JADE LOGBOOK IV Runs 3960 - 5201

Ein Brunnen-Erzeugnis

JADE LOG BOOK

N° IV

RUNS 3960 - 5201

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG >4

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

20^{41} 1/7/80 Takeda / Allison
Beam off. Injecting.

22^{20} Beam established in PETRA — BP indicator is high. (We beat MARK J !!!)
22^{23} Run # 3960 started.
22^{28} Average luminosity so far: 2.00×10^{30} !!
22^{37} Beam lost. Trans. Detector Error 2. ~~IADE~~ run down.
PKR say: Magnet temperature problem. People in tunnel investigating. Timescale uncertain.

23^{52} Beam in PETRA again. BP ~~rate~~ indicator high
23^{55} Run # 3961 started.
23^{56} LG total energy threshold adjusted for 40 mV H. Takeda

~~23~~

2/7/80 SATO & DARVILL ON SHIFT
0:01 RUN 3961 stopped due to ADC pedestal problem. (crate #3) (LG)
0:11 Beam lost, ID trip. Run stopped.
0:20 Call PKR, who are not totally certain at this stage what the problem is and it is clear that we are holding up the diagnosis. They offer to call back.
0:25 P.K.R. call back to say that the problem is the same as at 22:37. They think it may be the sensor which is faulty and will change it. Estimate ½ hour.
0:35 Magnet current fluctuation message comes - we look and find the DVM reading a little down 9477, fluctuating ± 3.
Since PKR are working on a (PETRA) magnet we decide to watch it for a while and see what happens.
0:55 Injection started.
1:25 LG ~~power~~ supply trouble. ~~crate 3 & 5 socket~~ (LG) HV power supply cable burned. Fix the socket. we find this as we switch on HV & start data taking.
1:54 We have almost solved the problem - we think when PKR loses beam and we must switch off to permit injection!
we cannot test the repair until we get beams again
2:05 Cello call to say PKR told them it was the same temperature trip again
07:15 After many attempts at accelerating the successfully injected bunches PKR give up to allow temporary access.
Restart to be at 13:00.
what a sad start to a new logbook!

07:35 Magnet current lowered to zero. 175 → 0

09:50 HV reset for Lead Glass counters (Barrel & E.C) - S.K.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJET $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
2																		
3960	1/7/80	22:23	22 37	9.81	9.16		839	2226	218	20	197	4.4	1237	718	415	543	519	236
3961	"	23:56	0:01	9.8	9.7		302	837	79	8.9	69.9	2.2	468	241	175	220	146	80
3962	2/7/80	0:01	0:11	9.55	9.43		524	1419	136	14.7	121.4	3.5	695	476	294	329	265	135
3963	2/7/80	21.12	21:24	9.2	9.4		607	1401	158	18.8	139.2	4.7	1012	1184	21	488	348	160
3964	"	22:04	22.11	9.7	9.6		333	859	87	8.7	78	2.7	602	499	16	285	235	77
3965	2/7/80	23.30	23.33	7.9	8.0		71	159	18	1.1	17	0.28	83	87	4	69	36	14
3966	3/7/80	1:56	2:02	7.1	7.2		313	233	81.3	36.3 ~~44.9~~	44.9	0.32	133	149	6	94	44	26
3967	3.7.80	4:06	4:08	6.9	7.0		18	125	4.7	3.0	17	0.01	28	8	0	4	25	19
3968	"	5:36	6:37	7.2	7.4		3574	7860	930.6	127.8	802.8	7.2	4069	2351 ~~2368~~	73	1649	3768 ~~1067~~	2336
3969	"	6:38	6:54	6.3	6.4		835	2812	228.1	527	115.3	1.0	1430	595	14	325	1067	720
3970	"	7:42	9:06	7.8	7.9		4961	7858	1291	85.3	1206	9.0	4502	4293	124	2416	1690	1801
3971	"	9:06	9:22	6.3	6.4		912	991	237	8.1	237	0.92	614	682	17	390	178	164
3972	"	10:11	10:41	7.7	7.8		1936	3810	452	62.4	389	4.98	1539	1732	29	859	528	1864
3973	"	10:42						1000										
3974	"							1000										
3975	"	11:04	11:14	6.6	6.8		558	1501	145	18.5	127	1.06	451	482	9	259	165	918
3976		11.15	11:17					130										
3977	"	11:18	12:02	6.4	6.6		2630	3478	685	30.6	654	3.7	2417	2339	78	1250	737	758
3978	"	12:12	13:16	5.8	5.7		3712	4007	966	35	931	3.0	2409	2652	85	1527	818	877
3979	"	14:46	14:48	?	?		76	151	19.9	1.2	18.7	0.15	74	71	1	55	32	23
3980	"	17:10	19:20	7,6	7,6	$6{,}6\times10^{-9}$	7787	7858	2026	277	1750	7,5	4985	5279	150	3166	1502	1359
3981	"	19:22	19:23	5.7	5.7		49	53	13	0,3	12,5	0,03	31	43	1	21	7	11
3982	"	21:09	21:21	8,1	8,2		677	1025	176	8,1	168	1,5	661	630	17	344	271	121
3983		22:02	22:05	8,3	8,1		92	150	24	1,4	22.7	0,29	118	108	2	55	47	16
3984	"	22.40	0:15	8.1	8.2		5683	7861	1479	63.9	1415	9.4	5074	5057	123	2752	1897	~~1176~~ 1176
3985	4/7/80	0:15	0:39	6.4	6.5		1274	~~1552~~ ~~1552~~	332	10.6	321	1.2	947	973	33	628	325	289
3986	"	2:07	2:22	8.3	8.3		760	1244	198	10.0	188	7.7	806	680	14	418	320	154
3987	"	4:31	6:10	8.0	8.1		5945	7855	1547	66.4	1481	8.2	5053	4988	127	2801	1909	1271
3988	"	6:11	8:14	6.3	6.4		7359	7551	1915	51.3	1864	4.3	4713	5067	159	3124	1450	1538
3989	"	9:52	10.13	6.86	6.86		1183	1312	307	4.7	293	1.2	845	886	27	508	267	198
3990	"	13:46	14:50	8.27	7.52		3854	7859	1003	85.0	918	5.8	3230	3223	83	1834	1212	3542
3991	"	14:53	16.26	5.7	6.3		5468	7853	1423	58	1365	4.1	3612	1909	2116	2596	1064	1158
3992	"	16:27	17:05	5.3	5.9		2246	2946	584	19	566	1.0	1336	653	864	909	419	457
3993	"	18:06	19:25	8.0	8.1		4718	7858	1228	59	1169	6.0	3834	2048	1906	2185	1413	1039
3994	"	19:26	19:58	6.6	6.6		1887	2897	491	19	472	1.5	1372	728	738	868	459	428

T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}dt$ RUN	$\int \mathcal{L}dt$ EXP	IBM / TAPE	BP	BHABHA 172	MULTI-HADRONS	BEAM ENERGY E_B (GeV)	FREQUENCY (kHz)	
							rejected Event Fraction			
3										
247	2.11	1.77	14.92	IBM	2.0	27	0	17.5	499665.0	stopped due to LG pedestal trouble
81	1.80	0.54	15.46	"	2.0	13	2	" (gut)		Beam lost I.D. trip
765	1.99	7.04	16.50	"	2.1	17	0	"		Beam lost I.D trip
171	1.95	1.19	17.69	"	2.5	17	0	"		Beam lost
112	2.16	0.72	18.41	"	2.2	11	0	17.5		Beam lost (or verschenkt)
21	1.54	0.11	18.52	"	2.0	4	0	"		Beam lost. ID trip
42	0.86	0.27	1879	"		2	1	"		Beam lost
2	0.64	0.01	1880	"		0	0	"		
604	1.21	4.32	23.12	"	1.8	51	1	"	499665.0	Beam lost
112	0.88	0.77	23.89	"	1.6	8	0	"	"	
1044	1.50	7.43	31.32	"	1.8	96	0	"	"	Beams lost.
143	1.12	1.02	32.34	"	1.4	13	1	"	"	
357	1.48	2.56	2.56	"	1.75	39	2	17.49	499665.0	New energy
				TAPE F0138						Test Runs (see page 6)
				TAPE F0138						
89	1.13	0.63	3.18	IBM	1.5	6	0	"	"	premature end due to IBM error
	1.19	0.11	3.29	"	~~1.4~~	1	0	"		stopped because of bad LG ped.
433	1.18	3.09	6.38	"	1.4	38	2	"	"	Still bad LG ped.
475	0.89	3.30	9.68	"	1.4	83	1	"	"	bad ped. disappeared !
21	1.48	0.11	9.79	"	1.85	5	0	"	"	
1105	1,00	7,81	17.60	"	1,7	113	9 !!!	"	"	remark : not on 01/04/80
7	1,05	0.05	17.65	"	1,4	3	0	"	"	New filling
163	1,63	1,10	18.75	"	1,8	17	0	"	"	Beam lost
7	0,47	0,04	18.79	"	2	0	0	"	"	Beam Lost
1128	1.40	7.94	26.73	"	1,8	103	0	"	499.6650	New Filling
200	1.06	1.35	28.08	"	1.5	16	16 2	"		
189	1.65	1.25	1.25	"		22	1	17.48		Beam lost
1123	1.34	7.94	9.19	"	2.0	104	1	"	499.6650	New energy
907	0.87	6.39	15.58	"	1.4	83	2	"	"	
208	1.23	1.45	17.03	"	1.6	18	0	"	"	beam lost
789	1.43	5.50	22.53	"	1.6	78	7	"	"	Normal run
785	1.01	5.53	28.06	"	1.2	98	3	"	"	
245	0.77	1.73	29.79	"		23	—	"	"	
899	1.35	6.38	36.17	"	1.6	63	3	"	"	
278	1.05	1.98	38.15	"		36	3	"	"	
						525	20			

T3 - multiple multiplicity was 4

T3 - mult.

1 region

see page 8

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

16^{00} R. Marshall and Y. Watanabe on shift

16^{10} PKR is starting to inject again. First try for 9 hours.
Solenoidal and Compensation magnets were turned on to the nominal settings.
18:00 No beam yet. They lose beam after starting acceleration.
20:30 The same as above.
21.10 This time it looks OK
Start run with reasonable conditions – collect 1 nb^{-1} in 10 mins when Tasso come on to say they can't switch on due to background. Mark J also have it bad. We suggest they wait a while but they won't buy it! (neither would we in their place). So PKR try a few things for Tasso (including a collimator scraper somewhere near us). Beams are immediately lost – so was we all lose out. Beam loss claimed to be coincidental.
PETRA Magnet trip plus other small problems.

22.25 Cells call, they have been able to switch on at all during the two short runs during which we amassed 1.91 nb^{-1} in 19 mins with no more than normal background. Neither have Tasso, and Mark J are very marginal. ✳ For once NW is the cleanest place on earth. ✳
Proposal is to run for a while with lower currents to allow an investigation.
We make point that 19 mins running since midnight hasn't allowed much time for any checks at any current. However, injection is a problem and it would not take long at 7 mA to improve on 19 mins at 9 mA. So we agree. Seems hypothetical anyway since PETRA appears chronically sick.

Standard histograms show that forward counters are empty. We followed the HV turn on procedure ("special treatment") of the LeCROY unit. Maybe we had to wait pushing the 2nd yellow button until the special treatment is done. Next time we will try that. Too long vacations for two of us? (just away from this room), or Two too anxious people quick temperatures.

22:50 They accellerated up to 17.5 GeV and before we can start, lost beam.
23:30 Beam ready. Run 3965 started. 2 min later beam lost.
We still have Forward counter problem. Related to YVOLTS error print out?

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

3.07.80
0.^{00} Wriedt and Minowa on shift
0:15 PKR states that they think of injecting within the next hour.
1:54 New filling ready, start run 3966
- μ-coate 5 missing, reset
- faulty DL8: Replist team is repairing it
- HV-power supply for forward μ-counters down, leads to error message "no lam found" on line-printer decision: expert will be called tomorrow morning

2:02 Run stopped to repair DL8: success of repair could not be checked because of:
2:06 Beams lost!!, ID trip. Warning: the descriptions in the blue folder how to reset the inner detector are no longer valid. There are new descriptions in the rucksack, attached to the electronic racks.
2:30 In the moment the old DL8 stays in place, maybe it works again – at next filling of Petra.
4:05 New filling ready, start run 3967
IBM just down → stopped run. Then they lost beams again! We got another 143 events.
DL8 worked during this run!
5:35 Another try!
6:20 In the middle of run 3968 the event rate suddenly jumped up to 4.5 Hz (causing a high dead-time). The reason for that seems to be a change in the LG-thresholds. This effect comes and goes.
We reached 89% and 95% dead-time
6:53 Run 3969 stopped to solve the LG-threshold problem
6:55 Beams lost
LG-pickup noises are still there after switching off HV's.
7:40 New fill ready a bad solder
The pick up noise was due to an insufficient cable connection between LG-box (Cable #92-27)
This pickup gives trigger but no energy in LG, so gives a peak at low P.H. in Threshold 1–3.
Histograms of LG

8:00 Goddard and Takeda on shift

8:10 The noisy channel of LG-energy-sum was pulled out. This is going to be repaired during next injection.
8:15 HV to forward counters tripped. Interlock signal from [illegible] box not present. Cable is now removed.
8:15 HV read error for TOF/TAG channel = φ No LAM found.
9:06 RUN 3971 start.
HV read error for forward μ-counter. HV channel = φ. No LAM FOUND.
The control switch has been set to "LOCAL". This should be "REMOTE" during run.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

9:22 beams lost.
9:25 Cello asked our luminosity so far. 32 nb^{-1}.
9:30 ** HV for forward μ counters must be turned off manually during injection until further notice. Further notice given at 12^{00}. Old situation restored.

10^{05} Noisy channel of LG-energy-sum was repaired. Beam filled.
Eichler & Heuer are working on DL8 crate trouble.

Beam energy changed to 17.49 GeV

10^{11} RUN 3972 start. Branch 4 crate 5 Fan + Power supply changed.
10^{12} HV for tagging, channel 27, wrong by 80 volts ← No. 8 Volts. Look more carefully at the message.
10^{41} RUN 3972 stopped for DL8 test.
Runs 3973-3974 Special test runs on tape F11138
Pedestal pulser is started with DL8-start signal → each event has additional Pedestal pulses
Run 3973 pedestal at time 124
Run 3974 " " 113 first half, at 96 second half of run.

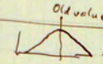
11^{45} 1) Noisy channel [redacted] appeared again. Cable #42-2 was pulled out.
This may be due to internal problem in ADC module.

2) Pedestal subtraction does not work well for one ADC-module (#46)
(Kill this module by off-line. Continue running for the moment)
(Spinning LG analysis takes care of the problem.)

12^{00} RUN 3977 stopped for ~~z-chamber test~~, μ forward counter latch delay curve

12^{20} ERROR 39 ; IOX ERROR
ADDRESS ; 6746 ; LEVEL : 10
ERROR 22 at 7633 FALSE INTERRUPT
LEVEL 10 IDENT CODE ϕ but data taking keeps running.

12^{12} RUN 3978 start.
Bad pedestal disappeared!

(Oh what a freight train.) Delay curve looked triangular 

. So we decided to widen the gate from 50 to 70 nsec and to let it start 10 nsec before the old time. The counting rate was then the same as in the peak of the delay curve. So we are safe
New dualdial settings of Mu-Conv. Latch Gate Gen: Delay 8,93 Width 9.10.

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

13^{00} Cello calls. New filling at 13^{15}.
13^{15} New filling starts.
14:46 RUN 3979 starts. Beam Current on the screen $I^+ = 0{,}33$ mA, $I^- = 0{,}21$ mA funny?
14:48 Beam lost ID tripped (trigger rate is normal)
16:00 Steffen & Darrell on shift.
16:18 Call Cello to see if they know what the problem is — they just changed shift and don't know any more than we do. Call PKR and ask them. They say that they have a transmitter problem which he believe they have localized to an electronics module which they are now changeing — their current time estimate is ½ hr. They are a little worried that this is not the whole problem.
16:40 We begin to see evidence of injection — the display indicates steadily increasing currents and the oscilloscope trace is no longer a clean straight line — have they really overestimated the time for the repair?
17:09 Run ~~3979~~ 3980 started
17:25 we have many IBM busy messages — call to Tasso to see if they have the same problem — they say not at the moment, but they did earlier in the run
we have total dead time 13%, instantaneous 3.3% event rate 1,2 Hz.
17:45 Instantaneous dead time frequently at 30-50 % + IBM BUSY
18:00 IBM busy messages now very infrequent and apparently not long enough to cause high dead times — instantaneous dead time runs at 3.3% – 3.6% for most of the time.
18:10 call to Tasso about this IBM busy problem — it seems that they now have exactly the same problem as we, with perfect synchronisation — at least on a short sample time.
21:02 Injection complete, up to energy, waiting for switch on HV message.
21:08 Run 3982 started.
21:19 beam lost
22:05 Having started this run ½ minute ago we are now asked to switch off the high voltage.
22:39 New filling complete, Run 3984 started — we hope for a longer run this time!
22:58 IBM problems seem now to have disappeared completely.
23:57 After drawing standard histograms we find a section of the tagging chambers is missing. A look over the wall soon shows a high voltage power supply to have died — we change it and the chambers work again.

4/7/80
0:00 Kawabata & Minowa on shift.
0:15 The cable #42-2 for LG-linear sum is connected again from Run 3985 on. (→ see p. 6)
0:39 Beam lost. ↳ (LG Threshold histograms of RUN 3985 and 3986 seem ok)

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08:00 G. Hughes and Y. Watanabe on-shift
08:15 Stopped run 3988 for refil.
09:52 Start run 3989
10:13 Stop run " beam lost
ON TV screen ~~Lady~~ DAISY ~~Duck~~ Duck says 'Join DESY FEST DURING BREAK.'
No beam until 12:00, Time to play Fupball.
12:10 Nothing on the TV screen.
12:15 Start injecting
12:40 Start accelerating
12:48 Just before we can switch on HV, beam is ~~was~~ lost. start all over.
13.45 17.450 GeV 8.37/7.61 Mamp.
14:00 lead glass energy threshold now 35 mV.
Krehbiel noticed that since run 3963 (2/7/80), the T3 accept is far too small.
A. Ball is being searched for.
14:30 lead glass threshold back to 40 mV.
14.50 Start Run 3990
14.51 Reset in T3 multiplicity scaler from 4 back to nominal 1 position
We note that up until Run # 3962 2/7/80 00:11 T3 Acc./T3 reject was ≥ 5?
From Run # 3963 2/7/80 21:12 onwards T3 Acc/T3 reject was ≤ 5?
This was traced by (HK) to the above multiplicity scaler. Probably left switched to 4 after muon test runs during access on 2/7/80 AB.
14.53 Start Run 3991 with T3 multiplicity reset to 1

Why didn't people (12 when on shift mia then) notice it! ⓐ numbers of T3 Accept ⓑ Trigger Bits ⓒ T3 output — all these should have been noticed!

16.00 Dittman & Nozaki in shift
20.34 New Energy 17.47 GeV run 3996 started.
21.05 JDAS ERROR 000004 (OCT) SUBERROR 00706 (OCT) TASK 7 occurs 6 times
STOP Run ! NO !
The same error message appeared 5 times then disappeared.
21.30 stop the run # 3996

PAGE-FAULT in YIBM, page # 137 ; stop run and restart. OK

23.01 Run 3997 stop R 3998 start
23.15 Muon crate M.Sessy Part 6 Reset → OK

* This strongly indicates that it is more difficult to find problems by just writing down numbers. Anyone can notice sudden change and starts wondering. Can it be done manually or automatically? Also nice to have check lists again.

don't just write the number down*!
once the first shift failed to noticing, it is more difficult to be noticed by the later shifts. The first shift had a problem of μ-ctr HV and thought that T3 rate was somehow related to it. But should have written it, even though runs were too short because PETRA had lots of difficulty to start. Watanabe

DL8 - problem stopped clicking

According to Matsumura, this module sits at rack 13 (counting room) 2nd crate from the top, and 4th right most module. The red light stays on when trouble Watanabe

Try stop and start a new run. If it continues, call experts. (disconnect start pulse according to the instruction manual)

One of the best way is to plot important ratios, then anyone can notice sudden change and starts wondering. Can it be done manually or automatically? Also nice to have check lists again. Watanabe

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

5/7/80

5.7.80 0:00 Watanabe on shift Olsson did not come. He was asleep after 40 hr 'journey'
0.17 New filling HV was off. RUN 3999
0.20 Start RUN 4000 Energy was 17.944 stop RUN DESY Fast Effekt ?
0.48 RUN 4001 started stopped at 2.09
2.19 RUN 4001 started beam lost RUN stopped
3.17 2 HV WRONG stop RUN 4002
3:51 JDAS ERROR 56 Suberror 405 56 = TOF bank wrong length, length = 405
4:19 ID Trip
8:00 Watanabe, Nield on shift
07:31 Muon crate #14 missing reset ok. (Run 4007)
message LG/BP power supply 19. 1.95V should be 1.97. Ignored the message.
08:54 Run 4008 stopped because the beam was quietly lost.
09:14 New filling with New energy 17.46 GeV ready.
Run 4009 started. YPARA error. CR3 no responce. But lights are flickering and wiremap etc are reasonable. Ignore the message - (Just ~~in case~~ to be safe, CR3 reset button was pushed)
Since I decided to write down anything I notice because of the incidence on the left page, I write the following observation, which made me a little nervous
We have been getting rather large number of errors on run sheets at - ERROR - "JETC ILLEGAL ADC VALUE". What are they? and how do they affect data?
(This error is apparently present from the beginning of ~~the~~ with similar frequency, but still nice to know)
09:58 Run 4009 normal end.
10.10 Information from PWA: due to an SEDAC-error (they think) the frequency written out on the TV-screen is wrong (~since 4c this morning). The true value is 499.6650 MHz (and not 499.6499 as on the screen).
10:15 Looking at histograms of run 4009, noticed that LG threshold 3 has a peak at 0 energy. This is since 4009 because the trigger rate of LG>4 was normal before then, and then it jumped.
10:45 Located LG-4 trigger problem to be the same as the one described in p 5 and 6. Pulled out cable 42-2 and asked MINOWA. He suggests to interchange cables at the input of linear sum. It seems to be ok now. This trick may fail again, so "the existance" of this cable 42-2 should be passed on to the next shifts for some time. (The cable goes into module #11, 2nd NIM bin from the bottom, rack #6 in the counting room.) normally ⊓ → ⊔ when bad
10:52 Happened again. No other inputs ~~seem~~ appear to cope with this cable. Pull it out for now, and looked at it, huge pick up of gate ~~from~~ visible. Shaked in the back. Now seems to be OK,

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
10																		11
3996	4.7.80	20:35	21:30	7.6	7.8		3211	5210	895	63	782	3.7	2528	1337	1258	1452	950	680
3997	"	21:32	23:01	6.7	6.8		5360	7852	1394	54	1340	3.5	3638	1873	2147	2293	1189	1170
3998	"	23:07	23:53	5.5	5.6		2991	3940	778	24	753	1.2	1954	819	1099	1179	539	628
3999	5.7.80	0:17	IGNORE															
4000	"	0:20	0:21	IGNORE														
4001	"	1:47	2:09	7.8	7.9		4820	7856	1254	75	1179	5.5	3842	1958	1981	2161	1381	1839
4002	"	2:16	2:16	TOO SHORT														
4003	"	2:38	3:18	8.1	8.2		2342	4088	599	32	561	3.6	2148	1118	898	1153	753	505
4004	"	3:19	4:44	7.3	7.4		4899	7864	1275	56	1219	4.4	3869	1996	1953	2232	1358	1159
4005	"	4:44	5:19	6.0	6.0		1972	2806	513	18	495	1.1	1276	679	716	822	425	466
4006	"	6:27	6:55	7.8	7.9		~~1544~~ 2783	~~3383~~	461	20	381	2.3	1368	689	693	735	538	321
4007	"	7:31	8:50	7.9	8.1		4660	7859	1213	62	1151	5.9	3820	~~887~~ 2014	1921	2134	1350	1060
4008	"	8:50	8:58	6.6	6.8		154	301	40	1.7	38	0.1	116	58	51	88	43	54
4009	"	9:15	9:58	7.3	7.4		2561	7858	667	59.8	607	3.4	2164	1165	1047	1248	~~4016~~ 277	4010
4010	"	9:58	10:29	7.2	7.3		1803 ~~440~~	4429	471	43.9	421	1.7	1282	706	678	786	~~405~~ 376	2115
4011	"	10:29	11:55	6.8	6.7		5130	7861	1335	83	1252	3.2	3200	1743	1946	2214	836	1874
4012	"	11:54	12:36	5.5	5.6		2399	3064	625	19.6	605	1.1	1334	727	935	965	336	462
4013	"	13:05	14:25	8.0	8.2		4702	7858	1224	66.6	1157	5.6	3792	2352	1859	2245	1281	1146
4014	"	14:26	15:21	6.6	6.7		3309 ~~8~~	5704	861	57.4	804	2.2	2378	1276	1292	1463	833	796
4015	"	15:25	15:42	5.8	5.9		1004	1444	261	20.1	241	0.5	685	~~358~~ 335	358	448	206	235
4016	6.7.80	00:19	01:31	7.0	7.0		4344	6785	1129	53.7	1075	4.4	3163	1892	1738	1910	1011	901
4017	"	01:31	02:22	5.8	5.7		~~3072~~	4334	798	3.9	766	1.8	1982	1116	1175	1324	611	615
4018	"	03:10	04:12	7.1	7.0		3716	6286	967	48.8	918	4.7	2928	1938	1545	1672	1085	788
4019	"	05:11	06:23	8.68	8.64		4185	7860	1087	58	1029	6.8	3852	2376	1784	2133	1387	987
4020	"	06:23	06:39	7.26	7.28		810	1378	210	9.5	200	0.8	630	397	340	370	226	194
4021		07:16	8:36	7.4	7.5		4837	7856	1257	58	1199	4.5	3725	2190	1891	2225	1325	1079
4022																		
4023	"	8:50	10:29	6.2	6.2		5988	7861	1506	57	1449	2.7	3411	1937	2177	2318	1055	1225
4024	"	10:29	10:38	5.2	5.2		538	879	140	5.2	135	0.2	290	153	219	200	87	289
4025	"	11:21	11:50	8.2	8.2		1709	7623	444	160	284	1.4	1014	604	455	597	316	581
4026	"	11:51	12:11	7.7	7.6		1194	4777	310	89	222	0.9	737	397	370	399	288	342
4027	"	12:12	13:28	7.3	7.3		4542	7856	1182	86	1096	3.2	3609	1935	1761	~~1961~~ 1975	~~1~~ 1461	1453
4028	"	13:28	14:42	6.2	6.2		4345	6411	1130	83.6	1047	1.9	~~1564~~ 1395	~~1936~~ 1584	1936	1829	1111	993
4029	"	15:12	16.26	7.8	7.9		4420	7853	1150	74.7	1075	3.9	3895	1872	1781	1983	1782	1076

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L}$ dt Run	$\int \mathcal{L}$ dt	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]
T1 LUMI	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L}$ RUN nb^{-1}	$\int \mathcal{L}$ Energy nb^{-1}	IBM/ TAPE	BP	BHABHAS	MULTI-HADRONS	EBEAM	FREQ	
562	1.22	3.93	3.93	IBM	1.5	56	1	17.47	499.6650 MHz	NEW ENERGY page-fault in YIBM
722	0.95	5.07	9.00	"	1.4	69	0	"	"	
307	.72	2.17	11.17	"	"	27	1	"	"	
										NO HV
										Energy was 17.946 but too few events
849	1.25	6.41	17.18	IBM	1.6	77	1	"	499.6650	
										beam lost
459	1.38	3.19	20.37	IBM	1.7	32	2	"	"	
759	1.09	5.35	25.72	"	1.6	76	3	"	"	
243	0.87	1.71	27.43	"	1.3	18	1	"	"	beam lost
320	1.45	2.23	29.66	"	1.7	37	0	"	499.6488 *	beam lost * : 499.6650 was the true frequency (see p.9)
870	1.33	6.21	35.87	"	1.7	~~80~~ 84	~~2~~ 3	"	*	
27	1.02	0.16	36.03	"	1.6	476 4	1 0	"	*	beam lost quietly
494	1.39	3.55	3.55	"	1.7	56	1	17.46	499.6499 *	~~beam lost quietly~~
291	1.13	2.05	5.60	"	1.6	32	2	"	499.6650	stopped beam & problems with LG ~~not stable~~ linear sum
678	0.94	4.83	10.43	"	1.5	72	3	"	"	~~T~~ linear sum LG #42-2 disconnected
251	0.74	1.77	12.20	"	1.2	18	0	"	"	beam off for ~~supp~~ refill.
863	1.29	6.09	18.29	"	1.7	102	2	"	"	
518	1.09	3.62	21.91	"	1.4	54	0	"	"	ID trip.
127	0.92	0.92	22.83	"	1.2	14	0	"	"	beam lost
775	1.25	5.41	28.24	"	1.4	76	1	"	"	stopped because of IBM exc. 56
446	1.02	3.13	31.37	"	1.3	39	9 0	"	"	Beam lost. -48596
807	1.54	5.73	5.73	"	1.4	87	2	17.450	499.6650	beam lost, Cello got 5.8 nb^{-1}
990	1.66	6.93	12.66	"	1.5	109	0	"	"	
167	1.44	1.16	13.82	"	1.5	20	1	"	"	beam lost
982	1.44	6.95	20.77	"	1.4	103	2	"	"	
838	1.02	5.91	26.68	"	1.2	81	3	"	"	
62	0.77	0.42	27.10	"	"	2	0 /8	"	"	beam bumped
284	1.16	~~1.87~~ 1.99	"	1.7	16	2	17440	"		LG th wrong
192	1.15	~~1.76~~ 1.37	3.36	"	1.5	19	0	"	"	
821	1.28	5.79	9.15	"	1.3	179	1	"	"	
588	0.98	4.25	13.40	"	1.2	59	1	"	"	beam dumped
855	1.37	6.05	19.45	"		59	2	"	"	

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2 TOF LG>1 $\geq$1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

57.80

11:00 reconnected the cable, and watched the event rate. Pulling out this cable corresponds to ignoring 16 LG counters, half of the raw in Z direction. Since all most all of the Bhabha events can be picked up by one cluster alone this does not effect Bhabha or $\gamma\gamma$. For multi-hadrons, the spread of tracks and jet structure probably assures LG>1GeV bit to fire. thus $\geq$2TOF·LG>1GeV probably picks up most of them. Because the problem is intermitten, and happens rather frequently, I decided to pull the cable out semi-permanently until it is fixed.
(Note this only affects the trigger, and ADC values are all ok)
→ Totsuka suggest to replace the bad chip of the module, which can only be done when there is enough beam-off time.

11:20 rather frequent IBM Busy.

11:55 Run 4011 normal end. Stand. histograms visually inspected.

12:36 Run 4012 ended for refill.

13:05 New fill is ready. Start run 4013.
LG linear sum output stable at 35mV. Change the thresholds to on the scope, but leave it out for now.
Cable 42-2 is also stable (misbehaving again at 14:30)

14:10 LG linear sum output moved down to 30mV. adjusted thresholds to corresponding values.

14:25 Run 4013 quietly and normally ended. Had some noisy ADC's.

14:30 LG output further down to 25mV. What's changing? adjust thresholds accordingly.
LG hit map looks reasonable.

14:48 LG output back to 30mV. adjusted thresholds.
Rather large number of noisy counters on the display. But I suggest to continue data taking a case like this, unless the quadrupole is tripped, because if run is started again one may cure the noisy counters, but spinning block analysis does not work well because of too little statistics. The pulse heights of them are usually just above the threshold (5 counts or 33MeV), and rather safe to apply above analysis.

15:08 LG output further up to 35mV. adjusted thresholds.

15:20 ID trip. beam still there. (anode current)
decide to end run. enough statistics to do spinning block analysis.

15:25 Start 4015.

15:41 ID trip. beam lost. end run.
LG output back to normal 40mV. adjust thresholds.

15:55 Koch phoned. PKR (and the other experiments) were want to increase the currents. They will start the next fill with 9mA, and if it works increase later to 10mA. We agree.

16:00 O'Neil and Weber on shift.

17:35 Still no beam. PKR says there was failure of a quadrupole power supply at about ~15.45 that caused the beam loss. Power supply repaired but they do not succeed in storing beams.

~20.00 PKR found rope in beam pipe preventing injection. After this problem was solved, machine was so badly deformed, that there were still injection problems (found Piotrowski at IBM to help them)

21.25 Magnet flops.

22.15 Beams at last. We cannot go. No magnet.

22.19 Bad fill. Have to reinject. So we haven't really missed anything.
K-people find 10 power-fuses in power-house have blown. Are in the process of changing them.

23.42 New fill, cannot use it because of magnet-supply-trouble.

00.14 Fuses changed, magnet-supply seems to work again: Set at 7500A.
Runstarted at 00.17.
Note: There are no more spare fuses of the above type. (R. Marshall promised to look for fuses when going to the U.K. next week.) Please call Pellat in case K-people do find that the same incident occurs again!

6.7.80

00.00 HUGHES HEINZELMAN. JULY 6th. SUNDAY

01:30 Run 4016 stopped as a precaution after "JBAS ERROR 56" — Tof Bank too long.

01:31 Run 4017 started.

02:22 Beam lost.; ID trips; End Run 4017 one JBAS 56 error.

03:10 Run 4018 started.

04:01 Another JBAS 56 error light 405 (oct) Task 1

06:29 μ-crate 4 missing

8:00 Stephens & Sato on shift

8:40 ID HV spark cell 7 in Ring 1 → reset

10:25 CELLO want to shift the beam at 10:30 to go to new energy, because of all other exp. reached $\int \mathcal{L}\,dt = 30\,nb^{-1}$, so we agreed.

11.20 New Energy 17640
Start Run 4025
LG threshold is wrong again as in Run 4011 we pull off cable 42-2 (see p9 ~~10:45~~ 7/15 : 10:45);
Runs 4025, 4026 are affected by above wrong threshold.

13:45 ~~LG output set to 35mV~~. LG output 35mV thresholds reset

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

14 6.7.80

13:30 LG output 30 mV this adjusted.

ID-Wiremaps: Segment 24 in Ring 2 and Ring 3 are weak. T_2 looks normal. Please watch! Rinaburg

Run 4028 (around event 2000): Now is ~~looks~~ seems Ref in Ring 1 and 2 segment 23 and 24 are low.

14^{04} Discovered that a V_{34} power supply has died: V_{34} (affected:) 23 Ring 1, 24 Ring 1, 23 Ring 2, 24 Ring 2 (power supply was still good at 13^{35})

14^{17} Power supply is now replaced. We are at event ~4600 in Run 4028. Was this the whole problem? Rbg or in Run 4029

14:35 LG/TAG HV wrong ignored.

15:50 LG output 40 mV ~~Ref~~ Thresholds were adjusted.

16.00 O'Neill + McCann on shift.

17.03 "MUON CRATE MISSING, FAULTY PART 12" FLASHES UP, GOES AWAY. Zweimal — IT'S OK, RUN SUMMARY SHOWS IT'S ONLY 2 EVENTS OUT OF ~8000.

18.38 We've had a few 'IBM Busy' signals. First had one of 40 seconds duration — by far the longest.

18.45 Cello phone and ask if we want to change energy. We have 27.2 nb^{-1} — but everyone else is ~30–33 nb^{-1}! Also, the present fill has been used for ~4 hours and none of the others wants to refill at this energy. So we have to agree to a change of energy in next fill (15 mins.).

19.01 STOP Run 4031 for a new filling.

23.00 Teletype rouses me from my ruminations. Tagging HV off 11 volts. Acknowledge, continue.

23.30 Cello calls. They wanna refill at 23.30.

15

7/7/80

00:00 P. Murphy and Y. Watanabe on shift

00:29 New filling ready. Start run 4036.

02:00 IBM link down. TASSO also. Decided to write ~~mate~~ on tape. (F11094)

02:08 Run 4038 started on F11094. (No run summary for run 4037)
"IBM PROBLEM OCT 53" appears, and then "IBM ONLINE COMPUTER UP" several times.

02:35 Now "IBM seems to stay up but continue writing onto F11094.

03:31 Run 4039 to IBM.

04:40 Stop run 4039 for new filling.

06:00 Still no beam. Announcement. They have transmitter problem. No beam for ≥ 1 hr.
Decide to turn down the solenoid current to 0. Kompensator are left on.
Histograms look OK for the runs 4039.

07:54 Beams are being injected. Turn on solenoid to 2500 A → later turned down to 0 again.

8.00 Olsen, Heuer on shift

9.30 Petra lost beams during accelerator at ~16 GeV → repair needs ~2 days
Reason: # 1 transmitter the HV connection below up and with the remaining transmitters it seems not possible to reach 17 GeV. Mr. Koch (exp. coord.) and Mr. Klumpfert are now discussing if one should continue running at lower energies or take the 2 days transmitte maintenance now, which are scheduled for next week.

10^{15} Decided to repair the transmitters now and to have no maintenance next week. The repair will be during day time today and tomorrow — no team then. PETRA will run from $\sim 18^{00}$ till tomorrow morning at a lower energy (exact value to be decided).
Magnet and compensating magnets turned down to ~0 and 50 A, respectively

16^{00} HUGHES KLEIN.

17^{29} PKR request Freigabe — temporarily removed whilst Heuer worked on 15 HV system. Freigabe given.

18^{15} Koch: Petra situation report: Transmitters now repaired, possible again to run at high energy
Synchrotron has Power supply problems ≤ 2 hours to fix. — Then normal running resumes
Tues 8-7-80 normal running
Tues 15-7-80 Maintenance on R.f transmitters

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4	T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]
16																												17
4030	6.7.80	16.26	17.59	6.5	6.7		5480	7858	1426	59.9	1366	3.0	3680	1950	2067	2353	1190	1146	779	1.01	5.55	25.00	IBM	1.6	58	2	17.440	499.665	
4031	"	17.59	M-02	5.4	5.5		3712	4787	966	51.3	915	1.35	2110	1059	1431	1429	656	728	404	0.76	2.82	27.82	"	1.4	38	0	17.440	499.665	
4032	"	19.34	20.39	9.4	9.4		3808	7857	991	71.5	920	6.0	4062	2285	1592	1928	1671	971	974	1.80	6.84	6.84	"	1.8	84	4	17.430	499.665	New Filling. New Energy
4033	"	20.39	21.53	7.9	7.9		4381	7862	1140	53.9	1086	3.9	3864	2107	1778	2061	1489	1084	891	1.44	6.31	13.15	"	1.8	99	2	"		
4034	"	21.53	23.25	6.5	6.6		5424	7860	1411	91.4	1320	2.7	3683	1939	1992	2242	1301	1145	831	1.08	5.84	18.99	"	1.2	64	2	"		
4035	"	23.25	23.32	5.5	5.5		384	515	99.7	3.2	96.5	0.2	218	118	150	133	79	85	49	0.85	0.33	19.32	"		3	0	"		
4036	7.7.80	00.29	01.33	9.2	9.6		3778	7860	981	57.8	924	6.3	4016	2366	1645	2054	1574	954	993	1.85	6.99	26.31	"	1.8	89	5	"		New fill
4037	"	01.33	02.08	No run summary available			3099														~2.00?	~28.31	"	1.6					IBM down
4038	"	02.08	03.30	6.3	6.5		4877	7860	1269	52.0	1217	3.6	3719	2046	1888	2126	1428	1139	879	1.26	6.17	34.48	Tape F11094	1.2	96	1	"	"	Tape
4039	"	03.31	04.41	5.9	6.1		4211	5794	1095	37.0	1058	1.89	2623	1367	1651	1744	799	784	604	1.01	4.25	38.73	IBM	1.1	45	4			Beams dumped
4040	Pulse left																												
4041	Pulse rems ID																												
4042					8.7.80																		Tape						
4044	9.7.80	BEAMS ID	LOST		BEFORE		PEDESTAL		TESTS		WERE		COMPLETE.																JNJECTION AT 7,050 GeV
4045	9.7.80	21.45	22.26	9.5	9.2		2374	7847	617.6	116.9	500.7	14.6	4577	6883	1318	2082	1825		444	1.26	3.0	3.00	IBM	2.8	45	2	17.420		NEW ENERGY. (BinGO) high
4046	"	22.25	23.11	7.59	7.91		2355	7261	612.7	144.4	461.2	10.2	4402	6040	1114	1874	1987	993	338	0.99	2.34	5.34	"	2.2	28	2	"		Beams lost background
4047	"	23.42	0.03	8.05	8.18		1236	3091	321	30	285	5.2	1729	1943	630	870	729	380	225	1.27	1.57	6.91	"	2.3	18	1	"		Beams lost
4048	10.7.80	0.42	0.47	8.9	9.0		88	147			too	few	events							0.73	0.06	6.37	"	3.0	1	0	"	499.665	new fill beams lost after 2 minutes
4049	"	1.27	2.21	8.3	9.1	$10 \cdot 10^{-9}$ (!)	3217	7849	837.8	85.0	752	16.5	4339	4866	1646	2158	1746	945	581	1.25	4.02	10.93	"	2.3	51	2	"	"	new fill
4050	"	2.21	2.29	7.7	7.8		432	829	112	13.7	90	1.4	441	511	191	252	155	109	57	0.89	0.38	11.37	"	2.0	5	0	"	"	beam lost / 10 mean anode currents ≈ 1.8 μA at run
4051	"	3.18	4.16	8.4	8.5		3438	7854	895	107.1	788	14.3	4160	4644	1724	2208	1628	1054	600	1.21	4.15	15.52	"	2.1	64	2	"	"	new fill
4052	"	4.16	5.25	7.3	7.4		4019	7856	1046	79.9	966	9.8	4005	4297	1770	2267	1533	1236	535	0.93	3.74	19.26	"	1.9	45	3	"	"	
4053	"	5.24	6.56	6.3	6.4		5419	7861	1409	100.6	1309	5.5	3688	3056	2071	2443	1135	1303	615	0.79	4.27	23.53	"	1.6	71	0	"	"	
4054	"	6.57	7.07	5.2	5.3		588	820	153	5.2	148	0.3	368	204	226	254	96	148	55	0.68	0.40	23.93	"	≈1.5	7	0	"	"	beam dumped
4055	"	7.08	8.28	8.7	9.0		1633	3322	425	26.5	395	4.1	1711	1498	739	924	640	424	321	1.37	2.23	26.16	"	?	30	0	"	"	beam lost
4056	"	8.57	9.48	10.2	10.1		2988 6311	6314	777.8	85.9	692	8.8	2374	2747	1299	1752	1204	842	644	1.47	4.39	30.55	"	2.3	59	0	"	"	New fill, Trip Cue for beam loss
4057	"	12.26	13.04	8.9	8.3		1567	1995	407.6	18.4	389	2.4	914	518	668	1245 1166	194	240	77	?	?		"	4.5	6	1	"	"	New fill Trip Cue for beam loss
4058	"	13.51	14.29	7.1	6.9		2244	3439	584.2	36.1	547	2.1	1539	981	858	960	520	498	373	not plotted			"	1.1	34	2	"	"	" " " " "
4059	"	14.29	16.11	7.1	6.9		5785	7856	1505	167	1338	3.3	3614	2169	2054	2414	1054	1274	705	.84	4.87		"		55	2	"	"	I D trip at 14.50 pause restart
4060	"	16.19	16.28	5.8	5.6		899	1196	234	142	220	0.42	517	327	336	359	162	206	102	.79	.71	(3832) ~39	"	1.1.	14 655	1/18	"	"	PETRA trips because of lightning
4061	"	23.47	23.57	8.2	8.5		596	1487	155	129	25.9	0.48	1066	372	53	93	668	136	23	0.19	0.11	0.11	IBM	3.0	2	0	17.410	499.6650	crazy rates, high deadtime 93%
4062	"	23.57	0.35	8.16	8.52		2238	3617	582	49.6	532	2.99	1839	1211	880	1009	700	438	309	0.96	2.14	2.25	"	~2	26	1	"	"	
4063	11.7.80	0.51	2.08	6.9	6.6		4537	6523	1180	120	1060	3.55	3025	2069	1679	1891	1061	975	579	0.88	3.99	3.996.24	"	1.5	56	2	"	"	
4064	"	2.09	3.42	5.80	5.60		5517	7855	1436	95.9	1340	4.06	3628	2395	2115	2327	1289	1269	584	0.74	4.11	10.35	"	1.2	46	0	"	"	

first data after > 2½ days

10 anode current partly wrong (see page 20)

ID anode current partly wrong (see page 20)

wrong E_b typed in

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG >4

8/7/80

00:00 Stephens and Watanabe on shift.

02.00 P.K.R. say at least 0700 before beam !!!

04:30 Message. Restart 8:00 AM.

07.00 " " 12.00 ! ! ! !

8[00] Riesberg, Warming on shift

9:30 Message : Restart 3:00 p.m.

10:30 message : Bildstörung

12:45 status report from PKR: An underground cable of the Synchrotron burnt. They are digging it out and will try to isolate it. Optimistic prognosis : Restart between 3 and 6 p.m.

16[00] Kinoshita, Kawabata on shift.

16[30] Message : Restart 7 p.m.

DL 8 repair : DL8 # 21 , wire # 174 repaired

DL8 # 137 , wires # 1096 - 1103 , unit exchanged because it was "banging" several times during Run 3366 and Run 3396

18:00 cannot get at histograms for old runs. No matter which of the listed old runs we select, we get 'error -120 for hist xx' / 'old run not found xx'. Why? AB/FKH

19[45] problem in LG linear sum may have been fixed. Cable 42-2 connected from Run 4044 on.
M. Minowa

97.80 0.00 Warasko & Pearce on shift. Doesn't matter really as Petra is still down.
Screen says till 2 am.

3:00 Petra is actually injecting again after v48 hours.
Switch on magnets.

4.00 Nothing happening any more

5.15 Petra claims they are injecting, but not very successfully yet.

8:00 Haidt and Takeda on shift, but no beam at all.

11:45 Cello calls. "New energy is 17.42 GeV".
But still no beam.

12:35 Forward Muon Counters: wiring between discriminators and latch unit replaced.
Please check the trigger rate, to confirm that they still work as before.
from FWD μ-counters

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

9/7/80

1600 HRS. DUERDOTH & HEDECOCK Plenty of snow on monitor but no beam, as yet.

19[25] HRS attempted to start run 4044 but beams were lost almost immediately after the detector had been switched on.

9[45] luminosity again. Background a bit high. ~~17.42~~ 17.420 GeV 44 204 ↑ ID anode current partly wrong.

22[30] I.D. TRIPPED. Anode current 40.9 - 54.

23[00] I D TRIPPED. Anode current

23[11] BEAMS LOST - NOTHING TRIPPED.
We often get IBM BUSY Red flashes.

00[01] Beams lost again - end of run.
STEFFEN & DRUMM HERE. (Hence loss of beams).

10.7.1980

0[00] Steffen, Drumm and Zenner on shift.
In the last two hills; the T_3 reject / T_3 accept was ~ 5:1 ; and was due to the high T2 postpone due to the dirty beam conditions. I have checked that the T_3 trigger is OK. I.P.D.

0[41] beams again back

0[44] " lost again

1[50] since today the injection DESY → PETRA takes place at 7.050 GeV because of better energy adaption between the two machines (after the breakdown the DESY energy definition seems to have shifted a bit and the adaption is easier at the PETRA side).

2[00] We have quite often IBM busy.
The background is not low. The anode currents in the ID are in average ≈ 1.8 μA

2[28] beams lost, ID trip

3[05] beams again ready. but our background is too high : BP ≈ 4.0
PKR makes some orbit corrections, Q-value corrections a.s.o. ⇒ BP ≈ 2.1 (old value 1.6 - 1.7 of 3 days ago will only be reached in course of time)

3[18] We start run 4051.
Very often IBM busy, ~~7 - 10~~ (≈ 5% dead time due to IBM). IBM says: everything normal, maybe too much noise.
At begin of run 4051 there was on the teletype the message: YPARA Error in Muon system, nothing on coloured screen.
CR = 3 no response
We saw nothing wrong, so we ignored the message. Next run (4052) : no message. What does it mean? Which reaction?

