

SUMMARY OF OPERATIONS - JANUARY 1982

Howard Fenker, Program Planning Office

January was the first month of accelerator operations for high-energy physics research since the end of May last year. During the seven-month shutdown almost every area that produces, accelerates, or transports beam was a scene of activity. The presence of new targets in experimental areas, relocated septa and Lambertson magnets in Switchyard, and a Main Ring that had to be pieced back together after Doubler/Saver construction could have made the startup in December more difficult than it turned out to be. As it happened, beam was available for research in the experimental areas on January 1, as scheduled.

The Chicago weather was the cause of several problems this month. High winds and four weekends with temperatures well below zero (Fahrenheit) is unusually severe for this part of the world. The Meson Detector Building suffered when wind blew out a section of the north wall and allowed -26° F air to enter. This, in turn, froze the industrial cooling water system which responded with a demonstration in freshman physics. The Proton Department, with most of their facilities underground, thought they were safe until they discovered a sump pump with a frozen discharge line.

Although weather-related incidents caused some disruptions, considerable progress was made in accommodating the needs of experimenters. The Neutrino narrow-band train achieved the "best alignment ever" by using 200-GeV protons extracted from the Main Ring half way up the 400-GeV ramp. Two experiments quickly achieved data-taking status to make use of the resulting increased neutrino flux. The Switchyard crew managed to set up the N7 beam line to deliver pings to the 30 in. bubble chamber.

The Meson experiments, blessed with a now stable superconducting left-bend string, saw beam from the Center target after only a few problems associated with the redesigned beam lines. In particular, commissioning of a tagged electron beam in M4 went smoothly. This will be used to test Colliding Detector Facility prototype devices. Turning on the superconducting bend string in M6 was delayed until it could be determined that the installation was safe. By the end of the month it appeared that this equipment was close to operation.

Experiments in both M1 and P-East have seen most of their beam during nights and weekends so that construction crews could work during the day shifts installing new experiments. Researchers in all areas of the Laboratory have, of course, eagerly accepted beam whenever they could get it.

FERMI NATIONAL ACCELERATOR LABORATORY
MONTHLY OPERATIONS HISTORY
JANUARY 1982

Date	Accelerator	Internal Target Area	Proton Area	Neutrino Area	Meson Area
Fri. 1/1	-1x10 ¹³ ppp @400 GeV	OFF	537 (PW) 612 (PE) 630 (PC)	594/701 (NO) DPI Test (N7)	555 (M2) 617 Test (M3) Beam Test (M4) OFF (M1) OFF (M6)
Sat. 1/2	1.0 sec flattop @200 GeV Front W Power Supply	Porch			
Sun. 1/3					
Mon. 1/4	Replace & Align Septum at D0				
Tue. 1/5					
Wed. 1/6	-1.0x10 ¹³ ppp				
Accelerator M&D					
Thu. 1/7	-1.5x10 ¹³ ppp @400 GeV/c	OFF	537 (PW) 612 (PE) 630 (PC)	594/701 (NO) DPI Test (N7) 673 (N1)	555 (M2) 617 Test (M3) 660 (M4) OFF (M1) OFF (M6)
Fri. 1/8	1.0 sec flattop				
Sat. 1/9					
Sun. 1/10					
Necessary Repairs					
Mon. 1/11	MRPS & Controls -1.5x10 ¹³ ppp @400 GeV/c	OFF	537 (PW) 612 (PE) 630 (PC)	594/701 (NO) DPI Test (N7) 673 (N1)	555 (M2, 617 Test (M3)) 660 (M4), OFF (M1) & (M6)
Tue. 1/12					
Wed. 1/13					
Accelerator Maintenance & Development					
Thu. 1/14	Controls	OFF	537 (PW) 612 (PE) 630 (PC)	594/701 (NO) DPI Test (N7) 673 (N1)	555 (M2) 617 Test (M3) 660 (M4) 515 (M1) OFF (M6)
Fri. 1/15	100 MeV Beam Cap. Test Pump				
Sat. 1/16					
Sun. 1/17	Switchyard Controls				
Mon. 1/18	Replace M. R. Dipole -1.7x10 ¹³ ppp @400 GeV/c				
Tue. 1/19					
Wed. 1/20					CDF (M4)
Accelerator Maintenance & Development					
Thu. 1/21	Replace MR Dipole	OFF	537 (PW) 612 (PE) 630 (PC)	594/701 (NO) DPI Test (N7) 673 (N1)	555 (M2) OFF (M6) 617 Test (M3) 515 (M1) CDF (M4)
Fri. 1/22					
Sat. 1/23	Replace MR Dipole				
Sun. 1/24	ES 3B Cable Shorted				
Mon. 1/25	Switchyard Studies				
Tue. 1/26	-1.6x10 ¹³ ppp				
Accelerator Studies					
Wed. 1/27					
Continue HEP					
Accelerator Maintenance & Development					
Thu. 1/28					
Fri. 1/29	Linac Power Amp -2.2x10 ¹³ ppp @400 GeV/c	OFF	537 (PW) 612 (PE) 630 (PC)	594/701 (NO) DPI Test (N7) 673 (N1)	555 (M2) OFF (M6) 617 Test (M3) 515 (M1) CDF (M4)
Sat. 1/30	1.0 sec flattop				
Sun. 1/31					

