SUMMARY OF OPERATIONS - APRIL - MAY - JUNE 1982

Howard Fenker, Program Planning Office

Eighteen experiments took data during these three months, accumulating a total of 8,750 hours and 929 K bubble chamber pictures for high energy physics research and detector calibration. Eleven experiments completed data taking. Originally, only six hours of running were scheduled for June, but this was increased to two weeks after the power company agreed to a variance in the procedure for calculating the Laboratory's power demand charge.

The Accelerator Division met some rather challenging demands during this period. In addition to the usual 1-sec slow spill and 1-msec fast spill at 400 GeV/c, the Main Ring produced 10^{12} protons in a 1-msec spill at 250 GeV/c, low-intensity pings (six short bursts spaced over the 1-sec slow extraction time), and high-intensity pings. For a large part of the time, all these modes were in operation simultaneously. No less challenging for the operators, however, was turning each individual mode on and off as experimental requirements varied.

On May 3, the accelerating column for the main Cockcroft-Walton broke down because of a vacuum leak in a cracked ceramic insulator. To repair this, the column had to be removed, dismantled, cleaned, reassembled with a new insulator, and put back in place--all without disturbing the pre-linac beam line or back-up preaccelerator. This task was successfully accomplished by May 24. After the column was put back into service, another 400 GeV/c intensity record was set: 3.253×10^{13} protons in a pulse. When the 400 GeV/c era ended on June 14, the accelerator had delivered beam for 94% of the scheduled 112 hours during the previous week.

During the week following the end of HEP, accelerator studies were carried out in preparation for the Tevatron. In particular, a milestone was reached on June 14 when 150 GeV/c beam was transported out of the Main Ring and through the Saver injection line.

FERMI NATIONAL ACCELERATOR LABORATORY
MONTHLY OPERATIONS HISTORY
APRIL 1982

DATE	ACCELERATOR	PROTON AREA	NEUTRINO AREA	MESON AREA
Thu. 4/1	Accelerator Maintenance & Development			
Fri. 4/2	~~Improve F1 Vacuum~~	326 (PW)	701/594 (N0)	609 (M6)
Sat. 4/3	~~F-Sector Security Broken~~	612 (PE)	597 (N7)	613 (M2)
Sun. 4/4	~~Main Ring Power~~	OFF (PC)	673 (N1)	617 (M3)
Mon. 4/5				605 (M1)
Tue. 4/6	Power Failure			CDF (M4)
Wed. 4/7	~~Linac Station 7~~			Cryogenic Systems Recovery from Power Failure
Thu. 4/8	~2.5x10^{13}ppp			
Fri. 4/9	Accelerator Necessary Repairs			
Sat. 4/10	~2.8x10^{13}ppp	326 (PW)	701/594 (N0)	609 (M6)
Sun. 4/11	@400 GeV/c	612 (PE)	597 (N7)	613 (M2)
Mon. 4/12		619 (PC)	673 (N1)	617 (M3)
Tue. 4/13	~~PSEP Shorted~~			605 (M1)
Wed. 4/14		End 612		CDF (M4)
Thu. 4/15		400 (PE)		
Fri. 4/16	~~M.R. Safety System~~			
Sat. 4/17	~2.5x10^{13}ppp	400 (PE)		
Sun. 4/18	@400 GeV/c	619 (PC)		
Mon. 4/19		326/615 (PW)		
Tue. 4/20	Accelerator Studies		End 673	
Wed. 4/21	Accelerator Maintenance & Development			
Thu. 4/22	~~Left Bends, Booster~~	400 (PE)	701/594 (N0)	609 (M6)
Fri. 4/23	~2.2x10^{13}ppp	619 (PC)	597 (N7)	613 (M2)
Sat. 4/24		326/615 (PW)		605 (M1)
Sun. 4/25	~~Main Ring Controls~~			617 (M3)
Mon. 4/26		End 326		660 (M4)
Tue. 4/27	Accelerator Necessary Repairs			
Wed. 4/28	~2.5x10^{13}ppp	400 (PE)	701/594 (N0)	609 (M6)
Thu. 4/29	@400 GeV/c	619 (PC)	597 (N7)	613 (M2)
Fri. 4/30		615 (PW)		605 (M1)
	Accelerator Necessary Repairs			617 (M3)
	~2.7x10^{13}ppp	400 (PE)	701/594 (N0)	660 (M4)
	@400 GeV/c	619 (PC)	597 (N7)	609 (M6)
		615 (PW)		613 (M2)
	~~M.R. Ground Fault~~			605 (M1)
	~1.2x10^{13}ppp			617 (M3)
	@400 GeV/c			660 (M4)
	200 GeV/c Front Porch			
	Accelerator Studies & Necessary Repairs			
	~2.2x10^{13}ppp	400 (PE)	701/594 (N0)	609 (M6)
	@400 GeV/c	619 (PC)	597 (N7)	613 (M2)
		615 (PW)		605 (M1)
				617 (M3)
				660 (M4)