8[00] But was calm running.

8[01] O'Neill, Weber on shift

2[02] Drumm notes that "no-beam, run-stop" cable was not plugged in trigger-box all night. Call Krehbiel, he wants it plugged in, so we do it. He confirms that "set-chambre-HV off" cables should not be plugged in trigger box, since this command is now part of the new control box

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

10.00 Run 4045 – (or 4056) 4055 anode currents ID Sector 17-20 interchanged with sector 21-24.

13.15 Print-out for Run 4057 has ~~IL and AL~~ IL=0 and AL=0. It is not clear whether this is due to a defect or due the the Tagging system not being turned on. Have to check it at beginning of next run. Also: T1, 2≥TOFLG>1 is too low, as well as T1 LUMI ⇒ Check LG-thresholds next run.

13:17 Change ~~(temporary)~~ in Forward Muon Counters: 'Common Stop' mode for TDC's & ADC gate widened to 120 ns (originally 70 ns)

13.50 New fill with weak currents now available. ★ No luminosity last run! (on run summary). Adjust LG thresholds (slightly). We set them for an offset of 38 mV. (They were at the values for 40 mV) Wrieckt and Hughes came to check Tagging system. Claim everything is o.k. (with hardware, conclude it must be the Nord-programme. We try to get Cords, Dittmann or Eichler, but cannot reach them by phone. Hughes promises to send Dittmann.

14.25 Wrieckt called after asking Dittmann: Energy ~~setting~~ wrongly typed in: 17.420 instead of 17.420! Stopped run 4058, correct E-~~setting~~, start new run 4059. Now IL and AL ≠ 0.

16.00 ~~Komaniya~~ / Pearce

16.25 ⚡ Lightning flash trips Petra. Run 4060 stopped. Next run at new energy.

17.45 PKR now that they will be off until at least 10 pm. — ~~SWITCH~~ RUN DOWN MAGNET CURRENT.

22.00 PKR start trying to inject.

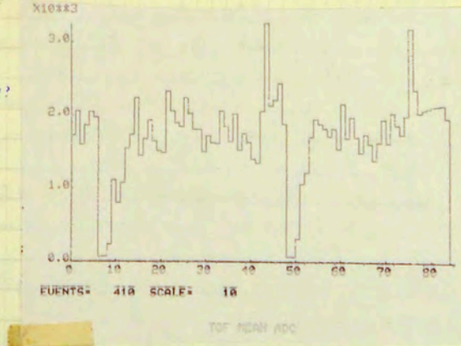
23.45 new beam is ready. Run 4061 started.
B.P. current is high ~ 4.5

11.7.80

0.00 P. Dittmann and H. Rieseberg on shift.
Run 4062 in Progress
(Run 4061 (short) was stopped before by the pre-shift because of LG-problems → crazy rates)

0.50 Run 4062 stopped. Found the 2nd TOF ADC almost dead. Exchanged with spare. OK now. Last standard histograms from Run 4052 show ADC still ok.

Frequent 'IBM BUSY's lead to ~ 15% dead time.



(hysteresis a new run)

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

2.07 Run 4063 has to be stopped because of ERROR 13 in 34323, PAGE FAULT FOR NON-DEMAND, PAGE NO 137. (IBM).

2.50 JDAS ERROR 56 (TOF-barrel wrong length) SUBERROR 405

3.42 Run 4065 started.

4.24 Stops for refilling

4.55 Run 4066 started

5.02 Power failure. Beams lost. Also 2 short power interruptions in the control house and on the Racksaal.
Reload N10

During the preceding runs we observed several events with ID-hits at z=0 ($A_L = A_R = 0$ ns). We have no explanation for this. The relative timing between DLS start and close is correct.

6.28 New fill is ready. Start Run 4067
$\mathcal{L} = 1.6 \times 10^{30}$. IBM jams are less frequent now. Good filling with long lifetime already in the beginning

7.30 Run 4068 started

8:00 Haidt & Sato on shift
Run 4068 cont.

8:28 Run 4068 stopped due to IBM link [redacted] failure.
Interlock problem

9:30 Beam lost Tagging LG hit map is slightly funny. ⇒ OK

11.45 I have increased the voltage on 9 of 10 of the forward muon counters to see if there is any significant change of counts on this counter. CH1.
2600 → 2650 according to error message

15:20 Beam dumped.

16:00 Stephens and Watanabe on shift

16:05 New fill new energy (17.400) ready, but PKR request to turn off HV just before we could switch on.
Beam was then dumped.

16:44 New fill 17.4 GeV ready. Run 4073 started.
LG threshold 40 mV.

18:49 New run 4074. Std. Histograms of 4073 look reasonable including FWP counter TDC.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2 TOF LG$>$1 $\geq$1 TR	T1 LG$>$4
4065	11.7	3.42	4.26	4.99	4.71		2501	3250	651	34.6	616	1.39	1453	985	927	1005	437	564
4066	"	4.56	~~5.44~~ 5.02	8.44	8.18		~~352~~	748	92	5.7	86	20% acc + 856 K (T_{2ng})	391	325	152			105
4067	"	6.28		8.73	8.80		3693	7852	960	~~337~~ 63	897	8.89	4040	3274	1662	2005	1652	1018
4068	"	7.30	8:25	7.42	7.23		3247	6074	844	44	800	5.2	2955	2523	1320	1598	1223	974
4069	"	8:31	9:32	6.6	6.3		3237	5226	842	38.8	804	3.2	2388	1750	1319	1456	872	877
4070	"	11:52	12:57	9.7	9.8		3840	7857	999	155	844	11	4012	3450	1584	1945	1659	966
4071	"	12:58	14:22	8.0	8.0		4973	7862	1294	280	1013	~~17.7~~	~~3370~~ 3379	1723	2136	1407	1792
4072	"	14:23	15:19	6.6	6.5		3311	4442	861	185	676	3.1	~~3737~~ 2029	~~1750~~ 1053	1246	~~2709~~	749
4073	"	16.44	17:49	9.29	9.32		3842	7849	1000	166	834	10.3	4076	3685	1559	1969	1583	922
4074	"	17:49	18:58	7.75	7.74		4131	7858	1075	111	963	7.7	3758	3547	1661	1973	1576	1223
4075	"	18:58	20.25	6.5	6.5		4909	7858	1278	110	1167	6.1	3583	3265	1844	2048	1438	1369
4076	"	20.21	20:48	5.50	5.50		1608	2481	418	24	394	1.6	1103	931	653	669	425	419
4077	"	21.38	22.30	9.69	9.74		~~3780~~ 3122	7852	810	97.9	712	11.8	4258	3800	1394	1824	1956	1000
4078	"	22.30	23:34	8.29	8.16		3780	7860	984	94.6	889	9.8	3875	3857	1632	1910	1691	1177
4079	"	23.34	0:46	7.10	6.82		4297	7857	1117	62.3	1056	6.8	3736	3357	1743	2070	1538	1268
4080	12.7	0.48	1:53	6.00	5.78		6533	6414	1003	44.8	958	4.05	2925	2409	1541	1809	1063	1002
4081	"	2.29	03:24	9.70	9.78		3255	7848	847	110	737	11.6	4210	3919	1403	1866	1821	975
4082	"	03:24	04:30	8.27	8.32		3900	7860	1014	88.6	926	7.58	3875	3506	1627	1953	1693	1156
4083	"	04:30	05:29	6.96	7.00		4681	7860	1218	78.8	1139	4.49	3741	2564	1880	2075	1515	1178
4084	"	05:29	06:25	5.86	5.82		3301	5075	859	34.0	825	2.27	2325	1519	1319	1399	907	809
4085	"	07:36	08 26	9.87	9.46		2989	7851	778	90.6	687	10	4245	4058	1339	1824	1982	1074
4086	"	08 27	09 38	8.16	7.64		4218	7858	1098	64.2	1033	6.2	3808	3070	1745	2133	1418	1131
4087	"	09 39	10 39	6.74	6.35		3558	5655	926	40.2	886	3.2	2570	1863	1413	1565	948	899
4088	"	11 43	12 43	9.66	9.77		3581	7850	931	81.4	850	9.14	4053	3103	1550	1922	1754	1065
4089	"	12 44	13 43	7.85	7.95		3513	7858	914	58.1	856	4.93	3224	2553	1404	1668	1314	2184
4090	"	13 43	15 01	6.7	6.8		4655	7859	1211	65.9	1146	3.95	3690	2485	1870	2024	1585	1220
4091	"	15 02	15 17	5.63	5.69		851	1320	221	10.8	210	0.54	635	382	335	376	252	201
4092	"	15 49	16 48	9.70	9.78		3516	7855	915	133.6	782	8.75	4317	3051	1458	1882	2001	950
4093		16 49	17 56	8.12	8.18		3989	7860	1038	72.0	966	6.27	3824	3114	1642	1947	1644	1192
4094	"	17 57	18 12	6.70	6.80		861	1576	224	11.2	213	0.94	738	554	339	423	270	248
4095	"	18 49	19 48	9.5	9.6		3500	7851	910	62.8	878	8.20	4116	3153	1535	1948	1745	1024
4096	"	19 49	20 56	8.0	8.1		4034	7859	1049	74.5	975	5.27	3968	2832	1620	2016	1746	1153
4097	"	20 58	21 52	6.64	6.71		3242	5320	844	70.5	773	2.74	2589	1810	1167	1396	1155	838
4098	"	22 31	23 23	9.5	9.6		3098	7859	806	69.5	736	7.77	4473	2759	1360	1730	2384	982

T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ RUN	$\int \mathcal{L} dt$ EXP.	IBM / TAPE	BP [V]	BHABHA	MULTI-HADRON	BEAM ENERGY E_B(GeV)	FREQUENCY (kHz)	23
215	0.59	1.47	11.82	IBM	1.2	18	0	17.410	499.6650	New fill
72	1.40	0.49	12.31	"	2.0	(calim.6)		"	"	Beam loss due to power failure. Numbers from Koshiba's Trigger-box and Color TV
730	1.37	5.06	17.37	"	2.1	67	3	"		
515	1.09	3.53	20.90	"	1.8	49	1	"	"	stoped due to IBM BUSY
421	0.91	2.93	23.83	"	1.1	40	1			Beam loss ★
836	1.54	5.91	29.74	"	2.0	70	1	"	"	New fill
790	1.06	5.29	35.03	"	1.8	83	2	"	"	
364	0.77	2.54	37.57	"	1.4	50	0 11	"		
788	1.43	5.48	5.48	"	1.8	88	3	17.400	"	New Fill ' New Energy
737	1.25	5.16	10.64	"	1.6	67	4	"	"	
636	0.90	4.43	15.07	"	1.3	59	2	"	"	
193	0.84	1.35	16.42	"	1.2	20	0	"	"	
700	1.55	4.84	21.26	"	2.0	69	3	"	"	New fill
711	1.30	4.92	26.18	"	1.9	58	0	"	"	
781	1.26	5.40	31.58	"	1.4	88	2	"	"	
682	1.21	4.65	36.23	"	1.2	52	3 12	"	"	
732	1.55	5.06	5.06	"	2.0	72	2	17.390	"	New fill, New Energy
809	1.43	5.58	10.64	"	1.7	95	1	"	"	
776	1.14	5.32	15.96	"	1.5	78	1	"	"	
447	0.92	3.02	18.98	"	1.1	43	0	"	"	
662	1.55	4.63	23.61	"	2.1	64	4	"	"	New Fill, [redacted]
838	1.37	5.79	29.40	"	1.8	94	0	"	"	
548	1.06	3.77	33.17	"	1.4	59	2 10	"		BEAMS DUMPED FOR FILL AT NEW ENERGY
837	1.63	5.83	5.83	"	2.0	100	2	17.380		NEW FILL NEW ENERGY.
750	1.47	5.17	11.00	"	1.6	64	1	"		
772	1.14	5.31	16.31	"	1.4	82	4	"		
117	0.92	0.78	17.09	"	1.1	7	0	"		BEAMS DUMPED FOR NEW FILLING.
788	1.55	5.46	22.55	"	2.0	80	2	"		NEW FILL.
860	1.49	5.96	28.51	"	1.8	73	3	"		
174	1.36	1.17	29.68	"	1.6	24	0 12	"		
814	1.59	5.58	5.58	"	2.3	84	1	17.370	"	NEW FILL NEW ENERGY
831	1.43	5.76	11.34	"	1.9	74	3	"	"	
494	1.05	3.40	14.74	"	1.5	40	1	"	"	
712	1.59	4.93	19.67	"	2.0	68	2	~~17.~~ "	"	New fill

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

20.00 CELCO say they have had severe background problems for the last two days. They wish to do ½ hr run with e⁺s followed by ½ hr e^- when an expert arrives. He say ~ 24.00

21:15 Consulted Mr. Felst about the above proposal. He phoned around and concludes that it is rather "unfounded" proposal. The situation, according to him, is as follows.
Cello: trigger expert comes in around midnight, who proposes this study.
PKR: No expert available after midnight.
Single beam study probably does not reveal anything, because of so much different condition (different tune shift etc.)
~~Concludes the~~
He suggests to us that we should be reluctant in accepting their proposal.

21:44 FWD MUON COUNTERS: trigger rate seems almost twice the previous normal and ~80% of trigger from the FWD μ counters included one particular counter (+x, +z, nearest to beam pipe: 7, 8 for 9/10) Suspired to discover that phototubes 8+9 have had their volts increased this afternoon (the error messages indicate this) because the 12:15 change was supposed to be for tubes 9 and 10.
ACTION: tube 8 reset to normal volts (2600V), tube 10 NOT altered at this time C.B.

22:26 FWD MUON COUNTERS: dip in MEAN TDC's & MEAN ADC's has reappeared in channels 9+10 but hit map for 9 is still abnormally high. Reduced channel 9 to normal(?) ie 2600 V

23:33 Dip is still there. Channel 9 hits are smaller in proportional but still too large.
New dip appeared for channels 25+26 in MEAN TDC's + ADC's.
Average singles rates ~ 50Hz

Singles rates	channel	singles rate
for dips:	9	145 Hz
"	26	9 Hz
'Good' counter	3	117 Hz

Is the MEAN TDC problem related to the change made the previous day to COMMON STOP for TDC's?

12.7.80

0.00 Ball + Yen on shift
Run 4079 in progress

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

12 JULY 80

0.50 Cello want to change new ~~fill~~ beam energy at the new filling.

1.53 Stop for refilling. Cello have ~ 30 nb^{-1} at 17.4 GeV. We have 36.2 nb^{-1}.
The gould plotter runs out of paper at the critical moments while printing histograms for run 4080. Surprisingly, for this time of morning, we manage to successfully reload it with paper!
From histograms: 1) HG hit map shows barrel I abnormally noisy
2) The dips in the forward μ counter TDC spectrum are in channels 9/10, 25/26. These are the counters nearest the beam on the +x side at each end. I suggest they are being hits by junk from dirty beam before the beam cross ~~as~~ occurs — hence low TDC value. [Doesn't explain low singles counts]

02.29 Start run 4081 at energy 17.390 GeV. BP ~ 2.0 Dead time ~ 15% Event rate ~ 3.3 Hz.

03.00 Cello phone. They think that they may be causing us problems with transfer to IBM, when they are using their link. It appears they are right. We do get intermittent 'IBM busy' messages when they start to send data. However, it seems to me that the problem clears itself after about 1 minute. — However, 5 mins later, comes back very frequent, but only lasts about 2 or 3 T.V. flashes — not hindering our data-taking. Cello checking with Linto to try to trace problem (may be due to Linto writing test data to IBM)

03.24 Run 4081 ended after 8000 events. Start run 4082. IBM problems apparently cleared up. HG hit map barrel I looks better.

04.30 Run 4082 ended after 8000 events. Start run 4083

~05.00 get IBM ONLINE-JOB ERROR CHECK 33 on control terminal. Error check 33 isn't listed in the JDAS file!. so ignore

05.49 Run 4083 ended after 8000 events. Start run 4084

06.40 Cello propose a new filling. We agree.

06.42 Stop run 4084.

8.00 Hedgecock & Cords on shift
run 4086; JDAS error 56 subrun 405 task 1

09.40 Run 4087 ~~started~~.

10.37 Run 4087 ~~stopped~~ and HV switched off preparing for beams to be dumped.

11.43 Have filling at 17.380 GEV. Run 4088 ~~started~~. B.P. current initially high but fall back to 2.0

13.20 HISTO for 4 GeV threshold looks flat with a spike at zero (run 4089); checked threshold setting, was o.k. starting a new run made the problem disappear ⇒ maybe the setting of pedestals solved it.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2 TOF LG>1 $\geq$1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

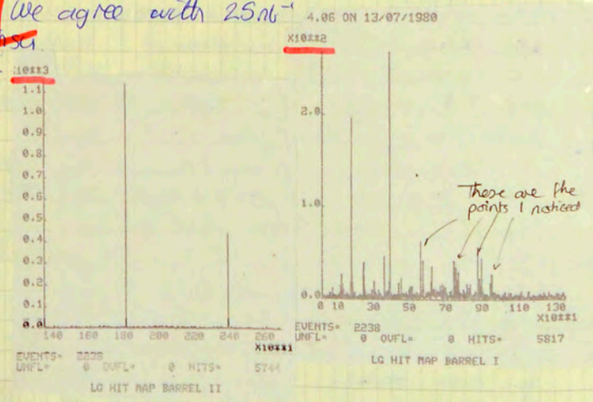
12 JULY 80

14:00 LG threshold signal flipped 40mV → 30mV during Run 4089
new signal is about 35mV → LG threshold is adjusted (4GeV, 1.5GeV) by changing the potentiometer. S.C.
15:20 Beams dumped for new filling to be made.
15:45 New filling ready.
15:49 Run 4092 started. Muon crate 3 missing. Reset in rucksack.

16:00 Heinzelmann and Komamiya on shift.
Event rate is very low (sometimes .3Hz) due to IBM busy.
17:00 Event rate ~1.9 Hz LG threshold ~43mV readjusted the threshold for 40mV
18:12 Beam lost
18:25 Cello proposed a new filling with new energy. we agreed.
17.370 GeV
19:21 LG threshold readjusted (35mV)
20:00 Muon crate missing (#4) → reset → o.k.
21:50 IBM busy → IBM problem 53
22:03 Cello proposed a new filling IBM problem is not solved yet. (also TASSO and CELLO)
~~22:31~~ 22:21 IBM problem is solved automatically(?) when ~~the~~ new run started.
00:00 Haidt+Hassard on shift. (13.7.80)
00:20 Cello want new filling at a new energy. We agree with 25nb^{-1}
00:40 LG Hitmap barrel I is still extremely noisy
Notice, however, the vetical scale is $\times 10^2$
whereas the graph of barrel II is $\times 10^3$
06:00 Muon Crate 10 missing
reset OK.
06:39 IBM busy, transfer error 53 oct.
Cello and Tasso likewise affected
IBM are looking into it.
06:53 IBM-man says he'll be at least
½ hour. Still doesn't know what's
wrong. We start run 4104 to
Tape #11123

clean: compare the scales!

4.06 ON 13/07/1980



07:14 Standard histogram news:- Forward μ counter hit map has significant holes in it, but TDC map looks a lot better.

07:33 Beams lost

13. July 80

8:00 Felt, Irving, Bamford on shift IBM O.K. again

8:20 HV WRONG error message – tagging system voltage fluctuation

10:42 Inner Detector trip. Run temporarily paused.
10:48 Run continues
11:10 Histograms for old run 4106 examined.
a) Anomalous peak in TAGGING LG HIT MAP (channel 190)
b) FWD MUON counters: MEAN TDC histogram has 2 dips in it still (probably OK), hit map OK
11:40 LG-Threshold 1.5 GeV adjusted to 35 mV
12:00 Run 4108 stopped as many LG-clock bx permanently disappeared in Run 4109
13:40 LG-Threshold 1.5 GeV back to 40 mV
14:19 Beam dumped
14:57 New fill ready
15:17 Crash of thunder ... crash of PETRA! Beam lost.
15:54 TAGGING LG HIT MAP anomaly has gone.

N.B. Power supplies to FWD μ counters run from 0 – 31 corresponding to counter 1–32

16:00 Olsson, Minowa on shift
17:00 2 wires (R2,3) in I.D. has started ringing R 4113
Mean TDC of FWD Counters now only 1 dip
17:45 Heinzelmann around, at end of RUN 4113 I.D. was switched off, 6V in ID switched off and start again. Ringing wires still there at run begin but suddenly disappear.

1930 PHR calls: ① MARK-J will be the coordinating expt from 8:00 monday.
② There will be an access time on wednesday at 8:00 – 16:00.

20:45 high spike in Forward LG hit bxgs, +2. Talk with H. Wendell. Pedestals probably drifted. Seemingly no effect on trigger rate. Will soon start new run, see if it stays. H. Wendell will come later on in the evening.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4099	12.7.80	23:24	12.7.80 00:28	8.1	8.2		3811	7859	911	67.5	924	5.9	4044	3012	1564	1939	1856	1147
4100	13.7.80	2.25	3.20	9.5	5.0		3306	7850	860	68.6	791	9.7	4124	3650	1524	2016	1730	1070
4101	13.7.80	3.21	3.42	8.5	8.2		1280	2519	325	20.8	304	2.5	1240	1185	534	682	481	368
4102	13.7.80	4.55	5.50	7.5	9.7		3293	7851	856	67	789	12.8	4028	4028!	1585	2010	1639	1025
4103	"	5.51	6.37	8.0	7.0		2684	5514	698	47	651	6.3	2735	2597	1162	1466	1118	783
4104	"	6.53	7.33	6.1	6.2		2346	4114	610	29	581	3.4	1975	1816	998	1174	753	578
4105	"	8.18	9.11	9.6	9.7		3184	7854	828	66	762	10.1	4234	3571	1466	1931	1857	936
4106	"	9.12	10.21	8.1	8.1		4080	7860	1062	57	1004	5.9	3871	3102	1672	2094	1515	1113
4107	"	10.21	11.03	6.7	6.7		2012	3216	523	40	483	1.8	1539	1195	758	955	508	493
4108	"	11.27	11.59	10.0	10.0		1885	5266	490	52	438	7.09	2523	2132	849	1181	992	1138
4109	"	12.00	13.02	8.0	8.0		3706	7854	964	65	899	6.29	3936	3005	1574	1917	1692	1055
4110	"	13.02	13.45	7.6	7.7		2573	4648	669	56	613	2.8	2305	1778	1028	1216	938	643
4111	"	13.46	14.19	6.0	6.0		1435	2736	503	97.8	405	1.46	1307	6977	624	784	447	416
4112	"	14.57	15.17	10.4	10.3		1203	3314	513	46.6	266	5.58	1847	1478	576	785	797	359
4113	"	16.31	17.42	7.800	7.050		4097	7855	1066	138	928	7.93	4138	3275	1586	2125	1673	988
4114	"																	
4115	"	17.47	19.09	6.43	5.79		4908	7860	1278	100	1178	8.06	3773	2988	1881	9225	1458	1165
4116	"	19.10	19.50	5.16	4.72		2375	3503	618	32.9	585	1.78	1636	1264	940	1031	589	542
4117	"	20.18	21.08	9.55	9.10		2956	7848	769	72.1	697	10.8	4295	3481	1472	1857	1952	958
4118	"	21.08	22.08	7.93	7.56		3596	7861	936	83.2	852	7.7	4055	3613	1580	1952	1842	1094
4119	"	22.09	23.25	5.9	5.6		4535	7863	1180	109.1	1071	6.0	3841	3431	1745	2137	1627	1238
4120	"	23.26	0.04	5.5	5.3		2302	3598	598	29.7	569	2.2	1654	1465	914	1044	574	569
4121	14.7.80	0.32	1.19	8.6	9.5		2775	7851	721	78.3	643	12.2	4414	4044	1337	1862	2067	1001
4122	"	1.19	1.35	8.1	8.0		933	2138	242.7	18.0	224.7	2.2	1147	1023	409	574	520	286
4123	"	1.37	2.51	6.6	6.5		4380	7858	1139	112.2	1027	5.7	3879	3178	1651	2092	1517	1121
4124	"	2.51	3.51	6.1	6.0		3554	5804	924	41.4	883	3.3	2748	2140	1356	1657	999	858
4125	"	4.55	5.44	8.2	8.1		2444	7856	767	70.6	697	11.6	4298	4043	1789	1958	1854	978
4126	"	5.45	6.26	7.9	7.9		2437	5764	634	41.5	593	5.2	2762	2430	1128	1384	1195	720
4127	"	9.43	10.29	8.2	8.7		2789	7854	725	160.6	565	11.5	3882	4356	1192	1775	1740	1814
4128	"	10.30	11.39	7.0	7.4		4078	7859	1061	120	941	7.6	4032	3759	1697	2184	1672	1053
4129	"	11.39	12.12	5.8	6.1		1830	3009	476	33.7	442	1.5	1439	1064	686	835	565	454
4130	"	15.51	16.13	10.36	10.29		1244	3177	324	74.5	248	3.58	1797	1357	492	693	806	344
4131	"	16.44	17.08	9.83	10.86		1362	3303	354	39.7	315	7.02	1751	2255	683	1045	246	218
4132	"	17.33	18.18	10.20	10.35		2668	7859	694	69.8	624	7.62	4593	3129	1157	1370	1994	890

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	BHABHA	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ RUN	$\int \mathcal{L} dt^-$ Exp	IBM/TAPE	BP	BHABHA	MULTI-HADRON	BEAM ENERGY (GeV)	FREQUENCY (kHz)	
782	1.42	5.39	25.08	IBM	1.9	80	1	17.370	499.6650	
749	1.57	5.18	5.18	IBM	2.1	91	3	17.360	499.665	
243	1.37	1.71	6.89	IBM	1.9	16	1	"	"	Beam lost.
792	1.68	5.43	12.32	IBM	1.9	75	2	"	"	
547	1.38	3.71	16.03	IBM	1.8	47	2	"	"	
378	1.09	2.56	18.59	TAPE 123	1.7	36	1	"	"	"
806	1.75	5.58	24.17	IBM	2.1	67	2	"	499.6650	
858	1.46	5.94	30.11	IBM	1.6(?)	95	1	"	"	
321	1.10	2.22	32.33	IBM	1.25	32 (44)	1 (33)	"	"	Beam dumped (>30 nb^{-1} collected)
536	1.97	3.71	3.71	IBM	2.3	47	4	17.350	499.6650	High initial event rate
875	1.62	6.02	8.73	"	1.7	93	1	"	"	
488	1.28	3.30	13.03	"	1.4	44	1	"	"	
278	1.00	1.93	14.96	"		29	1	"	"	Beam dumped
335	1.91	2.30	17.26	IBM	2.5	22	0	"	"	Beam lost
782	1.31	5.38	22.64	"	1.7	92	0	"	"	
										No events, IBM not ready. No print out.
733	1.03	5.05	27.69	"	1.5	73	2	"	"	
262	0.75	1.79	29.48	"		20 (47.0)	1 (10)	"	"	
217	1.68	4.97	4.97	"	2.3	76	5	17.340	"	
722	1.48	5.31	10.28	"	1.9	60	3	"	"	p-orbit 14 missing
719	1.09	4.95	15.23	"		64	4	"	"	
316	0.94	2.17	17.40	"	1.4	35	0	"	"	beams dumped
686	1.68	4.65	22.05	"	2.3	68	0	"	"	
198	1.47	1.37	23.42	"	1.7	18	0	"	"	bad error
868	1.37	5.98	29.40	"	1.7	92	0	"	"	
607	1.18	4.20	33.60	"	1.5	57 (47.0)	3 (0)	"	"	
767	1.79	5.27	5.27	"	2	81	1	17.330	"	New energy
573	1.61	3.41	9.18	"		58	3	"	"	beam lost
627	1.31	3.67	12.85	"	2.6 (5.0)	45	2	"	"	
728	1.24	5.05	17.90	"	2.0	72	2	"	"	
312	1.18	2.16	20.06	"	1.6	37	0	"	"	
349	1.93	2.40	22.46	"	2.4	26	0	"	"	BEAMS LOST.
411	1.95	2.65	25.11	"	2.7	53	0	"	"	Beams lost
838	2.17	5.79	30.90	"	2.2	65	1	"	"	

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

23^{00} JDHS Event 56 subrun 405 Tof back wrong length!

14.7.80

0^{00} Goddard, Warming on shift

0^{04} beams dumped for new filling

1^{45} H. Wriedt visited us to check tagging LG. He says the difference between the two energy sum histograms is due to pedestal fluctuations and could be tolerated.

1^{35} run 4122 stopped because of error 13 in 34323. Page fault for Non-demand page No 137 (at 103041)

1^{45} 18% deadtime due to frequent occurance of "IBM busy", ceased after ~15 minutes

3^{50} beams dumped for new filling (next energy: 17.33 GeV)

4^{50} new fill ready

6^{00} MARK J says possible access time at 0800 today.

6^{26} beams lost, ID trip

TASSO requests access for 45 min, we agree.

08:00 Elsen & Watanabe on shift

08:15 Tasso's access is over, but PKR is looking for some "Druckabfall" in the tunnel. TASSO is out again. (leak in the pressurized air system)

09:00 PKR still investigating the leak. As soon as people are out of tunnel, they can start.

09:08 PETRA being injected.

09:42 Run 4127 started. B.P. was 3.5 V after the sign of "HV switch on". After asking PKR for an adjustment, went down to 2.5 V.
LG threshold 30 mV

10:10 The old 42-2 problem has reappeared. (see p 526) The linear sum output of cable #42-2 fluctuates and sometimes gives a huge pulses. Decided to disconnect it again. ~~LG~~.
LG threshold 3 shows peak at Ø pulse height due to this problem.
(Fixed on 15/7/80 see p 32 ~~33~~)

10:35 Tasso asks for access at the end of this fill. They need 10 min to replace a bad HV channel. We agree for the short interupt.

11:30 IBH ONLINE DOU ERROR CHECK 33

11:45 I.D. trip

12:00 MARK J asks for beam dump at 12:10. Maybe $\mathcal{L}$ can be improved by orbit corrections. Tasso taking their access

12:10 beam dumped.
LG threshold 35 mV. (Off-line: sync 2)

13:30 Increase of $\mathcal{L}$ seems is only possible with painful efforts. PKR lost beam twice after accumulation. Trying the 3rd fill.

14:30 Still trying in vain.

14:40 PETRA has problems with vacuum pump in Hall North.

16:00

About LG linear sum output cable #42-2.
I watched the output for 3~4 hours with HV off condition, ~~and~~ the output did not give unstable pulses. Now run 4130 has been started and it is still OK, so I am going to plug that cable back in. I still suspect that the misbehavior comes from counter #1334 which shows up in the hitmap (~~LG~~ 1 named).

Fixed !! p 32

* Message to non expert.
When trigger rate is extremely high or dead time is ~100% not due to IBM busy, Unplug the cable #42-2. & or peak at low energy in LG threshold histogram for LG >4 GeV.

* Message to experts.
If this condition happens, look ~~at~~ if the counter #1334 (Ring 23 Ward Oben 21) is misbehaving. The HV for this is distributor 18-126 → Checked that it is not the counter 15/7/80 Watanabe check this

HEDGECOCK & BALL

16^{44} New fill ready and system switched on. Run 4131

17:08 Beams lost. Stop run 4131

17:30 Stable beams BP-2.1 Start run 4132

18 ~~19~~. MUON CRATE MISSING. № 8. Reset normally.

19.09 Beams lost.

20^{50} New filling ready at next energy. 17.320 GeV. System switched on. Run 4134

21^{00} Histograms look OK.

22^{38} New filling ready. Run 4135 started.

23^{25} New filling ready. Run 4136 started. This is like a bad dream!!

23:34 Beams lost again. 2 ringing ID wires. R22 & R23 Richard informing Herr Reisberg, who is here, luckily. Also signs of tower of noise in HC hit map barrel II channels 2112 — 2156. Switched off HV for amplifiers in ID.; then back on. When beams come back. Check on wires. See latest Histogram sheets to compare. CH

15.7.80 Kawabata & Takeda on shift
Kawabata is now investigating on-line problem (one dump MT is missing).
So Takeda is taking shift alone for the moment.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

15.7.80

0:12 RUN 4137 start.
0:20 Beams lost. RUN 4137 stopped.

We have lost one DUMP tape (EXDUMP 445). The contents of this tape are data from Run 4119 to 4123. During online dump job, something has happened. Data found and being patched up.

2:29 Beam filled at last, RUN 4138 start.
3:07 ID tripped. RUN 4138 stopped
3:16 RUN 4139 start.
4:33 RUN 4139 normal end. 6 hadronic events obtained. Fruitful run!
4:33 RUN 4140 start.
5:00 Beam dump. RUN 4140 stop.
5:39 New fill. RUN 4141 start.
6:38 RUN 4141 Normal End
6:38 RUN 4142 start
7:51 At the event # 8000, data taking hung up.
We stopped the run.
We tried to start ~~xxx~~ next run, but we have ~~not~~ no triggers.
Also, we have pedestal setting errors, muon crate 10 fault, No latch bank!
CPU seems crazy ???
We restarted Nord. At the same time beam was dumped.
8:00 Meier and Watanabe on shift
But Access started and ~~no~~ restart is 3:00 PM.
10:00 We switched off main magnet and Kompensators
15:00 Totsuka and Minowa finally fixed the problem of linear sum output (PS86). Bad chips replaced.
15:00 Message on TV. "Restart 17:00" ~~xxx~~ (Ello works in its own)
16:00 Drumm Hassard

We want to ① test muon crate 10	so we start T3 run. It works for just μ system
② latch banks.	with no problem in crate 10. I suspect it was
③ Pedestal setting	just a transitory effect above.

PKR say our interlock is broken. We don't understand that. (Its Machine people working on it)
To check pedestals, we restart run with LG on. Pedestals were read OK and parameter setting OK but no message on NORSK plotter confirming run start. Presumably only comes when writing events. Eichler confirms this → no problems anymore.

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

1836 Riesberg arrives; Drumm goes. Doesn't help!

21[50] Since four hours they try to get beams into the machine.
PKR says that they have a lot of difficulties.
The transmitters which were adjusted this afternoon are now correctly tuned
There is one correction coil which fluctuates. They are trying to localize the coil.
More over the synchrotron cannot deliver electrons at the time being
Probably the "INTERMITTENCY" will last a few hours
NB: Magnet current lowered from 7500 to 1005
And raised again, but PKR only teasing.

0[00] Dittmann and Komamiya on shift
Finally have stable beams again
0[47] LG signal ~ 30mV → changed the thresholds for 30mV
1[00] TAGGING LG HV power FROREM
CALLED WRIEDT: ITS NOT A POWER PROBLEM, BUT ADC PROBLEM
The first 48 Tagging LG channels are missing
H. WRIEDT IS COMING IN
Since we had $1.8 \cdot 10^{30}$ $\mathcal{L}$ at the begin of the filling, we feel that the linear
1[55] Tagging ADC #1 stopped functioning partially: 48 ADC-channels (corresponding to 46 lead-glass channels ≙ one half of the $-z$-side lead glass) are dead. But the last sum of those channels is still produced ⇒ the on-line luminosity value is not affected.
An exchange will be tried during the day. tw
2:55 LG threshold changed for 40mV
3[00] $2.1 \cdot 10^{30}$ $\mathcal{L}$ at begin of the fill (9×10 mA) !!!
6[20] LG thresholds adjusted for 30mV
8[00] Pearce, Feldt on shift
PETRA has maximum leak, run magnet down
14[00] PETRA injecting again, magnet up again
got a good filling, but beams were lost after about 3 min, PETRA people don't know why. This happens usually with the beams in the recent days.
PETRA people try to find the source of this beam losses
We accumulated 0.38 nb^{-1} on this shift. Felt them nothing!
(but not much better)

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG >4
4133	14.7.80	18.19	19.09	8.56	8.65	-	2977	6860	774	1068	668	4.96	3857	2793	1165	1695	1736	832
4134	"	20^{50}	21^{27}	11.37	10.90		2225	6115	579	94.1	484	6.44	3594	2412	930	1378	1586	642
4135	"	22^{38}	22^{56}	11.28	11.62		1046	3032	271	61	210	3.4	1780	1205	445	663	792	321
4136	"	23^{35}	23^{34}	10.81	10.88		479	1447	124	13	111	1.47	813	538	230	340	344	160
4137	15.7.80	0^{10}	0^{20}	10.15	9.60		430	1103	112	12	100	1,11	573	434	197	246	259	115
4138	"	2^{29}	3^{07}	9.49	9.59		2245	5292	584	56.8	527	4.81	2889	2226	969	1309	1156	648
4139	"	3^{16}	4.32	7.60	6.44		4535	7857	1180	78.5	1102	4.26	3990	2813	1755	2030	1730	1021
4140	"	4:33	5:02	6.37	5.35		1729	2602	450	23.7	427	1.2	1234	878	654	744	461	384
4141	"	5:39	6:38	9.37	9.46		3472	7862	905	76.3	828	6.48	4130	3475	1467	1920	1825	1033
4142	"	6:38	7:51	9.85	9.93		4350	7860	1132	78.4	1053	4.35	3922	2918	1653	2102	1617	1117
4143	16.7.80	no events																
4145	16.7.80	00:40	01:20	8.9	8.7		2406	4470	626	39.2	587	3.22	2237	1398	948	1147	854	523
4146	"	01:21	02:09	8.0	7.9		2773	4918	721	48.9	673	2.90	2437	1618	1074	1284	1018	640
4147	"	02:54	03:06	10.2	9.2		~~1665~~ 729	~~1669~~ 166	190	13.1	177	1.22	913	502	290	373	411	153
4148	"	03:44	04:49	9.8	9.8		3834	7850	998	58.3	940	5.34	4025	2498	1585	1990	1526	907
4149	"	04:50	05:10	7.9	7.9		1194	2205	311	15.1	296	1.18	1059	645	480	580	408	290
4150	"	05:45	06:48	9.9	9.9		3819	~~7856~~	~~993~~ 992	58.2	935	5.60	4073	2808	1533	1980	1617	973
4151	"	06:49	07:09	8.0	8.0		1179	2408	307	17.3	289	1.32	1289	740	463	575	639	302
4152	"	14^{12}	14^{18}	8.3	8.5		253	676	66	8.7	57.2	0.6	366	349 !	98 !	177	166	81
4153	"	16^{10}		10.2	10.2		117	363	30.6	5.4	25.2	0.32	228	126	48	79	113	33
4154	"	16^{43}	16^{44}	10.0	10.0		— no	events	—									
4155	"	19^{36}	19^{57}	9.86	9.13		1180	2792	307	30	277	1.88	1591	803	479	617	778	286
4156	"	23.28		9.90	9.70		1279	3213	333	34	299	2.25	1859	902	525	674	995	322
4157	17.7.80	0.31	0.34	7.7	7.8		72	230	18.9	1.6	13.2	0.8	108	37	21	58	72	22
4158	"	2.42	2.43	7.8	8.0		136	240	35.4	7.9	27.6	0.12	133	66	45	44	78	26
4159	"	3.38	3.41	7.9	8.1		170	360	44.2	3.2	41.0	0.25	211	94	60	91	100	36
4160	"	3.41	3.50	7.8	8.0		468	1044	122	7	114	0.55	534	266	191	218	326	123
4161	"	5.31	5.41	7.8	7.9		536	1094	139	10	129	0.55	562	298	210	277	272	120
4162	"	9.21	10.34	7.8	7.9		4478	7844	1086	175	911	4.1	4297	2356	1457	1781	2305	996
4163	"	10.35	11.38	6.7	6.8		3730	6568	970	86	884	3.0	3360	2052	1431	1587	1689	939
4165	"	13.50	13.48	9.3	9.3		3430	7860	892	59	833	5.9	4290	2989	1423	1759	2147	1005
4167	"	14.02	15.09	7.9	7.9		3990	7859	1038	66	982	4.7	4508	2934	1574	2010	1990	1078
4168	"	15.15	15.20	6.8	6.8		319	562	83	3.8	79	.3	288	233	119	144	142	87
4169	"	16.48	17.30	10.2	9.3		2495	6076	649	57	593	4.9	3398	2044	1033	1318	1765	735

T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ RUN	$\int \mathcal{L} dt$ EXP.	IBM/TAPE	B.P.	BHABHA	MULTI HADRON	BEAM ENERGY E_B (GEV)	FREQUENCY (KHz)	
711	1.65	4.90	35.80	IBM	1.8	62 (494)	0 (1)	17.330	499.6650	BEAMS LOST.
627	1.95	4.33	4.33	"	2.2	51	1	~~17.330~~	"	NEW ENERGY. BEAMS LOST.
308	2.03	2.13	6.46	"	2.2	33	1	"	"	BEAMS LOST.
155	2.22	1.06	7.52	"	2.0	18	0	"	"	BEAMS LOST.
131	2.03	0.87	8.39	"	1.95	11	1	"	4996650	BEAMS lost.
511	1.56	3.49	11.88	"	1.8	40	2	"	"	ID tripped
725	1.05	4.76	16.64	"	1.3	67	6	"	"	Normal End
223	0.91	1.56	18.20	"	?	26	0	"	"	Beam dump.
839	1.66	5.78	23.98	"	1.9	75	1	"	"	Normal End
867	1.36	5.91	29.89	"	1.4	75	3	"	"	Forced stop. Data taking hung up.
601	1.72	4.13	34.02	"	2.0?	50	1	"	"	
590	1.42	3.93	37.95	"	1.4	56 (602)	1 (17)	"	"	Beam lost
228	2.08	1.52	~~1.52~~	"	1.7	14	1	~~17.310~~	"	Beam lost
1028	1.77	6.79	8.31	"	2.0	107	8	"	"	111111 000000 R=16
295	1.65	1.97	10.28	"	1.7	26	1	"	"	Beam lost
980	1.70	6.49	16.77	"	1.7	106	2	"	"	
288	1.58	1.86	18.63		1.7	22	0	"	"	Beam lost
58	0.57	0.38	19.00	"	1.8	5	0	17370	4996650	Beam lost after 3 min Ar injection beam
40	1.76	0.21	19.22	"	2.1	4	0	"	"	
					2.0	—	—			Beams lost. New filling
312	1.78	2.10	21.32	"	1.7	25	0	17.310	"	Beams lost New filling
378	2.05	2.62	23.94	IBM	1.7	41	1	"	"	Beams lost
25	1.93	0.14	24.08	"	1.7	1	0	"		Beam lost
25	1.27	0.17	24.25	"		5	0	"		"
44	1.71	0.29	24.54	"	1.5	7	0	"	4996	Stopped because of many LG-channels on
118	1.66	0.78	25.32	"	"	9	0	"	"	Beam lost
128	1.57	0.84	26.16	"	1.3	13	0	"	"	Beam lost
799	1.31	5.45	31.61	"	1.5	67	2	"	"	
627	1.15	4.28	35.89		1.3	80 (72)	2 (4)	"	"	beam dump
815	1.63	~~5.53~~ 5.58	~~5.53~~ 5.58	Tape F11 103	1.6	68	1	17.320	"	IBM online computer down.
821	1.40	5.59	11.17	Tape F11092	1.4	80	3	"	"	"
47	1.01	0.32	11.49	Tape F11098	1.2	5	1	"	"	Beam lost
666	1.83	4.55	16.04	IBM	1.4	68	0	"	"	Tagging Timeouts

T1 LG >4	
832	BEAMS LOST.
642	NEW ENERGY. BEAMS LOST.
321	BEAMS LOST.
160	BEAMS LOST.
115	BEAMS lost.
648	ID tripped
1021	Normal End
384	Beam dump.
1033	Normal End
1117	Forced stop. Data taking hung up.
523	
640	Beam lost
153	Beam lost
907	
290	Beam lost
973	
302	Beam lost
81	Beam lost after 3 min Ar injection beam
33	
	Beams lost. New filling
286	Beams lost New filling
322	Beams lost
22	Beam lost
26	"
36	Stopped because of many LG-channels on
123	Beam lost
120	Beam lost
996	
939	beam dump
1005	IBM online computer down.
1078	"
87	Beam lost
735	Tagging Timeouts

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

16.7.80

16^{00} H. Wriedt and H. Rieseberg on shift.

16^{05} good filling ready

16^{10} Start Run 4153

Message: "Too many bad channels" in Crate 4 at Pedestal subtraction

Tagging LG bit map: all channels from ~48 to ~192 are on !! channels 1-48 are missing.

16^{13} We try to cure the problem by starting a new Run (# 4154). Same error message as before on the printer. At count # 13 the beams are lost (without alarm).

16^{40} We ask PKR. The beam loss at 16^{14} was again without obvious reason: No fluctuation was observed on the transmitters. They are going to check the transmitters again and they will install a few more recorders (on paper tape) to survey the transmitters. It cannot be excluded that the beam loss is due to a very short fluctuation of a correction coil.

Refill will start soon.

16^{50} H. Wriedt and Y. Totsuka are working on the Tagging LG ADC.

A.10 Problems with tagging-ADCs, module #1 (and with pedestal subtraction in run 4153) seem to be cured by changing ~~most~~ the position of ADC module #1 in the CAMAC-crate (Totsuka gave the magic hint). — Soulute! (B.40) —

18^{17} New filling with 2×10.5 mA

PKR studies beam losses with open collimators (BP = 6V). We cannot measure

18^{34} Beams lost.

19^{33} New filling with $I^+ = 9.9$ and $I^- = 9.2$ mA. BP rate is already low (1.7V). We start Run 4155

19^{40} Again the tagging ADC, module #1 doesn't work. Will be investigated after this run. ID-Vac # 671 oscillates.

19^{57} Beams lost without alarm

20^{32} – 20^{40} Beams (no data-taking because of tagging ADC-investigations)

20:45 The tagging-ADC, module #1 shows the following strange behaviour:

- when being installed in its new position, all pedestals were different from 0 (in a test run, ~ 17:05)
- during the following data-taking, the all 48 channels remained 0 (~ 20:00)
- after that run, the pedestals were ~~==~~ 0 (in a test-run, ~ 20:00)
- → module #1 was exchanged with the spare module, which pedestals were 0 as well (test-run, ~ 20:25), independent whether the "old" or the "new" position was chosen in the crate. In the case of the "old" position most of the pedestals of the other 3 modules were overflown, i.e. ~~4047~~ 4013 (4012).
- module #1 again was installed in the "new" position. In two test-runs the pedestals were different from 0 (~ 20:40)

∴ from this behaviour I draw the conclusion that it is not this specific ADC-module which causes the problem. I suspect that the problem comes from the CAMAC-side or the system-processor.

17.7.80

21:15 The ADC-problem continues:
- in another test run, the pedestals from module #1 are all different from 0, but now several from module #2 are 0!

22^{30} The compressor of the air conditioner starts to make noise. The floor of the counting house is vibrating. No, the noise comes from the pipe underneath the compressor. (water pipe?)

Meanwhile two fillings were lost during acceleration.

23:00 another filling lost

23:25 Stable beams & new run

$\langle \mathcal{L} \rangle = 2.1 \times 10^{30}$

23^{50} Beams lost. 2×1.5 mA remain. No alarm

18.7.80

0^{00} Eichler and Totsuka

ASB cable of the tagging ADC replaced. The ADC seem to be working properly. — Totsuka.

0^{31} Beam ready

0^{33} Beam lost.

3^{05} Runs 4157, 4158 had LG threshold = 5. Many spurious hits are there.

from Run 4159 LG threshold = 6 (Default) — Y.T.

8:00 Bamford and Nozaki on shift

8:45 PKR investigating the problem with separating beam.

9:20 Start run 4162.

10.00 ID alarm. Anode current 4e3 address 000.

10:30 Stop run 4162. Start run 4163

11:25 Stop run 4163. beam dump.

