fermilab report

Fermi National Accelerator Laboratory Monthly Report

October 1977

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THE COVER: An 8-magnet string of superconducting magnets set up and operating. (See "Progress Report on the Energy Doubler/Saver," page 9.)

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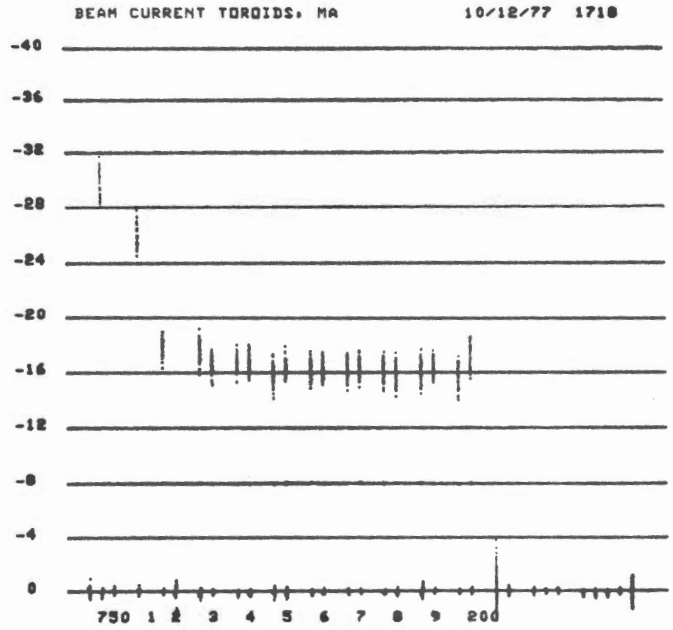
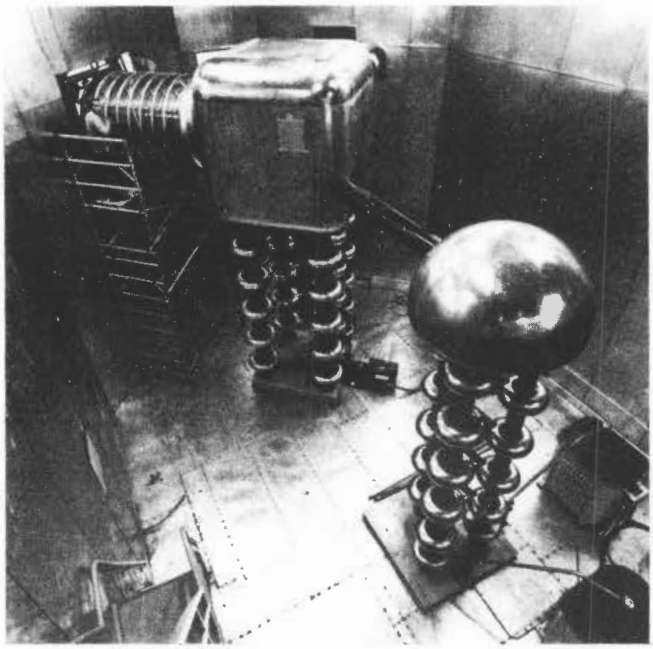
H^- BEAM

A significant milestone was achieved recently when the first negative-ion beam was accelerated in the Linac. A peak current of 17 mA of H^- was accelerated to 200 MeV over a 50-μsec pulse length, a total charge of 0.85 μCoulomb. This first observed beam is more than half the charge of the final goal, 1.4 μCoulomb. The observed charge can be increased easily by increasing the pulse length. A measurement of the emittance at 200 MeV was not possible because the computer program did not seem to recognize negative beam. It is planned to utilize negative-ion injection and stripping in the Booster to increase beam intensity.



Fast time plot of many pulses of H^- beam through the Linac.



The second Cockcroft-Walton is installed and operating for negative hydrogen ions.

NEUTRAL HYPERON EXPERIMENTS

Lee Pondrom*

A Λ^o hyperon has a mean lifetime in its rest system of approximately 2.5×10^{-10} sec, but a Λ^o of momentum 200 GeV/c travels 13.8 m in the laboratory. In this distance, it is feasible to build a well-defined beam and to study the interaction of neutral hyperons with matter. Thus the reaching of energies of several hundred GeV at Fermilab has made possible a new and varied experimental program with short-lived particles.

This work began at Fermilab with Experiment 8, a collaboration of Michigan, Rutgers, and Wisconsin. There have been many results of physics interest from Experiment 8 and its successors and this article will review these results briefly.

The experiment began by studying the inclusive production of Λ^o's and other short-lived neutral particles by 300 and 400 GeV protons on a metal target, that is, reactions of the form $p + A \rightarrow \Lambda^o + X$, where X represents any possible (unobserved) final state that can accompany the hyperon. It was found that Λ^o's produced in this way are polarized.[1] That is to say that the spins and magnetic moments of the hyperons are preferentially aligned. At first, this result was surprising, because it was thought that averaging over all possible final states X would tend to smooth out the details of the production process and give no net polarization. Since this discovery, however, similar effects have been observed at other energies[2] and in other inclusive channels.[3]

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*On leave from the University of Wisconsin.

A follow-up experiment, E-441, has been performed using a liquid hydrogen production target, $p + p \rightarrow \Lambda^O + X$, to study the dynamics of the polarization process in more detail in search of clues to its origin. Meanwhile, the effect has been exploited in E-440 to make a precision measurement (better than 1% accuracy) of the magnetic moment of the Λ^O. An experiment is planned which will use the polarized beam to study the beta decay $\Lambda^O \rightarrow p + e^- + \bar{\nu}_e$.

