

SUMMARY OF OPERATIONS - DECEMBER 1979

Program Planning Office

The high energy physics research program through the month of December included a three-day period of accelerator operation at 200 GeV to allow Neutrino #616 to do some necessary calibrations. During this period the Proton Area was run parasitically. The failure of a roughing pump in the Switchyard during the 200-GeV running resulted in oil contamination of the Proton splitting septa. The pump was replaced, but the contaminated septa would not hold sufficient voltage to resume operation at 400 GeV. Clean-up and replacement efforts resulted in an alternate configuration of septa that allowed the Proton Area program to resume running at very limited intensities. This condition persisted through the end of the 400-GeV running period on Monday, December 24, when the Laboratory went into a standby mode for the holidays.

Data taking for Hadron Dissociation #272 (M1) was completed early in the month in the Meson Laboratory. A transition between Hadron Dissociation #272 and Particle Search #515 was made during the 200-GeV running period and startup activities for E-515 got underway. Charged Hyperon Magnetic Moment #620 completed Σ^- data taking on December 16. About three days of equipment changes and tuning were required before Σ^- data taking got underway.

Thanks to extremely steady accelerator operation at 200 GeV, Neutrino #616 completed all of the measurements that had been planned for the dedicated calibration run. The remaining 400-GeV running during the month was utilized for Cherenkov studies and neutrino data taking with the dichromatic train tuned to 250 GeV.

FERMI NATIONAL ACCELERATOR LABORATORY
 MONTHLY OPERATIONS HISTORY
 DECEMBER 1979

Date	Accelerator	Internal Target Area	Proton Area	Neutrino Area	Meson Area
Sat. 12/1	$\sim 2 \times 10^{13}$ ppp @400 GeV	OFF	326 (PW) 516 (PE)	616 (NO)	272, 620, 557, Open (M3) (End 272)
Sun. 12/2	1.0 sec flattop		P-Center Tests		
Mon. 12/3	$\sim 2 \times 10^{13}$ ppp @200 GeV				Meson Area OFF
Tue. 12/4	0.5 sec flattop				
Wed. 12/5	Accelerator Necessary Repairs, & Startup @400 GeV				
Thu. 12/6		OFF	326 (PW) 516 (PE)	616 (NO)	620 (M2) 557 (M6)
Fri. 12/7			P-Center Tests		584 (M3) 515 (M1)
Sat. 12/8			Proton Area OFF due to PSEP failure		
Sun. 12/9					
Mon. 12/10					
Tue. 12/11					
Wed. 12/12	Accelerator Maintenance				
Thu. 12/13					
Fri. 12/14	Reprs: FO Ion pump; Vert. damper Tuning: PLAMB losses	OFF	326 (PW) 516 (PE)	616 (NO)	
Sat. 12/15			P-Center Tests		
Sun. 12/16					
Mon. 12/17	Necessary Repairs $> 2 \times 10^{13}$ ppp @400 GeV				Same as above but, 580 (M6) 613 Tests
Tue. 12/18	1.0 sec flattop				620 (M2) 557 (M6) 584 (M3) 515 (M1)
Wed. 12/19	Necessary Repairs $> 2 \times 10^{13}$ ppp				
Thu. 12/20	Linac vacuum				
Fri. 12/21	@400 GeV				
Sat. 12/22	1.0 sec flattop				
Sun. 12/23	Reprs: BK Vacuum				
Mon. (H) 12/24	Facility Shutdown				
Tue. (H) 12/25	Facility Shutdown				
Wed. 12/26	Facility Shutdown				
Thu. 12/27	Facility Shutdown				
Fri. 12/28	Facility Shutdown				
Sat. 12/29	Facility Shutdown				
Sun. 12/30	Facility Shutdown				
Mon. 12/31	Facility Shutdown				

BEAM UTILIZATION BY

	<u>Beam</u>	<u>Hours</u>
PROTON AREA		
Di-Muon #326	PW	190
Photoproduction #516	PE	220
P-West Beam Tests	PW	15
NEUTRINO AREA		
Neutrino #616	NO	400
MESON AREA		
Hadron Dissociation #272	M1	40
Particle Search #515	M1	280
Hadron Jets #557	M6	170
Particle Search #580	M6	60
Particle Search #584	M3	110
Charged Hyperon Magnetic Moments #620	M2	330
TOTAL HOURS FOR HIGH ENERGY PHYSICS		<hr/> 1815



EXPERIMENTAL ACTIVITY - DECEMBER 1979

Activities

setup and tuneup of experimental apparatus to measure muon pairs produced by pions

setup and tuneup of a large magnetic spectrometer in the Tagged Photon Lab

studies to improve the beam in the P-West High Intensity Area

data and calibrations for the measurement of neutrino structure functions

completed; study of the coherent dissociation of π , K, and p into strange particles

setup and tuneup of experimental apparatus for the study of charmed particles produced in hadronic interactions

tuneup and calibrations; study of hadron jets with the calorimeter triggered multiparticle spectrometer

setup and tuneup of experimental apparatus to search for new resonances with the decay channels $K_S^0 K_S^0$, $K^0 K^0 \pi$, $\Lambda \bar{\Lambda}$, and $\Lambda \bar{\Lambda} \pi$.

setup and tuneup; search for the decay of new long lived neutral particles

data to measure the magnetic moments of Σ^+ , Ξ^- , Σ^- , and Ω^- hyperons

FACILITY UTILIZATION SUMMARY - DECEMBER 1979

I. Summary of Accelerator Operations

	<u>Hours</u>	
A. Accelerator use for physics research		
High energy physics research	391.4	
Accelerator physics research	2.6	
Subtotal		394.0
B. Other Activities		
Program interruption	44.2	
Accelerator setup and tuning to experimental areas	15.5	
Subtotal		59.7
C. Unscheduled interruption		106.3
D. Unmanned time		<u>184.0</u>
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	1800	1 completed
B. Bubble chamber experiments	-	-	
C. Emulsion experiments	-	-	
D. Special target experiments	-	-	
E. Test experiments	-	-	
F. Engineering studies and tests	1	15	P-West beam studies
G. Other Beam Use	-	-	
Totals	<u>10</u>	<u>1815</u>	

III. Number of Protons Accelerated and Delivered ($\times 10^{18}$ p) at 400 GeV

A. Beam accelerated in Main Ring	2.31
B. Beam delivered to experimental areas	2.12
Proton Area	<0.01
Neutrino Area	
Slow Spill	0.69
Fast Spill	0.92
Meson Area	0.51



If the groundhog sees his shadow on February 2 this year it will hardly matter that Fermilab is in store for six more weeks of winter. This has been one of the mildest winters in a decade, and even the groundhogs have been seen running up and down the berm playing tag with their shadows.

(Photograph courtesy of Robert Poole)



Arthur and Janice Roberts retiring from Fermilab (talking to Lou Voyvodic and Phil Livdahl). They have moved to Hawaii to work on the DUMAND experiment.

(Photograph by Fermilab Photo Unit)