12:50 New Energy 17.300 GeV. Run 4165 started. IBM is dumping output to Tape F11103.

Run 4166 is dump.

13.15 Mark J phoned us to tell that Tesse wants to access for half an hour of the next filling because they have some problem for Liquid Argon. We didn't say any objection.

13:48 Run 4165 end. start Run 4166. IBM on line computer is on but cannot be linked due to IBM busy. Run 4166 end.

14:02 output on Tape F11092 Run 4167.

14:43 JDAS ERROR 000036 (OCT) SUBERROR 000405 (OCT) TASK 1

15:49 Run 4167 ended. Run 4168 started.

15:20 Beam lost

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

16 ^{00} Bartel + McCann on shift

16 ^{45} Filling ready, IBM up work data to IBM
Trouble with tagging, head plans CDNAC
Time out on 30^3_8
To restart ZDAS does not help Wrindt not available, call Fichtler

Observe 2 more noisy channels ~ 170 in run 4169 compared to Run 4163.
Switch power on and off, take gate out, put back — it works. no!
after 34 again hang up.

18 ^{00} Beams lost — causes I.D. Trip.
switch power off in Tagg lg-crate for ~2 minutes. Works again. But we have 22 broken channels now (pedestal = 0). If problem with tag-adc comes again, start with function key F8 and give readout pattern 77754B. tag-adc will then not be read out.

18 ^{58} Start run 4173
μ-crate #12 failed
Runs 4170 – 4172 junk no events tagging system failure

20 ^{28} 'IBM busy' confused the ~~NORD50~~ event display - which was in regular event display mode at the time.
Stopped run 4174. Start run 4175. ~~NORD50~~ event display (at least) still confused — writing the following repeatedly on the Tektronix screen:
#13 ILLEGAL NHITS 872 157 2817
Stop run 4175 in order to restart data aquisition. This cures problem.
20.35 Start run 4176. RUN 4175 is probably useless (only 401 events)

The event display program was not in the NORD-10 and has absolutely nothing to do with the N-50 program

21 ^{50} During run 4177 μ-crate 8 missing

22 ^{40} We notice on the histograms for runs 4176 and 4177 that the first ring of the jet chamber is missing. Call Hinzelmann. May be that is the reason why we got so few hadronic events. ~~Firmware~~ Ring 1 only missing in hit maps, not in trigger input.

18.7.80
0 ^{00} Tease + Elsen on shift Inherit an 'expert' – this is a bad sign!

2:20 Beams dumped (after request of Hahn)
Again another expert – Schwarz
Heinzelmann, Hahn and meanwhile also Kawabata are working on the ring 1 readout problem. Fichtler gave some advice through the telephone.
Try to get the pulser system working to be independent of NORD.
Successively setting crates off-line in branch 5 and/or taking out DL8's does not cure the wrong contents of DETC bank 8.

3:00 Was fully ready, but we aren't yet. Continue tease party, pulser system. Smoke begins to creep from behind NORD terminal. Brief panic followed by terminal being bodily ejected from the room R.I.P.

3:35 1 crate controller (Crate 5, Branch 5) and 1 DL8 were found to be causing the problem. Both replaced by spare ones.

3:40 IBM busy. They do not know for how long. Drive to tape.

3:40 Run 4180 stopped after 400 events because IBM seemed to be up (but it wasn't).

Run 4179 lost in trial (no events)

This crate controller caused additional hits on nearly all wires in the whole branch and was therefore very difficult to trace

Run 4181 error in LG Pedestal events.

3:50 Run 4182 started – lead glass pedestal error! – try again

Ⓧ I.D. cell 20 is dead – Herzelmann & Heuer are still here and are investigating

4 ^{05} Run 4182 stopped to check DL8's for missing cell(s).

4 ^{06} Beams lost. IBM now totally dead.
The Greenbergs are out tonight!!!

Ⓧ It was again a DL8 problem. During our fiddles the last 4 hours we have had all DL8's out of the crate and these 4 DL8's from cell 20 were not plugged in properly.
Now clocked with pulse runs no ok (cut kept at 440)

4 ^{45}. H & H leave claiming everything will work when the beam comes back. optimists!
Injection has still not started.

5 ^{15} Luminosity achieved.
Start run 4183 to IBM. Ebeam = 17.290 GeV.
Stop run 4183 in attempt to clear LG pedestal problem.
Start run 4184

6 ^{20} IBM hang up.
IBM continually hanging up. CC 6T50 have been down most of the new night – apparently there is a connection.

Tagging volts MF 60 ch. 26,27 are OFF!!
I.O. zero voltage. Try to reset manually – will not work.
Use TOF HV program. What a DUMB program.
This tells us what we already know – that HV is off for 2 channels – but will not reset them!
Telephone H. Wriedt.

6 ^{50} Reset HV mainframe 60 Channel 26 and 27 to their nominal values manually.
HV-Program is able to read the 2 voltages and they seem to be okay.

6:57 Stop Run 4185, Start Run 4186 to avoid pedestal problems.

7:00 IBM always busy. Deadtime 40%. Stop run and write to tape. Support to continue until CC is up.

7:01 Run 4187 started – that's better. Deadtime now ~7%.

7 ^{45} Beams lost. We now have an intermittency (!! quite!)

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
40																		
Run	Date	Start	Stop	I^+	I^-	Vac	(sec) Time	Nord evts acc	Multrig $\times 10^6$	T0 reject $\times 10^6$	T0 accept $\times 10^6$	T1 Accept + Postp $\times 10^6$	T2 accept	T3 reject	T3 accept	T2 collin	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4172	17.07	18[00]																
4173	"	19[00]	19.45	9.9	9.2		2842	7853	738	67	672	5.2	4681	2334	1165	1550	2764	957
4174	"	~~19.46~~ 20.00	20.30	8.8	8.2		2613	6243	680	54	625	3.4	3519	~~1775~~ 1019		1270	1999	809
4175	"	20.31	20.34					401										
4176	"	20.38	21.35	7.8	7.4		3652	~~7867~~	950	75	875	3.4	4318	~~2124~~	1385	1800	2402	1109
4177	"	21.40	22.23	7.0	6.5		2599	5020	677	36	640	2.0	2632	1484	1008	1217	1366	737
4178	18.7.80	3.40	3.47	9.8	8.5		402	495	104	60	44.7	0.3	291	177	90	90	161	52
4182	"	3.50	4.06				1435	3850	373	30.6	342	2.2	2310	1155	562	783	1360	472
4183		5.15	5.30				400	1414	104	45.5	58.7	1.05	999	453	105	200	654	143
4184	18/7/80	5.30	6.30				3979	9826	1035	280	755	7.0	6001	3278	1400	1847	3690	1143
4185	"	6.37	6.57	9.3	8.2		1148	2242	299	92.9	205.6	1.3	1308	716	359	484	751	291
4186	"	6.58	7.07	8.8	7.8		162	226	41.9	18.5	23.4	0.14	127	69	38	41	75	23
4187							2866	6472 ~~6627~~	746	46.8	699	3.6	3498	2158	1144	1532	1778	892
4188	18/7/80	09.13	09.16	10.8	10.4		131	57	34.1	30.1	4.1	0.047	29	16	9	11	12	6
4189	"	09.16	10.08	10.61	10.27		3080	7388	801	58.1	743	6.5	3846	3056	1393	1786	1607	952
4190	"	10.09	11.09	9.16	8.88		3583	7861	932	65.9	867	5.3	4098	3017	1527	1887	1876	1074
4191	"	11.09	12.15	8.0	7.8		3908	7857	1017	55.9	961	4.3	3984	2812	1541	1876	1896	1128
4192	"	12.15	12.27	7.03	6.81		682	1264	177.5	10.3	167	0.6	621	491	271	346	248	197
4193, 4194		— failed to establish IBM link																
4195	"	≈13[30]	≈13[42]	11.4	9.7		602	1	1372	73.5	83	1.3	338	668	151	1	0	0
4196	"	13[44]	13[57]	10.8	8.8		813	2515	211	24.6	187	2.1	1458	1061	365	473	742	330
4197		— failed to establish IBM link																
4198	"	14[06]	15[04]	10.2	8.0	$9.4\cdot10^{-9}$	3456	7854	839	57.6	842	5.3	4040	2929	1447	1829	1676	1096
4199	"	15[05]	16[01]	8.3	6.9		3341	6382	870	87.9	782	3.4	3197	2231	1298	1603	1344	931
4200	"	16[45]	17[29]	10.6	10.2		2629	7861	684	80.5	603	6.3	4755	3107	1135	1554	2547	958
4201	"	17[30]	18[25]	9.2	8.8		3272	7862	851	59.9	791	5.4	4402	2993	1326	1823	2222	1073
4202	"	18[26]	19[32]	7.3	7.0		3928	7857	1022	55.1	967	4.5	3929	3105	1569	1943	1761	1132
4203	"	19[32]	19[49]	7.1	6.7		974	1892	253	12.8	241	0.9	975	733	392	496	427	270
4204	"	21[29]	21[37]	10.7	10.6		463	1540	120	15.5	105	1.5	966	704	200	342	462	167
4205	"	21[38]	22[20]	10.3	10.1		3097	7860	806	60.9	745	6.8	4321	3383	1333	1881	1808	981
4206	"	22[20]	23[32]	8.9	8.7		3704	7851	964	61.3	902	5.5	4110	3180	1503	1964	1774	1035
4207	"	23[33]	00[28]	7.7	7.6		3280	6293	853	50.96	802	3.6	3091	2506	1314	1527	1312	924
4208	19/7/80	00[27]	01[19]	6.85	6.7		2503	4481	651	31.1	620	2.2	2270	1720	996	1239	844	640
4209	"	02[21]	03[12]	10.61	9.96		3003	7853	781	71.5	710	6.9	4499	3433	1260	1864	1940	949

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	Bhabh	Method	Beam energy GeV	Frequency (MHz)	
41										
T1 Lumi	<2> $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$ Exp	IBM/ Tape	BP	Bhabh	Method	Beam energy GeV	Frequency (MHz)	
			16.04							time out tagging
789	1.91	5.43	21.47	IBM	1.5	96	0	17.300	499.6650	probably OK
706	1.85	4.84	26.31	"	1.5	74	0	17.300	"	Stopped due to NORD hang-up. / probably Ring 1 problem
	1.67	0.31	26.62	"				"		May be errors in Events Records due to NORD problem)
826	1.52	5.57	32.19	"	1.0	84	0	"	"	Ring 1 problem (Ring 1 "missing")
505	1.34	3.47	35.66	"	1.0	30	5	"	"	10 problems
46	.76	0.31	0.31	TAPE F11 112	1.8	8	0	17.290	"	Ring 1, cells 20 and 21 in DL8's "missing" (mostly) + Ring 1, cell 3, 2nd half
357	1.7	2.44	2.75	TAPE F11 112	1.8	37	1	"	"	Beams lost
89	1.4	0.56	3.31	IBM	2.0	5	0	17.290	499.6650	new fill probably OK
913	1.54	6.12	9.43	IBM	2.0	90	2	"	"	
215	1.27	1.75	10.88	IBM	1.8	17	0	"	"	ended because TAG HV reset
29	1.28	0.21	11.09	IBM	1.6	2	0	"	"	IBM dead time too high
715	1.70	4.87	15.96	TAPE F11 119	1.6	69	3	17.290	"	
9	0.44	0.06	0.06	IBM ~~F11 195~~	2.0	1	0	17.280	499.6650	IBM problems. Stop to write to tape.
909	1.98	6.11	6.16	F11 195	1.8	87	2	"	"	
873	1.67	5.99	12.15	IBM	1.5	84	3	"	"	
923	1.63	6.35	18.50	"	1.4	76	0	"	"	
142	1.4	0.96	19.46	"	1.2	9	0	"	"	beams dumped
0	~~1.31~~	~~0.79~~	16.75	IBM F11 138	≈1.8	?	?	17.290	499.6650 MHz	new fill with old energy 17.280, as we had to fix data
258	2.09	1.70	18.45	"	≈1.7	32	0	"	"	see page 43, top
972	1.94	6.69	25.14	IBM F11 129	1.6	107	3	"	"	old energy 17.230
769	1.57	5.23	30.37	IBM	1.4	83	1	"	"	beam dumped, energy 17.290 finished
709	1.77	4.65	24.11	IBM	2.0	62	4	17.280	"	back to 17.280 GeV with this new fill
757	1.55	5.07	29.18	"	1.5	58	2	"	"	
928	1.62	6.36	35.54	"	1.3	94	1	"	"	
205	1.44	1.41	36.95	"	1.2	18	1	"	"	beam dumped
143	2.07	0.96	0.96	"	2.0	13	1	17.270	"	LG noisy run stopped.
918	1.97	6.12	7.08	"	1.9	89	2	"	"	
899	1.67	6.20	13.28	"	1.5	81	2	"	"	DL8 debit Wire 46 - 47
743	1.55	5.07	18.35	"	1.3	64	0	"	"	
488	1.36	3.40	21.75	"	1.2	45	0	"	"	BEAMS DUMPED.
825	1.82	5.48	27.33	"	1.8	80	5	"	499.665	NEW FILLING.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2 TOF LG>1 $\geq$1 TR	T1 LG>4

800 PEKA announces INTERMITTENCY.

Ball & Drumm on shift. We hope the gremlins have gone to bed with the last shift!

08:30 Injection started. New energy: will be 17.280

09:00 New fill ready. Waiting a few minutes while R. Eichler finishes copying disk.

09:12 Start run 4188 + try writing to IBM. ~~p~~ crate 9 missing — reset.

09:14 Attempt to write to IBM was abject failure. Start run 4189 on tape F11195

10:08 Stop run 4189

10:09 Start run ~~4188~~ 4190 — writing to IBM — successfully.

While checking through histograms for previous runs to get precise duration of I.D. problems, we notice the following effect: — If:

1) select old run for which there are no histograms
2) try to display a histogram for this 'non-existent' run (get error message on Tektronix)

ATTENTION HOWARD HIGGS!! Problem cured 4/9/80 H.EM

then, we find that whatever run number (including the current one, if actually typed in) we select under 'select old hist', ~~this~~ we get an error message if we try to display a histogram.

The only way out of this is to type just return (ie. default to current run, without typing in run number) in response to 'select old hist'. AND THEN DISPLAY A HISTOGRAM. Then we can successfully display histograms for old runs which do exist.

11:09 Run 4190 ended after 8000 events. Start run 4191.

Herr Eckst rings to say that PKR + Mark J have agreed to one more fill at an energy of 17.290 GeV — probably to take place after this fill, or after this energy.

11:53 Addendum to the ID problems (page 38/39)

Probably the data from Run 4173 to Run 4183 are affected ((we view map histograms in Run sheet + histogram folder after Run 4184))

Run 4173 probably OK

Run 4174 "missing" ring 1 problem started during run

Runs 4175 - 4177 "missing" ring 1

Runs 4178 + 4179 + 4181 not existent

Runs 4180 + 4182 "missing" DL8's in ring 1, cells 20 and 21 (only few entries in wire maps), and cell 3, 2nd half

Run 4183 probably OK

12:15 Mark J ring next filling will be in 10 mins at ~~old~~ energy of ~~17.280~~ 17.290 GeV (arranged through Eckst)

Stop run 4191 after 8000 events. Start run 4192.

12:25 Stop run 4192. Dump beams.

13:25 New filling ready. Start run 4193 — fail to establish IBM link

4194 " " " " "

Start 4195 on tape F11138

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

Notice very high deadtime (~50%). No obvious reason.

Wait for first entry in run-summary. Run-summary so far shows only 1 event out of ~1000 triggers! D.T. comp is 46%. Appears to be writing something to tape, however!

Decide to stop + re-start run. Stop run 4195 — run summary (same) appears, then I am suddenly logged off! Then prompted for N50 file — so continue + start run 4196 on tape F11138

Dead time now ~ 13% + run summary shows entries in 'records', 'events' + analysed.

Not sure what is written on the first part of tape, so, in case it's difficult to get the good data off, we decide to stop + start a new run on a new tape (F11 129)

14:06 Start run 4197 ~~8~~ (4197 was another attempt to write to IBM — failed to establish link)

15:20 JDAS error 56, subcor 371

14:45, 15:30 we agreed with Mark J to dump beams (and go back to 27.280 GeV) at 15^{30}. But at 15^{30} there are problems with ~~the~~ DESY, so that the PKR cannot fill. We continue with this fill. We have nearly over 22 nb^{-1} at 17.290 GeV.

15:45 Why is in the run-summary - that the # of CAMAC-reads (and N50 (bit)) $\frac{1}{3}$ accept < # of 2TOF COLL. 1TR /T3 (in the same time) ??? since long or are? ~~#~~

In ID histogramms mean hits/wire (and others) are ~~the~~ less entries than in the wire maps (and others). Dittmann looks for it. see p. 49

15:50 ~~the~~ PKR says that DESY problems last still at least ¼ hour.

Next filling will be again at ~~the~~ 17.280 GeV, the "current" energy.

~~15:00~~ We have > 25 nb^{-1} at 17.280 GeV, ~~that~~ seems to be enough. (We agreed already before on the energy change)

15^{59} switch-off for beam dump and injection.

16" Bolestaw Wystouch + Totsuka

21^{30} run 4204: ~10 ch of LG ADC are noisy run stopped.

LG still noisy. But leave it so — Y. Totsuka

19.7.80

24^{00} HEDGECOCK & MATSUMURA on SHIFT.

00^{01} Check histograms. Notice one DL8 is missing. No 5. Wire 48 ~ 47 | had for runs 4206 (= 1/2) and for 4207

00^{28} ~~Start~~ run 4207 and change defective DL8

00^{37} ~~Start~~ new run 4208. Check ID wire map. All looks ok.

01^{00} MARK "J" call. New fill in 15 minutes.

01^{19} Run 4208 terminated + beams dumped.

02^{27} Run 4209 started after new fill.

02^{40} JDAS ERROR 44 SUB 703 TASK 1.

During run 4209 it was noticed that tagging LG HIT MAP was incorrect We waited until (normal running) the run ended and then switched off all HVoltages and then back on. At start of Run 4210 the HV MAIN FRAME 60 stayed off and we could not reset manually. (Luminosity obviously incorrect). We have 27.33 InB and since H. WRIEDT comes in at 08.00 we decided to leave calling him until the next filling when energy will be changed.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

03^{45} Run 4210 terminated with IBM transfer problem.
04^{32} Run 4211 terminated when beams were lost.
05^{10} New filling at new energy level. Run 4212 started. Tagging HV problem still with us.
Stopped run 4212 after 3000 events after looking at histograms. LG ringing.
Run 4213 started – LG still ringing.
05 attempted to call H. WRIEDT. – no reply.
05^{58} After consulting MINOWA – stopped run 4213 and ran HVoltages down. Switched back on and started new run 4214. Blocks have stopped ringing.
06^{20} Called H. WRIEDT. Informed him of problem.
07^{45} Beams dumped for new filling.
Our luminosity measurement are obviously incorrect. TASSO, MARK J, CELLO ALL ≈ 16 GeV/c, all quiet.

08^{00} Wriedt and O'Neill on shift. Forward detector power supply is out.
$\sim 08^{30}$ New fill ready. We were still changing the supply.
08^{53} Finally going again. Start Run 4216
9.35 Run 4216 stopped after having finished work on tagging EHT-supplies: exchanged MFR 60 and 63, 63 is now 60 and vice versa. Start run 4217. Tagging EHT's look ok. ~~but there still appear error-messages~~ / ~~Error in HV system~~ There appeared error messages on the line-printer indicating that I forgot to switch back to "remote." MFR 63 (former 60) supplies no EHTs: there is now only one spare supply left.

Conclusions, Issues & Remarks:

a) On-line luminosity for runs 4210 – 4216 is too low.
b) it may happen, as in run 4209, that the tagging LG-hit-map shows a lot of spikes. ~~It~~ is known up to ~~now~~ now this has nothing to do with tagging EHT's but is on tagging system-processor and/or CAMAC-problem. To cure the problem: stop the run and start a new one. If this does not help (twice), contact a Lancastrian. [At the moment a two spikes, besides noisy channels 65-67, will known. do not worry!]
c) do not switch off/on the EHT supplies as long as there is no urgent need. If the EHT's are wrong, there should appear error messages on the line-printer. As long as this is not the case, please do not touch the EHT-supplies without having contacted a Lancastrian.
If some channels are pointed out as faulty, you should try to restore the EHT-value (if this does not work: ~~in~~ set the EHT-~~s~~ to manually to its nominal value), if you know how to do it.
If not: phone a Lancastrian, who will give you some advice via the phone or will come in.

Thank you!
H. Wriedt

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

10:18 Beams lost, as typ
10:30 Inspecting the standard histograms it was noticed that channels 25–32 of the forward μ-counters are missing. Informed Austin Ball.

11:27 Lots of beam losses during injection. Now we are finally going again. (Run 4218)
11:30 Forward μ-counters still wrong. HVs are on, output from discriminators is there. Austin Ball will come and investigate.
3 tagging HVs are a little bit unstable: ± 10V (MFR 60, channels 25–27). This causes error-messages. These instabilities ~~are~~ are acceptable.
13:00 Beams dumped for new fill.

13:45 Forward μ-counters: 1 quadrant missing from histograms ($+x, -z$ quadrant). Volts ok. Pulses to ADC's + discriminators ok. TDC start, stop, clear ok. ADC gate, clear ok. Beate Naroska informs us that no ADC entries are made unless TDC entries are there. We check TDC cabling and find no problem. Naroska suggests we swap the spare TDC from the TOF crate into the F.M.C crate. We decide to wait until the end of the fill.

Checked pulses were reaching 8 bit latch unit. Before phoning Beate N., we tried changing ADC for counters 24–32 – no effect (obvious from above!), so we will change it back. (Pedestals probably wrong on module we installed)
~ 14:00 Stop run 4220. High dead-time caused by high trigger-rate due to high single track rate
≈ 2TOF × LG>1GeV × (1 track) ≈ ~~15~~ 1.5 × higher than normal
TAGG × 1track ≈ 3–4 times higher than normal
Hoped that one of the three noisy tagging LG-blocks, which may contribute to the problem, may become quiet.
In new run still two noisy blocks, rates and dead-time are slowly coming down.
~ 14:15 Lots of spinning lead-glass blocks in barrel, part II. (Please, have a look into the folder with the run summary-sheets)
≈ Stopped run 4221 and started new run.
Spinning LG-blocks are gone after starting run 4222
Event rate still high (3–4 Hz), dead-time ~ 17% (currents: $I^- = 8.25$ mA, $I^+ = 9.86$ mA)
General impression: Beams are ~~#~~ quite dirty, indicated by high rates in some parts of the μ-system and some parts of the 2nd cap lead-glass.
15:25 Stop run 4223 to fix the bug in the forward μ-counters
15:49 Changing the TDC fixed the problem in the TDC, ADC, hitmap histograms of the Forward muon counters. Low counts in channels 7+8 are simply statistical (probably) AND the TDC in the last slot of the TOF crate is the bad one – its there simply to fill a space. Next shifts- please check these histograms occasionally. ~~Hassack~~ ADC replaced ok.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
46 RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVENTS ACC.	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT.	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4210	19/7/80	03^{15}	05^{45}	9.36	8.28		1686	3490	438	27.6	411	2.7	1813	1748	921	970	915	537
4211	"	05^{50}	08^{33}	8.73	7.71		2551	4824	664	39.0	624	3.3	2463	2375	1035	1361	1202	794
4212	"	05^{10}	05^{30}	10.48	9.02		1139	2861	296	24.7	271	2.55	1602	1404	498	708	894	446
4213	"	05^{30}	05^{59}	10.80	8.7		1651	3939	429	31.4	398	3.04	2162	1872	767	969	1243	602
4214	"	06^{05}	07^{12}	9.31	7.90		3975	7857	1034	59.5	974	5.26	4016	3894	1715	2203	1958	1305
4215	"	07^{12}	07^{48}	8.10	6.86		2113	3525	550	37.2	513	2.15	1750	1685	857	1083	1083	580
4216	"	8 55	9 36	10.0	8.0		2414	4627	628	62.2	566	4.13	2351	2565	1009	1334	1024	701
4217	"	9 36	10 13	~~7.5~~ 9.1	~~7.3~~ 8.3		2556	5327	665	46.1	619	3.84	2785	2373	991	1463	1094	737
4218	"	11:27	12:13	11.8	10.4		2753	7855	716	82.1	634	7.90	4453	3456	1206	1734	1875	955
4219	"	12:13	13:00	10.5	9.3		2353	7584	768	102.5	666	6.40	4103	3565	1268	1835	1695	1068
4220	"	13:32	14:01	11.3	9.7		1673	5679	435	144.7	290	4.12	3658	2140	550	886	1499	725
4221	"	14:02	14:22	10.5	8.8		1187	4604	309	78.2	231	3.10	2850	1803	490	741	1352	664
4222	"	14:22	15:04	10.0	8.4		2511	7853	653	86.4	567	5.52	4461	3464	1092	1576	2188	1325 ~~727~~
4223	"	15:04	15:26	9.1	7.6		1266	3388	330	34.7	285	2.22	1858	1526	546	707	973	489
4224	"	15:36	16:11	8.5	7.1		2029	4872	529	35.4	493	2.94	2624	2186	821	1142	1328	731
4225	"	16:18	17:20	7.6	6.5		3702	7858	964	65.9	898	4.14	4060	3211	1529	2011	1886	1238
4226	"	17:24	19:27	6.0	5.8		182	374	49.6	2.5	45	0.18	204	141	78	100	98	45
4227	"	11^{11}	13^{59}	10.0	10.0		2845	7854	741	63.8	677	7.0	4467	3695	1233	1757	1884	1075
4228	"	19^{59}	20^{12}	9.0	8.9		719	1704	187	15.3	171	1.3	916	717	304	388	414	248
4229	"	20^{12}	21^{08}	8.7	8.8		3332	7862	867	60	807	5.4	4110	3338	1460	1940	1853	1158
4230	"	21^{08}	22^{11}	7.7	7.8		3694	7859	862	56	806	4.6	3844	3538	1583	2070	1720	1177
4231		22^{11}	22^{33}	6.8	6.9		1257	2362	327	23	303	1.2	1156	1060	509	624	476	376
4232	"	23^{44}	0^{34}	10.5	9.8		2902	7854	756	180.1	576	6.2	4465	3505	1180	1620	1913	1027
4233	20.7.80	0^{34}	1^{22}	9.4	8.8	$10.2 \cdot 10^{-9}$	2834	7861	738	60.8	677	5.4	4235	3477	1389	1652	2049	1187
4234	"	1^{22}	2^{22}	8.4	7.9		3548	7858	922	55.9	866	4.52	3981	3225	1518	1924	1814	1204
4235	"	2^{23}	3^{13}	7.5	7.0		2989	6103	778	43.7	734	3.0	3041	2417	1243	1527	1343	918
4236	"	4^{10}	4^{51}	10.7	9.8		2361	7860	614	74.6	539	6.4	4813	3084	1042	1469	2447	983
4237	"	4^{51}	5^{40}	9.7	8.9		2895	7860	753	61.0	692	5.8	4409	3406	1305	1701	2169	1109
4238	"	5^{40}	6^{13}	8.7	8.0		1586	3911	412	30.6	382	2.5	2123	1623	660	924	997	587
4239	"	$\approx 6^{40}$	6^{45}	10.9	9.8		no data											
4240	"	7 54	8 25	11.7	10.8		1841	6418	479	91.9	387	5.86	3898	2579	749	1139	1709	784
4241	"	8 31	9 28	10.7	9.9		3404	7863	886	65.5	820	5.39	4027	3028	1448	1889	1592	1060
4243	"	9 29	10^{40}	9.2	8.4		4251	7859	1106	55.1	1051	4.42	3721	2828	1703	2198	1204	1099
4244	"	10^{41}	11^{02}	7.9	7.2		1249	2161	325	14.4	311	1.03	1011	781	514	611	348	307

data taking problems

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$ Exp.	IBM/TAPE	BP	BHABHA	MULTI-HADRON	BEAM ENERGY E_B(GeV)	FREQUENCY (MHz)	47
239 *	0.83 *	1.41 *	28.74 *	IBM	1.6	58	1	17.270	499.665	LUMINOSITY NOT CORRECT ! TERMINATED WITH IBM TRANSFER PROBLEM.
320 *	0.73 *	1.87 *	30.61 *	"	1.3	52	0 (11)	"	"	BEAMS LOST.
183 *	0.95 *	1.08 *	1.08 *	"	1.9	22	3	17.260	"	NEW ENERGY. Histogram Barrel 2 not OK
230 *	0.85 *	1.40 *	2.48 *	"	1.8	35	1	"	"	STOPPED AFTER 4000 EVENTS.
516 *	0.78 *	3.12 *	5.60 *	"	1.7	83	1	"	"	
216 *	0.61 *	1.29 *	6.89 *	"	1.4	28	1	"	"	* all numbers typ low, see remarks on p. 44
345 *	0.89 *	2.14 *	9.03 *	"		62	1	"	"	beams lost
542	1.51	3.85	12.88 *	"	1.5	57	0	"	"	
915	2.27	6.26	19.14 *	"	2.4	76	0	"		
837	1.91	5.64	24.78 *	"	2.1	77 (80)	1 (8)	"		stopped for dumping beams
933	1.45	2.42	2.42	"	3.0	36	3	17.250	499.665	
349	1.57	1.87	4.29	"	2.1	29	0	"	"	
721	1.78	4.47	8.76	"	1.8	59	1	"	"	
342	1.78	2.26	11.02	"	1.6	24	2	"	"	
474	1.58	3.21	14.23	"	1.5	38	2	"	"	~~17.26 nb~~ $\int \mathcal{L} dt$ 26 nb^{-1}
763	1.38	5.13	19.36	"	1.3	83	3	"	"	
35	1.39	0.25	19.61	"	1.3	3	0	"	"	
735	1.73	4.81	24.52	"	1.8	58	3	"	"	new fill/my
162	1.48	1.06	25.08	"	1.6	18	1	"	"	LG noisy
817	1.66	5.53	30.61	"	1.5	84	1	"	"	
840	1.53	5.65	36.26	"	1.3	74	3	"	"	
247	1.35	1.70	37.96	"	1.2	17 (64)	0 (4)	"	"	
863	1.92	5.56	5.56	"	2.0	75	5	17.240	499.650 MHz	new fill, new energy (Cryo head time run / IBM)
705	1.58	4.49	10.05	"	1.7	74	1	"	"	
885	1.69	6.00	16.05	"	1.5	68	1	"	"	
690	1.57	4.68	20.73	"	1.3	58	1	"	"	stopped for dumping beams
705	1.84	4.36	25.09	"	1.85	55	4	"	"	Forward μ counters have earlier TDC START (see note overleaf) [TEST ONLY]
726	1.66	4.81	29.80	"	1.7	66	4	"	"	
404	(2.18)?	(3.46)?	33.36	"	1.5	48 (44)	2 (3)	"	"	stopped for dumping beam and energy change
				"	2.0	—	—	17.230		new fill, new energy // beam lost at 6^{45}
659	2.18	4.02	4.02	"	2.0	56	3	"	"	new fill
998	1.94	6.62	10.64	"	1.8	102	4	"		
1060	1.70	7.24	17.88	"	1.5	91	0	"		
260	1.41	1.77	19.65	IBM ~~TAPE~~	1.2	26	2	"		

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG >4

19.7.80

16:00 Felst + Sato on shift.

20:00 LG noisy → Run 4228 stopped. (20:12)

20:12 Run4229 started. LG noise is decreased → we continue Run

20/7/80

00:00 Drumm and Bowdery on shift.

00:41 Magnet fluctuation error. Seems OK though.

N.B Run 4232 had a large computer deadtime (23%) for the IBM. OK again at Run 4233.

Judging from the 1D histograms there is a small and slightly asymmetric beam loss (more downwards) at this fill.

02:15 All's quiet. IBM is not often busy now.

02:28 JDAS Error 000044_8 subError 000701_8 Task 1

02:56 HV WRONG error message: TAGGING system – several channels are 5 to 10 volts off (2nd error message of this type)
Light dinner failed at the same time – control room plunged into darkness!

3:10 All standard histograms checked. OK

3:13 Stopped run. Beams get dumped for a new filling.

FWD μ Counter Experts (hit map, counter multiplicity)

Observation: Histogram of FWD μ counters has less entries corresponding to events with 1 or more counters firing than the number of events accepted by the FWD μ counter trigger logic.

Comment: This is possible since the histograms are compiled from TDC "hits" and the TDC's are started separately from the trigger latch gates. (SOLVED)

Conclusion: TDC's are missing some hits that the trigger logic is accepting (or its "over-triggering")

Action: For the next run, I will shorten the delay before the TDC's start (32ns → 16ns on delay box) [runs 4236 & 4237]

Result: After 2 runs, discrepancy in numbers is still there (mean TDC's values were bigger as expected). ∴ must be over-triggering?

05:21 JDAS error 56_8 subError 405_8 task 1

05:47 ID trip.

05:53 MARK J suggest new filling at 17.23 GeV at 06:10. We agree.

05:56 Magnet fluctuation error. Still seems OK all the same.

05:57 ID trip again.

06:00 Running again.

06:06 ID trip yet again. Why? We see no obvious reason for it. All trips due to anode over current.

06:10 HV off for beam dumping. Energy will be changed to 17.23 GeV

06:40 Fill ready. HV all on and ID ready.
NORD seemed to be hung up. We re-loaded it in time for PETRA to lose its beams (6^{45})

6:45 causing the ID to trip. Run 4239 never really began.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM / Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

07:54 Fill ready. 10.7 mA & 11.6 mA in e^- & e^+ beams respectively. Data rate is 4Hz.

Record Luminosity: $\langle L \rangle = 2.8 \times 10^{30}$

08:00 Dittmann & Kowaniya on shift

CAMAC error on 303: Tagging crate does not work any more!
Switch off/on crate power: works again

To everyBody who looks in detail into on-line histograms
and to HOWARD:

Problem cured HEM 4/9/80

In all "MEAN" histograms the number of events, as written at the bottom of the histogram, is wrong. One can get the correct number by pressing (F3) SET-OPTIONS, (F5) GOOD-EVENTS. Don't forget to reset this options by (F4) ALL-EVENTS.

To Howard M.: you must have mixed up the "good events" and "all events" for mean histograms.
↖ no - I just made an error!

16:00 Stephens, Flath on shift

16:30 IBM ON-LINE DOS ERROR CHECK 5 appears. What does it mean? We ignore it.

17:00 Notice that from run 4248 on, jet chamber wire 671 appears always with 8 hits.
Phone Matsumura. His tip is a faulty card in a V84. We will come in later.

~17:30 Problem in muon system readout from CRATE 14. Started run 4243, fixed before start of run 4250. Problem was faulty CAMAC module, now replaced, which resulted in no beginning and end of crate markers for crate 14, and junk data from this crate, giving many illegal chamber numbers in run-summary, and no data for crate 14 chambers in hitmap.

To Peter Dittmann: we don't understand why there was no 'crate missing' warning message. KS/AB/BK

because it got mixed up in 'crate 42' data, flagged illegal chamber # there, and couldn't understand the rest of data. Crate 14 could well have been there. PD

17.54 Herr Matsumura passes run to us to look at inner detector readout.

17.57 Continue

18.19 Another power for H. Matsumura.

18.46 End run. Herr Matsumura. trip I.D.
Next fill in 10 mins

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
50																		
RUN	DATE	START	STOP	I^+	I^-	Vac	Time	Nord Events Acc	All Trigger $\times 10^6$	T0 Reject $\times 10^6$	T0 Accept $\times 10^6$	T1 Accept + postpone $\times 10^6$	T2 Acc	T3 reject	T3 accept	T2 Collin	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4245	20.07.80	11:35	11:36	11.3	8.6	–	47	125	12	0.99	11.	0.14	79	65	26	34	28	7
4246	"	12.15	12:44	11.1	9.5	–	1711	4093	445	32.3	413	3.64	2209	1497	765	1035	833	468
4247	"	13:46	14:40	10.56	9.23	–	3208	~~6830~~ ~~7238~~	834	50.6	784	5.60	3576	2671	1366	1846	1271	848
4248	"	15:13	16:00	10.6	9.0	–	2794	7836	727	66.6	660	7.74	4428	3538	1279	1983	1651	991
4249	"	16:01	16:49	9.5	8.1		2873	7856	747	67.7	680	5.7	4054	2863	1846	1822	1610	958
4250	"	16:51	17:49	8.5	7.2		3484	7860	906	66.5	840	5.8	4136	3828	1507	2030	1656	1141
4251	"	17:50	18:43	7.6	6.5		2980	6265	776	64	732	3.7	3230	2982	1294	1704	1252	967
4252	"	18:51	19:05	6.8	5.8		635	1233	165	8.6	157	0.64	610	583	279	326	269	210
4254	"	19:40	20:33	9.5	8.1		3153	7855	820	86	734	6.4	4312	3769	1426	1902	1865	1056
4255	"	20:34	20:43	8.4	7.2		556	1386	144	10.4	134	0.96	735	653	268	335	328	209
4256	21.7.80	23:37	0:15	10.9	10.4		2114	7818	549	344	206	4.8	5638	2678	441	849	1958	811
4257	"	0:17	0:52	9.8	9.5		1681	6903	436	217	219	4.5	4667	2758	536	837	1960	840
4258	"	0:57	1:33	9.0	8.6		2151	6458	559	109	449	4.7	3867	3184	807	1171	1728	915
4259	"	1:59	2:41	11.5	11.3		2505	7855	651	65	585	6.1	4440	3436	1129	1703	1893	1047
4260	"	2:41	3:26	9.9	10.0		2505	7851	650	85	565	5.3	4380	3879	1115	1652	1815	1252
4261	"	3:26	4:23	8.8	8.9		3375	7856	876	59	817	4.9	4084	3600	1408	2008	1686	1191
4262	"	4:24	5:24	7.7	7.9		3020	5554	785	69	716	3.0	2623	2387	1193	1485	984	818
4263	"	6:08	6:56	11.0	9.9		2861	7852	764	71	672	5.9	4231	3549	1245	1814	1764	1066
4264	"	6:52	7:53	9.7	8.8		3365	7862	876	57	819	5.2	4062	3694	1445	1830	1784	1159
4265	"	7:54	8.23	8.6	7.8		1741	3622	454	25	429	2.1	1784	1445	694	917	775	536
4266	"	10:03	10:51	9.4	10.4		2808	7723	731	67	664	6.3	4062	3527	1267	1766	1804	905
4267	"	10:56	11:57	8.2	9.2		3731	7855	972	100.	871.	5.9	3827	3690	1477	1970	1568	1082
4268	"	11:59	12:43	7.1	8.1		2606	4056	678	158	523	2.8	1824	1966	892	1105	625	552
4269	"	13.34	14.17	10.3	11.4		2498	7856	651	111	540	6.5	4324	3656	1114	1647	1588	1069
4270	"	14.17	15.03	x	10.2		2719	7861	708	74.3	629	5.6	4176	3956	1228	1764	1666	1142
4271	"	15.03	15.36	7.8	9.1		1523	4161	402	36.9	365	2.8	2133	2075	674	964	884	~~667~~ 664
4272	"	16.15	17.10	8.4	9.6		3328	7862	867	111	755	6.8	3987	3609	1450	1921	1584	954
4273	"	17.11	17.54	8.2	9.5		2547	5343	663	58.7	604	3.9	2612	2441	1074	1387	943	695
4274	"	17.55	18.31	7.5	8.6		2151	3812	560	72.9	487	2.6	1862	1830	780	1075	661	480
4275	"	18.32	19.16	6.9	8.0		4412	7854	1149	75.6	1073	4.6	3692	3452	1766	2248	1309	1021
4276	"	19.17	19.48	6.0	7.0		94	168	24.6	1	235	0.087	69	70	47	46	22	23
4277	"	20.40	21.05	10.8	11.2		1439	3739	375	30.1	345	3.7	2010	1692	666	820	866	436
4278	"	21.08	21.15	9.5	10.0		411	920	103	68.9	336	0.4	226	161	74	98	98	54
4279	"	21.19	22.18	9.2	9.7		3576	7861	931	86.3	845	6.2	4001	3510	1554	1933	1737	1020
4280	"	22.28	22.29	7.9	8.3		140	340	36.4	2.2	34.2	0.2	146	124	60	84	64	46

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	BHABHA	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]
T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ RUN	$\int \mathcal{L} dt$ Exp	IBM/ TAPE	BP.	BHABHA	MULTI-HADRON	BEAM ENERGY [GeV]	FREQUENCY [MHz]	51
10	1.30	0.06	~~19.71~~ ~~0.06~~	IBM	2.0	0	0	17.230	499.665	New fill dump the beam because of asymmetric beam currents
510	2.00	3.41	~~23.12~~ ~~3.47~~	"	2.0	~~47~~	3	"	"	new fill beam lost
786	1.64	5.25	28.37	"	1.9	85 ~~47~~	0 (12)	"	"	new fill beam lost
862	2.04	5.71	~~5.71~~ ~~0.08~~	"	1.9	94	8	17.220	"	
748	1.72	4.94	10.65	"	1.7	58	3	"	"	
768	1.46	5.08	15.73	"	1.6	61	1	"	"	
547	1.22	3.63	19.36	"	1.4	76	1	"	"	new ended accidental 1.2 t.p. (low luminosity)
99	1.06	0.67	20.03	"	1.3	8	2	"	4	new ended – new fill
765	1.61	5.08	25.11	"	1.7	87	2	"	"	
120	1.46	0.81	25.92	"	1.6	9	0	"	"	beams lost
372	0.67	1.41	27.33	"	2.0	33	2	"	"	
321	0.80	1.34	28.67	"	2.4	26	0	"	"	
438	1.20	2.58	31.25	"	2.2	28 ~~44~~	2 (13)	"	"	beam dumped new fill
854	2.22	5.56	5.56	"	1.8	66	2	17.210	"	new energy
672	1.60	4.02	9.58	"	1.6	57	1	"	"	
840	1.62	5.46	15.04	"	1.4	72	1	"	"	
690	1.53	4.63	19.67	"	1.3	87	2	"	"	beam dumped new fill
959	2.20	6.30	25.97	"	1.6	92	3	"	"	
805	1.54	5.19	31.16	"	1.5	82	4	"	"	
408	1.56	2.72	33.88	"	1.3	48 ~~44~~	2 (15)	"	"	
1050	2.51	7.04	7.04	"	1.8.	107	5	17.200.	499.665	NEW ENERGY
1118	2.03	7.57	14.61	"	1.5	117	1	"	"	
588	1.52	3.96	18.57	"	1.4	43	3	"	"	
929	2.31	5.78	24.35	"	1.8	107	1	"	"	New filling.
882	2.01	5.46	29.81		1.8	82	4	"	"	
451	1.82	2.81	32.62		1.5	33 ~~44~~	1 (15)	"	"	LG crate 1 problem (crazy data)
1106	2.27	7.54	7.54	IBM	1.6	91	4	17.190	499.665 ~~MHz~~	NEW FILLING at new energy
721	1.92	4.88	12.42	"	1.4	66	2	"	"	
514	1.60	3.46	15.88	"	1.3	38	1	"	"	stopped because of internal ADC word error #9
1060	1.63	7.18	23.06	"	1.15	114	2	"	"	
25	1.85	0.17	23.23	"	81.1	5	0	"	"	beam dumped.
459	2.14	3.07	26.30	"	1.6	38	0	"	"	stopped ?? of illegal ADC word error #9
45	0.79	0.30	26.60	"	1.5	5	0	"	"	
945	1.81	6.47	32.07	"	1.5	89	1	"	"	
43	1.87	0.26	32.33	"		4 450	0 (10)	"	"	Beam dumped but just before dump

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

18.51 Start run 4252
18.54 Pause for H. Matsumura.
18.57 Continue
19.05 Run 4252 aded — new fill.
Run 4253 started before ID volts fully up. — aborted.
1960 " 4254 started
20:05 Beams lost during run 4255. I.D. trips.
Mark J phone. They have 30 nb^{-1}, Cello: 10, Jade: 26, Tasso not phoned yet.
20:45 M. Matsumura exchanges DL8 No 19 = Cell 10.2, The timing map for this cell had shown offsets since 18-7-80 when the crate controller was replaced (See page 39) (DL8 ser # 56 is now replaced by #260). Waiting for beam to see if this cured the problem.
22.25 still no beam PKR. PETRA power failed. But injection still difficult after repair. They are investigating.

23.39 Beam back Start run 4256 I.D. timing for CELL 10.2 now seems OK.

21.7.80
0:00 Petersen & Sato on shift

DL8 is now ok. timing map & event display.

0:50 Wire #46 of IC was dead, corresponding DL8 was changed by Matsumara. It is now OK.

08:00 McCann & Dittman on shift.

08:15 We agree to new filling at new energy at 08:30
08:20 "IBM BUSY" on TV screen — goes on for 400 seconds. Some confusion at IBM !!
08:26 Stop run for new fill.
~9.30 Thyristor alarm on I.D. immediately after pressing green button to switch it on.
12:30 Frequent 'IBM BUSY's lead to 20% dead time
13:20 New fill Ready. Again Thyristor alarm on I.D. when try to switch it on. Drumm fixed it up.
13-34 Start run 4269. Luminosity reading is $2.58 \cdot 10^{30}$

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM / Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

14.17 End run 4269. Start run 4270
15:03 End run 4270. Start 4271. Mark J suggest moving to a new energy. We agree on another 30 mins at this energy - still quite high currents in this fill.

16-00 Drumm & BAMFORD ON SHIFT.
16-13 New fillings at new energy.
16-20 Muon cards 14 missing - read OK!
18-30 TOKYO: #9 Illegal ADC word error; stopped run 4274 and re-started which cured it. This happened probably at very end display of the Run 4274. For Tokyo people, as it is a LG-fault. See Run-summary output of Runs 4273+4274.
19.50 Run stopped for new fill.
20.40 Restart; run = 4277
21-05 Problem with L.G. ADC word error again, run stopped & re-started OK.
21-15 No trigger error message — N=20 read O.K.
22:13 BOWDERY reports: Having observed on-line display of FWD μ triggers for several hours, counter #4 seems to be dead. TDC values for tubes 7 & 8 are okay so maybe the pulses are not reaching the latch after leaving the discriminator. Risking all, I will request a five minute break at the end of this run to check this hypothesis.
22:18 Run 4279 ends.
Bingo! The cable to latch #4 seems to be broken. Replace cable #4 by cable #18 (spare).
22:26 Run 4280 starts. Second event (of FWD μ trigger) seen on display has been caused by counter 4. Near hysteria in the control room!
22:29 Run stops. - Beam accidentally dumped just before power down ID stopped. Beams lost at time of manual off for change.
23:00 Break at Petra. Restart at midnight. The next filling will be at new energy 17.480, as agreed with Mark J.

