JADE LOGBOOK I 1337

Ein Brunnen-Erzeugnis

JADE - LOGBOOK I

10.3.79 - 9.8.79

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

11.3.79 3^{00} R. Felst

Eichung der pick-up Elektrode gegen Strom: 1.6 V ≃ 2 mA auf 485 scope

TOF und beam-pipe counter an den "Catch" gelegt

Raten: pick up electr.

pro 10^6 TO signals	⩾ 1	⩾ 2	⩾ 3	⩾ 4	counter
1.7 V	17000	11000	8900	7500	TOF
1.6 V	18700	4700	3700	3100	beam pipe
1.6 V	3600	2800	2500	2100	TOF * matrix

‖ These rates vary with beam conditions up to factor 5 ‖

please sign your entry in logbook and please write in English

11.3.79 9^{00}

The LG-pedestal determination goes now with software + TO trigger alone.
You need a pulsegenerator only in trigger input 7. The program waits for 1 sec; during this time the adc's receive gate + fast clear. Then the program reads one event and waits again for 1 sec. This is repeated 10 times.
The problem with the first read is solved. Before the initialisation sequence was:
camac 2 - enable processor - write control word - enable gates + fastclear. Now the new sequence is
camac 2 - write control word - enable processor - enable gates + fastclear.
There is still a problem with the first read, after the gate + fast clear frequency is changed. The adc's 2+3 in each crate are much more affected than the others. R. Eichler

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trans	Remarks

12.3.79 ~~Weber~~ Weber

After taking over at 11.30, 11.3.79, failure of synchrotron due to rain! synchrotron back on 3.00, get maximum current of ~ 2 mA

Check TOF * Matrix rate: ~ 1900 per 10^6 TO signals. o.k. (set to ⩾ 4)

Wagner tries to record events with jet chambers (TOF * matrix) on tape
4,00 ohm ~ 1.35 mA

Record several times 10^4 evts, ~~[illegible]~~ on tape. But events displayed on screen do not show beam-pipe or TOF-signals, but only jet chamber signals. What is wrong?*

At 6.20 PETRA operator claims beam current is ~ 14 mA (with same setting as above). According to our measurement, it has decreased by ~ 4 since 4.00 o'clock!

* Event display and -printout seem to indicate, that there is not the correct time correlation between counter gates and counter signals; while the triggers rate agrees with the values from yesterday, no hits were recorded in TOF counters or beampipe counters, no tracks were seen in chambers.

NB: The ID-chamber was running for 3.5 hrs and looked very clean. A.W.

12.3.79 W. Bartel

21^{30} Water cooling for beam pipe on

13.3.79 14^{20} PETRA down because of water leak, therefore compensating magnets switched on for tel R.F (PKR informed)

16^{30} I_{magn} = 7500 A but PETRA ~~seems to have~~ has no beam

I_{comp} = 803 A (with only kompensatingmagnets at 800 A PETRA could still inject)

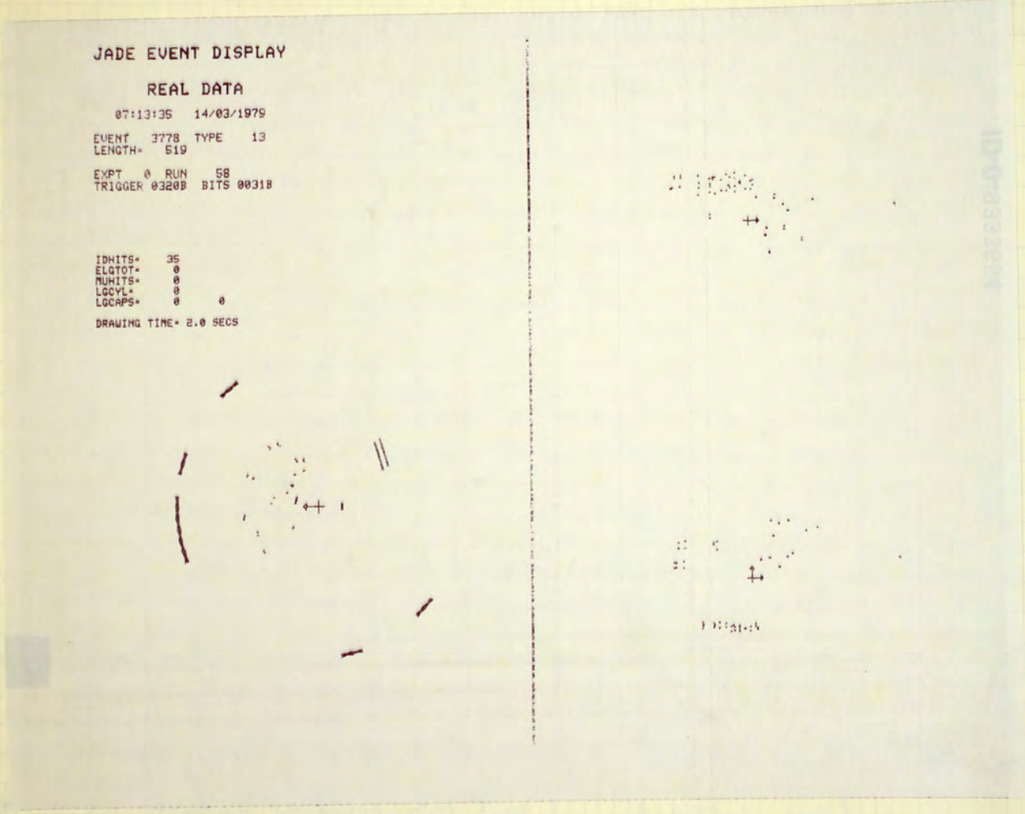
18^{45} PETRA Injektion o.k.

NRN	date	Start	Stop	I^+	I^-	Veh	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

14.3.79 1h ade for TOF counter 19-24, 61-66 has short on -24 V. Taken out of crate. ~~No replacement~~. R. Eichler
For the time being replaced by module without AC coupling.

2.2 V × (2 from splitter) ≙ 2.3 mA
2.5 V × 12 ") = 4 mA

Checked and adjusted timing of gates.



2 TOF *LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Trans	Remarks

14.3.79 6^00 Warner, Peters, Field, Wagner, Foster

Took one tape with one beam only (F11-136) ~ 11000 ev.

Run 57, ~ 3 mA Trigger ≥ 2 TOF (via Matrix), Matrix width 13

difficulties: event display only worked once
tape writing only once. For the next tape we got the message "write ring missing"

Headglass off
In the beginning ADC gates (TOF) not properly timed.

3.5 mA rates per 10^6 T0: TOF Prompt Matrix

≥1	≥2	≥3	≥4	TOF	Matrix width
4285	2984	2113	1515	AND	13
4828	3775	3040	2415	OR	13
3114	2060	1385	937	AND	7
3729	2788	3195	1660	OR	7

Magnet has run since 16^00 yesterday – with two trips one –: Power house too hot; door must be kept open.
two –: Inlet water temp control not working properly – Tech. throttled water without telling us to check effect.
Effect was to heat coil up whereupon Klixon tripped.
Problem with water control is that the auto throttle is not letting enough lake water through the heat xchange so we dont use enough heat. R. Marshall

Tape F11-136 taken to the IBM U Bartel 14.3. 8^00 11^30 Back to Univ. R. Feist

Magnetic tape drive seems ok - ZDAS2:DATA (Configure for play-back) was faulty 12^40 14. Hilbert

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

16.3.79 PDi

21^{00} Temperature in the counting house rises steadily. Is now 25° above disc-drives.

Herrn Schult angerufen. Er kommt.

22^{00} Luftklappen waren verstellt. Temperature goes down.

17.3.79 HEM

19^{05} Three DL8 crates gave audible warnings within one minute! One had Ken Rail lamp on - the other two did not. Power to those crates turned off

19^{10} For three now read four! Herr Wagner says keep them off for a while then turn them back on.

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30} m^{-2} sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Trans	Remarks

17.3.79 7^{00} Beginn mit 3 Testschichten

7^{30} $I^- = 0.75$ mA, $E_{Strahl} = 11.3$ GeV Beginnen mit dem timing

Magnet ~~aus~~ 7500 A ≙ 4873 G

09.45 DL8 Crate trip on fan fail. DL8 90–95
09.47 DL8 " " " " " DL8 48–54
09.47 DL8 " " " " " DL8 90–95 — Left switched off
09.59 DL8 " " " " " DL8 48–54 — " " "
10^{00} neue Füllung angefordert

11^{30} $I^- = 0.9$ mA, $E = 14$ GeV

14^{00} $I^- = 7$ mA $E = 6.5$ GeV

15^{00} $I^- = 1.9$ mA $E = 6.5$ GeV

15^{40} NORD hung on level 14 - when restarted ZDAS came on terminal 1 - ZDASX obviously corrupted. Reloaded All segments WEM

T1 timing. Status so far Poti T0 - T1 = 7.80, ≙ 270 nsec Delay between NIM Signals from cards "Deadtime" (leading Edge) to "Start DL8" (Leading Edge)
If you don't see Start DL8, put Logics to Permanent accept and DL8 on.

Purpose of measurement: How early can T1 be? Safety margin between available T1 information and DL8 delay cables.

T0 - T1 delay Helipot 6.4 ≙ 200 nsec 10% } 1 TOF
5.8 nothing
6.2 nothing (5 Till)
7. 7.5 ← 1/2 144 277 6.75 255 255 } LG 1 GeV
8. 534 255
9 462 244
650 148
600 0

NRN	date	Start	Stop	I^+	I^-	Veh	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

16 40 magnet tripped

Matrix 4 TOF 4 BP ~~1 GeV~~ pv 10^6 to

Hpot		
9,00		5850
8,00		5600
7,50		5500
7,00		2160 ← 1/2
7,25		5700

2 TOF × 2 BP × LG (1 GeV (pv 10^7)

Hpot		
9,00		79
8,00		69
7,00	6,75 ← 1/2	75 28
6,50		3

Set Helipot 750 ≙ 250 nsec for to – T1 delay

18^{00} 6,5 GeV, 2,5 mA

18^{50} 20 mA

19^{00} – 20^{40} RF dead, a sextupole dead

22.30 Start writing a tape with lead glass trigger.
Trigger ≥2 TOF via Matrix (width 13) · LG (threshold = 600 MeV)
tape is not meaningful because beam losses tripped
some dambe.

Repeat rates with previous beam → tape F11 138
LG threshold ~ 800 MeV overwritten

2 TOF · LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ 10^{30} m^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Trans	Remarks

N. Ortb

Lead Glass total energy trigger rate

1). 6.5 GeV, 6.3 mA e^-, stable, optics M25 :

total Energy single rate with 80 nsec strobe.

$\Sigma E \geq 1$ GeV ~ 3/sec , $\Sigma E > 2$ GeV ~ 0.4/sec, $\Sigma E > 3$ GeV ~ 0.08/sec, $\Sigma E > 4$ GeV ~ 0.05/sec

2) 6.5 GeV, 0.7 mA e^-, unstable beam :

$\Sigma E > 1$ GeV ; 30/sec

(BP * TOF, n22, width 13) ; 300/sec

$(\Sigma E > 1\text{ GeV}) * (BP * TOF, n22, \text{width } 13)$ 0.05/sec

3) 0.8 mA stable beam

$\Sigma E > 800$ MeV ; 40/sec

(BP × TOF, n22, width 13) ; 320/sec

$(\Sigma E > 800\text{ MeV}) * (BP \times TOF, n22)$ 0.15/sec

conclusion :

⇒ ① If beam is reasonably stable we probably can set (ΣE-alone) trigger threshold at a few GeV.

② Putting ($\Sigma E > 1$ GeV) in coincidence with (Beam. Pipe + TOF), the trigger rate can be reduced by a factor between 1000 to 3000

Dittman/Kübler

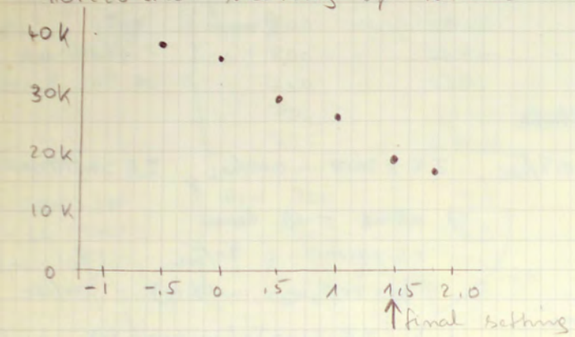
Timing test of JDAS : real events 1 mA beam T2-trigger ≥1 Track, no field
event length 2000 – 4000

configure with: 2DAS1 = full task 2 buffers + Nord50 all ~~other~~ analysprograms running : 2.2 /sec
2DAS1$_{mod}$ = 2 buffers . Nord50 has not analysed jet-chamber tracks, no Pb-glass ✓
only error checks + histogramming 10 /sec
2DAS1$_{dummy}$ = 2 buffers . Dummy Nord50 program 20 /sec
2DAS∅ = 1 buffer . No Nord50 program 20 /sec

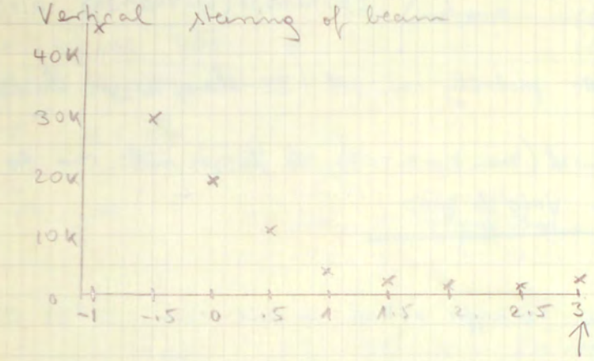
NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

• 2 TOF via Matrix

Horizontal steering of beam



Vertical steering of beam



Take another tape F11 137, Run 72
LG threshold is now ~450 MeV

19.3.79 2.30h.

T2 trigger was checked roughly and seems to produce more tracks in the events.

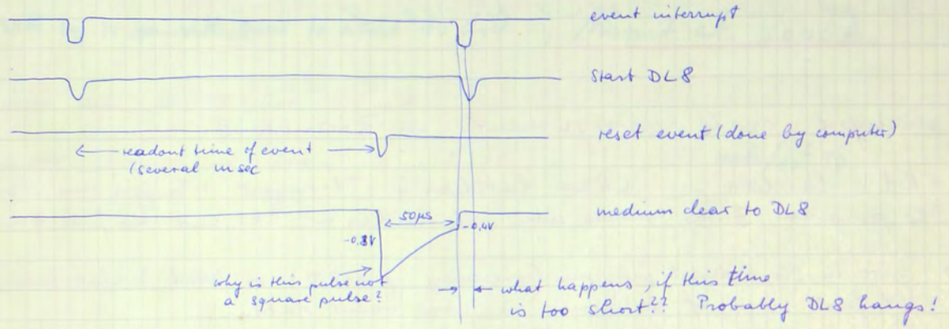
Take tape: 2 TOF v. Matr. × T_2 (2 tracks) Default param. T2
Run
Tape F11 138 On the same tape after ev. 2400 } no magnet
2 Tof v. Matr. × T_2 (4 trks) ev. 2500 }

3rd file: magnet on, T2 (≥1 track) (field .695 on DVM)
(≈ 6950 amps)

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Trans	Remarks

With T2-trigger and "medium" clear to DL8 there ~~were~~ problems with timeout of DL8. Several DL8's hang, each time one another one. The effect became worse with time and was there after one one of gate/clear even with a T1 trigger (without clear!) After ca. 30 min. the DL8's recovered and behave normal now. The temperature (above disk) was always 23°C. Zeidler

Timing diagram for an accepted event by T2



Apparently the clear signal is produced after each accepted event (also T1 accepted)
No hang up happens with a "low" trigger rate (~50 Hz)
Many hang up at a rate of 10^5/sec.

19.10 Event display & ~~DSEND~~ troubles all went away when IBM interface removed! HEP

NRN	date	Start	Stop	I^+	I^-	Veh	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

21.3.79

10:40 Crate #6 of DL8 had a fan failure. switched off. – Totsuka.
(DL8 #179 – 185)

22.3.79 up till the "and - or" condition was on "only 2".
now it is "and" again. the discriminator threshold is
changed from 250 mV to 100 mV. Peter

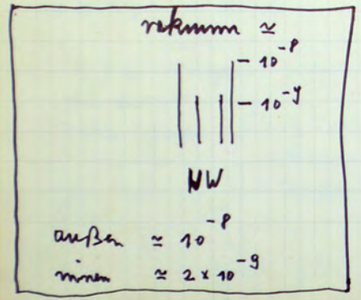
24.3.79 changed crate assignment in Branch 2
8.00
CR1 = latches CR2 = latches + T1-trigger + Triggers run/start/stop
The program TOAS reads now all latches in CR1 and the first 4 units in CR2.

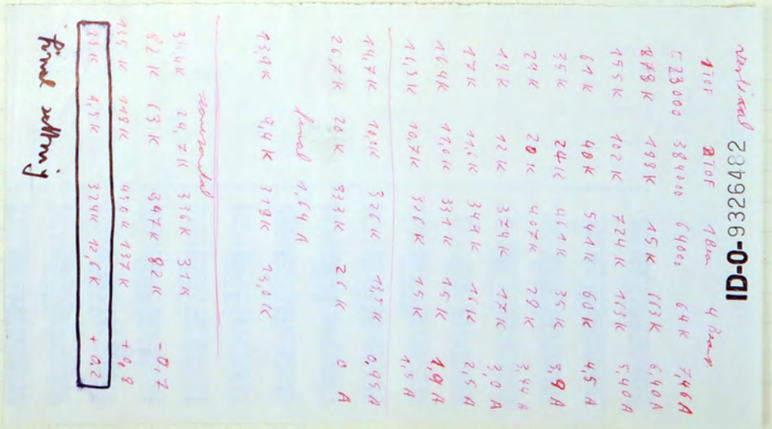
22:00 Error in LG-pedestal program (concerning ped=250) is fixed. I also belief, that the first event of data-run is now valid data.
There is still a problem with the tagging adc's. The pedestals fluctuate by ±50 channels even if Petra is off. R.Eichler

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beam steering rate

TOF-Schwelle 100 mV
condition "AND"





⟨beam current⟩ ≃ 4 mA

2 TOF * LG>1 GeV	LG>4 GeV	tagging	⟨L⟩ 10^{30} cm^{-2} sec^{-1}	∫L dt nb^{-1}	tape	BP [V]	3TOF / 10^6 T$_{acc}$	Remarks

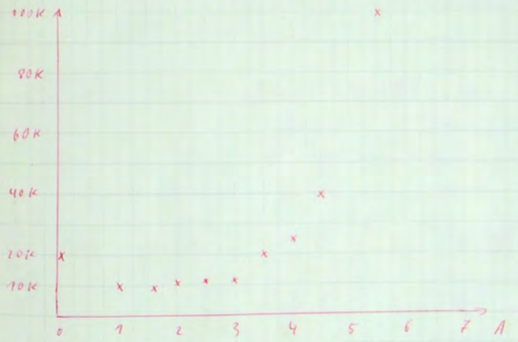
25. 3. 79

Up to now has always been M100 optics in service. PETRA will stay with M100 for these test-shifts.

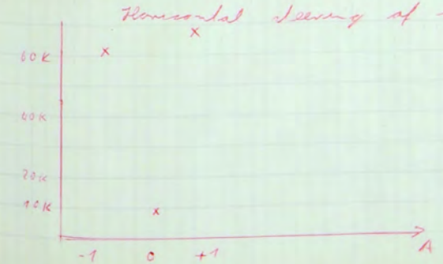
7^{00} Have to announce Steffen and Kolanoski that there are experimental shifts started will try to go with M100 to about 14 GeV, Magnet at 5000 A

9^{30} stable beam at 13.5 GeV 5 mA

vertical steering of beam 2TOF rate/10^6 TO



Horizontal steering of beam 2TOF



NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

10^{40} $I^- = 2{,}6$ mA alte Füllung Magn. field .500

11^{20} $I^- = 4{,}3$ mA 13.7 GeV

1 TOF : 12,7 K 2 TOF : 7,5 K 1 Beam : 51,9 K 4 BP : 9,2 K 10^6 B. events

11^{30} Total E threshold set to ch.1 4GeV, ch2 2GeV, ch3 1GeV, ch4 0.5GeV.
All lead glass timing checked o.k.

14.00 Matrix checked ok (width 24)
Changed faulty BP fadc

Check Rates; Pickup signal 0.64 V

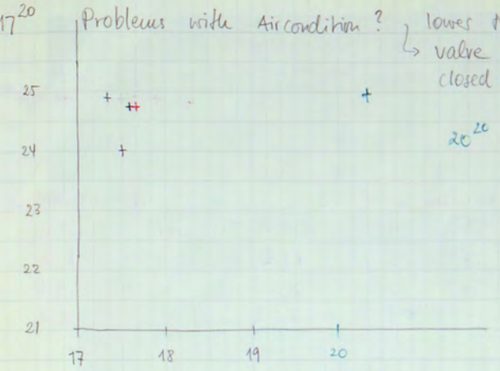
	≥ 1	2	3	4
all per $10 \cdot 10^6$ T_0				
$TOF_{mat\,24}$:	19.9 K	13.9 K	10.5 K	7.8 K
$TOF_{mat\,13}$:	18.1 K	12.8 K	9.7 K	7.1 K

$TOF_{mat\,24}$ means TOF through Matrix width 24

1 $TOF_{mat\,24}$ · LG(500)	:	17	· LG(1GeV) :	4	(took $20 \cdot 10^6$ T_0)
2 $TOF_{mat\,24}$ · LG(500)	:	9	· LG(1GeV) :	3.5	
LG threshold:	.500	1	2	4	GeV
LG single rates	2256	383	28	6	

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 $T_{0\,acc}$	Remarks

17^{20} Problems with Aircondition? → lower thermostat in Aircond. house by 0.5°C to 17.5°C
→ valve controlling hot water flow was oszillation between closed (0) and 0.6 open.



20^{20} Thermostat lowered to 16°C

18 15 stable beam 5 mA 6.5 GeV pickup amplitude 2.6 Volt
beam steering

~~Horizontal~~ ~~Vertical~~ steering (vertical) 5 mA 6.5 GeV 25.3.79 10^{10}

Amp	1 TOF	2 TOF	2 Beam	4 beam
0.5	722 K	584 K	716 K	536 K
1	831 K	719 K	831 K	681 K
-0.5	182 K	118 K	174 K	102 K
-1.0	58 K	35 k	55 k	31 K
-1.5	19 K	11 k	18 k	11 K
-2.0	11	6 k	10 k	6 k ←
-2.5	17	10 k	18 k	11 k

steering (horizontal)

-0.5	9.5	5	9.2	5.3
-1.0	7.5	3.9	7.4	4.3
-1.5	10	5.7	10.5	6.7
+0.5	12	7.6	12	7.8
-0.8	7.4	3.7	7.3	4.3 ←

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Tagg	Remarks

rates: without matrix 1K/sec ~~pro 10^7 accept~~ 1.4×10⁶ 7sec = 10^7 T0

TOF	1x	71 K	BP	1x	177 k
"	2x	37 K	"	2x	70 k
"	3x	22 K	"	3x	53 k
"	4x	13 K	"	4x	40 k

pro 10^7 accept

matrix width 24			600/sec	matrix width 13			matrix width 6		
18 20	TOF	1x	42 k		TOF	1x	36 k	TOF	1x	28 k
		2x	22 k	300/sec	TOF	2x	17 k		2x	11 k
		3x	12 k		TOF	3x	7.5 k		3x	3.9 k
		4x	5.9 k		TOF	4x	3.2 k		4x	1.3 k

LG - threshold	#4	4: .5 GeV	3139 / ~~10^6~~ 10^7 trigger	40/sec	Rates above possibly wrong
12 ~~0~~ counters have	#3	3: 1 GeV	704 "	10/sec	for Crate failure
H.V. off in barrel part	#2	2: 2 GeV	18 "	0.25/sec	
	#1	1: 4 GeV	3 "	0.04/sec	

LG - low threshold + 1 TOF through matrix 24 : 24 pro 10^7

LG - low " + 2 TOF " " 24 : 14 pro 10^7

LG - 1 GeV + 1 TOF matrix 24 : 13

2 TOF matrix 24 : 5

Run 107 T0 Data. Check T1 condition in the Postpone Logic Condition of Action Word (LG - H.V. too high !) Tape F11113

19 25 4 mA beam current (filling of 18 25)

19 35 Up to 19:30, High Voltages of Lead-Glass-Counters were too high.! Now they are set to normal values. (too high on run 107)

Run 108 Tape F111114 Tagging trigger 500 events

Total Energy Trigger from γ-ve tagging PbGlass - No Scintillators in trigger $E > 1.08$ eV

500 triggers in 140 M T0 = 1.7/sec 500/167 / 140/108 = 300/sec

LV 109 Tape F11-115 T0 Random trigger ~~or~~ Magnet on. Jet chamber off.

25.3.79 Beam on 6.5 GeV

18 25 (5 mA)



twice

same data could be seen in the third crate of Lead-Glass-Counter data due to mal-function of ADC-processor.

ex. 26 ⌴⌴⌴⌴⌴⌴⌴⌴⌴ 26 ⌴⌴

12 words

NRN	date	Start	Stop	I^+	I^-	Veh	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 T0 acc	Remarks

16

rates: without matrix — 1K/rec — 1.4×10⁵ — 7.6 — 7 otec = 10^7 T0

TOF	1x	71 K	pro 10^7 T0
"	2x	37 K	
"	3x	22 K	
"	4x	13 K	

BP 1x 177 k

matrix width 24

TOF	1x	42 k
	2x	22 k
	3x	12 k
	4x	5.9 k

18 20

LG - threshold #4 $\int$: .5 GeV 31

120 counters have #3 $\int$: 1 GeV

H.V. off in barrel part #2 $\int$: 2 GeV

#1 $\int$: 4 GeV

LG - low threshold + 1 TOF through matrix 24 : 24 pro 10^7

LG - low " + 2 TOF " " 24 : 14 pro 10^7

LG - 1 GeV + 1 TOF matrix 24 : 13

2 TOF matrix 24 : 5

Run 107 T0 Data. Check T1 condition in the Postpone Logic Condition of Action Word (LG - H.V. too high !) Tape F11113

19 25 4 mA beam current (filling of 18 25)

19 35 Up to 19:30, High Voltages of Lead-Glass-Counters were too high.! Now they are set to normal values. (too high on run 107)

Run 108 Tape F111114 Tagging trigger 500 events

Total Energy Trigger from γ-ve tagging PbGlass - No Scintillators in trigger $E > \sim 1.0$ GeV

500 triggers in 140 M T0 = 1.7/sec — 500/140·10⁶ = 3.6·10⁻⁶

RUN 109 Tape F11-115 T0 Random trigger ~~or~~ Magnet on. Jet chamber off.

17



twice

same data could be seen ✓ in the third crate of Lead-Glass-Counter data due to mal-function of ADC-processor.

ex. 26 ⌴⌴⌴⌴⌴⌴⌴⌴⌴⌴ 26 ⌴⌴

12 words

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 T0 arr.	Remarks

rates: without matrix

TOF	1x	71 K
"	2x	37 K
"	3x	22 K
"	4x	13 K

matrix width 24

TOF	1x	42 k
	2x	22 k
	3x	12 k
	4x	5.9 k

LG - threshold #4 γ: .5 GeV
#3 β: 1 GeV
#2 β: 2 GeV
#1 γ: 4 GeV

120 counters have H.V. off in barrel part

LG - low threshold + 1 TOF through
LG - low " + 2 TOF "

LG - 1 GeV + 1 TOF matrix 24
2 TOF matrix 24

Run 107 T0 Data. Check T1 (LG - H.V.

19 25 4 m A beam current (filling of 18 -)

19 35 Up to 19:30, High Voltages of Lead-Glass-Counters were too high.
Now they are set to normal values. (too high on run 107)

Run 108 Tape F111114 Tagging trigger 500 events
Total Energy Trigger from γ-ve tagging PbGlass - No Scintillators in trigger $E > \sim 1.0$ GeV
500 triggers in 140 M T0 = 1.7/sec

RUN 109 Tape F11-115 T0 Random trigger ~~or~~ Magnet on. Jet chamber off.



twice
same data could be seen in the third crate of Lead-Glass-Counter data due to mal-function of ADC-processor.
ex. 26 ⌴⌴⌴⌴⌴⌴⌴⌴⌴ 26 ⌴⌴
12 words

NRN	date	Start	Stop	I^+	I^-	Veh	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

DATE RUN 107 TAPE 113

I^- 4.1 mA MAGNET A

I^+ mA VACUUM 10^{-9} Torr

TRIGGER PARAMETERS

TOF AND/OR MATRIX-WIDTH LG E-TOT mV

	HITCLL	HITWLL	HITSUM
R1			
R2			
R3			

T2 with TOF DISABLED WIRE LAYER

BROKEN WIRES

FAILURE V34 DL8

TRIGGER CONDITIONS

T1 ACCEPT ALL TØ + Waiting Logics

T1 POSTPONE for Readout Only: 1 Tof Mat 24 and LG 500 MeV

T2 ACCEPT

COMMENTS

SCALERS (per 10^6 TØ)

ALL TRIGGERS	52 255 553	TØ REJECT	49 677 319
TØ ACCEPT	2578 235	T1 REJECT	2557 454
T1 ACCEPT	20 476	T2 REJECT	372
T2 ACCEPT		ALL ACCEPT	20 476

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> 10^{30} m^{-2} sec^{-1}	$\int L dt$ nB^{-1}	tape	BP [V]	3TOF / 10^6 Trans	Remarks

DATE RUN 108 TAPE F11 114

I^- mA MAGNET A

I^+ mA VACUUM 10^{-9} Torr

TRIGGER PARAMETERS

TOF AND/OR MATRIX-WIDTH LG E-TOT mV

	HITCLL	HITWLL	HITSUM
R1			
R2			
R3			

T2 with TOF DISABLED WIRE LAYER

BROKEN WIRES

FAILURE V34 DL8

TRIGGER CONDITIONS

T1 ACCEPT Tags :3-

T1 POSTPONE

T2 ACCEPT

COMMENTS Σ(11.18 + 24.28 34.38 + 44.48) à 10K in 30M TØ

SCALERS (per 10^6 TØ)

ALL TRIGGERS	140M	TØ REJECT	1.070
TØ ACCEPT	138.98M	T1 REJECT	138.98M
T1 ACCEPT	489	T2 REJECT	
T2 ACCEPT		ALL ACCEPT	489

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Magnet 5000 A $I^- = 5$ mA 6.5 GeV Vac $< 10^{-8}$ Torr

T1 POSTPONE : 1 TOF (AND) through MATRIX (24)

T2 ACCEPT ≥ 1 track (ALL) ≥ 2 tracks (ALL)

per 10^7 T0 accept

167

1, T2 parameters default, with TOF Cell 25, 30 set to HIGH

T0 - T2 Poti: 903

Horizontal / Vertical	1TOF	2TOF	2BP	4BP	
0	189	120	233	178	
-0.5	103	64	128	98	←
-1.0	76	50	93	74	
					beam lost
-0.5	59	36	74	56	
Vertical					
-0.5	16	9	21	15	
-1.0	12	6	15	11	
-1.5	8	4	10	7.6	
-2.0	7.2	3.8	9	6.5	
-2.5	6.6	3.5	8.2	6.0	←
-3.0	6.9	3.6	8.6	6.3	

www.welt der physik.de heute schon gelacht?

siehe S. 128/29 Lehmann!

~~track stability test~~ after beam loss shows IQ strange behaviour, shut down

2.00 26.3.79 6.5 GeV, ≃ 1.7 mA

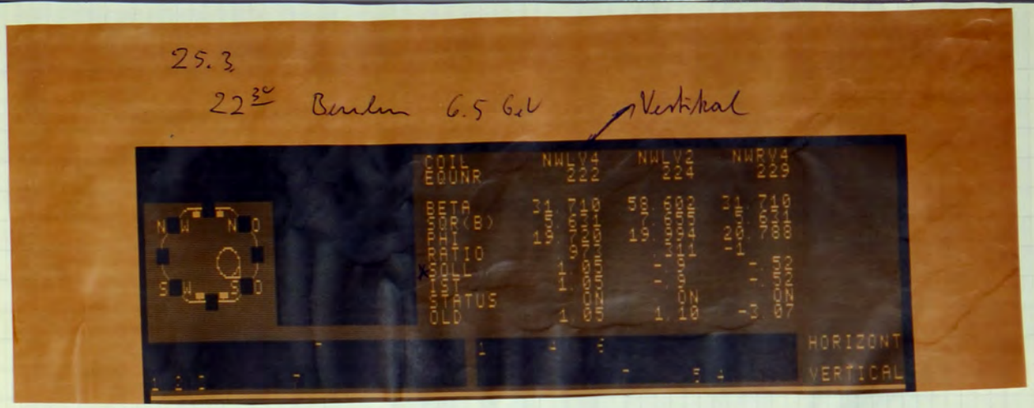
Pb-glass	E ≥ 500 MeV	≥ 1 GeV	≥ 2 GeV	≥ 4 GeV	
	~~442~~ 297	51	12	3	/ 10^7 T0 ← this rate is presumably wrong (ADC's were not enabled, Linear Gate was off!) Y. Totsuka

3.20 48 mA 13.415 GeV stable e⁻ beam (obtained without any difficulties ~~according~~ following ~~to~~ stacking recipe)

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ 10^{30} m^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trace	Remarks

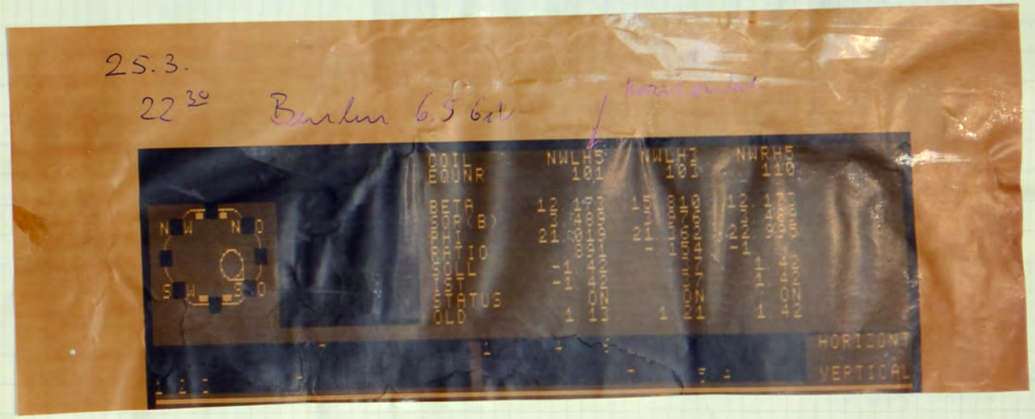
25.3

22.30 Berlin 6.5 GeV Vertikal



25.3.

22.30 Berlin 6.5 GeV horizontal



conclusion: 'Berlin' different after each filling

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

Magnet 5000 A $I^- = 5$ mA 6.5 GeV Vac $< 10^{-8}$ Torr

T1 POSTPONE : 1 TOF (AND) through MATRIX (24)

T2 ACCEPT ≥ 1 track (ALL) per 10^7 TØ accept: 167
≥ 2 tracks (ALL)

1. T2 parameters default, with TOF Cell 25, 30 set to HIGH

TØ - T2 Poti : 903

Horizontal / Vertical	1TOF	2TOF	2BP	4BP	
0	189	120	233	178	
-0.5	103	64	128	98	←
-1.0	76	50	93	74	
					beam lost
-0.5	59	36	74	56	
Vertical					
-0.5	16	9	21	15	
-1.0	12	6	15	11	
-1.5	8	4	10	7.6	
-2.0	7.2	3.8	9	6.5	
-2.5	6.6	3.5	8.2	6.0	←
-3.0	6.9	3.6	8.6	6.3	

~~track structure lost~~ after beam loss shows IO strange behaviour, shut down

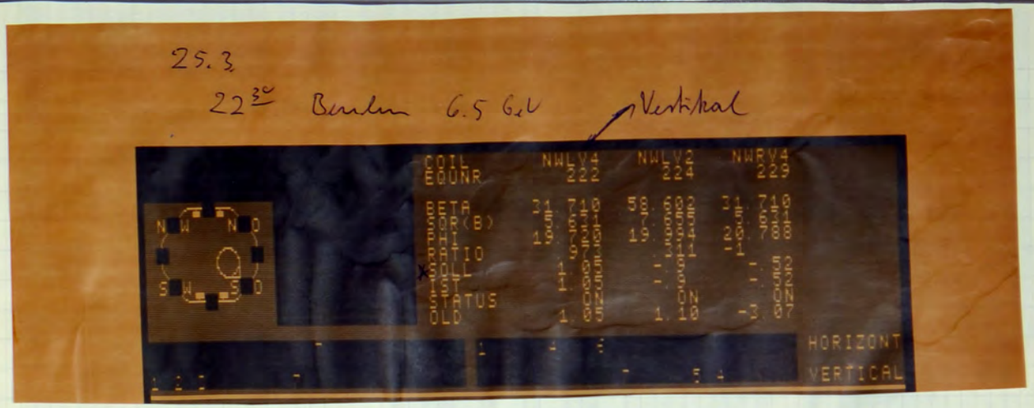
2^{00} 26.3.71 6.5 GeV, ≃ 1.7 mA

Pb-glass	E ≥ 500 MeV	≥ 1 GeV	≥ 2 GeV	≥ 4 GeV	
	~~442~~ 297	51	12	3	/ 10^7 TO ← this rate is presumably wrong (ADC's were not enabled, Linear Gate was off!) Y. Totsuka

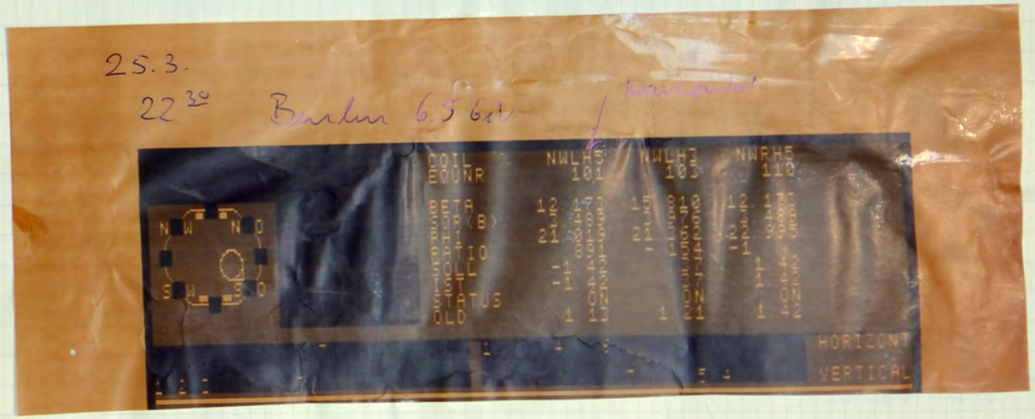
3^{20} 4.8mA 13.415 GeV stable e⁻ beam (obtained without any difficulties ~~according following~~ following ~~stacking~~ receipt)

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trans	Remarks

25.3
22^{35} Bonn 6.5 GeV Vertikal



25.3.
22^{30} Bonn 6.5 GeV horizontal



conclusion: 'Bonn' different after each filling

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2, accept

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T$_{0sec}$	Remarks

4^{35} 5,2 mA , 13.$\not{4}$ GeV ≥ 2 TOF$_{mat\,24}$ 6015 / 10^6 T$_0$

PB	$\geq$ 500 MeV	$\geq$ 1 GeV	$\geq$ 2 GeV	$\geq$ 4 GeV	
	1314	239	40	7	/ 10^7 T$_0$ = 7/sec
	20/sec	3/sec	0.6/sec	0.1/sec	

≥ 1 TOF$_{matrix}$ + PB $\geq$ 500 MeV : 166 / 10^7 T0

6^{20} 5.8 mA , 13.1 GeV

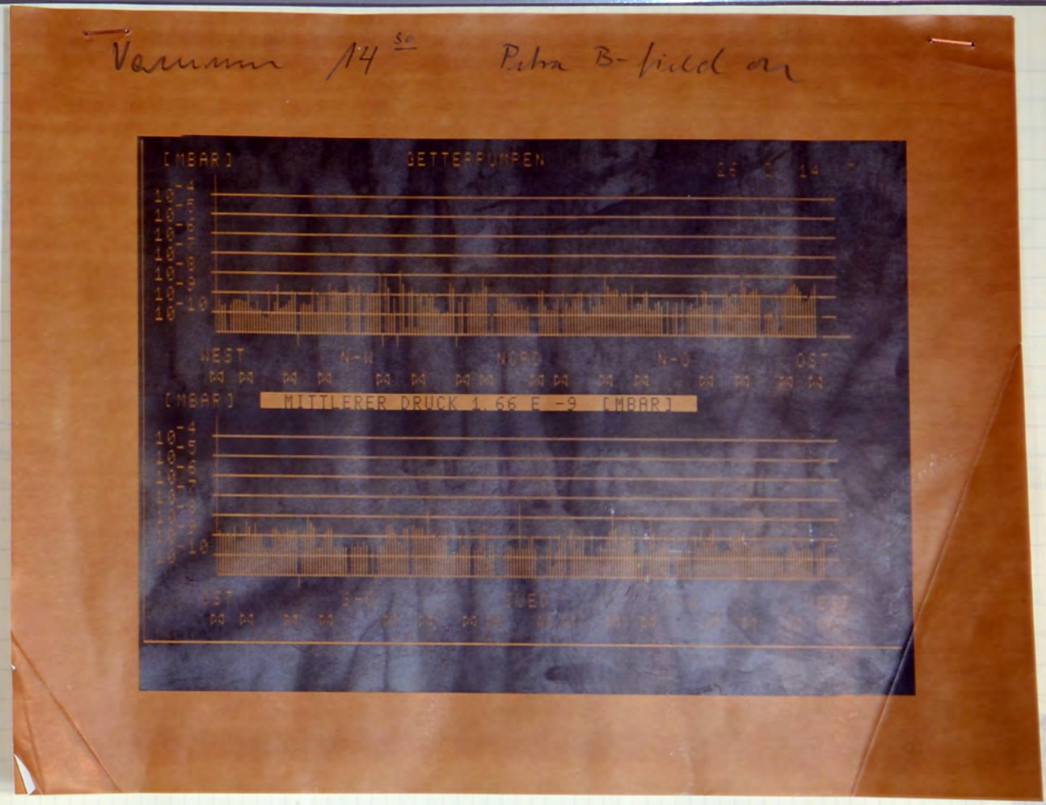
~~≥ 2 TOF$_{mat\,24}$ 34/10^6 T0 (Lecko strange)~~

PB	$\geq$ 500 MeV	$\geq$ 1 GeV	$\geq$ 2 GeV	$\geq$ 4 GeV	
	866	158	17	2	/ 10^7 T0

6^{40} Strahl weg

da END

Vacuum 14 Sa Petra B-field on



NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

4^{35} 5,2 mA , 13.$ GeV ≥ 2 TOF Matrix 6015 / 10^6 T0

Pb	≥ 500 MeV	≥ 1 GeV	≥ 2 GeV	≥ 4 GeV	
	1314	239	40	7	/ 10^7 T0 = 7 sec
	20/sec	3/sec	0.6/sec	0.1/sec	

≥ 1 TOF Matrix + Pb ≥ 500 MeV : 166 / 10^7 T0

6^{20} 5.8 mA , 13.1 GeV

~~≥ 2 TOF Matrix 34 / 10^6 T0 (harter Strahl)~~

Pb	≥ 500 MeV	≥ 1 GeV	≥ 2 GeV	≥ 4 GeV	
	966	158	17	2	/ 10^7 T0

6^{40} Strahl weg

da END

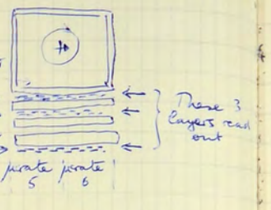
2 TO
LG >

11.50 / 16.3.79 Pbar B-field off



NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

21.10 25/4/79 μ plinth chamber readouts (μ crate 5 & 6) commissioned with temporary pulse-generator in rackroom.



21.16 Waiting for HT.

21.17 TØ is 'OR' of 200 kHz pulse from pulse generator & the central scintillator.
T1 is ≥2 TOF counters : rate ≈ 3.5/s.
Without central scintillator, we pick up cosmics at random : T1 rate is 2/s
TØ pulse width is 1μs. If less, we get time out in LG μ-proc. The LG μ-proc needs at least 800ns for the fast clear. During this time, no gate should come from trigger box.

JADE EVENT DISPLAY

REAL DATA

21:56:50 25/04/1979

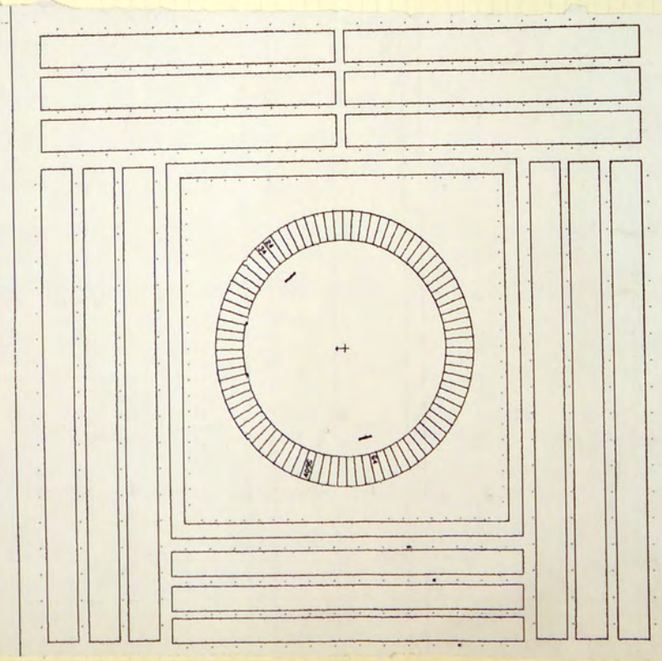
EVENT 1093 TYPE 13
RAW LENGTH= 331

EXPT 0 RUN 161
TRIGGER 0020B BITS 0011B

MAGNET FIELD 0G
BEAM ENERGY 0MEV
CURRENT E+ 0UA
E- 0UA

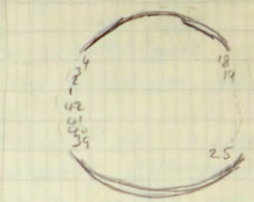
IDHITS= 0
ELGTOT= 4217
MUHITS= 3
LGCYL= 4217
LGCAPS= 0 0

DRAWING TIME= 5.8 SECS

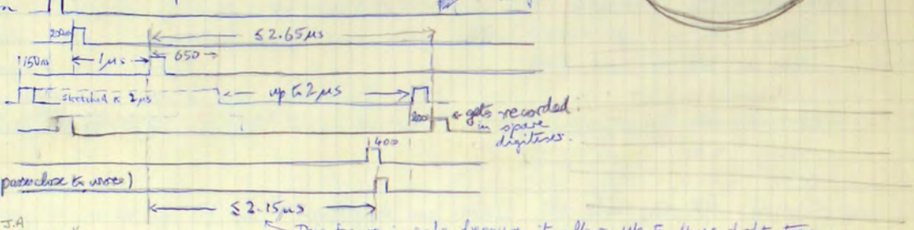


2 TOF * LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^4 Trans	Remarks

11.53 25/4/79 TOF's 1-4, 18-25, 39-42 signals disconnected.



Trigger : TØ is (coincidence scintillator-at origin) .OR. (pulse every 4 μs)
TØ is lengthened to 2 μs to inhibit further TØ's within 2 μs
μ-crates are ~~ready~~ with 'reset' and started with 'reset' delayed by 1 μs



Thurs. 26 Apr. 79 JA JCMA PGM *
0040hrs. Plinth muon chambers all on except 219, 221, 227
Supply 6.4 kV
Sense 1.6 kV
With trigger described above we see 16 good tracks (3 chambers out of 3 in line with trigger counters) out of 50 triggers

0046 Start data on tape F22 B19. Trigger rate 5/sec. Run 162
26/4/79 01.00 JFH FKL *
01.35 Start run 163 on tape F22 B19 file 2 (previous run stopped for unknown reason) — conditions as run 162
02.45 With same trigger we get 12 good tracks out of 50 triggers for proton efficiency.

03.00 Start run 164 on tape F22 B21 file 1
Supply 6.2 kV → 3 good events / 50 triggers
Sense 1.60 kV
03.20 started to look at proton efficiency — have 0 good events / 21 triggers when ...
03.25 Nord + VDU crash — we decide to abort at ever 5851 and change volts.
03.27 reviewed to 6kV. run 165 started on F22 B21 file 2
very low hit rate — 1 hit in 10 (3 tks) none at all in 50 triggers
03.45 Stop run 165. @ ever 3530

* JA = John Allison
JCMA = John Armitage
PGM = Paul Murphy
JFH = John Hassard
FKL = Fred Lockeyer

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

03.50 Start num 166 on F22 B21 file3 <pseudoefficiency>
Supply 6.4kV
Sense 1.60 kV } 12 "events" in 50 trigger using standard 3 chamber criteria
04.25 Stop num 166 @ event 8748

04.30 start run 167 } pseudoefficiency: 13 events in 50 triggers on Tape F22 B22 file 1
Supply 6.6kV
Sense 1.60kV.
05.00 Stop run 167 @ event 7328

05.05 start run 168 } pseudoefficiency: 10 events in 50 triggers on tape F22 B22 file 2
Supply 6.8 kV
sense 1.6kV
05.35 Stop run 168 @ event 7117

05.50 Start run 169 on tape F22 B23 file 1 } pseudoefficiency. 6 events in 50 triggers
Supply 6.4 kV
Sense 1.65kV
06.20 Stop run 169 @ event 6770

06.25 Start run 170 on tape F22 B23 file 2 } pseudoefficiency 3 events in 50 triggers!
Supply 6.6kV
Sense 1.65kV
06.55 Stop run 170 @ event 7563

07.05 start 6.8kV run 171 on tape F22B23 file 3 } pseudoefficiency 3 event in 50 triggers.
sense 1.65 kV
Supply 6.8kV.
07.20 Poor efficiency and high signal current (5μA) ∴ Stop run @ event 3915

Revert to early "high efficiency" condition to see if we reproduce earlier results.
← PETRA came on comparatively late !!!
07.30 Start run 172 on tape F22 B23 file 4. } pseudoefficiency 12 event in 50 triggers.
Supply 6.4kV
Sense 1.60kV
07.50 Stop run 172 @ event 4327

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> $10^{30}cm^{-2}sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Trans	Remarks

PETRA's on now so
were trying to see if low counts/sec of runs like 170 were due to it being off.
0800 run 173 onto F22 B23 file 5
supply 6.6 kV } pseudo efficiency 2 event / 50 triggers.
sense 1.65 kV
0815 Stop run 173 @ event 2560.