BEAM UTILIZATION

	<u>Beam</u>	<u>Hours</u>
PROTON AREA		
Dimuon #537	PW	360
Photodissociation #612	PE	310
Charm Search #630	PC	280
NEUTRINO AREA		
Neutrino #594	NO	330
Chi Meson #673	N1	300
Neutrino #701	NO	350
MESON AREA		
Particle Search #515	M1	160
Neutral Hyperon #555	M2	410
CP Violation #617	M3	410
Channeling #660	M4	150
CDF Development	M4	160
TOTAL HOURS FOR HIGH ENERGY PHYSICS		<hr/> 3220

BY EXPERIMENTAL ACTIVITY - JANUARY 1982

Activities

rate and trigger studies; data collection

background studies and data collection

streamer chamber and beam alignment; background studies, data collection

startup tests and data with narrow-band beam; neutrinos and antineutrinos

setup and beam tuning; detector calibration; data collection

tests and data collection

setup, beam tuning, trigger studies

beam tuning and data at various production angles

beam line setup and tests; detector tests

beam setup and tuning; crystal channeling data.

electron beam established; detector tests



FACILITY UTILIZATION SUMMARY - JANUARY 1982

I. Summary of Accelerator Operations

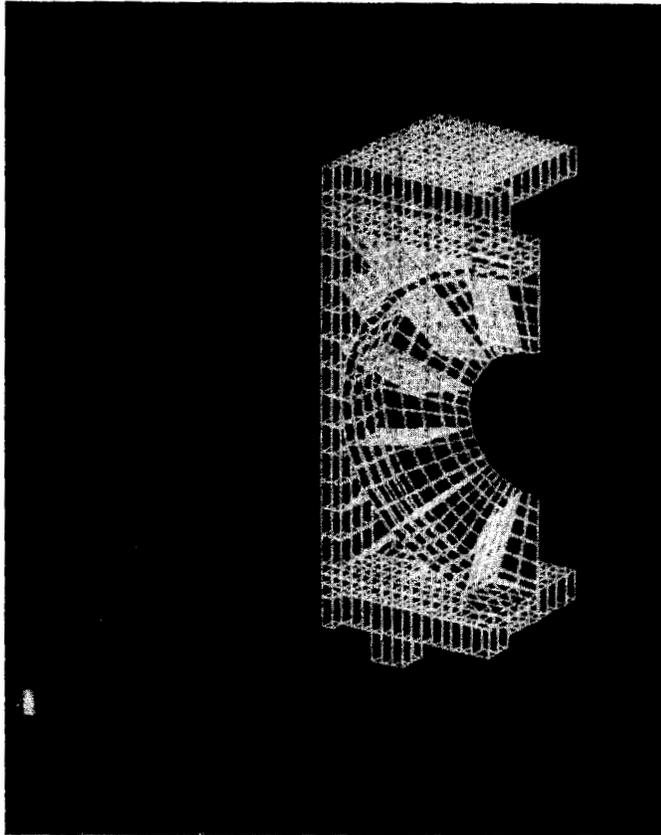
	<u>Hours</u>	
A. Accelerator use for physics research		
High energy physics research	468.7	
Accelerator physics research	12.0	
Subtotal		480.7
B. Other Activities		
Program interruption	66.3	
Accelerator setup and tuning to experimental areas	-	
Subtotal		66.3
C. Unscheduled interruption	197.0	
D. Unmanned time	-	
Total		744.0