22.7.80
0:00 Petersen & Sato on shift.
3:00 RUN 4281 started E_B = 17.880. LG ADC seems to be OK.
8:00 Eichler, Matsumura on shift
8:20 lower magnet-current to zero since no beam till 14:00
10:45 Koch (coordinator) phoned: As Telst proposed, Petra will start at 17.000 GeV and scan upwards.
14:50 magnet on, petra starts injection
16:00. Hughes + Drumm.
16:30 Beams accelerated to 17 GeV, ~ 11.5 mA but I_{et} has very short lifetime ~ 1.5 hrs

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
54 RUN	DATE	START	STOP	I^+	I^-	Vac	Time (sec)	NORD ETVS ACC	ALL TRG. $\times 10^6$	T0 Reject $\times 10^6$	T0 ACC. $\times 10^6$	T1 ACC. PP. $\times 10^6$	T2 ACC.	T3 REJ.	T3 ACC.	T2 COLL.	T2 ≥ 2 TOF LG>1R	T1 LG>4
4281	22.9.84	3:01	3:59	10.4	10.8		3365	7850	875	66.3	809	7.5	4030	3453	1443	1935	1599	853
4282	"	3:59	5:05	8.9	9.2		3888	7858	1012	63	949	7.0	3706	3841	1652	1952	1420	903
4283	"	5:09	5:52	7.6	7.8		2559	4539	665.9	51	615	3.6	2094	2201	1099	1233	766	513
4284	"	6:32	7:15	10.4	10.9		2792	7857	726	63	695	6.9	4469	3160	1279	1594	2201	793
4285	"	7:20	8:11	8.9	9.5		3048	7858	793	75	718	5.9	4418	3232	1232	1642	2295	919
4286	"	16:52	17:52	8.75	10.84		3576	7841	932	77.5	854	7.0	3693	3945	1473	1913	1520	827
4287	"	17:53	19:02	6.6	8.2		4091	7852	1066	105.2	960	7.4	3535	4498	1681	1998	1365	903
4288	"	19:02	20:04	6.5	8.1		3679	6225	958	99.1	859	5.4	2786	3585	1447	1755	981	746
4289	"	20:51	20:58	11.3	11.6		377	1129	98.3	9.6	88.6	1.03	611	546	165	277	263	109
4290	"	IBM	jammed in pedestal	rm.														
4291	"	21:02	21:06	10.9	11.2		259	172	67.3	5165	15.7	0.16	78	88	33	22	44	23
4292	"	21:07	21:56	10.7	11.1		2907	7861	757	89	668	6.1	4159	3543	1225	1816	1969	967
4293	"	21:56	22:38	9.4	9.8		1882	4610	489	33.9	455	3.3	2348	2186	779	1076	1135	615
4294	"	22:29		8.75	9.05		3799	7855	988	61.8	926	5.4	3867	3486	1551	2039	1599	941
4295	"	23:33	0:24	7.6	7.9		3026	5469	787	366	750.6	3.4	2541	2483	1223	1413	1020	681
4296	23.7.84	01:14	01:16	10.7	10.8		94	290	24	3.2	2.1	0.2	170	358	35	96	56	24
4297	"	01:18	02:14	10.7	10.8		3354	7860	873	100	773	6.4	4078	3595	1324	1865	1867	912
4298	"	02:19	03:26	9.1	9.2		4019	7854	1046	56.9	989	5.4	3765	3457	1617	1964	1595	1005
4299	"	03:26	04:33	7.9	7.9		3964	6767	1031	50.8	930	3.9	3243	2756	1571	1867	1273	825
4300	24.7.84	0:27	01:09	11.28	11.52		2477	7840	644.5	67.3	577.2	7.7	4354	3995	1173	1617	2062	748
4301	"	1:10	01:56	10.06	10.10		2711	7605	705.5	62.1	643.4	7.3	3968	4101	1245	1732	1817	811
4302	"	3:31	4:12	11.5	11.7		2369	7849	616.3	70.1	546.2	8.8	4254	4299	1105	1643	1989	820
4303	"	4:16	4:57	10.3	10.4		2441	7854	635.4	64.1	571.3	7.7	4194	4400	1137	1721	2034	888
4304	"	4:59	5:46	9.2	9.3		2832	7854	736.9	65.1	671.8	7.2	4058	4304	1203	1813	1887	971
4305	"	5:47	6:07	8.2	8.3		1179	2999	306.7	21.3	285.0	2.6	1755	1664	529	677	733	373
4306	"	8:58	9:21	10.9	9.0		1097	2665	285.5	94.5	191.0	2.2	1604	1058	319	455	853	273
4307	"	9:21	10:22	10.3	9.0		3627	7854	943.7	109.1	834.6	7.2	3896	4269	1482	1807	1828	933
4308	"	10:22	10:42	8.96	6.0		1123	2106	292.3	61.9	230.5	1.8	1025	1045	416	504	478	270
4309	"	10:42	11:36	8.73	5.89		3175	5869	826.1	104.3	721.8	4.9	2955	2980	1255	1454	1200	764
4310	"	14:50	15:38	8.71	9.29		3011	6588	783.5	79.4	704.1	6.3	3167	3593	1305	1672	1193	756
4311	"	15:50	16:56	7.70	8.21		4012	7848	1044	153	890	7.15	3525	4647	1738	2063	1242	937
4312	"	16:57	17:35	6.3	6.4		2243	3845	583	83.7	499	3,21	1689	2215	915	1043	599	474
4313	"	17:40	18:58	5.7	6.0		4648	7860	1209	53.2	1156	5.82	3394	4211	1949	2195	1160	1057
4314	"	18:58	19:36	4.9	5.1		2206	3357	574	28.9	545	2.21	1430	1709	855	976	456	460

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]
T1 LUMI	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ RUN	$\int \mathcal{L} dt$ EXP	IBM TAPE	BP	BHABHA	MULTI HADRON	Beam Energy EO (GeV)	FREQ. (KHZ)	COMMENTS
1091	2.18	7.34	7.34	IBM	1.9	106	3	17.180	499.6650	new energy
1036	1.82	7.08	14.42	"	1.5	93	4	"	"	
565	1.50	3.83	18.25	"	1.2	54	1	"	"	Beam dumped
887	2.15	6.01	24.26	"	1.8	67	1	"	"	New fill
842	1.87	5.76	29.96	"	1.6	74	2	"		
1169	2.17	7.75	7.75	"	1.4	95	5	17.000	"	New Energy
1060	1.72	7.03	14.78	"	1.2	82	4	"	"	
719	1.30	4.78	19.56	"	1.0	58	0	"	"	Beam dumped
163	2.77	1.05	20.61	"	1.6	11	1	"	"	IBM jam
					"					" "
29	0.56	0.15	20.76	"	"	5	1	"	"	" "
960	2.15	6.26	27.02	"	1.5	99	4	"	"	
570	2.02	3.80	30.82	"	1.3	72	2	"	"	
961	1.64	6.24	6.24	"	1.2	96	3	17.010	"	New Energy ↕ same filling
619	1.36	4.12	10.36	"	1.1	46	3	"	"	
33	2.38	0.22	10.58	"	1.7	5	0	"	"	.0 hz.
1013	2.01	6.73	17.31	"	"	89	4	"	"	
972	1.59	6.41	23.72	"		102	4	"	"	
771	1.28	5.08	28.80	"	1.3	66	2	"	"	
882	2.37	5.86	34.66	"	1.9	87	3	"	"	New fill
804	1.93	5.22	39.88	"	1.6	80	2	"	"	beams lost
856	2.39	5.66	45.54	"	2.0	82	1	"	"	normal and.
901	2.45	5.98	5.98	"	1.7	98	5	17.020		normal and NEW ENERGY SAME FILL
937	2.20	6.23	12.21	"	1.6	113	2	"		normal and
357	1.36	2.31	14.52	"	1.4	42	3	"		beams lost
196	1.13	1.24	15.76	"	3.0→1.5	17	0	"	499.6650	new fill
894	1.61	5.84	21.60	"	1.3	82	2	"	"	
226	1.36	1.53	23.13	"	1.2	19	0	"	"	stopped due to trigger trouble
673	1.39	4.42	27.55	"	1.1	56	1	"	"	Beams lost
790	1.93	5.20	32.75	"	1.4	79	2	"	"	New fill
950	1.57	6.30	6.3	"	1.3	93	3	17.030	"	↕ New energy same fill
482	1.42	3.17	9,47	"	1.0	44	3	"		Stopped due to IBM problems
928	1.32	6.14	15.61	EXABYTE	0.9	89	2	"		
359	1.06	2.33	17.94	IBM		44	2	"		beam dumped

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

3718

22.7.80.

16.45 Stable beams. I_{e^-} 10.37 I_{e^+} 8.77. 17 GeV.

16.52 Start Run. 4286

17.45 Hexe comes, Brumm goes
histograms + Events checked, look okay
G. Hughes detected, that the T_3-reject rate went up ~~since~~ at Run 4044 whereas T3 accept stays at the old rate. Maybe that the beam conditions changed at Run 4044 (2½ days break).
IBM-"busy" causes ~ 18% dead time at Run 4288

19.50 Mark J wants a new filling at 20.00

20.51 Start Run # 4289 $\mathcal{L}$ (atstat run) ~~2.77~~ $\times 10^{30}$ (x 1.10 correction online) = ~~3.05~~ $\times 10^{30}$
IBM Busy > 60 sec

IBM transfer Error (oct) 000053 Subsev 000000 Env Cut 000000
20.58. Run stopped accidentally after above error. (C Bansch) following erroneous instructions!!
Start 4290. terminated by Nord since IBM Busy in pedestal run.

IBM online job check 9.

21.01 Start 4291

Again IBM transfer Error 000053 after IBM busy > 60 sec.

21.04 ——— Beam Pipe Temperature alarm station # 11 Temp 37.9° ; Phone Bartel ⇒ Reset threshold.

21.07 Start Run 4292

Wednesday, 23 July 1980

0.00 John (Hazardous John) Hassard and L. H. O'Neill on Shift.

0.09 Mark J calls. Wants new fill at 0.20

0.22 Pump beams.

1.10 Beams again. Start Run 4296

1.14 MCate? missing modules.

1.16 ID trip.

2.20 Run 4297 over. Dump out standard histograms. John says they look alright (the same as usual) so far as he can tell. He probably knows more about them than I do.

2.25 Fetching reformatting jobs from the IBM. Runs 4274-4281. Awful mess with LG ADC's. ~800 events/30k fail to reformat. Non-increasing ADC addresses, illegal crate number etc. Previous tape, Runs 4270-4273 not much better. Will make dump for L. G. guys. Note log book comments p 53

2.40 (This ___ shift is ⅓ over). For the latest monalde tape: Runs 4282-4285, the ADC's are ok

4.26 Mark J want refill. They lost 2 hours data with sticky collimators. ~~need better~~. We have more nb^{-1} than anybody
4.30 Turn off for beam dump. End Run 4295
5.13 17.010 GeV/beam, on the very verge of success, beams lost.

how can you divide 8 hours by 3 in your head??

5.20 (This ___ shift is ⅔ over.) (You realize 1 hr = 60 min? $\frac{8\,hr}{3}$ = 2 hr 40 min.)

5.45 BREAK. Comes up on the PETRA screen. RESTART 7.30 AM.

7.30 PKR claims the official restart time (now) is only slightly optimistic. Problem is a singed - nearly burned cable - to the magnet power supplies.

8.00 Nozaki and Takeda on shift

No beam until 10.00 → 3°° pm.
Linac defect.
We lowered the magnet current to zero. ~~and shut~~
Compensation magnets were switched off.

15.25 Still no beams. PKR says, "I hope we have beams half an hour later".

It is a quiet, calm and boring shift.

1600 Felst / Minowa on shift
2230 still no beams
ask PKR still bad LINAC vac.

23.59 first sign of beams, set the magnets to 7500 A again

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

24.7.80 Stephens & Warming on shift

0^{00} after hopefully solving the Linac problem they start injection
Check histograms after ~1500 events all seems OK,
at run start: error message on the line printer: YPARA PED CRT 4 CH 81 > 800 ↖ did not show up at run 4311
since histograms look ok no action taken

1^{20} JDAS Error 44 Suberror 701 Task 1

1^{56} beams lost due to Sender ausfall
Mark J phoned around for $\int \mathcal{L} dt$, result: JADE 40, Mark J 30, Tasso 24, Cello 24 nb^{-1}
it was agreed to start the next fill at the old energy and increase energy after ~15 min.
they had various problems yesterday

3.31 Start Run 4302

04.00 Mark J ask us if it is OK change energy at 04.15... we agree.
Our loud speaker is not working so we are not getting any messages from PKR. They will send someone to check later today.

5.05 JDAS Error 44 Suberror 702 Task 1

8^{00} Heinzelmann and Takeda on shift.
PKR is trying injection.

9^{00} New fill ready.
RUN 4306 started
At the beginning, BP current was ~ 3.0. After 5 minutes, it decreased to 1.5.

9^{19} RUN 4306 PAUSED. by requirement of Heinzelmann. (some adjustments for ID)

9^{20} CONTINUE RUN

9^{25} STOP RUN 4306 In this run wires 192-200 are missing because of dead U34. Repaired now.
START RUN 4307.

10^{22} RUN 4307 stopped with 8000 events.
RUN 4308 started.

10^{40} "NO TRIGGERS" appeared on TV screen. Nothing wrong!?
We stopped the run.

10^{42} RUN 4309 start. It seems OK,
"IBM BUSY" many times.

11^{20} Mark-J calls. New filling in 20 min. (same energy)

11^{40} Beams lost. RUN 4309 stopped.
GTR1, Q2H failure

14^{50} Beam ready. START RUN 4310
ll-crate missing ☒ → reset

15^{34} Mark-J called and asked our luminosity.

JADE	32
MARK-J	35.5
TASSO	31
CELLO	28

Beam energy should be changed.

15^{43} RUN 4310 stopped.

15^{50} Beam Energy 17.03 GeV RUN 4311 started.

15^{51} ID tripped. RUN PAUSE. ⇒ CONTINUE

16^{00} Clarke + Eichler
Run 4312 LG illegal address 658x
LG illegal data 120x
Run 4313 o.K.

19 20 JADE 17 nb^{-1}
TASSO 20 nb^{-1}
Mark-J 23 nb^{-1}

19:40 beam dumped

22:53 start Run. After ~ 5 min data taking, message from control room: bunches in wrong position
beams dumped

23:20 intermittency. lower magnet current

25.7.80 Nozaki + Kung on shift.

0^{00}

0^{10} magnet current raised a 7500 A.

0^{20} start run 4316.

2.05. Mark J. ask if we object to a change in energy. We have 30.5 nb^{-1} so we agree.
Energy to be changed in 10 mins.

2.15. Stop run to change energy, new run is 4319. (at 17.040 GeV).

2.22. Beams lost. ⇒ ID trips!!! So much for Run 4319!

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC.	ALL TRIGGERS $\times 10^6$	TØ REJECT $\times 10^6$	TØ ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4315	24.7.80	22.50		9.45	9.13		211	527	54.7	.5	49.6	0,46	334	273	94	178	147	41
4316	25.7.80	0·11	0·54	11.2	11.6		2827	7840	657	78.6	578.8	7.8	4257	3750	1242	1660	2145	829
4317	"	0·54	1·44	—	—		2813	7859	732	62.2	669.8	7.4	4107	4076	1338	1779	2069	941
4318	"	1·45	2·13	8.8	9.1		1494	3614	388	35.8	352.8	3.2	1812	1928	663	816	915	431
4319	"	2·13	2·24	8.5	8.2		551	1287	143	9.3	134	1.1	607	683	234	311	285	172
4320	"	4·24	5·11	10.8	11.6		2617	7848	681	64.3	617	7.6	4160	3748	1297	1693	2083	784
4321	"	5·11	5·35	9.6	10.3		1388	3997	361	30.3	331	3.5	1986	1913	694	848	1026	486
4322	"	7.38	8.23	9.9	11.1		2676	7849	696	64.0	632	6.5	4190	3552	1222	1651	2189	871
4323	"	8.24	9:19	7.5	8.4		3297	7858	858	71.8	787	6.5	3787	4031	1420	1737	1744	938
4324	"	9.17	10:25	6.4	7.0		3917	7861	1019	62.2	957	5.9	3574	4086	1679	1932	1494	979
4325	"	10.26	10.28				100	154	25.9	5.8	20.1	0.1	59	72	32	37	23	22
4326	"	1236	1255	10.9	11.4		1100	3219	286	26.5	260	3.4	1517	1649	553	757	585	368
4327	"	1257	1352	9.9	10.4		3316	7854	863	173.8	689	8.4	3755	4535	1361	1825	1574	967
4328	"	1353	1358	8.8	9.2		289	655	75	17.0	58	0.6	288	330	104	160	120	90
4329	"	1400	1454	8.6	9.0		3205	6223	834	188	627	5.5	2507	3357	1127	1476	1205	844
4331	"	1505	1647	7.0	7.3		4207	7855	1095	71.8	1022	6.1	3622	4132	1652	2054	1385	1056
4332	"	1619	1715	6.20	6.31		3338	5494	869	51.8	817	3.6	2430	2642	1975	1516	897	790
4333	"	1936	2023	9.57	9.87		3523	6566	657	76.6	580	5,3	3392	3251	1087	1528	1613	825
4334	"	1 circuit lost																
4335	"	2031		8.31	8.54		3435	low ?	894	94.8	799	7.2	3904	4896	1486	low ?	low ?	low 0
4336		2134	2237	6.3	6.4		3105	6340	808	45	763	5.3	2992	3858	1284	1608	1382	810
4337	26.7.80	0.48	1.43	8.3	10.3		3135	7850	814	95.5	719	7.7	4064	4465	1347	1754	1977	923
4338	~	1.41	2.44	7.0	8.7		3577	7852	930	57	873	7.5	3778	5054	1573	1983	1552	1001
4339	~	2.41	3.14	5.8	7.3		1940	3606	504	26.5	504	3.1	1651	2290	822	921	667	478
4340	26/7/80	8.14	9.09	11.4	11.4		3100	7847	807	60.9	746	8.0	3924	4265	1445	1823	15984	860
4341	"	9.10	9.14	9.8	9.8		194	442	51	3.3	47	0.5	214	291	70	107	86	62
4342	"	9.15	10.15	9.7	9.7		3492	7846	909	60.6	848	8.4	3731	5134	1569	1987	1367	945
4343	"	10.16	11.28	8.1	8.2		4304	9856	1119	75.7	1043	7.6	3534	5205	1772	2223	1530	1004
4344	"	11.29	12.08	6.9	6.9		2285	3671	594.4	30.7	3631	3.2	1638	2288	845	1139	451	468
4345	"	13:11	14:01	11.1	11.3		2927	7840	761.5	74.1	687	11.6	3857	4414	1404	1908	1509	955
4346	"	14.01	14.56	9.4	9.7		3252	7603	846	77.6	769	6.2	3804	4046	1290	1969	1560	1080
4347	"	15.01	16.03	7.9	8.22		3690	7545	960	56.4	904	5.9	3635	4259	1485	2035	1416	1004
4348	"	1807	1854	9.9	10.8		2808	7851	731	64.4	667	7.9	4086	3930	1250	1833	1801	958
4349	"	1855	1950	8.4	9.2		3335	7856	867.7	60.1	807.6	6.5	3931	4186	1419	1991	1671	1037

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ RUN	$\int \mathcal{L} dt$ EXP	IBH/TAPE	BP current	BHABHA	Multi hadron	BEAM ENERGY	FREQ (KHZ)	
15	0.48	0.1	18.04	IBM	1.4	3	2	17.030		bunches in wrong position
857	2·24	5·66	23.70	"	1.6	78	1	"	499.665	
812	1.89	5.82	29.02	"	1.5	82	1	"	"	
405	1·79	2·68	31.70	"	1.3	31	1	"	"	stop run to change energy.
144	1.72	0.95	0.95	"	1.0	14	0	17.040		NEW ENERGY.
973	2.47	6.46	7.41	"	1.5	77	4	"	"	new filling.
482	2.28	3.16	10.57	"	1.5	56	2	"	"	beams lost.
1015	2.48	6.63	17.20	"	1.5	100	2	"	"	
1102	2.19	7.24	24.44	"	1.4	107	2	"	"	
1074	1.81	7.10	31.54	"	1.2	102	3	"	"	
25	1.60	0.16	31.70	"		3	0	"	"	
486	2.94	3.24	3.24	"	1.9	42	4	17.050	"	New Energy
1030	2.04	6.77	10.01	"	1.7	109	5	"	"	
90	1.89	0.55	10.56	"	1.5	6	1	"	"	
834	1.74	5.58	16.14	"	1.3	88	3	"	"	
1008	1.61	6.77	22.91	"	1.0	112	5	"	"	Magnet trip, beams dumped soon after
639	1.28	4.26	27.17	"	"	65	0	"	"	
826	2,16	5,45	32.62	"	1,6	82	1	17.050	"	
								17.060	"	New Energy
0	1.67	5.73	5.73		1,4	7	1	"	"	
710	1.50	4.67	10.40		1.2	65	2	"	"	beams dumped at end of run
897	1.90	5.94	16.34	"	1.7	71	3	"	"	
891	1.67	5.96	22.30	"		90	1	"	"	
411	1·39	2·70	25.00	"	1.1	53	0	"	"	beam dumped as expected
1079	2.32	7.18	32.18	"	1.8	107	0	"	"	
65	2.24	0.43	32.61	"	1.6	7	0	"	"	
983	1.86	6.51	6.51	"	1.5	73	3	17.070	"	new Energy
989	1.54	6.62	13.13	"	1.3	105	1	"	"	
470	1.38	3.15	16.28	"	1.1	47	1	"	"	Beam dumped
1114	2.51	7.36	23.64	"	1.8	105	0	"	"	new fill
1007	2.07	6.73	30.37	"	1.5	106	4	"	"	
971	1.75	6.46	36.46	"	1.2	85	2	17.080		new Energy Last beam
1003	2·37	6.66	13·12	"	1.8	97	1	"	"	New fill
957	1.88	6.28	19.40	"	1.5	93	3	"	"	normal end

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG >4

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH / Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

4.27. New filling eventually ready. Start run 4320.
5.33. Beams lost. ⇒ ID trips. (I WAKE UP !). (How?)
7.35. Beams finally ready ⇒ start RUN 4328

8^{00} Bartel & Nirowa on shift
Look at histograms:
⊙ Forward counters #24+25 ~~now completely dead, no TDC, no ADC~~ recovered a little ADC and TDC some times firing
#9 and 10 recovered on TDC + ADC but #11 has very small pulse height now

Beam pipe temperatures are reasonable #11 (-z getter pump) 36° (10 + 9 mA)
Lead glass thresholds checked

10^{30} Interrupt for ~ 1h to repair a Petra magnet. run down our magnets to save money and power

12^{35} Start with new energy 17.050

OF course
Analysis of many months of data taking led to $\mathcal{L} = \int \mathcal{L}_0 (1 + \frac{dt}{\tau}) e^{-t/\tau}$ and this form was integrated analytically to obtain conclusion

12.52 Error Message comes on the printer :
[Error 13 IN 34323 AT 103014 ; PAGE FAULT FOR NON-DEMAND
PAGE No. 137]
then Run hangs-up. after starting a new RUN, it seems OK.

14^{30} Problems to send data to the IBM. Not only us also Pluto and Cells Kaiserwalter does not observe any severe use of the link. All users have moderate rates.
IBM will investigate the slowness of the BB.
Transmission rate got better when LENA stopped transferring data.
They think it could be their program. They will investigate the case.

15^{40} Petra-triggers system failed do not get signals from PKR stop run 4329
19^{15} continue to run
Runs 4330 = junk

16^{00} Marshall + Olsen on shift
17^{20} Water alarm, magnet trip
Tagging lead glass hit map shows peaks at 75, 80. Cannot reach anybody responsible for them.
Energy sums look normal. ↳ spinning channels of ABC of Barrel LG.
18^{50} Beams in again, nice Pili. We have to wait for another ½ hour. Control technicians at work.
19^{25} Broken connection mended. Magnet is going high again.
Mark J says: stay 1 hour more at present energy, Cello has only 12 nb^{-1}! whereas we have 27 nb^{-1}
19^{30} Energy change; just before IBM busy for over 3 minutes. Physics LENA, they see nothing unusual
After some problems will link, it gets going
16 events and dead stop again, for 35 seconds.

21^{37} Tried to start run 4336 and get logged off Nord
Restart and then notice that the run summary for 4335 has lots of missing information.
46 Bhabas recorded, no hadrons (although we know there was 1 event for this run)

22^{20} Careful numerical consideration of the fill decay times and refill times show that under present conditions, luminosity is being lost by allowing the fill to last 5 hours. We would (did you take into account be better off on $\int \mathcal{L}$ if the fill was killed after 4 hours (and maybe even 3). (but been Need the specific Put the suggestion to Mark J with the added push that a new Petra shift come on at Lumi-increase for later events? 23^{00} his. She may not be able to refill in 1 hour? Mark J have chosen a shift & they U. Bartel need time to discuss.. Since $\int \mathcal{L}$ means more to Mark J than $\#_{\mu}$ I bet DM10 they will dump. No takers, but Mark J and others agree to dump in 5 min.
22^{30} Beam dump.
23^{00} Petra now has has problems ... ahem. But, they would have happened anyway. They would.

26/7/80
0:00 Heuer and Boerder on shift
0.48 * new filling ready * NORD-time, which is 5 min. late
1:07 $L = 2.18 \times 10^{30}$ Event rate ~ 3.1 Hz (peak)
1:12 LG Threshold appears to be too low, adjusted
Stel-histograms look more or less okay. First trigger bit a bit high (46 Kreisel-bits hit too low according to the histos.). Trigger 3 output has 2 additional spikes which have been noticed already in Runs 4309 ff.
1.33 IBM busy quite often
1:46 Muon crate 11 needed resetting - OK.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 OF LG>1 ≥ 1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

26.7.80

1.53 4 noisy LG-endcap chs in Run 4338, but the barrel looks very clean, so live with it for this

2.55 quiet endcaps again in Run 4339

3.18 New filling requested by Mark J

We are short in multihadrons at this energy!

4:10 New filling lost

Histograms of "Trigger Bits" & "Trigger Input" in 'What to know about JDAS' have been updated to show the Forward Muon Counters. Also a new histogram "All-4-FWD-HISTS" has been added.

4:36 PETRA has not yet started injection. Perhaps the operators are dreaming of far-away islands, long cool drinks and superconducting RF cavities.....

They have problems with one power supply, group 4 is working on.

5:36 Very quiet. Too quiet. No beam. This condition will last at least ~1 hour

5:46 We power down the magnet. No, since Bowdery wants a test for the forward μ-chs with beam off / magnet on

7:15 test finished, magnet current down to 1000 A

7:36 PETRA injection seems imminent so we will power up our magnet soon.

7:38 Injection announced on the TV monitor. We proceed to power up the magnet. Compensating magnets are still off, probably since the failure yesterday afternoon (or since long time?)

That costs lumi for all experiments, L.H.Sa.

8:00 Meier & Sato on shift.

8:30 3rd e⁺ Bunch out of time, HARU-J asks whether we have trigger-problems, everything seems to be O.K., so we agreed to continue the filling

9:10 Run 4341 started

9:14 PETRA increases Energy during the run ?! → new Energy 17.070 GeV

9:15 Run 4342 with new Energy

13:35 LG thresholds changed to the value corresponding to 30mV

14:53 ID-Trip

14:54 Run 4346 stopped (PETRA increases Energy to 17.080 GeV)

16:00 Warning + Murphy

16:03 Lost beams end run 4347

→ reason was: a foil dropped into the beam due to failure of ~~hydraulic~~ aeropneumatic.

17:00 Compensating magnets are off, even though set to 8002.8 A. We try switching them on, since there is no reason for having them off (according to this log book). Lights comes on, but reads zero.

26.7.80

Flashing storing light. So we call the magnet experts. They search for us. The NORD clock is slow by ~5 minutes.

Histograms for run 4348 show spike in tagging LG #183. In run 4349 it has moved to #190. G. Hughes has been informed.

20:15 LG thresholds readjusted to 25 mV. There are just spinning 4 dc channels. SA

21:05 muon crate 7 missing

21:45 "no triggers for (some) seconds", we could not find any reason, so we stopped run, started a new run after that everything was presumably OK again

22:40 When looking for old histograms we can get none (not even the last one), despite being given a list by the NORD (at the first attempt it listed 50 runs, at the second it listed 20). So we reload the NORD 10. This dawning time between runs, ~~4353~~ 4352 and ~~4353~~ 4353. There were run numbers. There were histograms. Now get last 20 histograms, last 50 run numbers OK.

22:43 Run 4353: beams lost after 1 event.

27/7/80

00:00 Takeda, Hughes.

00:09 RUN 4355 start.

00:40 LG threshold adjusted to 30 mV.

01:10 LG high voltages were reset by means of "RING-HB".

01:12 RUN 4355 stop. RUN 4356 start.

02:10 Mark-J called. New filling ~~start~~ will start at 02:20. We ~~a~~ agreed.

02:17 RUN 4356 stopped for a new filling.

02:25 Tagging/lumi discrimin. thresholds adjusted for test run

Chamel/old/new 1/200/100 ; 2/100/80 ; 3/300/200 ; 4/160/100.

Rate checks will be made on ① lumi Hi/Lo thresholds ② tagg triggers ③ Bhabha rate/lumi to gauge the effect of this change [aimed at rebalancing the +z/-z pulse heights] G.H. (see below)

02:29 Magnet trip. ⇒ ID TRIP.

Magnet + Compensating Coils both off. Water leak in power house next to Hall door.

Pipe had come loose from connection (again). Tank is now empty.

03:00 Petra Beam Established. Water Restored in Power House — Electricians still working. Jets off.

04:02 Problems with Main Magnet controller are serious — Electricians say it will take ≥ 4 hours to fix

03:36 → 04:19 tested above tagging thresholds. Unacceptably high T1 Tagg. TR trigger rate. Try 2nd test

Threshold set 1/200/150 ; 2/100/80 ; 3/300/250 ; 4/160/125.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TØ REJECT $\times 10^6$	TØ ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
66																		
Run	Date	Start	Stop	I^+	I^-	Vac	Time (sec)	NORD Events acc	All Triggers $*10^6$	TØ reject $*10^6$	TØ accept $*10^6$	acc+postp $*10^6$	T2 accept	T3 reject	T3 accept	T2 collin	T2 ≥ 2 TOF LG>1 GeV ≥ 1 Track	T1 LG>4
4350	26.7.80	19.51	20.59	7.9	8.7		4083	7852	1062.1	62.4	999.7	5.3	3925	3900	1556	2052	1686	1070
4351	"	2100	2143	6.6	7.3		2559	4275	666.2	58.9	607.4	2.7	1962	2045	948	1144	827	663
4352	"	2144	2157	5.9	6.5		802	1355	208.5	9.0	199.6	0.8	629	656	279	379	234	190
4354	27.7.80	23^{20}	0^{09}	10.2	10.4		2891	7848	752.	61.9	690.3	6.0	4457	3568	1176	1756	2428	919
4355	"	0^{09}	1^{12}	8.68	9.01		3702	7854	963	101	862	6.5	4064	3611	1367	1741	2156	1067
4356	"	1^{12}	2^{18}	8.33	7.63		3913	7522	1018	51.8	966	4.6	3703	3491	1428	1846	1808	1109
4357	"	12^{27}	13^{19}	11.2	11.6		3077	7795	800	93.9	706	7.4	3992	3986	1222	1697	1775	895
4358	"	13^{20}	14^{25}	8.8	9.0		3878	7851	1008	67.9	940	6.8	3613	4268	1517	1933	1400	1010
4359	"	14^{26}	15^{33}	7.2	7.3		3998	6692	1040	64.3	976	5.0	3046	3480	1426	1877	1071	961
4360	"	16^{29}	17.31	10.76	11.25		3642	7855	947	59.3	888	5.4	4037	3061	1298	1877	1715	1088
4361	"	17^{31}	18.50	8.11	8.75		4662	7862	1213	53.1	1160	3.84	3666	3088	1549	2167	1384	1192
4362	"	1851	$19.^{40}$	6.22	6.74		2902	4544	754.8	29.1	725.7	1.6	2167	1660	943	1278	832	728
4363	"	23^{05}	0^{08}	9.69	10.52		3540	7851	920	77.9	842	5.9	4141	3525	1286	1850	2027	984
4364	28/7/80	00:09	00:15	7.70	840		319	654	83	11.8	71.1	0.84	295	240	112	143	152	103
4365	"	00:17	00:42	7.50	8.20		1470	2415	382	75.9	306	1.6	1234	1134	431	620	583	317
4366	"	00:42	01:32	6.92	7.58		2867	4814	746	92.0	653	3.1	2341	2236	924	1263	1063	711
4367	"	01:32	04:58	5.93	6.50		1503	2430	390	17	373	1.4	1175	1111	495	670	511	350
4368	"	04:26	05:14	10.16	10.74		2854	7851	742	68	674	5.8	4570	3221	1102	1586	2940	926
4369	"	05:15	06:14	8.0	8.9		3533	9854	919	69	850	4.9	4359	3169	1234	1735	2605	1101
4370	"	06:18	07:33	6.46	7.08		4443	7861	1154	73	1081	4.2	4196	3244	1463	1890	2377	1140
4371	"	07:33	07:44	5.1	5.6		582	899	151	5.8	145	0.97	474	410	166	245	249	137
4372	"	0901	0949	10.8	11.0		2863	7842	745	71	674	8.2	4200	4634	1239	1813	2024	913
4373	"	0950	1059	8.6	8.9		4097	7855	1067	59	1008	7.0	3725	4455	1488	2050	1458	1112
4374	"	1100	1114	6.6	6.8		850	1435	221	10	212	1.1	640	807	299	401	223	211
4375	"	1115	1214	6.3	6.5		3475	5144	905	34.4	870	3.7	2281	2795	1133	1567	685	823
4376	"	17^{16}	18^{09}	11.1	11.4		3128	7828	814	130	685	7.7	4179	3988	1190	1819	1848	973
4377	"	18^{09}	1915	8.4	9.4		3937	7856	1025	117	907	6.08	4068	3767	1431	1940	1931	989
4378	"	1916	20^{24}	7.0	7.9		4007	7062	1042	87.2	955	4.43	3472	3204	1457	1722	1716	996
4379	"	21^{40}	22^{27}	10.1	10.5		2826	7851	735	97.5	638	6.05	4311	3406	1204	1590	2473	927
4380	"	22^{28}	23^{32}	8.5	9.0		3817	7857	993	157	836	5.20	4290	3302	1338	1664	2514	1059
4381	"	23^{33}	23^{38}	7.2	7.6		331	687	86	7.6	78.5	0.40	351	257	149	156	196	82
4382	29.7.80	0^{03}	0^{03}	9.4	10.8		-	26	-	-	-	-	-	-	-	-	-	-
4383	"	2^{38}	3^{28}	11.3	11.4		2941	7855	765	63.8	701	6.98	4271	3279	1304	1651	2122	887
4384	"	3^{29}	4^{30}	8.8	9.5		3634	7859	945	71	874	6.2	4040	3429	1507	1818	1893	966
4385	"	4^{21}	4^{59}	7.5	8.1		1697	3179	428	25	403	2.1	1571	1330	659	781	738	422

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]
67									
T1 Lumi	$\langle \mathcal{L} \rangle$ $*10^{30}$	$\int \mathcal{L} dt$ per Run	$\int \mathcal{L} dt$ per energy pt.	IBM/Tape	BP (Volts)	Bhabha 275	Multi-Hadron 6	Beam Energy (GeV)	Frequency (kHz)	Comments
879	1.43	5.84	25.84	IBM	1.8	85	3	17.080	499.6650	
504	1.31	3.35	28.59	"	1.0	38	5	"	"	Nord hwgap.
157	1.34	1.07	29.66	"	1.0	17	0	"	"	
841	1.95	5.64	5.64	"	1.4	92	2	17.090	499.6650	New Energy
973	1.76	6.51	12.15	"	1.4	78	3	"	"	
893	1.52	5.96	18.11	"	1.2	92	1	"	"	
1098	2.56	7.86	7.86	"	1.3	110	2	17.100	"	
1140	2.08	8.08	15.94	"	1.0	83	4	"	"	
897	1.58	6.32	22.26	"	1.0	82	3	"	"	
1120	2.18	7.95	7.95	"	1.4	97	3	17.110	"	New Energy, New Filling
1146	1.74	8.12	16.07	"	1.2	111	4	"	"	
542	1.32	3.82	19.89	"	.9	53	1	"	"	
1000	2.00	7.07	26.96	"	1.45	93	2	"	"	New Filling
78	1.63	0.52	27.48	"	1.2	8	0	"	"	Stopped after NORD error — see P.69
293	1.39	2.05	29.53	"	1.1	26	1	"	"	Stopped for new ~~filling~~ energy.
649	1.36	3.89	3.89		1.0	64	1	17.120	"	Old filling accelerated to new energy.
259	1.22	1.83	5.72		0.8	19	0	"	"	beam dump
822	2.04	5.82	11.55		1.9	93	4	"	"	New filling
792	1.59	5.61	17.16		1.2	79	0	"	"	
333	1.18	5.25	22.41		0.9	66	0	"	"	
79	0.99	0.57	22.98		0.6	"	1	"	"	beam dump
857	2.15	6.16	29.14	"	2.0	85	1	"	"	New filling
997	1.73	7.07	36.21	"	1.4	94	2	17.120	"	
170	1.39	1.18	37.39	"	1.0	11	1	"	"	
630	1.30	4.51	~~41.90~~ 41.451	"	0.9	62	1	17.130	499.6650	New Energy
854	1.95	6.11	10.62	"	2.5	88	6	"	"	New filling
853	1.55	6.10	16.72	"	1.6	69	2	"	"	
735	1.30	5.19	21.91	"	1.1	82	3	"	"	beam lost
889	2.52	6.35	28.26	"	1.9	87	2	"	"	New filling
741	1.38	5.27	33.53	"	1.6	67	2	"	"	
60	1.30	0.43	33.96	"	1.3	1	0	"	"	
-	-	-	0.0	"	-	0	0	17.140	(→ beam: start stopped)	
914	2.23	6.55	6.55	"	1.5	79	1		499.6650	
890	1.73	6.29	12.84		1.4	87	4			
333	1.44	2.37	15.21			37	3			

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

05[35] Energy Chge. 17.100 Jade still not running (approx 16 nb^{-1} lost at 17.090)

~~06~~[55] Electricians still working on magnet power supply

07[17] New fill ready - - - - but no magnet.

The readjusted tagging thresholds listed at the bottom of page #64 will be left as the standard settings. This change is vital to the offline lumi monitoring and to tag. triggering. There will be an (unfortunate) increase of about 5% in the number of triggers getting T1 postpone and therefore a small increase in deadtime. G.H.

08[00] Heinzelmann and Hassard

The problems in the pump house (power supply) will take at least 3 hours.

11[30] Magnet up again. But now PETRA has problems with a 15 sec scale

Magnet down time $2^{30} - 11^{30}$ we lost { at 17.090 GeV ~ 12 nb^{-1} ; at 17.100 GeV ~ 25 nb^{-1}

12[35] New fill ready start run 4357

14:07 channel #25 of FMC is dead. Nothing from FMC distribution boxes gives any clues - TDC start, stop, clear ok. ADC gate, clear look fine. Latch cabling good. No spare TDC's (or ADC's) available.

14[59] Adjusted LG Thresholds - all ~0.07 V too high.

15[30] Mark J ask for a new filling

15[40] Clearing all cables must have made a connection good since the dead channels now begin to count. Richard Hedgecock comes to call and points out that the T1 trigger input is the important histogram. There should be no holes in the FMC. section (ie the right hand side)

16[00] Krehbiel & Yen

16[29] New Fill, start Run 4360

18[51] LG Thresh. set to 10 mV

19[27] Mark J ask for a new filling in about 10 min.

20.55. Strange features on PETRA-TV. We call PKR. Haller says they have problems with the Petra-computer. He cannot say how long. From then on "intermittency" on the screen.

21[39] Magnet Fluctuation occurs twice, we look at the DVM, but it shows always 7500 (computer Error alarm 1)

23[05] Beam arrives finally. Energy monitor on TV doesn't work. E = 17.110 GeV as before.

23[13] LG Thresh. Set to 25 mV.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

28.7.1980

0[00] Ball / Nozaki on shift

0[15] Run 6363 ended and Run 6364 started.

0[20] Error 13 in 34328 at 103014 page fault for non-demand.
stop the run. and start the new run. The computer works.

00:24 Mark J requests new energy at 00:45. We have 27 nb^{-1} at present, so we agree.

00:44 Energy about to be changed. Stop run 4365.

00:45 Energy 17.120 GeV. Start run 4366

01:08 μ-crate 3 goes missing + stays missing. Reset OK at crate

01:35 computer error: error 13 in 34323 at 103014. Page fault for non-demand. Page no: 137. NORD has hung-up. Stop run 4366. Start run 4367 OK.

01:55 Mark J ask to dump beams for new filling at 02:00. Petra engineers require "5 minute access" before next fill. We agree.

02[00] beam dump. stop run 4367

02[01] Error 40 in 32251 at 26222 "power fail" message appears on NORSK print out. There is no signal on TV screen.
We reset power of TV screen and restart NORD computer. Then it works again.

04:20 After a rather long '5 minute access', we have a new filling. Start run 4368. 05:14 4368 ended.

05:40 JDAS ERROR 00044 (OCT) SUBERROR 00763 (OCT) TASK 1 appears 6 Times in the terminal. STOP Run? "NO" is answered and OK.

07[8]06:14 Stop run 4369. Start run 4370. Histograms ok for run 4368.

07:20 JADE now co-ordinating expt.

07:35 Tasso 4 nb^{-1}? We asked the other groups and PKR to dump the beam in 10 minutes. Stop run 4370 Start run 4371

07:40 Muon code missing. Faulty part 9. Reset OK.

08[00] Minowa, Hughes.

0900 LG Threshold set to 40 mV

0945

	Sldt	MJ	Jade	Tasso	Cello	
		31	28	17	20	$\Sigma = 96$
finally.		40	37.4	26	28	$\Sigma =$

Both Cello + Tasso had problems $E_{\text{all particle}} E_p$
Propose to run for another 5 nb^{-1} $= \Sigma 116$

1031 JDAS Error 44 Branch 3 Crate 2. task 1

1022 Brief μCrate missing Part 4 on Celln TV — self clearing

1112 μ Crate Missing 12 Reset the crate ... ok.

1214 beams dumped
short break until 1400 due to PETRA VACCUM problems.
1500 16:08

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR.	T1 LG>4

Compensators powered down to 50 A off.
Coil (Solenoid) " "

✳ I.D. alarm switched OFF

16.00 Komamiya and O'Neill on the swing shift. There are still no beams, but the estimate for their coming back is now.
16.15 R. Hedgecock chasing magnet problem.
~16.30 Main magnet now on. Can't turn on Left Compensation Magnet.
17.11 "K" technicians clear the compensating magnet problem. We are ready to run. Injection now almost done.
17.19 We are finally going again. Run 4376 started
17:23 LG threshold set for 20 mV.
18:26 6 multihadronic events in Run 4376 $6.11\ nb^{-1}$ $R = 13.2 \pm 5.4$
18:28 Telegraph Bonn that we have the $t\bar{t}$ $Q = 2/3$ ground state.
18:29 Call Hamburger Abendblatt, Bildzeitung. Press Conference tomorrow 9 a.m.
if this peak remains statistically till 9 a.m.
19:10 JDAS ERROR 000056 SUBERROR 000005 TASK 1 appears ~~in~~ on the terminal
19.40 'magnet fluctuation' appears on color display.
~~19.~~
20-25 Adjust L.G. thresholds ~~for~~ 25 mV
20.28 Beams gone!! (No I.D. trip)
20-32 "Sender Ausfall." They don't know much yet at PkR.

20.47 Checked standard histograms. They all look sick to me. So far as we can tell the general level of pathology is similar to that which has prevailed for the last 50 runs.
Beate: Please update you file on what these things should look like.
Programmers! Please automate these histogram checks as far as possible.

20.50 Still no beams.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

21:00 Luminosities: JADE 21.9 TASSO 23 MarkJ 23.5 CELLO 21.5 $[nb^{-1}]$ We have never seen such an excellent agreement on $\int \mathcal{L} dt$.
21:40 New beam is ready.

23^{09} Geez, you can't even sleep here anymore. Now the IBH busy is on for a minute or so at a time. CELLO also has problems TASSO doesn't. Call IBH. They know. Their "working on the machine." How long will this nonsense last? "Wir wissen selber nicht."

23^{25} Negotiate new filling and the next energy step with all exptrs + PkR. Will get at 23^{40}. Thought of keeping this fill and just bumping the energy since the fill is fairly young. Mark-J wants new fill because their lumi is only 1.Y. Ours is about the same. OK. New fill.

23^{35} LG threshold adjusted for 35 mV
23^{40} Beam dump for new filling with new energy.

29.7.80 M. Goddard & A. Wagner
00^{04} New beams ready
00^{06} New beams lost (Power supply problem, „Kurze Unterbrechung")
1^{21} Still no beams
2^{38} beam again
5^{00} new fill requested
5^{25} beam again

8^{00} Barthel & McCarron

All histograms ok, all magnets are on
9^{20} new energy = 17.15
9^{45} frequently IBH-busy
Pluto sends comic ray data to the IBH at a rate of 5 Hz. They run 20% CPU-time. They are going to reduce the CPU-time.
10.^{14} End run 4390 start run 4391.
10^{30} JDAS errors 56 / 405
56 / 371
44 / 302

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4386	29.7.80	5.24	6.13	11.2	11.5		2873	7846	748	66.9	681	6.7	4408	3335	1244	1681	2261	920
4387	"	6.13	7.12	9.2	9.6		3488	7850	908	58.2	849	5.9	4077	3434	1397	1834	2026	1042
4388	"	7.13	8.25	7.8	8.2		4314	7858	1123	61.1	1062	5.3	3844	3373	1635	2038 ~~1723~~	1723	1150
4389	"	8.26	8.27	6.5	6.8		80	125	21	0.8	20	0.1	56	44	30	32	27	16
4390	"	9.20	10.10	11.1	11.2		2997	7846	780	133	647	7.1	4243	3428	1173	1721	2188	921
4391	"	10.11	11.08	9.1	9.4		3399	7859	885	81.6	803	6.1	3945	3565	1349	1789	1386	1101
4392	"	11.09	12.25	7.8	8.1		4510	7858	1174	183	990	6.0	3527	3832	1671	1969	1417	1164
4393	"	12.26	12.32	6.5	6.7		332	610	86	6.9	79	0.4	239	264	121	160	88	97
4394	"	12.35	13.59	6.3	6.6		5011	7853	1304	86	1219	5.5	3413	3807	1933	2245	1069	1112
4396	"	20.18	21:10	9.27	10.21		3060	8002	796	985	706	6.5	4109	3157	1286	1593	1617	889
4397	"	21.11	21.14	7.90	8.80		175	426	45.4	3.06	42.3	.33	214	210	71	89	117	62
4398	"	21.14	22.21	7.80	8.68		3938	7856	1025	95.6	929	4.9	3925	3123	1525	1874	1575	998
4399	"	22.21	23.38	6.53	7.30		4536	7856	1180	53.5	1126	4.1	3809	2779	1734	2057	1425	1051
4400	"	23.38	23:58	5.44	6.11		1016	1699	264	10.9	253	0,76	848	594	395	473	348	246
4401	30.7.80	00:38	00:50	11.02	11.02	2.8×10^{-9}	688	2223	179	19.3	160	1,9	1252	878	351	423	749	257
4402	"	00:58	01:57	10.00	10.20		2904	7855	756	60,5	696	5,9	4400	3308	1188	1629	2507	1039
4403	"	01:46	02:23	8.5	8.7		2133	5158	555	41.2	514	3,3	2788	2054	894	1093	1614	716
4404	"	03:19	03:57	11.5	11.4		2258	7848	588	75.7	512	6,3	4918	2764	1012	1325	3311	823
4405	"	03:59	04:25	9.8	9.9		1535	4962	399	40.1	359	3,4	3035	1851	656	893	1970	584
4406	"	04:27	05:16	9.0	9.1		2902	7855	755	58.4	697	4,4	4431	2695	1234	1487	2870	1012
4407	"	05:17	06:24	7.86	7.93		4006	7859	1042	52.0	989	4,4	3632	2992	1632	1872	1669	1310
4408	"	06:25	07:26	6.65	6.69		3616	6133	941	40,3	900	3,0	2729	2240	1396	1576	1181	1088
4409	"																	
4410	"	9,26	10:20	10.71	11,00		3154	7857	820	135	685	7.4	3976	4005	1229	1718	1938	1119
4411	"	10:20	10:49	8.54	9.04		1610	3955	419	40.3	379	3.05	1879	1833	673	923	898	604
4412	"	10:49	11:21	7.76	8.25		1714	3551	446	59.4	386	2.71	1570	1693	683	817	727	593
								END OF THE ENERGY SCAN						17-17.5 GeV				
4413	"	12:55	12:55	11.43	11.73													
4414																		
4415																		
4416																		
4417																		
4418	"	13:48	14:58	8.84	8.73		4084	7855	1063	67.9	995	14.6	3694	2994	1973	2067	1401	1176
4419	"	14:59	15:38	6.8	6.6		2347	3779	611	37.3	573	4.4	1713	1397	975	1121	563	611

T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}dt$ RUN	$\int \mathcal{L}dt$ EXP	IBM/TAPE	BP	BHABHA	MULTI HADRONS	BEAM ENERGY E_B (GeV)	FREQUENCY (KHz)	
828	2.02	5.80	21.01	IBM	1.6	123 73	2	17.190	499.6650	new fill
845	1.72	5.98	26.99	"	1.4	73	2	"	"	
802	1.34	5.76	32.85	"	1.2	70	3	"	"	
14	1.27	0.10	32.95	"	1.1	6 [3] [15]	1 [15]	"	"	
980	2.32	6.94	6.94	"	1.8	112	2	17.15	"	new fill NEW ENERGY
953	2.0	6.80	13.74	"	1.4	87	2	"	"	
974	1.54	6.96	20.70	"	1.2	95	1	"	"	
72	1.41	0.47	21.17	"	0.9	6	2	"	"	new stopped with NORD page error
913	1.29	6.47	27.64	"	0.4	82	3	"	"	
938	2.2	6.72	34.36	"	1.4	80	3	"	"	new fill
49	2.09	.37	34.73	"	1.3	8 [14]	0 [13]	"	"	
989	1.79	7.06	7.06	"	1.2	87	3	17.16	"	New Energy
891	1.39	6.30	13.36	"	1.0	72	4	"	"	
162	1.12	1.14	14.50	"	.8	13	0			
210		1.47	15.97	"	1.6	21	0	"	499.6650	New filling. Beam stopped. wrong beam energy given first
751	1.62	5.28	21.25	"	1.4	52	3	"	"	LG crate 3 problem (dead bits 2^2, 2^9) Before lost
455	1.51	3.23	24.48		1.2	49	1	"	"	
650	2.08	4.70	29.18		1.8	60	3 [15]	"	"	
417	1.92	2.95	32.13		1.6	28 [32]	1 [15]			
770	1.91	5.55	5.55	"	1.3	71	4	17.17	499.6650	New Energy same filling
923	1.66	6.65	12.20		1.1	96	1	"	"	
629	1.26	4.56	16.76		0.9	68	2	"	"	Beam dumped
					1.8					Never really started
870	1.99	6.28	23.04	"	1.8	82	3	"	"	
449	1.95	3.14	26.18	"	1.3	34	0	"	"	Computer error We stopped run.
419	1.72	2.95	29.13	"	1.2	43 [20]	1 [15]	"	"	Beam lost soon after ID tip recovery
NEW ENERGY SCAN FROM 17.780 GeV										
								17.780	"	Beam lost New energy
								"		
								"		IBM Problems
								"		
								"		
731	1.36	5.57	5.57	F11122	1.7	67	4	"	499.6640	N.B. Different f than previous scan → 17.78
355	1.16	2.71	8.28	IBM	1.5	23	1	"	"	Low luminosity

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

12^{00} Linac problems so we run on the present fill until the linac is repaired

12^{35} NORD hang up ERROR 13 in 34323 at 103014 page fault page # 132 start new run #4394 ok

14^{00} Linac back, ask for new fill

14^{45} Problems with Petra there is a short on one of the Petra magnets. Interrupt of 3 – 5 hours.
We a) turn down main magnet
b) " " compensators

16^{00} Orito at Yen

19^{30} Raise the magnet to 7500 A, compensators to 80?