FERMI NATIONAL ACCELERATOR LABORATORY
MONTHLY OPERATIONS HISTORY
MAY 1982

DATE	ACCELERATOR	PROTON AREA	NEUTRINO AREA	MESON AREA
Sat. 5/1	Ion Source Problems	400 (PE) 619 (PC) 615 (PW)	701/594 (N0) 597 (N7) End 597	609 (M6), 613 (M2) 605 (M1), 617 (M3) 660 (M4) End 660
Sun. 5/2	~1.9×10^{13}ppp			
Mon. 5/3	Controls & Pwr Supply	Accelerator Necessary Repairs		
Tue. 5/4		400, 619, 615	701/594, 565/570	609,613,605,617,CDF
Wed. 5/5		Accelerator Maintenance & Development		
Thu. 5/6	~2.2×10^{13}ppp 1 sec flattop @400 GeV/c 250 GeV/c Front Porch	400 (PE) 619 (PC) 615 (PW)	701/594 (N0) 565/570 (N7)	609 (M6) 613 (M2) 605 (M1) 617 (M3) CDF (M4)
Fri. 5/7				
Sat. 5/8				
Sun. 5/9				
Mon. 5/10				
Tue. 5/11				End 609
Wed. 5/12				End 613
Thu. 5/13		Accelerator Studies & Maintenance		
Fri. 5/14	Replace Bad Source ~2.0×10^{13}ppp	400 (PE) 619 (PC) 615 (PW)	701/594 (N0) 565/570 (N7)	617 (M3) 605 (M1) 623 (M6) CDF (M4) OFF (M2)
Sat. 5/15	Power Glitch Recovery			
Sun. 5/16	Power Glitch Recovery			
Mon. 5/17				
Tue. 5/18		Accelerator Studies		
Wed. 5/19		Accelerator Maintenance & Development		
Thu. 5/20	~1.8×10^{13}ppp 1 sec flattop @400 GeV/c 250 GeV/c Front Porch	400 (PE) 619 (PC) 615 (PW)	701/594 (N0) 565/570 (N7)	617 (M3) 623 (M6) 605 (M1) CDF (M4) OFF (M2)
Fri. 5/21				
Sat. 5/22	Linac R.F. Station 7			
Sun. 5/23	~2.3×10^{13}ppp @400 GeV/c 250 GeV/c Front Porch			
Mon. 5/24				
Tue. 5/25				
Wed. 5/26				
Thu. 5/27		Accelerator Maintenance & Development, Studies		
Fri. 5/28	~2.6×10^{13}ppp	619 (PC) 400 (PE) 615 (PW)	701/594 (N0) 565/570 (N7)	617 (M3) 623 (M6) 605 (M1) CDF (M4) OFF (M2)
Sat. 5/29	Injection Kicker Down			
Sun. 5/30	NEW INTENSITY RECORD 3.253×10^{13} Protons			
Mon. 5/31	~2.5×10^{13}ppp		End 565/570	