II. Summaries of High Energy Physics Research Use

	<u># of Expts.</u>	<u>Hours</u>	<u>Results</u>
A. Counter experiments	9	2650	
B. Bubble chamber experiments			
C. Emulsion experiments			
D. Special target experiments	1	-	4 foils exposed
E. Test experiments	1	410	
F. Engineering studies and tests	1	160	
G. Other Beam Use	-	-	
Totals	<u>12</u>	<u>3220</u>	

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

A. Beam accelerated in Main Ring	18.8
B. Beam delivered to experimental areas	16.3
Proton Area	5.8
Neutrino Area	
Slow Spill	0.4
Fast Spill	8.1
Meson Area	2.0



Stress analysis of an End Wall of the Collider Detector Facility.
(Photograph by Fermilab Photo Unit)

SITUATION REPORT -- JANUARY 1982

PAGE 1 FERMILAB NATIONAL ACCELERATOR LABORATORY PROGRAM PLANNING OFFICE
EXPERIMENTAL PROGRAM SITUATION REPORT 1 FEB 1982

THE EXPERIMENTAL PROGRAM SITUATION AT FERMILAB IS SUMMARIZED BELOW. THE EXPERIMENTS ARE LISTED BY EXPERIMENTAL AREA AND DESCRIBE THEIR CATEGORIES THAT BEST DESCRIBE THEIR STATUS OR PRIORITY IN 1982. FOR EXPERIMENTS WHICH HAVE BEEN APPROVED OR HAVE RECEIVED FUNDING, THE SOURCE OF FUNDING AND THE DATE IS LISTED. FOR EXPERIMENTS WHICH HAVE BEEN APPROVED AS FOLLOWS: BEAM AREA (BA), NEUTRINO AREA (NA), PROTON AREA (PA), INTERNAL TARGET AREA (ITA). PROPOSALS OR EXPERIMENTS THAT ARE REQUESTING TREATMENT ENERGY ARE PRECEDED BY TEV.

TOTAL NUMBER OF APPROVED EXPERIMENTS - 320

AREA-BEAR	EXPERIMENTS THAT HAVE COMPLETED DATA TAKING (278):	SPOKESPERSON	TOTAL RUN	DATE COMPLETED
(ONLY EXPERIMENTS COMPLETED SINCE 1 JAN 1981 ARE LISTED BELOW)				
NA-N1	DIRECT PHOTON PRODUCTION #629	WELSON	400 HOURS	9 MAR 1981
-N4	FAST CHARGE EXCHANGE #585	FRANCK	3,150 HOURS	16 MAR 1981
	LARGE POLARIZATION #663	KORBAK	320 HOURS	1 JUN 1981
-N6	ELASTIC SCATTERING #577	BRUNSTEIN	1,550 HOURS	16 MAR 1981
NA-NO-NORN	15-FOOT NEUTRINO/NEUTRINO#53A	BALTAY	440K PIX	9 MAR 1981
	NEUTRINO #531	BEAT	3,800 HOURS	1 JUN 1981
	15-FOOT & EMULSION/NEUTRINO#564	VOTODIC	277K PIX	9 MAR 1981
-OTHER	MUC CALIBRATION CROSS SECT #631	BAKER	41 EXPOSURES	1 JUN 1981
PA-PE	PHOTOPRODUCTION #516	WASS	4,500 HOURS	1 JUN 1981
-PC	CHARGED NEUTRON #497	LACH	2,500 HOURS	16 MAR 1981
	EMULSION EXPOSURE #666	WILKES	6 STACKS	9 MAR 1981
ITA-C O	PARTICLE SEARCH #591	GUTAY	1,950 HOURS	8 FEB 1981