Conclusion: Fall in efficiency with $V_S - V_D = 1650$ V is not dependent on PETRA status despite the correlation of low effy with PETRA off — high with it on throughout the night.
The chambers don't like 1650 V !
Normal high efficiency is reproducible by returning to ~6.4 kV : 1600 V.
[pedestal shift]

29.4.79 15.00 Luminosity — re set up T0 from Beam pick up station. Re time gates for Tagging trigger + latches.
Beam lost.
18.00 Linac I failure on DESY
20.00 Luminosity restored.
20.15 ZAS Problems. Ralph Eichler gives instructions by phone to release ZAS — fails.
23.00 Beam lost.

[On Monday 23.4.79 → Tues 24.4.79 00.45.
Measured at 13.575 GeV Positron bunches 1.3ma Each, $2e^-$ bunch 1.6 & 1.5ma
in 1000 seconds (260 M T0)
1A 1B 1S, 5B 5S 30 } 0.03 Hz ⇒ $\mathcal{L} = 1 \times 10^{30}$
5A 5B 5S 1B 1S 29
Wednesday 25.4.79. Rate for (3MZ > 1GeV). (3PZ > 1GeV) ~ 0.25 Hz
consistent with $\mathcal{L} = 1 \times 10^{29}$
Photo measurement at HIS this 0.5 10^{29}]

23.15 Refilling
23.35 Positrons in Petra again.
01.15 Run 322 Positrons only, +Z tagger energy trigger. tape 11K aborted } Tape
323 " " aborted } Trans
02.24 " 324 " aborted
Tape Rewind
02.26 Run 325 $e^- + e^+$ in Petra ~ ~ ~ ~ ~ ~ 5K events
02.56 Run 326 " " " −Z tagger " " " " " 5K events
03.10 " " SAS Jams as ~ 1000 counts
04.00 Pb Glass 3MZ. 3PZ Rate is 0.10 Hz ⇒ $\mathcal{L} = 7 \times 10^{28}$ (?)

NR	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

04.00 Luminosity Estimate $t = 2000$ secs LMZ = 2 ; LPZ = 1 ; SMZ · AND · BTZ = 215
Rates consistent with $\mathcal{L} \approx 7 \times 10^{28}$ (?)

1.5.79 G.H Tagging System tests Tape FILIII Run 329 Trigger $(\Sigma E + z) \cdot (\Sigma E - z)$

DAS jammed again ! ran successfully with no tape for ~ 1½ hours but then 1st run with tape & stops. Tape unit will not rewind.

18.15 Concerning above trouble - no error on console,
LT-RT-PR says ZDAS in RTWAIT with TQ reserved! - dont understand - never seen this

Tried JDAS with tagging system test (no magnetic tape)
Observed that about 12 events came at ~2 Hz, then event count cleared (on trigger box), then counted at high rate. Could the high rate kill things?

During tests I also got "ZDAS outside segment bounds & JSYST(1) cleared !

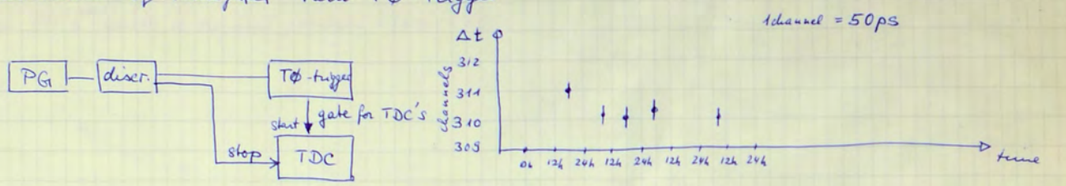
Events seem long with lots of zeros in the middle.

2.5.79 GH Run 330 to tape FILIII testing system.
Stop causes mag tape ran to jam DAS. Run was stopped & tape wrote a record after "STOP" typed. Now ZDAS is in RTWAIT with terminal ? allocated.
Terminal I also locked & not allocated to anything!

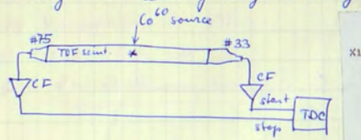
8.5.79 Modification to TØ trigger. Delay box installed between "Magic T" splitter and amplifier.
for e^- only running delay box setting = 0 ns
for e^+ " or e^+ and e^- " " " = 45 nsec

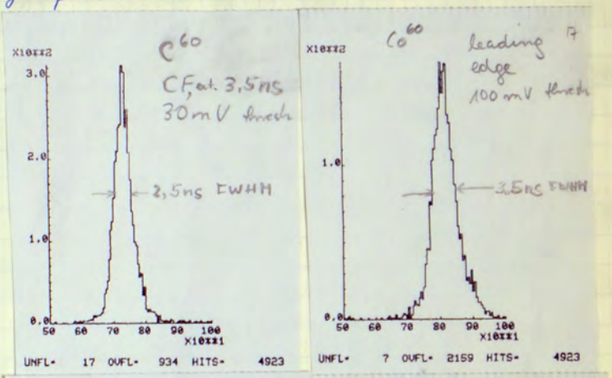
2 TOF $\cdot LG > 1$ GeV	$LG > 4$ GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T-pairs	Remarks

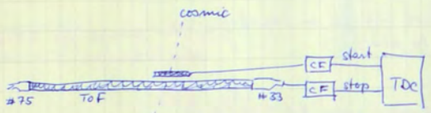
RAE
9.5.79 Measurement of timejitter then TØ-trigger



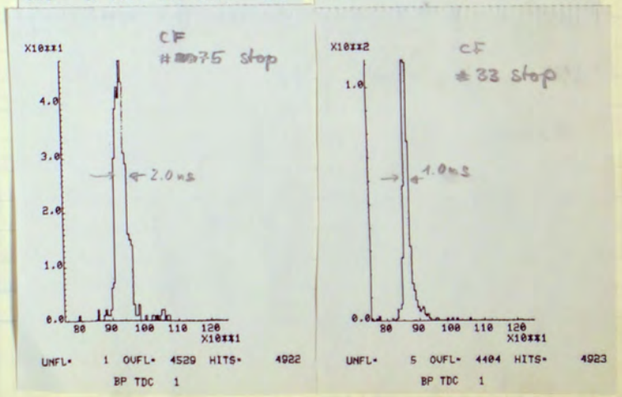
9.5.79
BN, RAE
Constant fraction timing vs. leading edge timing of TOF counter





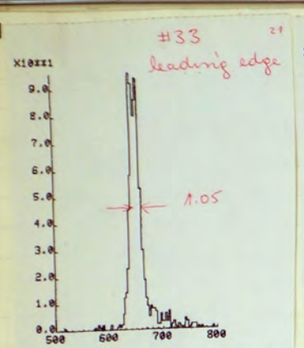


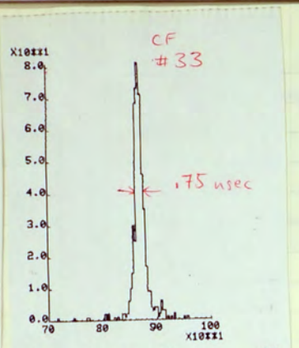
Phototube #75 seems to be worse than #33. The width of the timing curve is independant of the position of the start scintillator with respect to the TOF-counter.

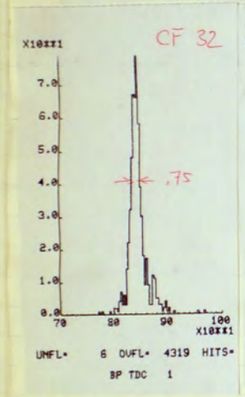


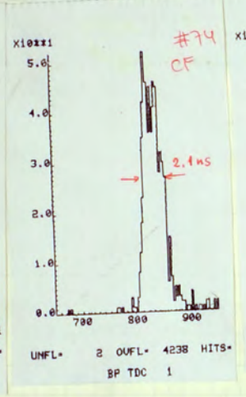
NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

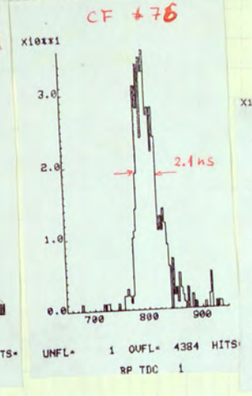
2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T-and	Remarks

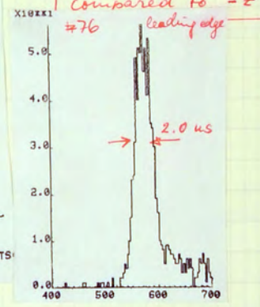












9.5.79

Why 2 peaks for leading edge?

All 3 measured timing resolutions on the +z side are worse by factor 2-3 compared to -z side.

resolution #77 : 2.0 ns
#35 : 1.25 ns

50 Hz noise on signal of PM: into 50 Ω : less than 0.5 mV (not visible on scope) } is the same for (+z) and (-z) photomultipliers
into 1 MΩ : 5 mV peak to peak

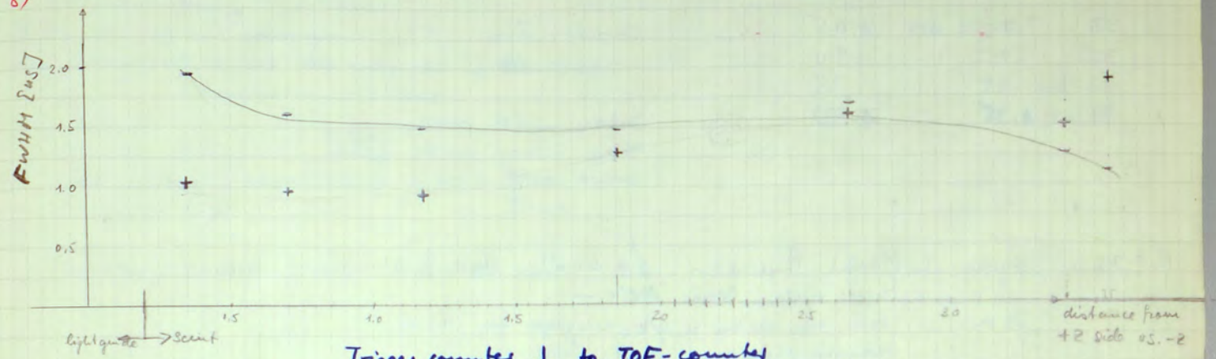
9.5.79

Investigation of time resol. difference +z / -z : all tests are done on PM #35 / #77

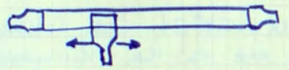
1) change the signal cable +z-phototube connected to -z signal cable and viz → no effect
2) take off PM on +z side and put back on (+z : 2.0 ns) → no effect
3) interchange PM's (+there) from +z and -z side (-z : 0.8 ns, +z : 2.0 ns) → no effect
4) move trigger counter (see pg 29 bottom left) to the extrem +z side (+z : 0.9 ns, -z : 2.2 ns) → aha!
5) move trigger counter back to middle of TOF (+z : 0.95 ns, -z : 1.8 ns) → ????

10.5.79

6) confirm result of yesterday point 5)
7) change PM's (+back) back to original position (+z : 0.95 ns , -z : 2.0 ns)
8)



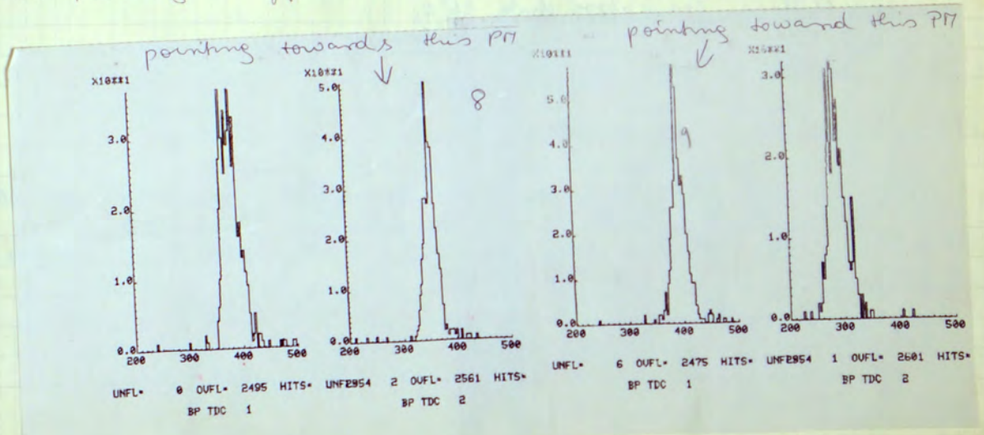
Trigger counter ⊥ to TOF-counter



Finally A. Pekrsen found the explanation of all problems: When the phototubes are pointing to the same direction the light-path differences cancel, while they add up when they are pointing the opposite direction.

Proof:
Trigger counts at the side of PM 1

No difference between close and far end!



NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Comparison leading edge – CF

CNTR	FWHM CF	LE
33	.75 ± .075	1.05
35	.75	.90
32 close	.75	.75
74 far	1.35	1.50

Conclusions: CF improves a little V resolution and partially compensates for z-dependence of resolution (pulseheight.)

Delay: 20 nsec
They seem to be rather insensitive to the exact adjustments of the Walk potentiometers.

12.5.79 21.00. Madrid Physics – $\mathcal{L} \sim 2 \times 10^{29}$ stable for 2 hours. – problems with triggering system Camac ADC's –
23.00. ADCs now working – will reinstall on 13.5.79
Beam still intermittent. No other Expts running

14.5.79 15.30 Temp above disk 28°C! Call Schulz. He does a few adjustments. Please keep an eye on the thermometer.

16.5.79 11.20 Computer switched on after airconditioning work (water system changed)
14.15 Temp above disk 26°C.
15.15 " 25°C
18.00 Power to NW hall tripped out

18.5.79 16.60 Nord now running again

28.5.79 15:00 Dead time in trigger box after T0 accept is 600 ns only It should be 850 ns at least! R.A.E.

29.5.79 13:30 change delay T1 reject – reset event. Deadtime now 1.2 μs (dial = 840)

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T trig	Remarks

COSMIC – Run

Delay	after T0 restart	width
TOF Latches	125 nsec	60 ns
BP Latches	120 nsec 132	50 ns
BP ADC GATE	60	70 ns
TOF ADC GATE	60	70 ns

Setting of Delay boxes: TDC START BP 32 μs, TOF 24 μsec } gives roughly 50 μsec between stop and start
LED TRIG 3 × full + 27 μsec

Triggerate: ≥ 2 TOF through Matrix ~ 4/sec

9.6.79 700 got telephone call that Nord was working. Hurray!

Checked Matrix and Trigger, all ok.
LG – is switched on and works, also pedestal taking works again. Cable was disconnected.

Attention NIM crates for BP counters still drop out frequently. Get new ones during day.

Problem: Ring 1 & 2 of Jet chambers are not read out. Brand cable doesn't come on. Switching branch cable 5 and 6 shows that it's not the branch. Probably software. It was Set-Camac, Branches were off-line!

BP HV set to nominal values.

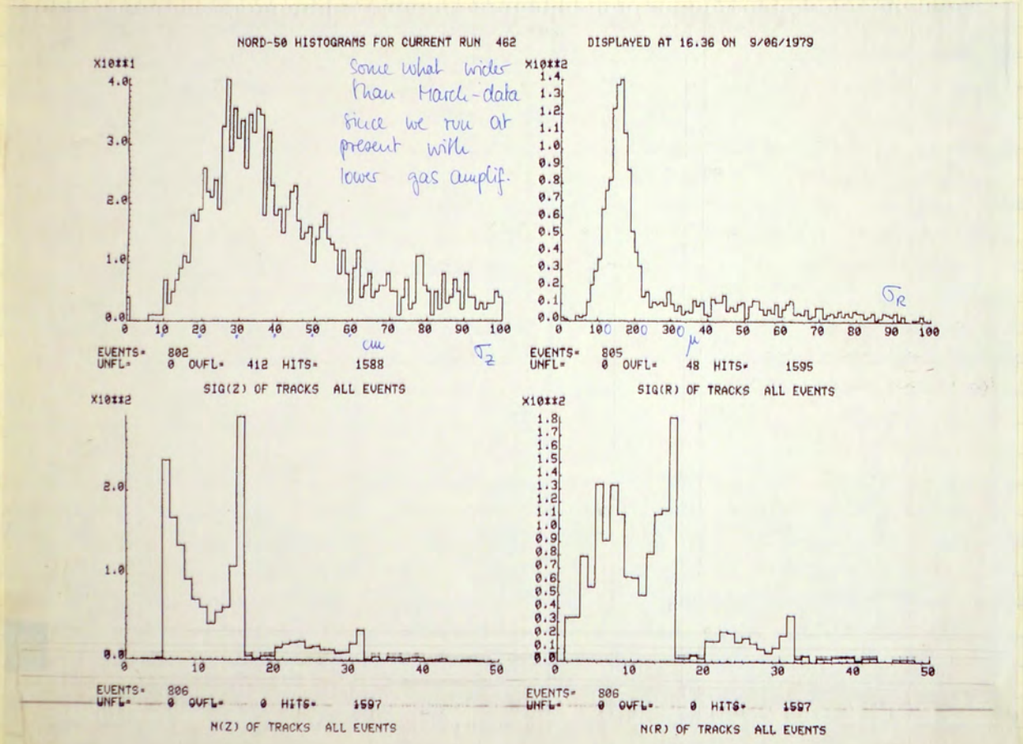
10⁰⁰ Temperature ~ 23° has risen by 3° since 7h.

TDC No 4 of ToF changed. Old one gave zeroes only
We tried some units ~~most~~ u off the shelf
Two were defective.

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

AW. 9.6.79 14^{15} Start RUN 461 cosmic data (4 LED's) Output tape: F22 B 33
Triggers as on pg 33
Potential voltage at chamber : 2.3 KV
14^{45} notice, that chamber had tripped off.
rewind tape + start again: RUN 462
15^{15} Stop run 462 [8551 events]

B.N. investigates a hole in TOF Hit map (cnts 13-16) and finds that TOF - light diodes were on until now.



2 TOF * LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 T trig	Remarks

RDH 9.6.79 17^{15} Start Run 463 cosmic data tape: F22 B33
conditions as in run 461

since event 580 Matrix narrower (Minimum)
18^{40} Stop Run 463 / 2294 events read
because of hippe problems
Crate of BP-logics had turned itself down

? Computer hang up (no data taking) on LV 3 P= 154
L= 21441

THIS RUN DOES NOT EXIST
? Start Run 464 tape F22 B07
potential voltage at chamber: 2.35 kV

? Computer hang up LV14 P= 154 L= 61741 72471 165741, 3,3
1 trig/sec

Problems with JET C

Computer hang up LV14 L= 62744
nothing was going on, DAS was in PAUSE 72471/000011, 15, 3

20^{48} Rewind Tape F22 B02
start run 466
U_p=2.3 kV at the chamber

22^{00} ~1600 events, Computer hang up LEVEL 14 72471/165740, 13,10

2 EOF written
Start run 467 2. File on Tape F22 B02

IF COMPUTER HANGS UP AND HAS TO BE RESTARTED:

DO NOT FORGET TO WRITE 2 END-OF-FILES TO TAPE WITH
@ DEV⌐ M-T⌐ W-EOF,2

(ENTER : D1,2
Password : 2
DAS.MAC U-EOF
CDO

23^{43} Run stopped. Chamber off ~2.3K events
23^{55} Start Run 468 (same conditions as run 467)

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

10.6.79 0^{30} Run stopped (952 events), because JETC was off

0^{35} Run 469 started – same conditions as last run.

2^{30} Run 469 stopped via JETC-tracks on the display (3103 events)
this happened after restart of regular event-display after looking at histograms during the run

2^{35} Run 470 started – same conditions as last run.
again no JETC-tracks; after some playing [NEXT-EVENT, then regular display], they came ...

2^{45} computer hangs up on LV 14 ‖ 309 events at Run 470
lamp 14 on, paging lamp 3, active levels on (white display) nothing else
Restart NORD10 as per recovery instruction sheet starting at Ⓐ
Two end of files written to tape.
All of the system comes back EXCEPT THE COLOUR T.V. !! We cannot ressurect this

~~3^{00}~~ Run 471 (??) started. Conditions same as previous runs – writing to tape.
We still cannot get the colour TV working (Check the ? on run #) so continue without it.

3^{35} Computer dies – all terminals locked out. The system has hung up again in the same fashion and at the same point as at 2^{45} above. We retrace the steps taken then by reloading a.s.w.
Two more end of files written onto tape
Test run without mag. tape (run # 472) to see if system still working. It is so –

3^{42} Run 472 started writing to tape (after a test run also supposedly run # 472 taken without writing to tape and terminated normally after 30 events !). Conditions as before.
How is this possible?? Take run numbers be same

4^{30} Run stopped, [Last event = 1364, Last record Nr. 926 Run terminated] message on LV. 9 due to end of tape (tape went off the wheel), were not able to rewind tape, wait till 6^{00} and shine Gods

6^{45} Tape F22 B12 rewound "on line", we are not sure about the EOF

7^{10} Run 473 started ‖‖ JETC: U_p = 2350 V now !!! Tape F22 B10
7^{20} DAS does not take data any more. We stop and rewind the tape
Run 473 lost We cannot restart a run with DAS.
We restart the Nord and DAS again Nord-50: memory examine lamps on; at Decwriter: Interval device for N50 both accepted.
NORD-50 Error: Illegal memory adress – Memory examine lamps on when loading N50 DAR

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T coinc	Remarks

12.20 Found error. ZDAS works again!
There was a faulty Crate Controller in Crate 1, Branch 2

Now LG is on very much. Kobayashi called and he'll come. Frequency of Pulsegenerator for pedestals was not well adjusted and readout mode was not 7.

12.52 Running again Run 474 Tape F22B10
13.12 NORD hangs on 14
13.25 Running again Run 474 Tape "
13.41 Nord hangs on 03 Two restart attempts
13.52 On call NORD EXPERT Dr. P. Pittmann advised of situation, komm.
BATCH PROCESSOR CORRUPTED IN NORD
WE GO ON WITHOUT NORD-50

? Run476 ~ 30 events
16.00 Run 477 210 events
decide to start new tape since content of F22B10 is not fully clear.

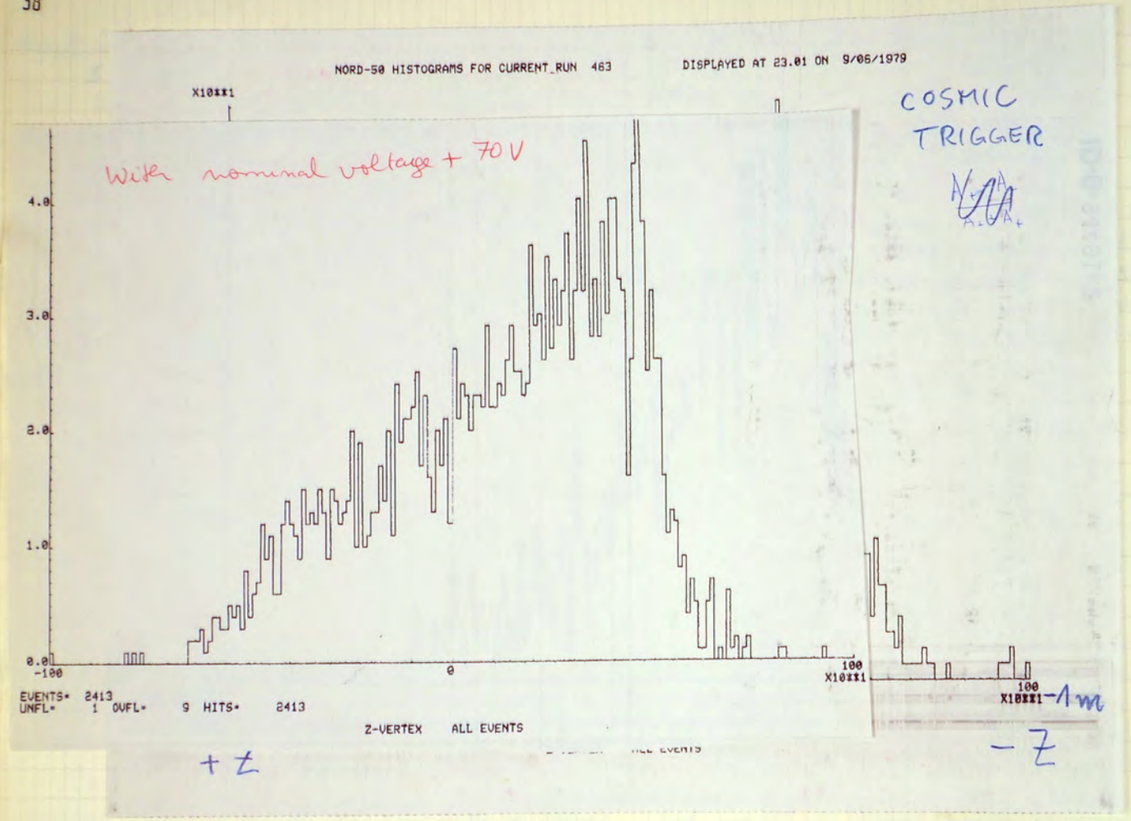
16.30 Run 478 started (no N50) 1. file Tape F22 B15
16.45 N10 hangup level 14, after 431 events
16.51 Run 479 started 2. file
Run 479 stopped N10 hang up on LV 3, after 180 events
17.02 Run 480 started 1024 events 3. file
17.35 N10 hang up level 14 22 cm, 4 GeV, 3.10
Run 481 has 13 dummy events 4. file
18.07 Run 482 started 199 events 5. file stopped due to DB error
18.23 Run 483 started 6. file
DL8 # 66 : Start removed, since DL8-hang-up

it could also be due to too high threshold for beampipe Counters OR which makes TQ

We observe that almost all events are at negative z values (see distribution next page)
We conclude that Beam-Counters do not see minimum ionizing particles at z around 0.

Under (~~pessimistic~~ optimistic) assumptions that the z-distribution of cosmics is flat we derive from the plot on next page the efficiency at z = 0 for minimum ionizing particles is $\varepsilon = 0.45$.
Therefore the inefficiency for both slides is
$(1-\varepsilon)^2 = 0.3$ (OR)

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept



20⁰⁰ Run 483 ended ~3300 events.
System + JOAS - segments loaded by D. CORDS

21⁰² Start Run 484 (with N50) 130 events 1. file
(one PLB crate was off)

21¹² Start Run 485 1677 events 2. file

22⁰³ End Run 485

Tape F22 B15

2 TOF *LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T$_{acc}$	Remarks

22.15 Found that BP High Voltages had been decreased by ~200 V (when? by whom?) I now set nominal values.

```
FIRST COUNTER (0=ALL):0
COUNTER    1 DISK VALUE   -1.600 ACTUAL VAL   -1.600
COUNTER    2 DISK VALUE   -1.600 ACTUAL VAL   -1.601
COUNTER    3 DISK VALUE   -1.600 ACTUAL VAL   -1.601
COUNTER    4 DISK VALUE   -1.700 ACTUAL VAL   -1.699
COUNTER    5 DISK VALUE   -1.600 ACTUAL VAL   -1.601
COUNTER    6 DISK VALUE   -1.500 ACTUAL VAL   -1.499
COUNTER    7 DISK VALUE   -1.700 ACTUAL VAL   -1.699
COUNTER    8 DISK VALUE   -1.700 ACTUAL VAL   -1.699
COUNTER    9 DISK VALUE   -1.550 ACTUAL VAL   -1.549
COUNTER   10 DISK VALUE   -1.600 ACTUAL VAL   -1.601
COUNTER   11 DISK VALUE   -1.600 ACTUAL VAL   -1.600
COUNTER   12 DISK VALUE   -1.600 ACTUAL VAL   -1.601
COUNTER   13 DISK VALUE   -1.650 ACTUAL VAL   -1.651
COUNTER   14 DISK VALUE   -1.500 ACTUAL VAL   -1.500
COUNTER   15 DISK VALUE   -1.500 ACTUAL VAL   -1.500
COUNTER   16 DISK VALUE   -1.650 ACTUAL VAL   -1.649
COUNTER   17 DISK VALUE   -1.700 ACTUAL VAL   -1.699
COUNTER   18 DISK VALUE   -1.700 ACTUAL VAL   -1.700
COUNTER   19 DISK VALUE   -1.650 ACTUAL VAL   -1.650
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COUNTER   22 DISK VALUE   -1.700 ACTUAL VAL   -1.700
COUNTER   23 DISK VALUE   -1.550 ACTUAL VAL   -1.549
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COUNTER   28 DISK VALUE   -1.700 ACTUAL VAL   -1.700
COUNTER   29 DISK VALUE   -1.700 ACTUAL VAL   -1.699
COUNTER   30 DISK VALUE   -1.700 ACTUAL VAL   -1.700
COUNTER   31 DISK VALUE   -1.700 ACTUAL VAL   -1.699
COUNTER   32 DISK VALUE   -1.700 ACTUAL VAL   -1.700
COUNTER   33 DISK VALUE   -1.700 ACTUAL VAL   -1.700
COUNTER   34 DISK VALUE   -1.700 ACTUAL VAL   -1.699
COUNTER   35 DISK VALUE   -1.500 ACTUAL VAL   -1.499
COUNTER   36 DISK VALUE   -1.600 ACTUAL VAL   -1.600
COUNTER   37 DISK VALUE   -1.600 ACTUAL VAL   -1.599
COUNTER   38 DISK VALUE   -1.550 ACTUAL VAL   -1.550
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COUNTER   45 DISK VALUE   -1.700 ACTUAL VAL   -1.700
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COUNTER   47 DISK VALUE   -1.550 ACTUAL VAL   -1.551
COUNTER   48 DISK VALUE   -1.700 ACTUAL VAL   -1.700
 TYPE (RD) TO READ HIGH VOLTAGES
```

22¹⁴ Start Run 486. 1007 events 3. file
noticably higher trigger rate since adjustment of HV (~ 1-2 Hz)

22²⁶ Stop Run 486

23⁰⁶ Start Run 487 4232 events 4. file

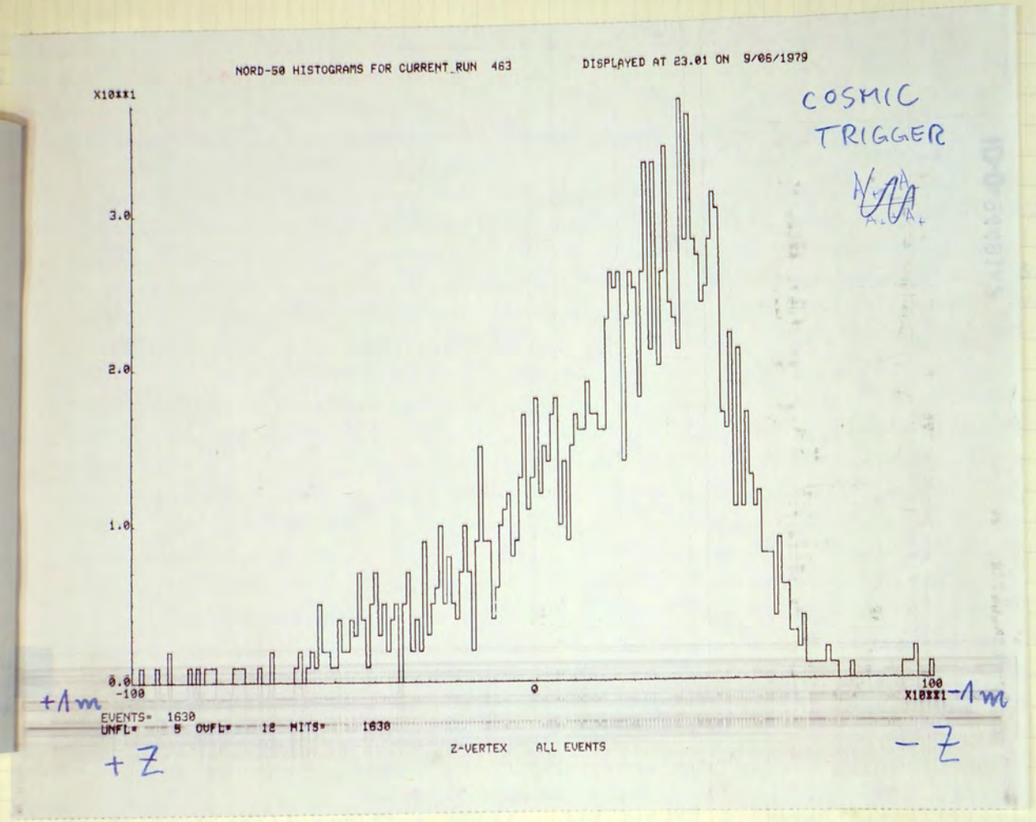
23.00 We increased BP-Voltage by 70 V. The z-histogram looks better. The problem is that the threshold for triggering is too high compared to the pulseheight.

23⁴⁰ End Run 487 Stopped

When trying to restart we get error message:
FTN-50 RUN ERROR - 00434 IN ZRFIT LINE 867 at address 005130₈
Neg arg in SQRT, N50 could not be started

24.00 After trying several times which P. Dittmann suggested, machine hung up completely. Restart. Again writing tape probably Run 488. (5. file)

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept



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(one DLB crate was off)

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Neg arg in SQRT, NSO could not be started

24.00 After trying several times which P. Dittmann suggested, machine hung up completely. Restart. Again writing tape probably Run 488. (5 fb)

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11. 6. 79

0.10 Restart ZDAS to get colour tv going. Run 489 6 file
potential voltage at the chamber: 2.4 kV 510 events (no EOF afterwards)

0.20 Nord hangs again (level 0, 2^0, 2^{13} os)
Restart. Run 490 464 ev. 7. file

0.30 Comp hangs level 3, NSO memory examine illuminated.
2 EOF written ??

0.33 Run 491 started 8 file
This run we try without event display as we suspect that that causes the hang-ups. It seems to improve the duration of a run.
Stopped at ev. 4687 as tape full. END OF TAPE F22 B15
8. files

1.04 Start run 492, 2336 ev.
Nord hangs, same error as 23.40 TAPE F22 B18
Restart Nord

1.30 Start run 493 ~ 4000 ev. 2. file

2.10 Nord hangs on level 11 Mem. examine NSO ect.
Run 494 started 4519 ev. 3 file END OF TAPE F22 B18

2.40 Run 495 started Tape F22 B19

2.50 Nord hangs level 14, 2 EOF written
Run 496 started 2. file

3.05 Memory parity error, ev. display looks ok, so we continue

3.20 lights flicker twice, then Nord hangs level 14 5320 ev.

3.40 Restart doesn't work, weget: NSO no memory allocated
But N10 doesn't work either, SYSTEM UNAVAILABLE.
I don't know what do do. We've probably got enough events with magnet on. Maybe we can still take some with magnet off next night.
So we switch off.

TAPES WRITTEN 9.6. – 11.6.79

			# ev.
F22 B33	Run	462 (1)	8551
		463 (2)	2294
F22 B02		~~464~~	
		466 (1)	
		467 (2)	
		468	952
		469	3103
		470	309
		471	
		472	1364
F22 B10		~~473~~	
		474	
		476	30
		477	210
F22 B13		478	491
		479	180
		480	1024
		481	
		482	199
		483	3300
F22 B15		484	190
		485	1677
		486	1007
		487	4232
		488	
		489	540
		490	464
		491	4687
F22 B18		492	2336
		493	~4000
		494	4519
F22 B19		495	
		496	5320 ev.



NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

AW 18.6.79 $8^{\underline{50}}$ Temperature-alarm from Beampipe (~ 40°C) and beampipe counters (~33°). According to PKR no excessive currents in the machine: e^+: 1 mA e^-: 2.5 mA.
Herr Seidel switches <u>watercooling</u> of beampipe on. Temperature drops rapidly.

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T trig	Remarks

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

A 20.6.79 Exp. Nr. 1

8^{00} Carsten, Olsen

Luminosity available since 6^{00} this morning

Timing for T1 finished

		WIDTH	DELAY	(POTI)
Latches	BP :	7.02	8.50	
	TOF :	8.60	8.40	
ADC	BP :	~~5.80~~ 8.64	5.80	
	TOF :	8.74	6.32	

eff 11^{00} beam current 1.5 mA E ≈ 13 GeV

TC≈11^{10} Beam dumped by HKR because of failure in the cooling system magnets went off also.

The PVR-loudspeaker does not work

eff. 12^{10} Magnet current 7000. Amps. (Do not go higher)

* nb We cannot run above 7000 A until 10/11 kV trafo is installed. ✕

eff. 15^{15} Magnet fault. Water leak at Steckt.

15^{45} Fixed again. Current = 7000 Amps.

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T$_{beam}$	Remarks

16^{00} Narodka, Olsson

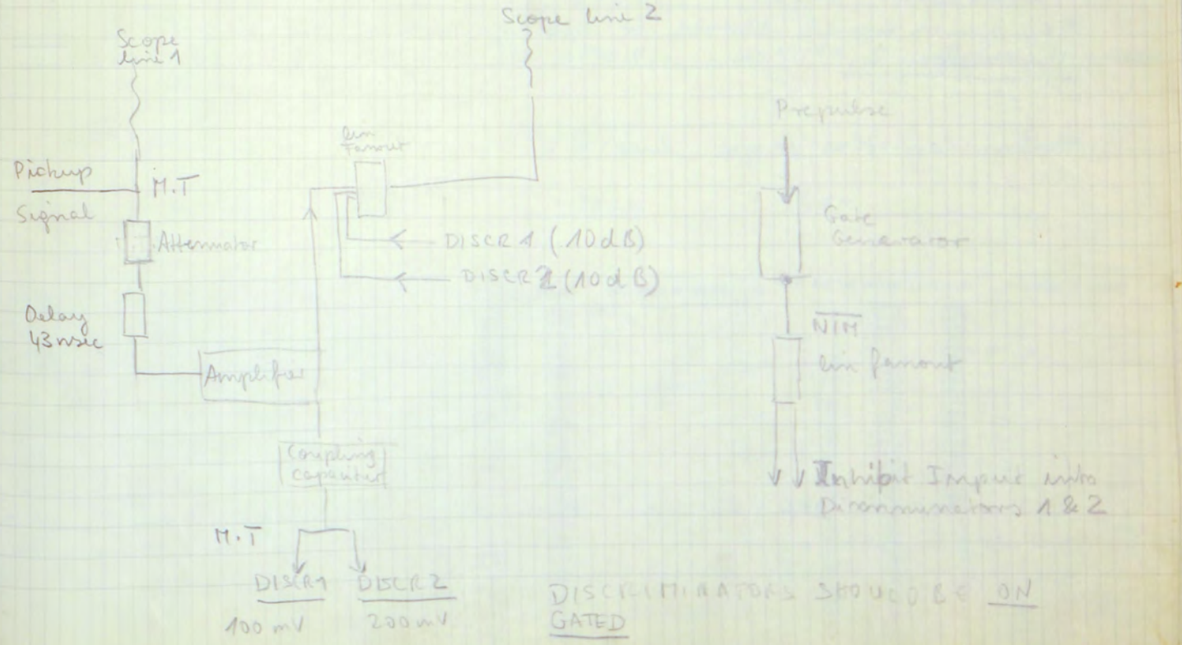
19.30^{4} Still waiting for beams, Petra has problems with injection

21:30 LG. Total Energy threshold:

channel 1	10 GeV
" 2	4 GeV
" 3	1 GeV
" 4	0.5 GeV

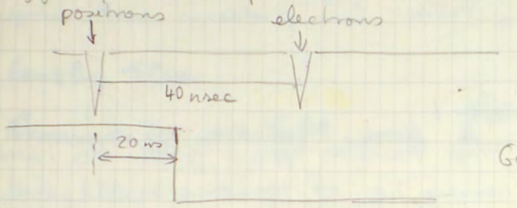
Caution!
These thresholds apply only when the CAMAC running, i.e all processors enabled and gates are accepted into the processors.
S. Orito

For the T$_0$ trigger the following setup has been installed:
(see next page for explanation)



NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

1.) The inhibit gate on the discriminator has been set so that it cannot trigger on the electron bunch:



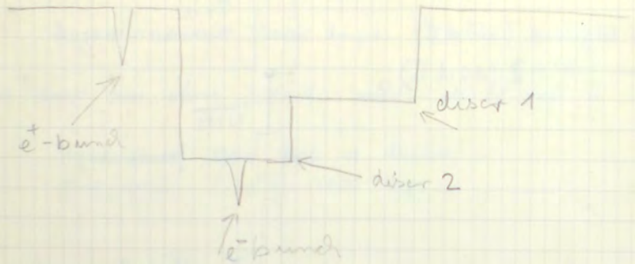
Gate into inhibit

2.) The 2 discriminators have thresholds a factor 2 different

discr 1 → 100 mV
discr 2 → 200 mV

The bunch signal should be always attenuated so that it just triggers discr 2. (corresponds to the old rule 6 dB below threshold)

Picture on the scope line 2:



If the second step (discr 2) disappears, take out 1dB (or more) out of attenuator.
An alarm will be installed presently.

2 TOF * LG>1 GeV	LG>4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T_{acc}	Remarks

21.6.79

1.00 We get beams finally. Computer says -4.533 kT

E = 13.7
I_{e^+} = 3.6 mA
I_{e^-} = 3.3

Lum per bunch?

Pluto	11.8	$\times 10^{29}$ cm^{-2} sec^{-1}
TASSO	17.21	
MarkJ	12.68	
Jade	~~18~~ - 25	

vacuum: $6.7 \cdot 10^{-9}$, $1.9 \cdot 10^{-8}$

Background rates / 10^6 accepted T_0

1 TOF	2 TOF	2 BP	4 BP
163 K	94 K	214 K	84 K

They are ~ factor 10 higher than page 15 (one beam, 6.5 GeV)
Increase probably due to different optics and slightly increased current.

a.)

1 TOF	2 TOF	3 TOF	4 TOF	through matrix (23)
102 K	74,4 K	64,5 K	58,9 K	rate / 10^6 TO accepted

b.)

1 TOF	2 TOF	3 TOF	4 TOF	through matrix (13)
91,5 K	69,5 K	60,2 K	55,7 K	

THESE ARE THE DEMAND(1)/TRUE(2) VOLTAGES OF MAINFR 61

1	-22349	2699
2	-24253	2550
3	-21533	2750
4	-20733	2800
5	-22333	2700
6	-22029	2719
7	-24253	2580
8	-20253	2830
9	-24573	2560
10	-23133	2650
11	-21533	2750
12	-21373	2760
13	-21373	2760
14	-22813	2670
15	-23453	2630
16	-21213	2770
17	-21693	2740
18	-22333	2700
19	-21373	2760
20	-21053	2780
21	-19133	2900
22	-21229	2769
23	-20269	2829
24	-21533	2750
25	-20573	2810
26	-20733	2800
27	-23613	2620
28	-22653	2680
29	-23133	2650
30	-23933	2600
31	-21853	2730
32	-23293	2640

THESE ARE THE DEMAND(1)/TRUE(2) VOLTAGES OF MAINFR 62

1	-23293	2640
2	-24253	2550
3	-22829	2669
4	-17853	2980
5	-22317	2701
6	-19453	2880
7	-20733	2800
8	-19613	2870
9	-20749	2799
10	-21533	2750
11	-23933	2600
12	-23773	2610
13	-21533	2750
14	-19933	2850
15	-19933	2850
16	-20573	2810
17	-24749	2549
18	-23133	2650
19	-22333	2700
20	-23309	2639
21	-23309	2639
22	-23293	2640
23	-19933	2850
24	-22333	2700
25	-21373	2760
26	-19933	2850
27	-23677	2641
28	-20413	2820
29	-20573	2810
30	-23453	2630
31	-22653	2680
32	-20733	2800

THESE ARE THE DEMAND(1)/TRUE(2) VOLTAGES OF MAINFR 63

1	-23949	2599
2	-19933	2850
3	-24413	2570
4	-21533	2750
5	-22173	2710
6	-23613	2620
7	-21357	2761
8	-21373	2760
9	-23293	2640
10	-21693	2740
11	-23933	2600
12	-19757	2861
13	-21517	2751
14	-22333	2700
15	-22013	2720
16	-20723	2800
17	-22813	2670
18	-22333	2700
19	-21053	2780
20	-20189	2839
21	147	9
22	131	8
23	131	8
24	115	7
25	83	5
26	83	5
27	83	5
28	115	7
29	83	5
30	99	6
31	115	7
32	115	7

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

The Tokyo prescription to take rates with the computer running doesn't work. The rates depend on how much deadtime is created by the computer. This varies a lot, as there are frequently time-outs.

Trigger rates without computer run

Normalized to 10^6 accepted To ($\hat{=}$ 4 /sec)

10^6 / = 4 sec.

