small, at least  $10^{32} \text{ cm}^{-2} \text{ sec}^{-1}$  achievable without drastic new technology but may be insufficient to study some of the rare processes discussed.  
  
(APS/DPF Newsletter, 10/26/83, p. III. 4; "Overview and Executive Summary," Proceedings of pp Options for the Supercollider (2/84), pp. i-ii.)
99. 2/15/84 Tevatron [Energy Doubler/Saver] reached 800 GeV (design energy).  
  
(SSC Reference Designs Study, 5/8/84, p. 45.)
100. 2/23/84 TCG Meeting (LBL)--working drafts of technical aspects of SSC Reference Design presented by Accelerator Physics Design & A/E TCG leaders; work breakdown structure, to provide framework for cost estimates, has been developed for each magnet design.  
  
(SSC Newsletter, APS/DPF, 3/15/84.)
101. 3/\_\_\_/84 Activation of Interim Management Arrangement -- URA--DOE implemented this body to develop R&D and management plans for preconstruction R&D and proposal development phase of SSC activity.  
  
(See notes 74, 77, 79, 100; Physics Today, 6/84, p. 17; SSC Reference Designs Study, 5/8/84, p. 6; Physics Today, 8/84, p. 69.)

102. 3/13-16/84 Tracking Requirements for HE Hadron-Hadron Collisions (SLAC) meeting. Conclusions: current tracking limitations were determined and further study of certain tracking items was recommended.
- (Gilchriese and Williams, PSSC Summary Report, 6/84, pp. 129-133.)
103. 3/16/84 6th PSSC (SLAC) Monthly Progress Reports of task force groups given and discussion meeting held.
- (PSSC SLAC Meeting Announcement and Schedule, 2/27/84.)
104. 4/84 George Keyworth, Presidential Science Adviser, invites Japanese to participate in SSC collaboration.
- (Science, Vol. 225, 8/3/84, pp. 490-491.)
105. 4/23-26/84 APS Meeting (Washington):--1 session (4/26) held for progress reports on planning R&D for SSC. G. Stever of URA described progress of management development. M. Tigner gave status report on reference design.
- (J. Peoples, Jr., SSC Newsletter, APS/DPF, 3/15/84; Physics Today, 6/84, p. 17.)
106. 4/27/84 1st Draft--Reference Design Study.
- (SSC Reference Design Study Group Draft I, 4/27/84.)
107. 4/28/84 Dedication of Tevatron (Energy Doubler/Saver) FNAL.
- (See note 16.)
108. 4/29-30/84 7th PSSC (FNAL) Summary Meeting, Task Force leaders gave presentations, Tigner gave Reference Design Report.
- (PSSC Summary Meeting Agenda, 4/30/84.)
109. 5/1/84 Reference Design due.
- (See note 77.)
110. 5/8/84 Final Draft of Reference Designs Study.
- (SSC Reference Designs Study, 5/8/84.)
111. 5/14-19/84 ICFA Seminar on Future Perspectives in High Energy Physics held at KEK in Japan. Lederman attended. Conclusions: ICFA role is facilitating construction of new high energy accelerators, not arbitrating national or regional options; will promote international collaboration stressing open access to all major

accelerators; will sponsor panels on topics and ensure wide distribution of panel reports; panels should have widest international representation; seminars to be held regularly (every 2-4 years) to review past and anticipate future.

(Private Communication, "Conclusions of ICFA" 5/19/84.)

112. \*\*\*\*\*"International collaboration hopes for 20 TeV  $\bar{p}p$  seem dead."

(Private Conversation.)

113. 5-6/84 International collaboration idea furthered by London Economic Summit decision of HEP being good scientific area of cooperation.

(See note 104.)

114. 5-6/84 DOE Review of SSC Reference Designs Study.

(See note 77.)

115. 6/1/84 R&D Plan and Management Plan for Phase 1 due to DOE; Review through 6/84.

(Ibid.)

116. 6/4/84 Reference Designs Study to Sec. of DOE Hodel.

(Physics Today, 6/84, p. 17.)

117. 6/4-22/84 Theoretical SSC Workshop (LBL). Purpose: to study ways in which hard collisions with cm energy in the TeV region could probe the mechanism responsible for electroweak symmetry breaking, and to clarify the general arguments that new physics must occur at or below this energy scale.

(SSC Newsletter, APS/DPF, 11/8/83; Proceedings to be published.)

118. 6/20/84 Announcement that Maury Tigner has been selected to direct the Central Design Group by the SSC Board of Overseers. Tigner names S. Wojcicki as Deputy Director. B.D. McDaniel selected as Chairman of SSC Board of Overseers.

(See note 104; Physics Today, 8/84, p. 69; B. D. McDaniel, "SSC Management," DPF News Bulletin, 7/30/84.)