AREA-BEAR	EXPERIMENTS THAT ARE IN PROGRESS (18):	SPOKESPERSON	TOTAL RUN TO DATE	DATE OF RECENT RUN
NA-N1	PARTICLE SEARCH #515	ROSEN	2,200 HOURS	1 FEB 1982
-N2	NEUTRAL NEUTRON #555	DEVLIN	400 HOURS	1 FEB 1982
	BEAM DUMP #613	BOE	1,150 HOURS	1 JUN 1981
-N4	CHARMELING #660	GIBSON	150 HOURS	1 FEB 1982
-N6	HADRON JETS #557	ZIMINSKI	500 HOURS	1 JUN 1981
	PARTICLE SEARCH #580	GREEN	800 HOURS	1 JUN 1981
NA-NO-DICHRO	NEUTRINO #594	WALKER	2,600 HOURS	1 FEB 1982
	NEUTRINO OSCILLATION #701	SEARWITZ	350 HOURS	1 FEB 1982
-NO-VE NORN	15-FOOT ANTI-NEUTRINO/NEUTRINO#180	ERNOLOV	273K PIX	1 JUN 1977
-NUC/HADRON	CHI NEUTRON #673	COOPER	300 HOURS	1 FEB 1982
-JO IMCH	30-IMCH MIBRID #565	FLESS	46K PIX	1 JUN 1981
	30-IMCH MIBRID #570	FLESS	46K PIX	1 JUN 1981
	30-IMCH MIBRID #597	WHITMORE	76K PIX	1 JUN 1981
-OTHER	NUCLEAR FRAGMENT #466	SIGURMAN	58 TARGETS EXPOSED	1 FEB 1982
PA-PE	PHOTON DISSOCIATION #612	GODLIANOS	1,200 HOURS	1 FEB 1982
-PC	CHARM PARTICLE #630	SANDWEISS	700 HOURS	1 FEB 1982
-PW	DI-HORN #524	SCHOENET	1,500 HOURS	16 MAR 1981
	DI-HORN #537	COX	2,300 HOURS	1 FEB 1982

AREA-BEAR	EXPERIMENTS THAT ARE IN TEST STAGE (3):	SPOKESPERSON	TOTAL RUN TO DATE	DATE OF RECENT RUN
NA-N3	CP VIOLATION #617	WINSTEIN	450 HOURS	1 FEB 1982
-N4	COLLIDING DETECTOR FACILITY	TOLLERSTRUP	150 HOURS	1 FEB 1982
-N6	PARTICLE SEARCH #623	GREEN	60 HOURS	1 JUN 1981

AREA-BEAR	EXPERIMENTS BEING INSTALLED (4):	SPOKESPERSON	TOTAL RUN TO DATE	DATE OF RECENT RUN
NA-N1	HORN BEAM PAIRS #605	BROWN	1,000 HOURS	
-N6	HADRON JETS #609	SELWEG	1,500 HOURS	
PA-PE	PARTICLE SEARCH #600	BUTLER	500 HOURS	
-PW	FORWARD SEARCH #615	ANDERSON	1,000 HOURS	

AREA-BEAR	EXPERIMENTS TO BE SET UP IN A YEAR (1):	SPOKESPERSON	TOTAL RUN TO DATE	DATE OF RECENT RUN
PA-PC	TRANSITION MAGNETIC MOMENT #619	DEVLIN	250 HOURS	

NOTE: THE ABILITY TO SET UP THIS EXPERIMENT DURING THE NEXT YEAR IS CONTINGENT ON THE AVAILABILITY OF FUNDS.

