SUMMARY OF OPERATIONS - AUGUST 1978

Program Planning Office

The accelerator and experimental facilities were operated throughout the month of August for experiments with two interruptions for maintenance and development activities. The variation of demands on the accelerator during the month were considerable. These came about due to unexpected failures of the target box for the tagged-photon beam in Proton-East and due to the request for 200-GeV beam by the neutrino experiment in order to calibrate equipment used to measure the flux of secondary particles from the dichromatic neutrino beam. As a result of these varied demands the proton intensities were much less than normally available.

The principal experimental activities were centered around use of the neutrino beam. The 15-ft bubble chamber run was ended in mid-August when a period of testing and calibration began in the Neutrino Area. A total of 96,000 pictures were taken during this run for the chamber. Two experiments were completed in the Meson Area. Both of these used the neutral hyperon beam at the end of the M2 beam line. By the end of August several other experiments were nearing completion as the time for a month-long shutdown in September neared. This shutdown will also begin the interruption of activities in the Meson Area for a six-month period.

FERMI NATIONAL ACCELERATOR LABORATORY
MONTHLY OPERATIONS HISTORY
AUGUST 1978

Date	Accelerator	Internal Target Area	Proton Area	Neutrino Area	Meson Area
Tue. 8/1	Accelerator Studies & Tuneup for HEP				
Wed. 8/2	Reprs: Cap tree, Booster RF, MR Vac	OFF	High Int.Bm.Tsts. (PW) OFF for repairs (PE) OFF (PC)	Neutrino 356 & 15'ν/H_2&Ne #380 (NO)	Ξ^0 Prod. 495 (M2) Part.Search 490 (M1W) Incl.Scatt.451 (M6E) K Chg.Exch.585(M4) π-μ Atoms 533(M3)
Thu. 8/3	Startup for HEP				
Fri. 8/4	~1.5x10^{13}ppp @400 GeV				
Sat. 8/5					
Sun. 8/6	(1.25 sec flattop)				
Mon. 8/7	Accelerator Studies and Maintenance & Development				
Tue. 8/8					
Wed. 8/9					
Thu. 8/10	Accelerator Startup				
Fri. 8/11	Tuning:High Extraction Losses		High Int.Bm.Tsts. (PW) OFF (PE) OFF (PC)	Neutrino 356 & 15'ν/H_2&Ne#380 (NO)	Part.Sch.490(M1W) Incl.Scatt. 451 (M6E) Ξ^0Prod.495 (M2) K Chg.Exch. 585 (M4) π-μ Atoms 533 (M3)
Sat. 8/12	~1.3x10^{13}ppp @400 GeV (1sec flattop)	OFF			
Sun. 8/13					
Mon. 8/14	Reprs:MR Gnd.Fault			(15' B.C. OFF) Neutrino 356 (NO)	
Tue. 8/15	Reprs:Tev.Anode PS, Linac RF,SWYD Loss Mon.				
Wed. 8/16	Extr.Loss Diagnostics		Photoprod.152B (PE) High Int.Bm.Tsts. (PW) OFF (PC)		
Thu. 8/17	Reprs:H$^-$source;BOS				
Fri. 8/18	~7x10^{12}ppp @200/400 GeV (1 sec flattop)				
Sat. 8/19	Reprs:SWYD Controls				
Sun. 8/20	6x10^{12}ppp 200 GeV(1 msec fast spill), 400 GeV(1 sec flattop)				
Mon. 8/21					
Tue. 8/22	set up 200 GeV front porch				
Wed. 8/23	200 GeV front porch, 400 GeV flattop(1 sec)				
Thu. 8/24	Power Glitch + MRRF reprs.		OFF due to target box(PE) High Intensity Beam Tests(PW) OFF (PC)		p Polariz.505 (M2) Part.Sch.490 (M1W) Incl.Scatt.451 (M6E) K Chg.Exch.585(M4) π-μ Atoms 533(3)
Fri. 8/25					
Sat. 8/26	1.7 & 0.3x10^{13}ppp @400 GeV (1 sec flattop)				
Sun. 8/27				OFF - substation failure	
Mon. 8/28	Maintenance & Development				
Tue. 8/29					
Wed. 8/30	Sitewide power failure				
Thu. 8/31	Accelerator Startup; replace MR magnet & align new septum				

BEAM UTILIZATION BY

	Beam	Hours
PROTON AREA		
Photoproduction #152B	PE	100
High Intensity Beam Tests	PW	100
NEUTRINO AREA		
Neutrino #356	N0	280
15' ν/H_2+N_e #380	N0	-
Nuclear Fragments #466	N0	-
Quark #549	N0	-
MESON AREA		
Particle Search #490	M1W	270
Ξ^0 Production #495	M2	290
p Polarization #505	M2	50
Λ β-Decay #361	M2	40
π-μ Atoms #533	M3	370
K Charge Exchange #585	M4	380
Inclusive Scattering #451	M6E	330
Nuclear Chemistry #81A	M0	-
TOTAL HOURS FOR HIGH ENERGY PHYSICS		2210