The production measurements were originally made with beryllium, copper, and lead targets, which resulted in data on the A (atomic mass) dependence of the inclusive reactions. This A dependence has been described by a simple collision model in which the outgoing hadronic system loses energy by collision with target nucleons as it leaves the nucleus.[4]

The hyperon beam contains other neutral particles as well. In order of decreasing intensity, the beam composition is n, γ, Λ^O, K_s^O, $\overline{\Lambda^O}$, Ξ^O, and $\overline{\Xi^O}$, all of which have been observed in E-8. Particular interest has centered on the $\overline{\Lambda^O}$'s, which are not polarized, but are fairly numerous (greater than 1% of the Λ^O's), and the Ξ^O's. The Ξ^O hyperon has a lifetime comparable to the Λ^O and decays into two neutrals: $\Xi^O \rightarrow \Lambda^O + \pi^O$ followed by $\pi^O \rightarrow \gamma + \gamma$ and $\Lambda^O \rightarrow p + \pi^-$. The final state has a complicated topology and both γ rays plus the daughter Λ^O decay were observed in order to unravel the decays. A sample of about 6000 Ξ^O hyperons has been collected, giving a new measurement of the asymmetry parameter $\mathcal{L}_{\Xi^O}$.[5] A new experiment, E-495, is scheduled to run in the spring of 1978, and will concentrate on Ξ^O hyperons, including a search for possible polarization and a first measurement of the magnetic moment.

Experiment 415 was performed in collaboration with a group from Colorado to round out the production studies by measuring the spectra of neutrals produced by 200-GeV π^-, K^-, and $\bar{p}$ beams.[6] This experiment showed that a "clean" K^o beam could be produced by π^-, free of high-energy neutrons.

In another phase of the program, a hydrogen target was inserted in the neutral beam itself to measure cross sections for Λ^o, $K^o s$, and $\overline{\Lambda^o}$. Over 10^5 $\Lambda^o p$ elastic scatters were collected in the momentum transfer range $0.05 \leq -t \leq 1.5$ (GeV/c).[2] Both the elastic differential cross section[7] and the Λ^o polarization[8] have been obtained.

Many aspects of the program are continuing, with emphasis in the future on high transverse momentum production phenomena and rare decay-mode studies made possible by the intensity up-grade in the Meson Laboratory.

References

[1] G. Bunce et al., Phys. Rev. Lett. 36, 1113 (1976).

[2] K. Heller et al., Phys. Lett. 68B, 480 (1977).

[3] H. Ogren, private communication.

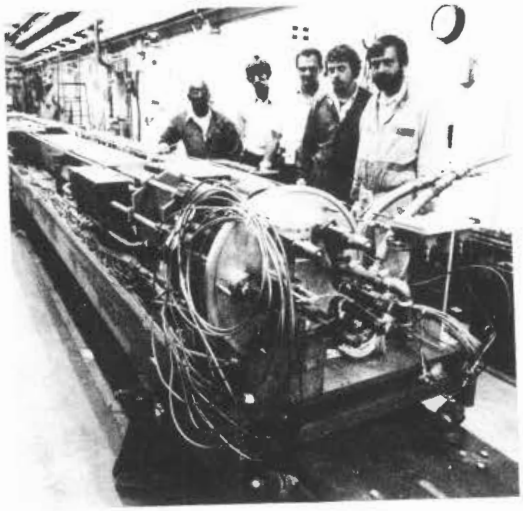
[4] K. Heller et al., Phys. Rev. D (to be published).

[5] G. Bunce et al., University of Michigan Preprint UM HE 77-41.

[6] R. T. Edwards et al., to be published.

[7] Philip S. Martin, Ph.D. Thesis, University of Wisconsin, 1977.

[8] Brian Edelman, Ph.D. Thesis, Rutgers University, 1977.



The new Meson Target Train Mark II prior to installation. The builders are (left to right) John Williams, Roger Tokarek, Anthony Glowacki, Robert Jensen, and Henry Koecher.

THE MESON WORKSHOP

A workshop was held on September 16 to discuss the upgrading of the Meson Area during the six month "Mesopause" that is scheduled for 1978. The basic motivation for the shutdown is to save operating funds, but there is also an opportunity to make improvements that will make full operation possible at 400 GeV (the Meson Area was originally designed for 200 GeV) and to make further, more extensive improvements that will make 1-TeV operation possible.

Two basic upgrading schemes are being considered, a two-way or a three-way split. The two-way split would make use of a wire septum installed in the F3 manhole to provide a 4-in. separation in the Meson Hall, 600 feet downstream. This system is somewhat similar to the Neutrino septum, which uses two wire septa and a 300-ft drift space. One beam would be targeted for the M1 beam line (as discussed below) and the other for M2 through M6. An important advantage of the two-way split is that it can be upgraded to operate at 1 TeV.

The three-way split would be accomplished by adding a wire septum in F2 to the one in F3 contemplated for the two-way split. In this scheme, one beam would be targeted for M1, a second straight-through beam of intensity less than 10^{11} for M2, (M3 not used except for attenuation targeting), and the third beam for M5 and M6. This scheme would provide approximately 4 in. for targets on either side of the straight-through beam. It would provide more secondary-beam acceptance and would make it possible to use standard magnets in the front end of the secondary beams, thus

alleviating a difficult spares problem and aiding reliability. The three-way split can probably be done at 400 GeV, but would be exceedingly difficult, if not impossible, to do at 1 TeV.