AREA-BEAR	OTHER APPROVED EXPERIMENTS (16):	SPOKESPERSON	TOTAL RUN TO DATE	DATE OF RECENT RUN
NA-OTHER	EMULSION/PHOTONS & 500 #506	WOLTER	EMULSION EXPOSURE	
	EMULSION/PHOTONS & 500 #524	WILKES	EMULSION EXPOSURE	
TEV-NA-ECL BEAM	EMULSION/PHOTONS & 500 #576	HERBERT	3 STACKS	
-NA-N6	POLARIZED BEAM #704	YOKOSAWA	UNSPECIFIED	
	HADRON JET #672	OSIERBA	UNSPECIFIED	
TEV-NA-NEUTRINO	PARTICLE SEARCH #650	BRADY	UNSPECIFIED	
-NA-EB DUMP	NEUTRINO #652	SCUDLITZ	UNSPECIFIED	
	BEAM DUMP #636	FLESS	UNSPECIFIED	
	15-FT BEAM DUMP #646	BALTAY	UNSPECIFIED	
-NA-NUCN	NUCH #640	LOREN	1,000 HOURS	
TEV-PA-PE	TEVATRON HORN #665	KERN	UNSPECIFIED	
PA-PC	PHOTOPRODUCTION #667	BUTLER	UNSPECIFIED	
-PA-PC	CP VIOLATION #621	THORSON	UNSPECIFIED	
	PARTICLE SEARCH #653	BEAT	UNSPECIFIED	
-PA-PW	CHI NEUTRON #705	COX	UNSPECIFIED	
TEV-UNSPEC BEAM	DIRECT PHOTON #706	SLATTERY	UNSPECIFIED	

AREA-BEAR	PENDING PROPOSALS (28):	SPOKESPERSON	TOTAL RUN TO DATE	DATE OF RECENT RUN
BA-N2	BEAM DUMP #644	LOWSO	2,000 HOURS	
ITA-C O	PARTICLE SEARCH #702	GLASS	400 HOURS	
TEV-NA-ECL BEAM	POLARIZED BEAM #682	UNDERWOOD	1,700 HOURS	
	POLARIZED BEAM #698	DITTLER	400 HOURS	
	POLARIZED BEAM #699	STANEX	1,000 HOURS	
-NA-N6	PARTICLE SEARCH #684	LAI	1,000 HOURS	
	PARTICLE SEARCH #696	THOMAS	UNSPECIFIED	
TEV-NA-NEUTRINO	15-FT NEUTRINO/NE & NE #632	MORRISON	250K PIX	
	NEUTRINO #635	NO	UNSPECIFIED	
	15-FT NEUTRINO/D2 #637	ARMOSOFF	UNSPECIFIED	
	15-FT NEUTRINO #641	KITAGAKI	200K PIX	
	NEUTRINO #647	PETERSON	UNSPECIFIED	
	NEUTRINO #649	TAYLOR	UNSPECIFIED	
	15-FT NEUTRINO/D2 #651	HILLMAN	100K PIX	
-NA-EB DUMP	BEAM DUMP #656	WHITAKER	UNSPECIFIED	
TEV-PA-PE	NEUTRINO OSCILLATION #700	MILLER	UNSPECIFIED	
	PHOTON DISSOCIATION #670	GODLIANOS	UNSPECIFIED	

ARIA-BEAM

PENDING PROPOSALS (CONT'D)

		SPONSORPERSON	REQUEST
	PHOTOPRODUCTION OF JETS #683	COBPELL	1,500 HOURS
	TAGGED PHOTON #691	WASH	1,000 HOURS
- PA-PW	DI-RADON #671	POPE	UNSPECIFIED
	LEPTON PAIR #693	MCDONALD	1,000 HOURS
TEV-ITA-C 0	PROTON-PROTON SCATTERING #500D	FRANZINI	1,000 HOURS
	P-P AND P-D SCATTERING #687	GOJAI	950 HOURS
-ITA-D 0	ELECTRON TARGET FACILITY #703	FRISKEE	1,000 HOURS
	ELECTRON TARGET FACILITY #706	LEE	
TEV-UNSPEC BEAM	EMULSION/PI- # 500 #667	WOLTER	EMULSION EXPOSURE
	EMULSION/PI- # 800 #668	WOLTER	EMULSION EXPOSURE
	PARTICLE SEARCH #692	RUCHTI	1,000 HOURS





Completed E-605 magnet.
(Photograph by Fermilab Photo Unit)