20^{10} Start Run 4395. IBM Busy. Problems on HV-system.

20^{18}

30.7.80

23:56 Beams dumped for new filling

24:00 Darvill & Heinzelmann on shift.

00:38 new filling ready, run

00:52 I D trip, run paused

00:55 I D reset, Run stopped. At the time of this trip we were discussing possible causes of absurdly low luminosity figures displayed on screen. Event rate and all other conditions imply that it is being wrongly computed.
Problem solved! I had put the beam energy and currents into the Nord a factor of 10 too small. DD

00:57 Run 4402 started

02:26 Beams lost. – – – "Kurze Unterbrechung" Sender failure – PKR predicts ½ hr. – Are they being optimistic?

05:18 Back on again, Run 4404 started

06:05 we see that we now have about 30 nb^{-1} – ring around other experiments shows that TASSO have 34, Mark J 33.5, Cello 31.5
Therefore ask PKR to increase energy to next setting. 17,17 they say they will do it at 06:25; that is 10 minutes after calling the last experiment.

5:15 LG-threshold adjusted to 30 mV from 20 mV

07:15 Luminosity is now down to $\sim 1.3 \times 10^{30}$ so we call the other experiments and agree a new filling should be made in about 10 minutes. P.K.R. agree to start the new filling at the same energy at 07:25.

08 00 Olsson, Bowdery

09:05 PKR are having problems with the injection. Perhaps the operators have forgotten how it's done!

09 21 Filling seems to be nearly ready.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

09:27 Run 4409 gets off to a bad start ... "IBM Busy" Automatically terminated

09:29 Run 4410 is "up and running".
$\langle \mathcal{L} \rangle = 2.51 \times 10^{30}$ $cm^{-2} s^{-1}$

09:51 2 Multi-hadrons and 38 Bhabha events so far.

09:55 TASSO ring to ask us our plans. We tell them ..... (!?) We will move to 17.78 GeV at the end of the current energy scan.

10:03 Everything seems okay. R. Hedgecock reports that the scaffolding is in place for a FWD μ counter test later today.

10:05 ~35 seconds of "IBM Busy"

10:14 Our luminosity has increased from 1.5×10^{30} to 1.97×10^{30}. $\langle \mathcal{L} \rangle = 2 \times 10^{30}$ $cm^{-2} s^{-1}$

10:22 Run 4411 starts

10:37 $\langle \mathcal{L} \rangle$ increases to 2.07×10^{30} $cm^{-2} s^{-1}$

10:49 Error 13 in 34323: Page fault for non-demand : page 137. We stopped run and restarted ... OK.

10:04 $\langle \mathcal{L} \rangle = 1.75 \times 10^{30}$ $cm^{-2} s^{-1}$

↑ time flies when you're having fun!

TASSO	MARK J	CELLO	JADE
29	30	30.06	~~28~~ ~~49~~ 28.19 (+10% → ~30)

nb^{-1}

11:15 PKR says it can accelerate the current fill to 17.78 GeV.
We will collect 30 nb^{-1} at 17.17 GeV then accelerate to 17.78 GeV.

11:20 I.D. Trip Paused the run.

11:23 Beam lost. No I.D. trip

11:27 We decide that as we have 29.013 nb^{-1} and all the other groups have more, the next fill should be at 17.78 GeV. All the experiments agree. PKR is informed of our decision.
Thus ends the energy scan from 17.00 GeV to 17.52 GeV.

11:35 PKR say that the beam was lost due to a transmitter failure. They don't anticipate a long break.

13^{00} Petra filled at 17.780 but still at old frequency. There are problems, they say. We wait.

13:54 Four more runs never started because of IBM link problems → we write our data to tape
Run 4418 started OK
Energy = 17.780 Petra RF = 499.6640

15:00 Run 4418 (tape) ended
Run 4419 → IBM OK

15:45 IBM Link problem 53 causes us to terminate run 4419
Run 4420 never started

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS x10⁶	TO REJECT x10⁶	TO ACCEPT x10⁶	T1 ACCEPT + POSTPONE x10⁶	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN.	T2 ≥2 TOF LG>1 ≥1 TR	T1 LG>4
4420	30/7/80													4006				
4421	"	15:44	17.02	6.80	6.61		4602	7854	7797	59	7738	8,6	3507	~~4978~~	1978	2271	7215	7789
4422	"	17.02	17.11	5.3	5.7		426	642	777	7,0	704	0,64	372	333	764	793	771	87
4423	"	18.10	19.09	8.81	9.04		3471	7852	904	91.8	812	79	3776	4450	7825	2779	7425	946
4424	30.7.80	19.09	19.48	7.72	7.25		2237	4745	582	54,8	52,7	6,7	1855	2256	7001	7745	645	576
4425	31.7.	4.06	4.34	6.9	6.9	$1.3 \cdot 10^{-9}$	1656	7832	431	125	305	19.5	3293	10424	1070	1684	1441	772
4426	〃	4.34	5.17	3.9	3.9		2498	4852	650	37	613	8.4	2076	5449	1148	1348	706	611
4427	〃	11.21	12.13	6.94	7.02		3038	5924	791	56.9	734	10.8	2822	4419	1469	1835	886	673
4428	〃	12.12	13.36	4.69	4.63		4973	6437	1294	40.1	1251	3.91	3016	2337	2035	2238	738	828
4429	"	BEAM		LOST		IMMEDIATELY		AFTER		START								
4430		14.58	15.20	9.09	9.29			≈2600					no	run	summary			
4432		15.29	16.47	7.89	7.66		4581	7855	1192	61.3	1130	10.6	3807	2723	2073	2295	1301	1028
4433	"	16.50	18.23	4.7	4.5		6580	7856	1452	88,2	1364	5.2	3589	2178	2238	2497	1017	1181
4434	"	18.56	20.09	8.3	8.3		4113	7855	1070	75.8	994	13.9	3798	2502	1992	2183	1346	1029
4435	"	20.09	21.37	5.6	5.4		5399	7862	1405	600	1345	5.1	3499	2091	2195	2440	1029	1242
4436	"	21.38	22.36	4.2	4.1		3438	4304 ~~5567~~	895	28.2	866	1.23	1939	864	1258	1495	469	701
4437	"	23.06	0.17	8.1	8.1		4300	7846	1119	70.8	1048	15.2	3759	3166	1945	2352	1188	1095
4438	1.8.80	0.18	1.53	6.59	6.62		5606	7855	1458	127.9	1330.5	7.6	3605	2611	2220	2523	985	1142
4439	"	1.53	2.39	4.94	4.95		2686	3579	70	23.8	675.5	1.9	1606	991	1079	1199	389	564
4440	"	3.16	3.24	7.83	7.85		400	814	104	8.5	95.6	2.8	399	390	203	255	136	96
4441	2.8.80	4.33	5.23	8.3	8.1		4780	7851	1244	111	1133	17.4	3717	2888	2201	2412	1136	917
4442	2.8.80	5.34	7.14	6.1	5.7		5491	7860	1553	52.8	1500	5.4	3556	2229	2387	2669	861 ~~1007~~	1127
4443	-〃-	7.14	8.00	4.6	4.3		2811	3953	732	20.1	712	1.2	1455	695	1035	1180	266	493
4444	-〃-	10.14	11.09	11.1	11.0		2237	6231	582	80.3	502	32.2	3265	2468	1616	1642	1007	562
4445	-〃-	11.14	11.53	7.8	8.5		2247	4337	585	43.1	542	6.6	2249	1461	1052	1274	806	580
4446	-〃-	12.36	13.05 13.16	10.85	10.75		1685	4412	439	32.0	367	15.1	2342	1688	1016	1164	770	483
4447	-〃-	13.10		9.15	9.35		267	723	70	7.2	62	2.1	347	257	158	182	126	77
4448	"	16.01					14K	output	lost	run	ended	due	to	NORD	back			
4286	〃	16.57	17.07	7.9	8.1		626	1249	163	11.7	151	2.3	638	375	309	339	213	137
4449	〃	17:15	18:34	7.4	7.6		4693	7869	1221	83.4	1158	8.4	3767	2216	2011	2255	1202	1078
4450	〃	18:34	18:59	5.8	5.6		1461	2186	380	15.8	364	1.4	1026	547	615	703	275	307
4451	〃	19.59	20:21	9.4	9.4		3595	7843	935	113	822	23.6	4062	3225	1892	2042	1365	857
4452	〃	20:52	22:06	7.6	7.6		4414	7854	1149	82.6	1066	12	3942	2967	1969	2358	1242	1058
4453	〃	22.07	23:29	6.1	6.0		4899	7354	1275	53.6	122	6.5	3439	2744	3439	2274	970	1108

T1 LUMI	$\langle \mathcal{L} \rangle$ x10³⁰	$\int \mathcal{L}\,dt$ RUN	$\int \mathcal{L}\,dt$ EXP	IBM / TAPE	B.P. V	BHABHA	MULTI-HADRON	BEAM ENERGY E_B (GeV)	FREQUENCY (RHz)	Comments
										Never started
746	7.25	5.77	14.05	FH 121	1.4	72	3	17.780	499664.0	IBM Problem
47	0.73 ~~0.71~~	0.37	14,36	IBM	7,0	7	0	17.78	"	Probably short run, dump is imminent but valid data
760	7.68	5.84	20,20	"	2.2	58	5	17,78	499.66	started Run. Petra plays with orbit. Temporarily bad beam cond. + high dead time
454	7.58	3.54	23,74	"	1.7	39	0	17,78	"	There were IBM jams during this run
124	.59	.98	24,72	"	3.1	14	0	"	"	bad background
93	.26	.64	25,36	"	1.0	13	0	"	"	
336	0.85	2.57	27.93	"	1.8	16	0	17.780	"	New fill Run ended - possibly LG problem.
377	0.58	2.88	30.81	"	1.2	30	2			end for Beam Dump
					2.3			17.790	499.663	New Fill NEW ENERGY
		≈ 20		~~FH19~~	2.2			"	"	New fill ended IBM Problem no end of run summary.
680	1.13	5.19	7.19	FH193	1.8	54	2	"	499.663	TAPE FH193
573	0.78	4.38	11.57	IBM	1.5	64	2	"	499.663	Back on IBM end of Beam dump
828	1.54	6.33	17.90	"	1.5	46	1	"	499.663	New Fill
681	0.98	5.27	23.17	"	1.0	64	5	"	499.663	
281	0.63	2.17	25.34	"	0.8	29	1	"	499.663	end run for beam dump.
825	1.47	6.33	31.67	"	1.7	80	0	"	499.663	New Fill
672	0.92	5.13	5.13	"	1.5	41	1	17.800	"	New Energy
236	0.68	1.83	6.96	"	1.2	8	0	"	"	
69	1.26	0.50	7.46	"	1.8	14	1	"	"	
751	1.21	5.39	13.25	"	1.5	69	2	"	"	
594	0.79	4.61	17.86	"		40	3	"	"	
196	0.54	1.52	19.38	"		19	0	"	"	LG crate 3 problem (2^2 and 2^9 bits dead)
548	1.98	3.98	23.36	"	2.7	30	0	"	"	
388	1.23	2.85	26.25	"	1.3	22	1	"	"	see note on pg 81
418	1.70	2.87	29.12	"	2.5	18	0	17.800	"	concerning the energy run ended due to NORD
71	1.83	0.49	29.61	"	2.1	3	0	"	"	
down			29.61		2.1			17.810		17.810 nom = 17.838 corr
140	1.53	0.96	0.96	"	2.0	9	0	"	"	Run volume is on tape
812	7.30	6.12	7.08	"	1.5	48	0	"	"	
194	1.01	1.48	8.56	"	1.3	17	0	"	"	
697	1.42	5.10	13.66	"	2.3	52	3	"	"	
639	1.06	4.70	18.36	"	1.6	52	1	"	"	
503	0.78	3.82	22.18	"	1.5	44	1	"	"	

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

15:44 Run 4421 written to tape

17.02. A short run written to IBM. 17.12 Beams dumped. (Saran-Petra wants) Temporary access to Cella area. Collimator is hanging this

18.12. Now it goes further (a gelt weiter). At beginning of Run 4423 the Petra people play abt with their machine → Temporarily bad beam conditions (BP cum. above 30, deadtime above 40%.) Since then it went better, I left the run running.

19.40 Sudden onset of most heavy thunderstorm. Ilvehliel tries to close the hall door. Gives up after 20 sec. Totally drenched.

19.45 Lightning kicks off Petra. Beams lost, ID trip. Petra says: Sendeausfall. "Intermittency." They cannot say how long. (Or they work with mittens on?)

21.47. Screen says Restart 11.00 PM. Hope they do not mean A.M.

23.60. " " " 0 AM. Telefone Call. Water Cooling trouble in P1A

31.7.80

0.00 Narosher, Watanabe
lowered magnet currents to save energy
Screen says restart 1 a.m

0.10 PKR requests to turn on magnets. Back to nominal settings.

1.45 Screen says restart 3 am

3.20 Started to inject

04.05 Run 4425 started. BP=3.1V. too high. The life time miserable

Very bad background conditions, PKR are trying to improve the life time of beams. Triggerate 5-6 Hz!
LG thresh. 40mV.

4.30 PKR says that vacuum is very bad, ~~but~~ but they still want to keep this filling in order to improve conditions for the next.

Tof cables 25,26 input into coincidence wh were interchanged. Put them right now. Probably from run 3728 on to 4426

6.50 Vacuum leak in Petra. Restart 9.00 am Turned down magnets.
7.20 Clicked connections in TOF Logic. Seems alright now.

0800. Stephens & Haingelmann.
0900 No sign of any beam so we contact PKR - still vacuum problems and vacuum group in PETRA ring. - 11.00 am Patest estimate.
10.30 D. Clark & R. Hedgecock turn on first stage voltages to check FWHM counter whilst

magnet is off.
Magnet on Freigabe
11.00 injection starts.
11.20 Suntil on B.P.
11.21 Run 4427 started

clock Trigger 1 input look OK.

TASSO have background Problems - ours is OK.

12.10 Run ~~4427~~ ended because Lead glass thresheld histograms look "strange" and "threshold" pulse on scope in pulsing. Call expert.

12.12 start Run 4428.
12.20 Onto anoes to investigate L.G problem.
Ask other Groups for their luminosities,

12.30	TASSO	MARK J	CELLO	~~MARK~~ JADE
	23	27	DON'T KNOW	~29

All groups agree to go to next energy 17.770 at the next fill in ~1hr.

12.47 Checked the FETOT signals and the timings. Everything OK, S.C

L.G. Histograms look better now.

13.23. New fill and energy in 15 mins.

16.18 # 4429 started
16.19 " ended Beam lost.
14.58 Run 4430 ~~and~~ started.
15.20 Run 4430 ended due to permanent IBH Busy IBH Put S3 and S4 (no scan summary) Had use time out and multiplexer errors.
Try to restart to Run 4431 but not successful. ∴ go to tape F11 193

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

80

15.29 start run 4432 NB Run 4431 does not exist on Tape F11 193

15.45 IBM say that all should now be OK. But we continue running on tape.

16.00 Marshall & Steffen a shift

At end of current run 4432 go back to IBM transfer OK. ; tape is on shelf

18.20 Looks like luminosity so decide to dump and fill.
Beams dumped 18.23. New fill ready 18.50, HV's ID all on – even had to counters switched on painlessly using Beates "ON"; does one log off? or will this switch off the HT?

22.30 Luminosity last again call round — everyone agrees
So far: Luminosities Max energy: Jade 26.65 Tasso 26 Mark J 27 Cello 15.

23.05 New fill started – 30 mins again. Note muon crate missing permanently on. Read muon manual (after searching 5 min through the 957 filed garbage to find the instructions) Crate 3 reset and message disappears. First 800 triggers were affected although there were no hadron events in this time.

Tasso call up to see if we share their background problems. They complain operator who can get the cleanest beam in Tasso hall has gone on holiday. Cello have had a mess permanently in PKR for the whole of today. Also bad background problems. hmmmm.

1.8.80

0.00 Orito & Yen on shift

0.06 All groups agree to raise energy to 17.800 GeV in ~ 15 min.

2.32 Luminosity is low, decide to dump & fill.

3.30 ID trip Anode current alarm

3.45 When I arrive, beams last here

8:00 Wagner, Wiedt

8.00 Beams dumped for new fill

9:30 R.C filters removed from tagging/Lumi Energy Sums. At start Run #4447

10.15 new filling with initially 11 mA/beam ready.
high deadtime (initially ~ 30% after 5 min 15%) trigger rate 3-4 Hz
$\mathcal{L} = 2 \cdot 10^{30}$, high BP and Chamber current

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

81

10.29 DDAS error 56 suberror 405 two times now (TOF bank wrong length, length = 405_8, 261_{10})

10.55 ID-trip (beams partially lost ~ 0.3 mA ↓)

10.57 IBM permanently busy, they are looking into the problem

11.07 no IBM-connection, run stopped.

11.14 IBM-connection re-established, start run 4445

11.15 Total confusion about beam-energy recorded on TV-screen by PKR:
they started including the frequency-correction into the recorded energy:
the preset "17.800" is now called "17.829". TASSO will inform Barth to sort out this problem with PKR...
→ for the moment we will continue the scan in 10 MeV-steps and write down the energy-values according to the old scheme

11:54 Beams lost, ID trip

* 11:59 Forward Muon Counter Strobe Gate (Latch) has been delayed a further 13 ns (Σ delays from ALL SYNCH = 205 ns) G. Barbiellini C. Bowdery
This should remove the two 'dips' in the FWD μ ⟨TDC⟩ histogram. *

The beam-energy – frequency relation has the following form

$$\frac{dE}{E} = -\frac{df}{f \cdot \alpha}$$

f = frequency (nominal) = 499 665 KHz
α = momentum compaction factor = $2.55 \cdot 10^{-3}$

puting in the present numbers: $df = -2$ KHz ↝ $dE = +28$ MeV ✓

Short history: frequency was, until end of run 4412 499665

then, in going to 17.78	frequency changed to	499664	i.e. 17.780	is really	17.794 GeV
in going to 17.79	—"—	499663	17.79	is really	17.818
			17.80		17.828
run 3715-3727	frequ was	499662.5	17.78		17.815

↝ overlap with old scan of two points. „gap" of 24 MeV in new scan between „17.78" and „17.79" was covered by old scan. we decide to continue upwards in our scan.
(TASSO agrees)

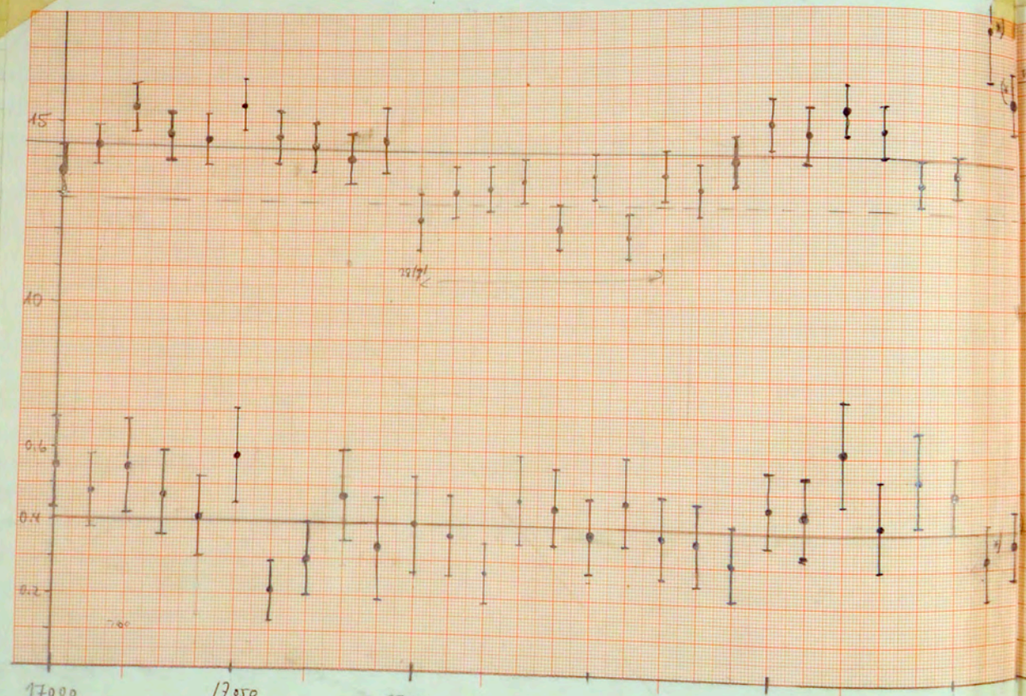
12.36 new beams

12.36-40 energy wrong by 27 MeV

12.52 in event display we get a lot of „non-increasing ADC adress", probably from Leadglas (~ 50% of all events)

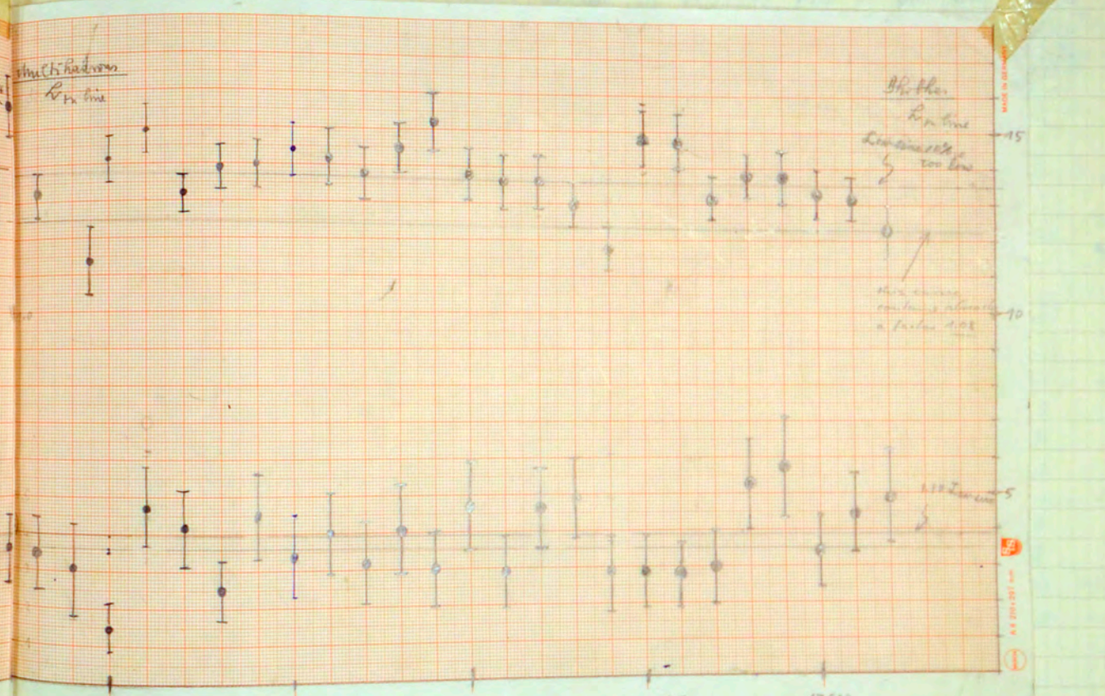
RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG >4

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]



Rough Average (accuse all error bars equal) $\left\langle \frac{\#\text{hadrons}}{\text{on LHS}} \right\rangle = 0.401$

COMPLETED 11:30 3/9/82



*) L measurement not fully OK

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^5$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG >4

13^{03} Error message „JETC illegal ADC value" is due to wire # 1295 which is present in each event with timing 1, $A_L - A_R = 0$. No action

13^{05} Computer hang up: Error 13 in 34 323 at 103014; page fault for non-demand page no: 137.

Stop run 4446. Reload Nord

13^{16} beams lost due to burst pressurized-air tube in PETRA

~ 14:30 Injection started

15:00 after tuning phase with other experiments PKR is asked for a new energy, i.e. 17.81 GeV corrected

$\int L\,dt$: ~17 ~30 ~35 29.6
Bilbo Tarso Mark J Jade

15^{15} Crate Controller of LG #3 had a dead bit (bit #9 = 512) which gave a wrong address. The crate controller was replaced. It should be OK (from Run 4448 on) Totsuka

15^{45} Lumi Scintillator logic modified from 1A1B1S5B5S to 1B1S5S etc at start Run #4448

16^{00} **Bartl & Nozaki on shift**

From Run # 4448 on we put the corrected energy onto the data tapes.

! The correction for RF-frequency is done by the PKR-computer. If you ask for a new energy at the PKR, you should ask for the nominal energy i.e. the energy as defined by the magnet setting. Run 4448 is nominal at $E_{nom} = 17.81$ and $E_{corr} = 17.835$

16^{20} NORD-hang up.
The system cannot be started.
Restarting N10 leads to the following error message on the printer
00.00.20 ERROR 06 in 33751: Batch input error
File error No: 100
Outside drive limits
Use back up disk. system works again
Output for run 4448 lost
The disk was apparently overwritten! Larry lost the draft of a paper Tokyo lost a big amount of lg-data
In order to protect ourselves against a similar failure we would like to produce another backup copy.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

Complaint to Cords & Co:
Why is there no description around of how to do a backup copy. Miss Naroska does not know.

We phone H. Hills in England.
Try to find Note from Tasso.

Wrong run number on the tape. Run number is 4284 should be 4448 also Energy wrong should be 17.838 There are only ~100 events in this run
We are also missing a description of how to change the run number on the tape.
H. Hills tells us where to find a description of the backup procedure.

From our experience of today we have written an instruction sheet of how to get the system working again by disk exchange. You will find the instructions on the JOBS-folder

$18.^{35}$ Run 4449 ended.
reset lead glass threshold at 6 because the new Nord program was booted before run 4448.
Histograms for run 4449 look ok

19^{00} ask for new filling
During the fill we produce a back up copy of the present system onto DISK A

19^{50} fill ready

21^{00} Problems with gould plotter it does not position the paper correctly. An expert should look at it. May be there is too much paper in it.

23^{20} There is one noisy wire in the jet chamber # 86

23^{30} New fill requested

24^{00} Komamiya, Meier on shift

24^{45} JADAS ERROR 44 branch 7 crate 3.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4454	2/8/80	0:16	1 12	8.99	9.14		3315	7852	862	96.8	765	28.7	4088	3265	1972	2036	1475	850
4455	"	1:13	2:01	7.5	7.6		2862	5481	744	48.3	696	12.4	2719	2256	1415	1527	905	713
4456	"	2:03	3:31	6.4	6.5		5313	7856	1382	95.9	1286	8.0	3727	2939	2211	2526	1010	1067
4457	"	3:32	3.41	5.00	5.08		514	681	133	4.6	129	0.5	316	241	211	221	69	101
4458	"	4:29	5:27	9.5	9.6		3461	7853	900	77.3	822	22.3	4021	3421	1911	2254	922	862
4459	"	5:28	6:55	7.7	7.8		4583	47858	1193	93.8	1099	10.5	3817	2985	2063	2322	1080	1020
4460	"	6:56	7:28	5.9	6.0		1883	2816	490	19.6	471	2.5	1308	968	750	938	331	413
4462	"	9.04	09 16	9.8	10.0		[illegible]	1760	156	27.5	129	6.8	986	804	416	501	312	150
4463	"	9.29	10 36	8.87	9.04		3905	7852	1016	79.6	937	19.3	3877	3042	1939	2184	1203	982
4464	"	10 35	11 57	7.12	7.23		4827	7860	1256	71.5	1185	7.93	3801	2490	2090	2363	1210	1094
4465	"	11 54	12 31	5.56	5.59		1979	2794	515	18.8	496	1.67	1319	717	771	826	468	440
4466	"	13.51	14 13	9.36	9.54		1242	2987	323	33.2	290	8.84	1555	872	730	718	642	335
4467	"	14 13	15 22	8.46	8.71		4038	7859	1051	95.7	955	14.6	4142	2216	1844	2166	1556	1033
4468	"	15 22	16:35	6.72	6.95		4162	6934	1083	63.7	1020	5.8	3450	1589	1725	1955	1273	954
4469	"	19.01		9.29	10.88		780	1919	203	18.3	184	4.8	1051	516	366	508	404	205
4470	"	20.10		9.53	9.77		2554	6000	664	63.3	601	18.2	3185	1860	1411	1525	1136	677
4471	"	21.42		8.64	9.40		2957	7847	7842	79,4	697	24 25.0	3769	5190	1861	2076	7719	836
4471	"	22.33																
4472	2-8-80	22:35	23:40	7.2	7.9		3911	7861	1018	69,9	948	15,5	3646	5462	2034	2272	1043	974
4473	"	23:44	00:57	5.70	6.27		4364	6179	1137	41,4	1095	3,64	2886	1463	1823	1950	766	889
4474	3-8-80	02:53	03:28 ~~03:53~~	9.6	9.8		1991	7840	518	93,4	425	20,8	3749	6308	1402	1747	1473	864
4475	"	03:30	04:05	8,28	8,52	2.3×10^9	2087	7856	543	77,2	466	20,5	3383	8011	1476	1787	1293	800
4476	"	4.05	4.41	7,22	7,55		2150	7850	560	76.2	483	18,9	3279	8648	1534	1807	1251	817
4477		4.42	5.23	6.5	6.7		2459	7846	640	74.7	566	18,6	3291	9231	1617	1920	1244	889
4478	"	524	528	5.7	5.9		251	664	65	11.3	53.9	1.6	284	861	129	161	109	82
4479	"	05:58	06:42	9.2	9.7		2642	7852	687	77,0	610	17,2	4337	4227	1541	1786	2087	932
4480	"	06:43	07:38	7.7	8.1		3243	7858	844	65.5	779	12,3	4131	4181	1688	1905	2006	1070
4481	3/8/80	7.59	8.49	6.3	6.7		4184	7858	1089	62.3	1028	9.7	3808	4526	1923	2172	1477	1196
4482	"	8.50	8.59	5.1	5.5		447	787	129	6	123	0.9	362	490	223	217	126	123
4483	"																	
4484	"	14.20	14.46	7.5	6.0		350	649	91.1	32.8 ~~48.3~~	58.3	1.0	343	317	133	199	91	79
4485	"	14.28	14.30	7.3	5.9		83	320	21.6	2.7	18.9	0.36	174	130	38	48	73	69
4486	"	14.35	14.51	7.2	5.7		475	1573	124	88.1	35.5	0.66	1193	269	82	137	156	115
4487	"	14.52	1504	6.7	5.4		715	1285	186	10.8	175	1.7	639	544	342	393	222	172
4488	"	15.06	15.14	6.5	5.2		462	682	119.9	32.2	87.7	0.7	277	228	156	189	88	75

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$ Exp	IBM/TAPE	BP	BHABHA	HADRONS	Beam Energy E_{from}	Beam Energy E_{corr}	FREQ kHz	
645	1.39	4.61	26.79	IBM	2.2	49	3	17.810	17.838	499.663	
456	1.18	3.37	30.16	"	1.8	24	0	17.810	17.838	"	
603	0.87	4.62	4.62	"	1.5	42	3	17.820	17.848	"	new Energy
44	.63	.32	4.94	"	1.0	4	0	"	"	"	
765	1.63	5.63	10.57	"	2.0	74	0	"	"		
716	1.06	4.85	15.42	"	1.5	47	2	"	"		
224	0.83	1.57	16.99	"	1.2	19	0	"	"	"	
139	SEE NOTE (1.01)		(1.88)	"	2.4	0	0	"	"		WAKEY / WAKEY! NO LUMI ENTERED SINCE LG WAS FAULTY.
743	1.48	5.78	21.77	"	2.1	79	2	"	"		
667	1.05	5.08	27.85	"	1.7	57	0	"	"		
266	0.80	1.58	29.43	"	1.2	20	2	"	"		BEAMS DUMPED.
268	1.55	1.92	1.92	"	2.2	27	1	17.830	17.858		new energy
656	1.18	4.78	6.70	"	2.0	66	3	"	"		
459	0.83	3.44	10.14	"	1.6	34	2	"	"		
202	1.85	1.44	11.58	"	2.1	15	2	17.830	17.858		Beams Cut. No ID trip. Beam lost sensationally.
517	1.43	3.65	15.23	"	2.5	42	0	"	"		Rather rough background and at Bayon.
679	1.67	4.93	20.16	"	2.5	60	0	"	"		Same " " " "
					2.15						
579	1,12	4,36	24,52	"	1.8	47	1	--	--		
429	0,75	3,28	27,80	"	1,5	27	1	17.830	17,858		
395	1,47	2,92	30,72	"	2.7	38	0	--	--		
348	1,22	2,55	33,27	"	2,5	30	1	--	--		
317	1.1	2.37	35,64	"	2.3	31	0	—	-		
283	.87	2,13	37,77	"	2.1	39	1				
24	.75	.19	37.96	"	2.1	4	0				
553	1,51	3,98	3.98	"	2.5	40	2	17.840	17.868		New energy
524	1,20	3,58	7,86	"	2.2	42	1	--	--		
462	0.83	3.48	11.34	"	1.8	45	3	"	"		
44	0.66	0.33	11.67	"	1.5	6	0	"	"		
					1.9						
29	0.29	0.10	11.77	"	2.0	3	0	"	"		
9	0.06	0.01	11.78	"	2.0	1	0	"	"		
23	-0.11	-0.05			1.9	2	0	"	"		
52	0.52	0.37	12.15	"	1.8	3	0	"	"		
30	0.48	0.22	12.37	"	1.6	1	0	"	"		
					1.5						

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

0:55 Luminosities for this Energy up to now:
Mark-J > 30 nb^{-1}!, TASSO 26 nb^{-1}, CELLO 25 nb^{-1}, we 25 nb^{-1}
we decided to continue this filling with old Energy

01 03 JADAS ERROR 56 SUB ERROR 405

01 20 at the begging of the Run 4455, LG pedestal subtraction for CRT=3 CH=435 was > 500 ch. always since run 4460

03 25 PIA has trouble, we have to use this ~~filling~~ beam as long as possible.

06:00 STD-Histograms checked, noisy wire #96 gone

8:00 Hedgecock + crew on shift

08:05 LG system processor 2280 is changed. because of JADAS ERROR 44 SUB ERROR 207 CRATE=3
at the beginning of the run.
(LG. pedestal parameter setting)

After the Processor is changed
the pedestal ~~setting~~ parameters are set without error. : G. Kroneja.

9.05 New filling ready, rate ~ 3 Hz, deadtime ~ 15%
JOAS error 56 (wrong TOF length) 405$_8$

9.14 looking through the histograms, we find that no LG counters are on, which are processed via the exchanged process ⇒ Call Hinowa, ~~and~~ stop run and wait.

9.25 Hinowa is looking into the problem

9.30 He touches the cables and it works ⇒ start immediately Run 4467

9.40 checked histograms - thing look normal? even we

10.50 LG-thresholds adjusted (40 → 30 mV)

11.40 " " " (→ 25 mV)

12.00 new filling not yet possible because of LINAC-problems
$\int L dt$ at the current E-point: ~ 33 (Mark J), ~ 1 (Tasso), ~ 28 (Cello), ~ 28 (we)

12.30 LINAC ok again ⇒ new filling + new energy requested (17.83 ≙ 17,858$_{corr}$)

13.50 filling ready, start Run 4466. We immediately get a multihadron!

14.15 Start Run 4467 because in Run 4466 amplifier of ID cell 817 was not working.
fuse replaced ⇒ Run 4467 ok.
LG-thresholds ok

15.05 LG- " changing between 15 and 20 mV

Around 16.30 Sometimes stop-and-go traffic with the IBM

16.33 Magnet trip → 10 trip → Run off → New filling ordered. Reason: Probably over-temperature in the power house. Even if when both roof-fans worked it was very hot in there and light "room temp"

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

at the control panel down there was on. But even when it went off after some time from opening the door there were still problems with the ~~rot~~ 2 attempts to raise the current led to trips ~~was~~ at ~~xxx~~ around 4000 A.
Called Hedgecock. Slightly before he came, a very slow runup was necessary. Temperature problems in the regulator ?. Now its on again, but PETRA has problems.

20.20. LG Thresh. adj to 20 mV
From that time to now 22.22 : Background conditions continuously dirty. BP current 2.3, Deadtime around 10%. Tasso cannot switch on their chamber. First overall orbit corrections has only improved conditions for Cello. At Beginning of Run 4472: Muon Crate 3 missing. Reset in Rucksack.

23.20 ff. Discussions what to do about PETRA. Recent measures of the PKR seem to have improved the lot of nearly all experiments. A handling-over of the machine to the PETRA crew for optimization at ~~t~~ was not welcomed. So they try to ~~st~~ orbit corrections while all experiments take data and ~~wat~~ watch ~~their~~ their background indicator with a watchful eye. At beginning of Run 4473 BP current 1,6, but luminosity also low, 0.8 E30. ~~Plant~~ Deadtime 4.6%

3.8.80

00:00 Darvill & Goddard on shift.

00:30 other groups called to ask if they agree to new filling at about 01:00. all agree - we call PKR who ask about our background and also whether or not they should try to adjust the beams to give better luminosity in this next filling - our feeling is yes but feel we should speak with other groups first. All groups agree with the proviso from Cello that we don't lose too much beam-time over it.

02:53 New filling ready. PKR. have finished their adjustments. Run 4474 started.

03:00 The background is rather high - BP current ~ 2.7 event rate 4 Hz so we call other experiments to see if they have the same problem - they all have. Speak to PKR who says that they have just been trying on Cello's behalf to improve conditions and feel they are as good now as they are likely to achieve.

03:15 call round to see what luminosity other groups have at this energy since we are close to 30 nb^{-1}
Cello 15, Tasso 12, Mark J 29.9, Jade 28.5 - Mark J and Jade are going to get rather more than 30 if we work to the ~~of~~ total luminosity for all experiments ~ 120 nb^{-1} requirement.

04:47 After several tagging system high voltage error messages I go over the bridge to look at the offending crate (MPA 56)
Looking at channel 26 shows that it is swinging continuously between 1,519 and 1,531 kV - 10 mV about the nominal setting. I suspect that several channels are doing this in this crate.

05:20 At last get total luminosities for this energy for all groups to ~~total~~ total > 120 nb^{-1} - Tasso and Cello numbers suddenly seem to have increased more rapidly and I think we are now at over 120 nb^{-1}. Ask for new filling at new energy of 17.84. PKR. will again attempt to get better luminosity with less background

05:56 New filling, New Energy. Run 4479 started.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \beta \rangle$ $\times 10^{30}$	$\int \beta\, dt$ Run	$\int \beta\, dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

1255

8.00 BAMFORD AND WATANABE ON SHIFT

9.00 New fill arranged

9.26 PKR are having problems with linac one, don't know when they will be ready to restart

9.40 Linac one down, they don't know how long it will take to solve the problem.

11.55 STILL no beam, magnet fluctuation error while pumping down the magnet.

13.38 PKR says switch on high voltage. Run 4483 started
they have problems with the machine, with extremely dirty beams. We can not switch chambers on (peaks exceed vertical scale of scope).

Temperature in hardware section now 22°C. Go to airconditin downstairs and lower thermostate from 19° to 16°. AW

Because of this, one of the CAMAC crates for ~~trigger etc.~~ DL8 went off, due to FAN failure. Then the TV screen blanked off. Could not terminate the run properly. (reloaded Nord)

14.45 Beam conditions very bad so run 4486 paused. Still having problems with the air conditioning unit.

14.55 Run 4486 stopped because of CAMAC crate fan failure.

14.56 CELLO phone and says they still have bad beam conditions but we are o.k. for the moment.

15.09 CAMAC crate again run 4487 stopped.

15.19 " " 4488

15.20 Mark J ~~and Cello~~ agree phoned and asked, because of the dirty beam conditions and low luminosity if we could dump the beam. They say for another 30 min CELLO agree. We phone TASSO and they agree. However PKR won't be keep the beam 1 hr longer and soon solve the problem, he said all the experiments agree.

15.25 Run 4489 stopped CAMAC crate again.
LG threshold now 0 mV! Temperature 20.5°.

16.00 Minowa + Wagner

16.08 beams dumped for new filling. TV Display is now showing the freq-corrected Beam Energy.

16.49 DL8 CAMAC CRATE fan failure again, also IBM in trouble stop the Run

16.53 Start the Run 4492 (output to Maj. Tape)

17.41 - 17.53 Fan unit branch 5 crate 4 (DL8 21-27) exchanged (The one which caused the frequent trouble-)

18.20 Notice that in Run 4497 the cells 12, 13, 14 in Ring 1 are missing (since fan exchange)

19.40 request new filling. Trace problem to faulty DL8 in cell 12

20.50 still no beam, DL8 problem hopefully fixed.

21.19 beams again. System seems ok

22.21
Survey of $\int L dt$ at 17.868:

	TASSO	MARK J	JADE	CELLO	
	33	36	26	24	pb^{-1}

agree to change energy at 23[00].

23.32 LG Threshold is set to 15 mV

24.00 " to 20 mV watch and adjust it ~ once per run.

Foster Steffen here.

4 Aug 80

00.40 Mark J call (!), suggest new filling – we agree, – Call all groups etc. New filling at 12.55.

00.55 End run 4501. – new filling begins.

01.23 New filling established! Start Run 4502 BP 2.3

1.27 LG threshold readjusted (25 mV)

02.15 Run 4502 ended Run 4503 started

03.18 Run 4503 ended Run 4504 started

03.30 TASSO Proper new fill at 04.00 since machine down at 0700 – we agree. BUT PKR cannot do refill – so we stay with present one!