FERMI NATIONAL ACCELERATOR LABORATORY
MONTHLY OPERATIONS HISTORY
JUNE 1982

DATE	ACCELERATOR	PROTON AREA	NEUTRINO AREA	MESON AREA
Tue. 6/1	Accelerator Maintenance & Development			
Wed. 6/2	~1.4×10^{13} ppp 250 GeV/c Front Porch 400 GeV/c Flattop	619 (PC) 400 (PE) 615 (PW)	701 (NO) 594 (NO)	617 (M3) 623 (M6) 605 (M1) CDF (M4) OFF (M2)
Thu. 6/3				
Fri. 6/4	~~Necessary Repairs~~			
Sat. 6/5	~2.6×10^{13} ppp 250 GeV/c Front Porch 400 GeV/c Flattop			
Sun. 6/6				
Mon. 6/7	Accelerator Studies			
Tue. 6/8				
Wed. 6/9	~2.8×10^{13} ppp 1.0 sec flattop @400 GeV/c 250 GeV/c Front Porch	619 (PC) 400 (PE) 615 (PW)	701 (NO) 594 (NO)	617 (M3) 623 (M6) 605 (M1) CDF/660 (M4) OFF (M2)
Thu. 6/10				
Fri. 6/11				
Sat. 6/12				
Sun. 6/13	~~F5 38 shorted~~			
Mon. 6/14	Accelerator Maintenance & Development			
Tue. 6/15	Accelerator Studies			
Wed. 6/16				
Thu. 6/17	- Accelerator Shutdown -			
Fri. 6/18				
Sat. 6/19				
Sun. 6/20				
Mon. 6/21				
Tue. 6/22				
Wed. 6/23				
Thu. 6/24				
Fri. 6/25				
Sat. 6/26				
Sun. 6/27				
Mon. 6/28				
Tue. 6/29				
Wed. 6/30				

BEAM UTILIZATION BY

	Beam	Hours
Dimuon #326	PW	200
Particle Search #400	PE	750
Photon Dissociation #612	PE	160
Forward Search #615	PW	580
Transition Moment #619	PC	680
30-in. Hybrid #565/570	N7	-
Neutrino #594	N0	900
30-in. Hybrid #597	N7	-
Chi Meson #673	N1	140
Neutrino Oscillations #701	N0	1060
High Mass Pairs #605	M1	880
Hadron Jets #609	M6	450
Beam Dump #613	M2	570
CP Violation #617	M3	1040
Particle Search #623	M6	360
Channeling #660	M4	270
CDF Development	M4	710
TOTAL HOURS FOR HIGH ENERGY PHYSICS		8750

EXPERIMENTAL ACTIVITY - APRIL, MAY, and JUNE 1982

Activities
data taking at high intensity; run completed
setup, trigger, and buffer memory development; data
TREAD time projection chamber data; run finished
setup and tests; data
setup, calibration, and data; completed
429K pictures; completed
neutrino elastic scattering data; detector; calibration completed
500K pictures; completed
data; completion of run
data and calibration; run completed
setup; low intensity testing
calibration of multiple energies; data
high intensity running; experiment completed
neutral and charged data
setup and data collection; run finished
data taking completed
prototype drift chamber and calorimeter tests

FACILITY UTILIZATION SUMMARY - APRIL 1982

I. Summary of Accelerator Operations

		Hours	
A. Accelerator use for physics research			
High energy physics research		518.3	
Accelerator physics research		12.9	
	Subtotal		531.2
B. Other Activities			
Program interruption		61.7	
Accelerator setup and tuning to experimental areas		-	
	Subtotal		61.7
C. Unscheduled interruption		126.1	
D. Unmanned time		-	
Total			719.0

II. Summaries of High Energy Physics Research Use

	# of Expts.	Hours	Results
A. Counter experiments	12	3180	3 exp. completed
B. Bubble chamber experiments	1	-	465K pictures
C. Emulsion experiments			
D. Special target experiments	1	-	5 targets exposed
E. Test experiments			
F. Engineering studies and tests	1	160	
G. Other Beam Use			
Totals	15	3340	

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

A. Beam accelerated in Main Ring		31.0
B. Beam delivered to experimental areas		28.0
Proton Area		3.8
Neutrino Area		
	Slow Spill	2.4
	Fast Spill	14.0
Meson Area		7.4