EXPERIMENTAL ACTIVITY -- AUGUST 1978

Activities

data: for study of elastic and inelastic Compton scattering

engineering tests: of a new 200 GeV high intensity pion beam

data, calibration & tests: for study of deep inelastic ν and $\bar{\nu}$ scattering using a dichromatic beam

data: bubble chamber experiment with heavy neon/hydrogen fill; 44K pictures taken during August for a total of 96K pictures for this run.

data: 2 targets exposed

tests: 1 target exposed

data: for study of charmed particle production in a high resolution streamer chamber

completed: measurement of the production spectrum and polarization of Ξ^0 and $\bar{\Lambda}^0$ hyperons.

completed: search for proton polarization produced in 400 GeV inclusive reactions and detected through study of Λ^0 decays

setup and tests: for future measurement of Λ^0 β-decay parameters

data: for measurement of the rate of formation of π-μ atoms in K_L^0 - decay

data: for study of KN charge exchange scattering

data: for study of the A - dependence of inclusive processes

data: 8 targets exposed

FACILITY UTILIZATION SUMMARY -- AUGUST 1978

I. Summary of Accelerator Operations

		Hours	
A.	Accelerator use for physics research		
	Accelerator physics research	33.0	
	High energy physics research	383.7	
	Subtotal		416.7
B.	Other activities		
	Accelerator setup and tuning to experimental areas	6.4	
	Program interruption	114.3	
	Unscheduled interruption	206.6	
	Subtotal		327.3
C.	Unmanned time		-
	Total		744.0

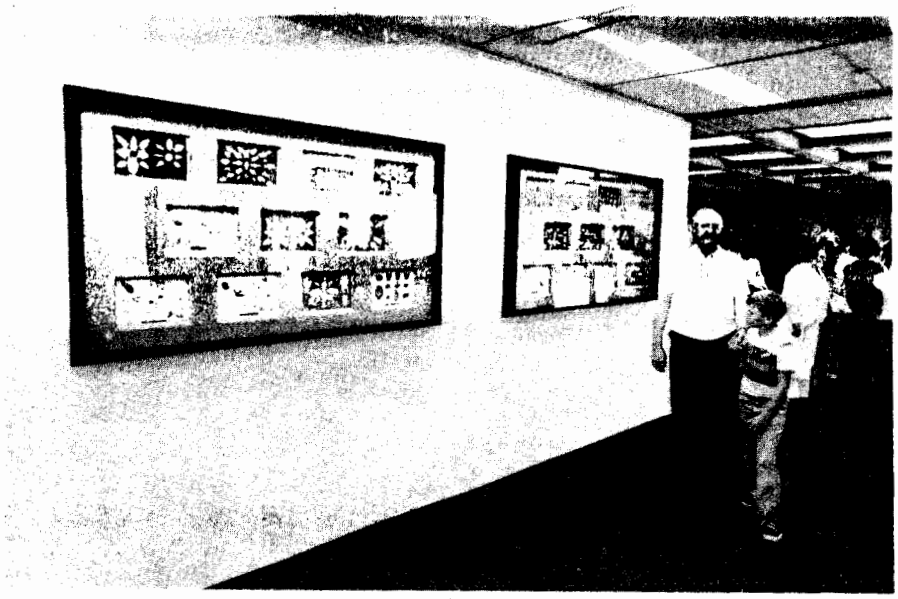
II. Summaries of High Energy Physics Research Use

		# of Expts.	Hours	Results
A.	Counter experiments	9	2110	2 exp. completed
B.	Bubble chamber expts.	1	-	44 K pictures in 15 ft
C.	Emulsion expts.	0	-	
D.	Special target expts.	3	-	11 targets exposed
E.	Test experiments	0	-	
F.	Engineering studies and tests	1	100	high intensity beam tests
G.	Other beam use			
	Totals	14	2210	

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

A.	Beam accelerated in Main Ring	1.37	
B.	Beam delivered to experimental areas	1.24	
	Meson Area	0.49	
	Neutrino Area		
	Slow Spill	-	
	Fast Spill	0.62	(includes beam at both 200 and 400 GeV)
	Proton Area	0.13	

John Satti and Leonard Sawicki inspecting a low-current superconducting magnet they are building for use in the Proton Area.
(Photograph by Fermilab Photo Unit)



A portion of the Mier collection as it is mounted for exhibition on the 15th floor of the Central Laboratory.

(Photograph by Fermilab Photo Unit)

Mr. August Mier visiting the permanent exhibit of his collection of native American artifacts found on the Fermilab Site.

(Photograph by Fermilab Photo Unit)