One of the important new features to be gained with either splitting system is a high-intensity 10^9 to 10^{10} pion beam in M1. Other features being considered are an increase in the energy of the M6 beam, polarized or enriched K and $\bar{p}$ beams and consolidation of the hadron program in the Meson Area by moving the 30-in. bubble chamber and hybrid facility there.

A number of more-detailed proposals were presented later in the workshop. Timothy Toohig will coordinate the future work. An explicit upgrading proposal is to be ready for public discussion in December in order that individual groups can utilize those ideas in physics proposals to be considered at the February meeting of the Program Advisory Committee. At that meeting, the Committee will make recommendations on which upgrading proposals should be carried out.

PROGRESS REPORT ON THE ENERGY DOUBLER/SAVER

Most of the magnet development work carried out so far for the Energy Doubler/Saver has been concentrated on dipole magnets; it has always been believed that many of the design solutions found for dipoles would be applicable to quadrupoles. Now this assumption has been tested experimentally, with good results.

Two superconducting quadrupoles have now undergone field measurements. Although the construction did not include the optimum mechanical shims to keep the coils accurately in place during excitation, the results are considered encouraging. A third quadrupole, this one with all appropriate shims, has been built and is now undergoing laboratory testing and measurement. A fourth quadrupole is being constructed and parts for four additional identical quads are being procured.

Design work is also continuing in order to investigate the possibility of making the assembly tooling for quadrupoles similar to that already developed for dipoles. At the same time, care must be taken to ensure that quadrupole quality is not compromised to overcome assembly problems.

An eight-magnet strong of dipoles, a bending cell, has been constructed (see cover photograph). This string is, of course, a major systems test for tne ED/S. Cryogenic tests have been completed on this string and excitation tests are in progress.

During August and September, assembly of a 1500-W refrigerator for production-magnet field measurements was started. Test of the components of the system have been encouraging, and complete system tests will start by mid October with production magnet testing being expected in November.

The first completed satellite refrigerator will be moved to a Main-Ring service building for installation in the near future. Components for more satellite refrigerators are beginning to arrive.

Assembly of the compressor, coldbox, air cooler and other major components of the Central Helium Liquifier is now well underway. Component testing is expected to begin in late fall with systems tests anticipated in early winter.

An effort has begun to modify spare Main-Ring power supplies for use in the Energy Doubler/Saver and first testing will begin shortly.

NOTES AND ANNOUNCEMENTS

APPOINTMENTS. . .

Peter McIntyre has been appointed head of the Internal Target Laboratory. He succeeds Thomas Nash, who will head the development of the Tagged-Photon Magnetic-Spectrometer Facility.

Richard Lundy has been appointed Business Manager of Fermilab. He succeeds Rich Orr, who will take charge of Energy Doubler/Saver installation.

Thomas Kirk has been appointed Associate Head of the Neutrino Department.

FUTURE DATA ACQUISITION SYSTEMS. . .

A workshop and panel discussion is planned to discuss the directions for future data acquisition systems at Fermilab. Schedule data is Friday, November 4, 1977, starting at 9 a.m. in Curia II. The theme of the workshop is primarily to explore what type data acquisition computer Fermilab should support for future experiments. Although the discussion may include aspects other than those of the data acquisition computer, e.g., new detectors and preprocessing techniques, the primary focus of the workshop will be on the installed data acquisition computer for especially large future experiments.

GUIDE FOR FOREIGN VISITORS AVAILABLE. . .

The Fermilab Guest Office has prepared a booklet which should be particularly useful to foreign visitors. This booklet was prepared primarily to answer many questions from foreign physicists and their families about what to expect upon reaching the U.S. and, in particular, regarding arrangements that should be made prior to visiting Fermilab for an extended period. Copies of the "Guide for Foreign Visitors" are available from the Fermilab Guest Office.

BUBBLE CHAMBER SUBCOMMITTEE MEETING. . .

In a special announcement circulated with the September issue of Fermilab Report, it was noted that the meeting of the Bubble Chamber Subcommittee of the Program Advisory Committee, originally scheduled to be held in February 1978, might be moved to an earlier date. This idea has now been dropped and the meeting will continue to be scheduled for February 23-24, 1978. The deadline for the submission of materials to be considered at this meeting will be January 27, 1978, as had been previously indicated.

POSITION AVAILABLE AT FERMILAB. . .

Occasionally, positions of special interest become available at Fermilab. We will announce such openings in this space.

A position with the new Tevatron instrumentation development group at Fermilab is available. The activities of this group will encompass development of electronics instrumentation and all types of advanced detectors for use in high-energy physics. Cooperative efforts with outside groups are also expected. In the immediate future, development work on a large colliding-beams detector will form an important part of the group's activities. Applicants with a strong interest in experimental physics and a good theoretical background will be given preference over those with only an interest in instrumentation. Interested applicants should contact A. V. Tollestrup.

The Neutrino beam dump being reconstructed after many years of service.

RESEARCH ACTIVITIES DURING SEPTEMBER 1977

James MacLachlan and Edward Stout

The first 12 days of September were a maintenance and development period, with major work under way in both the accelerator and experimental areas. Accelerator startup went well, in spite of a feeder-cable failure and beam was available to experimenters within 24 hours of the scheduled time.