FACILITY UTILIZATION SUMMARY - MAY 1982

I. Summary of Accelerator Operations

		Hours	
A. Accelerator use for physics research			
High energy physics research		555.6	
Accelerator physics research		21.5	
	Subtotal		577.1
B. Other Activities			
Program interruption		52.9	
Accelerator setup and tuning to experimental areas		-	
	Subtotal		52.9
C. Unscheduled interruption		114.0	
D. Unmanned time		-	
Total			744.0

II. Summaries of High Energy Physics Research Use

	# of Expts.	Hours	Results
A. Counter experiments	11	3475	2 exp. completed
B. Bubble chamber experiments	2		460K pictures
C. Emulsion experiments			
D. Special target experiments	1	-	4 targets exposed
E. Test experiments			
F. Engineering studies and tests	1	410	
G. Other Beam Use			
Totals	15	3885	

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

A. Beam accelerated in Main Ring		29.4
B. Beam delivered to experimental areas		25.2
Proton Area		0.7
Neutrino Area		
	Slow Spill	7.2
	Fast Spill	8.9
Meson Area		8.4

FACILITY UTILIZATION SUMMARY - JUNE 1982

I. Summary of Accelerator Operations

		Hours	
A. Accelerator use for physics research			
High energy physics research		217.9	
Accelerator physics research		89.8	
	Subtotal		307.7
B. Other Activities			
Program interruption		38.0	
Accelerator setup and tuning to experimental areas		-	
	Subtotal		38.0
C. Unscheduled interruption		38.3	
D. Unmanned time		336.0	
Total			720.0

II. Summaries of High Energy Physics Research Use

	# of Expts.	Hours	Results
A. Counter experiments	9	1385	6 exp. completed
B. Bubble chamber experiments	1	-	5K pictures
C. Emulsion experiments			
D. Special target experiments	1	-	2 targets exposed
E. Test experiments			
F. Engineering studies and tests	1	150	
G. Other Beam Use			
Totals	12	1535	

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

A. Beam accelerated in Main Ring		12.5
B. Beam delivered to experimental areas		11.2
Proton Area		1.0
Neutrino Area		
	Slow Spill	2.2
	Fast Spill	4.3
Meson Area		3.7

SITUATION REPORT - JULY, 1982

PAGE 1 FERMI NATIONAL ACCELERATOR LABORATORY PROGRAM PLANNING OFFICE
20 JUL 1982

EXPERIMENTAL PROGRAM SITUATION REPORT

THE EXPERIMENTAL PROGRAM SITUATION AT FERMILAB IS SUMMARIZED BELOW. THE EXPERIMENTS ARE LISTED BY EXPERIMENTAL AREA AND BEAMLINE UNDER CATEGORIES THAT BEST DESCRIBE THEIR STATUS ON JULY 1, 1982. FOR EXPERIMENTS WHICH HAVE BEEN COMPLETED OR HAVE RECEIVED BEAM, THE AMOUNT OF RUNNING TIME OF EXPOSURE TO DATE IS LISTED. THE EXPERIMENTAL AREA NAMES ARE ABBREVIATED AS FOLLOWS: MESON AREA (MA), NEUTRINO AREA (NA), PROTON AREA (PA), INTERNAL TARGET AREA (ITA), AND COLLISION AREA (COL). PROPOSALS OR EXPERIMENTS THAT ARE REQUESTING TEVATRON ENERGY ARE PRECEDED BY TEV.