				LG ≥ 500 MeV		LG ≥ 1000	
1	TOF	without	Matr. · LG	8.635 K	(2~~4~~6 K)	230	(1253)
2	TOF	"	" · LG	8.136 K	(25.8 K)	119	(1273)
1	TOF	via	Matr (23) · LG	8.4 K	(27.6 K)	133	(1239)
2				~~7~~.9 K	(26.6 K)	133	(1324)
3				7.5 K	(25.3 K)	90	(1177)
4							
7				7.2 K	(25.2 K)	97	(1275)

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T_{open}	Remarks

4 μsec

4×10^{-6} sec ⇒ 0.21×10^6/sec 2.5×10^5/sec

Numbers in parantheses: LG rates alone

LG ≥ 4000		LG ≥ 10 000	
4.8	(5.76)	0.6	(4.1)
5.2	(64.2)	0.4	(3.1)
5.7	(62.6)	0.3	(3.8)
5.3	(63.6)	0.1	(3.6)

old values

```
@HV

INITIALIZATION ROUTINE
 PRIMARY HIGH VOLTAGE    -1.837
        0
 TYPE (RD) TO READ HIGH VOLTAGES
      (SE) TO SET HV TO DISK VALUES
      (COR) TO CORRECT HV BY HAND
      (STOP) TO STOP
>RD
 FIRST COUNTER (0=ALL):0
COUNTER    1 DISK VALUE    -1.600 ACTUAL VAL    -1.599
COUNTER    2 DISK VALUE    -1.600 ACTUAL VAL    -1.599
COUNTER    3 DISK VALUE    -1.600 ACTUAL VAL    -1.600
COUNTER    4 DISK VALUE    -1.700 ACTUAL VAL    -1.799
COUNTER    5 DISK VALUE    -1.600 ACTUAL VAL    -1.501
COUNTER    6 DISK VALUE    -1.500 ACTUAL VAL    -1.501
COUNTER    7 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER    8 DISK VALUE    -1.700 ACTUAL VAL    -1.700
COUNTER    9 DISK VALUE    -1.650 ACTUAL VAL    -1.650
COUNTER   10 DISK VALUE    -1.600 ACTUAL VAL    -1.701
COUNTER   11 DISK VALUE    -1.600 ACTUAL VAL    -1.600
COUNTER   12 DISK VALUE    -1.600 ACTUAL VAL    -1.601
COUNTER   13 DISK VALUE    -1.650 ACTUAL VAL    -1.649
COUNTER   14 DISK VALUE    -1.500 ACTUAL VAL    -1.499
COUNTER   15 DISK VALUE    -1.500 ACTUAL VAL    -1.650
COUNTER   16 DISK VALUE    -1.650 ACTUAL VAL    -1.701
COUNTER   17 DISK VALUE    -1.700 ACTUAL VAL    -1.700
COUNTER   18 DISK VALUE    -1.700 ACTUAL VAL    -1.549
COUNTER   19 DISK VALUE    -1.650 ACTUAL VAL    -1.699
COUNTER   20 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   21 DISK VALUE    -1.650 ACTUAL VAL    -1.649
COUNTER   22 DISK VALUE    -1.700 ACTUAL VAL    -1.699
COUNTER   23 DISK VALUE    -1.550 ACTUAL VAL    -1.551
COUNTER   24 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   25 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   26 DISK VALUE    -1.650 ACTUAL VAL    -1.649
COUNTER   27 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   28 DISK VALUE    -1.700 ACTUAL VAL    -1.699
COUNTER   29 DISK VALUE    -1.700 ACTUAL VAL    -1.800
COUNTER   30 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   31 DISK VALUE    -1.700 ACTUAL VAL    -1.700
COUNTER   32 DISK VALUE    -1.700 ACTUAL VAL    -1.699
COUNTER   33 DISK VALUE    -1.700 ACTUAL VAL    -1.699
COUNTER   34 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   35 DISK VALUE    -1.500 ACTUAL VAL    -1.501
COUNTER   36 DISK VALUE    -1.600 ACTUAL VAL    -1.600
COUNTER   37 DISK VALUE    -1.600 ACTUAL VAL    -1.600
COUNTER   38 DISK VALUE    -1.550 ACTUAL VAL    -1.699
COUNTER   39 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   40 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   41 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   42 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   43 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   44 DISK VALUE    -1.700 ACTUAL VAL    -1.700
COUNTER   45 DISK VALUE    -1.700 ACTUAL VAL    -1.701
COUNTER   46 DISK VALUE    -1.700 ACTUAL VAL    -1.700
COUNTER   47 DISK VALUE    -1.550 ACTUAL VAL    -1.550
COUNTER   48 DISK VALUE    -1.700 ACTUAL VAL    -1.699

DIFFERENCES ACTUAL HV - WANTED HV FOR 96 COUNTERS
```

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Acc Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

New values ~~for~~ of HV beam proc counter

```
COUNTER    1 DISK VALUE   -1.600 ACTUAL VAL    -1.651
COUNTER    2 DISK VALUE   -1.000 ACTUAL VAL    -1.599
COUNTER    3 DISK VALUE   -1.800 ACTUAL VAL    -1.600
COUNTER    4 DISK VALUE   -1.700 ACTUAL VAL    -1.799  <- flankes
COUNTER    5 DISK VALUE   -1.600 ACTUAL VAL    -1.600
COUNTER    6 DISK VALUE   -1.500 ACTUAL VAL    -1.600
COUNTER    7 DISK VALUE   -1.700 ACTUAL VAL    -1.750
COUNTER    8 DISK VALUE   -1.700 ACTUAL VAL    -1.800
COUNTER    9 DISK VALUE   -1.550 ACTUAL VAL    -1.650
COUNTER   10 DISK VALUE   -1.600 ACTUAL VAL    -1.800  <- factor >5.5 down
COUNTER   11 DISK VALUE   -1.600 ACTUAL VAL    -1.600
COUNTER   12 DISK VALUE   -1.600 ACTUAL VAL    -1.551
COUNTER   13 DISK VALUE   -1.650 ACTUAL VAL    -1.499
COUNTER   14 DISK VALUE   -1.500 ACTUAL VAL    -1.401
COUNTER   15 DISK VALUE   -1.500 ACTUAL VAL    -1.650
COUNTER   16 DISK VALUE   -1.650 ACTUAL VAL    -1.800  <- factor 2 down
COUNTER   17 DISK VALUE   -1.700 ACTUAL VAL    -1.648
COUNTER   18 DISK VALUE   -1.700 ACTUAL VAL    -1.549
COUNTER   19 DISK VALUE   -1.650 ACTUAL VAL    -1.751
COUNTER   20 DISK VALUE   -1.700 ACTUAL VAL    -1.800
COUNTER   21 DISK VALUE   -1.650 ACTUAL VAL    -1.649
COUNTER   22 DISK VALUE   -1.700 ACTUAL VAL    -1.800  <- factor 1.5 down
COUNTER   23 DISK VALUE   -1.550 ACTUAL VAL    -1.551
COUNTER   24 DISK VALUE   -1.700 ACTUAL VAL    -1.750
COUNTER   25 DISK VALUE   -1.700 ACTUAL VAL    -1.649
COUNTER   26 DISK VALUE   -1.650 ACTUAL VAL    -1.550
COUNTER   27 DISK VALUE   -1.700 ACTUAL VAL    -1.701
COUNTER   28 DISK VALUE   -1.700 ACTUAL VAL    -1.699
COUNTER   29 DISK VALUE   -1.700 ACTUAL VAL    -1.800  <- factor 2 down
COUNTER   30 DISK VALUE   -1.700 ACTUAL VAL    -1.800
COUNTER   31 DISK VALUE   -1.700 ACTUAL VAL    -1.700
COUNTER   32 DISK VALUE   -1.700 ACTUAL VAL    -1.759
COUNTER   33 DISK VALUE   -1.700 ACTUAL VAL    -1.800
COUNTER   34 DISK VALUE   -1.700 ACTUAL VAL    -1.701
COUNTER   35 DISK VALUE   -1.500 ACTUAL VAL    -1.450
COUNTER   36 DISK VALUE   -1.600 ACTUAL VAL    -1.600
COUNTER   37 DISK VALUE   -1.600 ACTUAL VAL    -1.499
COUNTER   38 DISK VALUE   -1.550 ACTUAL VAL    -1.550
COUNTER   39 DISK VALUE   -1.700 ACTUAL VAL    -1.649
COUNTER   40 DISK VALUE   -1.700 ACTUAL VAL    -1.651
COUNTER   41 DISK VALUE   -1.700 ACTUAL VAL    -1.701
COUNTER   42 DISK VALUE   -1.700 ACTUAL VAL    -1.649
COUNTER   43 DISK VALUE   -1.700 ACTUAL VAL    -1.599
COUNTER   44 DISK VALUE   -1.700 ACTUAL VAL    -1.649
COUNTER   45 DISK VALUE   -1.700 ACTUAL VAL    -1.751
COUNTER   46 DISK VALUE   -1.700 ACTUAL VAL    -1.800
COUNTER   47 DISK VALUE   -1.550 ACTUAL VAL    -1.600
COUNTER   48 DISK VALUE   -1.700 ACTUAL VAL    -1.751

DIFFERENCES ACTUAL HV - WANTED HV FOR BP COUNTERS

   -0.051    0.001    0.000   -0.100    0.000   -0.100   -0.050   -0.100
   -0.100   -0.200   -0.000    0.049    0.151    0.099   -0.150   -0.150
    0.052    0.151   -0.101   -0.100    0.001   -0.100   -0.001   -0.051
    0.051    0.100   -0.001    0.001   -0.100   -0.100   -0.000   -0.059
   -0.100   -0.001    0.050    0.000    0.101    0.000    0.051   -0.049
   -0.001    0.051    0.101    0.051   -0.051   -0.100   -0.050   -0.051
TYPE <RD> TO READ HIGH VOLTAGES
    <SET> TO SET HV TO DISK VALUES
    <COR> TO CORRECT HV BY HAND
    <STOP> TO STOP
>
```

The HV is changed to these values having a mean noise height of about 150 mV

We changed the HV of beam proc counter. Its mean noise height was set to about 150 mV with beam. (But there is no single particle line to be seen!)

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T_{acc}	Remarks

Setup of trigger T2

21-6-79 4 h Krehbiel, Hahn

Adjustment of the trigger T2 gate generator

Delay with respect to the prepulse (T0-400 ns) 340 ns
equal in all rings (switch position II)

Agate width 4 M (same for cell and wall latches) R1 1440 ns
R2 2000 ns
R3 1480 ns

The gate accounts for 100 ns before and 200 ns after the signals

~~For~~ the dead cell #17 in R1 all 16 wires are switched on at the T2 logics, so that cell will ever fire.

Poti at master trigger box T0 - T2 gunshot pulse 720

T2 rates

T1 postpone : 2 TOF (or matrix) [alone gives 25 4 k]

T2 references = default tracks with TOF

T2 accept per 10^7 T0 [≙ 40 s]

condition	# acc
≥ 1 ALL TRACK	1960
≥ 2 ALL " 's	523 ⇒ reduction factor ~ 500 with respect to T1
≥ 3 ALL "	125
≥ 4 ALL "	72
≥ 1 FAST TRACK	1517
≥ 2 FAST " 's	315

6 h PLUTO asks for new filling.

→ 8 30 magnet failure (power house got too warm - or thermostat set too low)
8 45 Back on again 7000 A

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

21.6.79 O'Neill, Tebt

10^{45} machine given to exp., 4 × 4.6 mA, 13,7 GeV, $Vak_{(Jm.\,m\ N4\text{-}Ihec)} = 1.7 \times 10^{-9}$

11^{05} beam lost by power supply failure, entrance to experimental area for 3/4 h removed flexible Al-pipe from the TOF-counters −z (as a possible source of Kamm)

14^{30} the right compensating magnet dropped off – to repair it we ran down all magnets (PKR asked us to do it)

15^{30} Magnets on again Main 7000 A, Kompensator 750 A

15^{-30} Luminosity available

$e^+_1 = 3{,}6$ mA $e^-_2 = 4{,}0$ mA 13,7 GeV $Vak_{(Jmi)} = 1{,}6 \times 10^{-9}$

$e^+_3 = 3{,}25$ " $e^-_4 = 3{,}75$ mA

TOF / 10^6 To

No matrix				with matrix			
1 TOF	2 TOF	3 TOF	4 TOF	1 TOF	2 TOF	3 TOF	4 TOF
270 k	161 k	125 k	107 k	176 k	127 k	108 k	96 k

Lead glass only / 10^6 To

Run	> 10 GeV	> 4 GeV	> 1 GeV	> 0.5 GeV
1	3	32	1091	2101
2	5	33	1141	2359

~~2×2.2 mA~~ 2×2.6 mA + 2×2.7 mA Stable

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	<L> $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 To	Remarks

2. High voltage unit out of 12 failed. Lead glass (barrel)

2 TOF. AND. 500 MeV (Lead Glass) 1853 / 10^6 To

1 " 1 GeV " 206 / 10^6 To

time →

16.24 again 2 TOF. 500 MeV ~~27~~ 175 491 } at 16.26 22.9 } at 16.29

1 GeV. 1 TOF ~~17~~ 29 51 } 8.8 }

16.21 TOF's only / 10^6 To

1 TOF	2 TOF	3 TOF	4 TOF
229 k	140 k	110 k	94 k

Coil	I	3TOF	4BP	LG Boomer	LG 1 GeV
current	0	101 k	148 k	1.397 k	.982 k
~~Horiz~~	0	105 k	153 k	1.414 k	1.001 k
Vert	+3	103 k	152 k	1.352 k	.939 k
	−3	128 k	184 k	1.405 k	.917 k
current	0	114 k	165 k	1.421 k	1.016 k
vert	−3	111 k	160 k	1.348 k	.918 k
	+4	88 k	130 k	1.389 k	1.016 k
	+7	83 k	120 k	1.37 k	1.01 k
	0	89 k	130 k	1.32 k	.96 k
Horiz	+3	98 k	143 k	1.38 k	0.97 k
	0	93 k	142 k	1.43 k	1.01 k
	−7	92 k	144 k	1.28 k	0.92 k
	+7	98 k	140 k	1.27	0.91 k
?		95 k	139 k	1.30 k	.97 k
		~~95 k~~	~~254 k~~		
	+7	85.8 k	125.4 k	1.170 k	.880 k
	+12	101 k	140 k	1.211 k	.881 k

Lead glass 11 V power supply back.

Count

	3 TOF	4 BP	LG (5 GeV)	LG (1 GeV)
−4.5	74 k	116 k	1.21 k	.84 k
−8	68 k	115 k	1.23 k	.96 k
−13	68 k	120 k	1.24 k	.95 k
~~−8~~ −8	68 k	105 k	1.18 k	.92 k
−7	65 k	109 k	1.14 k	.86 k
Orthogonal coils				
2 amps	58 k	95 k	1.14 k	.80 k
	77 k	127 k	1.14 k	.88 k
even more orthogonal				
2 amps	80 k	129 k	1.15 k	.86 k
Origin.	68 k	113 k	1.18 k	.92 k

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

2 TOF without matrix (1 GeV) 718 / 10^7 To — 2 TOF with matrix (1 GeV) 589 / 10^7 To — 10^7 To ~ 40 sec.

" (.5 GeV) 1086 / 10^7 To — " (.5 GeV) 843 / 10^7 To

7 / 10^7 To (4 GeV) — 6 / 10^7 To (4 GeV)

2 TOF, 1 Track (ALL). No L6 320 / 10^7 To

2 TOF: 2 " (ALL) " 30 / 10^7 To Factor 10!

" , 3 " " " 11 / 10^7 To

1 Track (Fast) " 331 / 10^7 To

2 " 43 / 10^7 To

T1 wrong connected

T1: with 2 TOF

T2: 1 ALL TRACKS 4820 / 10^7 To

2 " 1400 / 10^7 To

3 " 400 / 10^7 To

4 " 148 / 10^7 To

1 FAST 3580 / "

2 " 830 / "

3 " 234 / "

"TRUE" T2 RATES

(compare with page 51)

18^{33} (?) Power failure at NW

20^{00} Power recovered

24^{00} Now shift

2 TOF *LG>1 GeV	LG>4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^4 To acc	Remarks

22.6.79

1.30 10^6 To acc

1 TOF Matr 62 K

2 " " 47 K

3 " " 41 K

4 " " 38 K

With TASSO magnet down

1^{30}

1^{40} TASSO magnet back to full power

Energy = 13.698 GeV

Luminosity = 6.32×10^{29} (Pluto)

5.35 " (Mark J)

I = e^- (2 x 2 mA), e^+ (2 x 2.5 mA)

Vacuum = ? (do not know how to read meter)

Luminosity = $6.4 \cdot 10^{29}$ [JADE]

1.45

1 TOF Matr 58 K

2 TOF " 44 K

3 " " 38 K

4 " " 35 K

2^{00} Magnet at 7000 Amps.

PLUTO did not see any influence of magnet on ϑ values.
Our rates didn't change either.

2^{30} PLUTO claims background rates are worse with our magnet up.

1 (in the PLUTO-log book it reads ~~it~~: only JADE sees more background, when the magnet on full power)
the other experiments see no difference R. Felst

2^{40} PLUTO ~~set~~ does a HF test: They lower HF by 2 kHz
our background rates don't change significantly

3^{00} HF back to nominal value.

3^{30} all HV off, New filling

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

22.6.79

We had just reached the stage to take rates after a lot of hard work on the leadglass electronics by Onito.
We are now finally able to take events with TOF · LG coincides.

CAUTION: You always have to have an expert there to tell you whether LG signals are right. They seem to depend on whether the computer is taking data or not. Present thresholds when computer running:

1	10 GeV
2	4 GeV
3	2 GeV
4	1 GeV

04^{30}_{00} stable beams e^- (2 × 4.9 mA) e^+ (2 × 3.5 mA)
$\mathcal{L} = 4.4 \cdot 10^{29}$

$2\,TOF_{maj} \times LG(1GeV) = 1405/10^7 = 87/sec$
$2 \qquad\qquad\quad 600/10^7 \simeq 15/sec$

5.30 The beams are lousy, high background, events look terrible. (Background rates factor 4 higher than before)
We have great problems with readout, several BL8's are hanging.
We switch them off.
Time-outs in system crate 44,000.
We read all different parts seperately. They all work.
!!!! FA again gives these time-outs. Try F8, nothing read.
!!!! ANY TEST (F8) does not read any bank except header!
Beams dumped, everything off.

I am not sure that it is worthwhile to take the F2 test data because BL8's are switched off and $ca

6:30 Phoned Mr Cords. He can not give immediate suggestion. We have to wait till he comes up. (Tannenberg ext 668)

7.30 One of the Petra Magnet Group says water reservoir level (for magnet coil) in pump room is low. Wants to know if we have a leak. No water visible on the floor.

2 TOF · LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^4 Trace	Remarks

08^{00} 22.6.79 Kobayashi/Marshall

10^{45} No developments on readout problems

PKR setting up orbit with all exp magnets on.

12^{00} One beam only, not stable.

16^{00} No beams. PKR will inject one beam, correct orbit and accelerate; a process which will take several hours.

15^{00} Single beam lost. Start all over again

PKR report that Tasso & Jade magnets make quite a difference to closed orbit and will now try to reoptimize with both exp magnets on. This may well reduce background(?)

16^{00} Ebeg shift

18^{00} NORD: CACHE-Limits changed to include Histogram-Segment. This results in a partial (?) improvement when/pol

16^{00} 22/6/79 [illegible] Flohr, Tokuoka

20:30 LG gate scheme finally fixed up. Prepulses are used. Kobayashi/Tokuoka

21^{30} PKR report e^- orbit optimized, start filling e^+.

23:30 Relative timing btwn prepulses & TØ changed from 400 ns to 170 ns !!

0^{00} 23.6.79 Heuer, Warming

2^{30} Stable beam at 13.7 GeV/beam with 4×3.7 mA Vakuum 5×10^{-9}

10^6
1 TOF 115.8 k
2 " 65.3 k
3 " 51.5 k
4 " 40.8 k

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

3^{00} 23.6.79

Luminosität bei Pluto 8.1×10^{29}
bei MF 7.3×10^{29}

called Klasska, Helm, Zeltz
Wriedt (comes only if we in trouble)

JADE ~1Hz $\triangleq$ $\mathcal{L} = 10^{30}$

Daten mit Bleiglas normalisiert auf 10^6

1 TOF · LG (1GeV)	1244/50	=	24.88
2 TOF · LG (2GeV)	129/50	=	2.58
3 TOF · LG (4GeV)	36/50	=	0.72
4 TOF · LG (10GeV)	6/50	=	0.12
1 TOF · LG (10 GeV)	17/60	=	0.28
2 4	32/60	=	0.53
3 2	133/60	=	2.22
4 1	132/60	=	22.02
2 TOF · LG (1 GeV)			25.1

$\mathcal{L} = 215/192\ \text{sec} \Rightarrow \mathcal{L} = 12.6 \cdot 10^{29}$

~~4320 $24 \cdot 10^{27}$~~
$12.6 \cdot 10^{29}$

pro 10^6 TØ accept

T2 taken T1 postponed

		2 TOF ohne LG	2 TOF +2GeV LG
1	All Track	461	
2	"	111	
3	"	47	
4	"	18	

Trigger error

last pulse was on

2 TOF · 2GeV · 1 All Track 19 accept, 37 reject pro $30 \cdot 10^6$ TØ

2 TOF · LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^4 T$_{TOF}$ acc	Remarks

T2 trigger test tape: F22B12 (Run 538) started 3.34^h

T1 ACC: 2 TOF (not through matrix) · LG (2 GeV)

Run start with 74730B (F8)

Magn. field 4532 I = 7000 A

T2 runs with $\geq$ 1 track ALL
references + mask default
cell 17 16 wires set to 1

nach 222 events stop die Kammer aus, rewound tape

write on to tape again with Run 540
after event 2577 LG changed to 1GeV

6^{10} Run 540 stopped at event # 3102
after that rates taken again:

pro 10^7 TØ

1	All Track	2 TOF	: 1185	2 TOF · LG (1GeV) : 9	2 TOF · LG
2	"		: 524	: 3	
3	"		: 173		
4	"		: 59		

Trigger for next tapes is:

TAGG + LG $\geq$ 1 0GeV + (2 TOF · LG $\geq$ 1 GeV · 1 Track T2)
210 102 65

$130 \cdot 10^6$ T$_2$ accept $5.9 \cdot 10^6$ T$_2$ reject

dead time $= \frac{5.9}{135.9} = 4.3\,\%$

start 15^{00} V34 of cell # 12.1 found with power failure short circuit on 7 out of 16 channels. repaired and reconnected after run 540

6^{45} cell # 233 caused several times tripp-off of HV of Internal Detektor
$\rightarrow$ #233 put to 2.2 kV Potential voltage (that is 100 V below all other cells!)

$L = \frac{N}{\sigma t} \cdot 1.0 \times 10^{30}$ at 13.7 GeV

Run number NRN	date	Start	Stop	$I^+_{1,2}$	$I^-_{1,2}$	Vak [10^{-3} mbar]	ΣE_{kin}	ΣE_{kin} ecc	time [sec]	$\int L dt$	Nr of accepted events Aee Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept
540	3.34	6.10	3.7 mA	3.7 mA	$5 \cdot 10^{-3}$					1,1 nb						
541	6.44	7.32	~2 mA	~2 mA	$6 \cdot 10^{-9}$	1441	12	2814	~~0,38 nb~~	732.7 · 10^6	38.56 · 10^6					
		new Filling, PKR wants to repair the feedthrough system (trench marker doesn't work), this														
542	12^{03}	~12^{18}	tape rewind													
543	12^{21}	13^{35}	~3.3 mA	-3.0 mA	6×10^{-9}	(127 GeV) =13.7			3852		1002 × 10^6					
New f. 544	16^{30}	17^{30}	2.9 mA	2.2 mA	5.5×10^{-9}	~~-~~	power pack change	3184	1.3	828 10^6	52.4 10^6					
545	17^{40}	~~18^{55}~~	2.4	1.9	5.5×10^{-9}	3247	201	3861	~~3.0~~ 2.1 nb^{-1}	1004 10^6	58.0 10^6					
547	19^{10}	19^{45}	2.0	1.5	"	1793	125	1838	0.8	478 × 10^6	37 10^6					
						note this strange difference										
549	4^{16}	4^{32}	4 ×	4.2 mA		786	75	954	0.28	247 · 10^6	143 10^6					
	24.6.73	8^{00} Vaerska, Febt				Tetrays in working in the leadglass trigger				(energy sum signal						
552	14^{40} 10	12.25	3,85/3,80	2,35/2,20	$5,5 \times 10^{-9}$	2666	270	5883	1.85	1.53 · 10^9	94 · 10^6					
553	12.29	14.39	5.4 Summe	3.2 Summe	6×10^{-9}	2906	496	7495	1.72	1.95 · 10^9	64 · 10^6					
	14^{40}	new Filling														
~~554~~	15 ^{60}		4/4 mA	3/3 mA	6×10^{-9}	5117	2959	334		86 · 10^6	21 · 10^6					
	24.6.73	16 ^{00} Comes A	Nesbitt													
		! 19^{30} Helm noticed that T2-Trigger was set to 3-tracks !!														
~~555~~	25^{00} 25.6.73	new filling														
~~556~~	3:30	4:00	4.2 mA	2.5 mA		613	173	4176	0.33	305.8 · 10^6	25.92 · 10^6					
560	5^{05}	5^{25}	4 mA	4 mA		1071	102	4277	0.73	332.5 · 10^6	25.10 · 10^6					
561	5^{33}	5^{45}	4 mA	4 mA			~ 1300 events		Computer	hang						
563	6^{00}	7 10	4 mA	4 mA	$5,5 \cdot 10^{-9}$	2110	28	4303	1.75	1120 · 10^6	1105 10^6 ?					
564	7^{30}	7^{55}	4 mA	4 mA	$5,5 \cdot 10^{-9}$	1215	322	1730	.60	445.2 · 10^6	17.8 · 10^6					
565 - 580	pulser runs / for details see tape sheet															
	22^{39}	Energy 13.86 GeV new Filling														
581	23.11	23.30	< 8 mA	< 8.8 mA	$5/4 \times 10^{-9}$	932	189	1344	0,9	349.7 × 10^6	113.3 × 10^6					
582	23.49	0:45	4,4 mA	6.6 mA	- " -	~~3265~~ 3272	206	3235	~~5.1~~ 2.7	842 × 10^6	(corr dead time) 58.2 × 10^6					
583	~~0:56~~		1,9	2.8	"											
584	1:05	1:52	1,9	2.8		1401	76	1831	1.2	4765 · 10^6	17.9 · 10^6					
~~585~~			Filling													
~~586~~	6:11		5.4	6.4	$5 \cdot 10^{-9}$, $1.5 \cdot 10^{-8}$	canceled										
587	7:00	8:10	5.4	6.4	$5 \cdot 10^{-9}$, $1.5 \cdot 10^{-8}$	3269	161	4138	2.6 2.326	1071 · 10^6	45 · 10^6					

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 T acc	Remarks
					F22 B12			Trigger: LG ≥ 1 Track All, T1 acc 2 TOF • LG (2 GeV)
1416	584	278	1062	446	~~398 072~~	F22 B11		Tagg + LG ≥ 1 GeV + (2 TOF • LG ≥ 1 GeV • 1 Track All)
may slightly change the timing of the pretrigger								Tagg + LG ≥ ~~2~~ 1 GeV + (2 TOF • LG ≥ 1 GeV • 1 Track All)
	rates cleared before reading			>4 GeV		F22 B14		" " (wrong energy on tape)
4699	19422	3506	1245 prior fix	3180	23 267	F22 B21		Tagg + LG ≥ 4 GeV + (2 TOF • LG ≥ 1 GeV • 1 Track All)
4846	8630	4846	2142	3027	10 859	F22 B22		"
2901	23 551	3514	819	2384	27 237	F22 B24		3 Track mia when?
						F22 B26		
2102	38 070	4006	287	1979	42 460	F22 B26		
arrive late therapie ?)								
6156	28 973	2378	1851	4828	40 779	F22 B34		Tagg + LG (> 4 GeV) + (2 TOF • LG (≥ 1 GeV) • 1 Track)
5786	27239	2321	1777	4532	41 171	F22 B27		"
~~1202~~	469	beam lost after 10 min due to thunderstorm				~~F22 B29~~		we cancel the run, tape rewound
probably from ≈ 4^{00} (24.6.73) – 13^{30} (24.6.73)								
1490	107493	673	326	1335	205 393	F22 B29		" [all except: 2165 / recovered with T1]
2112	6559	1446	728	1560	35988	F22 B29		"
during data taking						F22 B29		"
4970	11078	2886	1754	3659	26 910	F22 B32		"
1692	3305	957	596	1247	8884	F22 B35		" 2702 ev.
						F22 B36		
1885	3594	901	892	1118	10985	F22 B37		Nord hang up, manual stop, new LG fired
5379	10039	2500	2746	3233	31662	F22 B38		
						~~F22 B39~~		run canceled due to ZD trip
2503	5527	1140	1160	1674	14 664	F22 B39		# ev 3712
						~~F22 B40~~		→ run cancelled, see page 73.
5096	7691	2006	2595	3118	19829	F22 B40		ev # 7227
therefore LG signals not fully efficient								

Run summary continued on page 76

can trim the T1-question mark was from about NRN 552 too early,

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Reserved for run summary

2. TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30} cm^{-2} sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^4 Trace	Remarks

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

8^{00} P. Steffen, H. Rieseberg

11^{17} beam $I^+ = 3.9$ mA, $I^- = 3.2$ mA $L = 0.89 \cdot 10^{30}$ $E = 13.7$ GeV

12^{30} After 150 sec starting Run 543, 911 T_1 accepted, 7174 T_2 rejected, no T_2 accepted: Something wrong with T_2. call Krakhael. T_2

12^{40} T_2 suddenly started working. S. Orito

12 Mr. Orito switched L6-threshold to 4 GeV for this run (Rate: 1 counts/sec)

Problem: ZDAS ~~ZFT~~ ERROR 44 (time out) shows up ~ once per minute

13^{45} Beams lost. RF failure, Linac II down → no e^+ injection possible for the moment. klystron

14^{10} A. Wagner has reload the clock gate for the DL8's from 4μs to 2μs.
The DL8 system is known to hang, if after a trigger no clock pulse comes. Therefore, the long clock gate may have caused the ERROR 44 - trouble, since two triggers, which follow in 1 bunch-distance, the second gates no clock pulse (dead time of the gate generator)

14^{20} Try to look Jet chamber Histogrammes.
Those of Run 541 are displayed, and not those of the last Run 543.

16^{05} Lumi again 13.70 GeV = E_{beam}
currents e^+: 2.7 and 3.1 mA/bunch
e^-: 2.2 and 2.2 mA/bunch.
Lumi Pluto 6.6×10^{29}
" Mark J 5.6×10^{29}
" JADE $= \frac{391-36}{426} \cdot K = 6.3 \times 10^{29}$

Rates (after B. Naroska has reconnected the scalers)
10^7 T_0 accepted.

Tagging	36	(0.9 Hz)
L6(>4GeV)	123	(3.1 Hz)
2TOF • L6 (>1GeV)	1956	(49 Hz)
# " " accepted from T_2	226	(5.7 Hz)
rejected from T_2	1716	

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^4 Trace	Remarks

16^{35} Run 544 started
16^{40} ID-chamber Noises
First 1100 events of Run without Lumi - = crate was tripped off

16^{45} onwards crate for tagging counters drops out

17^{00} from ev 3550 on, change power ~~pin~~ pair for NIM crate for Tagging trigger. It should now work again.

But watch it!

18^{05} ID chamber Noises

18^{20} H.E.P.
YEDISP-YECOPY hanging in I/O WAIT. Jammed 3 terminals trying to free it! Suspect its some interaction with ZSEND-GETEVO
Recommend ~~reboot~~ restarting the Nord when the run ends.
Also Nord-50 hists have strange happening - have to IBOOT-N50 before each run to ensure it starts a new run correctly.

18^{55} Stop run 545. Reload N50

20^{30} luminosities end of run 547:

PLUTO	3.0×10^{29}
Mark J	$3.6 \cdot 10^{29}$
Tasso	$\sim 4.0 \cdot 10^{29}$
Jade	$7.5 \cdot 10^{29}$ or $3.5 \cdot 10^{29}$ depending on scale

21^{30} Scanned the reduced Disk mode by Steffen for run 540 and 541 at the 195 terminal. Found 16 Bhabha events. Average energy found to be ~~12.6 GeV, this would~~ 12.2 ± 1.6 GeV/track. This can perhaps be understood because ⅓ of the events scatter through ~~the~~ the Barrel and rings (θ ≈ 40°-50°). ~~also~~ Also the radiative ~~correction~~ loss has to be taken into account. ~~3 Jet~~ A few of the 16 events look also like eeγ. These all tend to reduce the energy. In the same sample, there are 3 Jet like beam-beam event. Beam gass interaction can easily be recognized. Chamber and lead glasses look quiet at last for good events. S. Orito

P.S. The momentum seems not good ~~I think~~ I have seen a Bhabha event with 30 GeV/c. Drift Chamber constants are urgently needed.

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

2^{50} new filling ready 4 x 4.5 mA

2^{55} ID chamber Not Aus, we wait 10 min before switching on again

? no data taken. ID switched off. Vak at luminosity counter.

24.6.79 2^{00} GV-power for ID preamplifiers switched off at segment 4+5 at one side ! ⇒ no Z-measurement in sector [4, 5] (8 cells)

2^{20} DAS ERROR 44 SUBERROR 0 all the time
beams lost

3^{30} Stable beams : 4 x 4.2 mA / 13.7 GeV

Rates [10^3 T_0

TAGGING	99
LG > 4 GeV	99
2 TOF + LG > 1 GeV	50 657 !
" accepted T2	2 703 !
" rejected T2	47 706 !

} very bad beams or error

3^{50} Start data-taking : events look bad, but maybe they always looked bad

talking with PKR : It turns out that the correction coils stay on values corresponding to M100 optics, after switching to M25. The crew at PKR (Petersen) does not know how to change the correction coils. We told them to get somebody out of bed.

talking with TASSO : They have perfectly good conditions

We have 80 % dead time

24/6/79

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^4 T acc	Remarks
1363								
1317								

Beulen fahren 24.6.79

5.40 uhr mit Rosmanith

		Rate 4 ToF-Mdn 10^6 T0 sec
A	auf -2 A	45 360
Horizontal	-4 A	47 842
Dies war Asymm Horizontal asymmetrisch	-3 A	42 000

Horizontal bleibt, vertikal symmetrisch

	+2 A	39 000
dito	+4 A	39 000
	zurück auf 2 A	

vertikale

Rosmanith meint, man müsse asymmetrische Beule fahren.

Hat nicht gehandelt	+2	40 000
dito	-2 A	40 000

zwischendurch kommen immer mal Zustände wo ein Trimmdet. alles viel besser ist, aber am Ende des Beulenfahrens ist immer alles beim alten. R. will mit nicht darauf einlassen den zwischenzustand zu suchen.

Jetzt noch Horizontal symmetrisch

+1 A	35 752
+2 A	37 000
-1 A	32 000
-1.5	30 000
-2 A	37 000

These are about the same rates as on page 5.7 at the beginning

RN) find that
the SYSTEM CRATE.

(if you have problems with Err 44)
Subcrate 0

oduced in coincidence with T0 but
ich up (with a period of 550 ns)
ime" signals on the ΣE_{+z} and ΣE_{-z}
and T0. This explains the effect
). The effect disappears totally
the luminosity is given most
ead Time) x E^2 x 6×10^{27}
ertigated on the data tapes ! G.H.

? ~20 CAGE OFF TO !

fahren', but PLUTO first.

see extra sheet)

two temporarily

0.2 mA , Vak = 6.0 10^{-9}

ror 10 higher than normal

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

21[50] new filling ready 4 x 4.

21[55] ID chamber not Aus, we rai

? wdata taken. ID ~~switch off~~. Vak.

24.6.79 2[00] GV-power for ID preamplifiers switche

2[20] DAS ERROR 44 SUBERROR
beams lost

3[30] Stable beams: 4 x 4.

Rates [10^3 T

TAGGING	92
LG > 4 GeV	92
2 TOF + LG > 1 GeV	50 657
" accepted T2	2 709
" rejected T2	47 706

3[50] Start data-taking; eve

talking with PKR:

talking with TASSO:

We have 80% dead tim

Nochmal vertikal symmetrisch

-1A	29000
-2A	28800
-3A	200000

Wir gehen auf -1.5A

Vers
im Augenblick nicht besser zu machen. Improvements possibly only due to Beam decay.

Orito still working on LG Trigger signal

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^3 T acc	Remarks

24/6/79

3[50] DAS ERROR 44 SUBERROR 0 always on
using (F8) and changing READOUT PATTERN I find that T2 trigger reading is the one who kills the SYSTEM CRATE.

Krehbiel says: its the Muon chambers

⇒ DAS: use F8 and 71730B (if you have problems with Err 44) Subcrat 0

4[40] Tagging Luminosity signal $(\Sigma E_{+2}) \cdot (\Sigma E_{-2})$ is produced in coincidence with T0 but not with computer live time. There is a large amount of pick up (with a period of 550 ns) during the camac readout cycle. This produces "in time" signals on the ΣE_{+2} and ΣE_{-2} discriminators and there are ten randoms between this and T0. This explains the effect noted on run # 547 (and earlier runs) on page 60. The effect disappears totally if the computer readout is not active. For the present the luminosity is given most accurately by (Tagging Trigger Rate) x (Correction for Dead Time) x $E^2 \times 6 \times 10^{27}$
[The problems with the Scintillator coincidences will be investigated on the data tapes] G.H.

5[00] We see that the LG total Energy is wrong
LG > 4 GeV = 200 / 10^6 T0, should be ≈ 20 CALL ORITO!

PKR seems to be ready now zum 'Beulen fahren', but PLUTO first.

6[52] Beulen fahren has only marginal effects (see extra sheet)
Orito still working on LG trigger signal
Drumm says 1. Def. too hot. Therm. shuts it down temporarily

8[00] ID: segment 4+5 reconnected to 6V for preamplifiers. OK

9[20] new filling completed: $\Sigma I^- = 7.7$ mA, $\Sigma I^+ = 10.2$ mA, Vak = 6.0 10^{-9}

Bad background conditions Rates ≈ factor 10 higher than normal

10.30 Rates improve. Switch on I.D., start run.
LG stops working

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

3 TOF v. Matr. 122 k } / 10^6 To acc.
3 TOF 164 k } / 10^6 To acc.

was 51 k on page 57

BP meter ~ 30 pA ; normally between 10–20 ?

10.35 I ~~tried~~ tried again various readout patterns:

75 730 B T2 and Test adc's → DMA time out
71 730 B ~~and~~ only Test adc's } both ok.
74 730 B only T2 trigger bank }

Felst and I think T2 should have priority, so we change ~~to~~ readout pattern to 74730 B again.
anode current of ID is by a factor of 3 to 4 higher than usual

11^{35} Nothing wrong found with the total energy linear sum. I do not understand why the rate was so high this morning ($>5^{00}$) except for the beam being noisy or the rate was measured without CAMAC enable. Further fine tuning on the timing of the linear sum has been completed At 9^{00} lead glass trigger just stoped. Found one ADD went broken. Exchanged.

Now everything seem O.K.

S. Orito

11.45 We still observe Time-outs in crate 7 branch 7.
Looking at the crate there is no particular DL8 that hangs.

12.45 L=3.27 · 10^{29}

since run 549 width of matrix = 6

13.45 I.D. HV tripped due to overcurrent in 2 cells
Noticed that BP TDC's don't work (probably since beginning of datataking. Will investigate reason after beam dump.

14.10 display gives impression of a ringing amplifier in cells # 18/19 in ring 1.
channel 19.1.4 oscillates 12 mV SS

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 To acc	Remarks

14^{40} new filling started
15^{29} new filling ready $I = 4$ mA e^+ per bunch, $I = 3$ mA e^- per bunch

	3 TOF v Matrix	691 k / 10^6 T0 acc		BP rate meter: off scale
	3 TOF	777 k / 10^6 T0 acc		
15^{42}	3 TOF via Matrix	170 k / 10^6 T0 acc		
		220 k / 10^6 T0 acc		BP rate meter still off scale
15^{45}	3 TOF via Matrix	132 k / 10^6 TO		" " "
	3 TOF	177 k /		

~~Rate is too~~ very Beam activity at the beginning of a filling, suggest to wait switching on the internal detector until

3 TOF / TO accepted < 0.2

16.02 I.D. tripped, beam lost, TASSO magnet dropped off and our compensating magnet (right) due to thunderstorm probably. thunderstorm

16^{40} compensating magnet O.K. again

22^{00} Beams back with 4 mA. Rates: LG > 4 GeV: 5
2TOF + LG > 1 GeV: 174 k
3TOF / Matrix: 10 k
3TOF: 132 k
T2 accept: 145

for T0 accept 10^6 and T2 ≥ 1 track

These rates were taken without the computer

22^{45} beam lost (since detector was on for 15 minutes)

e 2.6 mA e^+ 4.2 mA

2 | Checklist for switching on/off of JADE detector (And shut of the shift but lost)

date	24.6.		25.6					26.6					27.6					
time	15	30 to 00	72[00]	2745	150	4[10]	4[00]	5[40]	807	1823	2229		5[31]	12[35]	16.08	19.34	7[00]	
on/off	on	OFF	ON	OFF	ON	OFF	ON	ON	OFF	ON	OFF	ON	OFF	off	on	off	on	
Injection/VETO	✓	✓	✓	✓	V	V	V	✓	V	V	✓	V		V	V	V	V	✓
beam pipe & TOF	✓	V	✓	✓	V	V	V	✓	✓	V	✓	✓	✓	V	V	V	V	✓
LG Endcap	✓	V	✓	✓	V	V	V	✓	V	V	✓	V	✓	*)	V	V	V	✓
LG Barrel	✓	V	✓	✓	V	V	V	✓	V	V	✓	V	✓	~~*)~~	V	V	V	✓
Tagg LG	✓	V	✓	✓	V	V	V	✓	V	V	✓	V	✓	V	V	V	V	✓
Tagg Szint	✓	V	✓	✓	V	V	V	✓	V	V	✓	V	✓	V	V	V	V	✓
Internal Det	✓	✓	✓	✓	V	V	V	✓	V		✓		✓	V	V	V	V	✓

*) LG not off by request of Orsay SW

ID-N-6704088

25/6/79

1:55 I = 2.5 mA e^-, I = 4.2 mA e^+, BP ratemeter: off scale.
new filling

2:20 3 TOF ∨ Matrix 69 k / 10^6 T0 BP ratemeter 68 μA
3 TOF 40.5 k / 10^6 T0

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	∫L dt nb^{-1}	tape	BP [V]	3 TOF / 10^6 T0 acc	Remarks

2:50 Rates
LG > 4 GeV : 5
2 TOF + LG > 1 GeV : 135 *
3 TOF/Matrix : 57 k
3 TOF : 87 k
T2 accept : 3.
} with computer for T0 accept 10^6 and T2 ≥ 1 Track.

We take data with T1 [Run 559, * events read: 2210]
ID tripped several times because of too high anode current.

≈ 4[00] PKR dumps beam to start a new filling ~~and~~ because of PLUTO-request.

4[55] new filling I_{e^+} = 2.4 mA I_{e^-} = 2.4 mA BP ratemeter 70 μA
3 TOF/Matrix 73 k / 10^6 T0 ≈ 5 min after filling ended
3 TOF 115 k / 10^6 T0

5[45] Computer hang up restarted
7[10] " " " restarted and finished Run 563 (≈ 8000 events)
7.50 Tested c's 1 + 2 connected and timed: contain prepulse and t_0.

~~8.30~~
8,00 – 9,00 ACCESS to EXP. 25.6. 8[00]: 11[00] vacuum, 12 bar

8.30 Problem with noisy TOF counters was due to an earth connection at connector 31+ by an alien cable. Removed, now pedestals look beautiful again.

9.00 ~~Changed~~ Interchange of beam pipe counter Nr. 15- ~~to~~ Nr. 17
The LED of TOF counter Nr. 37+ doesn't work

15[25] EH7 Power Supply Number +6 on tagging system found tripped off – was not reset. REPLACED
This will change the luminosity by a factor of 2. Result from off-line analysis:
this must have happened already ~~later~~ between runs 547 and 549. 4.7.79, H.W.

15[50] – 16[00] Pulser-runs for ID calibration taken / for details see Tapesheet
Tape F22 B36, runs 565 – 580
A.W.

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

e 2.6 mA e^+ 4.2 mA

2 | Checklist for switching on/off of JADE detector (And shut of the shift list lost)

date	24.6.		25.6					26.6					27.6				
time	15	30 to 00	7200	2245	150	410	600	540	807	1023	2229		531	1235	1608	1934	2400
on/off	on	OFF	ON	OFF	ON	OFF	ON	ON	OFF	ON	OFF	ON	OFF	off	on	off	on
Injection/VETO	✓	✓	✓	✓	V	v	v	✓	v	v	v	v		V	V	V	V
Beam pipe & TOF	✓	v	✓	✓	V	V	v	✓	✓	v	v	v	✓	V	V	V	V
LG Endcap	✓	v	v	✓	V	v	v	✓	v	v	v	v	✓	*)	V	V	V
LG Barrel	✓	v	v	✓	V	v	v	✓	v	v	-	v	✓	~~V~~	V	V	V
Tagg LG	✓	v	v	✓	v	v	v	✓	v	v	v	v	✓	V	V	V	V
Tagg Szint	✓	v	v	✓	v	v	v	✓	v	v	v	v	✓	V	V	V	V
Internal Det	v	✓	✓	✓	v	v	v	✓	v		✓		✓	V	V	V	V

*) LG not off by request of Orsay FW

ID-N-670408

25/6/79

1:55 I = 2.5 mA e^-, I = 4.2 mA e^+, BP ratemeter: off scale.
new filling

2:20 3 TOF v Matrix 69 k / 10^6 T0 BP ratemeter 68 μA
3 ToF 40.5 k / 10^6 T0

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^5 T0 acc	Remarks

2:50 Rates LG > 4 GeV : 5 ?

1 | Checklist for Switching on/off of JADE detector

time	130	600	1100	1105	1530	245		1117	1345	1605	2009	2145	8.30	246 / 925	
on/off	ON	OFF	ON	OFF	ON	ON		on		on	OFF	ON	OFF	on	off
Beam pipe		✓	✓	v	✓	✓	v	v	v	V	v	v	✓	✓	✓
I.D.	X	✓				✓	v	v	v		✓	v	✓	✓	✓
TOF		✓	v	v	✓	v		v	v	v	v	v	✓	✓	✓
LG-EC		✓	v	v	v	v	v	v	v	V	✓	v	✓	~~✓~~	✓
LG-Barrel		✓	v	✓	v	v	~~v~~	v	v	✓	✓	v	✓	✓	✓
Tagging LG		✓	v	✓	v	✓	v	v	v	✓	✓	v	✓	✓	✓
Tagging Si		✓	v	v	v	✓	v	v	v	✓	✓	v	✓	✓	✓
Injection VETO		✓	v	v	v	V		V	V	V	V	v	✓	✓	✓

15:25 EHT Power Supply Number +6 on tagging system found tripped off — was not reset. REPLACED. This will change the luminosity by a factor of 2. Result from off-line analysis: this must have happened already ~~before~~ between runs 547 and 549. 4.7.79, H.W.

15:50 - 16:00 Pulser-runs for ID calibration taken / for details see Tapesheet
Tape F22 B36, runs 565 - 580
A.W.

NRN	date	Start	Stop	I^+	I^-	Veh	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

72 25.6.79

16^{00} H. Riesberg, D. Haidt.

No beams yet.

16^{10} Nord hang up at μ-damber test.
Mr. Petersen restarts computer.

16^{25} e^- stored, but PKR says that no e^+ can be injected for the time being (problems at synchrotron)
New energy shall be 13.86 GeV

17^{45} Modifications made to Colourtv ☆, event display and N50 histogramdisplay programs.
H.E.M. Tested and appear to be Ok.

19^{15} Start filling

20^{30} PETRA control room announces that the next run can start.

2 bunches	e^-	5	4.5
	e^+	3.4	1.5

13.86 GeV

↑ low! not yet understood by PCR

Rates per 10^6 "T0 trigger ACCEPT" :

TAGGING	4
LG > 4 GeV	5
2TOF + LG	1.4×10^5

21^{15} PETRA control room interrupts the run, they want to fill again.

22^{15} PCR: ready for next start

e^+	4.0	4.0
e^-	4.3	4.5

Rates 3 TOF 149 540 for 10^6 T_0 accept
3 ??? Matrix 94 040

Branch 7 crate 2 crate controller exchanged because of ZDAS ERROR 44

22^{30} found one TOF discriminator threshold set to 50 mV instead of 100 mV

2 TOF • LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30} cm^{-2} sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^4 T acc	Remarks

73

23^{11} Run 581 started Trigger: Tagg + LG(>4 GeV) + 2TOF • LG(>1 GeV) • 1 Track (all)

Problem: 1.) still DAS ERROR Number 44, now in 707 (~ 1/min) → reason: DLB 139 hangs occasion. restart of 139 disconnected A.W.

2.) LG many events with high LG clusters on one side → 1 module fired all the time Y.T.

23^{30} Computer hang up at event 2825 Disappeared after this run (581)

26.6.79 Shift Helm, Totsuka

0^{56} run stopped due to HV trip of ID

1^{05} Run 584 Started.

1^{17} ID failure, 1:19 continued

1^{25} " " , 1:29 "

1^{44} " " Petra is permanently loosing beam, we keep ID switched off.

Stop Run.

2^{30} HV of BP checked channel #1 reset to the nominal value.
HV of LG set to the correct values Y.T.

2^{40} Now filling

5^{37} beam available I^+ = 5.4 mA I^- = 6.4 mA

Rate			
	Tagging	223	10^7 'T0 trig accept'
	LG > 4 GeV	60	
	2TOF + LG	960×10^3	

7^{00} Run 58[illegible] cancelled due to abnormally high trigger rate of LG > 4 GeV
It turned out that T0 was not fully efficient, namely too much attenuation was in.

From run 586 onwards the potential voltage of the ID is back to normal (2.47 KV at powersupply). Found that powersupply had been erroneously be set to 2.40 KV at unknown time in recent history. AW.

8.00 o.ito Krehbiel

8^{10} Beams lost. PETRA people say it will take some time because of e^+ septum trouble

8^{30} Paper of Data-log-Printer, (Magnet + Heat etc) was blocked. Unable to fix because of Key Disable.

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

12^{15} PETRA make orbit correction at ~~this error~~ the new energy 13.86 GeV
16^{00} C.Y. , H.D. C. Yanagisawa / Herbert Drumm
18^{25} 2 X 4 mA e^- / 4 mA, 2.5 mA e^+

19^{00} 20^{00} Discrepancies in 2 TOF * LG > 1 GeV - Rates were due to a too early T1 question pulse. Not true see next page
Ono-to and Wenning checked their respective equipment. Conclusion: the T1 - Time generator had a jump of 90 nsec
We run now at HP 890 (before it was 830) [This has to be confirmed by Wrapper, event display, of tape wrapper indicates no jump]

19^{00} 20^{00} Ruseby installed a beeper to indicate that the inner detector is off (buzzing) or on (not buzzing)

20^{30} DL8 no. 139 and 152 are disconnected (start cable pulled out) because of frequent time - outs.

22^{00} T2 card 1 in Rucksack for CELL 39 tentatively exchanged. Hope the notch in the Histogram will disappear
22^{30} " " " " " 39 also "

Exchange of card cell 39 seemed to be successful.

23^{55} The number of events accepted on scaler is ≈ 2% lower than the number of events read on coloured screen
0^{00} Jmuri, Olsson on shift (events on color TV include scaler events!) R. Eichler
27.06.79 Rates at start of R.591

$T\Theta^{ecc.} = 10^{7}$ Tagging 66
LG > 4 G: 34
2 TOF · LG(>1 GeV) 365

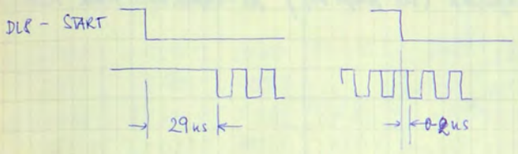
Run ended by HV trip of 10, simultaneously 8000 evs reached.
Run 592 started, after PLR gin message of Frequency change from -3 kHz to -2,5 kHz
Background is now much better, BP rate much lower scales 60 μA instead of >100 μA Run 591 ca 5 Hz
Observation in R591 : Many triggers 400 B = LG > 4 GeV; but on display only few "guiding blocks" ?
" ~~FEW~~ tagging triggers but in event display mostly pedestal values

20^{45} Fan fault branch 4 Crate 1 ~~then~~ switching on, off as ok. Then DAS error 44. Start new run.

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^4 T0 acc	Remarks

12^{30} The last filling (≈ 8^{00} - 12^{30}) was used to understand and (possibly) fix the problem, that either the leadglass trigger or the driftchambers are inefficient. The T1-question pulse has to come with a (TΦ - T1) - delay of ≥ 840 Hewlett-Packard units, while the driftchambers needs a (TΦ - T1) - delay of ≤ 830 Helis. In the attempt to cure this problem the DL8 Start / Clock - timings were re-arranged.

old relation: new relation



since the first clock count has to come before the earliest hit in the chamber the net - timing gain is ≈ 25 ~~nsec~~ nsec ≙ ≈ 3 counts

A.W.

This scheme has to be tested with tracks and distributions during the next filling.

16^{30} Timing - offset in chambers measured with tracks to be (5 ± 1) counts.

13^{00} insert muon readout in DAS when started with F01. But since ~~not~~ μ-chambers are not all ready an error message will appear YPARA: error in muon system
missing response in crates 1, 2, 7, 9, 10

F01 reads the following: event header, latches, T1 trigger, T2 trigger, test adc's, BP, TOF, LG - adc's, ~~[illegible]~~
tagging adc's, jet-chamber, muon-chambers
The scalers are read all 100 s events and at run end! R. Eichler

13^{32} MUON READOUT INCORPORATED into standard data taking option (F1).