3.43 LG threshold readjusted (30 mV)
Magnet readjusted (was 7505 A)

04.34 Run 4504 ended Run 04505 started.

5.49 beams lost no next filling possible until repair finished (might be soon)

06.30 No more luminosity

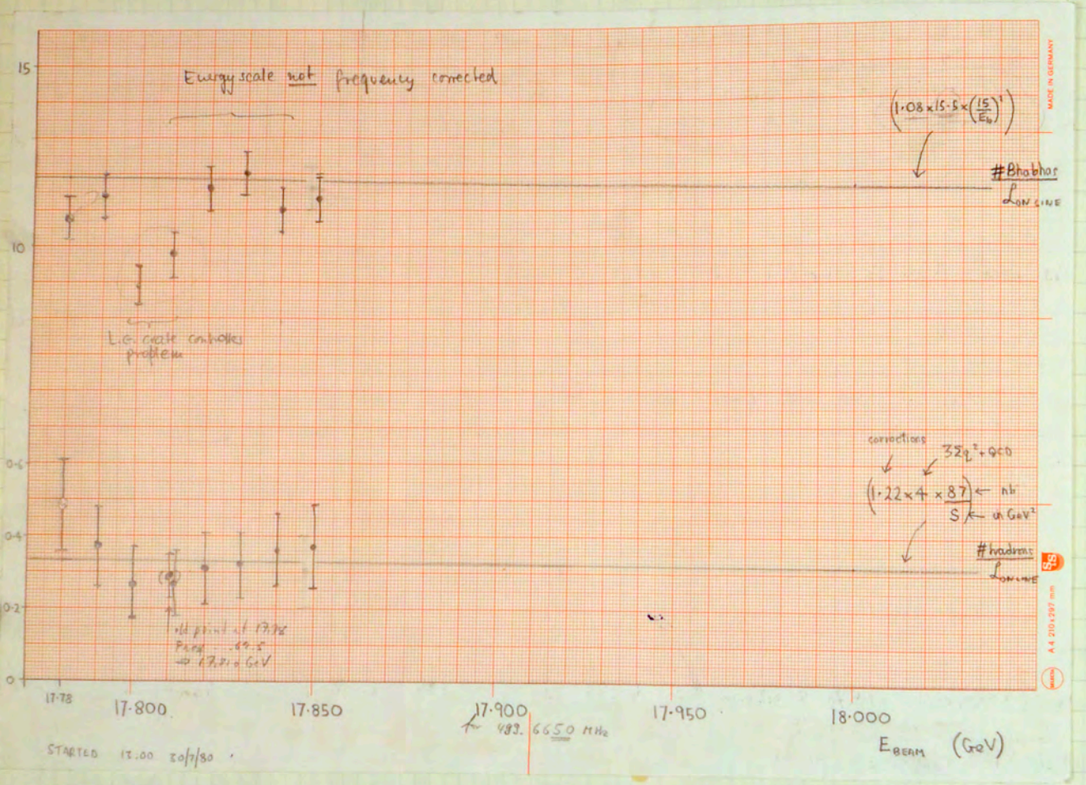
6.50 Magnet are run down. We go home.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4491	3/8/80	15.15	15.23	6.3	5.0		479	750	124	5.3	119	0.7	347	266	236	222	101	110
4490	"	15.24	16.07	6.1	4.9		2583	3689	671	29.0	642	2.2	1787	915	1052	1120	575	584
4491	"	16.41	16.49	10.2	10.2		239	848	62	10.2	52	2.4	469	373	159	210	189	89
4492	"	16.53	17.14	9.12	9.35		1163	3107	303	27	275	6.1	1621	1283	636	704	756	421
4493	— IBM LINK failed — no events in this Run —																	
4494	3/8/80	17.18	17.32	7.8	8.2		148	317	39	2.4	36	0.4	158	109	65	80	79	35
4495	"	1722	1731	7.7	8.1		406	976	106	7.2	99	1.1	482	291	198	252	213	163
4496	"	17.31	17.41	7.4	7.8		537	1128	140	8.6	131	1.3	553	383	277	277	228	152
4497	"	17.53	1820	6.8	7.1		1531	2857	398	20.5	378	2.4	1400	904	680	826	491	451
4498	"	21.19	22.08	9.99	10.01		2918	7845	759	86.6	672	23.2	3939	4008	1752	2021	1358	890
4499	"	22.08	22.59	7.7	7.8		2994	5920	778	49.3	729	9.5	2792	2723	1462	1609	940	811
4500	"	22.59	23.50	6.4	6.3		2961	5168	769.9	54.9	715	5.4	2467	1996	1339	1510	875	736
4501	"	23.50	00 53	4.5	4.5		3731	5765	970.7	46.1	926.6	4.3	2551	2123	1633	1725	787	892
4502	4/8/80	01 23	02 15	9.7	10.1		2990	7847	778	87.7	690	23.6	3910	4123	1789	1980	1395	941
4503	4/8/80	02 15	03 18	6.09	6.30		3727	7856	969.7	80.2	887.5	14.3	3794	3905	1859	2090	1372	1111
4504	"	03 18	0431	6.1	6.3		4401	7858	1145	61.0	1084	9.2	3725	3882	1947	2318	1256	1148
4505	"	04 32	05.45	4.8	4.9		4287	6513	1115	44.5	1070	5.2	2878	2863	1775	2038	850	1075
4511	11.8.80	14.08	14.35	8.40	8.67		1759	3039	307	57	250	3.9	1576	2461	457	734	508	372
4512	"	14.42	14.44			Not properly running because of IBM Problems and IDAS errors.												
4513	"	14.58	16.17	5.72	5.91		4639	7844	1207	74	1133	9.0	3582	6135	1908	2377	913	1010
4514	"	16.17	16.36	3.41	3.52		946	1324	247	8.2	238	1.1	590	819	378	457	132	176
4515	"	17.27	18.48	2.2	2.1		4815	5480	1254	32	1222	4.0	2302	3034	2018	2005	331	667 2667
4516	"	20:05	21:09	6.86	6.66		3733	7845	972	58	914	10	3564	6537	1698	2191	1080	936 3736
4517	"	21:09	22:34	3.6	3.5		5078	7856	1321	53	1268	9	3308	6398	2151	2496	744	1146
4518	"	22:34	0:26	2.6	2.5		6658	7842	1730	51	1680	6.4	3245	4810	2645	2786	521	1187
4519	12.08.80	0:26	0.49	1.4	1.3		1291	1430	356	8.3	328	0.7	581	566	530	533	60	237
4520	12/8/80	06:04	06:36	7.0	6.7		1868	3635	486	26.2	460	3.29	1714	2292	786	1093	464	382
4521	"																	
4522	"	10.04	10:25	7.3	7.0		1136	2148	296	53	243	1.92	1602	1305	432	638	255	243
4523																		
4524																		
4525		10.42	12:14	5.7	5.4		5442	7858	1416	157	1259	7.99	3467	5789	2105	2498	817	965

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM / Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

RUN	T1 LUMI	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ RUN	$\int \mathcal{L} dt$ EXP.	IBM / TAPE	BP	BHABHA	MULTI-HADRON	BEAM ENERGY LEP (GeV)	BEAM ENERGY FCOOL (GeV)	FREQ. (KHz)	
4491	23	0.32	0.16	12.53	IBM	1.5	1	0	17.840	17.868		
4492	192	0.56	1.44	13.97	"	1.5	14	0	17.840	17.868		
4493	60	1.46	0.35	14.32	IBM	2.5	4	0		17.868		DL-8 FAN-FAIL.
	298	1.86	2.16	16.48	TAPE F11221	2.0	24	1		17.868		IBM problem write to tape FAN-FAIL.
					IBM LINK tried							
4494	36	1.75	0.26	16.74	TAPE F11221	1.7	0	0		17.868		FAN-FAIL.
4495	97	1.75	0.71	17.45	" F11221	1.6	7	0		17.868		"
4496	108	1.51	0.81	18.26	" F11221	1.6	8	0		17.868		"
4497	253	1.25	1.92	20.18	" F11.221	1.5	23	1		17.868		End of Tape reached Coils 12.1 - 14.1 missing
4498	769	1.94	5.66	25 84	IBM	2.5	62	1		"		
4499	588	1.49	4.46	30.30	"	1.8	47	2 (1)		"		
4500	448	1.16	3.43	3.48	"	1.4	45	2	17.860	17.878		New Energy
4501	463	0.95	3.55	6.98	"	1.5	46	2	"	"		
4502	793	2.00	5.99	12.97	"	2.0	63	6	"	"		
4503	692	1.40	5.23	18.20	"	1.7	57	2	"	"		
4504	670	1.19	5.26	23.46	"	1.3	45	2	"	"		
4505	428	0.86	3.68	27.14	"	1.0	52	2	"	"		
4511												Frequency .665 = Soll-Frequenz v. Petra
4512	355	1.85	2.74	2.74	IBM	2.0	30	2		16.500	.665	o.k. the TV Screen Indicates Magnet-Energie = Korr. Energie
4513	353	1.09	5.04	7.18	IBM	1.3	65	1		16.500		IBM seems to be o.k. now.
4514	107	0.76	0.72	7.90	"	0.6	7	0		"		
4515	173	0.25	1.21	9.11	"	0.4	19	0		"		beam lost
4516	865	1.56	5.83	14.94	"	0.8	79	4		"		new filling
4517	593	0.80	4.07	18.01	"	0.5	62	2		"		
4518	286	0.30	1.99	20.00	"	0.2	26	0		"		
4519	27	0.14	0.19	20.19	"	0.3	3	0		"		beams dumped
4520	500	1.83	3.41	23.60	IBM	1.0	37	0		"		beams lost
4521										"		JUNK. HV's off.
4522	308	1.84	2.08	25.68	IBM	0.9	25	1		"		
4523										"		JUNK TOF CAMAC
4524												JUNK Bruch Problems
4525	746	0.96	5.20	30.88	"	0.6	56	2		"		

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4



STARTED 12.00 20/7/80 .

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

8 August 1980

Reset 11/8/80

1. Freigabe given to PKR by means of Switch on top of Rack 21 ✓
2. Luminosity (Tagging) Thresholds set for 7 GeV Beams ✓
3. HV control given to PKR. ✓
4. ADC gate disconnected from Tagging 2280 ✓
5. Label gate + general Tagging gate disconnected + o/p set to logical "true". ✓

9-8-80

00^{25} No Lumi Studies until 08^{00} at the earliest

15.35 No Lumi-tests today, maybe tomorrow

10-8-80

12^{17} No Lumi Studies at least until 23^{00} today and then only at $\geq$ 17.00 GeV
There will be no lumi tests at 7.00 GeV. - PKR have problems (Segde)

23.45 PKR now attempting luminosity @ 16.5 GeV so to adjust Pb Glass (tagging) thresholds t_{th}^{ref} 350, 150, 350, 150 (see tagging log) 4/4

11. August 1980 Heinzelmann & Krehbiel on shift. 7^{00} No Lumi. K has water problems.

7.37 Pillat comes and 2 people switch on the magnets. They say they have lost water in the Kupferkreislauf of compensating magnets. Bastel and Pillat enter interlock area to check if there are any ponds.

09.15 Reconnect tagging system (see top of page 94) Trg test runs ~6 small HV discrepancies on Tagg-HV MPR 62.

Run#4509 test run No events

10.05 Magnet + Comp. Coils off to save power.

10.55 Cells finished magnet fiddles. PETRA starts injection

12.00 **At request of PETRA the JADE magnets + comp. coils switched on. Set to final value.**

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

14.00 Luminosity is there. First BP Current was 10 ~~5~~ Volts, but it was all due to one Counter, No 16. It was disconnected, then from summing. Then Value dropped to 2.
We start a run. Sato et Hese to check Leadglass.

Also BP Counter 24 is source of excessive and fluctuating Current indication. It is now disconnected. → 2 BP Counters disconnected → Nominal currents 8% lower.
Extended IBM JAMS. Called IBM. They say CC down. Even TSO down. Technicians are working, It may take ½ hours. Decided not to go on tape, because it is first run and quasi test run anyhow.
Run 4517 at Event 3704: IBM severely down. IBM Transfer error 53; Run stops by itself
During Run occured IDAS Errors 44/101/1; 44/501/1, 56/232, 1;

14.50. μCrate 2 missing while replaced digitiser # 137 (ch 44-47) reserved. T3A/T3R ratio now much better: It was formerly (14:30) 1/8 but is now 1/3

16.00 Naroska, Watanabe
Beams decaying fast. PKR wants to refill only after ~30 min.

16.30 Found BP counters at wrong voltages. Set them right. (explains the above problem
16.36 PKR requests HV off. PKR seems to be fiddling with the beam.
17.25 PKR ~~s~~ HV on, but still the same filling with ~~low~~ currents !! DESY synchrotron is down and PKR can not refill. The Att = 4dB!
17.26 Starts run 4515. BP current off-scale, but this was due to BP # 9. Light leak?
JDAS error 44-703.
18.00 Att. 2dB. $\langle \mathcal{L} \rangle = 0.4 \cdot 10^{30}$ cm^{-2}sec^{-1}
18:40 Att 0dB.
18:48 Beam lost end ~~s~~ 4515
19:15 Restart 20:00 on screen.
19:40 Injecting
20:05 New fill ready on time !? Run 4516.
We keep getting HV 2 errors. But do not just disregard. ~~Sometimes~~ Once there was really a big deviation, which should be reset (Maybe with F18*?) In any case the HVs for frame 62 seem to fluctuate ± 10 V.
22:15 G. Hughes came, we looked at the power supply. The voltages definitely fluctuate. G. Hughes went away. Unless the fluctuations get worse than ± 20 Volts on Mainframe 62 then we leave the problem until tomorrow day shift.

(HV ~~cable~~ #34 ~~was disconnected~~ had too high voltage. ~~Trip~~
(Beate's magic hands fixed it? Now Normal)
She found cables #33 and 34 interchanged at the counters, but who cares?

* At that time, Beate resetted it with her program.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

22:40 Again synchrotron problem; can not refill. Keep this fill until 23:00.
Keep getting μ-crate #3 missing. A work for A. Ball who comes in soon.
PKR wonders why $\mathcal{L}$ is high in spite of the fact that the currents are so low.
Specific luminosity ~ 10^{29}. (definition is $2\mathcal{L}/(i_+ \cdot i_-)$ for two bunch mode)
23:18 No new fill until 1:00 am, according to the screen.
Att = 4dB, LG threshold = 25 mV.

00:00 A. BALL & S. KOMAMIYA ON SHIFT Tuesday 12.8.80.

00:30 PKR postpone the restart time to 2:00 a.m.
$\mathcal{L} \sim 1.7 \times 10^{29}$ [cm^{-2}s^{-1}] Attenuator is set to 0 dB

00:49 PKR request H.T. off. Lumi run 4519. Estimated restart time still 02:00.
μ crate 3 was replaced to cure problems which showed up just before this running period. Have now fixed original crate, so put it back in service. Hopefully this may cure the 'missing responses'.

02:03 No sign of restart.
02:30 Injecting now.
02:40 We nearly had stable beams, ..but then there was a power glitch (lightning, I think!)
03:15 T.V. screen says 'short break'. That means usually 'it takes long time'.
04:30 Injecting again.
06:00 Stable beams BP ~1.0 Start run 4520.
06:25 Checked histograms — looks ok.
06:36 Beams lost. ID trip
06:45 Yet another 'kurze unterbrechung'. Who (whom) are they trying to hide? English error level 12.
07:00 Estimated restart time 08:30.

08:00 BAMFORD & O'NEILL ON SHIFT.

09:56 Beams ΣBP pinned. Can't turn on. Call PKR. Our collimators are in. Maybe this is the same nonsense the evening shift fought.
~10.00 After telephone conversation with B. Naroska pull cable for b.g. counter # 9. That was it! BP ~ 0.9 very low.
10.01 Start Run 4521. Completely stupid! We have forgotten to turn on anything except the BP counters
10.06 Finally going, 10 min after lumi available. Very poor show, very poor indeed.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

No wonder Mark-J has twice the luminosity with the kind of personell we have on shift. I volunteer to resign from all further shifts.
NO! You have to get much more practice! !!! maybe some others too !!

10:13 Now we keep getting JDAS ERROR 000044 (OCT) SUBERROR 000303 (OCT) TASK 1

10:19 Problem has gone without our doing anything.

10.27 Errors going again. R. Hoyer points out documentation showing this problem has to do with the tagging system. Reach Gareth Hughes. Problem has occurred before. He is coming.

10.29. No triggers. Connected with JDAS ?. Stop Run.
Try to start new run. 2 events. Teletypo clatters ominously:
"YPARA: ERROR DURING LG-PED RUN: SEE COMMAND TERMINAL FOR JDAS ERRORS
Terminal shows same JDAS error: 44 suberror 303.

10.42 Runs 4523, 24 junk. Gareth fumbles around, does nothing, understands nothing, but nevertheless gets us running again. Run 4525 begins.

11.10 Go to check L.6. ~~thres~~ thresholds. They are set up for x=30 mV.
I find x more like 20 mV, but then, before my very eyes, there is some IBM dead time and when it's over x is totally different: 10 mV or 5. Then it slowly creeps back upward.
What is this. Call Orito. He consoles me. "It's not normal, but it's the way life is."

11.25. X seems to have stabilized at about 24 mV. Set thresholds accordingly.

12.00 Lumi is down to 0.5 and we have 30.3 nb^{-1}. It would be reasonable to get a new filling and a new energy, but we're too close to shutdown (13:30)

12 16 Run 4525 Ended Run 4526 started.

The problems with Tasso HV Mainframe 62 appear to be in its internal SVM. An externally connected SVM does not show the variation. P. Feller comes to investigate after lunch.

13 98 Stat Jade 30.8 MarkJ 30.4 Tasso 23.8 Cello 15.4 (Hinking)
↑ Smears

13 27 No. triggers! Pause, restart. I dunno. We have to stop anyway

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

13 57 This is really it. Dump.
15 15 Thes. LG. High Voltage reset by RI-HB S.K.

16 00 B. Naroska + A Wagner
No beams The „Lauchsprechkonferenz berichtigt PETRA"
+ klystron exchanged

18 00 Luminosity status of all experiments
Tasso: 25.3 / MJ: 31.9 / Jade: 33 / Cello: 17 / nb^{-1}

19 15 very good beams

21 50 JDAS 56 suberror 371 (TOF - wrong bank length)

22 30 After 3½ hours of true fill we have still a luminosity of $1.7 \cdot 10^{30}$ (Tasso also), lifetime 7h, specific $\mathcal{L} = 11.9\ 10^{30}$
very low background (BP ~ 0.3) currents 2×5.4 mA.
PKR says that 2 changes were made today:
Klystron-Süd links was exchanged + vacuum leak fixed

22 43 While writing this, beams are lost - one gets superstitious.
Several crashes follow.
I.D. trips, motor doesn't go down completely, the red and green light are on simultaneously.

23.30 Scream says "short break"
Linac is down.
ID seems to be repaired under joint forces of Heine, Fernet und Wagner.

0 00 Barbel & Stephanie on shift Wednesday 13-8-80

0 40 excellent fill $\mathcal{L} = 2.1 \cdot 10^{30}$ BP = 1.0

1 20 Histograms of run 4533 show
a) some dead tagging counters ✓
b) large no of noisy LG-blocks

1 30 TD-trip stop #4533
due to magnet trip Pump pumps fall 1+2
Pump 1 was very hot probably at stopping due to overtemperature

Important changes.
(Enter here things that are of long term interest, for analysis, etc)

New option in HV-checking program "TOF".
See folder JDAS for details.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG ≥ 1 ≥ 1 TR	T1 LG > 4
100																		
4526	12/8*	12.14	13.56	3.0	2.9		5927	7031	1542	68	1474	5.2	2993	4028	2260	2476	622	1025
4527	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
4528	"	13.15	20.15	9.79	9.90		3562	7856	927	68	858	4.7	4138	2912	1370	1925	1481	880
4529	"	20.15	21.15	8.23	8.19		3549	6588	924	87	836	3.5	3121	2506	1363	1632	1119	924
4530	"	21.15	21.21	6.56	6.89		297	530	77	3.1	74	0.2	232	141	124	132	79	80
4531	"	21.21	22.41	5.5	5.4		4758	7862	1237	49.6	1188	3.0	3410	2213	1769	2064	1180	1250
4532	"	22.42	22.43	5.4	5.3			49					too few events				bad	good
4533	13/8/80	0.40	1.37	9.89	10.06		3358	7660	874	60.6	813	3.9	3984	2481	1286	1832	1661	1016
4534	-	1.51	2.11	8.2	8.0		1134	2371	296	20.4	276	1.0	1091	729	437	579	433	360
4535	"	2.53	3.48	9.7	9.8		3305	7855	860	68.2	791	3.9	3846	2295	1252	1768	1656	1098
4536	-	3.49		8.2	8.2		3767	7859	980	49.5	931	3.4	3744	2288	1472	1825	1549	1162
4537	"	4.54	5.28	6.8	6.9		2026	3732	527	42.6	485	1.4	1642	1042	732	907	672	593
4538	"	5.30	6.48	6.2	6.3		4642	7859	1209	58.1	1150	2.4	3433	1861	1732	2108	1770	1248
4539	"	6.48	7.23	4.4	4.9		2054	3023	535	20	515	0.8	1247	711	763	783	463	517
4540	"	8.24	9.23	8.9	8.7		3507	7859	912.4	55.5	856.9	3.4	3538	2165	1331	1738	1549	1005
4541	"	9.23	9.33	7.4	7.3		559	1059	145.5	6.4	139.1	0.5	441	326	177	272	143	163
4542	"	12.13	13.19	9.3	9.3		3856	7856	1004.1	111.1	893.	3.7	3366	2346	1372	1855	1042	986
4543	"	13.20	13.58	7.7	7.6		2309	4504	600.6	34.0	566.6	1.9	1916	1287	869	1116	592	657
4544	"	13.59	16.54	6.7	6.6		3068	5276	748.5	47.4	751	2.0	2210	1563	1122	1433	627	757
4545	~	16.55	16.32	5.4	2.20		5471	7614	1411 ###	143	1268	2.48	3092	2086	1951	2189	739	1191
4546	14/8/80	2.13	3.15	9.0	9.5		3566	7858	927.2	89.1	838	4.5	3644	2858	1395	1858	1334	1003
4547	"	3.16	3.36	7.4	7.9		1029	1942	267	18.5	249	1.2	1000	827	398	493	415	265
4548	"	3.38	4.55	6.9	7.3		4571	7863	1139	59.7	1135	4.1	3693	2890	1717	2059	1432	1161
4549	"	~~3.55~~	~~5.55~~															
4550	"	9.38	10.29	9.2	8.9		2809	6706	730	45.1	686	3.9	3450	2498	1052	1523	1589	836
4551	"	10.35	11.45	7.7	7.4		4171	7862	1086	50.3	1036	4.4	3640	3025	1670	2051	1299	1132
4552	"	11.46	13.07	6.2	5.9		4703	7448	1224	47.8	1176	3.75	3123	2800	1747	2056	932	1189
4553	LG crate controller (Branch = 2, crate 5) did not work.																	
4554																		
4555																		
4556																		
4557	"	13.45	13.59	4.3	4.1	~~8.10~~	838	1145	218	6.8	211	0.5	465	406	316	341	123	196
4558	14/8/80	17.09	18.03	6.7	6.9		2860	4659	640	30.5	610	2.8	2158	1933	1011	1211	673	578
4559	"	18.04	19.28	5.3	5.3		4781	7855	1245	685	1186	4.27	3346	3148	1872	2162	906	1123

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]	
101										
368	0.43	2.57	33.43	IBM	0.4		43	0	16.500	.665
-	-	-	-	-	-		-	-	-	-
-	-	-	-	-	-		-	-	-	-
1164	2.24	7.97	41.42	IBM	0.8		79	2	16.500	.665
926	1.78	6.33	47.75	"						
74	1.74	0.52	48.27	"	0.7		77	3		
1168	1.74	8.30	8.30	"	0.4		7	0		
run					0.4		106	3	16.510	.665
1105	2.24	7.51	15.81	"	1.0		103	2	"	"
366	2.13	2.49	18.40	"	0.6		31	3	"	"
1350	2.71!	8.95	27.35	-	0.8		133	6	"	-
1220	2.20	8.28	35.63	"	0.5		99	1	"	"
620	2.10	4.25	39.88	"	0.5		57	2	"	"
1243	1.89	8.77	8.77	"	.3		98	2	16.52	.665
424	1.44	2.96	11.73	"	.2		43	1	"	"
1647	3.22	11.29	23.02	"	0.65		129	4	"	"
238	2.90	1.62	24.64	"	0.5		17	0	"	"
1842	3.26	12.85	37.19	"	0.8		156	7	"	"
916	2.76	6.37	43.56		0.5		82 (520)	2	"	"
985	2.23	6.84	6.84	"	0.5		70	2	16.53	"
1153	1.49	8.10	14.94	"	0.4		101	5	- -	
1493	2.86	10.20	25.14	IBM	1.0		127	3	- -	
211	1.36	1.40	26.54	-	0.6		20	0	"	
984	1.48	6.77	33.31	"	0.4		95	5	"	
		~~7.4~~	~~34.7~~		0.4		552	0	"	
1099	2.65	7.45	~~42.76~~ 41.5	F11220	1.0		84 (497)	2	16.53	
1145	1.89	7.89	7.89	F11196	1.0		79	4	16.54	
1101	1.65	7.75	15.64	IBM	0.6		106	1	16.54	
135	1.14	0.95	8.84	IBM	~0.5		18	0	"	"
729	2.07	5.10	13.94	"	0.6		69	2	"	
1246	1.85	8.83	22.77	"	0.5		97	3	"	-

Beam Energy (without dumping the beams)

Ended due to LG Crate fault

Never really started

Beams dumped

Not full, stopped because NORD trouble

beam dumped.

IBM troubles during PEP run

beams dumped

run ended because of magnet trip.

beams lost

new energy

record lumi

beams lost

end of the energy

NEW ENERGY (run stopped because of Nord hang)

beam lost

new filling

NORD page fault

beamlost, run summary lost

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

Important changes to the experiment

2^{10} beams lost + ID-Trip, Sundrausfall
Run 4535 1 JOBS-ERROR SC = TOF bank noisy bright 405 nb
" " one additional noisy wire in ID ~#10
The band fly is getting very noisy
record $\langle \mathcal{L} \rangle = 2.7 \cdot 10^{30}$ cm^{-2} s^{-1}
4^{10} $\int \mathcal{L}\,dt$ Tasso 25 nb^{-1}
Mark J 25 nb^{-1}
Cello 20 nb^{-1}
Jade 29 nb^{-1}
5^{30} change energy
6^{30} DESY-synchrotron is down so we keep them full
For time to time the Diablo goes crazy.
7^{20} request new fill
8:00 Poster session here.
8:24 Run 4540 started. $\mathcal{L} = 3.43_{\pm 0.30}$!!
8:35 LG histograms checked, they look cleaner now
Tagging HT's seem stable.
9:15 LG thresholds readjusted (to 30 mV)
9:24 Run 4540 finished $\langle \mathcal{L} \rangle = 3.2 \times 10^{30}$
Run 4541 started. Muon code missing warning.
9:26 missing muon crate?
9:33 too good to last : beams lost
9:50 short break : PETRA suffers from cooling problems
12:13 Injection complete. Start run 4542. $\mathcal{L} = 3.4 \pm 10^{30}$
12:24 Many TBM busy signals.
LG histogram ~~not~~ ~~keep~~ ~~again~~ more noisy.
13:30 $\int \mathcal{L}\,dt$: JADE TASSO MARK J CELLO
37 26 33 24
~~$\langle \mathcal{L} \rangle$: 2.1~~ decided to change energy to 16.53 GeV at 14:00
(problems at DESY synchrotron - so cannot obtain new fill for several hours — this fill seems pretty good anyway!
Pb Glas now clean again.
14:00 New energy Run 4543 ended Run 4544 started. 16.53 GV
~~to 30~~
14:25 Magnet read error. DVM gain overload indication

other
However all indications are that magnet is still on & working normally
Phone Dick Hedgcock who will come over immediately.
PKR had plugged a monitor lead at the back of the magnet control panel in parallel with our DVM readout cable causing the system to read nonsense. Herr. Killat has disconnected the cable and will inform PKR. CH.
14:53 Error 13 Page number 137 stop run 4544
14:54 Start Run 4545.
16:00 Darrill & Takeda on shift. DESY has a problem and we must keep this filling as long as possible.
16:24 I.D. Trip. Due to electron beam loss.
During a conversation between Tasso and us over the advantages of switching off the magnets to save energy and the gains to be had from continuing to run on with positron beams only the positron beam is lost and we are requested to switch off H.V.
N:20 P.K.R. says that it will be at least 19:00 before Petra can be refilled. we wind down magnet current and switch off compensation
17:30 T3 trigger chamber disable, and layer 5 permanent enables, modified to account for recent work on dead + noisy chambers in the jet filter. Please watch T3 o/p histogram, and T3 accept/reject ratio, in case we have introduced noise. AB.

18:45 crate-controller of LG (crate #7) was exchanged with spare one. The old one seems to miss bit 2, occasionally. H. Takeda

14.8.1980 Kawabata & Nozaki on shift
00.00 still PETRA is down.
01.30 we raised magnet current to 7500 A.
But we cannot switch on the compensation magnet.
CALL PKR to send a people to check the power supply of the compensation magnet.
02.05 "K" people meet the power supply.
Compensation magnet was switched on.

~~Pb Glas flags~~

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS x10⁶	T0 REJECT x10⁶	T0 ACCEPT x10⁶	T1 ACCEPT + POSTPONE x10⁶	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥2 TOF LG>1 ≥1 TR	T1 LG>4

02.14 Run 4546 started. Typewriter message "YPARA PED CRT 3 CH 435 is 7500"

03:36 Typewriter error message "ERROR 13 IN 34323 at 103014; page fault for non-demand"
Stop the run and start new run and ok.

05:15 $\int L\,dt = 22\ nb^{-1}$ Tasso, $\int L\,dt = 26\ nb^{-1}$ Cello
$\int L\,dt = 35\ nb^{-1}$ Jade. $\int L\,dt$ ~>30 M. J.
We request new filling at 5:30 with new energy.

05:25 beam Lost.
TV screen and color TV are both off.
Terminal 400 is locked due to the breakdown of color TV.
Run summary list for the run # 4549.
re load the Nord program.
PETRA has problem with the magnet.
Short break

07:40 There is some problems in synchrotron.
It is not clear how long PKR needs until next injection.
So we don't lower the magnit current.

08:05 Injection started.
Time Reversal

08:00 Bowdery & Komamiya on shift.

08:20 reset LG (Tokyo) High Voltage by (LG2) RI-HB.

09:20 beam lost during accelerating.
the new beams are ready

09:28 Fill ready. NORD terminal 9 seems to have hung up.

09:38 We reload the NORD. Small delay in setting up a mag. tape.
Run 4550 starts.

09:40 Magnet fluctuation. Seems to be okay

09 50 Richard Hedgecock checks the 1D. histograms. Something(?) seems to be wrong he says.
Magnet Fluctuation seems real one. ~7500 [A] → ~7200 [A]

10 00 Luminosity TASSO: 27 nb^{-1}, MarkJ: 32 nb^{-1}; CELLO: 28 nb^{-1}
JADE 38 nb^{-1} ← new conversion factor? effect

We call G. Hughes, who will investigate.

T1 Lumi	$\langle \mathcal{L} \rangle$ x 10^{30}	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM / Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

10:15 Run 4550 — V34 DL8 23.3 FUSE BLOWN — WIRES 1772-1787 were missing until event 2758. Replaced fuses & run restarted. Helpcard & Cieselberg.

10:15 Tagging HV wrong. 11 volts on MFR=60 Chan = 1 & 2. We take no action

10:22 We call around again to ask for luminosities.
CELLO ~~TASSO~~ : 29.5 nb^{-1} They agree to change the energy.
TASSO >30 nb^{-1} " " " " "
MARK J Want to change the energy

10:25 We phone PKR to ask them to accelerate the beams at 10:30 to 16.54GeV
PKR says that it is possible. All experts. informed.

11:01 The 1.08 correction factor applied to (Online Bhabhas)/$\int L\,dt$ and (Hadrons)/$\int L\,dt$ should no longer be necessary.
"lines" on current graph have been corrected to $15.5 \times (8/7.5)^2$ and $(1.14 \times 4 \times 8/7.5)$ respectively.

11:39 IBM AA is UP (EXP. ON AA)

12:30 HV. Read Error
CH = 1, 2 LG/BP (set=0.7kV, sense=1.97kV)
checked by independent program looks O.K.
TOT (TESTHV) HVDST ~~dumped~~ Cr=1 and Cr=2

13:07 Computer time
13:15 JDAS Error 44 Suberr 205 (BR=2, CR=5) Track 1
No triggers. Run 4552 terminated. Runs 4553 - 4556 did not start

* *
* Please can someone produce a map of where each Branch *
* and Crate is in the counting room. I was unable to find *
* the particular crate [and also unable to contact directly the *
* person responsible for maintaining it] [I have now seen the table but a map is still needed] *
* *

13:30 LG crate 5 is the faulty one. Komamiya (back from lunch) fixes it. → see next page

13:48 Run 4557 starts okay.

the run stopped during the pedestal run event # ≤ 13.

DONE!
See "What to know about JDAS" in the electronics room.

Crate Controller
LG-ADC-I (Branch 2/8 Crate 5)
was changed.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

→→ changed the crate controller for Branch=2 Crate=5 (LG ADC crate 1) and the JDAS error that was fixed.

13:50 Cello and Tasso have rung in the last half hour to enquire when we will be dumping the beams.
Since our hardware problem is over, I ring around to ask all the experiments about a refill at 14:00. They all like the idea. We inform PKR.

14:00 Beams dumped
PKR announce a short break over the TV monitor. We wait.

15.19 Short break continuing

16⁰⁰ Marshall and Weber on shift

16²¹ PKR say they have e^+ again from the synchrotron and can now restart injecting again

17²³ New Fill start run — immediate F/D trip.
background high.
reset F/D
background low now so continue

18.03 Run 4558 stopped because Nord hang-up on "display tracking histogram". Restart IDAS.

18.55 T.O. Trip during run 4559 due to "anode current". Reset and start. probable reason ~ 1 mA of current lost during that period.

23.18 Checked LG thresholds. all o.k.

23.30 Reloaded YHDISP and YEDISP. Error of histograms cured now. (B.N.!!)
↑ Something must have been corrupted

FOR HEM DISPLAY N50 MISTS gives endless loop
Forl Runtim Error
ERROR 30 in 34557a 42622
FORTRAN ERR NR 403

H.E.M

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM / Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

15/8/1980
0⁰⁰ McCann and Takeda on shift
00³⁰ Ask PKR to dump beams for refill at 12.45 after agreeing with all other experiments.
00.40 JDAS ERROR 44 SUBERROR 703 TASK 1. Jet chamber ring 3.
00.45 Stop run 4563
01:22 New fill ready. RUN 4564 start.
02:30 RUN 4564 stopped with 8000 events. RUN 4565 started.
02:38 IBM-LINK down. RUN stopped.
We decided to write on tape.
02:50 RUN 4566 started.
03:20 LG threshold adjusted to 30 mV
03:40 RUN 4566 stopped for a new fill.
04:09 New fill ready.
RUN 4567 started. Transfer to IBM.
Lead glass crate #1 noisy. but continue run.
5:15 RUN 4567 stopped with 8000 events
RUN 4568 started.
5:45

TASSO	MARK-J	CELLO	JADE	
32	30	26	32	nb^{-1}

We asked PKR to increase energy by 10 MeV. (New fill)
6:04 RUN 4568 stopped.
5:44 New fill ready Energy is 16.56 GeV. RUN 4569 started.
• LG. crate #1 noisy due to pedestal substraction problem. (not so serious)
7:05 - LG threshold was adjusted To 35 mV.
7:53 RUN 4569 stopped. RUN 4570 started.
0800 Stephens/Nozaki on Shift.
0800 JDAS Error 56 - TOF bank wrong length.
0815 Ask for new fill
0820 End run 4570
We found V34 # 1.4 (wire # 784~799) has been dead since run 4567.
08.50 Heinzelman repaired it.

JETC
Run 4567 ~ Run 4570
wire # 784 ~ 799
data are missing.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2 TOF LG>1 $\geq$1 TR	T1 LG>4
4560	14.8.80	19.20	20.59	4.8	4.8		5131	6890	1388	83.2	1305	3.19	2871	2578	1908	2155	673	1012
4561	"	21.39	22.10	8.2	8.1		1779	3870	463	28	435	2.94	1909	1976	646	1029	670	468
4562	"	22.12	23.21	7.2	7.2		4147	7346	1079	46.2	1033	5.14	3346	3659	1699	2048	1001	1049
4563	15.8.80	23.29	0.46	4.8	4.7		4513	6123	1174	36.9	1137	3.29	2653	2698	1667	1952	652	989
4564	"	1.22	2.30	8.03	8.41		4027	7841	1048	113	935	5.78	3812	3909	1471	2079	1414	1073
4565	"	2.30	2.58	5.7	6.0		198	425	51.5	2.3	49.2	0.2	178	154	75	125	72	68
4566	"	2.50	3.40	5.2	5.44		2993	4797	779	29.4	750	2.76	2213	2105	1122	1389	793	763
4567	"	4.09	5.12	8.14	8.52		3741	7851	974	55.3	919	6.39	3857	4321	1568	2093	1331	993
4568	"	5.15	6.04	5.84	6.11		2868	4815	747	30.3	717	3.19	2168	2462	1206	1371	699	705
4569	"	6.44	7.53	7.44	7.93		4138	7841	1077	56.4	1021	5.83	3751	4232	1741	2242	1159	942
4570	"	7.54	8.19	5.00	5.34		1483	2269	386	14.3	372	1.48	1007	1103	575	698	246	323
4571	"	9.27	9.37	8.78	8.80		574	1335	149	9.65	150	1.14	695	722	234	385	191	138
4572	"	9.38	10.47	8.27	8.29		4097	7853	1066	69.5	997	6.23	3652	4176	1624	2133	1088	1068
4573	"		Beam		Past	after	82 events		also		computer		crash					
4574	"	11.54	12.59	9.50	9.64		3821	7851	993	80.3	913	6.5	3821	4350	1556	2081	1067	1006
4575	"	12.59	14.03	6.79	6.91		3759	6029	978	64.9	913	4.14	2640	2930	1406	1798	647	809
4576	"	14.06	14.19	6.89	6.97		731	990	190	862	181	0.61	416	454	300	303	88	121
4577		15.07	16.19	8.07	9.67		4210	7856	1095	63.3	1032	6.0	3861	4394	1652	2311	952	1094
4578	"	16.20	17.30	6.5	5.4		3943	6278	1026	53.0	973	3.2	2768	2768	1433	1804	939	1104
4579	"	18.05	19.07	8.9	8.8		3669	7849	955	53.0	902	5.8	3946	4235	1448	2068	1182	1098
4580	"	19.09	20.38	6.2	6.1		5105	7850	1329	47.5	1281	4.4	3488	3767	2018	2412	883	1217
4581	"	20.39	20.45	3.7	3.6		361	4481	94	2.6	91	0.2	225	187	134	181	39	68
4582	"	22.38	23.10	8.0	8.2		1682	3207	437.6	24.4	413.2	2.6	1546	1817	669	989	391	385
4583	"	23.38	0.25	6.5	5.7		2811	4647	~~731~~ 731	~~780~~ 30.8	700.3	3.5	2123	2388	1136	1448	534	603
4584	16.8.80	0.26	0.50	4.7	4.2		1422	1940	369	11.3	358.4	1.2	839	967	521	622	183	297
4585	"	1.18	2.13	8.6	8.5		3291	7305	855	52.6	803	9.1	3500	6009	1412	2073	958	860
4586	"	2.18	3.11	5.4	5.4		3169	5614	824	37.3	786.8	6.1	2593	4469	1276	1779	753	843
4587	16.8.80	3.34	4.27	8.38	8.42		3107	7840	808	63.7	744	9.2	3919	6308	1388	1992	1554	1082
4588	"	4.37	5.02	5.1	5.1		1468	2903	382	19.0	363	2.8	1471	2080	599	818	569	455
4589	"	5.33	6.24	8.6	8.5		3064	7851	797	46	735	11.1	3961	7191	1378	2081	1651	985
4590	"	6.25	7.14	4.8	4.8		2946	5511	766	38.6	727	7.6	2612	5152	1274	1606	940	820
4592	"	18.20	19.12	8.0	7.9		3093	7846	804	63.7	741	16.7	3134	9971	1589	2184	570	715
4593	"	19.15	20.17	6.73	6.66		3627	7850	943	63.4	880	17.1	3013	10423	1764	2230	523	850
4594	"	20.17	21.21	5.63	5.56		3683	7847	958	60.8	897	15.0	3154	9480	1792	2269	811	1011

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]	

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$ Expt	IBM/TAPE	BP	Bhabha	Multi Hadron	Beam Energy (GeV)	Frequency (kHz)	
856	1.14	6.08	28.85	IBM	0.3	97	3	16.54	649-6650	Beams dumped at end of run.
610	2.36	4.20	33.05	"	0.8	46	1	"		New fill, stopped to increase energy
974	1.65	6.84	6.84	"	0.7	70	0	16.55		same fill as above
596	0.93	4.21	11.05	"	?	33	2	"		Stopped for beam dump.
1096	1.91	7.68	18.73	"	0.7	98	3	"		New fill
47	1.28	0.25	18.98	"	0.4	6	0	"		IBM LINK down
523	1.24	3.71	22.69	FI1197	0.3	53	0	"		Stopped for beam dump.
1021	1.88	7.02	29.71	IBM	0.65	94	3	"		New fill
529	1.30	3.72	33.43	"	0.4	39	5	"		Stopped run to increase energy
1049	1.77	7.32	7.32	"	0.6	79	6	16.56		New fill,
263	1.25	1.85	9.17	"	0.3	16	0	"		stopped for new fill
203	2.31	1.33	10.50	"	0.8	7	1	"		New fill. Endrun - noisy LG Barrel 1
1172	1.97	8.07	18.57	"	0.7	98	1	"		~~Beam lost~~
										Beam lost
1085	1.88	7.18	25.75	"	0.7	94	1	"		New fill
883	1.62	6.11	31.86	"	0.3	75	1	"		endrel - no events - not understood.
115	1.11	0.81	32.67	"	0.2	9	0	"		Beam dump -
906	1.49	6.26	6.26	"	0.7	63	4	16.57		New fill
664	1.20	4.74	11.00	"	?	62	2	"		
1128	2.14	7.84	18.84	"	0.9	94	2	"		New fill
845	1.17	5.99	24.83	"	<0.5	61	5	"		
41	0.82	0.30	~~25.13~~ 25.13	"	~	2	0	"		
437	2.13	3.59	28.72	"	0.9	30	0	"		New fill
597	1.49	4.19	32.91	"	0.9	50	0	"		stop run to improve LG pedl,
211	1.07	1.52	34.43	"	0.2	16	1	"		dump
995	2.10	6.92	41.35	"	0.5	94	2	"		
536	1.21	3.83	3.83	"	0.4	57	1	16.58		dump
874	1.96	6.10	9.53	"	0.7	89	0	16.58		
246	1.18	1.73	11.66	"	0.5	22	0	"		dump
717	1.3	4.99	16.65	"	1.0	57	3			
357	0.85	2.50	19.15	"	0.5	39	0			dump
947	2.09	6.46	25.61	FI1094	0.8	65	3	"		
786	1.51	5.47	31.08	FI1095	0.6	56	5	"		
667	1.28	4.72	35.80	IBM	0.5	64	2	"		

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

110

09.27 start Run 4571
LG. Barrel 1 seems to be even more noisy now so we stop run.

09.38 start Run 4572. Cannot get expert for Lead Glass yet.

The LG. noise is low energy and should not present a problem.

10.28 JDAS Error 56 – TOF bank wrong length.
10.47 Run 4572 ~~started~~ ended
10.48 Run 4573 started.
Beams lost after only 82 events also computer crash. restart system.
11.54 Start Run 4574
12.59 Start Run 4575

13.30

Tasso	Mark J.	Celle	Jade	
29.8	27	21.8	29.05	nb^{-1}

14.03 Run 4575 Ended. no events – but not understood (computer?)
14.06 Start Run 4576 - everything looks OK.

Tasso	Mark J	Celle	Jade	
34	30	25.5	32.5	nb^{-1}

14.20 Ask PKR to dump and change energy to 16.57
15.07 Run 4577 started

L.G. (Tag) MF 60 seems to drift quite a bit
G. Hughes told.

111

16:00 O'Neill & Sato on shift.
16:05 LG threshold set to 20 mV
16:10 LG bit map is very noisy Run 4577
16:30 LG bit map is now clean Run 4578. It depend on pedestal calibration.
17.04 Heinzelmann screwing up the experiment. He wants to pass the run for "three minutes". We shall see. Pause as requested.
17.04½ Precious multihadrons, Higgs particles, glueballs fairly fly from from the interaction point. JADE is idle.
17.05 I.D. trip. Now Heinzelmann has destroyed the Jet Chamber.
17.07. Running again.
17.10. Heinzelmann informs me that, although we have missed the Higgs, we have cured the spinning wire. He switch 6v for the preamps on and off.
17.22 All experiments agree to a new filling. Arrange with PKR for 17.30.
17.23 Stop Run 4578 for dump.
18.06 Running again Run 4579.
20.18 ID Trip Spark at 23R3 and 60R2.
According ID handbook we need call experts in this case but we can't contact with them and it seems no problem HV and Current so we continue.
20:30 Everybody agrees to a new filling. PKR filling DORIS
20:45 Dump.
21:05 "Kurze Unterbrechung!" Phone PKR. Sender ausfall. ~"5-10 min." ~~Tasso~~
22:50 That was 5-10 min in the rest frame of a 10 TeV cosmic μ.
Now it's time for mathematical fun and games. The question of the day is, "When should one ask for a refill?" When you get to the end of a regular run so you don't get stuck with the runshort for a short run? When the IBM goes down, so you don't have to find a tape? When Mark-J calls up?
No, it's none of the above. One should ask for a refill at that time which optimizes the overall average luminosity. Now, how does one know

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

When that is? The following simple-minded calculation shows you:

t = time since the start of the ~~last fill~~ current fill.
s = time needed to refill (of course you have no idea. Guess)
$\mathcal{L}$ = instantaneous luminosity
$\langle \mathcal{L} \rangle$ = mean luminosity, averaged over the time from the start of the current fill to the start of the ~~next fill~~ next fill, if dump is done at t.

Then (obviously)

$$\langle \mathcal{L} \rangle = \frac{\int_0^t \mathcal{L}(t')\,dt'}{t+s}$$

To maximize $\langle \mathcal{L} \rangle$ set $\frac{d}{dt}\langle \mathcal{L} \rangle = 0$

$$\frac{d}{dt}\langle \mathcal{L} \rangle = \frac{\mathcal{L}(t)}{t+s} - \frac{\int_0^t \mathcal{L}(t')\,dt'}{(t+s)^2}$$

Setting this to 0 and multiplying through by $t+s$, we have the dump criterion:

$$\mathcal{L}(\text{now}) = \frac{\int \mathcal{L}\,dt \ (\text{for this fill})}{(\text{Age of current fill} + \text{refill time})}$$

Concisely

$$\mathcal{L}(t) = \frac{\int_0^t \mathcal{L}(t')\,dt'}{t+s} = \langle \mathcal{L} \rangle$$

N.B. This criterion does not depend on the assumption that the luminosity drops exponentially with time. It is valid for any monotonically decreasing luminosity.

Question. Could the NORD boys program in a user-set estimated refill time

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

in the start of run dialog, default ~45 min, and then send a message to the screen when the optimumum refill time has been reached?
Must be an Americanism!

Comments on the problematic "s". It's not so bad. The quantity that appears in the denominator on the right side of my equation is $t+s$. s is typically short compared to t, so we're not all that sensitive to whether it is ½ hr or 1 hr. One strategy might be always to set s to the last refill time, within reason (not Christmas shutdown etc.) Then our very long term average should be optimal. We would just average automatically over the variations in refill time.

22:38 Beams available start run 4582
The last 10 refill times (in min) were 190, 40, 36, 29, 40, 68, 67, 28, 35 and 113
Avg = 64.6 min.

22:50 I.D. trip. ~~Reset~~

22:53 "Bad Event structure" flashes up.

~~t $\mathcal{L}$ $\langle \mathcal{L} \rangle$ (assume s = 64.6 min)~~

t	$\mathcal{L}$	$\int \mathcal{L}\,dt$	$\int \mathcal{L}\,dt / (t+64.6\ \text{min})$
(23.58)	20 min	1.54×10^{30}	$2.53\ \text{nb}^{-1}$	0.50×10^{30}

23:04 Oh! now I see. I.D. trip no doubt caused by current loss. No wonder the luminosity is so low. Current down to ~ 5mA.
All experiments agree to a new filling

23:11 Stop Run 4582 for a new filling.
Interesting. Just as I'm going through the consequences of my simple minded calculation, I'm reminded ~~when~~ of one thing I've forgotten: Not all fills are equally good. Best estimate, like that of s, is surely last run value.

$\int \mathcal{L}\,dt$. TASSO 26.5 Mark-J 21.7 CELLO 20 Good Guys 28.7
Σ: 96.9 Go for 6/expt. 1 more run at this energy.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM / Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

23.38 Run 4583. We're off and running. Currents only 6.5/5.7 ma. Bad. We'll see.

	t	$\int \mathcal{L} dt$ $[nb^{-1}\ 10^{33}]$	$\int \mathcal{L} dt / (t + 64.6\ min)$ (convert to seconds) $[10^{30}]$	$\mathcal{L}$
23.43	5 min	0.48	0.11	N.A.
23.48	10 min	0.96	0.21	1.80
23.53	15 min	1.47	0.31	1.81
23.58	20 min	1.89	0.37 ?	1.40
0.22	40 min	4.04	.65	~.9

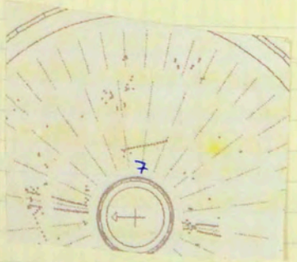
I go off shift. Beate refuses to continue this table, indifferent to the what?
Good of the experiment, I wanted to write, but was interrupted.

0.00 Krehbiel, Maroshe
Counting room electronics side 21°, we turn down thermostat to 14°
Open one square in the ceiling of the computer side.

0.20 LG crate 1 very noisy. Sato recommends to restart run,

TASSO	28	(45 min)
Mark J	25	
JADE	33	
	86	
Cello	26	

0.45 Decide to refill at the same energy.
1.20 New fill, running again $L = 2.6 \cdot 10^{30}$
Noisy wire in cell 7 ring 1.
Decide to wait until morning before calling an expert.