TOTAL NUMBER OF APPROVED EXPERIMENTS - 327

AREA-BEAM		SPOKESPERSON	TOTAL RUN	DATE COMPLETED
A. EXPERIMENTS THAT HAVE COMPLETED DATA TAKING (295):				
(ONLY EXPERIMENTS COMPLETED SINCE 01 JAN 1982 ARE LISTED BELOW				
MA-M1	PARTICLE SEARCH #515	ROSEN	2,650 HOURS	10 MAR 1982
-M2	NEUTRAL HYPERON #555	DEVLIN	650 HOURS	17 FEB 1982
	BEAM DUMP #613	BOE	1,800 HOURS	13 MAY 1982
-M4	CHANNELING #660	GIBSON	425 HOURS	13 JUN 1982
-M6	PARTICLE SEARCH #623	GREEN	425 HOURS	14 JUN 1982
NA-N0-DICHROM	NEUTRINO #594	WALKER	4,400 HOURS	14 JUN 1982
	NEUTRINO OSCILLATION #701	SHAEVITZ	2,250 HOURS	14 JUN 1982
-MUON/HADRON	CHI MESON #673	COOPER	1,100 HOURS	14 APR 1982
-30 INCH	30-INCH HYBRID #565	PLESS	1,068K PIX	1 JUN 1982
	30-INCH HYBRID #570	PLESS	1,068K PIX	1 JUN 1982
	30-INCH HYBRID #597	WHITMORE	658K PIX	3 MAY 1982
PA-PE	PHOTON DISSOCIATION #612	GOULIANOS	1,850 HOURS	12 APR 1982
-PC	TRANSITION MAGNETIC MOMENT #619	DEVLIN	675 HOURS	14 JUN 1982
	CHARM PARTICLE #630	SANDWEISS	1,150 HOURS	15 MAR 1982
-PW	DI-MUON #326	SHOCHET	2,000 HOURS	26 APR 1982
	DI-MUON #537	COX	2,700 HOURS	28 FEB 1982

B. EXPERIMENTS THAT ARE IN PROGRESS (7):			TOTAL RUN TO DATE	DATE OF RECENT RUN
MA-M3	CP VIOLATION #617	WINSTEIN	2,300 HOURS	1 JUL 1982
-M6	HADRON JETS #557	ZIEMINSKI	600 HOURS	1 JUN 1981
	HADRON JETS #609	SELOVE	775 HOURS	1 JUL 1982
NA-N0-HOEN	15-FOOT ANTI-NEUTRINO/H2&NE#180	ERMOLOV	273K PIX	1 JUN 1977
-CTHEE	NUCLEAR FRAGMENTS #466	SUGARMAN	77 TARGETS EXPOSED	1 JUL 1982
PA-PE	PARTICLE SEARCH #400	BUTLER	1,000 HOURS	1 JUL 1982
-PW	FORWARD SEARCH #615	MCDONALD	580 HOURS	1 JUL 1982

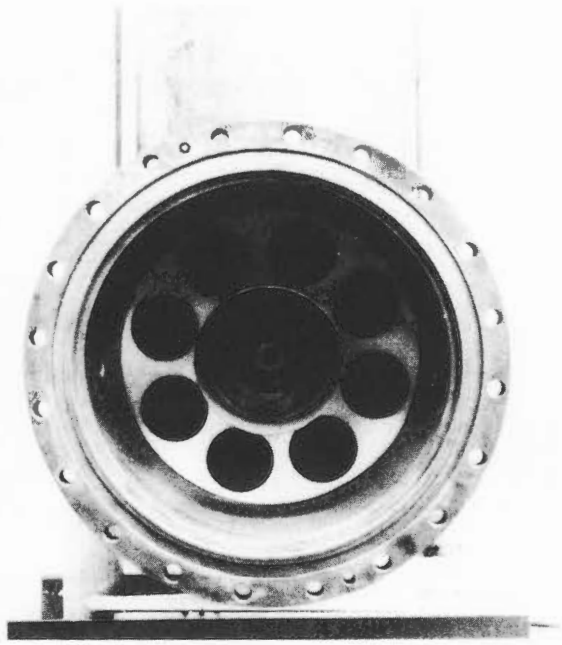
C. EXPERIMENTS THAT ARE IN TEST STAGE (1):			TOTAL RUN TO DATE	DATE OF RECENT RUN
MA-M1	HIGH MASS PAIRS #605	BROWN	900 HOURS	1 JUL 1982