CRATES	3, 4	Rucksack sidewall	currently active
	5, 6	Base	
	8	Eastern quadrant of roof	
CRATES	1, 2	Far side wall	are expected to become active over the next few days. (Meanwhile, they give a warning message at start of run)
	7	Northern quadrant of roof	
	9	Western " "	
	10	Southern " "	

NRN	date	start	stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept
→	26.6.79		≈ 19⁰⁰			new	filling		13.86 GeV		T1-quartz pulse changed to			
588	26.6.79	20^{33}	20^{48}	1.5/2.5	2×2.5	$5.2\cdot10^{-7}$	105	1253	~~$27\cdot10^6$~~	~~$26\cdot10^6$~~				
589	26.6.79	20^{51}	21^{40}	1.5/2.5	2×2.5	$5.2\cdot10^{-7}$	2874	8000	$748\cdot10^6$	$63\cdot10^6$	$685\cdot10^6$	4754	15226	3139
590	26.6.79	21^{57}	22^{23}	1.1/2.0	2×2.0	8 "	~~1461~~	4032	$380\cdot10^6$	$20\cdot10^6$	$359\cdot10^6$	2119	~~10~~ 165	1839
NF	new filling ready at 03⁰⁰													
591	27.6.79	03^{29}	03^{53}	1.5/3.6	3.6/3.6	$5.4\cdot10^{-7}$	1440	8000	352×10^6	12×10^6	231×10^6	5953	14793	2113
592	27.6.79	04^{16}	4^{56}	2.8/2.1	2.5/2.5	"	2400	3331	562×10^6	$44\cdot10^6$	$338\cdot10^6$	2220	5243	1111
593	"	5^{06}	5^{30}	1.0/2.3	2.3/2.3	"	1440	2400	331 "	$11.5\cdot10^6$	320 ·	1734	3165	666
NF	27.6.79	8⁰⁰–13⁰⁰	/T1 quartz pulse and SCP-gate now adjusted (see page 75) /									u-chamber		read out
594	"	16^{28}	16.52	2/3.2	3.2/3.2	$7\cdot10^{-7}$		8465						
595	"	17⁰⁰	17.35	1.8/2.8	3.0/2.6	$6.6\cdot10^{-7}$	1471	6221	330×10^6	50×10^6	272×10^6	3333	11413	2781
596	"	18^{06}	19.15	1.5/2.2	2.3/2.6	$5\cdot10^{-7}$	4079	6934	1.23×10^9	310×10^6		3764	9182	3170
NF 597	"	23^{02}	23^{25}	1.4/1.8	1.4/1.4	$9.6\cdot10^{-7}$	~~952~~ 1415	7413	350×10^6	33×10^6	214×10^6	3623	14568	3365
598	"	23.30	00.05	2.4/2.3	2.3/2.3	$9.2\cdot10^{-7}$	1926	9013	501×10^6	72.5×10^6	429×10^6	5224	19901	3637
599	28.6.79	00.10	00.55	2.3/2.5	2.5/2.5	$8.8\cdot10^{-7}$	2790	8000	655×10^6	41×10^6	613×10^6	5211	6425	2654
600	28.6.79	1.05	1.59	2.25/2.25	2.25/2.25	$6.6\cdot10^{-7}$	3701	8000	859×10^6	40.9×10^6	818×10^6	5298	5694	2568
601	28.6.79	2.09	3.42	1.8/1.8	1.8/1.8	$6.6\cdot10^{-7}$	5393	10000	1.25×10^9	51.7×10^6	$1201.\times10^6$	6067	9340	3747
NF 602	28.6.79	3.49	3.57	1.8/1.8	1.8/1.8		460	814	108×10^6	$4.2\cdot10^6$	104×10^6	469	1524	379
603	28.6.79	9.26	10.12	3.4/3.4	3.2/3.2	$5.1\cdot10^{-7}$	2997	7865	$709\cdot10^6$	$45\cdot10^6$	$663\cdot10^6$	5284	9792	2581
604	28.6.79	10.22	11.12	2.4/2.4	2.2/2.1		3256	5935	$762\cdot10^6$	$43\cdot10^6$	$719\cdot10^6$	3966	5804	1969
605	– " –	11.18	11.58	2.1/2.1	1.8/1.8	$4.8\cdot10^{-7}$	2699	3565	$642\cdot10^6$	$46\cdot10^6$	$596\cdot10^6$	2592	2739	974
606	– " –	12.08	13.09	1.8/1.8	1.6/1.6	$4.5\cdot10^{-7}$	3656 (3255)	5334	$846\cdot10^6$	$82\cdot10^6$	$814\cdot10^6$	3452	5770	1882
NF 607	28.6.79	16.55	17.13	2.2/2.8	2.1/2.3	$5.0\cdot10^{-7}$	497	1138	$272\cdot10^6$	165×10^6	107.1×10^6	662	1277	476
608	28.6.79	17.20	18.25	2.8/2.8	1.9/1.9	$6.0\cdot10^{-7}$	3637	7865	$946\cdot10^6$	157×10^6	789×10^6	4440	10677	3425
609	28.6.79	18.35	19.39	4.4	3.0	$4.8\cdot10^{-7}$	3891	7865	987.7×10^6	~~$131.$~~ 120.3 $\times10^6$	867.4×10^6	4267	11990	3598
~~610~~	~~28.6.79~~	~~19.54~~	magnetic tape was not selected.											
610	28.6.79	19.53	21.03	3.8	2.6		4393	7232	$1089.6\cdot10^6$	114.9×10^6	978.8×10^6	3960	10113	3272
611	28.6.79	21.11	21.45	3.2	2.2	4.8×10^{-7}	2074	3456	531×10^6	74.8×10^6	457×10^6	1760	6232	1696
612	28.6.79	21.51	21.55	3.0	2.0	4.8×10^{-7}	269	359	60×10^6	2.1×10^6	57.9×10^6	194	557	165
NF 613	29.6.79	0^{40}	1.14	6.5	7.0	$4.8\cdot10^{-7}$	747	8000	$366.4\cdot10^6$	212.0×10^6	154.4×10^6	3089	39706	4778
614	"	1^{20}	1.43			$4.8\cdot10^{-7}$	–	8000	320,6 "	172 "	148 "	3157	42986	4708
616	"	2^{30}	3^{01}	5	4,8	"	1868	8000	453,4 "	54,3 "	399 "	3553	27714	4312
617	"	3^{08}	3^{34}	2×2.3	2×2.2	"	1758	4149	431,8 "	45,1 "	386,7 "	2183	7156	1813

Sum of this should be approximately equal to

2 TOF · LG > 1 GeV	LG > 4 GeV	tagging	<L> from tagging $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^4 T trace	Remarks
890 (before 830)					F22 B41			ID failure ends the run; scaler values not correct
18611	2378	2479	.86	2.5	F22 B44			
12118	1236	944	.65	1.0	F22 B45			stop because of a new Petra-filling
•					F22 B46			
17~~86~~	4138	1724	1.38	2.0	F22 B46			
6458	992	1275	0,61	1.5	F22 B47			ended because of DAS wire 44, bx 4 or 7 Fan fail.
3920	800	972	0.78	1.1	F11 112			Beam lost
added (see page 75)					F11113			solenoids were not read out, because of tests with Trigger-systems
17508	2159	1486		~~1.5~~ 1.5?	F11114			← increase threshold for TOF to 200 mV from Run 585 on
12~~5~~64	2751	1539		1.73	F11115			← (ΣE_2) x $(\Sigma E_{4\pi})$ (large) first read out, some one body reset (orphan)
18581	2378	1246	1.8	1.7	F11118			
15855	3030	2807	1.5	2.8	F11119			At 11.47 ID tripped, Continue run at 11.50
9309	2810	2942	1.09	3.0	F11131			to 1.00 ID tripped Continue at 1.05
8446	2917	2940	0.92	~~3.~~4	F11132			for first 4000 evts. energy typed was 1.386 instead of 13.86 GeV
13303	5723	3072	0.6 [3249/516 tags acc.]	3.4	F11 133			
1924	346	198		0.2	F11 136			Run stopped for new filling
12661	2900	2978	1.14	3.4	F11 136			
7977	2292	2131	0.75	2.4	F11 137			Run stopped by DL8 crate failure
3820	1477	1392	0.6	1.6	F11 138			" due to NORD crash.
7830	2230	1628	0.5	1.87	F22 B05			Found that LG trace drifted by about 20 mV (1.6 GeV) readjusted at 12:35. Before was 0.6 GeV
1803	438	319	0.74	0.37	F22 B08			Stopped due to CAMAC hangup
14334	3047	1946	0.62	2.25	F22 B09			Normal End
15812	3103	1810	0.54	2.09	F22 B23			" " ← T2-Trigger: FPLA card #6 exchanged
~~13554~~	~~2~~				F22 Y01			
13554	2896	1590	0.42	1.83	F22Y01			Run end due to unexplained readout hang up
8008	1407	633	0.35	0.73	F22 B91			Run end — same reason
756	159	63	0.27	0.07	F22 B91			Run end — new filling
44756	2640	1012	1.3	1.0	F22 B92			
47906	2722	962	–	0.9	F22 B93			
32197	2746	1382	0.75	1.4	F22 B94			increased ~~reset~~ energy load from thresholds by 10 mV (see page 82)
9154	1437	1051	0,56	1.0	F22 B95			← LG-threshold increased by further 5 mV Run stopped due to computer hang up

Run summary continues page 84

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

78 27.6.79

16.00 Pearce, Weber on shift.
Run 594 shows very high background: most of TOF counter respond at each event.
Feld and Petersen increase threshold for TOF-counter to 200 mV (before 100 mV)

Rates / 10^6 T0 acc.	3 TOF (low noise)	3 TOF
threshold Tof-counter 100 – A	125,5 K	194 K
" " " 200 – A	78,9 K	127 K

Run 595 interrupted by buss of JET-ch. at 17.26, 5099 evts, continue at 17.29
After Run 595 beam optimized in beamwaist position by PKR
Muon readout switched off after 596.

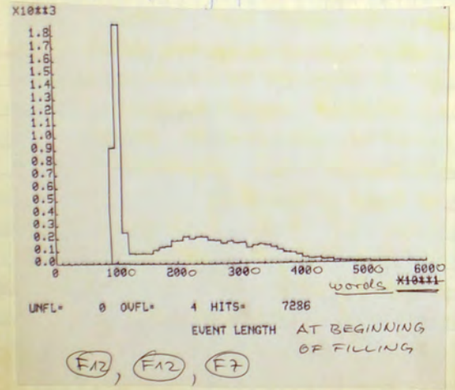
19.30 Comparison of Trigger-Rate without and with Leadglass:

	T_1 = 2 TOF, T_2 = 2 prong	T_1 = 2 TOF + 1 GeV, T_2 = 1 prong →
T_0 accept	10^4	10^7
T_4 postponed	253 K	400
T_2 reject	252 K	300
T_2 accept	816	100
	↳ ≈ 20 Hz	↳ 2,5 Hz

These Numbers were taken from log book, NRN 595

$\frac{253\,K}{40\,Sec} = 6\,KHz$

21.40 Luminosity for a few minutes ⇒ loss of positrons ⇒ have to start filling again
23.00 New filling finished ~~at 23.00~~ Rates at new filling / 10^7 T0



F12, F12, F7

Tagg	85
LG > 4	51
2TOF · LG>1	4 k
3TOF	1190 k
3 TOF/Mstr.	734 k

2 TOF · LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nB^{-1}	tape	BP [V]	3TOF / 10^6 T acc	Remarks

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28.6.79 0⁰⁰ Elsen, O'Neill

tf 1.35 PKR announce to change frequency to -2 KHz.
03.01 JET chamber trip off.
tf 03.15 Run continued.
tf 3.57 PKR announce new filling Tape F11136 barely started. Will put 2nd run onto it.
05.04 PKR calls to announce they are still having trouble with both e^+ and e^- from Synchrotron
tf 7.50 PKR will try to inject "soon". Synchrotron had problems with 1 Kicker.

8.00 J. Allison, A. Wagner

g.15 Beam again
g.40 ID trip due to overcurrent, run did not stop due to wrong cabling ∿ ∿ 3 min of run 603 without chamber inform.
10.25 change ZREAD. There was a mistake in scaler readout before. But the scalers have still a problem due to wrong switch settings. Will investigate during next beam off. REtelles. Up to now, only the luminosity scalers are read correctly. The trigger box is read incorrectly.
11.57 Computer hung on level 3 HEN - restarted
13.09 End Run 606 for new filling

16.00 H. Krehbiel, R. Marshall

16.05 PKR ready to start filling, but unsure how it will go.
16.45 All scalers should read correctly. The last 3 scalers were not hooked together (32 bits) before. The scaler "All triggers" will overflow after 4000 sec. But we have all 64 events as scaler reading, the overflow is easy to notice.
18.30 Run 608 T2 logic (31-32) 12 bits for linked tracks missing. We want to exchange FPLA card #6.

Once per shift please make a hardcopy of N50 histograms
#7 and #8 T2 input and output! V

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Date	Time	ON OFF	Inject VETO	beam pipe TOF	LG End-cap	LG barrel	Tagg LG	Tagg Szint	Inter Detect
28.6.79	9^{15}	ON	v	v	v	v	v	v	✓
	13^{09}	OFF	v	v	v	v	✓	✓	v
	16^{40}	on	v	v	v	v	v	v	v
	19^{55}	off	v	v	v	v	v	v	v
29.6.79	0^{35}	on	✓	✓	✓	✓	✓	✓	✓
	6^{00}	off	v	✓	✓	✓	✓	✓	✓
	7^{00}	on	✓	✓	✓	✓	✓	✓	✓
	1150	off	✓	✓	✓	✓	✓	✓	✓
	1300	ON	✓	✓	✓	✓	✓	✓	✓
30.6.79	18.46		✓	✓	✓	✓	✓	✓	✓
1.7.79	3.47	off		✓	✓	✓	✓	✓	✓
1.7.79	8^{03}	on	✓	✓	✓	✓	✓	✓	✓
1.7.79	(2x)	off	✓	✓	✓	✓	✓	✓	✓
	1330	on	✓	✓	✓	✓	✓	✓	✓
	1904	OFF	v	v	v	v	v	v	v
	20^{00}	ON	v	v	v	v	v	v	v
13.7.79	3^{07}	ON	v	✓	✓	✓	✓	✓	
13.2.79	10^{00}	off	✓	✓	✓	✓	✓	✓	✓
18.7.79	07	off	v	v	v	v	v	v	v
	150	ON	v	v	v	v			✓
	330	OFF	✓	v	v	v	v	v	v
	445	ON	v	v	v	v	v	v	✓
	640	OFF	v	✓	v	✓	v	v	v
	10^{10}	ON	✓	v	v	v	v	v	✓

2 TOF * LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Trace	Remarks

28.6.79

19.39 End of Run 609. We ~~replace~~ FPLA card #6 in Trigger-2 logic according to the instruction of Mr. Helm.

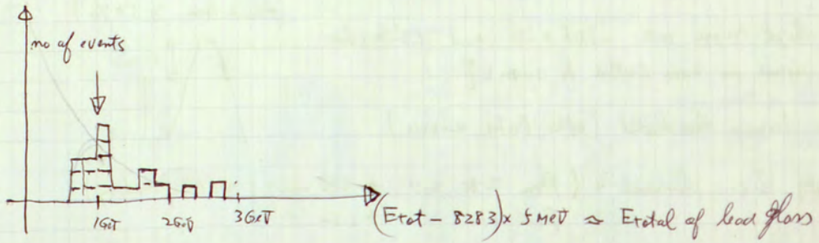
19.53 Start of Run 610. T2 logic; still gaps in linked tracks.

21^{00} Looking about 50 event on the on-line display ~~or~~ I noticed that trigger 400B (supposed be LG>4GeV) almost always give empty lead glasses while trigger 1000B (supposed to be tagging) gives ~~a~~ large energy in the lead glass. If this trigger words true, something must be totally wrong with the trigger.
S. Orito

9^{05} · After 72^{32} events no more came through SDAS – computer seemed OK & event accept light on trigger box was on i.e. computer should have read it!. Ended run. when starting next one, the N50 crashed with negative sqrare root – Aborted N50 – next run seemed OK H. Fujii

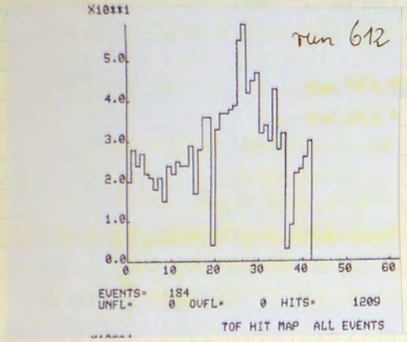
21^{15} At the end of the run we pulled the lead glass total energy cable, and watched display. Only trigger 1000B appeared. Put the lead glass back 400B and 1B came. So the assignment was wrong. The correct ones are; 400B=(tagging), 1000B=(LG>4GeV)

21^{20} ~~During the run Prof. Suzuki et al. visited the~~
For the trigger T1 (2TOF+LG>1GeV) energy curve from on line display



21^{50} Beam taken out — new filling

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept



3 TOF counters nearly down.

The discriminators and latches are O.K (see Trigger 1 input plotts ~~next~~ upwrik page) this plotts is obtained from TOC's.

23^{00} Tape unit cleaned. PDi

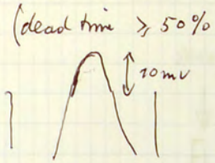
29.6.79 0^{00} Warming, felt

0^{30} new filling, 6,5 mA e^+, 7.0 mA e^-

~~DO N~~

1^{45} noticed high trigger rate 2TOF*LG and LG>4Gev
lead glass signal on scope drifted to 10 mV E
increased trigger threshold (after Orito advice)
accordingly i.e. channel 4 { from 220 mV → 320 mV (voltage reading)
" 2 from 600 " → 650 "

(dead time ≥ 50%)



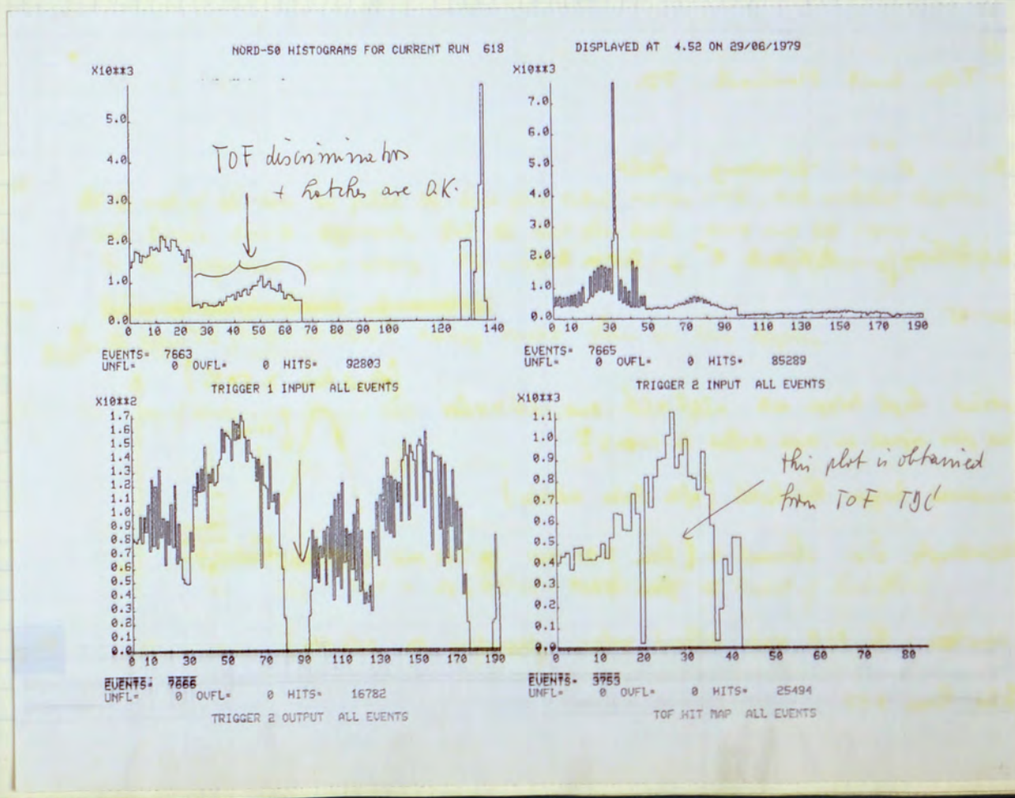
(caution: the DVM reads different values depending on polarity)
this must be due to DVM. Measurement with „Keithley" does not show this effect before Run 616

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> 10^{30} m^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^5 T$_{beam}$	Remarks

29.6.79

3^{00} dummy Run 616 drifted the Leadglass offset from 10 → 15 mV
increased the threshold before Run 617 accordingly 4 : 320 → 370 mV
2 : 650 → 680 mV

6^{00} next Filling 6^{58} ready
– 2h Hz



NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

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Run #	date	start	stop	I^+ [mA]	I^- [mA]	Vak [10^{-6} Torr]	time [sec]	# of accepted events	All triggers	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept
618	29.6.79	3.48	4.54	4.4	4.2	4.8	4495	8000	$1021{,}2\cdot10^6$	$39{,}1\cdot10^6$	$982{,}1\cdot10^6$	4442	11109	3424
NF 619	"	4.59	5.23	"	"	"	1545	2163	349.8 "	9.69 "	340,1 "	1249	2466	868
			new filling											
620	29.6.79	7^{20}	7.54	2x4	2x3.6	4.8	1883	8000	473×10^6	$55{,}6\cdot10^6$	$417.8\cdot10^6$	4466	14165	3379
621	"	7.58	8.40	2x3.3	2x3.0	"	2736	8358	645×10^6	458×10^6	650×10^6	5801	12666	3357
622	29.6.79	8.51	9.15	2x2.7	2x2.5	4.6	1526	3980	369×10^6	34×10^6	334×10^6	2261	6188	1719
623	29.6.79	9.41	10.09	2x2.5	2x2.3	4.7	539	3400	197×10^6	82×10^6	114×10^6	2777	2125	623
~~624~~														
624	29/6/79	10.21	11.37	2x2.4	2x2.1		4901	8852	1135×10^6	55×10^6	1079×10^6	5153	9553	3699
625		11.44		2x2.6	2x1.8									
626 new filling		1300		2x3	2x4									
630		1403	14:30					3855	476×10^6	22×10^6	453×10^6	2832	3431	1023
631		1440	16:30	2x2.0	2x2.5		6138	8861	1597×10^6	75×10^6	1522×10^6	6101	7453	2760
632		16 40	17:30	2x2.0	2x1.5		3005	6159	782×10^6	40×10^6	741×10^6	3100	14182	3059
new filling														
633		19 50	20 05	2x2.6	2x2.7		711	3862	185×10^6	51×10^6	134×10^6	1663	13465	2199
new filling														
634		21^{25}	21^{43}	2x4	2x4	3.5×10^{-9}	1101	3454	286×10^6	108×10^6	178×10^6	1998	5815	1456
635		21^{53}	22^{37}	5.4	5.3	4.6×10^{-9}	1790	7966	465×10^6	$66{,}8\times10^6$	399×10^6	4019	16601	3847
636		22^{30}	23 07				2304	7865	599×10^6	52.9×10^6	546×10^6	4236	14802	3629
637		23 15	24 00			4.6×10^{-9}	2807	7865	730×10^6	$55{,}5\times10^6$	676×10^6	4240	13584	3625
638	30.6.79	0.04	2.07	~5.0	~5.0	4.2×10^{-9}	4614	8851	1201×10^6	$54{,}2\times10^6$	1146×10^6	5048	13729	3803
639	30/6/79	2.17	2.45	3.2	3.2	4×10^{-9}	1628	3083	424×10^6	15.7×10^6	408×10^6	1709	5628	1374
640	30.6.79	6.36	7.42	5.0	6.2	4.3×10^{-9}	3722	6883	968×10^6	$44{,}1\times10^6$	924×10^6	4632	7767	2251
641	30.6.79	7.49	8.56	4.0	5.0	4×10^{-9}	~~4618~~	5168	$1{,}3\times10^9$	32×10^6	999×10^6	3611	4569	1472
642	30.6.79	9.20	10.19	3.0	4.0	4×10^{-9}	3997		948×10^6	69×10^6	879×10^6	2437	3507	1060
~~643~~	~~30.6.79~~	~~10.34~~												
643	30.6.79	13 30	13 59	4.4	8.0		1425	4300	$371\cdot10^6$	$33\cdot10^6$	$338\cdot10^6$	2562	5960	1738
644		14 11	14 55	7.6	4.2		1575	2846	$410\cdot10^6$	$79\cdot10^6$	$330\cdot10^6$	1907	2702	939
645		14 08	15 15	6.8	3.7	$4.1\cdot10^{-9}$	5448	7380	1.34×10^9	1.87×10^8	1.205×10^9	4973	6054	2329
646		16 48	18 40	2.7	2.0	4.0×10^{-9}	7438	7400	1.71×10^9	74.4×10^6	1.64×10^9	4856	5743	2450
647	30.6.79	20^{01}	21 42	6.4	6.8	4×10^{-9}	5937	10000	1.39×10^9	86.2×10^6	1.30×10^9	7485	6200	2387
648	"	21^{51}	22^{16}				1551	1572	3.51×10^8	10.3×10^6	340×10^6	1114	955	425
649	30/6/79	23.32	23.49	8.3	8.9		1390	6801	364×10^6	54.6×10^6	310×10^6	2973	10251	2709

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	Run gaps	<L> $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape #	Remarks

$\int L\,dt = N \times 1.15 \times 10^{30}\ (cm^{-2})$ N = tagging − accidentals

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2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	Run gaps	<L> $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ $[nb^{-1}]$	tape #	Remarks
14 724	3021	2047		0.45	2.0	F22 B96	
3388	847	559		0.36	0.6	F22 B99	
17848	2769	2272		1.2	2.3	F22 B98	
16285	2981	2684	281	1.0	2.8	F22 Bq7	
7994	1424	1151	83	0.8	1.2	F22 C01	Run ended due to computer crash
2853	2629	520	26	1.0 ?	0.6	F22 C02	Before run 623 TOF counters taken out of T2 tracks, gap 80-91 disappears.
							Lead glass rate rather high ($^{eff}_{>4GeV}$), lead glass discriminator
13457	3431	2407	114	0.5	2.6	F22 C04	~~Run without writing onto tape for a while~~) lead glass corrected.
						F22 C05	TOF+T2 now in Trigger
						F22 C05	2 kHz – $\int L\,dt$ for distint. fill/final devices just jammed.
4689	1509	1611		?	1.85	F22 C05	Computer crashed ←
10541	3693	3116	264	0.5	3.3	F22 C06	
17376	2276	1251	59		1.2	F22 C07	μ-read out in – crate 3,4,5,6,8,10 only.
15769	1212	736	70		0.77	F22 C08	Beam lost ↑
~~2398~~	~~1182~~	~~1075~~	~~204~~			F22 C09	
7398	1182	1075	201	1.1	1.20	F22 C09	{Added μ crates 7,9. Some μ-noise at beginning of run.
20690	2624	1987	250		1.8	F22 C10	Large dead time due to μ-crate not properly reset?
18624	2620	2225	199		2.2	F22 C11	μ crates 3-10 still in, dead-time OK
17391	2372	2411	151	0.93	2.60	F22 C12	T2-Reset Timing temporally from 240 → 890 ns to see if pile up on LG. Crate #2 comes from the worst dead time, see page 88
							T2-Reset Timing back to original setting
17727	3226	2445	110	0.58	2.69	F22 C13	40 min interruption for beam-steering for Hall 3
7060	1185	747	24	0.51	0.83	F22 C14	Beam steering for Hall 3 during run.
10187	2484	2651	202	0.76	2.84	F22 C14	
6198	1062	2031	133	0.47	2.2	F22 C15	~~TOF~~ take during this run TOF crate off
16650	1426	1294	78	0.37	1.5	F22 C15	~~TOF~~ TOF off hang-up at 10.19, start new run.
7869	1499	1401	388	0.8	1.17	F22 C16	ended, too many lead glasses fired
3761	1046	1112	245	0.63	1.0	F22 C16	
8642	2669	2833			3.2	F22 C17	ended by computer hang up level 3.
8414	2910	2563	0	0.3	2.3	F22 C18	
8863	3545	4626			5.3	F22 C19	
1428	652	587	0		0.7	F22 C20	
13207	2240	2220	8			F22 020	

level 16 (rate 90)

TOF TDC 37-40 missing

not activated!

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

9^{15} Computer hang on level 14. Earlier I noticed that any attempt to run a :PROC file under TSS resulted in "outside segment bounds". Calling FTN caused the final hang. Sometime in the night the segments must have been corrupted in some way. Restarting SINTRAN made all problems go away. H.E.Hall

New version of ZREAD loaded. Error message DAS ERROR 52 will now appear on TV screen as soft error EER1 (event too long) RAE.

9^{30} It was noticed that the gap in the T2 trigger (track bins 80-91) disappears when the TOF counters were taken out of the track linking logic (i.e. switched to permanently on at TOF receiver card). Exchange of TOF receiver in T2 crate as well as TOF ECL → TTL driver changed nothing. We however remarked that the bits down directly correspond to TOF # 36-42. From run 623 T2 trigger runs without TOF!

10^{00} Run 623 was stopped since Rate (LG > 4GeV) was factor 4-5 higher than normal, event display showed ~all LG-blocks ON, but trigger rate (LG > 1GeV + 2 TOF) = normal. DVM reading of the two LG-thresholds = normal.

Channel 4 : 380 mV
Channel 2 : 680 mV

A.W.

Starting a new run seems to have cured this problem.

10^{21} ERR1 (2)

11^{00} T2 error found: TOF 36-42 cable was disconnected. Next run include TOF to T2 again. Since when?

BP 9-16 cable for latches was disconnected!! Blaser

This is very bad! the red cables disconnect themselves from the LATCH units

11^{15} Check of (LG>1GeV) for Run 624



Erst of ADC. (bad channels subtracted)

2 TOF * LG>1GeV	LG>4GeV	tagging	<L> 10^{30} m^{-2} sec^{-1}	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trans	Remarks

11^{20} Busses went off and run stopped automatically — restarted again a few minutes later.

11^{45} New filling only ~300 evts on tape

changed TOC TOF of TOF counter # 37-40 RAE

meaning of error message: YPARA : ped. crate xx chan YY bigger 500
xx = 1-3 TOKYO Lead-glass
xx = 4 Tagging Lead-glass.

Ped. is found bigger then 500 ⇒ faulty adc. This channel will always appear on on-line display (event display).

1400 problem with computer fixed (ZSEND was left at two 2) start run 630, using tape F22C05 (starting at beginning) 29.6.79.

16^{00} 59 nb^{-1} from Run 508 to Run 632 Armitage.
~20 nb^{-1}/day

Scan of vertex distribution of background-events during run 624:
35 events with vertex at (+z), electron induced
21 events with vertex at (-z), positron induced
A.W.

16^{30} muon readout incorporated in F1 (normal start)

16^{50} LG>1GeV threshold readjusted to 300 mV.

21^{35} Added μ-crates 7, 9. Some noisy channels.

21^{40} Found dead time about 50% although the rate is about 2~3/sec

21^{45} Drift chamber high voltage tripped off.

21^{46} We took μ on crates out dead time is now a few % with trigger rate of ~2/sec (see note below)

21^{46} Strange computer error! Data taking ok but ZOAS died hence could not control it. The RT command dot (e.g. RT ZOAS gave illegal monitor call!) Hence every time a task communicated with ZOAS it failed & produced error on console printer. Restarting the Nord made all problems go away H.E.M

21^{55} Re dead-time problem. RESETTING μ-crates locally solves the problem. In future, we will make NORD automatically RESET μ-proc. at start of run - go.

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

by steering ✓

20^{05} At the end of run 633, I was watching ΣEtot on the scope when the last beam. The effect of the beam loss was tremendous on the lead glass signal. please make sure to switch off the high voltages while steering ~~Control~~

23^{45} Trying to find the ~~xxx~~ source of the spurious signals on crate #2 of the lead glass, for run 636 Tuned the T1 reject – reset timing dial to 890 which corresponds to the reset – dead time tail (at the fan out of the lead glass logics) of 900 nsec (before dial 840 and 740 nsec).
~~No eff~~ No improvement seen on the spurious pick up problem back to dial 840.

30.6.79

0.00 G. Pearce, H. Rieseberg

0.04 Run 638 started

0.08 Run 638 interrupted. Mr. Dehne wants to steer the beam (Beulen fahren), to improve background conditions for Mark J

1.) Korrekturspule in Nord Ost Linac near Pluto
2.) Asymmetrische Beule (wide Bump) in the Mark J (South West) region
3.) Symmetrische Beule in the Mark J (South West) region

During these changes we observe only the rate of the beam pipe counters on the meter: There is only little or no change of the rate (70 mV is the mean value). No change at Tasso
At the final setting we have perhaps more frequent spikes in the observed rate. Improvement is only for the Electron-side of Mark J, Mr. Dehne will leave this situation for 1/2 h to try

0.50 continuation of Run 638

1.50 – 2.45 Again Bump steering by Mr. Dehne for Mark J. We continue running

1.) Horizontal symmetric bump near Pluto
2.) Horizontal asymmetric bump near Pluto
3.) Narrow asymmetric bump at Mark J

Result: No improvement for Mark J (they are looking for a Factor 10 in background rate) and no change for us.

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^4 Toacc	Remarks

2.17 – 2.45 Run 639

2.45 New filling required by Tasso

5.00 Filling not yet ready, problems with injection
6.00 Filling not yet ready, energy ramping
6.12 Filling ready e^+ 2 × 2.5 mA, e^- 2 × 3.1 mA

Rates
- T_0 accept 10^7
- Tagging 32
- LG (> 4 GeV) 18
- 2TOF × LG(> 1 GeV) · 1537
- 3 TOF 0.344×10^6
- BP counters rate 170 mV

LG total energy thresholds adjusted according to Onito's prescription.

6.36 Run 640 started
Chamber current low and quiet. $\langle L \rangle \approx 0.85 \times 10^{30}$
6.55 Chamber alarm
7.03 LG thresholds readjusted

Observation on screen:	e^+ induced shower events	unclear	e^- induced shower events	Forbidden LG ≥ 4 GeV crate #2 pair-up events
	7	4	17	2

7.42 end of run 640
7.49 e^+ 2 × 2.0, e^- 2 × 2.5 frequency −2.5 kHz
7.49 Start Run 641

8.00 Heinzelmann, Wilke
8.56 stop run 641, because PLEP want, to steer beam on request of Tasso.
Beam steering on request of Mark J

Correction Coil NO L44 [Amp]	3 TOF via Meter	3 TOF	T_0 acc.	BP [V]	
6.7	13 K	16 K	10^6	≈ 0.1	⇒ no effect, no effect either for Mark J and others
6.2 ?	18 K	16 K			
5.7	13 K	17 K			
5.6	13 K	17 K			

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

30.6.79

9.20 Start run 642 continue tape F22 C15 e^+ 3mA, e^- 5mA

10.20 (see also page 86) Just like yesterday morning the Nord hung on level 14 when I tried to use a segment i.e. QED Problem went away when Nord restarted. Something is overwriting segments or system in the night! H.E.17.

11.30 V34 #10.4 (Ring 3 Segment 10) repaired. Went dead after run 639. (A.W)

12.38 Note: Runs 640 – 642 upper TOF-counter discriminators not functioning due to failure of power-pack. Exchanged by Krehbiel and Feist, Now waiting for machine to come on again.

13.00 Changes made to ZDAS to enable selection of event type. This has been checked & seems to work. It has not been put into the complete DAS-BUILD. Also facility to abort display drawings. Done at 14.50 4.6.79 ~~for~~ Nord-50 histograms, CNTRS & Trigger has F17 added for 4 trigger histograms. H.E.17

13.25 new filling ready start run 643

13.55 Events with lots of leadglasses firing → stop run according to prescription, wait 5 min and observe display normal again.

14.11 start run 644 LG tot energy level ~5mV on Scope

15.26 chamber tripped

16.00 O'neill & Haidt on shift

Voss appeared, MARK I wants to have a vertical steering requiring 15 minutes.

17.24 PKR is steering beams. We notice no great effect on background. Σ beam pipe ~ 0.1 → 0.15 V. Continue run 646.

2 TOF * LG>1 GeV	LG>4 GeV	tagging	<L> $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^3 Trans	Remarks

30.6.79

18.48 Dump Beams.

19.55 new fill ready. TOF3/T0 on ≙ 1.5% Σ beam pipe anode water = 0.27 V roughly proportional to current. seems to be a very nice filling. Dead time ~ 7% right at beginning of new fill.

20.35 Bad set T0 attenuator up to 7 DB at beginning of filling. Now see that D2 is very slightly inefficient → 6 DB

20.51 Average dead time since start of run = 63.34/786.9 neg = 8.0%
Σ beam pipes = 0.21 V

20.52 jet chamber trip off! Reset by expert P. Zanarini.

20.55 schon wieder! Was ist going on

21.00.00 – 21.03.20 ∅ Event rate = (7106 – 6714)/200 sec = 2.0 Hz.

21.22 jet chamber trip off. sudden beam loss. e^+ now 2.0 mA ×2 e^- 1.5 mA.

22.16 K Steffen: start new filling

22.29 TOF-TDC 37-40 und 79-82 (vorläufig Einzahl) hatte kein Fast-Clear. Since when?

23.17 Start run 649 with currents I^+ = 8.3 I^- = 8.9.
Excellent filling: we have $L = 2.2 \times 10^{30}$

TDC of TOF 37-40 missing on RUN 630-648

1.7.79

24.00 on shift: Hegglin & Coutrakon
Tape F22C22 may not have correct No of EOF marks.
Run 652,3 not on tape, recovered to recover COLOR TV

0230 ID trips out.
0240 Restart Run #654
0243 ID Trip.
0247 Restar Run #654
0302 ID Trip.
0351 Beam dumped (Expected display disappeared during recovery 654, 2DIS crashed)
(12.00 Sunday – PKR provide info, TASSO wanted a new filling)

Why?

Always ask PKR why when beams dumped — and record reason

0405 new filling OK $L = 1.3 \times 10^{30}$
0800 On shift: Weidt Jan
0905 LG total energy threshold adjusted according to Carlo's prescription. Run has trips to + 30 mV.
Observation: at run start level at ≈ –5 mV, after 2 minutes +5 mV reached.
9.30 ID tripped out
Feature of looking at old VDD-histograms stopped working
~ 10.00 T0 attenuator from 4 DB → 3 DB

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept
650	30.6.79	23.49	00.34	6.6	7.2		2359	8850	614×10^6	57×10^6	557×10^6	5424	$557\cdot10^6$	3426
651	1.7.79	00.50	01.45	6.0	6.2		3361	8849	874×10^6	60×10^6	814×10^6	5488	10734	3361
654	1.7.79	02.15	03.59	4.8	5.2	4×10^{-9}	4377	8850	1139×10^6	43×10^6	1096×10^6	5417	11138	3433
655	1.7.79	08.10	08.57	4.8*	5.2	4×10^{-9}	2753	7866	716×10^6	43×10^6	673×10^6	5162	9323	2698
656	1.7.79	09.18	11.20	5.6	4.4	3.6×10^{-9}	7087	9834	1842×10^6	42×10^6	1800×10^6	8026	4054	1808
657	1.7.79	11.29	12.43	4.1	3.6		4420	4929	1119×10^6	31×10^6	1118×10^6	3960	2121	969
658	1.7.79	13.52	14.41	3.6	3.6	4.2×10^{-9}	2749	7886	714×10^6	65×10^6	643×10^6	5985	6045	1901
659	1.7.79	14.52	15.45	5.2	5.5		3111	9242	809×10^6	68×10^6	741×10^6	6125	15091	3747
660	1.7.79	15.51	16.52	4.2	4.6	2.10^{-9}	4307	9835	1000×10^6	55×10^6	944×10^6	6127	14032	3708
661	1.7.79	17.00	18.30	3.6	4.0		5858	9834	4336×10^6	55×10^6	1281×10^6	6110	13462	3724
662	1.7.79	20.10	20 38	8.0	8.5		1329	8258	345×10^6	74×10^6	270×10^6	4471	19062	3787
663	1.7.79	20 45	21 05			4.2	1443	8626	367×10^6	57×10^6	311×10^6	4522	24495	4104
664	"	21.15	21 40	5.6	6.5		1556	8268	$404\cdot E6$	$60\cdot10^6$	$344\cdot10^6$	4155	23906	4113
665	"	21:56	22:25				1624	8630	$452\cdot10^6$	$89\cdot10^6$	$362\cdot10^6$	5240	20924	3390
666	"	22:39	23 05	4.2	5.1		1734	8176	$451\cdot10^6$	$94\cdot10^6$	$356\cdot10^6$	6004	10369	2172
667		23:21	23 30	2.0	2.4	3.8	780	1812	$203\cdot10^6$	$63\cdot10^6$	$134\cdot10^6$	1058	4055	755
668	"	23:46	0.20				2235	4763	571	76	495	2942	7298	1823
669	2.7.79	0:40	1.37	4.1/3.8	2.2/2.6		Livetime 3270	5605	835	26	809	3767	7351	1835
670	2.7.79	4.07	4.37	7.4	5.2	3.6	2192	5031	487	30	467	3032	7194	1999
671	2.7.79	6.43	7.00	7.6	7.5	3.6	7465	4656	366	41	324	2873	7141	1943
672	2.7.79	7.14	7.15	7.5	7.5	3.6	38	72	7.8	0.3	7.48	59	23	13

END OF OPERATION

2 TOF * LG>1 GeV	LG>4 GeV	tagging	<L> $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^3 Trans	Remarks
15880	2970	3075	1.209	3.1	F22C21			ausschl. Vorglas & Coax !
14313	2978	3203	1.04	4.0	F22C22			
14750	3133	2930	0.69	3.02	F22C23			
12202	2665	3113	1.31	3.60	F22C24			neue Kammer; * probable wrong value, at 9:15 pm changed I^+ after filling 2 × 3.2 on A therefore $I^+ = 6.6$ on A instead of 4.8 on A
6083	3428	5336	0.87	6.15	F22C25			
3222	1884	2458	0.64	2.83	F22T92			← up to here = Scale = 14.6 // run 657 ended for new filling
8210	2701	3863	1.62	4.46	F22T93			new beam
13010	3359	3500	1.30	4.04	F22T94			
17956	3478	3423	0.91	3.94	F22T95			
17376	3431	3391	0.67	3.90	F22T96			
23080	2612	2443	2.11	2.81	F22T97			no HIST flag in N50
26842	2832	2328	1.89	2.68	F22T98			no HIST flag "
28184	2588	2150	1.59	2.47	F22T99			computer died lev. 14
24522	3732	2443	1.52	2.46	F22U01			HIST flag on in N50 ? LG-threshold 4 GeV set 605 mV, instead of 705 mV!
12817	4744	1869	1.24	2.15	F22U02			
4846	604	576	0.85	0.62	F22U03			computer died level 14 (Fortbild. Elem.
9202	1630	1673	0.85	1.88	F22U04			computer died level 3 (Mining & Fuel drawing
9300	2055	2152	0.77	2.47	F22U05			Petra instable now ! ! !
9296	1700	1695	0.70	1.76	F22U06			Petra lost beams
9091	1485	1685	≈1.3	≈1.9	F22U07			Computer hanger Level 3, Histograms lost.
43	32	31			F22U07			Beam lost, T.D. stopped

BETRIEBSRUHE

Total $188\,nb^{-1}$
less tad runs (= 187.7)
× 2/3 because of our normalisation ?

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

17.7.79

11^{40} HEM Regarding earlier problems with event display - It all worked fine for me! - 11^{50} oh- I now see it!

11^{45} LG total energy thresholds adjusted again, level now back to + 10 mV

12.40 Run 659 ended for new filling (demanded by DESY)

13.35 New filling, 8.6 mA per beam, -3.3 kHz

13^{40} Online event display selection by NORD-50 decision added but not tested. DO not use it! Hardware trigger selection is Ok.

13.45 LG total energy thresholds adjusted again, level now + 5 mV ; $L = 1.9\ 10^{30}$

T0 attenuator at run start set to 3 dB

~13.55 —"— reduced to 6 dB

14.28 ID tripped out

14.30 T0 attenuator reduced to 4 dB

14.45 LG total energy thresholds adjusted to -4 mV

15.05 —"— —"— —"— ±0 mV

15.35 T0 attenuator reduced to 3 dB

16^{00} on shift Eichler, Kawabata, Wagner

16^{30} TOF counter #19, 61 : mean TDC value is only $0.8 * 10^4$

no. it's 20, 62 #19 has low adc #61 few hits only

17^{13} inner detector tripped

19^{00} ~~stop~~ start new filling

8.40 Rate tests : trigger was the same as during normal data taking, except ~~except~~ LG ~~threshold 0 GeV~~ removed from trigger

Program configuration	events accept/sec	T0 reject / T0 accept	Remark
ZDAS0: = only Camac no tape! complete detector without jets	27.65 41.65	1.30 0.54	
ZDAS1: NSOHevents + HIST no tape! complete detector without μ-detector without μ, jets	5.63 7.08 15.00	11.24 8.34 3.09	noisy μ-crate 40 hits in μ-System
ZDAS1: NSODARno flags set no tape! complete detector	12.5	4.04	

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	<L> $10^{30} m^{-2} sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^3 Trace	Remarks

conclusion: it takes per event:

36 msec	Camac reading (12 msec for site)
44 msec	copy step into 2 buffers + NSO ~~doing nothing~~ checking each event
97 msec	NSO Histogramming + enter flag on
177 msec	÷ 5.6 events/sec

average event-length (of this trigger)

19^{45} HEM There is a problem in the event display concerned with ABORT-REG-DISP. Sometimes subsequent NEXT-EVENT or REGULAR-DISPLAY commands give YEDISP - STRANGE ENTRY CODE on the console teletype. To do a temporary fix in event display context:-

F15 MISCELLANEOUS
F09 RESTORE-EVENT — give filename EV64 (now draws event)
F02 LEAVE-MISC
F06 FAST-3-VIEW — draws it again
Then next event or whatever you wish.

20^{00} new filling $I^+ = 8$ mA $I^- = 8.5$ mA

20^{20} dead time is 50%. → switch Histogr. flag in N50 off.

21^{40} Computer hangs on level 14 tape almost full (8700 events) restart word

21^{50} ID trips

22^{00} Histo flags on in N50

22^{05} readjustment of LG-Total Energy Thresholds. Base line had drifted to + 5 mV

	0 mV	+ 5 mV	+ 10 mV	- 5 mV	- 10 mV
T4	340	390	440	290	240
T3	680	730	780	630	580
T2	680	705	730	655	630
T1	850	863	875	838	825

23^{05} Found that I have set threshold T2 to 605 mV instead of 705 mV. Runs 665 and 666 were therefore taken with a too low threshold in the pure energy trigger. Now fixed (run 667 etc) [see also notes in run summary] H.W.

23^{25} readjustment of LG-Tot. energy thresholds. Base line had shifted to +10 mV

23^{30} computer hangs on level 14. Restart Nord10. Write 2 EOF : @DEV M-T W-EOF,2

Lumenitron Log.

Run #	Lumi "tagging"	valabella	Seconds	Lm2 acc	Lm2	LP2	LP2 accid	Comments
631	1251	1621	3005	26	201	148	50	Run stop to refill
633	736	880	715	69	149.10³	219.10³	139.10³	Beam LOST !!
634	1075	1172	1101	18	188	218	37	Program ZDAS lost
635	1987	2281	1990	31	474	420	103	Normal Run.
636	2225	2483	2304	24	238	234	38	Normal Run
637	2411	2787	2807	285	827	781	414	Normal Run
638	2445	2704	4614	318	830	665	279	"
639	747	1044	1628	16	69	70	20	"
640	2651	2905	3722	36	329	309	64	"
644	1112	1200	1531	37	244	231	40	"
645	2938		5448	97	565	544	108	"
646	2563	2988	7438	28	275	263	52	"
647	4624		5937	5189	18079	35581	27815	? Beam lost ?
650	3075	3397	2359	34	360	359	75	Normal
654	3930	3122	4377	60	329	362	93	
655	5119	5478	2753	108	682	497	232	Normal run
656	5536	6146	7087	106	483	520	167	— " —
657	2458	2905	4420	15	166	166	25	Normal end
658	3803	4122	2949	103	510	510	158	
659	3500	3867	3111	187	420	445	261	— " —
660	3423	3696	3246	24	200	237	54	= " =
661	3391	3670	5161	104	211	238	34	" " "
662	2443	2858	1329	39	249	295	76	— " —
663	2328	2769	1413	30	170	198	49	— " —
664	2750	2604	1584	194	344	338	209	— " —
665	2743	2885	1621	13	140	144	27	— " —
667	576	614	780	4	33	50	7	comp. died
666	1269	—	1734	—	—	—	—	normal end
668								
669								Not written down by mistake
670								
671								
672								

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	⟨L⟩ $10^{30}\,m^{-2}\,sec^{-1}$	$\int L\,dt$ nB^{-1}	tape	BP [V]	3 TOF / 10^3 Trans	Remarks

0.00 Krakbick, Elsen

0.20 Computer hangs with level 3 & Stop button lit. ~~Eisl~~ Elsen & Heinzelmann restart computer.
TDC for TOF ~~Eight~~ 20 + 62 ought to be exchanged, but we ran out of working TDC's.
Latch histogram is o.k.

0:45 PKR reported wrong current reading for ring currents for first ≈ 1000 orbs
(wrong values : (0.8/0.8)+(1.1/0.8) $(e^+)(e^-)$; new values : (1.7/1.7)+(2.8/1.8))

0.55 I.D. trips

1.00 LG- threshold readjusted (peak value 16 mV)

	old	new
T4	440	502
T3	780	840
T2	720	760
T1	875	840

3.55 New filling e^+ (3.7/3.7) e^- (2.6/2.6) $\nu = -3.5$ kHz

4.20 I.D. trips (possibly loss of electrons)

4.37 ~~Last~~ All beams totally gone

7.15 Beam lost. Reason not again CF.

T2 trigger card for cell 89 exchanged. HK.