The Main Ring was started with a 200/300 GeV ramp, each with a 2-sec flattop. The 200-GeV front porch was dropped on September 21 because Dilepton #288, the prime user, was incapacitated by a magnet failure. Intensity was raised from 4×10^{12} protons/pulse at startup to 10^{13} protons/pulse as intensity needs increased. Only 0.78×10^{18} protons were accelerated in September, partly because of the short running period, but also because there was no high-intensity user.

Accelerator performance was outstanding in reliability. The accelerator delivered 312 hours, or 78% of the scheduled 397 hours for the month. This better-than-average performance is especially noteworthy following the longest and perhaps most ambitious accelerator-improvement shutdown to date.

Although there was beam present in the experimental areas an unprecedented number of hours per week, the program did not prosper commensurately. The number of hours for all experiments is typically about eight times the number of accelerator hours, but the corresponding factor for this month is four. Top priority was accorded to Dilepton #288, for which 200 hours of 200/300 GeV in Proton-Central had been requested for a

measurement of the energy dependence of the production of Υ states and the high-mass dimuon continuum. The experimenters were on schedule at startup after having undertaken the somewhat rushed installation of a "wedge magnet" (steel with a magnetizing winding) in place of some of the steel shielding between the two spectrometer arms. The first few days of data taking went well enough, but over the weekend spill seemed to deteriorate, especially with respect to rf structure on the 200-GeV spill, and the experimenters acquired only the data they would expect from 50 hours of good running. Just as it seemed the spill was returning to satisfactory quality on Monday, September 19, the analyzing magnet in the west spectrometer arm developed a coil-to-coil short and a major water leak. The Proton Department mechanical group under Ron Currier worked 10 long days in an effort to replace the damaged conductor without moving the magnet or coil. The sad end to this story is that the repair did not hold; within 24 hours it was found that there were two new turn-to-turn shorts in parts of the coil near the earlier repair. This disappointment did not represent the end of the story, because the same crew returned to the struggle with the added help of Jack Jagger and the magnet factory and in early October achieved at least temporary success.

The second intended beneficiary of 300-GeV running was Polarized Scattering #61 in the Meson Laboratory M1E line. Although they got off to a slower start than E-288, they achieved solid progress toward their goal of the measurement of 280 additional elastic scatters in the region of the cross-section dip near $t = -1.4\,(\mathrm{GeV}/c)^2$. The Meson Laboratory began

running two days after the Proton Laboratory because they had been involved in a major target-train change during the shutdown. Problems with tuning up the M1 line continued for several days and were compounded by software difficulties with the newly implemented experimental area PDP 11 systems. Once they were properly under way, however, and the operating mode remained fixed, the experimenters began to take data a great deal faster than in their previous running at 400 GeV. The 7.25-sec cycle, the intensity, and the good accelerator reliability combined to provide almost an order-of-magnitude improvement.

The Internal Target Area was active in September, but the Neutrino Area was off for all but the last few days because of the construction of an access and rail system for the main dump at the upstream end of Enclosure 100. The details of the running of individual experiments are indicated on the following "Monthly Operations History," which has a format similar to the weekly schedule, as a supplement to the tabulation of "Beam Utilization by Experiments" which has been included in earlier reports.

FACILITY UTILIZATION SUMMARY -- SEPTEMBER 1977

I. Summary of Accelerator Operations

			Hours	
A. Accelerator use for physics research				
Accelerator physics research			38.9	
High energy physics research			311.6	
Research during other use			(8.7)	
		Subtotal		350.5
B. Other activities				
Accelerator setup and tuning to experimental areas			15.9	
Program interruption	Scheduled	264.0	264.3	
	Ad hoc	0.3		
Unscheduled interruption			89.3	
		Subtotal		369.5
C. Unmanned time			—	
		Total		720.0

II. Summaries of High Energy Physics Research Use

	# of Expts.	Hours	Results
A. Counter experiments	9	1227.0	—
B. Bubble-chamber experiments	—	—	—
C. Emulsion experiments	—	—	—
D. Special target experiments	—	—	—
E. Test experiments	—	—	—
F. Engineering studies and test	—	—	—
G. Other beam use	—	—	—
	9	1227.0	

III. Number of Protons Accelerated and Delivered ($\times 10^{17}$)

A. Beam accelerated in Main Ring				7.77
B. Beam delivered to experimental areas		@ 200 GeV	@ 300 GeV	
Meson Area		—	4.68	
Neutrino Area				
	Slow Spill	—	< 0.01	
	Fast Spill	—	< 0.01	
Proton Area		0.32	0.38	
	Totals	0.32	5.07	5.39

BEAM UTILIZATION BY

	Beam	Hours
MESON AREA		
Polarized Scattering #61	M1E	196.0
Backward Scattering #290	M6W	196.0
Hadron Jets #395	M2	91.5
NEUTRINO AREA		
Dimuon #444	N1	19.0
Neutrino #482	N5	31.1
PROTON AREA		
Photon Search #95A	PW	251.4
Photoproduction #152B	P2	246.0
Di-Lepton #288	PC	112.8
INTERNAL TARGET AREA		
p-He Scattering #289	C0	83.2
TOTAL HOURS FOR EXPERIMENTS		1227.0

EXPERIMENT -- SEPTEMBER 1977

Activities

data: elastic scattering 300-GeV protons on a polarized proton target with forward spectrometer and recoil spectrometers

data: $\pi^{\pm}$p backward elastic scattering at 30 GeV/c incident momentum

tests: beam tuning, calorimeter calibration with muons, calorimeter calibration with electrons, Cerenkov counter, pressure curves, etc.

