

SUMMARY OF OPERATIONS - MARCH 1981

Program Planning Office

The 400-GeV high-energy physics program was interrupted for about two weeks during the month of March to allow construction of facilities needed for the Energy Saver. Nevertheless, the experimental and accelerator programs clearly made progress, and six experiments completed their data taking during the month.

Dimuon #326 in the High-Intensity Laboratory and Charged Hyperon #497 in Proton Center relinquished their experimental areas to Dimuon #537 (testing their apparatus) and Charm Production #630 (setting up), respectively. In the Tagged Photon Laboratory, Experiments 516 and 612 (Photoproduction and Photodissociation) have been studying what conditions are necessary in order to take data in both the magnetic spectrometer and time projection chamber simultaneously.

The Meson Area has seen the completion of Kaon Charge Exchange #585 and Elastic Scattering #577, and the startup of E-663 (Lambda Polarization) and E-577 (Hadron Jets). The Beam Dump Experiment in M2 (E-613) began taking special data to study the effects of background particles produced in the Meson targets. Particle Search #515 has been testing equipment in M1.

The 15-ft bubble chamber was warmed up after Experiments 53A and 564 finished their neutrino exposures, and the 30-in bubble chamber program was started up. Tests of this chamber and its beam were conducted this month in preparation for experiments expected to begin in April. Continuing to run in the Neutrino Area was E-531. Experiment 594 progressed with the equipment testing phase of its run.

The accelerator passed a milestone this month (see March 1981 Fermilab Report) when a new world intensity record was set for 400-GeV operation:  $3.003 \times 10^{13}$  protons were accelerated and delivered to experimental areas in one cycle. This accomplishment was preceded by two weeks of running with intensities averaging about  $2.5 \times 10^{13}$  protons per pulse.

FERMI NATIONAL ACCELERATOR LABORATORY  
MONTHLY OPERATIONS HISTORY  
MARCH 1981

Date	Accelerator	Internal Target Area	Proton Area	Neutrino Area	Meson Area
Sun. 3/1	2.5x10 <sup>13</sup> ppp @400 GeV	OFF	516 (PE) 326 (PW)	53A,564,531(N0) 594,P635,631	577(M6), 613(M2) 585(M4), 629(M1)
Mon. 3/2	1.0 sec flattop		497 (PC)	565,570,597(N3)	617(M3) Test
Tue. 3/3					
Wed. 3/4				End 53A,564	
Thu. 3/5	Accelerator M&D				
Fri. 3/6	SV Vacuum	OFF	497 (PC) 326 (PW)	531 (NO) 565,570,597(N3)	613(M2), 577(M6) 629(M1), 585(M4)
Sat. 3/7			612 (PE)	594 (NO)	617(M3) Test
Sun. 3/8			516 (PE)	P635 Tests 631	
Mon. 3/9	Nec. Repairs/MR Dipole				613(M2), 585(M4) 577(M6), 515(M1)
Tue. 3/10	Replace MR Quad				617(M3) Test
Wed. 3/11	2.2x10 <sup>13</sup> ppp @400 GeV/c				
Thu. 3/12	1.0 sec flattop				
Fri. 3/13					
Sat. 3/14					
Sun. 3/15			End 497, 326		End 53A, 564
Mon. 3/16					
Tue. 3/17					
Wed. 3/18			Accelerator Shutdown		
Thu. 3/19					
Fri. 3/20					
Sat. 3/21					
Sun. 3/22					
Mon. 3/23					
Tue. 3/24					
Wed. 3/25					
Thu. 3/26					
Fri. 3/27			Startup & Tuneup		
Sat. 3/28	2.0x10 <sup>13</sup> ppp	OFF	517 (PW)	531 (NO)	613(M2), 515(M1)
Sun. 3/29	1.0 sec flattop		516/612 (PE)	565,570,597(N3)	617(M3), 585(M4)
Mon. 3/30	400 GeV/c 1.0 sec flattop		OFF (PC)	594 (NO)	Meson OFF
Tue. 3/31	1.0 sec flattop				

## BEAM UTILIZATION BY EXPERIMENTAL ACTIVITY - MARCH 1981

	<u>Beam</u>	<u>Hours</u>	<u>Activities</u>
PROTON AREA			
Dimuon #326	PW	180	data taking completed
Charged Hyperon #497	PC	230	hyperon polarization data; completed
Protoproduction #516	PE	240	data and tests
Dimuon #537	PW	85	startup and testing
Photodissociation #612	PW	215	setup and tuning; detector tests
NEUTRINO AREA			
15-ft $\nu/H_2$ and Ne #53A and 15-ft w/Emulsion #564	NO		additional 27 K pictures; run completed
Neutrino #531	NO	325	data; short-lived charmed particle studies
Neutrino #594	NO	280	data and flash tube calorimeter tests
MESON AREA			
Particle Search #515	M1	75	setup, tuning, timing
Hadron Jets #557	M6	5	setup and calorimeter tests
Elastic Scattering #577	M6	210	data taking completed
Kaon Charge Exchange #585	M4	185	end of data collection
Beam Dump #613	M2	195	data; background studies
Direct Photon Production #629	M1	120	finish data taking
TOTAL HOURS FOR HIGH ENERGY PHYSICS		2345	

FACILITY UTILIZATION SUMMARY - MARCH 1981

I. Summary of Accelerator Operations

	<u>Hours</u>
A. Accelerator use for physics research	
High energy physics research	317.2
Accelerator physics research	-
Subtotal	317.2
B. Other Activities	
Program interruption	324.7
Accelerator setup and tuning to experimental areas	11.5
Subtotal	336.2
C. Unscheduled interruption	90.6
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	13	2345	
B. Bubble chamber experiments	1		26.7 K pictures
C. Emulsion experiments	-	-	
D. Special target experiments	-	-	
E. Test experiments	-	-	
F. Engineering studies and tests	-	-	
G. Other Beam Use	-	-	
Totals	<u>1</u>	<u>2345</u>	

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

A. Beam accelerated in Main Ring	21.5	
B. Beam delivered to experimental areas		20.1
Proton Area	5.1	
Neutrino Area		
Slow Spill		0.24
Fast Spill		11.2
Meson Area	3.6	



Annual User's Meeting Committee. From left Phyllis Hale,  
Lawrence Jones of Michigan, and Sherry Balika.  
(Photograph by Fermilab Photo Unit)

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Graduation of the second Saturday Morning Physics class.  
(Photograph by Fermilab Photo Unit)