17.00 Fault in event display (mod) found & corrected H.E.S.

3/7/79

8-13.4 Try out modified DMA + RTX
DMA locks computer (always stop) Rebuild from F52 finds an error in modification of DMA. But we have still problems with DMA transfer.
Switch back to old (unmod.) DMA module. Only the RTX remains modified.
Please report all problems to R Eichler.

NRN	date	Start	Stop	I^+	I^-

changed TOF TOC No 17 → 20

New timing for TOC - START



with the old value the gate of the latches was not within the gate of the TOC

Peters

08 07 '79 12/39 Imori, Krokbil

PKR tells stable beams. We switched on beam pipe counter and Tagging counters

16 GeV

luminosity ≤ Jade 4×10^{30}
Mark J 6×10^{29}
Pluto 10^{30}
Tasso 4×10^{31} (!)

magnet off

beam pipe background rate 17 on Voltmeter

3 TOF discriminator ..... 3 TOF / 10^6 Toacc 20 K
$3TOF_m$ / " 17 K

PKR dumps the beam and tries to accelerate again to 15.8 GeV (beam decay rate at 16 GeV too big)
Then we can switch on the magnet

Kopanaris ToF Coplanarity Matrix built in & tested (Navicka Krokbiel) O.K.

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	<L> $10^{30} m^{-2} s^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Toacc	Remarks

14 $\frac{1}{2}$ ^{37} Petra says: 16 GeV, 4.4 mA, stable cond. 3 ToF-rate: 54 000 / 70^6 Toacc
Tagging rate 475 / 100 sec. Tagg. accid. 420 / 100 sec Background at Voltmeter 25-30 skt C

15 $\frac{1}{2}$ ^{10} Beam off again (Switch off)

~ fill the beam again

15 $\frac{1}{2}$ ^{40} beam beam unlikely

16.30 Stable beams again

BP VM: 24
3TOF / 10^6 Toacc 50 K
$3TOF_{Mat}$ / " 40 K

Luminosity ≤ $4 \cdot 10^{30}$ (Presently only upper limits are possible according to H. Wriedt)
(more likely 0.5×10^{30} according to later estimate – no tagging beam yet)

PKR don't allow us to switch on magnet before next filling.
So we try to get everything working:

Switch on LG → big bang and burnt smell. Apparently something burnt in a distributor. Call Orito.

They switch on and 2 distributors may be broken.

Try read-out, hang-up during Pedestal run.

17.10 ^{4} beam lost.
17.25 ^{4} Switch on magnet: 7000 A, Compensators: 750 A both

18.00 2×32 mA 2×3.5 mA 16 GeV Stable beams

BP 23

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

changed TOF TOC No

new timing for TOC

TOC-Start

Gate latch

← 140 nsec

← 90 nsec

08 07 '79 12/39 Imori

PKR tells stable be

16 GeV

luminosity ≤ 5

magnet off

beam pipe background

PKR dumps the beam
Then we can switch on

Koptanat ToF Coplanarity Matrix built in

PROGRAM FOR WEEKEND 8.-9. 7.78

(E beam = 16 GeV)

① On request from PKR run ~~plan~~ magnets up in parallel (kompensator and main)

② If PKR ~~cool Field (82 73 12)~~ announces stable beam conditions, watch beam pipe counter signal on scope and ~~run~~ switch on HV. If OK cool at TOF counters

③ If also TOF counters are O.K. switch on lead glas and measure rates

④ If rate reasonable switch on ID.

⑤ If ④ O.K. take data on tape.

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T acc	Remarks

14 ℰ 37 Petra says : 16 GeV, 4.4 mA, stable cond. 3ToF-rate: 54 000 / 70⁶ Beam To

Tagging rate 475 / 100 sec. Tagg. accid. 420/100 sec Background at Voltmeter 25-30 skt C

15 ℬ 10 Beam off again (Switch off)

~ fill the beam again

15 ℬ 40 beat beam suddenly

16.30 Stable beams again

BP VM : 24
3TOF / 10^6 T acc 50 K
3TOF Mat / " 40 K

Luminosity ≤ $4 \cdot 10^{30}$ (Presently only upper limit are possible according to H. Wriedt)

(more likely 0.5×10^{30} according to later estimate – no tagging beats 1984)

PKR don't allow us to switch on magnet before next filling.
So we try to get everything working:

Switch on LG → big bang and burnt smell. Apparently something burnt in a distributor. Call Orito.

They switch on and 2 distributors may be broken.

Try read-out, hang-up during Pedestal run.

17.10 beam lost.
17.25 Switch on magnet: 7000 A, Compensators: 750 A both

18.00 2×32 mA 2×3.5 mA 16 GeV Stable beams

BP 23

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Take collinearity rates

T2 condition is always 2 fast tracks

T1 width	anti	T0 acc	T1 rej	T2 rej	T2 acc
0	—	$1.07 \cdot 10^6$	$10414 \cdot 10^6$	18 892	117
0	≥4	$1.012 \cdot 10^7$	$1,0113 \cdot 10^7$	5376	6
3	≥4	10^7	1.005^-	32 923	25
3	≥7	10^7	$.9965 \cdot 10^7$	95 204	134

18.45 beams lost

20.30 Still no beams.
Onito said that only the lower bits of the distributor were affected. So that almost all LG blocks are working at their proper voltage within 10V.

21.10 Stable beams
4mA/bunch 16 GeV

BP 30 3TOF 50 K/10^6
$3TOF_H$ 56 K/10^6

21.20 Beams lost

9.7.79

0.00 Elsen, Rieseberg
Thresholds of lead-glass sums (forward detector) increased ∴ luminosity measurement by SW2 * SP2 should be more realistic (no longer "upper limit") H.W.

3.15 Phone to PKR (Mr. Nesemann). There was a water pipe of a PETRA magnet disconnected.
Program for the next 2 hours: Try to raise Luminosity at around 15.8 GeV. Filling is expected to be fast.

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	<L> $10^{30} m^{-2} sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trans	Remarks

5.30 PETRA Computer died. No beams before 8?.

9.7.79

08.00 Amtage.
Still no beams yet.

09.10 P.K.R. Still having trouble with their computer no beams before 10^{30}

10.00 all camac scaler are gated with "no run" signal from now on R. Eichler

10.30 P.K.R Have bypassed trouble in computer and will attempt to inject

11.30 P.K.R. Had trouble with synchrotron but will try again to inject in ~5 mins time.

12.20 P.K.R. Are now injecting & hope to store beams in ~ 1 hr ; NEAR (JADE) still down,

14.10 P.K.R. Vacuum problems – will try injecting again.

15.15 Petra still in injection mode.

Shift : Kleinzelmann . Totenko

16.40 no beams

~20.00 water on the floor of the pit outside the rails towards concrete wall (PKR) observed by ONITO
water leak detektor etc. at Seidel: no leak in heatshield since rails outside rails. Inside interlock there is already a bucket installed from "Wasserleute". No action today, leave for tomorrows shut down.

22.30 PKR still injecting

23.00 New filling ready 15.78 GeV $e^+ = 4 mA$, $e^- = 2.6 mA$

23:55 rates
tagging = $3.2/10^6$, LG > 4Gev = $0.5/10^6$, 2TOF + LG>1 = $162/10^6$, 3TOF = $26K/10^6$
BP = 20
Switch on ID

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Tuesday, July 10, 1979

00.00 ~~Murphy and O'neill~~
Nord hung up on JDAS error 000044 suberror 000000, which latter nobody understands. R. Eichler called.

00.18 Beams lost. Hvs off. Injection "freigabe".

* Use the following procedure to take data : (according to Totsuka, according to R. Eichler by phone)

F8
read out pattern : 74730B
default trigger source : N
trigger ~~actor source~~ ? (0-9) : 0
trigger action override ? : 0
transfer to IBM : Y or N
magtape output : Y or N
- -
- - -
} these are same as before

~~40.7.74~~

01.00 Beam again 15.78 GeV e^-: 2x 3,5 mA e^+: 3,8 mA / 4,3 mA
01.16 Finally going. Start Run 698. Preposterous rate. ≈100% T0 deadtime. Stop. Record
01.19 Nord "error 14 in 34611 at 100001 outside segment bounds" "page no: 137"
Reload computer; Dance again. (repaired with the help of Gods on phone, reloaded YPARA)
01.55 Beams lost.

02.38 Beams again e^+ 2x 3.2 ma e^- 2x 2.9 ma
Start Run 699, soon stopped by error 38 in 32251 memory parity.

03.05 Start Run 700 without new coplanar 2 prong trigger[†] killed after 3 events by "YPARA: Error during LG-PED run. Record tape.

03.08 Going with Run 701
03.13 Nord hangs. Level 14.

[†] N.B. This means T2 accept II cable pulled. So not with coplanar triggers, but they still cause deadtime at T0. (50%)
↑ No this is wrong. (LOOK).

2 TOF * LG>1 GeV	LG>4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T_{coinc}	Remarks

Nord hangs up several times, set running on Run 704. 03.44 PB6 threshold raised to 309.9 mV from 210.

03.52 Running run 704. I^+ = 2x 2.55 ma I^- = 2x 2.35 ma, Triggering at 740 events/100 seconds T0 deadtime down to about 18% since LG third increase.

04.45 Just starting Run 706. I^+/I^- down to 2x 2.22 / 2x 2.04
Triggering at 442 event/100 seconds. T0 deadtime down to 10%

05.20 Stop run 707 for new injection. Freigabe.

?? Got new filling. Much difficulty trying to start new run. Got the familiar "YPARA: error during LG-ped run." This turns out to be because we had forgotten to pull plug by which JPT chamber, which was still off, suppresses data taking. Misleading error message. Eventually got to measuring rate. Have had 100% T0 deadtime. This was probably due to typographical error giving trigger source.
~~Tot to~~

06:30 Finally measure rates. Beautiful. 3TOF/T0 ≈ 3%. Dead time ≈ 1%!
Σ beam pipe = 2V.
Turn jet chamber on. Start real run.
JDAS Error 000044 subcrr 000000. This is big trouble
Funny thing: When I tried to start tape run according to Eichler prescription on preceding page, I was not prompted "Transfer to IBM" I'm absolutely sure because terminal 9 dialog is still on the screen. The resident pattern given is 74730B and the other answers given in the dialog are correct.

06:50 Finally get going with run 709. Run 708 is a 3 event run. We don't record because Run 707 is on the same tape. We succeeded simply by repeating the Eichler start procedure on preceding page. Again there was not prompt for "Transfer to IBM".

07:07. Run 709 suddenly stops at 3442 events. We notice that dead time

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept
699	10.7.79	02.48	02.52	6.4	5.8	4×10^{-9}	185	2468	57.6×10^6	16.3×10^6	41.3×10^6	860	100868	1557
701	"	03.11	—				164	1540	—	—	37.2×10^6	541	83192	965
704	"	03.45	04.04	5.1	4.7		1090	6955	280.7×10^6	44.5×10^6	236.2×10^6	2524	38284	4310
705	"	04.10	04.37				1643	7000	405.2×10^6	43.8×10^6	361.5×10^6	2845	35667	4036
706	"	04.42	05.12	4.4	4.1	4×10^{-9}	1852	7000	452.3×10^6	44.2×10^6	408.0×10^6	2694	36403	4188
707	"	05.18	05.22				227	748	55.5×10^6	4.4×10^6	51.1×10^6	291	3691	433
708	"	—	—				0	3	—	—	—	—	—	—
709	"	~~06.50 16.15~~	7.07	5.1	5.1	4.2×10^{-9}	660	3442	240.2×10^6	98.6×10^6	141.6×10^6	1331	17675	2048
									Shutdown					
710	10.7.79	10.00	10.45	—	—	—	1565	11765	$1.2\cdot10^6$	$0.8\cdot10^6$	$.42\cdot10^6$	11765	0	0
714	— " —	11.33	11.55	—	—	—	1329	~~9850~~	$1.17\ 10^6$	$0.82\ 10^6$	.36	9850	0	0
715	— " —	12.19	12.44	—	—	—	1419	14791	$.901\cdot10^6$	$.499\cdot10^6$	$.405\cdot10^6$	14790		
716	— " —	13.05	13.27	—	—	—		13768	.951	.532	.419	13557		
717	— " —	13.33	13.53	—	—	—		14810	$.894\cdot10^6$	$.428\cdot10^6$	$.468\cdot10^6$	14810	0	0
720	— " —	15.17	15.25	—	—	—		2466	-	-	-	-	-	-
721	— " —	15.45	15.50	—	—	—		?						
722	"	16.20	?	—	—	—		~14000						
723	— " —	17.31		—	—	—		15673	$.578\cdot10^6$	$.126\cdot10^6$	$.453\cdot10^6$	15673		
724	— " —	18.00	18.05	—	—	—		2602	$.174\cdot10^6$	$.102\cdot10^6$	$.72\cdot10^6$	2602		
725	— " —	18.11	18.25	—	—	—		3816	.247	.130	.118	3816	9	0
726	— " —	18.28	18.38	—	—	—	575	10668	.529	.116	.415	10668	13	0
727	— " —	18.45	19.00	—	—	—	—	~15000	-	-	-	-	-	-
728	— " —	19.04	19.20	—	—	—		16886	.844	.196	.651	16631	24	-
729	— " —	19.27	19.44	—	—	—		2162	$1.004\cdot10^6$	$.036\cdot10^6$	$.972\cdot10^6$	2162		
730	— " —	19.45	19.59	—	—	—		6375	$.855\times10^6$	$.130\cdot10^6$	$.724\cdot10^6$	6375		
731	— " —	20.04	20.23	—	—	—		8024	1.013	.114	.903	7907	0	
733	11.7.79	10.20	10.49	—	—	—		9852	1.251×10^6	$.853\times10^3$	$.400$	9852	0	
734	— " —	11.01		—	—	—		9862	.877	.504	.374	9862		
735	— " —		11.39	—	—	—		9853	.691	.356	.336	9853		
736	— " —		"	—	—	—								
* test	NEW FILLING 12/7/79	ORBS					39			138×10^3	10^7	27	12.7×10^3	62
764	"	4:55		2×2	2×25				1		$101\times10^{+6}$	475	115935	1057
765	"	5:50	6:00	—	—		450	1236	110×10^6	8.3×10^6	101×10^6	398	81040	832

* Runs 737 – 763 Test Runs for IBM-Link, no good data.

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> $10^{30}cm^{-2}sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trans	Remarks

105

2 TOF LG>1GeV | Coplanar 2prong trig | LG>4GeV | Tagging | <L> $\times10^{30}$ | $\int L dt$ nb^{-1} | Tape | Remarks. 2 x fo = 3 fo

17107	85808	770	125			F22U09	
12815	72154	497	74			F22U10	All trig + T0 reject lost. scalers
42708	381578	2269	416			F22U11	+ kept running after NORD hangup.
39849	520224	2447	554			F22U12	+ P66 threshold raised 210 –
40728	515589	2323	528			F22U13	309.9 nC at start of R 704.
4141	57895	239	66			F22U14	Stopped for new injection.
—	—	—	—			F22U14	Mirror Run. Stopped by Nord crash.
19780	262919	1127	263			F22U14	
0	11453	0	0	—	—	F22U15	Cosmics B=0
2TO= 0	8631	0	0	—	—	F22U16	— " — B=0 T3 connected in. 0 test adc's
2662	13771	0	0	—	—	F22U17	— " — B=0
295	12291	1364	0	—	—	F22U18	— " — B=0
298	13505	1475	0			F22U19	— " — B=0 correct readout of TEST adc's tdc's bank
program	hang / scaler - monitor					IBM-transfer	— " — B=0
"	"	"				"	"
						"	" no NORD-50
364	14297	1232	—			F22U20	Cosmics B=-4530 Gauss
66	2855	~~2371~~ 221	—			F22U21	— " —
82	3459	342	—	N10+N50		2 file	— " —
241	9089	1697	—	N10 only		3 file	— " —
-	-	-	-	N10 only		F22U22	— " —
372	14404	2403	—			F22U23	— " —
502	4506	482				F22U24	Cosmics, B=-3000 Gauss, clean trigger
382	3543	1088				2 file	— " —
455	4415	7907				3 file	— " —
202	0?	2027	—			IBM transfer	Cosmics, B=0 G, normal U_D
172	0	1720	—	—		— " —	— " — U_D higher by 50V/cm
232	0?	1213					two ev. breaked after 11 events
							U_D lower by 50V/cm
							← NEW FILLING 15.78 GeV / BEAM
139	12.6 K	24	4	0,10			Nord hangup Level 14
~~7766~~ 7710	710×10^3	466	39			19 F22U25	Tagging-LG threshold were changed
5573	75546	373	69	0,15	38	IBM transfer	

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

has suddenly became enormous. 40 %! It was negligible at beginning of run! TO still there. Pause and Continue does not help. Stop run however succeed normally. We get an error message from the graphics screen when the run stops that run is not in progress. Suspect graphics somehow hanging us up.

Before we can start a new run PKR calls and asks for "Freigabe": Shutdown begins

10.7.79 , 8.00

Start setting up Cosmic ray trigger

Delays found on potentiometers:

ADC's		DEL	WIDTH
	BP	5.8	8.65
	TOF	6.3 5.8	8.75
LATCH	BP	8.5 7.9	7.02
	TOF	8.14 7.87	8.6

3.00 Now the following delays have been set:

ADC		DEL	WIDTH
	BP	3.7	8.65
	TOF	1.48	8.75
LATCH	BP	7.82	7.02
	TOF	7.35	8.76

Delaybox for TOF - ~~ADC~~ - START: 0 (cable taken out)

2 TOF • LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trigger	Remarks

10^{00} Start Tape with Cosmic trigger B = 0 Gauss
Readout pattern: 71608
Run 710 / Tape F22 U15

13:55 turn off ID

14.00 turn on ID

~17.00 turn on Magnet to 4.5 KG

We use for trigger

- ~~1~~ 2 TOF$_{Mat}$ (width 6)
  Coll: 2 TOF (width 8) · $\overline{\geq 4\,TOF}$

for Runs 710 to 728 Trigger (I)

19:27 field lowered to 3.0 KG

+ very clean trigger: 2 TOF$_{MAT}$ (width 6) • Coll [2 TOF (width 6) · $\overline{\geq 4\,TOF}$] run 729

2 TOF$_{MAT}$ (width 6) + Coll [2 TOF (width 6) · $\overline{\geq 4\,TOF}$] run 730

11.7.79

10.12 Start Run 732 [transfer to IBM] triggers (I)
... Cosmics B = 0. KG
normal DH/t voltages ± 500/cm [IBM - transfer]

14:15 Interlock test for Petra. Switch off all voltages and go to inject mode

16.50 Ffoster here. Clean above
Magnet setting: 7000A. ~~709~~ 750A corrections

21.45 Beam monitor scope suddenly much widened, nothing to see. PKR claims they still have good beams in. Red lamp (dB) on
Taking out 39's doesn't help. Knobbiel called, will come. All due to mix up with µ trigger tests.

23.10 Runs 737 - 763 are playruns only: D. Graf

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

12.7.79
0:00 Kawabata, Pearce

4:15 New filling energy 15.78 GeV $I^+ = 2 \times 2$ mA $I^- = 2 \times 2.5$ mA

5.00 Comp hang-up level 14 (Decode address light on)

5.10 H Wriedt adjusts Tagg thresholds.

Coll. Rate: 100 sec
T_0^{acc} 25.736 $\cdot 10^6$
2TOF · ≥4TOF Coll 23529
(width 3) T_2acc 50

100 sec
2TOF · LG≥1 GeV
T_0acc
T_2 acc

5.45 Thresholds of lead-glass sums (forward detector) used for TAGG-Trigger set to 100 mV each. H.W.

12.7.79
8:00 Nozaki, Imori

8:10 begins to fill

$L = 1.49 * 10^{+30} * (\text{count/sec})$

12:40 stable beam 2 x 3.5 mA e^-
2 x 3.3 mA e^+
15.99 GeV

run 766 is abnormally terminated. the number of events are too small to keep this magnetic. B = −4531 G

Triggers:
Tagg
2TOF · LG≥1 GeV · 1Track
Copl (width 0) ≥4TOF · 2 tracks

Run 767

2 TOF · LG>1 GeV	LG>4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T_0acc	Remarks

13:35 Run 767 is suspended because of alarm in internal detector

13:52 run terminates without any messages. number of event displayed on color TV is 33F7
LM2 148 LP2 166 148+166−(15+14) = 235
LM3 accidental 35 LP3 accidental 44

Most accurately event number on TV display does not changes more than 2 minutes, although the beam is not yet lost. The console terminal is working but 2TAS does not seem to operate. (The memory was destroyed and Nord can not get any histogram)

14:02 the computer is restarted by Herrn Eichler.

LM2=10, LM+(acc)=4, LP2=9 LP2(acc)=9
10+9−(4+4) = 11

14:10 Run 768 begins

14:19 Run ends because of N-50 problems. Then we can not get any histogram.

14.33 new filling starts

16:00 Krohbiel, Rieseberg

16:25 Norsk Data (computer expert) (Mr. Delfs, T58) appears and tries (together with Mr. D. Hmann) to cure the Nord 10/50 error by exchanging the positron of similar cards in the NORD 10.

16:42 Nord filling ready 15.78 GeV, e^+e^- - 4 x 4.4 mA, Frequency 64 kHz
- but our NORD is down.

Rates 10^7 T_0 accept
3 TOF 675.5 k
2 TOF Copl(0) * (≤3 TOF) 7565
Chamber anode current < 2 μA — looks like a good filling

16:58 Beams lost due to Sender ausfall

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept
110														
Run #	Date	Start	Stop	I^+	I^-	Vak	time (sec)	Nr of accepted events	All. Trig	T0 reject	To accept	T1 accept	T2 reject	T2 accept
766	12/07/79	12:48	13:05	2x3.5	2x3.5					93 x10⁶	460 x10⁶	1639	105323	1688
767	"	13:09	13:32	"	"	3.5x10⁻⁹	2127	3325	573 x10⁶					
768	12/07/79	14:10	14:23				732	1767	138 x10⁶	33 x10⁶	106 x10⁶	595	29348	1192
770		19.14	~19.20				300	55						
771		19.22	19.41				~1140 ~~~8689~~	~8689						
		EXP	NR	2										
773	13/07/79	4.02	4.54	2x3.2	2x3.2	4x10⁻⁹	2929	8180	723 x10⁶	77 x10⁶	646 x10⁶	4000	7145 76	4080
775	"	5.05	5.15	2x2.2	2x2.2	"	594	1460	167 x10⁶	39	128	679	111814	748
776	"	5.15	5.52				1426	3071	357 x10⁶	80 x10⁶	316 x10⁶	1422	236255	1589
~~778~~	"	7.46	9.51				5591	16230	1,455 10⁷	152.7 10⁶	1.3 10⁹	7612	?508193	8618
784	"			2x3.1	2x3.2		531	1856	138 x10⁶	53 x10⁶	85 x10⁶	824	138 x10³	1032
785		16.32					1059	4257	~~275~~ x10⁶	56.5x10⁶	219 x10⁶	1778	290 x10³	2480
786		16.33	17.12				2010	7657	520x10⁶	645x10⁶	455x10⁶	3135	522x10³	4522
~~787~~		~~19.08~~												
788		19.09	21.44	2x3.6	2x3.5		8786	31500	2285x10⁶	439x10⁶	1847x10⁶	12.2 x10³	2201 x10³	19.3x10³
789		JUNK												
793		22.00	22.13				786	2084	204x10⁶	27x10⁶	177x10⁶	730	98.8x10³	1334
794		22.18	23.52	2x3.8	2x3.8	48x10⁻⁹	1532	7283	399x10⁶	182x10⁶	217x10⁶	2756	367x10³	4527
795		23.59					815	3604	212x10⁶	69.8x10⁶	142.5x10⁶	1336	197x10³	2268
796	14/09/79	good run, but rates lost												
798	"	0.42	2:35	2x2.7	2x2.5		5791	18428	1507x10⁶	233 x10⁶	1273x10⁶	7104	?6008x10³	11324
799													This digit is broken	
800		Junk	Error during LG-PED RUN											
801														
802														
803														
804	14/09/79	6:50	9.04	2x2.3	2x2.3		T=67 ~~1152~~	1+132	2020 x10⁶	132x10⁶ ~~151x10⁶~~	1884x10⁶	6418	6.8.9? ⑤462x10³	7482
		MARK-J counts Filling		(9⁵⁰ —	10⁰⁰)									
806		10:11	10:30	2x3.4	2x2.5	4.5x10⁻⁹	1612	4668	419 x10⁶	62 x10⁶	357 x10⁶	2145	?549	2523
809		10:49	~~11~~ 11³⁰	2x3.4	2x2.5	Kb	2631	6870	684 x10⁶	232 x10⁶	451 x10⁶	2567	?536	4187
812		11:45	12⁰⁵	2x2.5	2x4		1168	3249	303 x10⁶	50 x10⁶	253 x10⁶	1145	0202	2041

Fill 3 12¹⁰ — 13⁰⁰

In the first 1800 events, the beam currents were typed in 3200 (e+), 3000 (e-) by mistake.

2 TOF * LG > 1 GeV	LG > 4 GeV	Tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trg	Remarks
111								
2 TOF LG > 1 GeV	LG > 4 GeV	Tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ (nb)$^{-1}$	tape	BP (V)	3TOF / 10^6 Trg	
								computer hangs NRN, revived.
23253	979	672	0.35	.75	IBM LINK			data to IBM. computer hangs NRN
17397	505	110	0.016	.12	IBM LINK			stop for beam dump
					"			Pedestal runs to fill IBM Disk
								" " " " , written
8636	2675	1703	.89	~~1.8~~ 2.5	F22U83	2.0	28/20	TRIGGER: LG≥4GeV, TAGG, 2TOF LG≥1GeV
1719	521	229	.58	~~0.25~~ 1.33	F22B49	1.6	18	2TOF$_{coll}$ · $\overline{3TOF}$ (width 2) · 2exact
3446	584	567	.61	0.78	F22B49	0.6		Tape & IBM Link
20924	5016	3147	.86	~~4.8~~ 4.366	—			IBM Link. Background too high
3500	536	347	2.1	1.1	IBM	12	43748	Collimator 15 mm in, turning run 784 Collimator trigger did not work
7174	1195	689	1.2	1.3			772	Coll. works again
12510	2169	1159	1.2	2.4	IBM		781x10⁸	Stopped by beam loss.
								Stopped by program after ~3 counts.
160 x10³	8868	4132	3.0	26.	IBM	1.5	8765x10²	
								IBM online programs reload
5785	630	177	0.30	0.23	IBM		111x10²	
18932	2186	810	4.3	6.6	F22B60	1.4	231x10²	
9472	1051	399	1.3	1.1	IBM	1.0	341x10²	DATA WRITTEN TO BOT-2 NT FOR IBM PROGRAM
			16.35		IBM			
48384	5653	1968	0.54	3.1	IBM		overflow	
								3TOF itself
12751	4424	2535	0.50	3.88	IBM		431.9x10³	Information from the ~~St~~ PKR pulse mask is 18 nsec too late for this filling." The total LG-energy timing was examined. It was still OK.
5488	1427	857	1.08	1.73	"		439 x10³	At the end of the run ~~stopped~~ ~~down~~ one wrong energy input to WORD, i.e. instead of 15.78 GeV 0.016 GeV. (may be used for some events)
~~788~~ 11976	1986	788	~~0.32~~	2.14	"		736x10³	
7037	907	317	~0.5	0.66				

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept
110														
Run #	Date	Start	Stop	I^+	I^-	Vak	time (sec)	Nr of accepted events	All Trig	T0 reject	To accept	T1 accept	T2 reject	T2 accept
766	12/07/'79	12:48	13:05	2x3.5	2x3.5					~~93 x10⁶~~				
767	"	13:09	13:32	"	"	3.5×10^{-9}	2127	3325	573×10^6		460×10^6	1639	105323	1688
768	12/07/'79	14:10	14:23				732	1767	138×10^6	33×10^6	106×10^6	595	29348	1192
770		19.14	~19.20				300	55						
771		19.22	19.41				~~~8689~~ ~1140	~8689						
		EXP	NR	2										
773	13/07/79	4.03	4.54	2x3.2	2x3.2	4×10^{-9}	2929	8180	723×10^6	~~777~~ $\times10^6$	646×10^6	4000	71456	4040
775	"	5.05	5.15	2x2.2	2x2.2	"	594	1460	167×10^6	39	128	679	11814	748
776	"	5.15	5.52				1426	3071	357×10^6	~~80~~ $\times10^6$	316×10^6	1422	23625	1589
~~778~~	"	7.46	9.51				5591	16230	$1,455\ 10^7$	$152.7\ 10^6$	$1.3\ 10^9$	7612	?50893	8618
784	"			2x3.1	2x3.2		531	1856	138×10^6	53×10^6	85×10^6	824	138×10^3	1032
785		16.30					1059	4257	~~275~~ $\times10^6$	56.5×10^6	219×10^6	1778	290×10^3	2480
786		16.33	17.12				2010	7657	520×10^6	64.5×10^6	455×10^6	3135	522×10^3	4522
~~787~~		~~19.05~~												
788		19.09	21.44	2x3.6	2x3.5		8786	31500	2285×10^6	439×10^6	1847×10^6	12.2×10^3	2201×10^3	19.3×10^3
789		JUNK												
793		22.00	22.13				786	2084	204×10^6	27×10^6	177×10^6	730	98.8×10^3	1334
794		22.18	23.52	2x3.8	2x3.8	48×10^{-9}	1532	7283	399×10^6	182×10^6	217×10^6	2756	367×10^3	4527
795		23.59					815	3604	212×10^6	69.8×10^6	142.5×10^6	1336	197×10^3	2268
796	~~14/09/79~~	good run, but rates lost												
798	"	0.42	2:35	2x2.7	2x2.5		5791	18428	1507×10^6	233×10^6	1273×10^6	7104	?6008×10³	11324
799														
800		Junk	Error during LG-PED RUN											
801														
802														
803														
804	14/09/79	6:50	9.04	2x2.3	2x2.3		~~7767~~ ~~4152~~	11132	2020 $\times10^6$	~~132×10⁶~~ ~~[illegible]~~	1884×10^6	6418	689? ⑤462×10³	7482
		MARK-J counts Filling		(9⁵⁰ —	10⁰⁰)									
806		10:11	10:30	2x3.4	2x2.5	4.5×10^{-9}	1612	4668	419×10^6	62×10^6	357×10^6	2145	?549	2523
809		10:49	~~11~~ 11³⁰	2x3.4	2x2.5	"	2631	6870	684×10^6	232×10^6	451×10^6	2567	?536	4187
812		11:45	12⁰⁵	2x2.5	2x2.4		1168	3249	303×10^6	50×10^6	253×10^6	1145	0202	2041

In the first 1800 events, the beam currents were typed in 3200 (e+), 3000 (e-) by mistake

Fill 3 12¹⁰ — 13⁰⁰

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}cm^{-2}sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trig	Remarks
111								
2 TOF LG > 1 GeV	LG > 4 GeV	Tagging	$\langle L \rangle$ $10^{30}cm^{-2}sec^{-1}$	$\int L\,dt$ $(nb)^{-1}$	tape	BP (V)	3TOF / 10^6 Trig	computer hangs MSO, rewired. data to IBM (computer house N/b)
23253	979	672	0.35	25	IBM LINK			
17397	505	110	0.016					
8636	2675	1703	.89					
1719	521	229	.58					
3446	584	567	.61					
20924	5016	3147	.86	1290	New fill			
3500	536	347	2.1					
7174	1195	689	1.2					
12510	2169	1159	1.2					
160×10^3	8868	4132	3.0					
5785	630	174	0.30					
18932	2186	810	4.3					
9472	1051	399	1.3					
48384	5653	1968	0.54					
12751	4424	2535	0.50					
5488	1427	857	1.08					
~~788~~ 11976	1986	788	~~0.32~~					
7037	907	317	~0.5					

$\sum_{FA}$ L2-L2 accid	L1 ~~accid~~	L1 accid	L1 ~~accid~~	L1 accid	
501	277	37	326	65	
	106	18	100	32	
	74	7	81	19	
1290	~~3781~~ 1091	376	1100	473	New fill
240	138	82	169	35	
273	~~25~~ 152	26	198	51	
496	443	191	444	200	
	4598	1851	3990	2114	
47	27	5	80	5	
1324	900	260	985	301	
214	112	12	136	22	
626	369	62	406	87	
Run 804	779	~~4437~~	77	520	107
806	347	208	51	268	78
809	430	260	~~34~~	258	54
812	132	70	11	84	11

cont'd page 120

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

12.7.79

17^{00} Looking together with Delfs into the N50 Problem.
It seems to be clear that these is a spurious error in the Multiport-System for the memory. Delfs ~~the~~ exchanged the cards controlling the N10 and the N50 access to the memory. If the error is on these cards, it should appear now in N10.

For tonight: If you have serious problems with the NORD call DITTMANN

If the data aquisition stops for unknown reason use (F11): N50-DIALOG
and then (F2): STATUS
if it says N50 PROGRAM running: N50 is ok
" N50 MONITOR WAITING FOR COMMANDS: use (F7), type LOAD N50DAR, spaces, return
" something else: restart the machine.

~~Start~~

17^{45} New filling 15.78 GeV , 4 x 4.4 mA
Vacuum 4.4×10^{-9} mbar.

μ-chamber test.

17^{52} beams lost

Plans 1.) For next filling, Orbit adjustment
2.) For to-morrow morning Collimator tests

19^{14} Run 770 started. This run contains only pedestal events and goes to IBM
to fill there the disk

19^{22} Run 771 started now without Nord 50 to get higher rates
very often IBM ONLINE-JOB ERROR CHECK # 3 (Bad event)
also # 0

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T$_{acc}$	Remarks

19^{45} Experiment number changed to 2 by ~~H. Eisele~~ and B. Naroska

21^{00} No beams yet. They are calibrating the beam position monitors at 6 GeV and will then accellerate one beam to 16 GeV

Muon Collaborators are doing test.

22^{05} Mr. Felst calls. If after the adjustment of the orbit the background is still so high, that we cannot take useful data, don't steer the bumps, but try to reduce the background by closing the collimators.

23^{55} PKR is still working on the orbit corrections

13.7.1979 Yen, Kobayashi

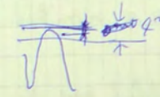
1^{52} new filling
soon lost.

3^{07} new filling 3 TOF / all trig = 33 K / 1 M , beam pipe: 2.0
15.78 GeV 2 x 3.2 mA

3^{18} 3 TOF / all trig = 5 K / 1 M

3^{25} Run 771 started with IBM transfer and MT output rewind
error in IBM transfer.

3^{27} Run 772, rewind

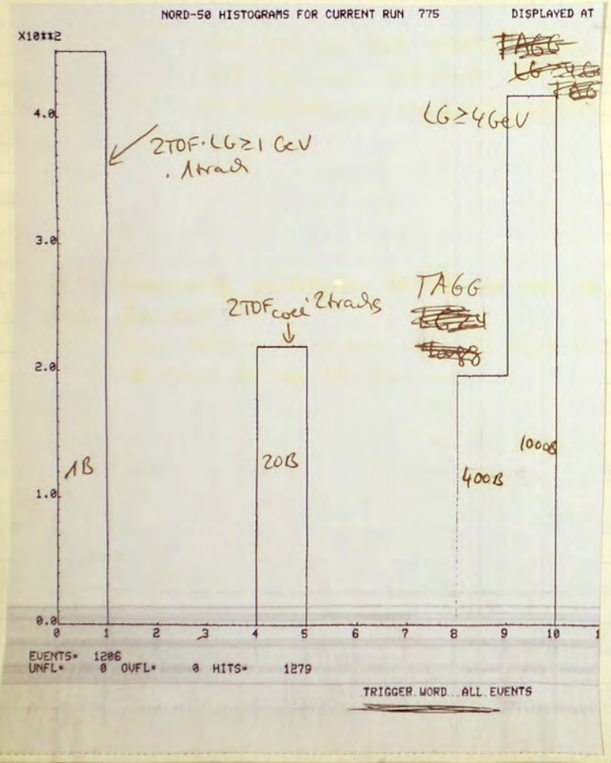
3^{40} LG lin. sum  threshold for LG > 4 GeV 690 mV
rate = 360 / 1 M all trig

NRN	date	Start	Stop	I^+	I^-	Vakk	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

4^{02} Run 773 started

5.10 N-50 only showed old histograms of run 770.
Restarted Wadwine
When hists work noticed that 1/2 BP counters were dead.
Crate had dropped.
Kobayashi adjusted LG HV to right voltage. Novo program gave message that crate 3 was wrong but it's not true.

5.55 Beam will be dumped at request of Mark J.



7:20 Beam start

7:25 PKR call that want to move the collimators in about 30 min. Everything should go smoothly. Can continue take data.
Background is still too high, so only output to IBM Link (36000/10^6 To accept)

7:40 PKR is moving the collimators of TASSO.

8^{00} Pearce, Canzler.

9^{00}!
Moving of Plate collimators all 12 mm inwards reduced the background of the innerdetector by factor 3

Optimum at Tasso was 15 mm yielding also a significant background reduction

Mr. Swoboda and Mr. Boer Schnoor try fix the fault in our collimator steering unit.

2 TOF · LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 To acc	Remarks

9^{30} Petra will change frequency from 96 to 81 KHz & 65 KHz slowly.
9^{31} Inner detector trgs.

9 45 Trigger 2 Output histogramm shows 0 for bin 29, must correspond to channel 15 or 16 change card * 15 on rucksack, reset T2 parameter by NORD
This was probably not the source of trouble. Ikeda

~ 9 50 Collimator moved:

Collimator	Current in Chamber Cell # 73.1 [arbitrary] (μA)	BP Counters (Rate in Volts)
before movement	2.3	?
15 mm in	1.8	0.9 V

RBg

10^{10} Beam lost

T2 Pflege Krehbiel Karte 83 ausgetauscht. Resetlöst Lücke im ~~T2~~ Input Histogram channel 163.
No failure detectable around channels 124 with Broken-wire switches. Further checks possible with real beam only

11^{30} 1 Bunch in der Maschine e^-, 2.0 mA. Unsere Background-Conditions
Beampipe-Integral 6 shtl, 3TOF = 4006, 3TOF/Motiv 6 2957 / 10^6 To accept = pro 10^6 Event Trigger
Energie 15.783

12^{25} Petra injection begins.

To next shifter: Try a run with all Muon CAMAC units in the CAMAC Crate Rack 17 pulled out. Print out ~~T2~~ T2 input & output histogram

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Test collimator 13.7.79

I_{e^+} = 6.25 mA
I_{e^-} = 6.43 mA

15.783 GeV

3 TOF	$I_{beam\ pipe}$	$I_{segment\ 13}$ ring coll 1	2	3	
57000	27	4.8	2.5	1.4	all collimators out
51800	17	2.8	1.5	0.7	all coll. 9 mm in
45000	14	2.5	1.2	0.5	-"- 15 mm -"-

4 collimators

13.7.79

16^{00} Tape unit broken (REWIND doesn't work)
Send data to IBM.
If trouble with starting the run (IBM ONLINE → ERROR CHECK) try again.

16^{00} Armitage & Minowa

17^{00} luminosity scintillators 1B-8B are now in testbank TDC. in bank #6 words 18-23, 25-26 R. Eichler

17^{12} Beam lost.

18^{25} Zweite FPLA-Karte von links in der T2-Logik Count ausgetauscht. Versuch, die Löcher in T2 Output Histogram Bei Kanal 28 resp. 126 loszuwerden. It did not help
Suspicion: Does Mu-Readout affect T2 readout, they are in the same crate

18^{35} Stable beams. Turn on B.P. & TOF counters. Current in BP counters is 3 units - bad.

Move collimators in 5x

NW	
530	563
533	520

e^- inner e^+

Now current is 2 units.

Go in another 5x

467	523
470	455

" 1.5 units

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30} cm^{-2} sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 T$_{acc}$	Remarks

13.7.79

Current in segment 13 of inner detector is 2.3 μA. — Good.

19^{35} Mark J now finished moving their collimator.
Take 1 dB out of prepulse trigger.

19^{40} Discover that one of our compensating magnets has tripped off KOMPENSATION RECHTS.
The "Regler - Max Min"

20^{40} Take 1 dB out of prepulse trigger.
Magnet man has now repaired the Kompensation magnet power supply and we will switch it on when the beams are next dumped.

21^{00} Take 1 dB out of To trigger.

22^{17} STOP RUN. MARK J requests a refill.

22^{00} Tape unit back to live (cleaning of air filter and vacuum pipes)
Mr. YEN has problems to read data coming through IBM-Link.
He recommends to write on tape only.

⇒ WRITE TO ~~TAPE~~ IBM ONLY (if REWIND should not work, then use IBM-Link)

22^{20} Beams now dumped so switch on KOMPENSATING MAGNET TO 750A.

23^{07} PKR announces stable beams. — They filled with the collimators IN
BP counters. 1.4 units — good conditions.
Inside current under details 2.8 μA — good.

23^{50} STOP RUN 794 — TAPE RUNS OFF ITS REEL AT ONLY 7300 events!
HAVE TO REWIND BY HAND — TAKES A LONG TIME SO START RUN 795 → IBM LINK

14/7/79

0.^{42} Run started # 798

2^{35} Stop After the stop of run, it was found that one of the power supplies was down due to overcurrent. (Ring 17 ~22 wall side) !!

2^{40} New filling.

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

118

14.7.79

6:00 e^- 3 mA
e^+ 3.2 mA

T0 10×10^6
3TOF 347×10^3 3TOF/T0 = 34.7K/1M
~~3TOF 1GeV 414×10^3 (?)~~
beam pipe ~ 1.2T

6 50 run start (IBM transfer)
"ERROR DURING LG-PED RUN" occured many times.
When IBM was disconnected, this error did not occur.

7 25 IBM ONLINE-JOB ERROR CHECK 3
But the run continued.
7 50 JDAS ERROR 000044 (OCT) SUBERROR 00302 (OCT) TASK 1

8 00 – 16 00 Weber, Yamada.

9 30 PKR wants to move our collimators outwards.

original readout

NW

467	523
467	455

e^- innen e^+

after moving

588	596
588	583

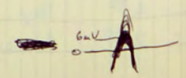
→ After injection they were returned to the original positions

467	523
470	453

10 30 N10-Stop/Level 14 during „display drawing event" [Run 806]
11 30 N10-Stop during histogram printing [Run 809]

11.40 Compensation Coil "Rechts" had current instability ($I \lesssim 700A$). Now o.k. again (current drop noticed at ~ 10.30 by Pilot)

15 00 changed LG thresholds 1 GeV from 340 to 400 mV
4 GeV from 680 to 710 mV
dead-time goes from 30% to 5%



2 TOF * LG>1 GeV	LG>4 GeV	tagging	<L> $10^{30} cm^{-2} sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T0acc	Remarks

14.7.79

16 00 Prosper, Warning
16 34 run 817 stopped for new filling
16 49 collimators moved out 10 turns
20 13 Stable beams – detectors switched on.
20 18 ID tripped off by 23.3 Silicium
20 20 Stop input to Muon Status disconnected (Staringer-Zeiger)
Collimators moved in again 10 turns
20 33 ID tripped again for same reason, LG threshold adjusted
20 35 I noticed that camac unit 4 (of MUON READOUT) flashed more often ?? than runs units
21 00 LG threshold adjusted to 410, 715 mV
21 40 IBM TRANSFER ERROR (OCT.): 000,000 SUBERR (OCT.): 000 000 ERR-CNT (OCT.): 000024
Try IBM LINK AGAIN? YES
error repeated after about 5 minutes.
These errors occured about 10 minutes after implementing MUON filter display routine.
~ 21 50 aborted MUON filter display-routine. Note: there may be no correlation !!
22 30 collimators moved out for new filling
0 25 LG thresholds readjusted to 400, 710 mV

15.7.79 H. Goddard

2 40 new filling ready. close collimators by 10 turns
3 00 Nord stops taking data. Try to start new run gives error message: NORD50 ERR: ILL INSTR.
* Batch job aborted
N50 cannot be started

Reload Nord start new run.
3 27 Pluto wants to move ~~their~~ their collimators. Turn off I.D. Run has just been aborted anyway.
3 45 Pluto finished coll. move from 20 → 25 mm. no change observed.
4 15 beam loss Stromausfall
5 55 New fill ready. start new run. 50% deadtime then
6 15 Nord stops Level 14. Reload Nord
7 04 Nord stops Level 3. Reload Nord
~~7 57~~ 8 10 Overload in Crate for BP counters Rack 3 Crate 1
8 10 Nord stops data taking. Reload

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	No of accepted events	Aee trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

2 TOF * LG>1 GeV	LG>4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T$_{acc}$	Remarks

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RUN#	Date	start	stop	I^+	I^-	Vak	time (sec)	#ϕ Acc. Ev.	All. trig	Tϕ reject	Tϕ Accept	T1 accept	T2 reject	T2 accept	2 TOF× LG>1
815	14.7.79	13 13	13.58	2×3.2	2×1.4	4.5×10^{-9}	2406	~~7207~~ ~~22565~~	626×10^6	211×10^6	415×10^6	2335	2424547	4742	17540
816	14.7.79	14.43	15 08	4.6	5,64		1370	5540	356×10^6	122×10^6	234×10^6	1906	(3)897×10^3	3634	14630
817	"	15.10	16 34				4749	8813	1235×10^6	862×10^6	1149×10^6	3456	(2) 110867	5208	9832
819	14.7.79	20.34	22.19	5,20	5,00		(~6100)	12503	1803×10^6	189.6×10^6	1314×10^6	4954	0196382	7343	16718
820	"	22.22	22.23	3.04	2.90		54	36	14 10^6	0.4 10^6	13.7×10^6	39	7890	43	88
822	15.7.79	0.15	0100	5.4	5.0	3.7×10^{-9}	2781	7888	723×10^6	70×10^6	653×10^6	3217	649785	4671	11946
824	"	2.47	254	7.6	8.0	4.3×10^{-9}	644	1766	167×10^6	109×10^6	57×10^6	786	96968	980	3423
825	"	3.11	327												
826	"	3.50	4.24	4.5	4.7		2040	5943	465×10^6	72×10^6	392×10^6	2566	372731	3877	9908
828	"	6.10	6.15	8.6	8.2		347	1300	90×10^6	53×10^6	37×10^6	519	72508	781	2729
829	"	6.22	7 04	8.6	82	4.2×10^{-9}	2563	10357	666×10^6	214×10^6	452×10^6	4719	2688817	5638	17124
830	"	7.12	757	5.7	5.2		2205	6998	573×10^6	74×10^6	500×10^6	3377	558429	3621	8541
833	"	7.58	810				646	1047	168×10^6	60×10^6	108×10^6	493	2100477	554	1085
835	"	8.17	948	4.4	4.0	3.8×10^{-9}	5103	9726	1339×10^6	63×10^6	1265×10^6	4533	827342	5029	9669
837	"	11.58	13 40	6.8	6.4		5608	13686	1458×10^6	237×10^6	1221×10^6	5740	848252	7728	20985
838	"	15.14	×17 10	7.6	7.6		6902	~~24~~500	1795×10^6	~~340~~ 337×10^6	1457×10^6	9517	1605109	14734	62284
839	"	17 18	17 24	7.5	7.5	4.5×10^{-9}		≈1500							
840	"	21 00	21 05	7.5	6.0										
844	16/7/79	1.07	1.23	4.6	4.5	4.0×10^{-9}	891	2780	231×10^6	37×10^6	193×10^6	1191	201339	1589	5447
845	"	3.09	3.56	3.5	3.0	3.6×10^{-9}	2777	4194	722×10^6	156×10^6	567×10^6	2966	524082	4194	13819
846	"	4.02	4:08	3.5	3.0		464	875	120×10^6	7×10^6	113×10^6	345	53137	530	1622
850	"	16 10	16 18			3.6×10^{-9}	1389	3729	316×10^6	85×10^6	275×10^6	1556	344K	2173	4621
855	"	16 49	17 44	3.4 ×2	3.6 ×2		2456	4401	639×10^6	105×10^6	534×10^6	1788	16.9×10^6	2613	5136
860	"	19.40	20 15	3.1×2	3.1×2	4.0×10^{-9}	2098	9108	546×10^6	88×10^6	459×10^6	3544	964×10^6	5264	13911
863	"	20 30	20.42				324	1083	84×10^6	6×10^6	77×10^6	461	128×10^6	622	1524
865	"	22 03	22 20	3.15×2	3.5×2	4.5×10^{-9}	1108	4748	288×10^6	37×10^6	210×10^6	2276	667×10^6	2472	5863
866	"	22 24	23.20				3491	14274	408×10^6	243×10^6	243×10^6	5943	(2) 5597×10^6	8331	22418
867	"	23.39	24 00				~~1458~~	4113	301×10^6	209×10^6	210×10^6	1540	?	2573	~~8884~~

121

LG>4	tagging	LM2	LM2 acc	LP2	LP2 acc	LM2·LP2 / LM2·LP2 acc	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP <V>	3TOF / 10^6 T$_{acc}$
1476	555	1359	1127	1886	1609	1009	2	~~7.7~~ 5.0	IBM	1.0	~~39×10^3~~ ~~2.34~~
1545	526	165	25	189	41	288	0.94	1.29	"	"	
1640	1085	233	36	275	60	412	0.41	1.97	IBM	0.5	
3770	1563	554	169	597	207	775	(0.61	3.83	IBM	0.7	27×10^3
31	10	2	0	2	0	4	0.4	0.02	IBM	"	—
							~~24.64~~	32.38			
2761	1049	425	99	408	140	594	1	2.96	IBM	1.5	64×10^3
543	318	156	22	194	33	235	~~2.3~~	1.54	"	1.2	
						LM2·LP2 / LM2·LP2 acc			"	"	
1919	920	1391	375	1133	459	1690	((4.2))	((8.5))	IBM	1.	
357	212	114	23	143	37	197	2.9	1.00	"	0.8	54K
3271	1938	546	85	659	143	978	1.9	4.9	"	0.8	
2221	1478	787	182	738	262	1081	2.4	5.4		0.8	
322	210	54	10	17	15	46	(0.3)	0.2			
3087	1802	432	125	461	161	607	.60	3.06	IBM		
4181	1975	17481	7096	14391	8457		?	?	IBM	0.1	40K
7116	3085	546	96	658	169	939	0.7	4.7	IBM	~~0.9~~	
									IBM	0.9	
							~~40.54~~	56.1	IBM down		
903	410	439	140	0	255	~~600~~		3.0	IBM		
2128	1088	308	79	356	106	479	0.86	2.4	IBM	0.6	344K
272	106	1605	805	1515	1199	1116	1.2	5.6	IBM		716
1110	564	101	15	117	20	183	0.66	0.9	IBM		274K
1293	625	187	77	195	88	217	0.45	1.1	IBM		57K
2695	1143	2458	1695	2229	1590	~~1398~~ ~~2349~~	~~3.3~~ ~~1.61~~	~~6.9~~ ~~4.11~~	IBM	1.3	329K
318	~~1.35~~	~~192~~	30	184	94	257	~~2.03~~ 2.41	~~1.32~~	IBM		652K
1463	1012	788	270	770	330			4.8	IBM	1.5	409K
4484	2169	893	231	948	333			6.4	"	1.2	1247K
1218	466	2[1]31	1.900	2522	1511				"	1.0	921K
		?						885			

13.58 beam dump by PKR (Times) with all currents power on ("Veto"). Times stop: Velo only applies to injection, not to beam dump!