setup & tests: plateauing and timing counters with muons

setup & tests: calibration of detectors with muons and hadrons

data: inclusive π^{O} production and single photon production by 200- and 300-GeV protons

setup & tests: calibration of forward shower detector with an electron beam

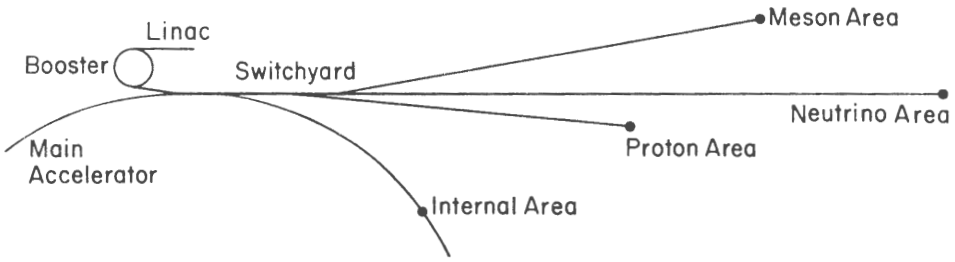
data: study of dimuon spectra above 5-GeV dimuon effective mass produced by 200- and 300-GeV protons on copper and platinum targets

data: elastic scattering of protons from a hydrogen-deuterium jet target as a calibration for helium jet data

FERMI NATIONAL ACCELERATOR LABORATORY
MONTHLY OPERATIONS HISTORY
SEPTEMBER 1977

Date		Accelerator	Internal Target Area	Proton Area	Neutrino Area	Meson Area
Thurs.	9/1					
Fri.	9/2					
Sat.	9/3					
Sun.	9/4					
Mon.	9/5					
Tues.	9/6	Linac checkout.				
Wed.	9/7	Linac startup; Main Ring secured and tested with power.				
Thurs.	9/8	Linac & Booster startup and repairs; replace Main Ring magnet.				
Fri.	9/9	Feeder repairs; Linac & Booster tuneup.				
Sat.	9/10	Main Ring startup.				
Sun.	9/11	Main Ring startup and orbit measurements; magnets moved.				
Mon.	9/12	Accelerator and experimental area startup			OFF for construction	Exp. area preparations
Tues.	9/13	~0.4x10^{13}ppp	Weekday and evening operation for p-He Scattering 289	200 & 300 GeV Di-Lepton 288 (PC) Photon Search 95A (PW) Photoproduction 152B (P2)		
Wed.	9/14					
Thurs.	9/15	Accel. Studies				300 GeV Pol.Scatt.61(M1E) Bkwd.Scatt.290 (M6W) Tests for Had.Jets 395(M2) Tests for Incl.K^o_s383 (M4)
Fri.	9/16	@200/300 GeV (2 sec flattop @200 and @300 GeV)				
Sat.	9/17					
Sun.	9/18					
Mon.	9/19			Photon Search 95A (PW) Photoproduction 152B (P2) OFF for repairs (PC)		
Tues.	9/20					
Wed.	9/21	Accel. Studies				
Thurs.	9/22	~0.8x10^{13}ppp @300 GeV				
Fri.	9/23					
Sat.	9/24				Neutrino Area startup 300 GeV Night and weekend operation with slow spill Di-Muon 444 (N1) Neutrino 482(N5)	
Sun.	9/25					
Mon.	9/26					
Tues.	9/27	Accel. Studies				
Wed.	9/28		Full time operation for p-He Scattering 289	Di-Lepton 288(PC) Photon Search 95A (PW) Photoproduction 152B (P2)		
Thurs.	9/29	Ramp change; obstacle search				
Fri.	9/30	~1x10^{13}ppp @200/300 GeV			Full time operation with slow and fast spill Di-Muon 444 (N1) Neutrino 310(N0) Neutrino 482(N5) Neutrino 253(N0)	

Fermi National Accelerator Laboratory



Experiments in the Research Areas

OCTOBER - DECEMBER 1977

Internal Area

p-He SCATTERING #289
PROTON POLARIZATION #522
p-N SCATTERING #552

Proton Area

PROTON EAST:
PHOTOPRODUCTION #87A
PHOTOPRODUCTION #152B

PROTON CENTER:
DI-LEPTON #288

Neutrino Area

NEUTRINO BEAM:
NEUTRINO #253
NEUTRINO #310
NEUTRINO #482
15-FT BUBBLE CHAMBER

MUON/HADRON BEAM:
MUON #203/#391
DI-MUON #[illegible]

Meson Area

M1 BEAM:
POLARIZED SCATTERING #61
TOTAL CROSS SECTION #104

M2 BEAM:
HADRON JETS #395
MULTI-MUON #439

M3 BEAM:
PARTICLE SEARCH #540

M4 BEAM:
INCLUSIVE K^0_S #383

M6 BEAM:
ASSOCIATED PRODUCTION #99
BACKWARD SCATTERING #290
HADRON DISSOCIATION #396

SITUATION REPORT - OCTOBER 1977

PAGE 1 — FERMI NATIONAL ACCELERATOR LABORATORY — PROGRAM PLANNING OFFICE, 12 OCT 1977

EXPERIMENTAL PROGRAM SITUATION REPORT

THE EXPERIMENTAL PROGRAM SITUATION AT FERMILAB IS SUMMARIZED BELOW. THE EXPERIMENTS ARE LISTED SEPARATED BY EXPERIMENTAL AREA UNDER CATEGORIES WHAT BEST DESCRIBE THEIR CIRCUMSTANCE AS OF OCTOBER 1, 1977. FOR EXPERIMENTS WHICH HAVE BEEN COMPLETED OR HAVE RECEIVED BEAM THERE IS INDICATION OF THE AMOUNT OF RUNNING TIME OR EXPOSURE. THE EXPERIMENTAL AREA NAMES ARE ABBREVIATED AS FOLLOWS: MESON AREA (MA), NEUTRINO AREA (NA), PHOTON AREA (PA), INTERNAL TARGET AREA (ITA).