2.10 Change energy
7.30 Set LG threshs. to 10 mV
4.55 Lifetime of beams is bad, so we keep people awake by frequent refills. The next one will be at 500.

7.00 PKR are going to refill. In ~ 1 hour the "scientists" will arrive. Then they will take the machine for some time and try to improve the lifetime.

8.00 Froster & Komamiya on shift.
Experts are working on PETRA now to optimize lifetime ... cannot say how long.

~~(Call I.D. for Warning)~~

8 30 Phone Warning re. I.D problem over. No quick or full instruction how to effect points over. ie turn off 6V power supplies for ~ 2 min. This we do, & reset alarm when necessary.

10 00 PKR say it will now take several hours to effect optimization - phone around the groups. We agree to get back to PKR & I how to try to speed up the process.

12 00 PKR Say beam back at 13-30.

13 25 PKR now say beams at 15:00 - Decide (at last) to leave to fill to zero.

13 30 TV screen says ~~beam~~ the filling starts at 15 00.
decide to
We turn off the magnet.
when the current is decreased to 3.000 the magnet trips. →
the inner detector alarm is caused by the magnet trip. we can not reset the alarm because ~~the~~ we turned off the magnet.
Magnet reset and re ner down. Now we can reset I.D, OK.

1500 // Still nothing. Roll on 1600!

15 23 Phone PKR - they have no idea when restart occurs.

15 24 Get Restart 4.00 pm message on TV screen!

15 45 PKR say beam dies in 10 min ∴ turn on magnet.

15 54 Magnet on!

16°° BALL, HELLENBRAND, WARMING on shift

18 15 new filling ready
but energy is 16.57 (after 11 hours PKR does not remember any longer, at which energy they were before)
But now IBM is down! They say only for a few minutes, but we decide to write onto tape F11094

18:45 LG thresholds seem to be set OK for a beam $x = 10mV$, however, the 'scope display shows $x \sim -10mV$ ie. peak below ground.
Check threshold histograms thoroughly - they look fine
Unable to contact Komamiya ~~&~~ or Minowa at present
- will try again later. Meanwhile, assume it's just a display fault.

Important things

Magnet trip
~ 3000 [kA]
→ 0 [kA]

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
116																		
4595	16/8/80	21:21	21:32	4.73	4.68		609	1214	158.6	9.8	148.8	2.2	450	1382	294	341	115	164
4596	"	21:35	22:00	4.60	4.50		1480	2816	385.1	20.6	364.5	5.2	1080	3213	681	823	255	387
4597	"	22:37	23:15	9.4	9.4		2277	7844	592.1	99.2	492.9	12.8	3725	7584	1148	1719	1691	898
4598	"	23:15	23:57	8.1	8.2		2496	7855	649.3	62.3	586.9	13.7	3709	8403	1173	1768	1766	996
4599	17/8/80	23:57	0:48	9.05	9.08		3026	7855	787.1	62.6	724.5	15.0	3282	9227	1514	1980	1747	1029
4600	"	0:49	1:46	5.96	5.89		3416	7854	888.0	60.4	829.6	15.1	3179	9585	1675	2047	1061	1042
4601	"	1:46	2:46	5.00	5.01		3561	7446	925.2	~~86.9~~ 55.7	869.5	14.0	3041	8793	1624	2187	819	1037
4602	"	4:08	4:44	9.30	9.36		2135	7844	555	69.2	485.9	16.3	3315	9459	1158	1912	986	717
4603	"	4:45	5:25	8.09	8.15		2379	7845	619	65.7	552.9	16.5	3231	9739	1300	1825	1077	878
4604	"	5:26	6:02	7.0	7.0		2144	6025	558	48.0	509.8	12.9	2358	7705	1207	1495	722	722
4605	"	6:02	6:19	6.15	6.15		974	2404	253	19.0	234.2	4.9	999	2963	469	658	310	295
4606	"	6:19	7:19	5.82	5.82		3527	7849	917	60.1	857	15.5	3221	9651	1730	2106	1032	1049
4607	"	7:20		4.06	4.05		3977	7339	1034	53.1	982	13.5	2931	8572	1788	2221	711	1053
4608	"	9.42	10,16	9.32	9.08		1962	7836	511	71	440	18.9	3211	10490	1237	1933	927	742
4609	"	10,16	10.54	8.17	7.94		2221	7854	578	69	509	20.5	2982	11911	1335	1797	887	857
4610	"	10.54	11.11	7,05	6.85		925	2697	241	25	216	8.2	1206	4826	557	771	388	380
4611	"	11.10	11.01	6.62	6.44		2958	6558	769	58	712	19.3	3354	11607	1570	2155	1118	1080
4612	"	12.32	13.04	9.87	9.91		1808	7839	470	75	396	18.5	3438	10286	1103	1738	1225	805
4613	"	13.04	13.40	8.60	8.64		2104	7848	547	70	478	19.0	3388 ~~1109~~	10992	1199	1035	699	545
4614	"	13.40	14.28	7.40	7.40		2850	7850	742	71	670	23.0	3978	13840	1691	2332	1398	1154
4615	"	14.28	15.26	6.1	6.1		3399	7850	884	70.5	814	22.9	3917	13932	1869	2486	1277	1207
4616	"	15.26		4.8	4.8		98	207	25	1.7	23.6	0.6	96	366	50	~~70~~ 20	26	39
4617	"	18.07	18.21	8.6	9.3		751	1860	196	13.9	182	1.5	1041	428	345	479	430	192
4618	"	18.21	18.23	9.0	8.3		68	152	18	1.0	16.7	0.1	79	72	27	30	31	15
4619	"	18.24	19.28	8.9	8.3		3839	7855	949	55.0	944	6.3	3767	3771	1513	1999	1317	1066
4620	"	19.29	20.00	~~6.58~~ 7.21	~~6.7~~ 7.1		1806	3154	470	20.8	449	2.2	1446	1482	644	820	531	485
4621	"	20.00	21.21	6.4	7.1		4605	7855	1148	50	1148	4.7	3488	3166	1738	2133	1161	1283
4622	"	21.22	22.00	5.6	6.0		2223	3404	578	22	557	1.8	1506	1193	814	974	562	598
4623	17/8/80	23:06	0:29	8.5	8.6		4980	7851	1295	53.7	1241	4.4	3622	2829	1923	2245	1127	1103
4624	18/8/80	0:30	1:01	5.8	6.0		1877	2783	488	16.6	471	1.2	1246	925	683	818	366	454
4625	"	1:41	2:52	8.8	8.8		4151	7840	1079	64.2	1015	5.6	3717	3335	1612	1999	1271	1009
4626	"	2:56	4:20	7.3	7.2		5015	1219	1305	85.8	1219	4.6	3585	2946	1832	2195	1197	1245
4627	"	4:21	4:25	6.0	5.9		237	353	62	2.2	59.6	0.18	158	109	83	112	46	75
4628	"	6:43	7:52	7.9	8.0		4131	7849	1074	52.9	1021	5.4	3932	3120	1717	2118	1489	1068

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$ L_{55} L_{80}	IBM/Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]		
T1 LUMI	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ RUN	$\int \mathcal{L} dt$ L_{55} L_{80}	IBM/TAPE	B.P.	BHABHA	MULTI-HADRON	BEAM ENERGY E_B (GeV)	FREQUENCY (kHz)		117
93	1.06	0.65	36.45	IBM	0.4	3	0	16.58	499-665		
200	0.97	1.43	37.88	IBM	0.3	19 (17)	0 (14)	16.58	"	beams dumped	
750	2.26	5.14	5.14	"	0.3	61	2	16.59	"		
700	1.94	4.85	9.99	"	0.7	64	1	"	"		
692	1.60	4.84	14.83	"	0.55	51	0	"			
661	1.37	4.67	19.50	"	0.55	52	1	"			
565	1.12	3.98	23.48	"	0.5	50	0	"		beam dumped.	
877	2.86	6.10	29.58	"	1.15	58	1	"		New filling	
859	2.52	5.99	35.57	"	1.10	82	3	"			
646	2.15	4.62	40.19	"	?	61 (47)	1 (?)	"		↓ same fill	
218	1.6	1.56	1.56	"	0.65	20	1	16.60		← beam energy mistyped 1.66 GeV	
655	1.33	4.67	6.33	"	0.6	49	1	"			
517	0.94	3.72	10.05	"	0.3	42	1	"		beams dumped	
600	2.11	4.14	14.19	"	1.3	45	0	"			
542	1.71	3.79	17.98	"	1.15	46	2	"			
224	1.68	1.56	19.54	"	1.0	10	0	"			
520	1.24	3.67	23.21	"	.7	39	3	"		beams dumped	
592	2.17	3.93	27.14	"	1.4	51	1	"			
289	1.65	1.48	30.62	"	1.2	52	0	"			
664	1.62	4.62	35.24	"	1.0	50	1	"			
526	1.08	3.68	38.92	"	0.85	41 (44)	1	"			
13	0.93	0.09	39.01	"	.6	2 (1)	0 (1)	"			
274	2.56	1.92	1.92	"	.8	21	1	16.61			
26	2.91	0.20	2.12	"	.8	4	0	"			
1342	2.44	9.37	11.48	"	.6	115	2	"			
528	2.06	3.72	15.21	"	.5	38	1	"			
1134	1.68	7.75	22.96	"	.4	102	3	"			
448	1.28	2.85	25.81	"	.3	36	2	"		beams dumped	
1066	1.39	6.91	32.72	"	.3	97	3	"			
351	1.33	2.5	35.22	"	.3	42	1	"		beams dumped	
~~1335~~ 1335	2.26	9.4	44.62	"	.8	95 (88)	1 (0)	"		ENERGY INCREASE ↓ SAME FILL	
1069	1.51	7.57	7.57	"	.6	95	4	16.62			
52	1.55	0.37	7.94	"	.5	2	0	"		beam lost ↔ ID HV problem	
987	1.69	6.98	14.92	"	.6	74	5	"			

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

118 16.8.80

19:12 Stop run 4592 8002 events.
19:15 Start run 4593 on tape F11095.
Histograms for run 4592 show
1)a) too many trigger bit 11's ? (forward pr counters)
normally ~ 1/3 of T3 level (bit 16)
~ 1/2 of LG ≥ 4 (bit 9)
now ≃ T3 level. ~ 2 × LG > 4.
b) too few trigger bit 0's – same number as there are bit 1's.
2) LG threshold 1 a little high.
peak at ~ 20, usually ~ 15.
Will try Thonemingen again.

19:55 Eventually contact Minowa — he will come in. 15 min.

important

20:05 Minowa here — there is a problem. He's working on it.
20:17 Stop run 4593
Start run 4594 to IBM. Linked OK.
20:32 hang up in trigger box, cured by pushing PAUSE/CONTINUE
20:45 negative bias of LG threshold was true. ——— GND
adjust threshold according to another table
for negative bias. (on the other side of the usual table)
too few trigger bit 0's and high peak in LG threshold 1
were due to this improper setting of threshold.
Now LG threshold set to −15 mV.

LG thresholds bias can go – ive

21:10 temperature in counting house is too high
21 °C in electronics side
temperature control of air conditioning stands on 14 °C
one of the tubes down here is covered with ice
called control technicians
they know only little, but they promise to try to call an expert
21:35 soon after the control technician went, two DL8 crates give overload alarm (too hot for them)
we stop run and start a new one
21:40.

JADE	TASSO	MARK-J	CELLO
36 nb^{-1}	28 nb^{-1}	32 nb^{-1}	17 nb^{-1} (off ~ 3 hrs with problems)

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

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All agree to new filling at new energy (16.59 GeV) at 22:00.
21:50 control technician can't reach any expert (they are all on vacacions, or spending their weekend on the baltic sea (good choice!))
we hope that we can live with the present situation
22:00 Beams dumped. End run 4596.
22:34 New filling ready. Energy 16.59 GeV. Climate: tropical!!
Start run 4597. Overload alarm from DL8 crate just before run start.
23:20 LG bias has drifted up to −10 mV.
Re-set LG thresholds according to Minowa's new table.

23:56 Run 4598 ended. Start run 4599.
24:00 Heinzelmann & Takeda on shift. 17.8.80
LG threshold set to 0 mV.
0:40 " +5 mV
0:49 RUN 4599 ended. Start run 4600.
1:37 LG threshold set to +10 mV (gradually increasing)
1:46 RUN 4600 ended. Start run 4601
2:46 RUN 4601 stopped for a new filling
3:00 'SHORT BREAK' on TV screen. (problem with DESY)
4:08 Beam ready. RUN 4602 start.
4:10 LG threshold adjusted to +15 mV.
4:30 JDAS ERROR 044444 SUBERROR 044703 TASK 1 (two times)

MARK-J	JADE	TASSO	CELLO
33	35	(16)?	26.7

gas alarm problem. They are not taking data now.

Wait until CELLO comes to 30 nb^{-1}.
Decided to increase energy at 6:00.
6:02 RUN 4604 stopped
RUN 4605 started at new energy 16.60 GeV
6:19 Beam energy was wrongly typed in 1.660 GeV.
So stopped RUN 4605 and started new run.

IMPORTANT

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG >4

Heuer and Hassard on Shift — chat column

Sunday 17th August 1980 08.00

8 27 PKR inform us they can make electrons and positrons now. So beams are finally dumped.

9.40 new filling ready, start Run 4608. Tagging MFR 60 channels 25,26,27 volts low.

10.00 LG thresholds checked. Std-histograms checked. Forward μ-triggers seems to have increased during the last runs. This trigger makes now ~ 1/4 of our rate (~4 Hz at the beginning of this filling), which is much too high to my mind. J.H. checks the single rates. Out of the histogr. it seems, that ch #9 is 2x the value as expected from older runs like 4572

10.16 HV error: "channel 0, TOF/TAG HV system, no LAM found" this error came 2x.

10.40 Mr. Schulte (airconditioning) comes (I had phoned him this morning to tell our problems with the temperature). He finds two things, which could be the reason for the problems: 1) The 1. filter for the air is completely dirty so he take it out. It will be cleaned monday morning. Meanwhile we run only with the second filter, which is enough for a short period. 2) The "Luftklappen" were not switched to automatic. They regulate the amount of outside air, coming into the cooling circuit.

11.10 Lecroy HV Quad on Tagging MFR 60 Channels 24, 25, 26, 27 exchanged.

11.10 Run 4611 started with all FWD μ counters voltages decreased by average of 480 V. Dead time is reduced from 12 to 8% and event rate from 3.8 to 2.5 Hz. The HV error of 10.16 was probably due to FWD μ counter HV supply being LOCAL during change. Total FWD μ trigger rate less than 1% now (actually 0)

12:41 FWD μ counters back to initial voltage values. DT at 14.5%, Rate 4.5 Hz

13.23 FWD μ counter thresholds set at discriminators to ~300 mV which gives a satisfactory rate in Trigger bit histogram. It probably throws away all physics though. At least we get error messages for TOF, Tagging now. All voltages put back to normal values.

13.30 $\int$ Ldt at 16.6 Gev at present: Mark J 27, Vano 24, Cello 19, Jade 29

Cello has problems with the background at the beginning of a filling so less lumi.

important column

should there be > 50V. difference

phone G. Hughes (IF, RAINUKS). GE 30

FWD μ counters effectively out of the system now, for run 4611 only. but error messages for other counters inhibited.

everything OK at 0800 except for FWD μ counters.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

important

Vano has problems with their gas. They will now switch off their inner detector

$\Rightarrow$ Σ (Mark J + Cello, Jade) has to be 120 nb^{-1}

14.50 PKR tells us, that they have to search for a vacuum leak after this filling. We try to finish 16.6 Gev with this filling (MJ 34, J 36, V 24, C ?)

15.20 Cello now says, they have 29 nb^{-1} compared to 21 at 14.50 (!). So we decide to dump the beam at 15.30 and start with new energy.

15.32 Magnet tripped: no obvious error on power supply control box but no temperaturüberwachung lights are red.

→ Maurlauf Hitzesch > 60° lamp is broken → possibly this is obscuring the problem.

⇐ NO WBa

16 00 Barth and Foster take over a mess: Peter down

16 15 Repeated attempt to turn on using posted procedure fail — magnet down

16 30 Phone Axel Helpcenter to get instructions on turn on procedure

16 54 Successful turn-on. This was done by going up to 4000 and then stepping for a few moments — then increasing with many short breaks before reaching 7500. Now Superkonv. magnet problems.

18 06 Run 4617 started $\mathcal{L} = 2.66 \times 10^{30}$

18 15 Third problem with Pb Glas Barrel I. Vetos many blocks firing.

Stop the run and start a new one 2x does not help

Phone Konarzewski: he knows about this problem. It occurs spontaneously and will disappear. He claims nobody is able to find and cure the problem.

We continue the run.

19 20 Standard histograms for run 4619 ok except for the extremely noisy Lg-blocks

21 50 Readjust LG thresholds

22 00 Dump beam for refill.

23 53 FF has just completed a short series of tests on tagging thresholds & they may have affected "on-line" lumi by up to −10% for runs 4620 4621 4622 4623

Thresholds are now reset to nominal values (see tagging logbook)

13/8/80 0:00 Nozaki + Bell on shift.

0:55 $\int$ Lot = 31 (MJ), 31 (CELLO), 34 (JADE) we ask new filling at 1 o.k.

1:00 dump the beam.

1:40 New filling is ready. Readjust Lead Glass threshold, +30 mV.

~~Too many spurious hits on lead glass barrel I.~~

Then appear again many spurious hits on Barrel I of lead glass.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

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IMPORTANT

2:46 Integrated luminosities:- JADE (44.5), MARKJ (40), CELLO (30)
Asked PWR for a new filling at 16.62 GeV at 2:55
2:57 New energy of 16.62 GeV. We collected 44.62 nb^{-1} at 16.61 GeV
4:26 Beam lost
5:15 New fill. I.D. cripped. Could not reset it. Called one Hener. Input H.V. is missing.
5:40 Hener came
6:42 I.D. reset by Hener + Wagner. They say it is ~~[illegible]~~ OK now.
Start Run # 4628. We lost ~9 nb^{-1} due to the ID problem.
7:14 TOF #29 has no output. We called Maroska but nobody answered. TOF #29 missing!
7:52 Run 4628 ended. Run 4629 started

8:00 Sato, Flohm on shift
Called Cello to tell them they are the coordinating experiment. They did not know.
10:30 Krehbiel and Schmitmann replaced Discriminator for channel 71 (TOF)
The broken channel gave much too long pulses so that the channel was longer on than off. Entries in the TDC and ADC histograms are made only if both TDC values are reasonable. So TOF #29 was missing in all TOF-histograms. During run 4630 discr. channel # 7 was not connected. (cable loose)
Restart with run 4631. TOF histograms o.k. now.
10:45 Beams dumped.
12:30 New fill ready. IBM down. Start run 4632 and write to tape.
13:30 "Kurze Unterbrechung" for ½ h according to Cello.
14:08 Tagging Pb-Glass HV Reset to Mark 3 (Aug 17th) values using NAR @TOF program. Tagging HV Reset.
15:15 New energy: 16.630 GeV. Start run 4633
15:50 Tagging HV in MFRs 59 & 63 (channels 0-7) was set to ~2 kV. Reset to 0 V (not connected to any counters). Please ignore error messages from MFR 59 & 63 (not from 56-58 or 60-62) for the moment! HV Panels see next page please.

16:00 Bolek Wystouch and H. Rieseberg

16:15 Long IBM jam, stop Run 4633
16:30 Start Run 4635 on magnetic tape # F11 106
16:57 (event # 2500) Attenuator found at 10 dB, turned to 12 dB.
LG-threshold adjusted (35 mV)

123

17:00 R. Hedgecock is working on the FW Muon Counters (see note below)

Problems 1.) No old histograms can be displayed → problem is due to the new-saved Run # 4633 (ended by IBM jam)
2.) ID Wire # 105 is ringing
Many hits with z=0, even in rather clean Bhabha event.
3.) twice JDAS ERROR 56 (TOF-bank wrong length) in 405
4.) Not-noticed beam loss of about 1.5 mA/beam at around 17:00
18:03 Start Run 4636, send to IBM
18:08 DL8 # 42 wires 336 - 343 Ranging (JDAS Error 44 in 507)
18:30 I have adjusted the forward muon counter discriminators back to 50 mV threshold levels. All the HV levels were checked and found to be normal. Singles rate counts compare to previous numbers. If there is any doubt about the counters, please call me. Ch H
FORWARD MUON DISCRIM'S LEVELS SET BACK TO 50 mV. CH.
18:46 Reference Stesh data set for Tag-HV Modified to remove JDAS error messages for MFR 59 and 60
H. Drumm cures the DL8 problem by sliding cables etc. (02 at event # 700, Run 4636)
In this Run the ID-problems, mentioned above, have nearly disappeared.
20:00 End Run 4637 for refill

20:31 New fill ready, Run 4638 started
Very clean filling with a luminosity of ~3×10^{30} at the beginning, BP rate ~0.95V!
21:25 Mr. Minowa has worked quite some time this afternoon on the LG-system.
There were no "crazzy" blocks in the runs 4635 - 4637. Now, when Mr. Minowa went out, they show up again. Got Mr. Minowa from his office
21:34 Start of a new run (# 4639) does not help.
Mr. Minowa says that the problem is not serious, as the pulse height are small. The error arises at the subtraction of the pedestals in the microprocessor.
Digital threshold of LG-ADC was changed to 6 ch. This will be in effect from Run 4641 on.
Threshold of LG-ADC changed to 6 ch for run # ≥ 4641

22:53 Stop for Test run on LG by Mr. Minowa. Noisy blocks have disappeared
22:59 Start Run 4641

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
124																		
4629	18/8/80	7:54	9:22	6.8	6.9		5120	7854	1333	72.5	1260	4.8	3525	2991	1959	2346	924	1121
4630	"	9:22	10:A	5.7	5.8		3362	4507	875	61.9	813	2.4	1880	1489	1223	1367	443	654
4631	"	10:28	10:48	5.1	5.1		1170	1460	304	9.2	295	0.7	603	504	421	457	124	206
4632	"	12:28	13:02	9.2	9.3		1930	3793	502	25.4	476	2.6	1822	1514	996	1002	543	459
4633	18.8.80	15.16	16:14	9.5	10.0		3395	6011	883	168	715	4.35	2814	2643	1200	1642	842	719
4634				empty														
4635	18.8.80	16.31	17.58 16:44	7.9	8.3		5096	7852	1326	50.8	1275	4.58	3476	3224	1995	2323	955	1088
4636	"	18.02	19:41	5.68	5.97		5846	7857	1534	82.4	1452	3.57	3197	2566	2160	2386	736	1198
4637	"	19.42	20.00	4.76	4.99	7.5×10^{-9}	1076	1420	280	8.1	272	0.56	580	438	399	463	109	235
4638	"	20.31	21.34	9.90	9.93		3729	7857	971	55	916	5.67	3685	3377	1489	2033	1182	1058
4639	"	21.34	22:01	8.40	8.50		1577	2994	410	20.4	389	2.07	1396	1317	622	777	476	440
4640	"	22.02	22:53	7.90	7.93		3046	5475	792	35.9	756	3.46	2431	2303	1215	1459	821	848
4641	"	22.59	23.53	6.95	6.98		3184	5216	828	35.8	792	2.76	2211	2003	1189	1376	738	861
4642	18.8.80 19.8.80	23.55	01 23	6.21	6.23		5306	7855	1380	59.5	1320	3.52	3295	2734	1989	2289	947	1264
4643	"	01 29	02^{00}	5.2	5.3		2125	2867	553	17.3	535	1.18	1187	934	758	878	303	484
4644	"	17.31	18.42	9.2	9.6		4112 114	7844 208	1070	80.8	989	5.27	4111	4167	1665	2342	1577	973
4645 4646	"	18:K	19:08	7.6	7.9		1374	0196	357	16.2	341	1.39	1085	1192	518	637	404	318
4650	"	20.47	21.01	9.3	9.5		785	1407	205	9.2	195	0.76	678	482	289	365	246	168
4651	"	21.48	22.28	10.5	10.5		2353	5462	612	39.9	572	3.6	2788	2034	974	1362	1023	640
4652	"	22.29	23.11	9.5	9.5		2503	5366	651	35.9	615	3.0	2677	1952	973	1413	963	667
4653	"	23.46	0 58	7.8	7.9		4267	7856	1110	53.8	1056	4.9	3899	3625	1672	2240	1341	1165
4654	20.8.80	0.58	1 23	6.7	6.8		1785	2901	46	2.1	44	1.6	1373	1134	696	885	421	421
4655	"	1.53	2.54	9.8	9.9		3575	7861	930	52.8	878	4.5	3919	3064	1375	1935	1529	1063
4656	"	2.54	4.04	8.5	8.6		4177	7862	1087	50.1	1037	4.0	3694	3027	1648	2042	1310	1117
4657	"	4.04	5.24	7.3	7.4		4777	7858	1243	58.0	1185	3.4	3483	2684	1790	2171	1113	1224
4658	"	5.24	6.00	6.2	6.3		2068	3137	538	16.5	520	1.2	1317	995	790	888	376	510
4659	"	6.43	7.40	9.4	9.7		3391	7378	882	49.9	832	4.4	3554	2903	1422	1902	1288	886
4660	"	7.42	8 58	8.2	8.4		4430	7857	1153	63.6	1090	3.9	3601	2906	1764	2113	1190	1092
4661	"	8.59	10 21	7.0	7.2		4882	7855	1271	55.1	1216	3.3	3459	2522	1849	2195	1134	1113
4662	"	10 22	10 59	5.0	6.1		2201	3196	573	22.9	650	1.2	1377	991	801	941	460	489
4663	"	11 37	11 48	$\times10^{1}$ 1.0	9.6		593	1330	154	~~137~~ 20.1	134	0.8	652	448	229	320	247	199
4664	"	12 28	13:27	10.0	10.26		3401	7862	885	588	826	5.0	4018	2918	1439	1905	1548	993
4665	"	13 26	14:30	8.-	8.90		3863	7860	989	645	925	4.2	3798	3041	3041	2091	1567	1073
4666	"	1431	15 28	7.0	7.6		3173	5541	825	43.7	781	2.5	2658	1720	1182	1524	957	861

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}dt$ Run	$\int \mathcal{L}dt$	IBM/ Tape	BP	Bhabha	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]	~~T2 ≥ 2 TOF LG>1 ≥ 1 TR~~ Magnet Energy (GeV)
125											
1146	1.60	8.19	23.11	IBM	~1.7	110	4		16.620		
647	1.37	4.61	28.82	"	~1.5	61	2		"		
210	1.28	1.50	29.20	"	~1.3	14	0		"		
664	2.42	4.66	33.86	Tape F11112		68	2		"		
1145	2.39	8.13	8.13	IBM		87	2		16.630	16.630	
1157	1.62	8.26	16.39	Tape F11106	0.8	97	0		"	"	
1048	1.29	7.59	23.98	IBM	0.5	86	0		"	"	
160	1.08	1.16	25.14	"	0.4	17	1		"	"	
1317	2.51	9.35	34.49	IBM	1.0	108	3		"	"	
405	1.84	2.90	37.39	"	0.8	40	0		"	"	
778	1.83	5.56	42.95	"	NO.7	79	1		"	"	
759	1.71	5.44	48.39	"	0.6	77	2		"	"	
1057	1.44	7.64	7.64	IBM	0.5	83	3		16.640	16.640	
367	1.25	2.65	10.29	"	0.6	34	2		"		
787	1.32	5.42	15.71	"	1.1	68	2		"	"	
183	0.93	0.20 1.28	16.99	"	1.0	3 23	0 0		"	"	
222	1.96	2.54	19.53	Tape F11117		13	0		"	"	
876	2.36	5.55	25.08	IBM	1.4	87	1		"	"	
853	2.34	5.87	30.95	"	1.1	79	2		"	"	
848	1.37	5.85	36.80	"	1.1	76	3				
314	1.22	2.18	38.98	"	0.9	28	2				
1187	2.29	8.20	8.20	"	1.3	89	8		16.650	16.650	
1094	1.83	7.65	15.85	"	1.1	83	2				
1146	1.70	8.13	23.98	"	0.9	94	6				
935	1.49	3.08	27.06	"	0.8	35	3				
1167	2.40	8.14	35.20	"	1.3	95	2		"		
1121	1.77	7.84	7.84	"	1.1	88	4		16.660		
1168	1.70	8.28	16.12	"	0.9	90	2		"		
431	1.39	3.06	19.18	"	0.8	33	1		"		
227	2.58	1.53	20.71	"	0.8	20	1		"		
1160	2.33	7.92	28.63	"	1.5	97	2		"		
1028	1.9	7.11	35.74	"	1.2	72	4		"		
676	1.68	4.70	40.44	"	1.2	58	0		"		

Beam Dumped

Beam Dumped

stop by IBM jam. Histograms not saved

New filling

~~Abort failure~~ Energy changed without dumping the beam

Beams dumped

New fill

TAGG/LUMI ADC problem

New fill, Trouble with IBM

New fill

ID trip ⇒ call Drum to first

Beam dumped. for new fill

Beam lost.

beam lost a few minute before expect dump
Tom.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

B. Naroska comes in:

23.30 TOF Counter 2- showed the same long pulses as 71 this morning. Changed the discriminator. Now it's ok. Watch for channels that have very low statistics. ← Important

000 B. King & S. Komamiya on shift.

1.43 Cello tell us they would like a new fill in 15 mins. time. We agree.

2.00 JDAS ERROR 44 SUBERROR 703 ---(jet chamber ring 3)

3.09 TV screen says 'KURZE UNTERBRECHUNG'

3.20. PKR have a computer problem and are unable to re-inject.

3.30. TV screen now says 'RESTART 4.30 a.m.' !!!

4.00 " " STILL " " "

4.44. PKR say that there is very little chance of any more beam before the access at 7 am.

5.40 PKR say that temporary access will start, ~~#~~ till 1200 a.m.

6.30 Since there is definitely no more beam until 12 a.m, we have run the magnet down to a low current and have gone home. (The TEMPORARY ACCESS had started).

8.00 Goddard, Drumm on shift

12.21 Tagging ADC # 4 faulty hybrids replaced — Tag. ADC repaired
no beam during the whole shift

16.00 Hughes, Weber on shift. Waiting for beam.
Machine filled, ready for data taking at 17.31.

18.50 L.6. threshold checked : o.k.
Run # 4645 aborted after 208 events TAG ADC problem.

19.04 Crate timeout Branch 7 crate 1 44 / 701

19.08 e^- Beam lost Stop run #4646 for refill

20.47 New fill, but not able to transfer data to IBM, TASSO has same problem, IBM promises to fix it but takes too long. So we write on mag. tape.

21.01 Beam dumped after transmitter failure (request of CELLO to PKR)
So we wait for a new fill

21.48 New fill. Start run ~~#####~~ 4651 IBM link working again

22.28 run 4651 Stopped because LG histogram indicates trouble with pedestals. Restart to see whether calibration improve
Histogram of 2 1000 events for run 4652 indicates LG system o.k.

Important

During Runs # 4644 and 4646 Tagging ADC's had a readout problem
It was cured before the start of Run #4650

22.23 Called Watanabe about Many Spiking blocks on LG Barrel I — He says leave it.

23.15 ~~22.28~~ I.D. Trip) Impossible for us to test, so we call expert (Drumm)

23.46 Drumm resets ID Hv problem : Start Run 4653.

20.8.80 0.4 P. Steffen + A Wagner

0.39 LG-Threshold ok (+40 mV)
JDAS error 56 / 405

4.29 JDAS error 44 / 703

6.00 Cello requests new fill

ID wire 105 was noisy during run 4658

7.42 At run start of run 4660 μ-rate 12 running for ~ 800 events

0800 F Foster / Oaks

Call Mattison if DLE goes beam v. frequent — (error 44 / 703 Track 1)

0850 Long IBM hang warning.

0858 Run 4660 ended 4661 started

1022 Run 4661 ended 4662 started — Cannot read I^+(mA) current on TV display; HV read error (3). No problem seeing; ring engineer at work over bridge.

1039 10 min to ~~new fill~~ beam dump.
Magnet fluctuation - check after beam dump.

1100 Power down for beam dump. Readjust magnet.

1135 Fill complete switch on. BP = 1.2 ok.

1137 Run 4663 started. $\langle \mathcal{L} \rangle = 2.44 \times 10^{30}$

1150 Beams lost.
ID trip with anode current down and Up-Clocks went off. Same situation as yesterday night (23.15), I switch on the Clocks again and we go on at end filling. ok. H.D.

1229 New fill ready, start run 4664.

1507 Long IBM hang interval - Try to phone Montanez (2318), but not there.

PLEASE PHONE # EITHER HEVER, OR RIESELBERG or BAUMM before SWITCH OFF FOAT END OF THIS FILL (phone 3718, 2570).

1523 CELLO reports dump beam + change energy at ~ 1533.

1528 Beams lost without warning! just as Heidelberger arrive

15-85. Tag thresholds reduced to (ref) 100 mV

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

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Wed. August 20 1980
Koehbiel + Hassard 16.00

16.31 Kurze Unterbrechung.
17.05 Run 4667 started, channel 105 of ID noisy but Currents on, and Heidelbergers know about it. Wire 105 is ringing.
17.25 Stop run to try to correct above fault.
17.30 Restart with problem fixed.
17.59 ID trip: reset ok.
18.24. Longer IBM hangup. PETRA-TV says AA down, Exp. down. Before I managed to ~~hang up~~ put on a tape, IBMs were up again (all 3). Run 4670 not existing.
19.06 Stop Run 4671 to enable Herren Rieseberg + Drumm to work on the ID briefly.
20.30 JDAS Errors 56 (OCT) SUBER 405 (OCT) TASK 7 ← Tof bank length
This ~~might~~ is associated with the 1 TOF bank wrong length ZREAD error in the run summary. Is error in new LG microprocessor?
21.22 Magnet failure between Linac and synchrotron → Kurze unterbrechung
21.44 New Run 4673 Started
23.40 Coordinating Kpunkt coordinates new Energy, new Fill

THURSDAY 21ST AUGUST 1980.

00.00 HEDGECOCK & SATO ON SHIFT. UGH!
00.24 Run 4675 started. New fill & new Energy.
LG ~~thresholds~~ set to 45mV.
8.00 Bolek Dyskud, Orito on shift
≈ 10.00 No beam till 13.22. Transmitter breakdown.
13:43. Beam up again
Background too high (BP 8) trigger THZ, PKR trimmed to vertical bump. Background went down too (BP 1.2), trigger 1.7HZ.

15.00 During run 4686 the first DL8 in Crate 7 board 5 hung several times. I pulled out Start cable and put it back in again. Since then it seems ok.
Herbert Drumm said this had happened before.

15.30 IBM performance very bad. Long deadtimes.

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16.00 Heuer and Marshall on shift.
16.30 Calo phones for the $\int \mathcal{L} dt$: me ~26, C~29, T~28, M~33
I can't see any interruption ~~of~~ where we lost Lumi. ? May be the IBM problems
But we agree to a new filling + new energy at 16.50 hrs of 16.70 GeV
ID wire 105 ringing again
Histogram of Run ~~4688~~ 4686 checked, ok.
18.06 IBM busy ~ 1 min, then IBM transfer error 53, suberror 0, err-cnt. 0
after trying link again, it was ok.
18.10 IBM is very bad, I phone them and complain
19.15 much better now
What the hell is a OJEC-error (IBM-on line) on the run summary?
22.30 At the new energy (16.700) the Bhabha rate seems to be a bit small (~10). Minowa is at Desy, he checks the LG → ok. Could be that the Lumi is a bit to high. All histograms look ok.

We lost 1 nb⁻¹ at least a run 4685 due to IBM. This is enough to explain difference

22.8.80
00.00 Drumm and Hassard
0.05 Beam lost, ID Trip.
2.02 finally new filling ready at old energy.
2.15 (2^{30}) up to know we had high background (2.5V at BP) and some loss of particles downwards (ID current). PKR did an orbit correction. OK now (BP: 1.3, "no" loss)
Also the luminosity went up from 1.75 → 1.9 → 2.3
2.40 ID: wire 105 is still ringing (but not too loudly). We leave it.
2.54 PKR change energy in flight.
5.30 ID trip. reset OK. JDAS error 44 suberror 204 = timeout in beampipes
5.55 Kurz unterbrechung so I turn the magnet down to ½ power.
7.25 Beams ready, start data taking (magnet up again at beginning of injection).
This time the beams and background are good in our region.

08.00 Friday 22/8/80 Pete Dittmann & Fred Loehrer.
9.30 IBM-problems. Mönckemeyer says this time its disc-problems at IBM due to technicians working there.

10.10 Beams dumped for energy increase.

10.40 Start run 4702 E_0 = 16.720 GeV.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4667	22.08.80	17.05	17.25	9.76	10.03		1114	2729	290	20.8	269	1.7	1438	1045	441	637	648	326
4668	"	17.31	18.01	9.2	9.5		1818	3831	472	49.4	423	2.3	1942	1590	714	967	762	514
4669	"	18.05	18.24	8.5	8.6		1073	2026	279	43.7	235	1.1	945	791	392	501	374	312
4671	"	18.35	19.07	8.0	8.0		1894	3588	493	23,0	470	7,96	1728	1561	757	973	675	520
4672	"	19.31	20.16	7.1	7.1		4470	7282	1163	45.6	1117	3.5	3329	2649	1713	2086	1154	1133
4673	"	21.44	22.43	9.95	10.03		3471	7852	863	58.2	845	9.1	4023	3284	1442	1983	1586	991
4674	"	22.44	23.33	8.7	8.7		2903	5889	755	38,2	716	3,4	2871	2473	1176	1592	1038	804
4675	21.8.80	0:25	1:24	10,5	10.2		3497	7854	910	55.8	853	5.5	4039	3609	1413	2068	1394	967
4676	"	01.24	02.32	8.96	8.82		4020	7855	1046	52.4	993	4.5	3725	3486	1689	2196	1170	1070
4677	"	02.32	03.52	7.66	7.53		4741	7855	1234	49.8	1184	3.9	3585	3242	1908	2324	1046	1159
4678	"	03.53	04.39	6.51	6.37		2679	4067	697	24.6	672	1.8	1818	1491	1102	1283	449	581
4679	"	05.06	06.04	10.28	10.29		3415	7853	889	55.3	833	5.6	3939	1476	3777	2017	1362	984
4680	"	06.07	06.12	8.85	8.87		262	566	68	3.7	64	0.35	286	236	105	146	105	76
4681	"	06.18	7.18	8.63	8.64		4157	4855	1082	52.8	1029	4.2	3774	3226	1680	2190	1313	1185
4682	"	07.21	8:53	7.34	7.34		4898	7852	1274.8	49.5	1225.4	3.6	3543	3042	1900	2376	1032	1261
4683	"	8:54	8:56	6.25	6.24		104	155	26.9	0.9	26.0	0.07	59	59	44	38	9	31
4684	"	13:43	15:58	9.99	9.93		517	1229	134	39.6	94.9	1.10	1644	857	133	248	313	124
4685		15:58	15.07	9.5	9.5		4089	7861	1063	284.2	779	6.7	4193	4777	1346	2091	1435	988
4686	"	15.07	16.33	7.0	6.8		4972	7858	1293	129	1164	4.5	3813	3448	1838	2376	1158	1074
4687	"	16.32	16.51	6.6	6.4		1048	1673	273	10.9	262	8.1	801	650	442	536	221	225
4688	"	17.30	18.31	9.8	9.8		3614	7857	940	91,2	849	5,5	3966	3971	1566	2117	1318	1005
4689	"	18.31	19.47	8.5	8.5		4428	7857	1152	61.1	1091	4.7	3810	3711	1777	2311	1203	1061
4690	"	19.47	21.01	7.1	7.1		4325	6579	1126	68,5	1057	3.5	3026	2800	1664	2056	833	965
4691	"	21.21	22.25	8.9	9.1		3737	7850	972	54	918	5.3	3951	3905	1575	2172	1299	997
4692	"	22.24	23.39	7.0	7.1		4387	7859	1141	51	1089	4.9	3800	3734	1769	2353	1179	1115
4693		23.38	0.05	7.0	7.1		1362	2211	354	14.7	339	1.4	989	1173	578	668	262	346
4694	22.8.80	2:03	2.42	10.0	9.9	18/6.5 $\cdot 10^{-9}$	2302	7858	599	74.5	525	8.6	4132	6304	1169	1825	1600	1025
4695	"	2.43	2.50	8.8	8.9		435	386	113	10.7	102	1.1	462	670	190	254	143	111
4696	"	2.54	3.55	8.6	8.7		3602	7851	937	56.8	880	8.5	3668	5356	1699	2155	1178	940
4697	"	3.55	5.04	7.4	7.5		4084	7858	1063	95	1006	8.2	3538	5521	1818	2209	1079	1016
4698	"	5.05	5.40	6.4	6.4		1372	3612	513	25.4	488	3.7	1624	2487	910	1098	474	454
4699	"	7.26	8.27	8.5	9.5		3244	7840	844	59	786	9.5	3626	5694	1522	2220	1132	874
4700	"	8.32	9.26	7.4	8.3		3811	7851	992	56.6	935	8.2	3555	5374	1778	2193	1107	946
4701	"	9.27	10.09	6.4	7.1		2390	1784	622	372	250	1.8	821	1274	422	567	205	203

T_1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$ Exp	IBM or Tape	BP	Bhabha	Multi particle	Beam Energy EB (GeV)	Magnet Energy (GeV)	Frequency (kHz)
402	2.47	2.75	2.75	IBM	1.2	40	0	16.670		
507	1.91	3.47	6.22	"	1.0	37	1	"		
280	1.80	1.93	8.15	"	1.0	31	1	"		
466	1.72	3.26	11.41	"	0.8	35	7	"		
836	1.32	5.88	17.35	"	0.7	60	4	"		
1085	2.14	7.42	24.77	"	1.1	83	4	"		
786	1.87	5.43	30.20	"	0.8	54 (49)	4 (15)	"		
1124	2.22	7.75	7.75	"	1.45	105	9	16.680		
1090	1.90	7.63	15.38	"	1.2	100	3	"		
940	1.41	6.66	22.04	"	1.1	81	6	"		
446	1.18	3.16	25.20	"	0.9	46	3	"		
1114	2.23	7.62	32.82	"	1.4	89	2	"		
75	2.52	0.53	33.35	"	1.2	3 (414)	1 (14)	"		
1001	1.68	7.00	7.00	"	1.2	97	2	16.690		
929	1.34	6.58	13.58	"	1.0	66	1	"		
17	1.20	0.12	13.70	"	1.0	0	0	"		
90	1.2	0.61	14.31	"	3-8	10	0			
788	1.32	5.40	19.71	"	4-8	63	0			
890	1.26	6.24	25.95	"		68	2	"		
163	1.08	1.13	27.08	"	.9	22 (376)	0 (4)	"		
988	1.90	6.91	6.91	"	1.4	67	3	16.700		
922	1.47	6.49	13.40	"	1.7	58	0	"		
665	1.09	4.69	18.09	"	1.0	52	0	"		
989	1.85	6.90	24.99	"	1.5	78	4	"		
848	1.36	5.97	30.96	"	1.1	87	1	"		
211	1.09	1.48	32.44	"	1.0	27	0	"		
649	1.95	4.50	36.94	"	2.5/1.3	45	1	"		
136	2.12	0.92	37.86	"	1.3	12 (416)	0 (9)	"		
1012	1.97	7.11	7.11	"	1.3	82	0	16.710		
972	1.67	6.82	13.93	"	1.1	68	3	"		
372	1.33	2.63	16.56	"	1.0	23	0	"		
1031	2.23	7.22	23.78	"	1.5	96	1	"		
960	1.77	6.74	30.52	"	1.1	79	2	"		
208	0.61	1.47	31.99	"	1.0	12 (26)	1 (7)	"		

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Run stopped. ~~Display from~~ Comm. TU says AA DOWN, EXP. DOWN. Run

NO RUN # 4670

ID-Trip, Beam Loss Sensor ~~Sensor~~ ~~Sensor~~ ~~Sensor~~

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

14.00. Beams dumped for refill : $\int \mathcal{L}$ so far. JADE 20 ; TASSO 21; MARK J 22; CELLO 17. (with high dead time).

NOTE No access next week.

15.10. IBM link down stop run 4706. Go to local mag. tape.

16.00 Orito & Nozaki on shift

17.08 Lumi Scintillators 1A – 8A, 1B – 8B Thresholds reset from 800mV on reference Multic socket to 200mV at End of run # 4707

Lumi Scint. Thresholds Adjusted.

18:35 new fill ready
Tagg crate missing, it is switched off.
Phone Foster and Hughes to find out why.
They say: nobody has done it deliberately

18:45 energy changed during fill to 16.730

23:55 Run 4715 ended. JT

Saturday, August 23, 1980

00:00 Bowdery + O'Neill on the graveyard.
00:45 End Run 4716. Dump beams for new energy
01:15 Beams lost the second time during attempt to refill.
01:36 Going again 16.74 GeV. Run 4717. One message "YPARA PED CRT 3 CH 435 is > 500.
02:44 Check standard histograms. TOF mean TDC has a funny peak. Forward counter TDC has a square dip. Expert for latter is here on shift.
02:55 Check L.G. thresholds. $x = 50$ mV. Adjust accordingly
03:03 Forward Mu trigger rate is rather high as one latch flips too often. The FWD μ Mean TDC has a crazy shape because the statistics are low for several bins.

NB. C. Bowdery & G. Bamford only assist D. Clarke & R. Hedgecock and are thus not responsible for the FWD μ counters. This is because of the prior commitment to the muon filter system. If D.C or R.H are not obtainable and the problem is urgent then assistance can be obtained from C.B & G.B on int. 2546 or via int 3561 or at home on 830 8502 (until 29/8/80)

Status of Forward Muon Counters

Generally in need of improved shielding which will be installed during the September access. Except for the change and reset of the thresholds over the previous weekend, no hardware changes have been made since 11:59 on 1/8/80. That change, you will instantly recall(!) was to delay the trigger latch gate to (hopefully) reject triggers caused by the beams passing the counters. The success or otherwise of this change is still under review. I suspect that little has been achieved by it but that it is a step in the right direction.

TDC's – not yet calibrated
ADC's – not yet checked for correct gating

Larry reports that the graphics program off-line includes some new facilities related to the counters:

CDTL 30 — displays raw TDC values (average of 2 if both, and/or present) for FWD μ counters on views ZX & ZY

command FWHU 1 — displays the counters, marking the ones that latched and displaying the raw TDC value measured at each tube.