F. OTHER APPROVED EXPERIMENTS (21):			APPROVAL
NA-OTHER	EMULSION/PROTONS @ 500 #508	WOLTER	EMULSION EXPOSURE
	EMULSION/PROTONS @ 500 #524	WILKES	EMULSION EXPOSURE
	EMULSION/PROTONS @ 500 #576	HEDERT	3 STACKS
PA-PC	SIGMA BETA DECAY #715	COOPER	UNSPECIFIED
TEV- MA-POL BEAM	POLARIZED BEAM #704	TOKOSAWA	UNSPECIFIED
- MA-M6	HADRON JET #672	DZIERBA	UNSPECIFIED
	DIRECT PHOTON #706	SLATTERY	UNSPECIFIED
TEV- NA-NEUTRINO	15-FT NEUTRINO/H2 & NE #632	MORRISON	UNSPECIFIED
	NEUTRINO #649	TAYLOR	UNSPECIFIED
	NEUTRINO #652	SCIULLI	UNSPECIFIED
- NA-BM DUMP	BEAM DUMP #636	PLESS	UNSPECIFIED
	15-FT BEAM DUMP #646	BALTAY	UNSPECIFIED
- NA-MUON	MUON #640	LOKEN	1,000 HOURS
	TEVATRON MUON #665	KIRK	UNSPECIFIED
- NA-N3	PARTICLE SEARCH #653	REAY	UNSPECIFIED
	PARTICLE SEARCH #690	KNAPP	UNSPECIFIED
TEV- PA-PE	PHOTOPRODUCTION #687	BUTLER	UNSPECIFIED
- PA-PC	CP VIOLATION #621	THOMSON	UNSPECIFIED
- PA-PW	CHI MESON #705	COX	UNSPECIFIED
TEV-COL-D 0	TOTAL CROSS-SECTION #710	RUBINSTEIN	UNSPECIFIED
	HIGHLY IONIZING PARTICLES #713	PRICE	UNSPECIFIED

PENDING PROPOSALS (22):			REQUEST
ITA-C 0	PARTICLE SEARCH #702	GLASS	400 HOURS
TEV- MA-POL BEAM	POLARIZED BEAM #682	UNDERWOOD	1,700 HOURS
	POLARIZED BEAM #688	DITZLER	400 HOURS
	POLARIZED BEAM #699	STANEK	1,000 HOURS
- MA-M6	PARTICLE SEARCH #684	LAI	1,000 HOURS
	PARTICLE SEARCH #696	TROWER	UNSPECIFIED
TEV- NA-NEUTRINO	NEUTRINO #635	MO	UNSPECIFIED
	HYBRID NEUTRINO #647	PETERSON	UNSPECIFIED
	15-FT NEUTRINO/D2 #651	MILLER	100K PIX
- NA-BM DUMP	BEAM DUMP #656	WHITAKER	UNSPECIFIED
	NEUTRINO OSCILLATION #700	MILLER	UNSPECIFIED
TEV- PA-PE	PHOTON DISSOCIATION #670	GOULIANOS	UNSPECIFIED
	PHOTOPRODUCTION OF JETS #683	CORNELL	1,500 HOURS

PAGE 2 EXPERIMENTAL PROGRAM SITUATION REPORT (CONT'D) 20 JUL 1982

AREA-BEAM		SPOKESPERSON	REQUEST
PENDING PROPOSALS(CONT'D)			
	TAGGED PHOTON #691	NASH	1,000 HOURS
- PA-PW	DI-MUON #671	POPE	UNSPECIFIED
	LEPTON PAIR #693	MCDONALD	1,000 HOURS
TEV-ITA-C 0	PROTON-PROTON SCATTERING #500B	FRANZINI	1,000 HOURS
	P-P AND P-D SCATTERING #681	GUTAY	950 HOURS
TEV-COL-D 0	LARGE ANGLE PARTICLE #714	GRANNIS	UNSPECIFIED
	ELECTRON TARGET FACILITY #719	LEE	UNSPECIFIED
TEV-UNSPEC BEAM	EMULSION/PI- @ 500 #667	WOLTER	EMULSION EXPOSURE
	EMULSION/PI- @ 800 #668	WOLTER	EMULSION EXPOSURE
	PARTICLE SEARCH #692	RUCHTI	1,000 HOURS



An Energy Saver accelerating cavity.
(Photograph by Fermilab Photo Unit)