TOTAL NUMBER OF APPROVED EXPERIMENTS - 272

AREA-BEAM		SPOKESPERSON	EXTENT OF RUN TO DATE	DATE COMPLETED
A. EXPERIMENTS THAT HAVE COMPLETED DATA TAKING (199):				
(ONLY EXPERIMENTS COMPLETED SINCE 1 JAN 1977 ARE LISTED BELOW)				
MA-M1	HADRON JETS #236A	MOCKETT	1,700 HOURS	20 JUL 1977
	INCLUSIVE SCATTERING #324	WEISBERG	1,200 HOURS	13 AUG 1977
	FORM FACTOR #456	STOSK	1,450 HOURS	13 APR 1977
	HIGH ENERGY CHANNELING #507	GIBSON	350 HOURS	30 MAY 1977
-M2	INCLUSIVE NEUTRAL MESON #350	KENNEY	900 HOURS	24 FEB 1977
	INCLUSIVE NEUTRON #404	GUSTAFSON	350 HOURS	5 JUL 1977
	LAMBDA MAGNETIC MOMENT #440	BUNCE	250 HOURS	22 MAR 1977
	LAMBDA POLARIZATION #441	PONDROM	400 HOURS	2 JUL 1977
-M3	NEUTRON-NUCLEUS INELASTIC #438	JONES	350 HOURS	10 APR 1977
-M4	K ZERO CHARGE RADIUS #226	TELEGDI	1,200 HOURS	17 MAR 1977
	K ZERO CROSS SECTION #486	WINSTEIN	950 HOURS	17 MAR 1977
-M6	INCLUSIVE SCATTERING #118A	FRIEDMAN	2,550 HOURS	20 JUL 1977
NA-N0-HORN	15-FOOT ANTI-NEUTRINO/H2 #31A	DERRICK	211K PIX	13 AUG 1977
	15-FOOT NEUTRINO/H2ENE #53A	BALTAY	163K PIX	24 MAY 1977
	EMULSION/NEUTRINO #536	NIU	2 STACKS	13 AUG 1977
-MUON/HADRON	PARTICLE SEARCH #369	KIRK	1,000 HOURS	13 AUG 1977
-15-FT	PARTICLE SEARCH #379	WOJCICKI	1,250 HOURS	8 JUN 1977
PA-PE	PARTICLE SEARCH #325	CRONIN	1,500 HOURS	28 FEB 1977
-PC	DI-HADRON #494	GOOD	1,950 HOURS	21 FEB 1977
-PW	PHOTON-PROTON ELASTIC #177A	ORDAR	2,400 HOURS	19 APR 1977
ITA-C-0	PROTON-NUCLEON SCATTERING #198A	OLSEN	900 HOURS	19 APR 1977
	PROTON-NUCLEON SCATTERING #381	MALAMUD	600 HOURS	30 MAR 1977
	NUCLEAR FRAGMENTS #442	TURKOT	1,200 HOURS	13 AUG 1977
B. EXPERIMENTS THAT ARE IN PROGRESS (23):			EXTENT OF RUN TO DATE	DATE OF RECENT RUN
MA-M1	TOTAL CROSS SECTION #104	KYCIA	1,400 HOURS	1 JAN 1975
	POLARIZED SCATTERING #61	CHAMBERLAIN	1,500 HOURS	1 OCT 1977
-M2	HADRON JETS #395	SELOVE	500 HOURS	1 OCT 1977
	MULTI-MUON #439	GARELICK	450 HOURS	1 JUL 1977
	PARTICLE SEARCH #468	STEINBERG	300 HOURS	1 OCT 1977
-M6	HADRON DISSOCIATION #396	GOULIANOS	700 HOURS	1 JUL 1977
	BACKWARD SCATTERING #290	BAKER	750 HOURS	1 OCT 1977
	MULTIPARTICLE #110A	DZIERBA	1,000 HOURS	1 JUL 1977
-OTHER	NUCLEAR CHEMISTRY #81A	KAUFMAN	150 BOMBARDMENTS	1 OCT 1977
NA-N0-HORN	15-FOOT NEUTRINO/H2 #45A	ROE	162K PIX	1 APR 1976
	15-FOOT ANTI-NEUTRINO/H2ENE#180	ROE	273K PIX	1 JUL 1977
-N0-TRIPLET	NEUTRINO #310	CLINE	2,150 HOURS	1 SEP 1977
-MUON/HADRON	TEST MUON IRRADIATION #501	LANDE	2 TARGETS EXPOSED	1 JAN 1977
-15-FT	15-FOOT PI- - P @ 100 #03A	KITAGAKI	11K PIX	1 APR 1975
	15-FOOT PI- - P2NE @ 200 #09	FRETTER	4K PIX	1 JUL 1975
	15-FOOT PI- - P @ 360 #384	LANNUTTI	20K PIX	1 APR 1976
-OTHER	MONOPOLE #502	BARTLETT	COSMIC RAY RUNNING	1 JUL 1977
	NUCLEAR FRAGMENTS #466	KAUFMAN	5 TARGETS EXPOSED	1 APR 1977
PA-PE	PHOTOPRODUCTION #87A	LEE	3,400 HOURS	1 OCT 1977
-PC	DI-LEPTON #288	LEDERMAN	4,250 HOURS	1 OCT 1977
-PW	PHOTON SEARCH #95A	COX	3,200 HOURS	1 OCT 1977
ITA-C-0	PROTON-PROTON POLARIZATION #313	NEAL	850 HOURS	1 APR 1977
	PROTON-HELIUM SCATTERING #289	MALAMUD	450 HOURS	1 OCT 1977
C. EXPERIMENTS THAT ARE IN TEST STAGE (6):			EXTENT OF RUN TO DATE	DATE OF RECENT RUN
MA-M4	INCLUSIVE K-SHORT #303	KOBRAK		1 OCT 1977
-M6	ASSOCIATED PRODUCTION #99	DIEBOLD	200 HOURS	1 OCT 1977
NA-N0-TRIPLET	NEUTRINO #482	SCIULLI	450 HOURS	1 OCT 1977
	NEUTRINO #253	NO		1 OCT 1977
-MUON/HADRON	DI-MUON #444	SMITH	20 HOURS	1 OCT 1977
PA-PE	PHOTOPRODUCTION #152B	HEUSCH	500 HOURS	1 OCT 1977
D. EXPERIMENTS BEING INSTALLED (5):			EXTENT OF APPROVAL	
MA-M1	HADRON DISSOCIATION #272	FERBEL	600 HOURS	
-M3	PARTICLE SEARCH #540	LONGO	PARASITIC RUNNING	
NA-N0-TRIPLET	15-FOOT NEUTRINO/H2ENE #546	HUSON	PARASITIC RUNNING	
-MUON/HADRON	MUON #203A	KERTH	500 HOURS	
	MUON #391	KERTH	PARASITIC RUNNING	
E. EXPERIMENTS TO BE SET UP WITHIN A YEAR (22):			EXTENT OF APPROVAL	
MA-M1	PARTICLE SEARCH #354	KYCIA	PARASITIC RUNNING	
	PARTICLE SEARCH #490	SANDWEISS	TEST RUNNING	
-M2	LAMBDA-BAR PRODUCTION #495	HELLER	400 HOURS	
-M3	PI-MU ATOMS #533	ARONSON	500 HOURS	
-M6	INCLUSIVE SCATTERING #451	BARTON	400 HOURS	
NA-N0-DICHROM	NEUTRINO #356	SCIULLI	1,000 HOURS	NOTE: THE AVAILABILITY TO SET UP THESE EXPERIMENTS DURING THE NEXT YEAR IS CONTINGENT ON THE AVAILABILITY OF FUNDS.
-N0-WB HORN	15-FOOT NEUTRINO/D2 #151A	SNOW	100K PIX	
	15-FOOT NEUTRINO/D2 #227	ENGELMANN	100K PIX	
	15-FOOT ANTI-NEUTRINO/D2 #390	CARMONY	300K PIX	
	NEUTRINO #531	REAY	PARASITIC RUNNING	
	NEUTRINO #553	HAND	PARASITIC RUNNING	
	15-FOOT & EMULSION/NEUTRINO#564	VOYVODIC	PARASITIC RUNNING	
-MUON/HADRON	MUON #448	LOOMIS	PARASITIC RUNNING	
-OTHER	QUARK #549	LONGO	PARASITIC RUNNING	
	EMULSION/PI- @200 #481	TAKAHASHI	EMULSION EXPOSURE	
	EMULSION/PI- @ > OR = 200 #503	OGATA	EMULSION EXPOSURE	
	EMULSION/PI- @ > OR = 200 #506	DAYE	EMULSION EXPOSURE	
	EMULSION/PIONS @ >300 #525	WILKES	EMULSION EXPOSURE	
	EMULSION/PI- @300 #568	HEBERT	EMULSION EXPOSURE	
PA-PE	PHOTOPRODUCTION #401	GORMLEY	600 HOURS	
ITA-C-0	PROTON POLARIZATION #522	OGREN	800 HOURS	
	P-N SCATTERING #552	SANNES	800 HOURS	