119. 6/23-7/13/84 DPF Summer Study on SSC (Snowmass, CO) Three subjects addressed: 1) Physics, 2) Detectors, and 3) Accelerator Design. Conclusions: further progress in understanding elementary particles requires experimental study of 1 TeV mass scale and  $pp$  collisions at 40 TeV cm will produce this; this area can be



explored with luminosity determined at  $\bar{p}p$  options for SSC meeting (2/13-17/84); detail revealed there justified effort in extending detector technology. Current technology can be extrapolated to needed parameters for detector design but R & D required along with accelerator R & D. Participants 1) reviewed Reference Designs Study for DOE, 2) saw need for SSC performance evaluation with computer simulation before final magnet design decision, 3) recommended that extensive program of computer simulations be started and experimental measurements be carried out on Tevatron for computer model evaluation, and 4) noted that the 1 TeV booster design must accommodate calibration beams of each detector. The complete analyses results will be published in the proceedings.

(J. Peoples, Jr., "Snowmass '84," APS/DPF Newsletter, 7/30/84; Snowmass '84 Proceedings, to be published.)

120. 7/2-3/84 1st meeting - Summit (7 nations) Working Group on HEP, Brussels, Belgium (chaired by A.W. Trivelpiece) 3 subpanels created : 1) long-term planning; 2) technical collaboration; 3) administrative issues. Report due by 6/85 at Summit Meeting in Bonn.

(See note 104.)

121. 7/3/84 UAl announces six candidate events suggesting top quark.

(Physics Today, 8/84, p. 17.)

122. 8/6/84 DOE decision due on proceeding with Phase 1.

(See note 88.)

123. 8/10/84 Trivelpiece reports DOE Review results and OER Review results which support Reference Designs Study's cost estimates to DOE Secretary Hodel.

(Physics Today, 10/84, p. 21.)

124. 8/13-24/84 U.S. Summer School on Particle Accelerators (FNAL).

Noteworthy Sessions:

"Accelerators of the 1990's" Symposium

(B. McDaniel, R. Billinge, B. Richter, L. Lederman)

"The World-Wide Growth of HEP--Competition or Collaboration?"

Round table discussion (B. McDaniel, R. Billinge,

B. Richter, M. Veltman, S. Wojcicki, L. Lederman)

"Accelerators of the 1980's" Symposium

(J. Peoples, E. Picasso, G. Fischer, V. Soergel, S. Ozaki)

"View from Snowmass"

(J. Peoples, L. Pondrom, T. Collins, I. Hinchliffe)

(Ferminews, 9/6/84.)

125. 8/16/84

Hodel approves Reference Designs Study, DOE and OER Reviews, and authorizes release of \$20M for FY1985 for SSC R&D. Hodel urges Trivelpiece to encourage international collaboration for SSC via Economic Summit Process. [Phase 1 begins.]

(See note 123.)

# ABBREVIATIONS AND ACRONYMS

AAR&D	Advanced Accelerator Research and Development
A/E	Architecture/Engineering
AIP	American Institute of Physics
ANL	Argonne National Laboratory (IL)
APS	American Physical Society
BNL	Brookhaven National Laboratory (NY)
CBA	Colliding Beam Accelerator (NY)
CERN	European Center for Nuclear Research (Switz.)
CESR	Cornell Electron Storage Ring (NY)
DOE	Department of Energy
DPF	Division of Particles and Fields
ERDA	Energy Research and Development Administration
FNAL	Fermi National Accelerator Laboratory (IL)
FP in HEP	Future Perspectives in High Energy Physics
GeV	Billion Electron Volts
HE	High Energy
HEAL	High Energy Accelerator Laboratory
HEP	High Energy Physics
HEPAP	High Energy Physics Advisory Panel
IAEC	International Atomic Energy Commission
ICFA	International Committee for Future Accelerators
IEEE	Institute of Electrical and Electronics Engineers
IHEP	Institute for High Energy Physics (USSR)
ISA	Intersecting Storage Accelerator (aka ISABELLE)
IUPAP	International Union of Pure and Applied Physics
JINR	Joint Institute for Nuclear Research (USSR)
KEK	High Energy Physics Institute (Japan)
LBL/LRL	Lawrence Berkeley Lab/Lawrence Radiation Lab (CA)
MBO	Memo of Business Order
NAL	National Accelerator Laboratory (now FNAL) (IL)
NSF	National Science Foundation
OER	Office of Energy Research
PEP	Positron-Electron Project (SLAC-CA)
PSSC	Physics at the Superconducting Super Collider
R&D	Research and Development
RDAG	Reference Designs Advisory Group
RDS	Reference Designs Study
SLAC	Stanford Linear Accelerator Center (CA)
SLC	SLAC Linear Collider (CA)
SPS	Super Proton Synchrotron
SSC	Superconducting Super Collider
TCG	Task Coordination Group
TeV	Trillion Electron Volts
TM	Technical Memo
UA1	Experiment Team at Underground Area #1 of CERN SPS Collider
UA2	Experiment Team at Underground Area #2 of CERN SPS Collider
UCRL	University of California Radiation Laboratory
UCSB/ITP	University of California, Santa Barbara/Institute for Theoretical Physics
URA	Universities Research Association
USAEC	United States Atomic Energy Commission
VBA	Very Big Accelerator