18^{30} overcurrent alarm

15^{35} spark "

new filling

new filling

Run aborted Nord stops datataking

Nord stops data taking

beam loss

Nord stops level 14

Nord stops level 3

Overload in crate of BP counters stop run

Nord stops datataking

New filling 2nd of beam lost in lumi counters.

Computer hang up after 5 minutes

IBM error program aborded STFB0000

IBM has difficulties

RF lost in Petra

NSO died

Desy power fail. Beam lost (on koll. ?)

IBM error occured. TOF counters not in T2

303K TOF taking out of T2 trig.

TOFF is off in T2 trigger

stopped by SOFT Error 1 = 2

beam lossed.

New filling. after 4000 ev. test for Hi-trig

Exception: N10 level 03 down.

IBM link error hangol

beam partially lost

5112×SUP = 498

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	No of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

15.7.79

8^{00} # Loebinger, t. Elsen

9^{00} Regular-count display dropped into dead loop at non-increasing rate number 736 58 840. (Err. No. 15)

9^{30} Two V34 down for some time already: Ring 3 cell 8 (I.D. code 4) since Run 824
2 cell 2 ok Run 826, dead 830

11^{30} PKR: Stable beams

12^{00} I.D. trips, probably because of beam loss. Tagging ~~rates~~ counts are very high.

Inner Detector during RUN 837

V34 #64 (Ring 3, Segment 8, second part) } good again
V34 #26 (Ring 2, Segment 2)

DL8 # 35,2 (Ring 2, Segment 11, second) every second wire is missing → 4 in total

This is a run with high pick up, background tolerable

Rey

13^{20} Beams dumped on request of Mask J.

14^{15} Beams stable.

14^{50} $+14^{52}$ $+15^{15}$ I.D. HV. trips.

16^{00} Brmm, Febt

17^{00} computer hung up, outside segment bounds, called Hartmann

Onto is working on lead glass triggering (tries to build the spurious trigger)

17^{40} beam dumped for new filling

LI and LA collimator can't be moved out (24 bit is missing wire)
PKR is going to look into it (pulse out and in again cured it)

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 $T_{0\,acc}$	Remarks

19^{20} stable beam again
19^{26} beam lost again (transformer-fault)

21^{00} new filling move in collimators and take following rates:

coll	BP	3TOF/T0	chamber current 18.1
open	2.4 V	44.5 K	3.8 μA
3 mm	1.6 V	40. K	2.8 "
15 mm	1.4 V	38.7	2.3 "
27.0 ~~19.5~~ mm	1.2 V	38.4	2.0 "

leave collimators at 19.5 mm = $1\frac{4}{8}$ turns
the meter show the following readings

Return trip seen

418	478
405	404

Electronic rack

internal detector does not both bad with these settings

21^{15} We cannot ~~write~~ on send data to the IBM. The IBM is down.
As the our magtape cannot be loaded, we are not able to record data.

From looking at the event display: ID is quite clean
Regular event display gives regularly faults: outside segment bounds (all ≈ 3 events)

The IBM will be down for longer time

≈22^{00} Bad smell from the lead glass distributor boxes
23^{15} After injection by Tobio: ~~no~~ nothing broken
Some channels had wrong HV-settings. Corrected
23^{15} JDAS ~~RDAS~~ reloaded by Eichler to cure the outside-segment-bounds-faults.
22^{40} beam dumped for new filling
24^{00} JADE Kompensationsmagnet right: Reglex max/min light on. Call PKR. Is fixed by technicians!

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Watanabe / Eichler

16.7.79 1^{00} IBM-link works, start run

1^{22} RF-cavity fails in Petra. Beam lost

Trouble with event display (message: change entry codes) → reload display program YEDISP and things work again.

3^{00} Beam 7.5 mA Kollimator LI cannot be moved. call PKR

3^{09} start run. trigger rate very high. Transfer rate to IBM: 3 Hz 50% deadtime

collinear (2-TOF / 4-TOF) rate is ~~(~~ (~300 Hz)

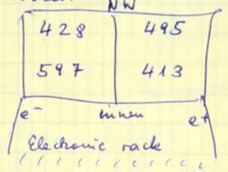
3:56 Nord50 ended with FTN-50 run error -000434 in ZRFIT line 867 at address 44531 (RALPH, you forgot to switch off FETCH Analysis in N50-Program)

neg. arg. in square root.

4^{00} beam lost. Whole Desy short power fail. computer stopped

all collimators can not be moved.

Present position:



lights "Kollimator nicht draussen"
Li off
LA, RA, Ri on

0800 Stephens / Haidt.

389 for compensating magnet potters.

Seiler asks when the compensating magnet could be checked.

PKR is reminded of the not moving collimators

Compensating magnet: technician says ok now

10.15 PKR say that they should start to bring on beam in about 15 min ∴ no useful beam expected for at least 1 hour.

~~Compensating magnet~~ 1350 alarm. alarm accepted and reset.

11 15 Another heat shield alarm

11.20 PETRA will be switched on

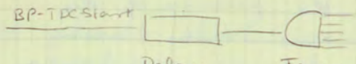
12 15 DL8 # 69 (Ring 2, Segment 11, second half) repaired. This DL8 delivered only odd numbers Runs 837 through 846 flag and probably affected the read-out of the rest of the Crate (DL8: 70-75)

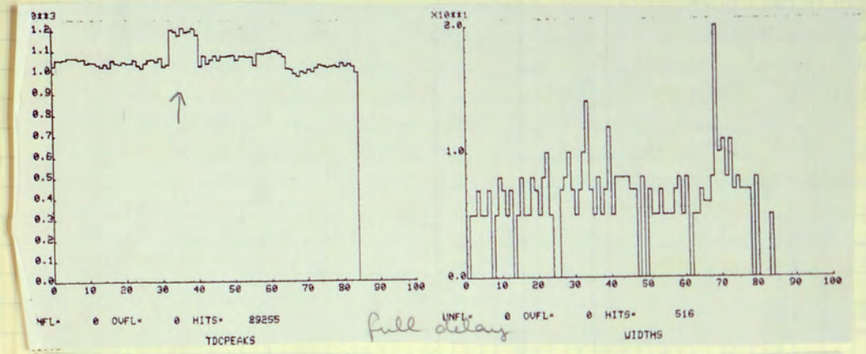
12 15 Beam lost from Options PKR will "adjust" for next half hour.

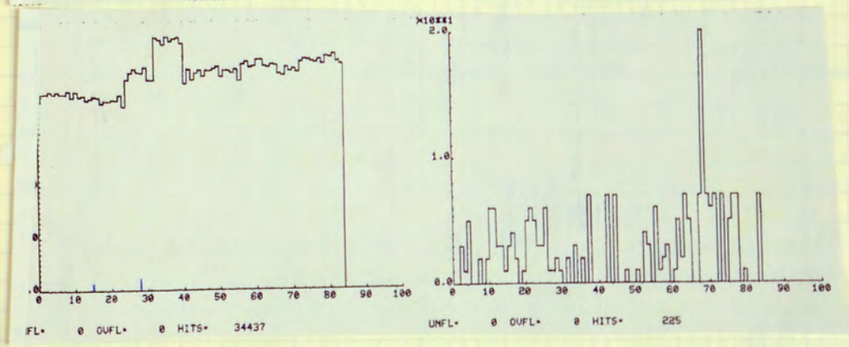
12 50 Beam off.

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Trans	Remarks

11.00 Installed Testsetup for TDC's TOF Counters







14 20 PKR technician: collimators are driven out

14 30 PKR beam: e^+ 2 × 3.2

e^- 2 × 2.9

Krebbiel & Naroska test T2 trigger

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

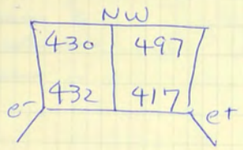
16.00 Investigated T2 problems:

1) Noisy wires in the beginning were due to the presence of the muon modules. We pulled them out. This necessitates using F8 for Start until program modification.

2) The hole around channel 28 was due to a missing TOF counter. This TOF-counter has a short with the neighbour on the card which may not be fast to find. So we take data <u>without</u> TOF counters in T2.

16.00. Kobayashi and Nozaki (~~1.77 / 183 e3~~)

16.40. New allignment of the collimator



[redacted]

Run 85/2 85K Dummy Run IBM Link does not work.

16 48 IBM link recovered.

15.10 Jet chamber alarm 23.3. restart.

18.00 beam dumped

18.15 Krehbiel thinks that short is fixed. So TOF counters back in again Bad water T2 output.

19.05 HV on. <u>New filling</u>

T2 off

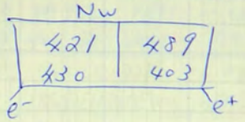
~ 19:27 Tested MOB 8 (~~off~~ on MUON status board) Harrison Prosper

~~board~~ output from deadtime gate connected to REF/STEP input of MUON fan-out — <u>Lancaster's</u> connection to REF/STEP input disconnected .... it gives a REF signal which comes <u>AFTER</u> reset.

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^5 T0acc	Remarks

From Run 860 on: <u>TOF is not included in the T2 logics.</u> (Intermittend wiring short-a-circuit on backplane of T2 crate in counting house)

19,36 Run 860 start.
collimator new set.



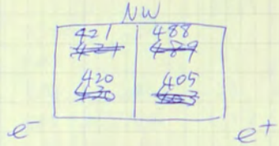
Now start again with F1.
If problems call R. EICKLER
8-Nov.

19:40 MUON electronics (in RUCKSACK) is not connected ... under test .. Harrison Prosper.
Time delays between pregate, REF/STEP and RESET being measured

20 42 beam lossed.

21 20 PK people moved the collimator out.

22 00 collimator reset



22.06 <u>Run 865 start</u>

22.20 stop run to remove muon radiant units. ~~trigger~~. Novosko cans!
because pendo trigger occurs in T2 due to muon trigger unit.

23.20 NORD 10 error level 03 → Run 866 no ~~stop~~ end file
23.37 Restart run 867

24°: Heuer, Ceeraerts

0.00 beam partially lost. Need filling. PK wants to try without opening collimators

0.00 beam partially lost. Need filling.

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Acc trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept	2TOF * LG>1GeV	LG>4GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T$_{acc}$	Remarks
869	AHH9	1.27	1.45	15.782	7.6	7.6	1044	4568	271	148	123×10⁶	1730	368 597	2755	10 011	1344	566	218	52	270	80	356	1.70	1.78	IBM	1.2	47 K	stopped because dicrup was pending
870	"	2.00	3.24	"	5.2	4.7	4332	15313	1 119	121	998	6116	485270	9197	24 883	4700	2000	460	114	528	172		0.81	3.50	IBM	1.2?	816	because lost
874	"	4.39	~~5.10~~	15.781	6.6	6.6	1556	6684	405	104	301	2574	559 940	3799	11 198	1969	870	196	33	245	63	345	1.10	1.72	IBM	1.0	182	stopped because of comp. hang up (Scaler reset running ~ 9 min longer)
875	"	5.15	~~5.52~~	"	"	"	2161	7362	561	66	495	3046	702484	4316	11 408	2330	997	462	104	470	162	661	1.52	3.29	IBM	1.0		because lost
879	"	7.43	8.15	"	7.8	7.6	2331	9623	606,5	138	469	3968	—	5495	14757	2875	1440	406	94	451	143	620	1.32	3.09	IBM	1.2	62 K	stopped because of NORD - hang-up (8.16)
880	"	8.39	8.55	"	"	"	933	3019	239	17	222	1301	347283	1658	3316	890	499	108	24	117	43	158	0.84	0.79	IBM	1.0	25 k	beam lost
881	"	10.08	11.20	"	4.6	7.0	4106	11583 (2)	1069	117	952	4806	—	6660	13564	3415	1730	375	101	423	114				IBM	2.2		stopped because of NORD - freak down
883	"	11.46		"			2273	849	591	51	540	2190	620193	3378	6681	1884	650	1354	396	1162	542				IBM	1.0	20 k	- - - request for beam - steering
																		NEW SM2×S2	SM1★ SP2 accord	COUNTS SM2 alte (19-accid)								
886	17/7/79	17.13		15.781	7.8	7.6	4.2		~ 1000	rates lost																		New IBM Link ↓
~~887~~	"	17.17	17.20						~~463~~																			
887	"	17.32							1276																IBM			
888	"	17.40	17.55	~~XX~~	7.8	28		783	3007	203	27,9	175	1511	37565	1437	2741	944	658	682	68			1.17	0.92	IBM			
889	"	~~18.05~~						888	2671	212	33.9	178	1308	32232	1363	2120	846	598	569	48			0.86	0.7	IBM	1.8		
890	"	18.22	18.41				4.4	~~618~~ 662	108	47.9	60	500	99028	638	1369	351	178	184	13	171			0.62	0.26	IBM			~~both Type & Link~~
891	"	18.46	19.39	15.781	5.2	5.0		2790	5333	647	73.4	574	3570	72674	4691	9682	2445	1237	1296	78			0.73	1.83	IBM & F22B62			both Type & Link
892	"	19.32	20.13				4.0	1862	4932	484	69.1	415	2027	38313	2815	5300	1542	612	654	24	620		0.51	0.95	IBM & F22B63	1.0	24 K	"
893	"	21.08	21.15					384	236	99	89.2	10	106	25723	117	309	61	48	48	3					IBM	1.4	54k	new Filling
~~894~~	~~807~~ 913	not operating, ~~Stopped~~			Stopped			in trying ZBM	link saving.																			
~~905~~																												
914	17/7/79	23.01	23.12		8.15	6.10		923	4757	240	74,5	165	2002	456 000											F22B64			
915	"	23.18	23.46					1664	8013	432	110	322	3284	76707	4591	38344	2410	1268	1312	146	1166		1.05	1.75	IBM	1.0		
916	"	23.49	0.57	15.781	7.00	5.00	46	3830	12779	992	124	867	5600	492 K	7177	26218	4057	2131	2243	151	2042		0.92	3.14	IBM			
918	18.7.79	2.01	2.19	-11-	5.3	5.3		1076	3387	279	38	241	944	393 k	2443	5373	961	70	862	0 ?	86		-	118.2	IBM			no HV for tagging system ←
919	-1.-	2,23	3.52	-11-	-11-	-11-	4.3	5194	13251	1357	135	1216	5886	429 K	7565	12567	3926	2167	2247	110	2137		0.62	3.20	IBM			
926	-11-	5.04	6.44	-11-	5.0	7.0	4.5	5596	15771	1456	130	1325	7018	scaler defect ?	8753	13913	4709	2756	2849	342	2507		0.67	3.76	IBM	1.1	36 K	
												Filling																
930	-11-	10:42	11:20		4.0	3.0		2462		640	96.4	544	3753	121 k	4461	7634		1558	1620	173	1447		0.95	2.17	IBM & F22B67	1.1	47 k	
931	"	11:40	11:55					982	New Filling	256	43	213	1123	363	1380	1689				Target					IBM + F22B68	1.1		Stop because of computer hang up
936	"	12:01	14:56		7.1	5.9		1280		333	74	259	258	467	2184	4012	1291	777	807	47	760		0.39	1.14		1.9	56k	
937	"	15:29	16.50				4.2	4853	12258	1263	199	1064	5457	421 k	6801	10.718	3803	2123	2196	117	2077		0.6	3-12 125 k		.9	60k	stop - because of computer - transfer to IBM ?

— cont'd to page 134 —

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Run 869: stopped because clamp was pending.
after several errors "i" message: program aborted $S00\phi$ $U\phi24\phi$
IBT-operator did not know about new clamp-job.

Run 870: SDAS ERROR $\phi\phi\phi054$ (OCT) SUBERROR $\phi\phi\phi\phi\phi3$ TASK 1
" 53 " 140205 " 1

During runs 869/870 collimator-setting as in Run 865
874, 875, 879

very often run ended after event # 7 (with IBT-error check)

8[00]: Alarming, Vacuum
8.15: tried to ~~reset~~ restarted restart NORD, failed
8.35: NORD restarted
8.43: Heat-shield water-flow alarm
8.48: Pluto asks for "Beulen fahren" ~ 10 min.
8.50 Beam lost, but before they started to "beulenfahren" (PKR does not know why!)
9[55] new fill
10[00] chamber tripped (23.3)
10[10] LG thresholds readjusted to 310, 730, 705, 860 mV
10[15] Collimators moved in 10 turns each
10[20] ID tripp (23.3)
10[20] ID tripp (magnet control)
10[55] LG threshold readjusted to 310, 665, mV
11[10] Pluto asks again for "beulenfahren"
11[20] ~~Fatal~~ Error in Run 883 ? ~~Memory destroyed~~ ? called expert P. Dittmann
event #, run start information destroyed Color TV Program destroyed, new geladen.
11.55 Collimators opened to check background in ID
12.00 ID tripped
12.10 Collimators moved back in again (14 times each)
12.23 Run 883 stopped because of request of Pluto for "Beulen fahren"
12.25 ~~Heat~~-shield water-flow alarm
12.35 Result of "Beulen fahren": reduces Pluto's background, does not affect other detectors (TASSO did not check for ID was off); ~~they~~ tends to ~~install~~ this beam correction installed permanently

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF $/10^5$ Trigger	Remarks

14.10 The visual scalers counting LMZ, LPZ and their accidentals have been disconnected whilst the data is investigated.
Idea now on the luminosity should be calculated from the tagging total Energy trigger.

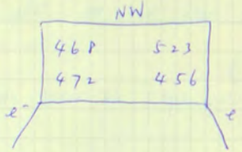
$SPZ\,(=\sum_{+\beta} E)$ • $SMZ\,(=\sum_{-\beta} E)$ and its accidentals. These rates are scaled on the visuell scales above the trigger box. $\mathcal{L} = (SMZ \cdot SPZ - accid) \times 6 \times 10^{27} \times E^2$

$= 1.5 \times 10^{30} \times (SMZ \cdot SPZ - accid)$ at 15.87 GeV

16[30] control on collimators now back at PKR, they promise to move them for us, check on that after each new filling!

16[45] new IBM on-line link installed changed load module jdast and changed jdump
See Nord 10 - logbook for details Reichler

17[10] Setting on Collimator

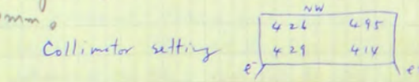


17[30] started new run 887. High background BP counter current 20, Inner Chamber current 0.3 μA
17[48] Display does not work. Stop the run. Reloaded.
18[30] NORD 50 + ~~ND~~ then NORD 10 down
18[46] Nord up again

18[00] TAPE-UNIT repaired. We take two runs to LINK & TAPE for comparison

20[11] At the end of run 892, PKR ~~tried~~ to drive the collimators for to 20mm as Only a small (10%) decrease of background rates observed. From next filling on they will set the collimators to 20mm.

20[48] New Filling Collimator setting



21[00] TAPE-Unit dead again, after two tapes were successfully written and read

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

21 30 IBM down for direct link

23 01 use tape

23 30 after call to IBM operator link works (operator loaded R1ST)

23 45 reload jdas-module at IBM starting run 916

18.7.1979

0 00 J. Hassard, A. Wagner

035 Inner chamber trip due to pickup. Reset.

057 beams lost [HF-transmitter loss NORD]

149 beams back

- Collimator settings untouched: 426 | 495 / 429 | 414. According to Reuker, PKR, the JADE-collimators can remain in their IN-position also during injection. This is not the case for the collimators of the other experiments.
- check LG threshold: set to x = + 15 mV. ok

2.15 Stop run 918 since tagging HV was not on. Why are there nevertheless 86 counts in SH2 × SP2?

3 35 Innerchamber trip: reset.

3 50 new filling requested by Mark J

this coincides with computer hang up. At next start we get the message: N50 can't be started

~~reload~~ + restart N10 → ok

4 45 new filling finished

difficulties with link; ask operator to restart JADE-program

Summary of rate measurements taken during run 919:

time	BP-current	ID current	I_{e^+}	I_{e^-}	counting rate accept. events/min	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}
2.00	1.1 V	1.8 ± 0.3 μA	5.9 mA	5.3 mA	190	?
2.25	1.0 V	1.8	5.3	4.7	208	
3.00	0.9 V	1.5	4.7	3.7	167	0.86
3.35	0.8 V	1.3	4.3	3.2	128	0.61
	70%	70%	70%	70%	67%	≈ 0.57

6 40 NF requested by Mark J

8 h Tobuka & Hanlt on shift

10^{35} Beam: e^- 2×3 mA e^+ 2×4 mA

10^{30} Collimators moved in by 20 mm done by PKR: 426 495 429 414 (corresponding to 20 mm)

11^{40} Tape full

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 T$_{acc}$	Remarks

11^{50} Nord hang up.

12^{10} e^+ 2.8 3.01 e^- 2.2 2.0 (still the filling since 10^{35})

12^{00} TAPE Unit working again. For test purposes we write to tape and link

3 NORD hang ups on LV 14 and LV 3 after ≈ 50 events together with hang ups: TRIGGER BOX not working properly, therefore very high rate (≈ 10/sec).

12^{20} We still don't know what the problem is
seems to be a problem with T2 trigger (Krehbiel is here)

12^{30} T2 trigger dead. Gate-Generator from II. Institute was definitive. Intermittently failure of Clear out. Replaced Gate Gen. by second one. All delays and widths set to the values of the first. Seems to work again. The

13:20 • DL8 at 705 is kaputt → recovered

13:30 Mark J will dump the Gem

: Mum people runs cosmic trigger

14^{47} PKR: filling ok e^- 3.0 2.9 e^+ 2.5 2.6
(Collimator are moved in (20 mm)
Hang up after reading the inner detector ("23" error) – start new run
change order of readout in ZREAD. The tagging adc's are read out after the inner detector.

16,00 Ian Duerdoth and G. Weber

16 50 Capacitive filters added to Tagging Channels Blue 22 (25) Bank; Blue 13 (43) Bank at end of Run 941
Run 943 stops because of IBM-link. Different tries to get it working

17 10 Run 944 has tagging chamber readout in

17 25 Pb-Glas Threshold adjusted

17 45 tagging chamber readout taken out again

18 00 change Camac crates in BRANCH 3. Now T2-trigger in crate 1, muon readout in crate 2

22.30 based on the low statistics of run 946 it seems that the extra crate in branch 3 has stopped the muon readout upsetting the T2 readout.

00 00 Olsson Clarke on shift

01^{10} R950 stopped after hang up R951
Confusion: N50 out, try to restart (Nowhere); Turn beam back

obs.: Data taking just stopped. Known reason

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept	2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trace	Remarks
134																							
NRUN	Date	Start	Stop	Eb [GeV]	I^+	I^-	Vak [10^{-9}]	time (sec)	# of acc events (from scaler)	All triggers (10^6)	T0 reject (10^6)	T0 accept (10^6)	T1 accept	T2 reject	T2 accept	2 TOF LG>1	LG >4	tagging	SH7 * SF2	SH7 * SF7 Accid.	SH7+SF2 − Accid.	<L> 10^{30} cm^{-2} sec^{-1}	$\int \mathcal{L}$ nb^{-1}	tape /IBM	BP (V)	3TOF (10^6)	135
944	18.7.79	17.12	17.18	15.78	4.3	3.4		1874	4583	487.7.10^6	80.3.10^6	407.2.10^6	1748	406 9	2747	5966	1342	514	545	21	544	.44	.82	IBM	0.9	825 B
946	"	22.02	22-14	"	7.6	5.4		456	1647	118.2	25.4	92.8	783	233.9	864	1559	486	344	360	20	340	1.1	.51 .74	IBM	2.1 *)	71.5k
950	19.7.79	00.56			6.6	6.4		533	(1921)				521	139.4	701	1994	359	225	231	24	207	.58	31	IBM	1.0	
951										116.	42.3	74.0	489	118.4	505	794	313	219	231	13	218	?	.33	"		33K
956	19.7.79	9.12	09.30	15.78	6.0	5.6		995	3062	240.1	41.7	148.7	1420	349.4	1641	7699	956	617	637	50	587	.85	.58	"	.9	
957	"	2.36	03.45	"	6.6	4.4	4.0	4070	9453	1058.	156.6	909.3	4332	805.6	5101	6809	1915	1845	1918	109	1803	66	2.70	"	.9	
958	"	05.48	09.00	"	4.4	3.1		602	1783	179.4	15.7	156.7	694	135.3	1089	2466	551	212	228	8	220	.50	.33	"		
960	"	05.16	6.46	"	8.0	5.2		5297	18348	1378.6	328.0	1050.6	5680	411.0	6662	10354	4027	2164	2273	142	2131	.60	3.20	IBM	1.1	
972	"	12.07	12.29	"	7.2	7.2		626	2402	162.3	59.06	106.25	1104	231 289	1561	4330	845	358	559	138	421	1.004	0.63	IBM		356.7K
974									114	24	19															
975	"	13.52	14.00	11	7.8	7.8		403	599	104.7	48.3	56.40	552	119 224	599	1382	389	214	220	21	199	.74	.30	IBM		
976	"	14:05	14.49	"	"	"		2424	8615	630.6	140.7	489.88	3735	872 752	4880	10529	2647	1427	1487	107	1380	0.858	2.07 1.46	IBM	0.95 total	509K?
979	"	14:54	15.30	15.783	5.20	4.81	4.0	1837	5055	478.2	60.4	417.7	2177	566728	2878	4750	1554	795	831	57	774	0.682	1.46	IBM	0.7	—
980	"	15.33	16.43					3923	8712	1020.9	150.4	820.5	3639	853 464	5073	8409	2682	1219	1285	59	1226	0.469	1.84	IBM	0.7	
																									500K	
																									STOF 10^6 Trace	
983	"	18.20	18.40	15.78	6.0 ~~8.0~~	8.2 ~~5.6~~	3.0	1077	5179	279.	76.	203.	2189	455 886	2990	8431	1627	786	831	70	761	1.06	1.14	IBM	1.2	50K
986	"	19.30	20.10	15.78	7.8	6.4		2414	10765	628	135.5	492.7	4282	866 269	6423	17336	3245	1442	1539	102	1435	0.89	2.15	IBM	1.2	40K
987		20:20	20.25	4.04				401	1344	100	10	90	590	119 410	734	1495	450	196	235	17	218	0.82	0.37	IBM	1.2	
992	20.7.79	1:30	2.11		7.4	5.8		2034	7864	544.10^6	77.10^6	467	3478	769 867	4387	9082	2568	1231	1290	93	1197	0.86	1.8	722865	1.2	40K
993	"	3.55	5.00	15.78	6.5	5.8	3.7	2771	7866	720	54	666	3760	883 454	4106	6188	2576	1524	1583	84	1435	0.81	2.2	722870	1.0	33K
996	"	5.45	5.50	"	7.0	7.8		277	1233	70	13	51	570	129 131	723	1738	411	202	214	17	197	1.0	6.3	722 871	1.2	50K
997	"	6.20	6.55	"	8.0	7.6	4.0	1127	7865	501	92	408	3619	835 086	4252	8387	2537	1412	1476	120	1356	1.10	2.0	722 872	1.2	50K
999	"	7.05	7.32					1733	3130	426	201	225	1480	368 055	1640	2793	1024	533	617	28	589	0.51	0.3	IBM		
1003	20.7.79	8.42	8.54	15.78	6.5	7.8	5.6	742	2209	192	62	731	1091	260 209	1118	1889	706	476	490	33	457	0.92	0.68	722882	1.2	90K
1005	"	9.06	9.22	15.78	5.9	4.9	4.1	2961	9610	990 x 10^6	76 x 10^6	694 x 10^6	4238	8093038	4372	6492	2905	1415	1470	120	1610	0.84	2.5	IBM	1.1	
1007	✓ "	10.14		15.78				1182	2534	317 x 10^6	32 x 10^6	285 x 10^6	1218	305 882	1819	1609	837	465	464	20	464	0.59	0.69	"	1.0	
1008	20.7.79	10.39	11.19	15.78	4.60	3.90	9	1938	3666	504 x 10^6	27 x 10^6	476 x 10^6	1643	474015	2023	2149	1190	583	619	36	583	0.45	0.73	"	0.9	
1009	20.7.79	11.53		15.78	3.60	3.22	"	1861	3185	464 x 10^6	22 x 10^6	461 x 10^6	1433	383933	1752	1640	1128	436	465	20	445	0.35	0.47	"	0.8	
1011		12:28	12.31						201															"		
1012		12.32	12.40						633	118	9.9	107 8	297	79 994 ~~113 700~~	336	242	221	107	114	2	112		0.19	"		
1013	20.7.79	14:10	15.10	15.78	6.20	5.50	4	2934	8412	761 x 10^6	87 x 10^6	694 x 10^6	3632 this page is missing	1029285	4580	4189	2686	1455	1512	114	1398	0.91	2.1 1594	IBM	1.1	

*) with coll. masters open discriminators adjusted, beam lost due to collimator powersupply (24V) fiddling at >2.14
New setting, collimators in. Start after some trouble with ERROR 50 on Nord due to CAMAC - μ-crate (power head tripped. Now on!)

Bank J request N. F.
" " " "

μ-readout in tag-chamber in
μ-readout out, tag-chamber in "

error in ZREAD corrected

← MUON chambers incorporated in ZOOB
⇒ not successful

tried IBM tape several times (see page 137) it may tape Wennerklamm on PETRA portable

ERR 4

Beam test

5

Beam test

6

2

IBM up again (two days before) Beam test

Scalers continuously after NEG failure
Stop at 9.27 due to LD trip reset

Run stopped because of NORD 50 bug: "TRANSF." on Line-printer

} with muon readout for HS only!
" " "
μ-readout in, see note on page 138 concerning μ-readout

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Run 956 TOF 5-8 out of function. Nakoska looking into it. Run stopped,
In test run everything Ok " thinks reset was not properly plugged in
Collimator reading | 426 | 495 | This gadget is really cleverly installed !
| 429 | 414 |

HT LD. Interrupt, the run did not continue after resetting. Reason unknown

Nav filling at 05, start R960. Error 000044, SUBERROR 000000 TASK7 Now very frequent, ~1/minute
6^{20} Currents e^+ 2x2.9 e^- 1.7, 1.8 mA
The errors still very frequent, we have to tell ROOD to continue every 2-3 minutes; otherwise things are steady and nice LG scope display has dropped below zero-line but Muhelelis agrees with formulas Kobayashi says Ok.

8^{00}

8^{30} New filling ready, but not listed by Mar2 J. Mar2 J requests new filling
8^{30} U. Krafft and King on shift
8^{50} New filling ready

collimator	427	495
	429	414

Problems with IBM end
9^{17} e^+ Beam lost,

Mr. Grell (MEL) says that Petra Television needs a regenerator in the NW-hall. This will be installed on next monday
10^{15} new filling ready — 438 494
10^{27} just after closing the collimators they lost the beam — 428 413
11^{20} had some "water trouble" in the machine
12^{05} filling ready — 435 495 } at 13.40. when beam became
12^{07} Run 972 started — 425 414 } available
lots of trouble with IDAS error 000044.
12^{20} Sender ausfall
14^{05} branch 3 crate # 2 taken out. errors are much less frequently
tagger chamber read out in!

14^{25} During Run 976 we have - like this morning - very often
IDAS ERROR 000044 SUBERROR 000000 TASK 1
frequency is about 1/min

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 Trans	Remarks

The error is caused by crate 5 in branch 6. Found a mistake in camac reading routine
The LAM was not disabled in BR6 CR5 before the DMA is started. This causes sometimes a dma time-out. Will fix the error in next run. Riedle

14.54 Run 979 started ERROR 44 has disappeared.
RUN 980 muon electronics in crate 2 BR3 reconnected but not read out

16.00 Cautero & Takeda
16 45 Need filling
18:15
18: ~~20~~ New filling ready

18:20 RUN 983 start
18:40 Beam lost

19:30 Beam ready, RUN 986 start
30:10 RUN 986 stop
— MUON chambers in IDAS — & take over again
20:15 RUN 987 start
20:25 Beam lost. There are troubles with HT in sector wall. Has to be reprocessed.

0^{00} Yanagisawa, Tokt what the date?

1^{20} filling again OK. Run stopped with IBM-link always after 127 event, message: LG problem, status: "waiting for IBM", operator says everything O.K., to make the same trial stand waiting rate high.

several error message: error 22 false interrupt
shortly after end of run 982 PETRA lost a beam due to water leak / off-line-record does not work / on-line-record does not work properly, at reminder the tape very slowly, tape is not in the reclamation channel

3^{50} beam in again, lost at 5^{10},

5^{45} beam back again, cannot use IBM-link (IDAS waiting for IBM and so) continue with tape

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^5 T$_{0acc}$	Remarks

The scaler readings from the visual ones are different (added on typ in Flins).

```
        EXP        2          E BEAM    15.783
        RUN      992          E+CURR     7.8
                              E-CURR     6.4
                              FIELD     -4.529

        RECORDS  9001
        EVENTS   7864
```

9092									1231	2568							
3024	0	0	0	1634	0	0	0	1231	2433	0	0	0	0	0	0	763967	
	0		0	549	0	77	0	467	0	0	0	4387 4348	0	0	764142		
	0		0	537	122852	76424324		463844226		0	771955	0					
1286		95															

8:00 Weber Imori

8:29 Try to start: Trouble with the NORD 50

8:39 IBM is down. data is written into Magnetic Tape A22

8:53 Run is suspended because of Mag Tape trouble. Message is as follows:

JDAS ERROR 00051 (OCT) subError 000165 (OCT) Task 2

8:53 Run is continued

8:52 Run is abnormally terminated because of N50 trouble

9:00 Coding (TASSO) calls for permission to play with collimators. At 9.25 collimator adjustment. Still goes on, finished at ≈ 9.30

9.52 ID alarm

10:03 run 1005 stops manually!!!

10.07 PKR wants to make optical bumps in TASSO-region.

11:13 Message TRANSF is printed on the console printer: Stop the run. Restart the system, reload the program, regenerate the system Reload JDAS

12:40 ask for new filling, switch off HV's, but PKR plays with beam till ≈ 13.00. Start filling after we complain

14:10 Run 1013 starts

14.21 ID alarm, continue at 14.24

μ-readout in (F8-start) See many hits in μ-chamber mainly in the far side. Found, that reset pulse is only 300 mV (should be NIM); with Tek (terminated 25 Ω) at scope when measuring). Sth bright of T2 reject counter is broken

From Run 1014 tagging trigge added to Trigge now is:

$$TAGG = SMZ \cdot SPZ$$
$$LG \geq 4\ GeV$$
$$(SMZ + SPZ) \cdot LG \geq 2\ GeV)$$
$$\left[(2TOF \cdot LG \geq 1\ GeV) + (SMZ + SPZ)\right] \cdot 1\ TRACK$$
$$\overline{2TOF_{coll} \cdot \geq 4\ TOF} \cdot 2TRACKS_{FAST}$$

(SMZ + SPZ) · (LG > 2 GeV)	triggered	7	in 100 secs
(SMZ + SPZ) · 1track	"	31	" 100 "
cf. (2TOF · LG ≥ 1 GeV) · 1track	"	160	" 100 secs

15:40 some time out error from μ-chamber crate. 16:00 Uwe + Heiner

18.00 New Beam available. Collimator settings 429 495
429 414

≈18:15 Run 1016 stopped because of ID trip off. New μ-chambers are build in Run start F1 (Muon crate 8 is not connected. Therefore you will get a "missing response" message for crate 8 at the start of each run. The chambers connected to this crate are in the roof, on the rucksack side, the quater nearest the counting room).

20:00 We checked the scaler rates produced by the run summary. They seem to be ok (≈1% difference for All trig, T_0 rej, T_0 acc (high rates)). Please take them regularly now after each run.

21:13 Run 1018 stopped, because we wanted a new filling. P.E+P.DI = E.N.
Just before dumping the beams, the PKR got the message, that PIA couldn't inject, so we continue with the old filling (Run 1019)

21:47 New filling possible

22:55 PKR: problems during acceleration (they lost the beam twice), maybe HF-troubles expert is looking into the problem

23:40 Filling ok

23:45 beam lost

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Alle Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept
1014	20.9.79	15:16	16.45	4.8	3.9	4.2	5535	14,986	1,440	163	1,277	5,781	2,325,895	8960
1016	20.7.79	18.11	~18.16	8.0	6.2		2	2907	145	41	104	~~1681~~	384821	1481
1017	"	18.33	19.46	"	"		3913	12173	1,011	131	881	5,038	2,160,129	6,933
1018	"	19.53	21.13	5.0	3.6	3.0	4617	10,169	1,189	129	1059	3967	1,524,624	6,032
1019	"	21.22	21.43	3.7	2.6	3.0	1211	2,161	315	22	293	749	315,043	1,366
1022	21.7.79	1.10	2.16	7.9	7.6	3.0	2774	14932	445	10	797	$25.8\cdot10^5$	$25\cdot10^5$	8221
1023	"	2.15	3.55	5.4	4.8		4162	15465	1434	115.7	1319	23,4	$23.2\cdot10^5$	8836
1024	21.7.79	19.10	20.25	8.1	5.7	3.2	3080	15276	1032 ~~2551256~~	183	849 ~~3731~~	2692495	2677498	8601
1025	"	22.30	22.33	~~7.1~~ 7.5	7.5			240						
~~1026~~	"													
1028	22.7.79	0.20	1.39	8.1	7.2	3.9	4062		1056	143	912	$3200\cdot10^3$	3 184 410	7892
1032	"	6.12	6.36	8.3	6.1		1228	3110	319	200	300	0.64	641392	1574
1033	"	7.51	8.09	7.9	7.4		986	3673	276	27.5	228	8×10^5	813935	1690
1035	"	10.28	10.43	8.0	6.6		845	3470	219	40	179	6.3×10^5	6.3×10^5	1738
1036	"	12.42	13.16	8.0	6.0		1686	6565	438	64	373	1.26×10^6	1.26×10^6	3386
1041	"	13.46	15.00	6.2	4.5	3.9	3991	11442	1038	94	944	1.97×10^6	1.96×10^6	?
1042	"	15.02	~15.10				1882	3805	489	78	411	$.56\times10^6$	$.56\times10^6$	2137
1043	"	JUNK												
1044	"	16:25	17.04 ~~1704321~~	8.2	7.4	3.9	1926	~8K	500	124	375	1.36×10^6	1.35×10^6	———
1047	"	17.14	18.13				3373	11109	877	99	778	—	9.3×10^6	5789
1049	"	18.21	19:14	5.2	4.6	—	3030	6904	788	539	734	—	1.17	3641
1050	"	20:21	20:40	8.3	7.9	4.0	938	5548	257	39.1	217	—	.884	3183
1051	"	21.30	21.47	8.6	7.9	—	972	4563	252	84	168	$7.3\cdot10^5$	$0.73\cdot10^6$	2600
1052	"	22.45	00.03	8.5	7.8	—	4233	~18K	1100	225	875	3.17×10^6	3.16×10^6	9928
1054	23.7.79	0.04	0.43	6.4	5.6		2024	6778	526	78	449	1.16×10^6	1.16×10^6	3774
1055	"	2.48	2.49	—	—			1009						
1056	"	16.57	17.15	8.2	5.4	$3\cdot10^9$	~~2556~~	3357						
1060	"	17 22	18 22	5.7	3.8	"	3506	10859	912	79.6	832.8	$0.89\cdot10^6$	$0.878\cdot10^6$	6527
1061–1070	"													
1071	"	20 29	21 30	8.4	7.0	"	3245	11069	843	140	704	$1.17\cdot10^6$	$116\cdot10^6$	6506
1072	"	23 02	0 00	4.6	3.4		3271	1049	851	122	729	1.24×10^6	1.23×10^6	5243
1076	24.7.79	00 11	0 35	4.0	3.0		1401	2780	364	18	347	0.28×10^6	0.28×10^6	1569
1077	"	01 30	1.54	7.4	7.2		803	3058	209	31	178	365×10^3	$362\cdot10^3$	1565
1078	"	2 04	2 20	"	"		618	2300	160	17	144	258×10^3	$255\cdot10^3$	1228

2 TOF • (LG > 1 GeV)	LG > 4 GeV	tagging LUMI	$\langle L \rangle$ $10^{30}\,cm^{-2}sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	TOF $/10^6$ T$_{acc}$	SMZ • SPZ	SMZ • SPZ ACCID	SMZ • SPZ – ACCID	Remarks
13,014	4,472	1732	0.48	2.67	IBM	1		1846	65	1781	
851	992	396			IBM	1.5	38K				numbers out of RAL-Summary
9,456	3,622	1,750	0.665	2.60	IBM	1		1,843	109	1734	
8,093	3,102	1,170	0.401	1.85	IBM	1		1,283	49	1234	
1,725	651	162	0.219	0.265	IBM	1		177	0	177	
(COII) 12268	4562	2432	1.28	3.5	IBM	~~1.4~~ 1.2	37K	2563	199	2364	
$1296\cdot10^3$ 12972	4837	2096	0.77	3.2	IBM			2202	73	2129	
538×10^6 10955	4605	2397	1.14	3.5	IBM			2535	187	2348	
							40K				
						1.3					
$538\cdot10^6$ 11 143	4 789	3 314	1.17	4.77	IBM	1.3	43K	3437	258	3 179	TOF in T2 again.
300 111 1647	966	625	0.9	0.9	"	1.2	30K	646	45	601	
415851 1728	1095	933	1.35	1.33	"	1.2	40K	968	79	889	
309410 2804	984	739	1.26	1.06	"	1.1	36K	767	59	708	
692761 5735	1986	1298	1.09	1.84	"	1.2	33K	1326	98	1228	V34 off 7 Jul waiting
1055580 8551	3747	2148	~~3~~,82	~~3.3~~ 3.27	(L(1GeV) 189.9	.8		2249	67	2182	V34 repaired
304560 3322	1197	522						556	17	547	
						1.7					
——— 8068	2462	1465	1.18	2.15	192.1	IBM 1.1	—	1644	187	1437	
——— 8931	3468	2167	.93	3.15	195.3	IBM "	34	2194	96	2101	
654004 4944	2157	1258	0.63	1.92	197.9	IBM "	20	1345	38	1307	"
— 6851	1604	257	1.16	1.14	199.0	IBM 1.4	42	1018	256	762	"
— 4860	1279	757	1.07	1.1	200.1	IBM 1.4	44	792	77	715	
1670479 ~~5325~~	3172	1.09	4.61	204.7	IBM 1.3	50	3309	239	3070		
— 5695	2071	1166	0.85	1.92	206.4	IBM TAPE		1280	62	1148	
640357		1379	0.64								Only headers beamstarring IBM-limited
~~1338~~ 13884	3411	~~1165~~	~~062~~	2.08	208.5	IBM 1.0		1458	3	1455	
798675 22421	3399	1653	0.76	2.48	211.0	IBM 1.2		1749	29	1720	TOF beam loss
swamped 7129	3032	2041	0.96	~~3.13~~		IBM		2109	15	2094	TOF beam loss
205146 1658	914	418	0.47	0.66		IBM 2.4	$3.5^{9}/_{0}$	441	1	440	see page 147
264×10^3 2714	949	~~1649~~	1.24	0.99		"		673	9	664	
185000 2022	715	404	1.01	0.63	216.41	"		426	7	419	Beam lost

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

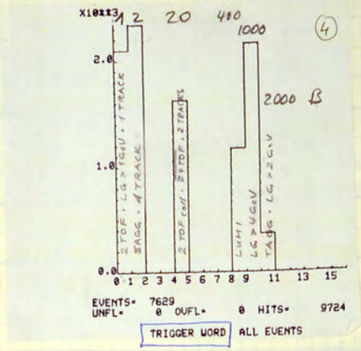
21/7/79

0:00 New Version (7907) of NSO program implemented

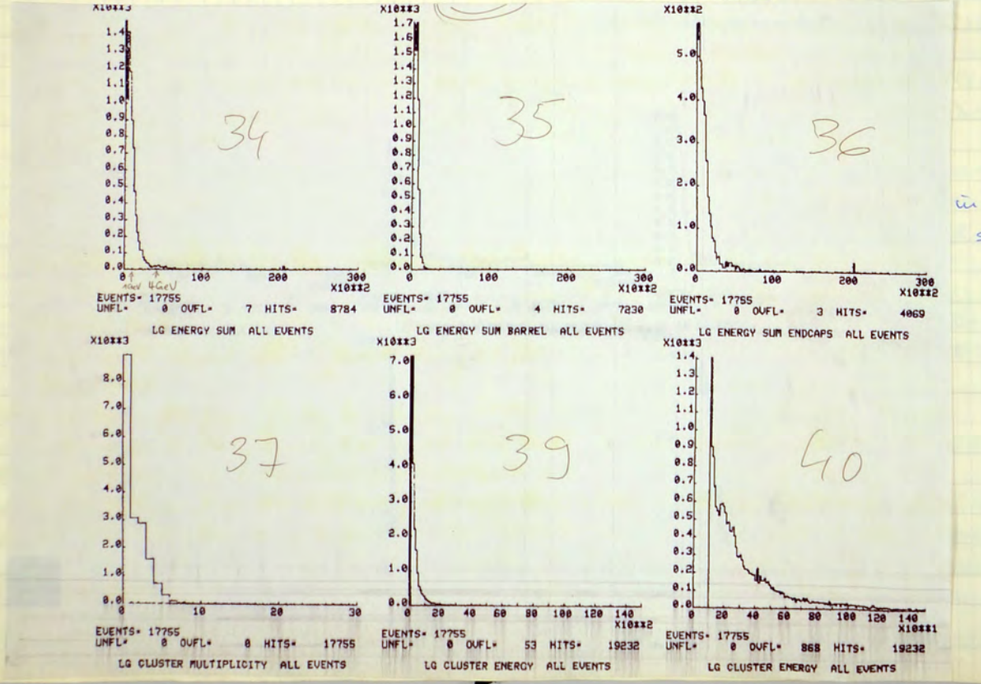
New features:

0.00 Barthl, Nimrod
1 05 Petra back
Dithmarsen last run
1 10 Start run # 1022
2 15 Chamber alarm # 23.3
Stop run # 10222

TAGG pedestal SDO subtracted
LG analysis always running now



in TRIGGER subcontext



in LEAD GLASS subcontext

2 TOF · LG>1GeV	LG>4GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trans	Remarks

collimator during run 1022, 1023
425 495
425 414

3 00 chamber alarm 23.3
4 00 " " "
ask for new filling, stop run # 1023

6 00 Run #1024 is a play run no data to EBN.
Vacuum $2.5 \cdot 10^{-3}$ torr
Petra-troubles: 1.) water hose broken in the Petra tunnel
2.) linac II down (independend of problem 1)

6 00 Visit by H. Rieseberg.
He had no complaints. The newcomers on shift did not work the chamber.

8 00 Goddard, Yamada

16 00 No beam all shift, very boring.

16 03 Murphy, O'neill are now on shift.

1900 hrs. Stable beams.
~1925 ~ 3 Jet chamber trip offs in a row. Always the manual HV channel # 23.
1932 β and time was 25% at start of fill 20 min ago. Now 15%
1942 Had 50 bangs. Started again by B. Naroska. Error was
parity error: address 51341/0026 31700 17 LOAD 17,0017,05,00

NB. nominal luminosity at start of fill 0.95×10^{30}
20.05 mean luminosity 19.49 - 19.59 $= 0.75 \pm 0.01$ (statistical) $\times 10^{30}$

20.25 Inner detector voltage off. Due to beam loss.

21.25 Uebbeil changed some of the wire wrapping at the head of the T2 crate. Now the short should be removed and the TOF's are back in T2 trigger.
Please check distribution carefully !!

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

We also exchanged the linear fanout for the time (seconds) pulse for a logic fanout. (12 years old electronics). The pulses from the linear fanout were only ~ 400–500 mV - too little the pulses too small for his scalers.

2150 hrs. Heatshield/flowmeter/temperature trip. Reset. Flowmeters all look OK.

2215 Beams.

2228 End run 1025 because power had been left disconnected ~ 1 hour ago in the T2 apparatus (not by shift operators). ↑ done by "experts" for trigger. (Think of what the amateurs do.)

2230 Beams lost again

2235 PKR calls. They still have 1/4 of the e^+. So we want to continue? They no.

22.7. Dittmann + Heinzelmann

24^{45} New filling ready

0.45 T2 Output looks alright, so we leave TOF counters in.

1^{50} Beams lost due to Power supply failure

2^{55} PKR calls. They want to replace 8 watercooling tubes. Takes about 2½ h.