AREA-BEAM		SPOKESPERSON	EXTENT OF APPROVAL
F. OTHER APPROVED EXPERIMENTS (17):			
MA-M1	PARTICLE SEARCH #515	ROSEN	800 HOURS
-M6	HADRON JETS #563	MALAMUD	1,600 HOURS
NA-NO-DICHROM	15-FOOT NEUTRINO/H2ENE #300	BALTAY	200K PIX
	15-FOOT ANTI-NEUTRINO/H2ENE#568	STEVENSON	200K PIX
-15-FT	15-FOOT P - P & NE @ 400 #291	MANN	25K PIX
-30-IN	30-INCH PI- - NI Z @ 300 #304	WALKER	200K PIX
-OTHER	EMULSION/PROTONS @ 400-500 #499	IWAI	EMULSION EXPOSURE
	EMULSION/PROTONS @ 500 #500	WOLTER	EMULSION EXPOSURE
	EMULSION/PROTONS @ 500 #524	WILKES	EMULSION EXPOSURE
	EMULSION/PROTONS @ 400-500 #547	JACQUOT	EMULSION EXPOSURE
PA-PE	PARTICLE SEARCH #400	PEOPLES	400 HOURS
	PHOTOPRODUCTION #458	LEE	1,000 HOURS
-PC	CHARGED HYPERON #497	LACH	400 HOURS
-PW	PION INCLUSIVE #258	PIROUE	800 HOURS
	DI-MUON #326	PIROUE	800 HOURS
	C-TEST #302	CESTER-REGGE	400 HOURS
	PARTICLE SEARCH #567	CESTER-REGGE	500 HOURS
PENDING PROPOSALS (59):			EXTENT OF REQUEST
MA-M1	HADRON JETS #240	SELOVE	1,500 HOURS
	DETECTOR DEVELOPMENT #427	YUAN	200 HOURS
-M2	LAMBDA BETA DECAY #361	FONDRUM	350 HOURS
	PROTON POLARIZATION #505	YAMIN	100 HOURS
	NUCLEAR CHEMISTRY #529	TURKEVICH	100 HOURS
	NEUTRAL HYPERON #555	DEVLIN	250 HOURS
-M6	PARTICLE SEARCH #469	CUTTS	150 HOURS
	MULTIPARTICLE #523	DZIERBA	800 HOURS
NA-NO-DICHROM	NEUTRINO #355	BARISH	1,400 HOURS
-NO-WB HORN	15-FOOT NEUTRINO/H2ENE #489	NEZRICK	300K PIX
	15-FOOT NEUTRINO/D2ENE #521	VANDER VELDE	200K PIX
	15-FOOT ANTINEUTRINO/D2ENE#539	FRETTER	300K PIX
	15-FOOT ANTINEUTRINO/D2ENE#542	CARMONY	500K PIX
	15-FOOT ANTINEUTRINO/D2ENE#543	KITAGAKI	400K PIX
	15-FOOT ANTINEUTRINO/H2ENE#544	KARTAMOV	500K PIX
	15-FOOT NEUTRINO/D2ENE #545	SNOW	300K PIX
-NEUTRINO	NEUTRINO #572	DEEDER	6,500 HOURS
-MUON/HADRON	PION DISSOCIATION #318	ASCOLI	400 HOURS
	MUON #348	WILSON	800 HOURS
-15-FT	15-FOOT P - P @ > OR = 300 #208	TAKIBAEV	75K PIX
	15-FOOT PBAR - P @ 100 #526	LANDER	150K PIX
	15-FOOT PBAR - D @ 100 #527	LANDER	150K PIX
	DETECTOR DEVELOPMENT #528	ROBERTS	100 HOURS
	15-FOOT PI- - D @ 100&360 #538	FRETTER	150K PIX
-30-IN	30-INCH HYBRID #394	WHITMORE	2,250K PIX
	30-INCH PI&P - PBAR @100 #504	GULJAMOV	10K PIX
	30-INCH PBAR - D @ 200 #511	FRIDMAN	150K PIX
	DETECTOR DEVELOPMENT #550	ATAC	TEST RUNNING
	30-INCH PI&K - P @ 100 #558	SHEPHARD	2,250K PIX
	30-INCH HYBRID #565	YAMAMOTO	3,000K PIX
	30-INCH HYBRID #570	PLESS	2,000K PIX
PA-PE	PHOTOPRODUCTION #516	NASH	1,000 HOURS
-PC	CHARGED HYPERON #355	ECKLUND	600 HOURS
	FORM FACTOR #446	ECKLUND	800 HOURS
-PW	HADRON-NUCLEON SCATTERING #420	GUIRAGOSSIAN	1,100 HOURS
	PARTICLE SEARCH #537	COX	1,700 HOURS
	NUCLEAR SCALING #569	LEKSIN	250 HOURS
1TA-C-0	PROTON-PROTON SCATTERING #500D	FRANZINI	1,000 HOURS
	QUARK SEARCH #571	OLSEN	300 HOURS

PROPOSALS RECEIVED DURING SEPTEMBER AND OCTOBER 1977

No.	Title	Spokesperson
567	Search for Charm Production in 200 GeV/c Hadron Interactions	R. Cester
568	300 GeV Pion Interactions in Nuclear Emulsion	J. Hébert I. Otterlund
569	A Study of the Nuclear Scaling Phenomenon at High Energies	G. Leksin
570	Proposal for a Study of Particle Production and Dynamics from X = 0 to X = 1 and the Dependence on Incident Quantum Numbers	I. Pless
571	A Proposal to Search for Integer Charged Quarks	S. Olsen
572	Proposal to Assemble a High Resolution - Electron Sensitive - Energy Flow Calorimeter in the NEULAND Spectrometer	D. Reeder H. Williams

DATES TO REMEMBER

November 4, 1977	Workshop and panel discussion on future data acquisition systems at Fermilab, 9 a.m., Curia II (for more information contact A. E. Brenner, Computing Department).
November 10-11, 1977	Fall meeting of the Fermilab Program Advisory Committee.
January 27, 1978	Deadline for receipt of all new proposals and other written materials to be considered at the spring meeting of the Program Advisory Committee and at the Bubble Chamber Subcommittee Meeting.
February 9-10, 1978	Proposal Presentation Meeting.
February 23-24, 1978	Meeting of the Bubble Chamber Subcommittee of the Program Advisory Committee.
March 9-10, 1978	Spring meeting of the Fermilab Advisory Committee.
May 5, 1978	Deadline for receipt of all new proposals and other written materials to be considered at the summer meeting of the Program Advisory Committee.
May 18-19, 1978	Proposal Presentation Meeting.
June 17-23, 1978	Summer meeting of the Fermilab Program Advisory Committee.