6^{00} New filling ready

6^{20} half of electrons lost. Now $\langle L \rangle \approx 0.5 \cdot 10^{30}$ ⇒ we ask for new filling

7^{40} New filling ready $\langle L \rangle = 1.4 \cdot 10^{30}$

8^{00} Manual data / Menu

8^{05} beams lost

10^{15} beams back

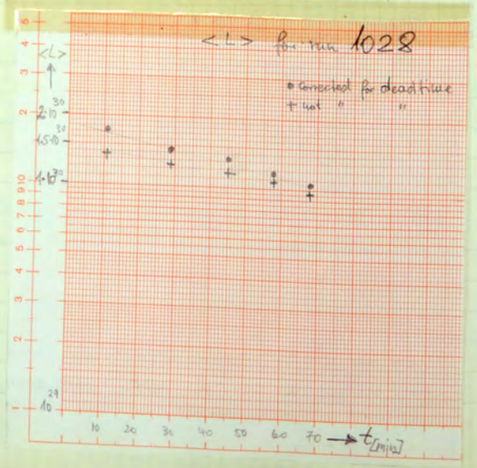
10^{25} Run 1034 stopped after 5 events during LG-ped.

10^{41} beams lost

Since the night from friday to saturday PETRA behaves quite bad (Erwin that night, they had RF-problems). The behaviour coincides with a higher background in the ID (more pick-up). But PKR says everything is as before.

12^{30} beams back

2 x magnet heatshield alarm / reset (waterflow)



2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Trans	Remarks

13^{16} NORD stopped the Run 1036 after 6565 evts.
V34 ~~cell~~ 7.3 repaired

17^{25} problems to restart again: memory out of range
restart with N50-program file N50.DAT doesn't work, stops after 3 events
restart ⇒ message: batch user logged off
Call to Eichler + restart NORD + several trials with F1 works finally

14^{10} During a pause in the run the step signals were disconnected from each ~~es~~ u-crate HBP. Yesterday they were connected to see what their effect would be. It appears that with the STEP's connected the digitizers are noisier than with them disconnected

11.00 Clarke/Watanabe

16:33 NORD 50 stopped without reason (ie ERROR) at 55744, we continue

17.00 N50 stopped with: BATCH JOB ABORTED, TIME OUT, — could not reload N50 ← consulted with P. Dittmann. He doesn't know this error.
Running with N10 only.

19.20 Start refilling

20.15 Full completed

20.30 Beam lost for unknown reason.

20.53 Increased Gate width for TOF ADC's to 50 nsec (it was 35) to be able to see also slow particles. – Nunta

21.25 Full completed, Nord 50 problem solved by P. Dittmann

21.45 Beam lost, reason unknown

22.40 Full completed PROSPER, EICHLER on shift

00.04 CAMAC units 1, 2 and 10 of MUON readout not flashing at all. These crates are however switched on. Perhaps the camac units are faulty. HBP.

00.50 CAMAC unit C104 replaced with C110; CAMAC unit C112 replaced with C109 for μ-crate 1 and 2 respectively. Nord claims now that crates 8, 10 are missing. C109 replaced with 114 ~~in~~ for μ-crate 10. Now only crate 8 gives a 'missing response' error. HBP.
I noticed that the 1st lamp (from the top) of CAMAC unit C107 (for μ-crate 4) was not flashing even when all the other lamps on the other CAMAC units were flashing rapidly .. this was noticed with the default trigger spreading. CAMAC unit ~~C107~~ not replaced. HBP.
Got a printout of raw data .... crates 1 .. 10 excluding 8 are indeed alive!!
Occasionally 1 x 2 (as well as 8) did not respond according to the NORD). Tried switching off CAMAC crate for a while ... all OK. after a few minutes

0:43 beam lost. Water problems with petra magnets

2:50 write 1000 events to tape jet pulser all events longer than 6000 words
Test of new program FREAD for long events successful. Tape F22D92
Will continue with old version of FREAD till reformatting steps also works for long events. R Eichler

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

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0525 @ the CAMAC crate for the μ-CAMAC UNITS was changed. Now only μ-crate 8 give no response (as it should!) PKR ... About 1 hour later the NORD claimed that crates 8, & 10 were not responding. 114 replaced with CAMAC unit C109 (in position 10).

8^{00} G. Hughes and H. Rieseberg on shift

μ-CAMAC still ok

Maintenance till 11 a

9^{10} μ-Crate Now #3 and #7 missing response, too hot?

9^{30} Tagging Pb-Glass EAT's reset to equalise tube gains. High Threshold Lumi taken scaled → normal

11^{50} PKR: Work in the PETRA tunnel (water tubes) will be finished in 1/4 hour. Then the setting of the interlock will start.

2i

13^{20} PKR: Tunnelsuite and interlock-setting is in progress. Beams probably not before 15^{00}

15^{25} Since ½ hour they try to store beams in PETRA

Mr. Felst tells that it is planned to minimize the background at TASSO. So we should try to reduce our background, too.

1600 Warning + Hassard on shift.

15^{57} Beams 15.777 GeV e^+: 2×4.1 mA, e^- 2×2.7 mA Check Collimators 425 495 / 425 414 | Vac: 3.0×10^{-9}

μ-readout taken out. (Very often error 44 suberror 302)

Run 1056

BEAM STEERING

Setting	Tagging ~~(HE)~~	LG > 4GeV ~~(HE)~~	Tagg. Tagg. ~~(HE)~~	T_2 accept ~~(HE)~~	3 TOF / 10^7 T_0 accept	time
2 more	0.3	8 (*)	0,5	7	60k	
~~old~~ (again)	27	75	12	119	216112	44
½	21	87	10	152	205497	46
new (best for Plato)	23	47	3	122	202331	43

* Pick up from DVM

10^7 T_0 accept

16^{45} NB Do not attempt to take rates whilst DVM is plugged into LG threshold scalers.

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^7 T_0 acc	Remarks

23.7.79

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1700 Petra TV is now working; tomorrow they install a regenerator to improve the quality of the picture

1703 Waiting to IBM; Run affected by steering Programme.

1712 In 1 Minute PKR will be steering beam in Tasso. We're next.

1725 Start with F8 to take out muon filter had the effect that only headers were sent to IBM, muon filter was readout nevertheless Run 1056

1830 Refill requested, 18.9% switch off all detectors, beams dumped.

Test of IBM-link. Run # 1061 - 1070 do not contain reasonable data. Only for program test.

1943 Refill reattempt initialised.

2020 new filling: e^- 3.51, 3.45 mA vacuum @ 1.7×10^{-9} | 428 | 498 | collimator setting for Bhabha

Run 1071 e^+ 4.2, 4.2 mA | 431 | 416

beam energy 15.778 → luminosity 0.98.10^{30}

416	489	New collimator setting (14 turns)
418	403	

2040 beam steering for Jade (vertical) no changes in ID current, so back to old values

45 " " " again, ID currents slightly decreased

50 JOAS Error 000054 Sub 0 Task 1

2053 beam partially lost: 1D trips, reset 20.55

2057 " " " , wait for stable beam at 2059, reset.

2102 IBM online-Job error check 2

2104 ID trip again; reset.

2120 e^- beam down to 2 mA

2130 new filling

2200 study of TOF mean {TDC / ADC} all event histograms reveal to ~2×12 channels with very low counts. No high voltage errors have been printed by NORD.

2235 nf. e^- 3.6 3.6 e^+ 4.1 4.0 | 416 | 487 / 418 | 403

2300 ID tripped #23

linear fan out produced level on common stop of TDC, inputs disconnect. now ok B.N.

2305 Start run 1072

Lb threshold for 1 GeV readjusted

2349 ID trips - reset, e^- 1.7, e^+ 2.3 after beamloss

2351 NSD hang up, new start off NSDAMP (B.N.), error message was "illegal parameter in monitor call"

2359 run 1072 stopped because some scalers are crazy

000 NSD memory out of range

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

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0^{00} O'Neill, Wriedt

0^{30} Dump beams

01^{25} Beams again. 3TOF/T0 acc ~ 3.5%. BP 2.4 V. Dead time ~ 10%. Start Run 1077.

01^{34} Jet chamber trip off. Usual channel 23 business.

01^{37} " " " " again

still taking data at this point.

02^{00}. Event display is hanging. Return to main. After a while run is hanging, i.e. "Events Read" not incremented on color TV. Stop run 1077. Try to start a new run. Get error NORD 50 cannot be started, or something to that effect. Reload, get started again.

N.B. Back when just the display was hanging, attempts to restart it produced teletype message: " YEDISP STRANGE ENTRY CODES:
1 142 1 0 0 0 0 34
and later 5 " " " " " " "

We pound buttons ignorantly. Somehow get started again

02^{15} Try again to start the event display. Still get:

YEDISP STRANGE ENTRY CODES: 5 142 1 0 0 0 0 34

02^{17} Chamber trip off. Beams lost.
Setting of collimators after filling at 1:25:
538 495
550 414
Seeing Run 1078 observed that 7S and 8S are missing in TAGGING latch pattern

03:07 New filling
collimator setting: 556 495 PWR will check whether they will be able to set the e^--collimator to its nominal position
523 414
e^- e^+

7S and 8S still missing in TAGG latch pattern, reason unknown. Undiscriminated signals are there, rate of discriminated signals very low. Discriminator thresholds for 7S and 8S decreased from ½(400) mV to ½(30) mV. PWR has trouble to move the e^--collimators to their nominal position.

03:55 ID tripped off again

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04.11 Jet chamber trip off. As we start running again, get JDAS ERROR 000044 (OCT) SUBERROR 000000 (OCT) TASK 1
This doesn't prevent our running.
We still can never get any event display. We took one at the beginning of the shift, but now we always get this YEDISP STRANGE ENTRY CODES business. Since we are logging data, will not make experts.

04.38 Check LG threshold. ⋀] ~ 10 mV. DVM: 439. OK, I guess.

04:48 ID tripped off

05:15 Some beam recently lost. Luminosity 5×10^{27} ~ 1/3 of starting value. Other experiments agree to a new filling.

06:25 The magnet heat shield data logger has gone crazy and just keeps printing paper. The first 12 channels read temperatures in the 50-55 degree range. Call expert B. Pierre. He says regardless of values data logger should not go continuously. 50ish is on the high side but not an emergency. We switched data logger off. We keep getting heat shield ~~temperature~~ water flow alarms every ~ 1/2 hr. but water flow gauges look ok. {Fan installed to cool Data Logger DC but not sure that this will work.}

06:44 Nord hanging on "Display drawing N50 Histogram." Nord stuck at level 14. "Active levels and white STOP key in." No response to RETURN, ESC or STOP at terminal 9. Reload from scratch.

06:50 Going again with run 1081. $\langle\mathcal{L}\rangle$ for Run 1080 = 0.79×10^{30} (not too good.)

07.11 Jet chamber trip off. Spurious. Is nothing.

07.31 We are down to 0.1 Hz ~ 0.15×10^{30} luminosity. Want new filling.

08.00 Allison, Kirchbuel

09.50 Filled at 15.791 GeV.

09.53 Heat shield water ~~flow~~ alarm. → {Now turned off, to fit mains filter} DC

09.59 Start Run 1082.

10.18 Beam lost. End run 1082.

13^{00} Serious Petra breakdown. One Klystron down. Up to Wed. evening they can only go to 2×7.1 GeV. They want to do test experiments for longer times & will 2×2 bunches and ~~2×1~~ 2×1 bunch (shared between the experiments), to check whether this has any influence on the luminosity. JADE will take full data during that time

NRN	date	Start	Stop	I^+	I^-	Vac	time [sec]	Nr of accepted events	Aee Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept
150														
NRUN (New Filling) /079	Date 24.07.79	3:07	5:14	8.0	7.6	3.8×10^{-9}	6992	22660	1820	176	1644	2627 $\times10^3$	2605 $\times10^3$	12267
1080	"	6:25	6:46	8.0	7.4	3.7×10^{-9}	1320		343	167	176	1623	498 $\times10^3$	2200
1081	"	6:50	7.32				2241	5967	583	38	545	664 $\times10^3$	658 $\times10^3$	3489
1082	"	09.58	10.18	7.7	6.9	2.		3793	255	34	221	412 $\cdot10^3$	408 $\cdot10^3$	1908
1083	24.07.79	16.00	17.12	3.7	37		4000	8982	1042	70	971	1.6 10^6	1.4 $\cdot10^6$	4172
		NEW ENERGY 13.86 GeV EXP 4												
1084	26.7.79	0.06	0.15	7.9	8.6			270	happened during beam dump.					
1085	"	1.20		7.4	8.0		621	1185	161	6.7	154.6	154.5 $\cdot10^3$	101759	299
1087	"	1.38	2.10	"	"	2.9×10^{-9}	1866	832	485	83.2	401.5	1312053	1307653	2224
1088	"	2.14	5.30	4.0	4.2		11720 23632	23632	?	?		5073943	505. $\cdot10^4$	11446
1089	26.7.79	7:55	8.52	9.8	7.3		3378	10203	879	60	818	2448861	2438657	5581
1090	"	8:53	8.56	8.2	5.7		71	238	18	5	13	27976	27798	92
1091	"	9:40	10:20	8.8	8.7			~ 10 000						
1092	"	10:38	11:09	7.4	7.2		1763	10389	459	146	312	770953	760741	5681
1093	"	11:11	12:08	6.0	6.0		3375	17265	878	137	741	1680375	1613394	9466
1095	26.7.79	18.23	19.13	5.6	7.6		2961	10241	770	195	575	1063	1053685	
1096	"	19.13	20.03	4.7	6.6		2952	9979	767	147	620	774711	764735	5302
1097	"	20.07	20.17	4.2	5.8		532	1655	138	19	119	123927	122 302	795
1098	"	20.21	21.27	4.2	5.8	3.2	3908	9350	1016	103	913	807152	797801	4354
1099 (100 fr 101)	"	22.34	23.15	5.6 4.8	5.5 5.0		2420	7862	629.7	42.6	587	576 $\times10^3$	568 $\times10^3$	2912
1102		23.45	0.40	4.5	4.7		3108	8179	808.7	63.1	745.6	552 $\times10^3$	544 $\times10^3$	3332
1103	27.7.79	0.38	1.43	4.5	4.7		3611	8054	899.5	60.8	838.9	536 $\times10^3$	528 $\times10^3$	3510
1104	"	4.26	4.44	5.3	7.6	3.0	1143* 2506	3500	297.9	21.6	275.6	374 $\cdot10^3$	370.8 $\times10^3$	1693
1105	"	4:45	5.25	4.6	7.5		7374	631.2	50.4	580.8	706 $\cdot10^3$	699 $\times10^3$	2902	
1106	"	6.14	6:50	6.2	8.0		2106	7863	547.8	45.1	502.6	704 $\cdot10^3$	696 $\times10^3$	3196
1107	"	7:16	8:02	5.0	6.2		2565	7871	667.7	43.6	624.1	645 $\cdot10^3$	637 $\times10^3$	3372
1114	"	9:03	9.33	8.8	7.8		1717	6601	446.8	69.2	377.5	772 $\times10^3$	765 $\times10^3$	2746
1115	27.7.79	10.10	10.43	6.6	6.9	3.0	1797	5916	467.9	40.8	427.1	562 $\times10^3$	556 $\times10^3$	2321
1116	27.7.79	10:45	11.48	5.7	6.2		3764	10670	979.6	73.6	906.0	923 $\times10^3$	912 $\times10^3$	4132
1117	27.7.79	11.51	12.16	4.8	5.2		1330	3322	346.2	38.9	307.3	271 10^3	268 $\times10^3$	1316

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	<L> $10^{30}cm^{-2}sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF $/10^6$ Trans	Remarks

Coll 1315×10^3	2 TOF > 1 GeV 17923	LG > 4 GeV	LUMI 4271	<L> $10^{30}cm^{-2}sec^{-1}$	$\int L\,dt$ Run	$\int L\,dt$ 1 GeV	Tape IBM	BP V 2.5	3 TOF 10^6 Trans 37 36	SMZ SPZ 4467	SMZ SPZ accid 32	SMZ, SPZ − Accid 4435	151
													request for new filling
$305\cdot10^3$	4689	1150	664	0.79	1.04	217.45	"	2.	35k	402	5	697	NORD Raus - AN request for new fill
$433\cdot10^3$	5282	1875	865	0.61	1.37	218.82	"			916	2	914	
$283\cdot10^3$	2957	1179	900				"		30K				Beam lost
						$\int L\,dt$ at 1 GeV							
$1.3\cdot10^6$	4862	2790	2431		1.8	1.8	IBM			2504	0	2504	1 GeV NEW ZERO
													don't use beam lost
	2 TOF LG ≥ 1 GeV					13.866 GeV							
38560	467	144	726	1.3	1.85 1.95	1.85 1.95	IBM	1.0	31K	732	5	727	1/2 TOF counters off
$11.64\cdot10^3$	990	454	1788	1.13	2.1	2.1	"			1821	3	1818	
23.10^6	4399	2705	9494	0.99	11.6	14.55	"	0.9		10142	25	10117	
353062	2013	1069	3712	1.27	4.29	18.84	"			3784	20	3764	normal end
3965	29	16	71	1.14	0.08	18.92	"			72	1	71	beam lost
						?	"	0.9					run-summ. lost. comp. dead
93486	21369	? 3441	1473	1.00	1.77	20.69	"	0.9		1540	4	1536	normal end
196556	268×10^6 27	? 5136	2935	1.04	3.50	24.19	"			3052	5	3047	− " −
	14353	3131	1922	0.77	2.28	26.37		0.5		1990	10	1980	
82269	12086	3076	1857	0.78	2.33	28.70				2024	4	2020	NORD HANG UP
14403	2101	506	371	0.75	0.44	29.14				381	0	381	
91130	5577	2870	2387	0.72	2.83	31.97				2452	0	2452	SM-LEVEL PIN accepted
77955	3961	2504	2692	1.28	3.11	35.08	F11088			2704	1	2703	can't dump 2 TOF data ABORTED.
71025	4419	2648	2497	0.949	2.75	37.83	IBM			2564	0	2564	BACK TO IBM.
67940	4508	2557	2289	0.747	2.70	40.53	IBM	0.5		2347	1	2346	
28887	2890	1151	799	1.321	0.94	41.87	IBM			821	1	820	* for 42 only 750 sec
83895	3158	2414	2421	1.137	2.85	44.72	IBM			2483	5	2478	beam lost
87492	5213	2489	2468	1.381	2.91	47.63	F11092			2530	2	2528	
74952	5135	2521	2338	1.07	2.76	50.38	F11094			2391	1	2528 2390	normal ending
92423	4734	2125	2025	1.39	2.39	52.76	IBM			2075	3	2072	Receipt synchronization lost Nord hang up
71151	2916	1856	1962	1.28	2.30	55.06	IBM	0.5		2005	3	2002	
129649	3851	3365	3588	1.12	4.21	59.27	IBM	0.5		3660	3	3657	10 reverts
31076	1083	1023	1056	0.93	1.24	60.51	IBM			1078	1	1077	Nord hang up

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

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24/7/79

15^{50} Petra beams at 10.999 GeV, e^+ 3.8 mA, e^- 3.8 mA.
In middle of μ-test.

15^{54} Start during run

16^{04} Start run 1083 — forgot to SET-PETRA — was 7.7/6.9 at start run, should have been 3.7/3.7.
X. Collimators not in, but wires detector quiet & dead-time <5%, so decided to leave them.
2 bunches/beam

19^{00} load new program ZREAD which can read events of arbitrary length. The soft error 1 is still counted for events longer than 6K

23^{30} Kohaupt called: plans of of PKR are

i) study luminosity with 1 bunch each hitting at PLUTO's and MARK J's until 4h in the morning
ii) study Luminosity with 2 bunches each from ~4h until 12h
iii) back to high energy after ~12h

0^{00} Eben Zwoni

sehr langweilig !!!
Beam for magnet beamshield retrofloor comes in intervals of 30 min.

6^{45} Had beam a few minutes 2 bunches
But beam very low. No new filling for this PWZ-shift.

8^{00} Barbel on shift (U. Krogh 9?0)
9^{15} Petra news: a) RF-klystron will not be put to operation before 17^{00}

b) Vacuum group is in the ring for a leak search south left

c) Hopefully around 11^{h} two beams at 11 GeV each will be available.

10^{20} muon tests

2 TOF • LG>1 GeV	LG>4 GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T0acc	Remarks

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25.7.79

15^{00} Petra gossip: klystron may be back up again at ~16^{00}
during the last few hours power problems occurred. (Faulty magnet power supplies)

16^{00} Marshak, Totsuka

16^{00} P.K.R: Estimate still another hour before RF back — getting only 600 kW instead of 800 kW

17^{00} P.K.R volunteer information — another 2 hours yet .....

19^{00} P.K.R: no idea how long it will take to fix klystron!
19^{16} P.K.R: Further troubles with another RF transmitter at least one hour but maybe longer....
22^{20} " : gave up to use the above RF transmitter and try to run at 13.86 GeV.
It may take ~4 hours.

22^{50} PKR: have beam at 13.86 3.8 × 3.5 mA

LG>4GeV: $7/10^7$ Tφ, 2TOF·LG>1·$27/10^7$ Tφ, T2acc $23/10^7$
Trig Tag: $54/10^7$ Tφ

LG L.S. out = −30 mV. 1 GeV threshold cannot be set to 1 GeV. it is ~1.4 GeV

23^{10} Beams lost after 10 mins! ← RF unstable

26.7.79 0.00 e^+ 3.9, 4.0 e^- 4.3 Stephens, Naroska
BP 1.1 V
3TOF 41 k / 10^6 T0acc

0.15 e^+ beam lost.

1.16 e^+ 2×3.7 e^- 2×4 New filling BP 1.0 3TOF 31 k / 10^6 T0acc

1.34 Restart Nord, Term 34 was in a dead loop of logon
Printer said: Run summary lost
2.05 NORD-50 died: Illegal instruction. Started from Term 9
Once in a while we see empty events on display. They are continuations of the very long events. (Only header and tagg channel)

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

1

154 26.7.79

5.30 Beams dumped on our request. Refill.

7.50 stable beams again e^+ 9.80; e^- 7.30 BP 1.0 3 TOF SSK

8.00 Eichler, Yanagisawa
move in collimator 13 turns. chamber current decreased from 2 μA → 1 μA

8:15 Petra changes RF frequency

8^{30} Petra news: 2 possibilities for klystron status & repair
① We can have 15.8 GeV tomorrow, if it turns out that the klystron can be repaired easily. That will be known by this afternoon

② We can go to 15.8 GeV not earlier than Saturday, if it turns out a new transmitter (available on the site) has to be installed.

8:50 beam lost. Move collimator out.

9:40 stable beams

10:30 for Run 1084 — 1091 :
- LG trigger was not properly set.
- Linear gate was not set.
- effective energy for 1 GeV ≒ 2 GeV.
- effective energy for 4 GeV ≒ 4.6 GeV.

12^{00} control room asks us to switch HV off because they do RF-studies with new klystron. danger to loose beam

14:45 Luminosity scales format changed by G. Hughes

15:55 YECOPY modified to reject part events (see previous page).
Also new triggers added to event selection H.E.M.

16^{00} Hedgehog, Felsy (Caeiro)

19^{30} Start of DL8 # 92 disconnected (gives only even wire numbers and disturbs reformating) (during run 1096, ev 4500) AW

20^{07} YCLRTV modified - T2A&R now believed to be correct on television. H.E.M

21^{20} IBM-JOB ABNORMAL END S000 U240 !
Disk full. JADDUMP requested at IBM, but DUMP-JOB says: NO DUMP PENDING

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 T_{acc}	Remarks

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26.7.79

~~2135~~ BEAMS DUMPED AT OUR REQUEST.

23.45 IBM BACK IN OPERATION FOR DATA TRANSFER. (DON'T UNDERSTAND WHY!)

27.7.79

0^{00} Takeda, Warning on shift

0^{40} run 1102 stopped to give P. Dittmann the possibility of loading a different version of NSO — histogram routines

1^{30} It's time for a new filling $\langle L \rangle \sim 0.65$, but Linac is down for some time, so we continue to run with the present filling

1^{40} beam lost due to Senderausfall

4^{20} 3 TOF ~~4477~~ × 10^3 / 10 M T♦
183
~~4 GeV(LG) 445 / 10 M T♦~~

BP - counters 0.5 V

4^{30} run 1104 was started without tagging system, Tagging switched on after 5 minutes, for calculating Luminosity this is taken into account

435 event display not working: it returns error message "JECOPY DID NOT RETURN EVENT, MAY BE RUN NOT IN PROGRESS", List 34 works
Void does not come back from "SELECTING EVENT", 'error counts' increases as fast as event count

445 run 1104 stopped to cure that problem
run 1105 started, now display works fine.
Select-Event-Type does very rare event type and therefore blocked the display → rolling versions

525 beam lost

530 IBM tries to reactivate Machine IC1, therefore aborted online job.

535 we discovered that in HIST "4" 3 trigger words are missing
rates of 2 TOF • LG seem reasonable, but a closer look to the previous runs reveals that there are tremendous variations possible. Reason? LG threshold?

6^{10} new filling ready, we check LG thresholds and find no fault

6^{15} start run
look for events with trigger word 0001 B, rate is very low, but they do not occur in Histogram 4 !

630 LG thresholds readjusted [was an error in NSO-program, repaired soon]

650 MT Rewind doesn't work. rewind manually !!

727 ID tripped by overcurrent

0800 Maehlum / Petersen

$2^1 \times 16$
$2^5 \cdot 8$ 334

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

IBM link doesn't work.

8^{20} Ask for new filling

8^{45} Extra news: new klystron is installed. It has to be baked and it has to be tuned. It will not be operational today.

All runs between 1108 to 1113 inclusive are junky - test runs to reestablish IBM link which is now working again.

09^{35} RF trip - beam lost

10^{05} New filling ready

One collimator didn't move in, bad connection at the power supply.

UPDATES on colour display - today

1) TOA, TOR, TIA, TIR now all read correct (previously was in unit of $2^{20} = 1.05 \times 10^6$)
2) IL (= integ lum for this run) will agree at end of run with scal
3) IBL (= instant. luminosity) - averaged over last 5 mins

14^{30} beam lost (Senderausfall)

15^{33} New filling ready.

16^{00} I/D trip

16^{03} beam loss !! coincidence?

16^{00} Drumm / Hughes

DL8 # 92 (three before the last in Ring 2)

Run 1087 (1^{38}-2^{10}, 26.7.79) still good

Run 1088 (7^{55}-8^{52}, 26.7.79) nearly all channels low, neighbours # 93, and less strongly # 94, #95 are affected

Run 1096 Fault discovered. Gives only odd wire numbers and disturbs neighbours # 93 - 95. Disconnected (stand pats) during Run at 13^{30} at event ~4500 (see page 154 this book)

Runs 1097 - 1114 Disconnected

Runs 1115 and 1116 Connected, but still bad (with bad influence on the neighbours)

Runs 1117 - 1119 Disconnected

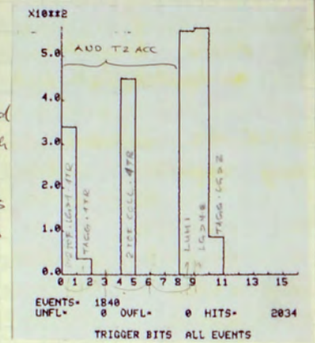
Run 1120 good again

Rimberg

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T0 acc	Remarks

* Muon crates 4, 7 & 9 will give "missing response" since they have special "quiet" programs in their micro-processors. *.

19^{00} New N50 Program version N50DAR
new features:
i) TAGGING chamber histograms implemented
ii) first 8 bit in TRIGGER WORD 'anded' with T2acc.
iii) SCALER histograms: a) # 60 TAGG scalers
b) # 94 scaler rates



HISTOGRAM 94 NUMBER OF BINS= 20
TITLE=SCALER RATES

0)	424	[illegible] LG>1
1)	462	[illegible] LG>4
2)	953	2TOF·LG>4
3)	95533	2TOF COLL
4)	1073758890	
5)	88	TAGG·LG
6)	17066	TAGG·1TR
7)	624	T2 ACC
8)	0	
9)	112366	T2 REJ
10)	0	
11)	0	
12)	132853029	TO acc
13)	8379261	TO rej
14)	124473770	TO acc
15)	0	
16)	113884	T1 acc+postp
17)	0	
18)	0	
19)	0	

19.49 Beam Lost.

21.05 PHR phone: problems with a 'tender'. Specialist called; it can take longer to get beam again.

another klystron broke down, with the two left 12.8 GeV maximum energy at a small meeting in the PKR it was decided to run at 11 GeV until monday max 11 GeV is the only energy (below 13.8 GeV) where there is a file available.

23^{00} beam stable, new energy 10.993 GeV per beam.
low background

23^{10} readjustment of LG-thresholds

23^{55} beam will be dumped to try higher currents

23^{52} Computer hangs with IBM Online-Job error check 2
no more reaction, no scaler values.
We restart the Nord

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

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NRUN	Date	Start	Stop	I^+	I^-	Vac	time	No. of accept. ev NORD	All trig. x10⁶	T0 reject 10^6	T0 accepts 10^6	T1 accept + postpone	T2 reject $\times 10^3$	T2 accept
1118	27.7.79	12.17	13.33	4.8	5.2	$1.5\cdot10^{-9}$	4479	10110	1165	112	1053	$764\cdot10^3$	$754\cdot10^3$	4094
1119	27.7.79	13.34	14.26	3.7	4.0		2836	5172	724	95	634	$374\cdot10^3$	$369\cdot10^3$	2190
1120	27.7.79	15.40	~~16~~.02	5.5	8.1		1129	3685	293.7	59.1	234.6	451.0	447	1575
1121	27.7.79	13.04	19.49	5.8	4.5	~~4~~	2532	6546	648	111.2	537	$455\ 10^3$	448	2875
EXP 5			10.999 GeV									$\times10^3$	$\times10^3$	
~~1~~122	27.7.79	23.33	23.52	2.2	4.0			≈2000						
1123	28.7.79	01.10	01.23	5.8	3.7		~~200~~	1390		~~136~~.	130	776	222	582
1124	"	01.33	07.40				~~1109~~	585			568	145	66	220
1125	"	01.47	01.53	5.4	3.5			486			50	301	55	185
1126	"	01.54	03.07	5.4	3.5	$2\cdot10^{-9}$	4353	10132	1129	53	1096	6193	1059	3967
1127	"	03.14	04.35	4.8	3.0		4802	10294	1249	48	1202	970	960	4081
1128	"	04.38	05.08	4.2	2.6		1531	3324	398	15	382	274	271	1390
1129	"	07.51	08:10	4.4	6.9		946	~~3747~~	246	25	222	365	362	1138
1130	"	08.23	08:45				1252	3544	326	52	274	273	406	1343
1131	"	08.55	08:58				60	205	16	0.9	15	25	25	69
1132	"	09.50	10:15	6.6	5.6		1602		416	49	367	3461	~~12~~90	2587
1133	"	10.40	11:28	5.1	4.9		2833	10123	737	80	657	1148	1138	4641
1134	"	11.35	12:26	4.5	4.5		3050	10349	794	50	743	981	971	(2688)
1135	"	12:30	13:00	4.1	4.1		1798	5307	468	35	433	671	666	2537
1136	"	14:46	15:49	6.0	6.7		3712	10000	966	206	760	1804	1794	268
1137	"	15:51	16:39	5.2	5.7		2887	7661	788	63	674	912	906	3209
1139	"	17.01	18.33	4.3	4.6		5478	13724	1425	85	1340	1417	1403	6114
1140		18.34	80.07	3.8	4.0		5372	11797	1398	96	1302	1111	1099	5346
1142 ~~1136~~	29.7.79	2.55	4.04	3.8	4.5		3912	7644	1018	36	982	3150	994	3555
		Filling finished				at	1140							
1143														
1144	29.7.79	11:45	11.50	6.8	3.9	$2.5\cdot10^{-9}$		704						
1145	"	12:00	12:07	6.8	3.8	"		1000 reloaded	93	4.9	88	145	144	416
1146	"	12:17	12:19	6.5	3.6	"	NORD		wrong	energy	input	forget the run.		
1147	"	12:20	12:50	6.5	3.6	"		3751	389	33	341			
1149	"	13:22	13:59	5.8	2.8		2172	~~4865~~	566	25	540	490	486	1533
1150	"	14:01	14:10	"	"	"	482	1108	125	4.9	120	579	575	1990
												113	112	488

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 T$_{acc}$	Remarks

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Collin.	2 TOF > 1 GeV	LG > 4 GeV	LUMI	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ Run	$\int L\,dt$ running total	TAPE	BP V	3 TOF 10^6 T$_{acc}$	SM2 x SP2	SM2 x SP2 $_{acc}$	SM2 · SP2 − accid	
86536	3071	3091	3274	0.86	3.85	64.36	IBM	6.0		3345	0	3345	beam lost
41312	1523	1543	1589	0.66	1.87	66.23	IBM			1620	0	1620	
44103	2469	1147	1098	1.14	1.31	67.54	IBM			1124	4	1120	beam lost
1539 T2	1369 T2 4859	2115	1853	.84	2.19	69.73	IBM	.5	≈12000	1901	1	1900	beam lost
									~~8500~~ 0,017 ~~8500~~				computer hang beam dumped
				≈.4	≈.4	.4	IBM	.4					computer hang with 2.49
T1 (21410 T2	561	432	~~549~~		~.5	.9	IBM	.5	~~1~~	409			//
T1 63 10 T2	164	178			~.2	1.1	IBM	.5	~~25~~	200			//
T1 53·10³ T2	150	144			~.2	1.3	IBM	.5	~~25~~	185			//
3143 T2	570 T2	3164	3494	.59	2.59	3.9	IBM			3565	0	3565	
3430	593	3299	3234	.51	2.43	6.3	IBM	.4		3343	0	3343	
1070 T2	386 T2	1021	921		0.70	7.0	IBM	.4		945	0	945	Beam lost
816 T2	320 T2	840	837	0.66	0.62	7.6	IBM	.6	0.03	858	0	858	N50 hangup
	1356	1170	1138	0.68 0.5	0.85	8.5	IBM	.6		1174	0	1174	N10 "
63	12	66	46	~~0.18~~	0.03	8.5	IBM	.5		48	0	48	Beam lost
25410³	5730	2022	7721	0.78	1.25	9.8	IBM	1.0	47K	1721	2	1719	N10 hangup
2242	2604	2957	2648	0.69	1.97	11.7	IBM			2719	2	2717	
2475	2775	2981	2565	0.60	1.92	13.6	IBM			2640	0	2640	
1376	1326	1470	1314	0.54	0.99	~~14~~.6	IBM			1358	1	1357	
2781	1560	2901	2831	0.66	2.10	16.7	IBM	0.5	~~37K~~	2896	3	2893	
2091(12)	1128	2279	2225	0.55	1.67	18.4	IBM	0.5		2286	1	2285	N50 hangup
4066	2254	4070	3866	0.52	2.87	21.3	IBM	0.5		3951	1	3950	
3687	1777	3683	3136	0.44	2.35	23.6	"	0.5		3233	0	3233	
935	2850	2322	1866 ~~1866~~	.38	1.47	25.1	IBM			1949	0	1949	Run # 1142 Glob TV 1140 Nord 50 !
						—							NORD died. why ???
283	130	287	295			—	IBM		0.06	307	0	307	Stopped
						—							
1090	426	1198	1074	0.54	0.81	25.9	IBM	0.5	~~375~~ ~~1000~~				IBM down
1457	506	1533	1369	0.48	1.06	27.0	TAPE		—	1403	0	1403	Tape # F11095
381	109	333	287	~0.48	0.2	27.2	IBM			300	1	299	← PETRA beam loss

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

0^{00} Saturday 28/7/79 Allison, Kobayashi
0^{10} Start run 1123. Collimators not in. ca. 8% deadtime.
μ crates 4,7,9 always give missing response due to test version of μ-proc program in these crates.
μ crate 8 appears to be dead.
0^{23} NORD hangs with level ~~09~~. restart again. Crashed during communication with display program.
0^{33} Start run 1124. Collimators in. ca. 6% dead-time.
0^{38} NORD hangs again! level 09. Display program again?
μ-crate 8 OK — pressed RESET (white light) on μ-crate 8 in hall.
0^{151} NORD hangs again — ~~this~~ while ABORT NCT REGULAR DISPLAY — as before.
0^{508} Beam lost. We were just going to ask for a new fill anyway. NORD was stopped, but still accepts
0^{507} NORD stopped taking data when EVENT SELECTION changed to LG>4 GeV. [messages.
0^{520} PETRA Control say: "Water in the Ring!" Off for ~½ hour. [Sony, forgot to RTC_34 !)
0^{521} Started MUEV-TEST (F07) & NORD said:

Memory out of ranges at: 025136
025136/ 002774 00057 FDV 40, 0057, 05, 00
and lots of other things and then
+EXIT
—— logged off !!! *. then
N50 PROGRAM FILE:

0^{525} This time just @17003 STOP 0
*** END *** AT: 000247
+EXIT

0^{526} NORD restarted.

NORD/ TRIGGER EXPERT PLEASE READ

I cannot get NORD (to ~~trigger~~ trigger box) to work correctly for trigger source 1, no override. Seemed to work O.K. late Fri.
With "manual" the rate of T1 accepts is ~ 0.25/s (when cosmic trigger is switched in) but with NORD it is 10^2/s, i.e. V. large. It is as though the trigger box were not responding to the NORD correctly. ... Oh the Nord doing monitors.
I think it is a problem in the TRIGGER BOX. If you are in "AUTO-RESET" (right-hand knob) it works OK. If you are in "LAM", it goes crazy after first cosmic event. This must be a question of programming!

0^{700} New fill. Test run OK. Collimators in.
0^{710} Jet chambers won't come on.

I don't believe it is anything really to do with this - at least nothing I can reproduce HEM

DO NOT USE 'REGULAR EVENT DISPLAY'! It appears to crash the NORD when you ABORT REG. EV. DISPLAY.

0^{750} Jet chambers HT on. Run 1129 started.

2 TOF • LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF 10^6 T$_{acc}$	Remarks

28/7/79
8:00 Kawabata, Mikowa
8:10 N50 stop.
8:45 N10 ~~stopped~~ hanged up during display (level 03)
9:30 New filling ok

10:30 H.E.M
Investigating overnight Event display problems - it certainly worked yesterday. Tests showed that it hung on level 9 in any of the three states possible when aborting the regular display i.e. IDLE, drawing & selecting. Nord was restarted after each of these attempts. Finally I reloaded the Event display tasks and ZDAS - then everything worked.
∴ I am convinced (I think) that its a similar problem to those we have had in the past where segments are corrupted and nothing really to do with the regular display at all

13:05 New filling starts
14:35 New filling O.K

16.00 T. Canzler & F. Loebinger.
16.45 +16.50 Inner detector 23.3 trip.
16.50 Nord 50 problems: Nord-50 monitor said MEMORY OUT OF RANGE. Reloading 50 program did not succeed. Reload of Nord operating system cured it. Could be system dying in N50 monitor just like Regular evdisp before. (H.E.M)

Vacuum reading in the moment not possible in our hall. The meter is controlled by SEDAC. The experts in the PKR try to switch it back to manual. Küppersbusch promised already last week to repair the 2nd vacuum gauge. 18.50: experts need a look at vacuum meters. 1) suppo instrument should work after ~ 1 hour. 2) Since it was switched off for a long time, the lower range is assumed to work after 1 day; but only over the lin-scale, the log scale after is not reliable in the lower ranges. Leave the scale at 10^{-7} mbar, because the meter switches off if it goes beyond the choosen range.

19.30 Average luminosity for whole run added to YCLRTV (AL= ---) HEM

20.10 new filling

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

29.7.79

~~Fri~~ 0⁰⁰ Krebbill & v. Kruft on shift
difficulties with beam

2³⁰ beam ready ; we are switching on.
currents are ideal

4⁰¹ lost beam

Note: For some reason the run number on the histograms was not incremented. (1140 was used again)
The color TV-set, however, did show 1142, which is correct.
It is not clear if this is correct or not in the data.

I think this is NORD-50 program Catch of gross slander). N50 may not have recognised start of run (I am sure I saw this once before ± 2 months ago!)
H.K.M.

4⁰⁰ Mr. Nozaki's second substitute: Pinsburg on shift, together with H. Krebbill

4³⁰ reloaded Nord 10 and Nord 50.
5³⁶ Petra Water Leak in Cooling System. They say it will take 1 hr.
6³⁰ Water leak is repaired.
6⁵⁰ "Petra wird eingeschaltet"
7²⁰ No injection possible. Beam position monitor disk doesn't move out. Compressed air tube leaks. It will last 1h.

Remarks: 1) Our vacuum reading is again normal
2) No old histograms not possible : Error -120

‖ Please check Run Number at the beginning of next run. Colour TV - events - Nord 50

7⁵⁵ "Petra wird eingeschaltet"

~~***~~ The -120 histogram error is accompanied by a message on the Control terminal which says the histograms for that run are not available ~~***~~ H.E.N

8⁰⁰-16⁰⁰ King, Yamada

11⁵⁰ NORD hanged durring data taking. (for Run 1144) H.Mills happend to be present but ~~he~~ even he couldn't find why.

2 TOF ·LG>1GeV	LG>4GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^3 Trace	Remarks

12⁰⁰ During the run 1145. IBM BUSY signal was always flickering.
The run was stopped at 1000 ev. to reload N50. The data sent to IBM for this run, H.M thinks, are probably OK.

There is something seriously wrong with the NORD. The (unchanged) colour TV program doesn't display any of the warning messages. I don't understand why. Seems to keep being corrupted & I suggest a CTOM2 & complete reload when next filling comes H.E.N

CANCELLED SEE BELOW

12²⁵ Run 1147. Trigger box stopped the run by itself. Start switch was pressed. The run was continued. But it stopped again.
12⁵⁰ IBM online job died. recovered ~~13⁵⁰~~

14.10 Beamloss due to waterleaks, PKR has to go into tunnel.

16.00 Problem in colour TV found - for some strange reason there was a test not to update warning msg etc, if run in progress!
I don't understand how it really got there!?!?. Seems ok now H.E.N

16⁰⁰ A. Pekrun & A. Wagner on shift
still no beams
17⁴⁵ very unstable beams. BP-analog signal 2-10V!
beams lost during collimator adjustment.
18⁴⁰ stable beams
19³⁰ NORD - hang up: no more events displayed. Hitting F1 in subroutext Event display acts like ESC-key: back to SINTRAN III / Enter:
We reload N10. → ok
19⁵⁰ N10 crash level 3 (no Dittmann-P/O, Terminal 9 does not react).
21⁵⁰ During run 1155: IBM ONLINE - JOB ERROR 2. What does this mean? No action
22¹⁰ new filling requested
23¹⁰ Magnet trip due to overload / call R. Marshall
23³⁰ Magnet back on again

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

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NRUN	DATE	START	STOP	I^+	I^-	Vac	time	No of accept. ev NORD	All trig $\times 10^6$	To reject 10^6	To accept 10^6	T1 accept + postpone	T2 reject	T2 accept
1151	29.7.79	18.45	18.54	6.9	6.9	2.4	474	1952	123	11	112	200026	198073	722
1152	—"—	19.03	19.33	6.5	6.5		1584	5250 4712	412	55	356	623 $\cdot 10^3$	619243	1934
1153	—"—	19.40	19.50	6.0	6.0		683	1887	177	44.5	133	1100	262 K	749
1154	—"—	20.02	21.00	5.7	5.7		3467	10163	902	53	849	$1.3 \cdot 10^6$	$1.29 \cdot 10^6$	?
1155	—"—	21.01	22.04	5.0	5.0		3736	9827	972	58.6	913	$1.11 \cdot 10^6$	$1.09 \cdot 10^6$	3881
1156	30.7.79	00^{29}	01^{10}	6.5	7.1		2400	9831	624	719	552	$1.35 \cdot 10^6$	$1.34 \cdot 10^6$	4027 ? scaler wrong
1157	"	1^{12}	01^{58}	5.6	6.1		2647	9831	688	56.3	632	$1.73 \cdot 10^6$	$1.72 \cdot 10^6$	?
1158	30.7.79							13						
1159	30.7.79	2^{17}	2^{37}	5.1	5.6	28.10^{-9}	1157	4214	298	24	274	$.618$ $1.18 \cdot 10^6$	816 K.	1783
1160	30.7.79	2^{46}	4^{04}	4.9	5.4		3649	9817	949	60	889	$1.56 \cdot 10^6$	$1.55 \cdot 10^6$	3845
1161	30.7.79	4^{06}	5^{10}	4.3	4.9	$7.5.10^{-9}$	3745	9828	974	56	919	$1.27 \cdot 10^6$	$1.26 \cdot 10^6$	3936
1162	30.7.79	5^{50}	6^{13}	6.9	6.3	"	≈1300	4698 4502			275	$\approx .941 \cdot 10^6$	$.939 \cdot 10^6$	2186
1163	30.7.79													
1164	no	events →												

1180 – 1190 TOF CALIBRATION RUNS
1191 – 1193 LED RUNS
1196 – 1209 ID - Pulser RUNS (see pg 168)

1210	3.8.79												
1211	3.8.79	10^{02}	10^{15}				1252	85	25	60	—	110927	431
1212	"	10^{23}	10^{27}				861						
1213	"	10^{28}	10^{32}				≈ 600-700						
1214	"	10^{34}	11^{13}				9864	603	66	538	—	757045	2839

2 TOF • LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 T acc	Remarks

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Collin.	2 TOF • LG > 1 GeV	LG > 4 GeV	LUMI	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}	$\int L\,dt$ Run	$\int L\,dt$ running total	TAPE	BP V	3 TOF / 10^6 acc	SMZ • SPZ	SMZ • SPZ accid	SMZ • SPZ − acc	
438	276	569	735	1.1	0.54	27.74	IBM	0.5	-	747	0	747	
		1926	1944	0.9	1.44	29.18	IBM	-	-	1984	0	1934	NORD crash
?	1009	571	589	0,68	0,4	29.58	IBM	0.6	-	605	0	605	NORD 10 / level 3-crash
2788	1336	3108	3217	0.7	2.4	31.98	IBM	-	-	3296	0	3296	
2851	990	3054	3234	0.64	2.4	33.38	IBM	0.5	-	3311	0	3311	
2111	1955	3114	3099	.96	2.3	35.69	IBM	0.8	~25000	3173	0	3173	during run : Bubble failure for Plate
2390	1776	3102	2996	.78	2.23	37.92	IBM	0.6	-	3066	4	3062	
				—	—	"	IBM						IBM Link crash; restarted.
-	-	1419	1096	0.70	0.81	38.73	IBM	0.5	-	1128	0	1128	NORD crash
2834	890	3138	3263	0.66	2.43	41.16	IBM	0.5	-	3346	0	3346	
2866	1118	3167	3125	0.62	2.33	43.49	IBM	0.4	-	3211	1	3210	request for new filling by ADA
		1518	1226	≈.70	.31	44.40	IBM	0.6	≈33000	1260	1	1259	Hard crash B HV & B Plant not correct.
							IBM		-				
													problems with DAS nothing written in tape 1163-1179
390	20	237	589										
623562	2634	2007	5133										

CONT pg 170

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

30.7.79. Drumm + Hassard on shift.

00^{16} PetraBeams on e^- 7·2mA e^+ 6·8mA (2 6unches)
energy 10·999GeV

00^{34} all chambers ring 3 #17-24 except 19 tripped with indication of spark. Reset shows them to be working normally.

00^{36} Pluto requested beam manoeuvring. Thats ok by us. We watch background

00^{48} Steering commencing. Our background didn't change. 01^{10} steering finished. Continued data taking

01^{35} Beams at $5{\cdot}6\ e^+$ $6{\cdot}1\ e^-$

01^{40} IBM job error check 2 online. Data taking continued; NORD seems fine.

02^{00} →IBM link inoperative – last ~10 minutes data. Reloaded ZDAS. This was preceded by:—
Run 1157 stopped without printing final summary page and with no output on Terminal 9.
10000 events were taken, however. We used STOP command on Terminal 9.

02^{17} Started Run 1159: beams $5{\cdot}6\ e^-$ and $5{\cdot}1\ e^+$, 10.979, GeV

02^{34} Adjusted LG Thresholds: channels 4 and 3 too low especially

02^{37} Nord hangs during display. Restart Nord.

03^{19} Beams still magnificent at $4{\cdot}2\ e^+$ and $5{\cdot}2\ e^-$

03^{20} Magnet trip: AC overload – trips 10. Restart Magnet and detector. Taking data by 03.27. (Magnet trip coincided with ~5% beam loss in e^+ of Petra)

03^{30} IBM online job error check 2 } NORD seems ok, events being written.

03^{31} IBM online job error check 2 }

03^{32} "

04^{20} Beams at 4·6 and 4·1 mA.

04^{29} Readjusted LG thresholds ~~from 11~~

05^{10} Requested refill from PKR – they agree and new beams ready by 05^{50}

05^{50} run 1162 started. Beams at $6{\cdot}9\ e^+$, $6{\cdot}3\ e^-$ mA

06^{00} beams at $6{\cdot}1\ e^-$ $6{\cdot}8\ e^+$.

06^{02} Readjust Lead Glass thresholds.

06^{13} end run 1162 as NORD crashed. Attempt to load NORD. Its waits for IBM for several minutes.

06^{20} correction to above – restarting NORD has no effect.

06 54 We are unable to write data to IBM or Magtape. Runs 1163 – 1170 are all attempts. (IBM) gives out ZDAS waiting for IBM and Magtape reads 4 events, stops then continues to 7 events then stops permanently.*) PKR inform us that they intend to dump in 6 minutes. We decide its not worth while calling out an expert.

*) ~~fault~~ error during LG-pedestal run.

07^{19} Petra is switched off. 0720 switch off Jaroc magnet, compensating coils.

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^5 Tracs	Remarks

1500 Petra want interlocks closed.

1-8-79

15.20. EHT control of tagging Pb-Glass has been connected straight to PETRA control room. For this purpose the EHT switch for Pb-Glass in Rack 9 must be left ON

TO RETURN TO NORMAL Data taking the following procedure must be followed

1) TURN the EHT (Pb-Glass) switch in Rack 9 to OFF

2) UNplug the yellow labelled cable to the PKR at the bottom of Rack 21 and leave open circuited

NB → 3) Reset the NORMAL/COMPLEMENT Switch on the 688AR Level adapter in rack 9 — Crate 3 (from top) 4 right hand-most Module to COMP

17.70. The luminosity scaler SMZ * SPZ is now derived from a higher threshold discriminator than the "Lumi Triggers". The New Constant for this Luminosity is

$$\mathcal{L} = \text{"SMZ * SPZ"} \times 5 \times 10^{27} \times \left(E\,(\text{GeV, beam})\right)^2$$

17.71 YCLRTV altered to take account of above. H.Rm

2-8-79 bad new prog. ZREAD. Previously ~30% of overflow events were lost.

11^{00} mount modified Camac DMA. It still gives occasionally time outs (Das error 44, suberror 00). If it occurs too often during data taking, we will switch back to the old one. But we want to see, if the modified DMA helps with the overwritten segments in Nord. R.Eichler

15^{40} take DMA out again, since too many time outs. Time out only in ~~one~~ if DMA reads crates which have a Standard Engin. Corp. Crate controller. Younger crate controllers work perfect together with DMA

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

2.8.79 23.00 A.W.

Inner Detector Pulser Runs / Expt 5 runs 1196 - 1209

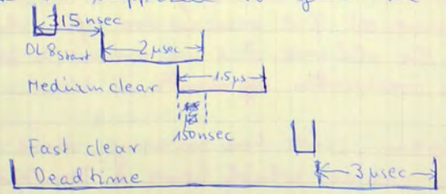
run		run		run	
1196	Pedestals	1201	0.5 V DC QL only	1205	0.5V QR
1197	1.5V(DC), QL	1202	1.0 V	1206	1.0V
1198	1.5 QR	1203	2.0 V	1207	2.0V
1199	1.5V both sides	1204	3.0 V	1208	3.0V
1200	Pedestals			1209	4.0V

22.50 Magnets on
Petra filling
HV Distributor for BP-counters on overcurrent. So we can't read the voltages any more. But they were ok before it happened

2.00 We started taking data: run 1210
After ~5000 events we noticed that the readout of the inner detector and LG was wrong. All timing spectra were much too short and had a large spike at 0.
→ DL8 start was ~ 300 nsec too late.
When we decreased the delay, time outs appeared.

4.30 Called up Ueberlieb
5.15 beams lost due to water leak, inner detector did not trip.
He now modifies trigger box. Apperently the medium clear to DL8's also comes too late and does not overlap with start.
→ Watch LG when we run again.
During a test on manual we saw that if we are on T2 accept the LG gate to the microprocessor comes twice (Is that normal or not ?)

6.37 Petra injects
7.10 beam lost
Now trigger box is supposed to give the right timing.



8.00 Eichler Heinzelmann on shift

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^5 T0acc	Remarks

9.00 stable beams. But still machine development
start test run without IBM transfer
computer hang ups level 14, 3, 1 after 2 min running each
rebuild JDAS.

9.45 still troubles with Nord. Take a short run without output to IBM. Stop after 200 events and check Histogramms. 1D looks reasonable. LG-timing is checked by Tokyo-people.

10.08 Start run 1211 output to IBM. Beam pipe counter power supply not working

10.15 Nord 50 hang up. Stop run. Analysis flag was still set (after rebuild JDAS) Actually NSO monitor crashed HEM

10.22 start new run.

10.27 Nord 10 hang up. Discovered, that Camac scalers are wrong connected.

10.31 Nord 10 hang up. Level 4 when somebody logged off.
set system unavailable. Take data without event displ. / Histogramm output or users!

11 during run 1214 DL8 #6 and #57 partially disconnected to investigate timing with scope

11.13 Run 1214 ended properly with 10034 events. If all ~~it~~ works ~~it~~ it nothing else is done to the nord! HEM

11.35 In ~~all~~ runs 1210-1215 the scaler (T1A + T1P) was not connected. (Fan out of DL8-start has broken output.) From now on the signal is taken from fan-out in DL8-rack

12.00 beam lost. Chamber tripped.
We rebuild Nord-system from ~~floppy~~ (Sintram) } same effects as before
rebuild JDAS } Test run (F3) with 10 Hz + Display

Try programs with old backup disk (B). No improvement.
Run memory initialize from floppy No effect
Run memory test (ND) Mo-Baski → error messages + hang up lev. 14

14.30 interchange memory cards in slot 22. Run initialize from floppy. Display = F3 at 50Hz works. for a while ~~it~~ ok

Call Delp from F58.

15.30 One memory card from multiport memory found to be bad. Call Norsk Data in Wiesbaden to send spare card by express immediatly. Should arrive here at Desy tomorrow.
People on shift should call "Pförtner" and ask ~~on~~ if card is here and then call P. Dettmann or R. Eichler.
In the meantime run JDAS with NSO but do not use display for events or histogr.
If run is stopped, you may look at Histogramms. But there is a chance that Nord hangs during display. The simply restart Nord 10.
Nobody should be logged on on any terminal.

16.00 PETERSON & HEDGECOCK ON SHIFT.

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept	2 TOF ·LG>1 GeV	LG>4 GeV	tagging	⟨L⟩ 10^{30} cm^{-2} sec^{-1}	∫Ldt nb^{-1}	tape	BP [V]	3 TOF / 10^6 T0 acc	Remarks

Exp. 6 E_β = 15.00 GeV

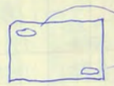
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NRN	DATE	START	STOP	I^+	I^-	VAC	time	Usual ev accepted	x10^6 ell trigger	x10^6 T0 reject	x10^6 T0 accept	T1 accept + postpuls	T2 reject	T2 accept	(T2) 2TOF LG>1 GeV	LG>4 GeV	LuMI	⟨L⟩ 10^{30} cm^{-2} sec^{-1}	∫Ldt Rom	∫Ldt Sup	TAPE	BP	3TOF x 10^6	3TOF x 10^6 - corr	comments
1210	3.8.79	2^{28}		7.3	7.2		ignore	Trigger box has mistake					110927	431	20						IBM				timing of SLP wrong
1211	"	10^{08}	10^{15}	7.3	7.2		325	1252	85	25	60		110927	431	20	390	237	589	1.35	0.44	0.44	IBM		390	390	Nord 50 hang up — no BP-entry
1212	"	10^{22}	10^{27}				—	861	~~85~~	~~25~~	~~60~~	—	~~110927~~	~~431~~	~~20~~	~~390~~	~~237~~	~~589~~		≈0.6	≈4.64	IBM		—	—	Nord 10 hang up — " —
1213	"	10^{28}	10^{32}				—	~600-700	—	—	—	—	—	—	—	—	—	—		—	—	IBM		—	—	Nord 10 hang up — " —
1214	"	10^{34}	11^{13}	6.9	6.7		2319	9864	604	66	538	—	757045	2839	~~133~~	2634	2007	5133	1.66	3.86	4.30 ~~3.86~~	IBM		3430	3427	normal end — " —
1215	"	11 26	12^{00}	5.8	5.6		1768	5994	460	35	425	—	469952	1463	86	1338	1295	3295	~~1.45~~ 1.39	2.45	6.75	IBM		2180	2178	beam lost — " —
1218	4.8.79	0 58	1^{05}	8.9	9.1		~~360~~ two online checks (one on analog on 100 events)	1071	93	66	27		73 542	683	17	675	175	220		0.09	6.84	IBM		147	146	at beginning no tagging HV, 65% dead time
1221	"	1 29	1 37	8.0	8.2		470 1659 ~~425~~	1659 ~~425~~	122	80	41	—	100 513	864	27	818	270	541		0.22	7.06	IBM		~~364~~ 363	363	65% deadtime
1223	"	1 52	2^{36}	7.4	7.4		2538	8902	675	281	394	—	719 338	3257	123	2678	2063	4289		3.22	10.28	IBM		2861	2858	beam lost
1225	"	3^{21}	4^{15}	9.3	9.5		3160	14744	822	424 ~~298~~	398	—	1 242 370	2840	135	2059	over flow	5359		3.86	11.14	IBM		3452	3434	normal end, high deadtime losses
1226	"	4 15	4^{41}	7.8	8.0		2413	10408	628	145	483	—	1 088 081	2930	128	~~1330~~	2822	5252		3.85	17.99	IBM		3427	3419	— " —
1227	"	4 56	5^{53}	6.8	7.0		3046	10648	792	66	727	—	1 219 000	2072	105	1544	1734	6966		5.06	22.05	IBM		4506	4502	— " —
1228	"	5 53	6 09	5.7	5.8		855 (one online check)	2464	222	13	209	—	293 015	382	27	306	393	1635		1.18	23.23	IBM		1058	1052	beam lost (water leak)
							sec											1.15 LuMI		~~1017~~					
~~1229~~ 1229	"	8 19	9 47	7.5	7.7		4973	11137	1294	132	1163	2768049	2756911	5517	236	4662	2971	2773		10.14	33.97	IBM	1.0	9041	9016	~~Luminosity FAGOMS~~ scaled down by factor 5 !
1230	"	9 48	10 06	6.4	6.6	3.6 10^{-9}	1021.8	2245	266	22	244	451631	449385	1257	43	1131	546	461		1.70	35.67	IBM	0.8	1513	1511	< 10% dead time
1231	"	10 10	10 40	6.3	6.5		1615.9	4003	421	76	344	572064	568102	2555	120	2433	875	568		2.11	37.78	IBM	0.7	1860	1856	stopped due to Nord 50 busy for 3 minutes — down time
1232	"	10 46	10 48	5.7	5.9		84.4	190	22	1.3	20.7	31069	30892	101	6	94	44	34		0.14	37.92	IBM		120	120	beam lost (Sonderauffall)
1233	"	13^{04}	13^{33}	8.0	8.3	3.1 10^{-3}	1652	4909	430	174	256	624971	620061	3402	107	2261	980	566		2.03	40.01	IBM	0.9	1864	1860	dead time ≈ 50% stopped for writing on tape / 2 tapes not working
1238	"	16^{36}	16^{37}	8.6	8.6		94	399	24	15	9	28439	28039	317						0.09	40.10	IBM		71	1	High dead time due to lead glass thresholds
1240	"	16^{51}	17^{09}	7.4	7.8		N50	crash - down												0.78	40.88	IBM				N50 crash down
1242	"	16.09		7.7	7.7		235	734	6061	27	568	134228	133546	411	221	179	48		1.74	0.54	41.42	IBM		444	447	N50 crash down - illegal instruction without N50 - just using N5000 MMM
1243	"	17^{20}	18^{36}	7.4	7.4	3.15 10^{-3}	4461	11822	1160	73	1086		2140 K	7477			2479	2032	1.67	1.45	48.87	IBM	1.0	6655	14	
1244	"	18^{40}	18^{51}	5.8	5.8		641	1620	166	10	156		257 K	1062			353	230	1.30	0.93	49.70	IBM		745	5	Beam lost / 6 l. dead time
1245/1248	Test runs																								
1249	"	23^{07}	0^{25}	9.1	9.1		4489	14442	1167	143	1024	2508147	2493764	4333	4067	15452	2897		1.67	~~873~~	58.93	"	10			
1254		0^{28}	1^{05}	6.3	7.0	3.5 10^{-3}	1639	3908	426	~~434~~	292	528 000	518 m	2668	1007	1623	778	488	1.67	177	60.80	"	10	1576	1574	beam lost
1257		5^{09}	6^{21}	8.2	8.1		4526	13779	1177	139	1038	1983 m	1963 m	5570	3815	5704	2738	1793	1.46	6.60	66.80	"	0.5	5488	5470	
1258		6^{22}	7^{20}	6.5	6.4	3.5	3351	8677	872	73	799	1111 K	1103 K	5833	248	11054	1671	1183	1.28	4.35	70.95	"	0.6	3855	3848	N50 hang up
1255		7^{25}	7^{36}	5.5	5.4		621	1612	162	10	152	180 K	179 K	1055	611	437	353	220	1.31	0.89	70.96	"	0.5			N50 crash
1260		7^{42}	8.08	5.2	5.1		1313	2867	342	24	318	337 K	335 K	1874	895	993	589	388	1.11	1.46	72.42	"		1300	0	
1261		8.12	9^{00}	See next summary pages																					

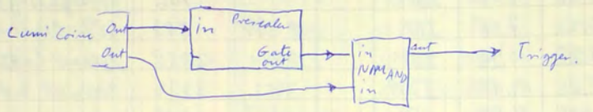
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NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	Aee Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

3. Aug. 76. 52 A Prescaler has been installed for the Luminosity Trigger. Rack 9, Crate 2
The Scale-down-rate is variable in Steps of 1 between 1 and 16. It is given by
(Sum of the weights of the pressed buttons) +1 = N
The "Divided-out" is about the image of the input pulse, coming every N times, with an internal delay of (12 nsec.) (about 4 nsec have been saved by shorter cables).

With the rates in the upper scaler box 

If delay is too long, install a NIM Gate



The Gate-Output changes after the trailing edge of the Input



This is for N = 4.
H. Wahl, Bielefeld.

16^{00} - 24^{00} Hedgehock, Pelzer

23^{00} The TOF NIM-AND-OR Function was on "only 1" ~~and~~ instead of "and". switched it back to and Pelzer

0^{h} Helm, Yanagisawa
the START-TOC for TOF and BP is delayed by 2 m! Pelzer

1^{30} Trouble with N50, several hang-ups. Restarted.
N-10 hang-up.

High deadtime probably due to LG threshold. We readjuste threshold values.
Run 1221 117 LG more than 500 blocks.

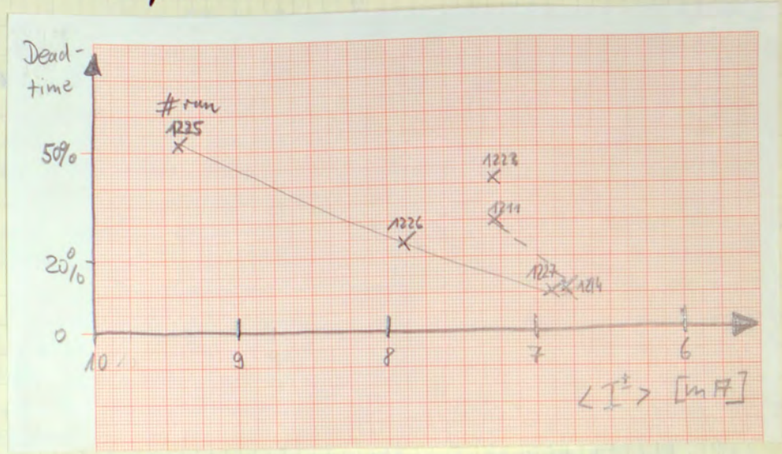
3^{10} Beam lost due to RF failure.
Were filling O.K.
Because of high dead time rate LG-thresholds were readjusted from time to time.

2 TOF *LG>1GeV	LG>4GeV	tagging	$\langle L \rangle$ 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^3 Trace	Remarks

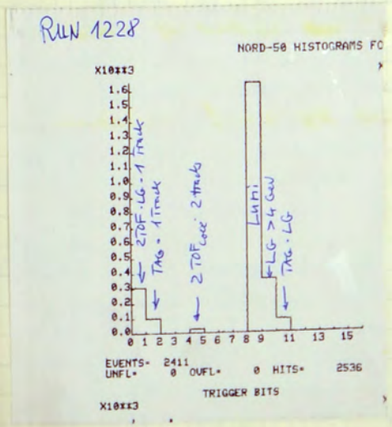
5^{13} ID tripped. Continue interrupted run 1226.

ID and LG seem to be very noisy at high beam currents.

~ 50% of triggers are from luminosity. Perhaps one should reduce this rate by factor 2 or 3.
(see histograms)



6^{09} Beam lost. ID tripped.
PETRA has water-leak.



The T2 Coinc - Trigger seems to have a very low rate. TOF multiplicity peaks at 0 due to dominating luminosity trigger, then remains flat up to $N_{TOF} \sim 7$.
Can T2 coinc ≪ T2 other be explained by background conditions?
→ Count-display about!!

From run 1218 - 1228 luminosity was calculated (not read from Scope) from $L = (SM2 \cdot SP2) \cdot 5 \cdot 10^{-27} \cdot E^2$. M.H.

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

04-08-79

8⁰⁰ Warning Drumm
For Run 1230 the luminosity rate was scaled down by a factor 5. → < 10% dead time

8²⁵ ID tripped.

9⁰⁰ LG thresholds readjusted to 10 mV (had been 20 mV before)
LG threshold readjusted again 0 mV
10⁰⁰ M. Helm thinks, the T2 Trigger is faulty (We us other output channels from track finding logic (~~without~~ has no effect)
& We called Krebiehl
(from times: collision rate request & 2TOF: ca 1-2 track, now a factor 10 lower)

10⁰⁵ I know why the Average(AL) and instantaneous luminosity (L) calculations on the TV are wrong – the former is down by 1/50 – clock scaler changed and the latter is just a bug – every 5 minutes it is correct for 30 seconds otherwise it is zero! H.
I will fix it during a Kill H.EM

10¹⁵ from time to time the Krebiehl trigger box causes a hang up ~~from~~ of data taking ("no events for more than -- seconds"), pushing T2 twice continues data taking
– maybe connected to the TOF-threshold-monitor. The monitor shows up only as a Run Stop, with red Stop Lamp lit. If beam is still there, push ~~red~~ green button.

10⁴⁵ beam lost due to Sundaresfall

12²⁵ Answ. v. B. Naroska: Since some time the histogram #1 (trigger words) contains the T2 accepted events, whereas before it contained all T1 postponed events. The T1 collinearity rate should be roughly 10^{-3} of all T0 OK
the T2 collinearity rate " " 10^{-4} of T1 coll OK
the ratio T2 acc / T2 reject should be roughly $2 \cdot 10^{-3}$ OK
1 TOF-(counter (#15) is down, as soon as there is beam, we check signals on the scope

13⁰⁰ Problem of Collinearity rates checked.
There was a misswiring in the T1 postpone → T2 condition coincidence.
Conditions 1-4 were most likely ok. Coplanarity had probably no coincidence and came only together with others.
I hope it is now correct.

13³⁰ IBM Link causes 45% dead time "IBM busy" message comes quite often try to write on tape
after 19 events Nord hang up → restart
try again: after a few events Nord gets crazy (printing in dead loop, Color TV flashing)
→ restart
3. trial: after a few events tape unit went crazy + Nord hang up "ring violation"

2 TOF *LG>1 GeV	LG>4 GeV	tagging	<L> $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^3 T coinc	Remarks

04-08-79

14¹⁰ called expert R. Eichler : ZDAS ~~was~~ loaded again
14¹⁵ beam loss (2 magnets tripped)

16⁰⁰ 4-August-79 Petersen & Mulls on shift.

~16³⁰ New Filling 15 GeV 8.6 mA each beam

Investigations showed that dead time problems were due to low leadglass thresholds not
16³⁹ ID trip } the IBM or Nord50. This problem may have been present for some time.

16⁵⁴ Nord loop on level 3 just as we were starting data run.

16⁵⁷ Stated run 1240
17⁰¹ IBM went busy for 19 seconds – cleared itself.
17⁰⁴ Nord 50 crashed twice – second time with illegal instruction. LEC & FETCH analysis was OEE
phoned P. Dittmann – he suggested trying a run with N50DUMMY and if that still fails then we should configure with ZDAS0:DATA which does not use the 50. The snag is that we will get no run summary printout. I believe the bad memory board is in the 50's area.
17²⁰ Run 1243 ~~#~~ N50DUMMY started.
17²⁸ Dead time 7.0% after 1.5 k events.
18⁴⁴ Innerdetector trip – beam lost
20⁰⁰ ~~changed~~ TOF TOC TOF #13-16 because TOC of TOF# 14 (bad wires) didn't work when

22⁴⁵ While PETRA was down because of water leaks, we were running ZDAS in play-back mode for ~2 hours together with EU-Display and compiling in full load on Nord
⇒ no hang up!
23⁰⁵ stable beams again!
IBM down! We decide to try the lousy tape unit.
23⁰⁷ IBM back – start run 1249
Most strange – we are running with ~~not~~ N50DAR and even event display & histograms work!
23³⁰ Again high dead time due to leadglass thresholds

NRN	date	Start	Stop	I^+	I^-	Vakk	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

5. 8. 79

0^{00} Barkl, Yamaguchi-arrr

0^{08} chamber dripped 23.3

0^{09} chamber dripped 23.3

0^{12} chamber dripped 23.3

0^{25} Stop run 1249

0^{28} during pedestal run for # 1250 chamber dripped
i.e. 1250 empty run
start run 1251

0^{45} chamber dripped

1^{23} beam lost RF-failure
Stop run # 1251
During run # 1251 IBD was restarted high dead time!

1^{50} stable beams

1^{52} Start run 1252

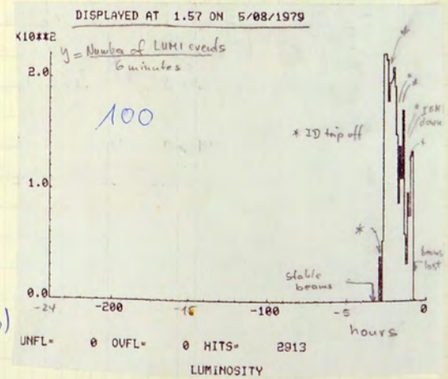
1^{53} beams lost 17 events in Run 1252

We have a new histogram:
Number of taken LUMI-events in the last 24 hours

X axis: 6 minutes bins in real time (CAMAC clock)
shifted from right to left

Y axis: number of LUMI-events gone from NORD-50

Histogram # 100
you get it in subcontext MISCELLANOUS – (F9) LUMINOSITY
(parts of this histogram may be lost if computer hang up)



3^{33} stable beams
Camac hang up
get repaired by itself manual, start, stop one CAMAC crate gave an alarm. We could not localize the crate. Before we could find it, it went off again

3^{45} beams lost RF-failure

2 TOF * LG > 1 GeV	LG > 4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^3 Trace	Remarks

4^{45} stable beams
Nord problems nerun says 'NORD 50 Busy' no data transfer
restart Nord 10, color display does not come on start again ok now

5^{05} Start Run 1257
readjust lead glass thresholds during run # 1252

Observe dead time losses due to IBD. Operators says that there is a high load on the machine and the HPD has some trouble, however we should not be affected but we are and so is TASSO.
TASSO-diagnostic: runs out on the multiplexer i.e. no response from the IBD itself.

7^{20} NORD-Trouble: 'NORD 50 BUSY'
try to stop from 'EXIT' at worker
stop Run # 1258

7^{25} Start run 1259

7^{36} Stop 1259 NORD-hang up
Restart NORD with Load bottom

7^{42} Start run 1260

7^{50} chamber dripped 23.3

8^{00} Cocilier/Kerr

8^{10} Stop run 1260, because N50 hangs

8^{17} Start run 1261

8^{58} Stop run 1261: Crate 1 in branch #4 fan failure

9^{20} Stop run 1263: New filling

10^{05} New filling ready

10^{10} Start run 1264

11^{50} change default HV-value for BP-counter from 1.8369 → 1.8671 in Program Yvolts.
Muon crates 3, 4, 8 missing response. Press "reset" on crates → all respond

12^{45} stable beams.

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	No of accepted events	AEE Trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

2 TOF *LG>1GeV	LG>4GeV	tagging	$\langle L \rangle$ $10^{30}cm^{-2}sec^{-1}$	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Tcoinc	Remarks

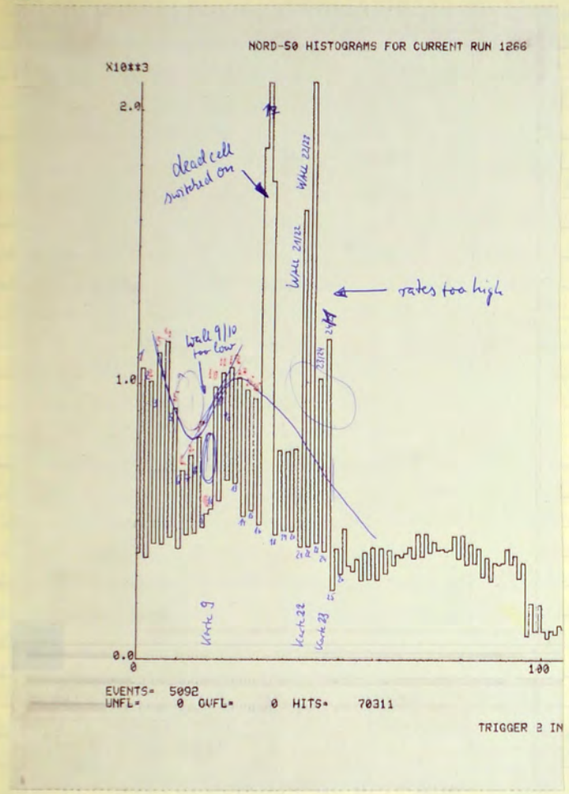
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RUN	DATE	START	STOP	I^+	I^-	VAC	TIME	NORD EVTS. ACC.	$\times 10^6$ ALL TRIG.	$\times 10^6$ T0 REJECT	$\times 10^6$ T0 ACCEPT	T1 acc + postpon.	T2 reject	T2 accept	T2 collin.	(T2) 2TOF, LG>1G
1261	5/8/79	8.12	8.59	4.6	4.5		2698	4857	702	33	670	591 K	586 K	3186	1726	1398
1262	"	9.01	9.13	3.8	3.7		685	1104	178	6	172	135 K	134 K	694	467	247
1263	"	9.14	9.20	3.8	3.7		289	502	75	3	72	55 K	55 K	336	221	121
1264	"	10.11	10.18	9.6	9.7		374	1345	98	16	81	205 K	204 K	1083	372	742
1265	"	10.19	11.10	7.6	7.7		3029	10848	789	101	688	1.76 M	1.75 M	—	2834	3851
1266	"	11:11	11:39	7.2	7.3		1671	5092	435	40	395	848 K	842 K	3448	1525	1739
1267	"	12:51	12:56	10.0	10.0		275	1170	71	19	52		216 K	812		
1268	"	13.34	13:55	9.6	9.3		1066	4315	277	66	211	705 K	701 K	2850	982	1713
1269	5.8.79	16.19	16.38	9.6	9.8		1076	4278	280	51.8	228	795 K	790 K	2938	1069	1660
1270	"	16.41	16.52	"	"		655	1684	121	18.5	102	328 K	326 K	1059	453	540
1271	"	16.59	17.24	8.25	8.1	4×10^{-9}	1442	5276	375	44	331	943 K	938 K	3507	1408	1907
1272	"	17.27	18.59	8.25	8.1		5221	14742	1360	113	1245	2546 K	2531 K	9635	4180	4997
1273	"	18.59	21.01	5.63	5.60	3.6×10^{-9}	7288	15274	1898	103	1794	2146 K	2131 K	10078	5036	4472
1274	"	21.03	21.22	4.10	4.00		1153	1974	300	14	286	246 K	244 K	1333	206	524
1275	"	22.24	23.04	9.30	9.30		2173	7964	565	108	457	136 K	1359 K	2684	2014	3104
1276	6.8.79	2.14	3.10	9.8	9.8		3204	12226	832	136	696	1788 K	1776 K	8423	2947	5076
1280	"	3.27	3.45				1039	3663	270	32	238	461217	457 K	2474	857	1572
1281	"	3.47	5.06	6.23	6.0	3.4×10^{-9}	4620	10481	1200	76	1124	1728 K	1718 K	7683	3635	3739
1282	"	6.43	7.19	8.3	9.1		2055	7013	534	65	469	1461 K	1454 K	5369	2083	2984
1283	"	9.29	10.19	9.0	9.1		2045	7018	512	116	415	1326 K	1319 K		1818	3621
1286	"	~10.25	10.25	~7	~7		No Scaler - rates because NSO not connected and scalers have been set									
1287	"	11.26	11.52	~7	~7		1549	5647	403	52	350	—	721 K	4790	—	—
1289	"	12.05	12.48				2553	8844	665	88	576		?	7710		
1290	"	17.55	18.27	9.7	9.5		1536	6027	400	75	325	1383 K	1377 K	5093	1622	3151
1291	"	19.44	19.55	9.8	9.6	4.5×10^{-9}	501	2021	130	27	103	474 K	472 K	1676	520	1024
1292	"	20.45	21.23	7.8	7.7		1823	4983	475	32	443	1282 K	1277 K	3852	1748	1895
1296	"	21.43	dropped due to "no events"													
1299	"	21.56	22.37	6.4	6.4		2426	4619	629	26	603	1125 K	1121 K	3370	[illegible]	[illegible]
1300	7.8.	0.37	2.12	9.4	9.1		5233	14496	1361	121	1239	3645 K	3631 K	10798	5155	4891
1301	"	2.12	2.30	6.9	6.7		823	2020	214	20.9	193	437 K	4364	1413	680	664
1302	"	3.39	4.28	9.6	9.4		3757 4455	9955	718	100	618	2172 K	2161 K	268 M	2765	4603
1303	"	4.29	6.05			3.20^{-9}	5565	14752	1449	103	1345	3206 K	3192 K	11145	4930	5677
1304	"	6.06	6.51	5.9	5.8		2622	5194	682	36.4	646	1032 K	1027 K	3824	1974	1743
1312	7.8	1939		8.3	8.8			1049				724				8
1313	"	19.50	20.08	8.4	8.8		763	2868	155	97	99	[illegible]	704	2088	493	9075
1314	"	20.13	20.34				913	3884	237	98	144	958 K	954 K	3498	694	2478

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LG>4GeV	LUMI	$\langle L \rangle$ $10^{30}cm^{-2}s^{-1}$	$\int L dt$ RUN	$\int L dt$ EXP	Tape	BP	SHZ+SPZ	SHZ+SPZ acc	
1054	645	.84	42.27	74.69	12M		2020	0	
237	143	.78	.54	75.23	"		477	0	
104	57	.80	.27	75.46	"		205	0	
276	–				"	1.0	–	–	tagging HV not on
2145	1699	2.06	6.24	81.70	"		5563	16	
1059	623	1.35	2.26	83.96	"		2012	7	RF lost.
211	149	1.98	0.54	84.50	"	1.5	489	5	beam lost. Run summary lost.
885	572	2.02	2.17	86.67	"	1.2	1910	5	beam lost
807	579	196	2.10	88 77	"	1.2	1887	16	run stopped because no info recorded for 50 sec (Readout busy)
321	256	1.98	0.95	89 72	"	1.0	528	7	restart. Stopped because NORD50 "busy", reload.
1034	718	1.79	2.61	92 33	"	1.0	2305	12	finner detectors trip 17.35 " " "
3255	2195	1.52	7.94	100.27	"	1.0	7078	23	due to all 23.3 continue at 17.38, some 18.28 - 18.31
3183	2204	1.10	8.00	108.27	"	0.8	7121	11	
395	264	0.84	0.97	109.24	"	0.8	866	2	NORMAL END. BEAMS DUMPED.
1541	1070	1.77	3.86	113.10	"	1.1	3457	33	NEW FILLING. (1D TRIP NO INDICATION: 82.96 HRS) BEAM LOST.
2221	1680	1.93	6.19	119.29	"	1.1	5534	32	stopped by IBM JOBERROR (DISK FULL)
713	436	1.51	1.65	120.94	"	0.9	1464	6	NSO crashed
856	1750	1.36	6.35	127.29	"	0.8	5636	20	beam lost due to power supply fail
365	1219	2.14	4.49	131.78	"	1.1	3972	52	beam lost due to water leak
461	916	1.7	3.49	135.27	"	1.1	3125	25	NSO hang up without NSO
reset during run		1.31	4.22	139.49	"				
300	542	1.26	1.96	141.45	"	.9	1757	13	without NSO, Scalers read from master bar
394	773	1.03	2.63	144.08	"		2348	9	" "
276	631	1.5	2.29	146.37	"	1.3	2059	25	IP trip at 18.00 Reset, continue run, Beam Lost 18.27
93	227	1.62	0.82	147.19	"	1.5	731	9	Magnet trip
370	729	1.46	2.67	149.86	"	1.1	2371	13	1D trip 2055 no known fault, reset and continue 20.57
369	787	1.17	2.83	152.69	"	0.9	2523	7	Stopped again after 450 evts by itself! Beam loss due to water leak → stop run.
948	2468	1.72	9.02	161.71	"	1.1	8061	47	
219	313	1.37	1.15	162.86	"	1.0	1009	5	Beam lost due to water leak
592	1459	1.93	5.35	168.21	"	.9	4782	38	NORD50 Memory out of range at 61401
893	2396	1.56	8.7	176.91	"	.9	7769	32	
378	880	1.22	3.21	180.12	"	.8	2854	5	Beams lost
119	148	0.71 0.72	0.24 0.55	180.36 180.91	" "	1.8 1.8	515	27	after 1049 events: NORD50 hang-up; IBM trouble, have to reload → stop run
121	190	0.65	0.59	181.50	"	1.3	570	42	beam lost due to water leak in PETRA tunnel

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept



12^{00}

Trigger T2 input signals:

Wall 9/10 rate too low

Wall 21/22, 22/23, 23/24, 24/25 rates too high

Exchanged cards #9, 22, 23 in T2 crate Rig 1 on the rucksack. M.K.

Exchange #22,23 was successful, for 9/10 it did not help. M.K.

12^{44} New filling ready

12^{51}–12^{56} 10 mA beam and then lost
dead time 25-30% event rate 4.1 Hz

We did not get a Run-summary! why? L-P was jammed!

13^{30} new beams

13^{55} beam lost

16.00 WEBER ; HEDGECOCK ON SHIFT.

16.10 PETRA BEAMS BACK ON.

16.14 INNER DETECTOR TRIPPED ON 23.3.

16^{52} Nord 50 Memory out of range at 016642 (this is the IDLE LOOP of the N-50 PD)
016642/2600---01 SETA 40,00-01 HEX

17.24 N50 HUNG – 'ILLEGAL MONITOR CALL' & DOES NOT ANSWER. JNM

Note: at 18.28 Muon Chamber – Gas Supply – Compressor was found to be off by B2-operator; gas is still circulating but pressure is dropping continuously. Try to reach Manchester – crew, no success so far (19.07)

19.31 adjust Pb-Glas-discriminators (x=12)

20.28 reduce γ-attenuator from 6 dB to 4 dB, counters stop, push green button (trigger box) to continue

21.42 BEAMS DUMPED READY FOR NEW FILLING.

2 TOF *LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trace	Remarks

21.25 TOTSUKA comes in to find cause of spurious Pb-Glas pulses in many channels.

22.20 – NEW FILLING COMPLETE.
TOTSUKA still investigating Pb glas System while running

22.46 I.D. TRIPPED. NOTAUS. BUT NO INDICATION OF FORSON ON INSTRUMENTATION IN RUCKSACK.

23.04 BEAM LOST. ID TRIPPED. WATER LEAK IN THE RING.

6.8.79

0.00 Kobayashi, Naroska

0.30 " Petra wird eingeschätzt"

0.55 " again

2.10 stable beams, collim. in by 13 turns, BP 1.1, 3TOF 47 K

3.10 IBM ONLINE JOB ERROR 1 → Disk full we can't continue.
Ask for dump.
IBM operator claims they can't do tapejobs because they are only 2 people.
P.D. goes up to investigate; They are running migration job Now dumpjob started

3.20 I.D. trips

3.27 running again! (17 min lost)

3.45 N50 – crash Item out of range

4.10 change LG-trigger (took off RUN signal from ADC gate flip-flop)
⇒ spurious triggers have died away now!

LG>4 dropped from ~0.7/sec to ~0.2/sec

5.06 beam lost, I.D. tripped ← overcurrent
↑power supply failure coil out

6.35 beams again
Start run 1282, coll in (14 turns) BP 1.1 3TOF 47 K

7.19 beams lost due to water leak.

8.00 Petersen / Klein

9.00 Memory Card for the Nord was send away from Wiesbaden this morning. When it arrives at Hamburg, the Station (Palm express) should call us. Please inform then D. Eckle or P. Hartmann immediately.

9.33 beams

10.19 N50 hang up, 2x new start didn't help (N50 died after 1 events without error message)
⇒ no run without N50

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

11^{30} Now that there are better monitoring facilities on the colour TV we notice delays in the Nord-50 more. For instance the 50 may stop for a short while when an event or histogram display is being made. The delay is not new I think, its the fact that we now notice it! The delays caused by the displays should be reduced when 1 a) change data transfer method in next shutdown and b) use buffered output in new SINTRAN IIER

11^{52} Run 1287 stopped by shelf!
Restart not possible for ≥5 min (IBM down)
12^{05} Stop data taking to try N50 again. Immediately after stop the becams were lost!

12^{05} Start Run 1289 re-Install capacitative filters on tagging Pb-Glass Module B. ADC # (1)
14^{00} JADE magnet went off.
14^{55} PKR: ~~temperature~~ Primary cooling water from the lake has ~35°C for cavity cooling. Pitlat measured 42°C for our cooling water. That's why the magnet failed.
An additional row of sprinklers in the "lake schoppen" has been switched on and the water flow has been increased. The magnet is back on again.
15^{20} magnet back again, PETRA has a water leak

Tomorrow (7/8/79) Petra will be off from 09.00 (6→7 hours) to replace all water pipes
16.00 Loebinger, Weber on shift. Waiting for PETRA to start running.
Glen filling finished at 17.55 start run I.D trip at 18.00, (Channel 233), restart.
Total dead time at beginning of run (2600 evts.) 26% probably due to I.D. trip.
New I.D trip at 18.10. (Channel 233) continue at 18.12
" " " " 18.14 (" ") " " 18.16
Beam lost at 18.27 due to R.F. trouble.
New filling at 19.44
19^{50} I.D Trip / Magnet trip ("A.C. overload")
Run stopped
$2^{0.43}$ Magnet back on

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> 10^{30} cm^{-2} sec^{-1}	$\int L dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T$_{TOF}$	Remarks

21.20 run 1292 stopped counting "no ack" for a long time. Stop run, try again. Call Dittmann.
21.56 After many attempts to get running with N50, start run 1299 without N50: No histograms will be available from run 1299. Dittmann still trying to find cause of trouble with N50.
The N50 MONITOR call didn't work any more. SINTRAN was corrupted
restarting the machine helped.

7/8/79 0.30^4 3TOF 54 BP 1.4 e^+ 9.4 mA e^- 9.1 mA
Stable beams

0.30 – 1.00 4 ID trips!
2.12 Stop run after ~15000 events. First normal stop since when?
5x Time out brand 5 crate 6
2.20 adjusted LG threshold for +5 mV
2.27 beam lost due to water leak (!)
3.35 stable beams again 3TOF 58K/ 10^6 T$_0$ BP 1.1
e^+ 9.6 e^- 9.4 mA
LG thresholds adjusted to 10 mV
3.50 I.D trips
04.28 NORD50 stopped. At 61401: Memory out of range.
5.53 I.D. trips
6.04 " , end run.
6.50 beams lost due to water leaks
Barbel + Kobayashi
7^{55} Call from PKR: Hoses in Petra will be exchanged from now on.
Beams back late afternoon (hopefully)
Switch off magnet however leave water flowing.
Run down compensating magnets
Switch off busses for central detector.
Cooling water 45° ok.

8^{15} Exchange ~~Install~~ 32K memory module in Nord. Run initialisation program HPM from floppy.
All error recovery lights off. Run mover test on 8 terminals simultaneously
~~Hist~~ No memory errors in first 15 minutes (no lights on). Please let programs running for 1-2 hours.
11^{00} No errors found. No error lights on. Run REG-DIR
11^{45} Regenerate system (SINTRAN)
12^{00} Reload JDAS

Computer works well with event display and test pulser events. RAE

NRN	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

Attention: run # was apparently reset to #1300 during Nord repair this morning. I have taken 2 Pedestal runs (50 events each) with run #s 1300, 1301, before noticing the problem. These runs should be eliminated, if possible in order to avoid confusion. A.W.

ID - Pulses runs: (50 ev = 100 records each)

run #	condition	
1305	Pedestals	t_0 = 45 cnts
1306	QL 1.5V	t_0 = 77 cnts
1307	QR 1.5V	
1308	QL+QR 1.5V	
1309	QL+QR	t_0 = 16 cnts

7.8.79 17.00 Murphy, Weber on shift, still no beam after all days work on PETRA magnet cooling water system (change of hoses). Magnets turned on · Main Solenoid: 7014 A

19.30 Stable beams.
Immun detector trips immediately. Peak of ring 1 anode current 5 μa. (2-3 would be OK, says A. Wagner).
Beam gas counter monitor reads 1.6 V.
Q-values were still being adjusted. Run 13.13 started at 19.50.
I.D. trip at 19.52, reset and continue
" " 19.58, " " "
I.D. trip at 20.27, during run 13.14, reset and continue at 20.28
Note: During I D off periods scalers do not stop, but keep counting. ← Wagner found cable in H.V. controll box disconnected, o.k now!

1947 DISK / DRUM TRANSFER ERROR (this should not happen)
Nord restarted

2235 Stable beams.
2253 dead time 6%
23.01 I D trip. reset (no events for 100 sec during off-time) 233
23.10 " " reset (~~again doesn't stop counting when I.D off~~) 233
23.28 Stop run, because DL8 crate failure.
23.32 Try to restart: ID trip.
23.45 Find compensating magnets acted 500 instead of 7500. We reset it.

2 TOF *LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 T coinc	Remarks

23.55. There is a strong vertical distortion in the beam in our region and at MARK-J.

8.8.79

0.00 Wriedt, Naroska
They tried an orbit correction which improved Background
BP 1.5 → 1.05 3TOF 130 k → 60 k

0.10 Decreased temperature by 1°.
DL8-Crate now seems to hold longer.

1.06 Beams lost due to failure of main magnet.

Found TOF COUNTER 36 - low in rate and TDC histogram.
CHECKED ALL SIGNALS WITH LED, NOTHING WRONG.

1.45 Weber talked to all intersection regions. They all agree that orbit adjustments should be made in order to improve backgrounds and increase luminosity. This apparently may take a major part of the shift.

3.20 New filling 3TOF 98 k BP 1.4

3.30 lost due to "Senderausfall"

5.25 New filling 3TOF 110 k BP 1.4

5.37 Background high, loss rate also high. PKR says that the orbit has improved considrably. But we don't seem to see it.
Somebody had disconnected a cable for the rate $2TOF_{coinc}$. $\geq 4TOF$
TOF counter 36- ok again, was probably bad contact.
during Run 1318:
Cell 19 ring 2 does not work, +12 V failure in V34, expert (A. Wagner) called

5.45 Strong fluctuations in background, BP goes up to 4 V!
Switch off ID and LG.
PKR can't find anything wrong

6.05 Stop PKR has slightly adjusted Q_x values. Seems to be better. Start run

6.25 Run 1318 stopped because of message on color TV: "data not written" (seems to be bug in the program)

7.00 V34 for cell 19 ring 2 is now repaired.

7.10 during Run 1321: part of message of Run 1320 still on color TV did not disappear after start of new run

NRN	date	Start	Stop	I^+	I^-	Vac	time [sec]	Nr of accepted events	AEE trig	TO reject	TO accept	T1 accept	T2 reject	T2 accept

2 TOF * LG>1 GeV	LG>4 GeV	tagging	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3 TOF / 10^6 Trace	Remarks

RUN	DATE	START	STOP	I^+	I^-	VAC	TIME	NORD EVTS. ACC.	$\times 10^6$ ALL TRIG.	$\times 10^6$ Tϕ REJECT	$\times 10^6$ Tϕ ACCEPT	T_1 acc +postpon.	T_2 REJECT	T_2 ACCEPT	T_2 collin ACCEPT	T2 2TOF, LG>1GeV
1315	7.8.79	22.49	23.29	6.50	6.80		1608	7292	418	207	211	2191 k	2184 k	6724	1192	4025
1317	8.8.79	00.20	1.06	5.1	5.2		2657	7442	691	73.7	617	2219 k	2211 k	268	2378	3904
1318	"	5.33	5.55	8.7	7.8		1236	4648	322	97	225	1554 k	1549 k		1133	2148
1319	"	6.16	6.25	7.7	6.7		540	1593	141	18	123	892 k	890 k	1397	525	696
1320	"	6.26	7.03	7.5	6.5		1792	4978	466	39	427	2199 k	2194 k	4369	1732	2182
1321	"	7.05		6.7	5.8		5740	13139	1444	118	1376	4773 k	4760 k	11418	5336	5351
1326	"	15.24	15.42	5.6	6.1											
1327	"	15.53	16.20	5.2	5.6	$5\cdot10^{-9}$	1805	2479	339.5	21	318	788 k	786 k	2065	1088	896
1329	"	16.21	17.00	4.4	4.70		2181	3284	567	33.5	534	750 k	747 k	2726	1649	996
1329	"	17.01	17.09	4.3	4.7		241	363	62.8	3.1	59.7	80.3 k	80 k	246	183	104
1330	"	17.23	18.21	3.8	4.1	$3\cdot10^{-8}$	3317	4430	863	24	839	943 k	939 k	3667	2357	1203
1331	"	22.22	22.33				431	1819	112	48.4	63.9	458 k	456 k	1669	342	1132
1336	4	22.44	—	7.3	7.5	7×10^{-9}	739	2938	192	24.3	168	1099 k	1096	2579	844	1505
1337	9.8.79	3.20	4.07	6.0	6.0	$6\cdot10^{-9}$	2533	7971	659	59.8	599	3173 k	3165 k	—	2859	3524

continuation in LOGBOOK Nr. 2

LG>4GeV	LUMI	$\langle L \rangle$ $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ RUN	$\int L\,dt$ EXP.	TAPE	BP	SM2×SP2	SM2×SP2 acc	
244	289	0.53	0.59	182,39	IBM	2.0	890	107	New filling, T.D. trip. 23.00 reset.,
373	371	0.49	1.31	183,70	"	1.0	1187	26	Beams lost
155	276	0.72	0.89	184.59	"		846	57	stopped for too strong background fluctuations
60	127	0.81	0.44	185.03	"?		405	14	" " message "data not written", message could be wrong
241	360	0.70	1.25	186.28	"	1.1	1157	44	" after repair of V34
799	919	0.57	3.27	189.55	"	1.0	2972	69	Auto asked for more filling
						1.0			events too long
159	220	0.52	0.81	190,36	"	0.8	717	4	Stopped because of "no events accepted", restart, restart
232	306	0.49	1.11	191.45	"	0.6	986	6	" " " " " " restart, restart
26	29	0.46	0.13	191.58	"	0.8	98	0	" " " " " " "
365	365	0.40	1.36	192.14	"	0.9	1204	5	Beam lost, Stop, rerun
47	96	0.73	0.32	193.26	"	1.8-2.5	309	29	Nr. events accepted after 11 min, stopped restart.
106	190	0.81	0.64	193.90	"	1.4	602	44	" " < 1 Events " "
360	421	0.64	1.64	195.54	"	1.1	1528	74	Beams lost

NR N	date	Start	Stop	I^+	I^-	Vak	time [sec]	Nr of accepted events	AEE trig	T0 reject	T0 accept	T1 accept	T2 reject	T2 accept

7.10 I asked all other experiments about their beam conditions. Mark J and Pluto aren't exactly happy. Tasso thinks it's one of the best and most quiet runs since a long time.
Mark J want to talk to Voß or Degèle and ask for an optimization.
7.33 ID tripped

8[00] Barth & Onto on shift
8[42] Pluto asks for new filling stop Run 1321
9[00] Petra orbit is distorted
orbit corrections are being made
Vacuum $6 \cdot 10^{-9}$
PKR says pumps currents look normal
11[20] Trigger T2: FPLA # 8 on card 1 exchanged (new: #28). Also R3 card for all 90 exchanged before run 1325

~15[10] stable beams
15[16] start run # 1325
no data transfer to IBM try again works. 4 events in run 1325
15[24] start run # 1326
15[42] stop run # 1326 all events are two long probably first 1800 events
15[53] start run # 1327
16.00 Marshall, Weber on shift.
During run 1327: "no events accepted for 5 min. Stop, start new run.
N50 hangs for several runs - start new run each time
18[21] Beams "lost" starting new filling. Cause of beam loss: Vacuum trouble in Section "West Realo" of PETRA. Peak on Vacuum: 3.6×10^{-9}
22.22 New filling. Start run 1330
2225 ID trip (we have 9 mA per beam)
Runs 1332-1336 Nord50 hang-ups. 22.44 restart Nord50 several times, never seem to work
2258 ID trip beams lost; end of fill; end of Nord hang-ups for a while;
See Note in D-DAS-folder

3.8.79 Prosper / Narain

1.08 Stable beams switch on BP 2,9 3TOF 236
Lead glass switched off after ~ 15 min - background is terrible. beam pipe counts rate 7-80 units.

2 TOF *LG>1GeV	LG>4GeV	tagging	<L> $10^{30}\,cm^{-2}\,sec^{-1}$	$\int L\,dt$ nb^{-1}	tape	BP [V]	3TOF / 10^6 Trace	Remarks

3.30 We have finally started running.
Here's the story of the last 2,5 hours:
When we started BP was nearly 3V, 3TOF ~ 230 / 10^6 To
PKR adjusted Q-values, then made a vertical bump. At the end of the bump we had BP 1, but Pluto could not live. So we went back to a quarter of the amplitude. The strong spikes started to appear BP went from time to time up to 10. The spikes were also present in other intervals but only very small.
PKR was completely puzzled. They checked their feedback system, the vacuum, the orbit. The vertical orbit near Jade seems to be distorted slightly.
At 3.30 we only have ~ 4x3 mA and the spikes seem to have disappeared by themselves. PKR did nothing. We switch on and start taking data.
4.05 beams lost due to quadrupole failure
4.20 PKR is now (hopefully) going to straighten out some of the vertical orbit problems. Pluto (main user) agreed because they were promised increased specific luminosity.
5.30 "Magnetstrom wird eingeschaltet"
"Petra " "
6.30 Petra runs in single bunch mode for the above mentioned adjustments.
7.05 Petra has now finished the orbit studies. They were not able to do any improvements.
The criterion they use is highest specific luminosity. Until then we used to confirm the existing orbit. So we'll probably have equally good conditions. They now start a normal fill.
8.00 The day shift has decided otherwise. They are still continuing the studies.

8.00 Yamada, Loch
9[15] Petra water leak at north-east / left
10[40] "Ablauf, PETRA wird eingeschaltet."
PETRA beam study will go on.