04:12 Cello ask us for our luminosity. We agree to a new filling at 04:30
$\int \mathcal{L}\,dt \sim 15\ nb^{-1}$ $\langle \mathcal{L} \rangle = 1.36 \times 10^{30}\ cm^{-2}s^{-1}$ Event rate = 2 Hz

~04:20 NORD simply stops. (STOP light ON and level 14) Must master clear. Reboot. Run summary for Run 4720 lost. Not found by option which prints old run summaries. Failure occured during event drawing. Estimated lost time ≤ 10 mins

04:30 PKR requests HV OFF. Beams dumped
04:47 Couldn't there be an alarm from the trigger box if the computer suddenly stops?
Fast injection noted.
04:52 We're up and running OK.
05:02 $\mathcal{L} = 2.26 \times 10^{30}$ $\int_{Run} \mathcal{L}\,dt = 1.36\ nb^{-1}$ Event rate = 4 Hz

05:39 JDAS error 44 suberr 703 (time out on camac crate serving ID Ring 3)
Seems OK now though.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4702	22/8/80	10.43	11.37	9.6	9.4		3213	7851	836	59.5	777	9.5	3757	5905	1453	2138	1018	813
4703	"	11.37	12.37	8.3	8.1		3554	7854	925	60.7	864	8.6	3620	5632	1707	2171	1006	908
4704	"	12.37	13.52	7.1	6.9		4447	7858	1157	127	1030	9.0	3524	6339	1927	2258	921	872
4705	"	13.53	13.59	5.9	5.7		348	627	91	4.4	86.2	0.7	292	469	136	194	83	82
4706	"	14.32	15.09	10.1	8.4		2227	6039	579	49.8	529	6.4	3068	4276	1065	1515	1136	689
4707	"	15.14	16:05	8.9	7.5		2947	7525	766	52.8	714	7.0	3968	4811	1417	1868	1480	936
4708									Bad short run; tagging crate was off.									
4709																		
4710	"	18.48	19:34	7.5	7.5		2685	7856	699	59.9	639	9.7	3943	5924	1362	1849	1610	853
4711	"	19:36	20:36	8.3	8.2		3598	7857	926	55.4	880	8.3	3693	5558	1631	2071	1358	991
4712	"	20:37	21:19	7.0	6.8		3490	4050	648	25.4	622	2.5	1861	1803	1004	1244	556	561
4713	"	21:55	22:38	9.8	9.8		2157	7843	~~561~~	63.9	497	10.8	4088	6717	1227	1741	1745	834
4714	"	23:03	23:42	8.4	8.7		2314	7854	602	62.1	539	11.4	4012	7230	1293	1746	1716	877
4715	"	23:14	23:56	7.4	7.7		2515	7851	654	61.9	592	12.2	3893	7915	1372	1876	1646	946
4716	22-23	23:57	0:45	6.6	6.7		2844	7858	740	61.9	678	13.1	3784	8550	1570	1974	1522	975
4717	23/8/80	01:37	02:11	9.8	9.8		2040	7832	530	69.3	461	12.1	4060	7187	1175	1834	1659	803
4718	"	02:12	02:52	8.8	8.8		2378	7855	619	62.8	556	11.3	4023	7020	1254	1769	1693	859
4719	"	02:53	03:39	7.7	7.7		2781	7853	724	59.9	664	11.9	3806	7836	1569	2050	1326	917
4720	"	03:40	04:12?															
4721	"	04:26	04:30	5.7	5.7		272	691	70.8	5.1	65.7	1.0	313	739	153	181	115	82
4722	"	04:52	05:26	9.0	9.0		2049	7840	533	68.3	465	12.6	3995	7545	1179	1770	1374	811
4723	"	05:27	06:06	8.5	8.6		2359	7849	614	64.1	550	12.3	3820	8276	1358	1809	1351	901
4724	"	06:07	06:51	7.4	7.4		2602	7858	677	61.6	615	13.7	3752	8983	1468	1981	1262	883
4725	"	06:51	07:30	6.4	6.4		2286	7851	595	111	484	14.8	3726	9724	1336	1725	1472	847
4726	"	16.31	17.30	9.2	9.5		3554	7810	925	75.0	850	7.8	3764	4713	1570	2188	1154	785
4727	"	17.31	18.55	8.0	8.2		5016	7839	1306	256	1049	6.9	3590	4581	1887	2161	1007	926
4728	"	18.56	20.26	6.69	6.83		5131	7846	1336	122	1214	6.3	3572	4606	2039	2325	966	967
4729	"	20.27	20.60	5.47	5.56		1367	2192	356	20.8	336	1.6	1067	1294	532	637	339	290
4730	"	21.33	22.33	8.9	9.2		3563	7859	927	73.2	854	7.5	3824	5161	1592	1896	1353	895
4731	"	22.36	23.25	6.4	6.7		2966	5277	772	45.8	726	4.2	2959	3244	1285	1396	827	697
4732	24.8.80	2:35	3:07	9.5	9.6		2199	4914	572	83.1	489	4.0	2351	2594	870	1237	802	528
4733	"	3:13	4:05	7.4	7.5		3124	5912	813	51.9	761	4.4	2809	3312	1375	1645	891	678
4734	"	4:06	4:31	5.6	5.6		1518	2531	395	20.2	375	1.7	1313	1470	559	819	386	299
4735	"	4:58	5:52	9.5	9.6		5246	7853	844	63.9	780	6.4	4022	4796	1424	2002	1339	912

T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ RUN	$\int \mathcal{L} dt$ EXP	IBM/TAPE	BP	BHABHA	MULTI-HADRON	BEAM ENERGY E_B (GeV)	MAGNET ENERGY (GeV)	Freq. (kHz)	
1022	2.18	7.01	7.01	IBM	1.5	92	2	16.720			
959	1.87	6.65	13.66	"	1.2	99	1	"			
874	1.36	6.06	19.72	"	1.0	83	3	"			
63	1.28	0.44	20.16	"	1.0	6	0	"			Beams dumped for refill.
710	2.13	4.74	24.90	"	1.4	72	1	"			
813	1.87	5.50	30.40	TAPE (Fu 128)	.	66 (44)	1 (8)	"			Beam lost.
914	2.32	6.22	6.22	IBM	1.6	78	1	16.730			
946	1.85	6.69	12.86	"	1.1	85	6	"			
485	1.40	3.49	16.35	"	1.0	38	1	"			beam dump
737	2.21	4.78	21.13	"	1.6	53	4	"			
681	1.89	4.38	25.51	"	1.5	86	2	"			
685	1.94	4.37	29.88	"	1.3	52	1	"			
607	1.45	4.12	34.00	"	?	61 (45?)	2 (1)	"			
677	2.17	4.43	4.43	"	≥ 1.6	61	1	16.740			New fill. New energy
708	1.96	4.66	9.09	"	1.6	76	0	"			
680	1.63	4.53	13.62	"	1.5	57	1				
		~2.5?	~15.32?	"	1.3	? (30)	≥ 1 ?				NORD crash. Run sum lost
				"	1.3	3	0	"			Short run. Beams dumped
48	1.15	0.31	~15.63	"	1.3	3	0	"			
720	2.18	4.47	20.10	"	2.0	55	2	"			
684	1.85	4.36	24.46	"	1.8?	40	0	"			
606	1.51	3.93	28.39	"	1.5	46	4	"			
386	1.06	2.43	30.82	"	1.4	28	3 (42)	"			Beam lost
1135	2.20	7.80	7.80	IBM	1.5	95	1	16.750			
1062	1.52	7.64	15.44	"	1.2	101	2	"			
916	1.28	6.54	21.98	"	1.1	88	1	"			
195	0.98	1.34	23.32	"	1.0	15	1	"			Beam dumped
1006	1.39	6.88	30.20	"	1.5	81	2	"			
535	1.25	3.70	33.90	"	1.2	43 (50)	1 (0)	"			Beam dumped.
673	2.11	4.64	4.64	"	1.6	57	1	16.760			
685	1.52	4.24	9.38	"	1.3	55	0	"			
215	.96	1.46	10.84	"	1.0	9	0	"			Beam dumped
972	1.97	6.41	17.25	"	1.7	82	0	"			

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

06:21 Rather cool in the control room. Otherwise everything okay. $\langle \mathcal{L} \rangle = 1.59 \times 10^{30}\ cm^{-2} s^{-1}$

07:11 We have slightly passed the time for optimal refill, assuming refill time of 35 m (average for last 3). See O'Neill Calculation p. 112. Should refill at $\mathcal{L} = 1.38 \times 10^{30}$. Have 1.26×10^{30}. Also we now have 29.9 nb^{-1}. Phone CELLO. They want to schedule dump for 07:30. We agree.

07:18 CELLO rings back. PKR can't do the new fillings until 07:45 – 08:00. At that point all expts will have 30 nb^{-1}, and we can go on to the next energy.

07:20 Third time that a transitory "Mu Crate Missing" message has been flashed on the screen, this shift. ⇐ THIS IS EXPECTED AND NOTHING TO WORRY ABOUT — READ JDAS FINE! #FWD μ triggers for run 4724 was ~1100 ie twice the normal maximum It would be useful if this number could be on the run summary under T1.

07:30 Run 4725 comes to end normally. Just as we are starting dialog for next run, I.D. trip. Brom 105 f. [Buzzer but no alarm from Kielblock's box in the control room. Is there a fault somewhere? Probably not I suppose because run had ended.]

07:38 The ominous "kurze unterbrechung" sign looms up on the screen.

08:00 Hedgecock & Matcuma on shift.

08:20 PKR call. Vacuum leak in the machine. Estimate 1 Hour to repair.

09:50 Message received that restart will not be before midday as magnets have been run down.

11:50 Injection started – magnets run up. Set Brain to "60" Beams come on but decay is very rapid – do not started.

12:50 Injection stopped – access was posted on monitor. 15:30 HRS restart –

16:00 Bamford & McCann on Shift.

16:30 Start run 4726.

17:30 Start run 4727

17:40 Many times (~10) JDAS ERROR 44 SUBERROR 507 (JETC ring 1)

18:00 Phone H. Matsumura he says he will come to see what the problem is.

18:20 JDAS before Matsumura arrives the problem solves itself (1 year in).

18:40 Ok histograms of the histograms for run 4726 a 'ringing' wire is noticed in the JET chamber but no color in Either. Also the triggering system histograms seem to be dramatically different to previous runs, we phone H. Wendt he says the problem could origin from the HT supplies of the triggering system. HTs look OK

19:43 JDAS error 44 subcode 703 (JET ring 3) only once.

20:06 More 44/507 errors.

20:15 JDAS error 44 sub 507 start to appear again. we wait & see if it goes away (10 minutes) we try to stop the error messages by using the door on the unit (DLS 42) but this has no effect so we then look at the start wire which stops the error messages. We ring the phone Matsumura and tell him what we have done he says he will be out in ~1 hour.

21:45 Replace the above start signal in unit DLS 42 to see if the error still occurs – no error messages appear so we know it is in.

23:15 [redacted] we panel at H. Matsumura also show we no hits – a certain section of the JET chamber wire map. The problem only occurring after we disconnected the start above. We find a beam fuse in one of the amplifier and fuse it.

24.8.89 0:00 Elsen, Wriedt on shift

0:30 After ~2 minutes of stable beams they lost them.

0:37 "kurze Unterbrechung" appears on TV-screen. Cello will ask PKR how long it will last. PKR does not know, there are vacuum-problems. We leave the magnet as it is for the moment

1:30 We just lowered magnet- and compensation-coils currents (after beams played Cello again), when PKR announced to switch PETRA on again

2:00 PKR wants to inject. We raise magnet currents.

2:20 Left compensation-coil causes problems at 600 A "Regler im Maximum". We leave it at 600 A, inform K & PKR

2:25 Run 4732 started

2:33 K fixes compensator by exchanging cards in power house control unit. Therefore they now foresee problems in the least significant digit (=0.1A). will be fixed on Monday. Current is now 600 A as it should be.

2:38 Many 44/507 errors (see above). We stop them by pulling out the start-cable and phone Matsumura.

3:10 We replace faulty DLS 42 according to his suggestion and set the switch (DLS 42) for the entire run to ocket 52. start new run. Wire map looks okay

3:45 Second time we get JDAS ERROR 44 SUBERROR 703

4:05 Fault in trigger-electronics read-out system repaired (fan-unit was exchanged). No useful trigger info in runs 4726–4733. Stop run 4733, start run 4734.

4:57 New fill ready

8:00 Wickenhöfer, Otter

8:08 New fill ready. start 4738. LG threshold stable at 50 mV. Temperature 14°C (counting room)

09:07 New run 4738. Mr. Rieseberg turned off the voltage to disconnected the noisy channel.

09:45 Several August fluctuations recently 4–17 Counts

11:25 2 HV Tag wrong. After Hubbig, Many go to 0

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TØ REJECT $\times 10^6$	TØ ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2TOF LG>1 $\geq$1 TR	T1 LG>4
4736	24.8.80	5:53	6:50	6.8	6.9		3432	6557	893	43.2	850	4.7	3382	4036	1442	1913	1082	748
4737	"	8^{08}	9^{06}	6.8	6.7		3478	7850	905	55.4	850	7.3	3967	5125	1525	2137	1224	826
4738	"	9^{07}	10^{02}	5.1	5.0		3250	5761	846	41.0	805	4.6	2829	3630	1343	1583	1001	726
4739	"	10^{30}	11^{08}	9.2	9.0		2206	5379	574	49.5	524	4.7	2832	3516	960	1345	1018	646
4740	"	11^{08}	N^{55}	7.0	6.7		2758	5526	718	38.4	679	4.3	2885	3343	1189	1586	999	642
4741	"	16^{38}	17.24	9.84	9.87		2704	6045	703	44.9	659	5.3	2994	3215	1179	1623	992	604
4742	"	18.23	19.22	10.10	10.06		3498	7845	901	57.7	852	7.3	3954	4310	1572	2098	1263	783
4743	"	19.23	20.29	8.81	8.88		3956	7858	1030	54.0	975	6.4	3753	4244	1701	2189	1138	891
4744	"	20.30	21^{46}	7.52	7.47	$6.7\cdot10^{-9}$	4554	7859	1185	51.7	1134	5.6	3768	3926	1785	2424	1069	968
4745	"	21^{47}	21^{51}	6.38	6.32		234	355	61	2.3	59	0.2	165	205	87	104	44	46
4746	"	22^{24}	23^{24}	9.92	9.38		3570	7848	929	57.1	872	7.5	3842	4278	1607	2172	1206	862
4747	"	23^{25}	00.35	8.55	8.07		4202	7861	1093	59.7	1034	6.1	3657	4156	1758	2200	1147	937
4748	25/9/80	00.36	1^{57}	7.3	6.8		4820	7761	1254	51.0	1203	5.4	3571	3941	1915	2354	1037	967
4749	"	2.29	3.28	9.9	10.0		3477	7836	905	57.7	847	7.7	3920	4815	1529	2157	1301	896
4750	"	3.28	4.01	8.5	8.6		1949 3426	3926	507	27.1	480	3.6	1886	2305	820	1115	597	470
4751	"	4.07	5.19	7.9	7.9		4529	7861	1179	55.8	1123	5.8	3573	4028	1867	2265	1067	988
4752	"	5.19	6^{31}	6.6	6.7		4316	6591	1124	44.8	1079	4.4	3019	3191	1678	2026	826	854
4753	"	6.55	7.57	10.0	9.5		3713	7845	966	58.3	908	6.9	3899	4584	1506	2196	1261	919
4754	"	7.58	9.13	8.6	8.1		4470	7854	1164	106	1057	6.0	3755	4122	1684	2255	1186	1001
4755	"	9.14	9.44	7.20	6.73		1845	3086	480	21.5	459	2.08	1439	1490	754	922	435	366
4756	"	12.31	13.34 9.16	9.38			3717	7853	971	77.5	897	6.8	3860	4360	1578	2157	1269	900
4757	"	13.35	13.59	7.9	8.0		1423	2623	370	21.8	348	2.2	1370	1605	581	761	434	352
4758	"	14.07	15.16	7.3	7.4		3954	6845	1029	46.3	983	4.9	3281	3721	1652	2034	1005	827
4759	"	16:43	17.10	10.2	10.2		1539	3792	401	38.1	363	3.2	1979	2049	631	957	668	392
4760	"	17.10	18.09	9.4	9.5		3476	7859	905	93.5	812	6.5	4135	4497	1412	2015	1450	929
4761	"	18.09	19.13	8.1	8.1		3815	7856	994	83.3	910	5.9	4018	4638	1603	2070	1398	946
4762	"	19.18	19.32	6.9	7.0		878	1733	229	11.8	217	1.2	852	975	391	482	289	225
4763	"	20.01	20.45	10.3	10.5		2633	7851	686	63.5	622	6.6	4470	4561	1199	1959	1582	895
4764	"	20.45	21.32	9.1	9.2		2791	7855	727	58.8	668	7.2	4427	5486	1267	1950	1614	902
4765	"	21:33	22.25	8.0	8.1		3099	7854	807	52.2	749	7.4	4211	5648	1419	1980	1532	958
4766	"	22:25	22:27	7.0	7.1		246	ignore										
4767	started on tape but decided to ~~write~~ because bad records may be written by trying to link to IBM, and then on tape again unsuccessfully. (P143)																	
4768–4769	short runs IBM link was not successful, and could not start run.																	
4770	"	22:42	23:01	6.8	7.0		1126	2507	293	17.2	276	2.2	1277	1764	509	691	406	303

T1 Lumi	$\langle\mathcal{L}\rangle$ $\times 10^{30}$	$\int\mathcal{L}dt$ Run	$\int\mathcal{L}dt$ EXP	IBM/ TAPE	BP	BHABHA	MULTI-HADRON	BEAM ENERGY E_B (GeV)	MAGNET ENERGY (GCV)	FREQUENCY (kHz)	
611	1.20	4.12	21.37	IBM	1.2	87	0	16.760			Beam dumped
952	1.90	6.62	27.99	"	1.4	69	3	"			
526	1.13	3.66	31.65	"	1.1	50	1	"			Beam dump
581	1.75	3.85	35.50	"	1.4	50 (493)	1 (6)	"			
801	1.24	3.42	3.42	"	1.2	52	3	16.770			Beam dump.
976	2.50	6.75	10.17	"	1.6	86	1	"			new fill, run ended. Beam lost
1158	2.28	7.96	18.13	"	1.6	85	0	"			new fill, run ended. Beam lost unsuccessful after 10 sec.
1178	2.10	8.32	26.45	"	1.4	98	4	"			
1048	1.64	7.45	33.90	"	1.2	95	3	"			
46	1.35	0.32	34.22	"	1.1	3 (413)	0 (11)	"			beam dumped
1153	2.27	8.11	8.11	"	1.5	91	1	16.780			new fill, new energy
1159	1.96	8.22	16.33	"	1.3	81	4	"			
1026	1.53	7.38	23.71	"	1.1	94	2	"			beam dumped
1115	2.24	7.80	31.51	"	1.5	98	2	"			
546	1.98	3.85	35.36	"	1.3	51 (243)	0 (9)	"			
1134	1.80	8.15	8.15	"	1.3	76	2	16.790			new energy changed in the same fill
789	1.32	5.71	13.86	"	1.0	69	6	"			beams dumped
1117	2.11	7.82	21.68	"	1.4	119	1	"			new fill
1124	1.81	8.07	29.75	"	~1.2	94	4	"			High dead time (9%) due to IBM jams and DAQ hangup
411	1.61	2.97	32.72	"	1.1	32 (132)	2 (62)	"			New fill
1160	2.18	8.15	8.15	"	1.5	115	4	16.800			
401	1.99	2.83	10.98	"	1.3	42	1	"			Run ended due to IBM PROBLEM
826	1.48	5.84	16.82	~~FH 016~~ TAPE	1.2	90	1	"			TO TAPE. FH 016. Beams dumped for NEW FILL
598	2.66	4.09	20.91	IBM	1.6	38	3	"			NEW FILL. run ended prematurally.
1066	2.11	7.32	28.23	"	1.5	86	0	"			
1020	1.83	6.97	35.20	"	1.35	81	3	"			
215	1.71	1.50	36.70	"	1.5	19 (107)	1 (13)	"			beam dumped.
938	2.33	6.13	6.13	"	1.7	77	4	16.810			
879	2.01	5.62	11.75	"	1.6	59	3	"			
861	1.81	5.60	17.35	"	1.5	58	4	"			
	1.65	0.18	17.53	"	1.3	2	0	"			IBM down
								"			
300	1.81	~~2.01~~ 2.04	19.57	FH 119 TAPE	1.2	29	0	"			TAPE FH119

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR.	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

11:20 2 HV error message. TAG. MFL 60 ch 1 and 8 off. F18 Reset-HV does not help.
G. Hughes was in his office (on the nice day, Saturday). He is now here to investigate.
EHT Quad on MFL60 Channels 0-4 replaced. (it has been slightly unstable for some time) Discover that the Reset HV (F18) command on the JDAS command console resets the HV to zero not to the disk demand value.

12^{00} PKR asks for turn off. Cello had requested Newfill, but not told us. We told them to behave.

~~13:00 Changed HV of TOF counter 11+ from 2760 to 2700. B.N.~~

13:20 Message RESTART 2:30 pm.

14:00 Now 4 3:00 pm.

16:00 Stephens / ~~Hoare~~ DRUMM who says: "Don't always confuse Muon and Drumm — remark to all JADE people!"

Call Cello. all they can say is that P.K.R. said at 15.00 hr that PETRA has a vacuum problem. Stephens asked Cello to get more up to date information and get us know.
Cello say P.K.R. will try to fill soon.

16^{40} Looked previous histograms and found that forward muon counters are still giving peculiar results.

Thresholds of forward muon counters adjusted to 60mV. CKH

16.38 Run 4741 started

16^{60} JDAS Error 000056 (oct) Suberror 000605 (oct) Task 1
TOF Pawl wrong length.

We notice on L.G. histograms that LG 1 threshold had many events between 0 and channel 10. Cannot get an expert but see that Minowa is on the next shift.
↳ May be the bias level was drifting during the run. (Minowa)

17.24 Beam lost - earth current problems with PETRA magnets.

Run 4741 Run summary sheet
triggers 6021
events 6045
also at Run 4728 and others, but mostly the difference is just ± 1!
Why? Why the big difference?

18.23 Run 4742 started.
19.22 " ended
19.23 Run. 4743 started
L.G. threshold 1 now looks OK.

21.30 Changed the HV of counter 11 + from 2850 to 2700 Volts. (run 4744)

There was a hangup in 4VOLTS when it read the headplane B.N.
power supplies. "NO CONVERGENCE OF DVM DATA".
By wiggling cables, aborting and restarting 4VOLTS it was cured.

≈22.^{15} Error 44/703 ~~occurred~~ once.

0.00 Monday 25/8/80 Minowa & Loebinger.

01.55 Beams dumped for refill (45 minutes after passing through the "O'Neill optimum luminosity point") (p. 112).

02.30 New beams, run 4749 started.

04.00 Energy increased to 16.790 GeV (same beams).

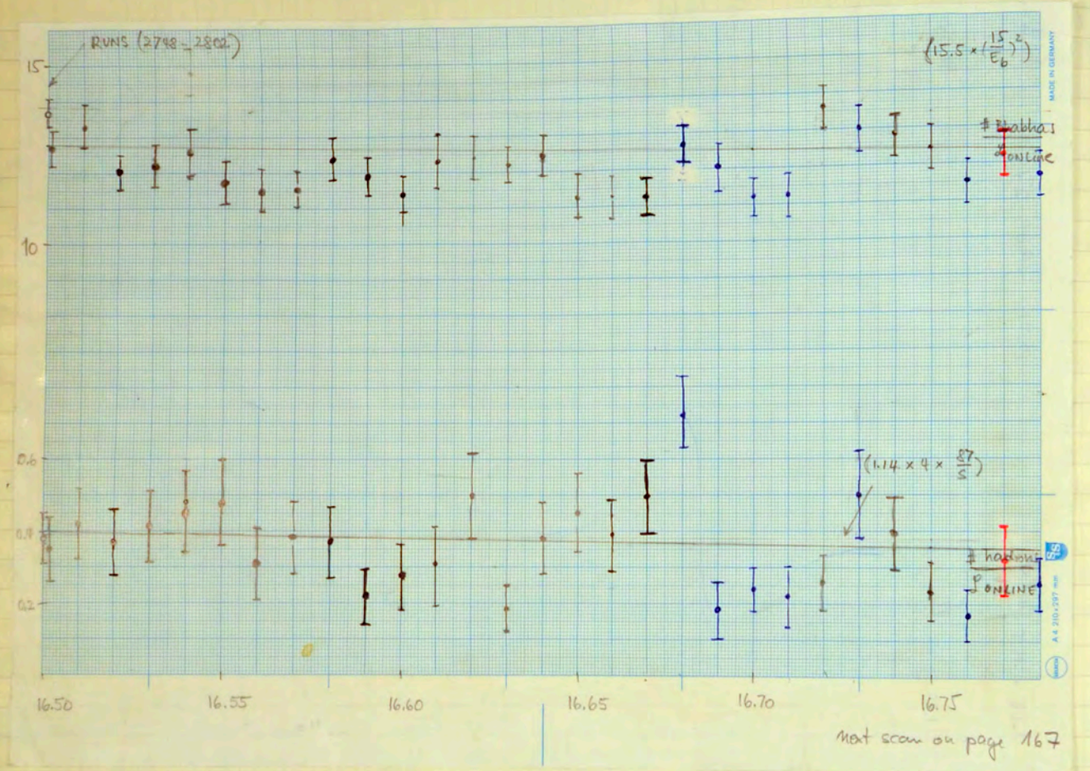
06.50 New beams (fill time 19 mins!) E_b still 16.790 GeV.

07.00 During the night we have had ≈ 12 JDAS errors 44 suberror 507. They occurred randomly. & lasted for only 1 event at a time.

08.00. Reinberg + King on shift.

9.13 Run 4755 started
9.44 Stop Run for refill
11.45 PKR has problems. Lost beam during accelerator
12^{16} New filling ready, New energy 16.80 GeV
I had timing of the kicking DL8 (#42) → 82. R
12^{31} Start Run 4756, $\mathcal{L} = 2.1 \times 10^{30}$

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]



Next scan on page 167

25.8.80

13.59. Stop Run 4757 due to "IBM BUSY".
14.07. START Run 4758 :– write to TAPE, due to continued problems with the IBM.
14.55. Cello ring to tell us there will be a new fill at 15.15 (same energy).
15.15. Beams duly dumped.
15.50. The infamous "Kurze Unterbrechung" appears on the TV screen !

16.00 Steffens & Watanabe on shift
PKR starts injection
16.43 Run 4759 started. rather frequent Timeout message 44 507 (DL8 #42)
(so far 10 or so at 2000 events. Continues as R suggests)
17.10 run 4759 ended by typing YES to STOP RUN? which was asked due to too many 44/507 errors. 4760 started immediately. Looks like this question is asked every 6 errors, and NORD waits for an answer without taking data.
19:13 end run 4761 Rieseberg replaced DL8 #42 with a new DL8.
19:18 Start run 4762 No Time out errors any more thanks to the above action
20:01 New energy 16.81 GeV
21:22 JDAS ERROR 56 -371 TASK 1. (wrong TOF length)
21:40 checked std histograms of run 4764. all OK.
22:29 IBM BUSY System crashed. IBM says the machine will be back soon, so decided to wait for 5 min.
22:34 start writing on tape F11119 (Run 4767)
22:37 IBM came on. Ended run 4767 and tried IBM link. IBM went down again and link was unsuccessful. Tryed to continue on F11119, but NO EVENTS FOR xxx SECONDS message after 4 events. Decided to ignore run 4767 because wrong records may be written during this trouble. Run 4770 started on tape. A few minutes later IBM seemed to have come on stably but continue on tape until the beam dump

26.8.80
0.00 Rittmann, Kleve on shift
3.23 New filling, very good beam conditions; 7^{14} ditto
7.15 "YPARA: CAMAC CRATE FOR LG GATE STEERING OFFLINE"
found LG crate 3 switched off with "fan failure"
Switch on again and hope it runs until day-shift comes in.
7.20 ID trip, Anode current

08:00 H'Cam + Bowdery on shift
8.34 JDAS Error 56 Suberror 405. TOF bank has wrong length
8.55 We phoned CELLO to ask them their plans since we have over 30 nb^{-1} at 16.820 GeV. They say they want to accelerate this beam but will phone around first.
9.00 CELLO phone to say that PKR will change to new energy at 9:10.

Beginning of Run 4774 were 344 – 351 missing (DL8-problem)

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
4771	25.8.80	23:51	0.32	9.8	10.0		2402	7847	625	62	563	7.6	4438	5175	1171	1761	1646	840
4772	26.8.80	0.32	1.20	8.68	8.84		2880	7859	749	58	691	7.7	4306	5343	1401	1981	1576	918
4773	26.8.80	1.21	2.16	7.6	7.7		3264	7289	850	53	796	7.1	3699	5260	1495	1936	1236	914
4774	"	3.23	4.20	9.60	10.16		3362	7851	875	56	819	6.5	4000	4321	1470	2099	1276	823
4775	"	4.20	5.15	8.20	8.70		3816	7857	993	54	939	5.9	3980	4296	1621	2276	1286	851
4776	"	5.15	6.22	7.0	7.4		3403	6017	886	40	846	4.3	2849	3345	1437	1756	831	704
4777	"																	
4778	"																	
4779	"	7.15	8:18	9.6	9.6		3631	7851	944	56	888	6.7	3780	4524	1569	2053	1239	880
4780	"	8:19	9:09	8.1	8.1		2972	5770	773	41	732	4.3	2737	3025	1221	1491	1004	718
4781	"	9:15	9:18	7.1	7.1		148	321	38	3	35	0.18	149	153	59	68	78	45
4782	"																	
4783	"	9:27	9:28	7.1	7.1		34	61	8.8	0.33	8.5	0.04	21	33	12	18	2	8
4784	"																	
4785	"																	
4786	"																	
4787	"	9:55	10.32	6.4	6.4		2173	3595	565	23.7	541	2.2	1720	1749	828	961	685	494
4788	"	12.21	13.18	9.0	9.1		3354	7848	873	131	742	6.6	4063	4178	1375	1899	1649	938
4789	"	13.18	13.32	8.6	8.7		820	1742	213	40	173	1.4	893	903	330	418	383	210
4790	"	13:39	14.34	8.2	8.3		3310	7859	861	79	781	5.8	4157	4240	1428	1947	1786	1028
4791	"	14.35	14:48	7.1	7.2		782	1784	203	17	186	1.3	973	967	311	475	414	242
4792	"	14.57	15.46	6.1	6.2		2849	4511	741	224	517	3.1	2312	2603	865	1210	944	639
4793	"	15 47	16:33	6.1	6.2		2732	5329	711.5	35.6	675.8	3.5	2765	3050	1144	1464	1069	738
4794	"	17:04	17.52	9.6	9.6		2608	7847	678	61.3	617	6.3	4511	4292	1202	1861	1701	961
4795	"	17:53	18:42	8.5	8.5		2855	7853	742	97.0	645.7	5.7	4531	4536	1216	1779	1794	962
4796	"	18:43	19:36	7.5	7.5		3193	7855	830	73.0	758.0	5.3	4357	4497	1350	1869	1678	1050
4797	"	19:37	19.40	6.6	6.5		162	419	42	2.5	39	0.2	216	206	59	112	89	55
4798	"	19:44	20:02	6.6	6.5		978	2169	254	14.6	240.0	1.4	1171	1281	419	574	460	288
4799	"	20:32	21.16	10.1	10.1		2236	7848	581	69.95	511.8	5.9	4784	4285	1035	1605	1816	919
4800	"	21.11	21.53	9.0	9.0		2526	7858	657	58	598	5.8	4618	4581	1202	1706	1907	979
4801	"	21:54	22:29	8.0	8.0		2102	5118	547	80.5	547	3.7	2909	3024	859	1271	1091	643
4802	"	22.40	22:41	7.1	7.1		53	33	14	9.1	4.6	0.03	17	24	7	9	5	3
4803	"	22:42	22:56	7.1	7.1		845	1944	220	13.6	206	1.4	1064	1135	347	498	414	278

T1 Lumi	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]
949	2.49	5.98	25.55	IBM	1.8	75	3	16.810	
807	1.81	5.20	30.75	"	1.6	71	2	"	
826	1.71	5.59	36.34	"		83	1	"	
1187	2.44	8.21	8.21	"	1.6	94	4	16.820	
1084	1.99	7.60	15.81	"	1.3	90	1	"	
787	1.63	5.54	21.35	"	1.2	59	0	"	
1231	2.38	8.63	29.98	"	≥ 1.3	112	2	"	
847	2.00	5.94	35.92	"	1.3	86	0	"	
39	1.76	0.26	0.26	"	1.2	4	0	16.830	16.830
11	1.71	0.06	0.32	"	?	1	0	"	
421	1.37	2.97	3.29	"	1.1	29	1	"	
1092	2.24	7.51	10.80	"	1.7	99	1	"	
229	1.96	1.61	12.41	"	1.4	19	0	"	
928	1.92	6.34	18.75	"	1.4	73	3	"	
190	1.64	1.28	20.03	"	1.4	24	0	"	
476	1.13	3.22	23.25	[redacted]	1.35	48	1	"	
480	1.50	4.08	27.33	FIII37	1.25	24	2	"	
882	2.16	5.62	5.62	IBM	1.6	61	1	16.840	16.840
848	1.88	5.35	10.77	"	1.4	60	2	"	"
791	1.63	5.20	15.97	"	1.3	81	0	"	"
38	1.33	.22	16.19	"	~1.3	2	0	"	"
209	1.48	1.48	17.67	"	~1.3	19	1	"	"
817	2.18	4.88	22.65	"	1.7	50	3	"	"
754	1.63	4.92	27.57	"	1.3	63	1	"	"
502	1.68	3.50	31.07	"	~1.2	37	3	"	"
5	0.64	0.03	31.10	"	~1.1	0	0	"	"
226	1.83	1.55	32.65	FII093	1.1	20	1	"	"

New energy, same fill: JDAS error 50 counter end of run
never really started
JDAS error 50 counters run to be ended
never started because of spurious LG PED-RUN problem
Beam dumped.
New fill
LG ADC >20->69 missing
LG problem fixed at end of run.
IBM Busy problems
<$\mathcal{L}$> and $\int \mathcal{L} dt$ corrected by factor 2. see log
New fill IBM ER(5%) 18:35
New fill

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

9:05 JDAS Error 44 subError 703 (once) JETC Ring 3 Crate TimeOut
No action taken.
9:08 Run 4780 terminated before beam acceleration.
9:15 No message heard but beam energy on TV screen is seen to be 16.830 GeV
Restart data-taking.
9:18 Last night's LG Crate problem (Fan failure) occurs again. We call Takeda and while he comes, attempt a temporary fix. Crate is switched off and on. Status appears okay, so the data-taking is restarted.
9:27 Run 4783 starts
9:28 LG crate problem occurs again while Takeda is here. He replaces the fan since the problem is not going to go away this time.
9:40 Takeda is finished but we have problems during the pedestal run.
Runs 4784 – 4786 lost or never really began
9:55 LG Test program shows that everything is okay. Run 4787 starts okay.
The gremlins were here today. Explained about gremlins to Takeda.
10:05 Richard Hedgecock arrives to check the Jet Chamber. He finds that a V34 ~~DLS~~ has broken. It happened during run 4779.
10:15 CELLO phone to say they went to dump the beams at 10:30. We agree.
We have ~2 nb^{-1} at this energy, so far.
10:30 PKR request us to switch off the high voltage.
Beams dumped.
For a few moments the message "Kurze Unterbrechung" appears on the screen but for once it is true. Injection seems to start immediately afterwards.
Richard will replace the ~~DLS~~ V34 fuse.
11:25 Phoned CELLO to enquire why the injection has not begun in practise.
They say that there has been access in their area.
11 30 V34 – 21.2 (+12 V) fuse replaced
PKR announce that PETRA will be restarted.
11:35 Injection gets under way.
12:21 Fill ready
12:25 About 1 minute of "IBM Busy". No time to phone Nonckemeyer though.
JETC Wire Map hole now disappeared as expected.
13:05 80 seconds of "IBM busy."
13:18 End run 4788. Start run 4789

JDAS error 50 suberr 2

Run 4779 – 4787.
Ring 2 – Cell 21
MISSING.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

13.20 Frequent "IBM busy" signals. No answer when I phone Mönckemeyer
Also, now getting a signal "IBM DISC 96% FULL". Phoned DCoords.
13:30 Run 4789 ended due to IBM DISC OVERFLOW.
Delay start of new run. DCoords is here; the dump job is running.
13.38 Dump job finished. Start run 4790.
14:10 Standard histograms printed. Hole found in LG Hit-Barrel 1. Takeda + Minowa come.
14:20 Takeda + Minowa arrive and check LG
14:25 Hughes, Foster + Bell come to check the tagging system.
14:48 Run 4791 stopped to fix LG ADC#16 in crate 1.
14:50 Muon system checked (gas, HT, currents). All OK.
15:05 The problem of missing ADC module was fixed. That was due to loose contact of the module at the rear part.
(The missing channels were 720 – 769)
LG thresholds checked OK.
~~830~~ Frequent long (60-80 seconds) 'IBM Busy'
15:43 CELLO ~25 nb^{-1} JADE ~23 nb^{-1}
We have lost ~2 nb^{-1} today because of LG problems.
We continue with this fill.
15:46 We stop run 4792 and write to tape for 4793
15:53 Foster is changing the forward tagging system. He says this will affect the luminosity values on the monitor TV — temporary (~1 hour).

LG ADC #16 in crate 1 is missing since RUN 4789. We will check it during next filling. (H.T. & M.M.)

Temporary increase in lumi threshold $\mathcal{L}$ (online) will be reduced by factor of 2 Run 4793

16^{00} Bartel & Wystouch (Bolek)
continue to work on tape although Alois IBM link is up again
16^{45} Cello wants to dump the beam at 16^{30} we agree
All other experiments will have over 30 nb^{-1} by that time we not. However we agree to change the energy. We will have ~27 nb^{-1}.
19^{45} IBM Busy-problem. Mönkemeyer found the reason: there was an FILLHO-job running (link graphics module) which had exclusive use of STOROS. When the job finished after ~3 min we could send data to the IBM again.

Same thresh. and return to normal at 16.30

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

19[53] Cello asks to dump at 20[00], we agree
within 5% all experiments accumulated the same lumi
21[40] during run 4800 F. Foster tuning lumi counter.
lumi factor for this run = 1.2
22[29] IBM-problem pause for 5 min. IBM has to be reloaded.
22[40] IBM ok for a few minutes, then down again.
we write on tape
μ-crate #10 missing, rest ok.
22[50] TV-screen reads (bottom line)
IBM: AA Down BB down CC Down TSO Down Exp down
I think we have a problem
22[55] Energy changed to 16.85 GeV
start #4804 continue to write on tape
23[15] IBM seems to be back, new fill is being prepared
00[00], 27.8.80 Goddard & Haidt
02[00] I.D. temp alarm. Raised ref. temp for trip, in ruckseck from 24° to 25°. Opened hall doors.

8[00] Kimoura + Petersen on shift
9:32 Error message at the printer: PAGE FAULT FOR NON-DEMAND
at the same time we get message "NO EVENTS FOR xx SEC" at the colour TV.
stop run .. Next run 4813 is running OK.
10:21 Beams dumped
10:50 Injection is not started yet. It seems they have a problem.
13:35 CELLO phoned to say PETRA has a problem with RF, and they will not start before 15:30.

16:00 Ting, Ball on shift.
We are in the middle of a 'Lange Unterbrechung' ---- yawn!..
19.30. We're still waiting!!
20:42 Stable beams. Start run 4814.
20.49. Run paused, ID trip, half of each beam has been lost.
20:55 We just get going again, [illegible] in time for PKR to request H.T. off for beam dump.

Run 4800 Change LUMI Thresholds again. (F.F.)
Restored to nominal.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	β^*	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

22.07. New fill ready. Start Run 4815.
Frank Foster is doing some tests. He says the on-line luminosity measurement will be effected, but we can correct for it at the end of the run.
22.57. Beams lost. End Run 4815.
Cello ring up to ask if we agree to change the energy. We have 29.90 nb^{-1}, but Cello tell us everyone else, including them, have >30 nb^{-1}, so we agree.
2 mins later, Cello ring back to tell us they had calculated their $\int L dt$ (exp) wrongly and that the next fill will be at the same energy !!! - for about one hour.
Histograms for run 4815 look OK.
23:45 Enter the gallant Sir Richard ... stage left ...
00[00], 28.8.80 Holocomb & Bamford take the driving seat?
01:04 Run 4816 started.
01:22 Beam Lost.
02:00 IBM BUSY problem causes the loss of run 4817
02:40 Run 4818 STOPPED [illegible] of IBM problem 53. >BOS on 4819 at 02:42
02:45 IBM problem 53 again! Try one box line for link, OK shots 5 we are now waiting cable type.
03:56 JDAS error 56 subcode 371
04:07 START run 4821 using IBM link again.
04:20 Run 4821 ended [illegible] beam loss.
07:45 JDAS ERROR 56 SUBERROR 405

8:00 Goddard & Sato
9.30 There will be access at ~10.30 for about 2 hrs to repair a klystron & for Cello to collect some ice from their magnet.
10:58 I.D. trip (partial beam loss)

1300. beams dumped, access for Cello
Solenoid & comp mag currents run down
16:00 Kawabata & Wystouch (Bolek for pedestrians)
16:20 We are turning magnets on.
18:40 LUMINOSITY RUN
19.45 MUON CRATE 2 MISSING Wish we went there; no sign of anything wrong.
23:57 Bye bye for now!

Run 4815 Lumi Thresholds altered - to correction to online lumi made at end of run 4815.

23:12 All tagging Thresholds reset to nominal 4815.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
150																		
Run	Date	Start	Stop	I^+	I^-	Vac	Time sec	Nord Evts Acc	All Trig $\times 10^6$	To Reject $\times 10^6$	To Accept $\times 10^6$	T1 Acc+Pst $\times 10^6$	T2 Accept	T3 Reject	T3 Accept	T2 Collin	T2 ≥ 2TOF LG>1	T1 LG>4
4804	26/08	22:58	23:15	6.8	6.8		984	1799	257	14.2	243	1.1	421	970	394	536	287	249
4805	26/08	23:41	0:30	10.0	10.1		2892	7850	752	59	673	6.1	4385	4131	1280	1893	1650	925
4806	27/08	~~23:39~~ 0:37	1:24	8.7	8.7		~~3139~~ 3139	7861	817	57	760	7.0	4174	5201	1417	2027	1556	994
4807	27/08	1:24	2:02	7.5	7.5		2212	5003	575	35	540	4.5	2555	3575	1024	1407	846	630
4808	"	3:58	4:50	10.1	8.9		3077	7848	806	58	747	6.5	4177	4550	1436	1975	1379	854
4809	"	4:51	5:46	8.8	7.8		3339	7434	869	53	816	6.1	3892	4518	1402	1920	1326	884
4810	"	5:47	6:52	7.6	6.7		3884	7231	1005	78	927	5.1	3466	4164	1541	2076	1145	933
4811	"	7:40	8:37	9.7	9.7		3401	7850	885	81	804	6.9	4089	4453	1482	2082	1345	863
4812	"	8:38	9:33	7.9	8.0		3297	5971	858	111	747	4.8	2979	3428	1281	1712	915	736
4813	"	9:35	10:21	6.9	7.0		2684	4047	699	99	600	2.8	1942	2049	1038	1206	587	505
4814	27/8	20:44	20:57	9.8	9.5		396	872	103	7.2	958	0.5	462	353	165	272	130	80
4815	"	22:05	22:37	10.3	9.2		3108	6650	809	46.4	762.7	4.1	3321	2573	1339	1752	1128	664
4816	28/8	01^{04}	01^{19}	8.7	9.2		839	1766	218	12.2	206	0.99	888	676	350	506	283	186
4817	Run	LOST		DUE	TO	IBM	LINK	UP	PROBLEMS.		NO	EVENTS		READ				
4818	"	02^{03}	0232	8.74	8.34		1656	3102	430	20.6	410	1.76	1514	1287	603	870	485	393
4819	"	0236	0241	8.20	7.80		203	387	52	2.4	50	0.2	179	163	82	102	53	39
4820	"	0247	04^{04}	8.10	7.73		4561	7459	1187	53	1134	3.99	3836	3122	1770	2313	1105	902
4821	"	04^{05}	0417	7.03	6.69		707	1121	183	7.4	176	0.54	550	428	265	362	154	121
4822	"	05^{52}	06:56	10.04	9.27		3750	7853	976	55.5	920	4.4	4027	3131	1463	2157	~~1262~~ 1262	840
4823	"	0657	0808	8.9	8.2		4215	7856	1099	52	1047	3.6	3764	2725	1700	2158	1191	926
4824	"	8:09	9:23	7.7	7.1		4463	7172	1162	58	1104	3.0	3307	2427	1664	2058	962	966
4825	"	9:25	10:54	6.8	6.2		5314	7862	1383	49	1334	2.9	3607	2650	2052	2476	964	996
4826	"	10:54	12:57	5.9	5.4		7193	7968	1871	44	1828	1.8	3438	1907	2622	2809	569	1104
4827	"	18:43	19:43	9.7	9.7		3574	7854	9300	56.8	873.1	5.6	4041	4100	1492	2167	1068	892
4828	"	19:44	20:49	8.4	8.4		3880	7855	1010.	~~54.6~~ 54.6	955.4	5.27	3940	4292	1628	2248	1081	935
4829	"	20:49	22:05	7.3	7.3		4504	7859	1171.	52.9	1118.7	4.9	3804	4085	1819	2361	997	1039
4830	"	22:06	22:22	6.3	6.2		940	1574	244	10.0	234.6	0.84	741	772	394	479	185	203
4831	29.8.	0:24	1:23	8.7	8.4		3530	7857	918.7	54.6	864.1	4.27	4194	3147	1363	2025	1588	934
4832	"	1:24	2:28	7.4	7.1		3849	7861	1001.5	53.2	948.3	4.02	4053	3183	1521	2055	1527	1024
4833		2.29	3.41	6.5	6.3		4282	7862	1114	51.8	1062	3.7	3935	3090	1699	2150	1425	1141
4894	"	3.42	4.18	6.4	6.2		2143	3590	557	32.6	525	1.6	1848	1429	796	1072	637	497
4835	"	6.39	7.41	9.7	8.0		3707	7856	965	54.9	910	3.9	4126	2788	1463	2029	1591	958
4836	"	7.41	7.52	8.5	7.0		652	1279	170	8.5	161	0.6	665	463	271	346	255	143

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]
Lumi									
177	1.20	1.18	1.18	FM0 93	nA	9	0	16.850	16.850	449.665	
994	2.30	6.65	7.83	IBM	1.5	96	4	"	"	449.665	New fill
977	2.13	6.70	14.53	"	"	89	4			"	
579	1.88	4.15	18.68	"	"	46	1	"	"		
1088	2.38	7.38	26.06	"		69	4	"	"		New Fill
966	1.97	6.56	32.62			82	2	"	"		
845	1.49	5.77	5.77	"		59	4	16.860	16.860		New Energy
1101	2.22	7.55	13.32	"	1.5	104	1	"	"		New Fill
752	1.58	5.21	18.53	"	1.3	57	1	"	"		
431	1.16	3.11	21.64	"	1.1	43	3	"	"		Beams dumped
127	2.16	0.85	22.49	IBM	1.2	12	1	"	"		beams dumped after loss of 4 fill
1057	2.38	7.41	~~25.90~~ 29.90.	"	1.4	82	2	"	"		new fill, Beams lost.
263	2.16	1.81	31.71	IBM	1.4	21	2	"	"		NEW FILL. Beam Loss
								16.870	16.870		NEW FILL AT NEW ENERGY.
505	2.11	3.49	3.49	IBM	1.4	45	0	"			Run stopped ~~" f~~ loss pattern
61	1.96	0.40	3.50	"	1.3	6	0	"			IBM Problems
1154	1.79	8.15	11.95	TAPE(FM100)	1.3	82	2	"			
158	1.59	1.12	13.07	IBM	1.2	18	1	"			Beam Loss
1284	2.41	9.05	22.12	IBM	1.6	106	3	"			NEW FILL
1280	2.14	9.04	31.16	"	1.4	97	3	"			
1072	1.73	7.12	38.88	"	1.3	84	2	"			
1009	1.37	7.26	7.26	"	1.2	92	3	16.880	16.880		New Energy (not a new fill)
458	0.87	3.35	10.61	"		53	0	"			Beam dumped
1159	2.21	7.89	18.50	"	1.3	88	6	"			New fill
1044	1.88	7.3	25.80	"		85	3	"			
987	1.44	6.49	32.29	"		65	3	"			
581	1.34	1.26	33.55	"	1.2	18(404)	1 (16)	"			
1109	2.16	7.62.	7.62	"	1.2	84	1	16.890	16.890	449.665	NEW ENERGY, NEW FILL
1008	1.83	7.04.	14.66	"	1.2	83	1	"	"	"	
895	1.45	6.21	20.87	"	1.0	77	1	"	"	"	
365	1.20	2.58	23.45	"	0.9	26	1	"	"	"	
1064	2.00	7.41	30.86	"	1.3	81	2	"	"	"	
172	1.85	1.21	32.07	"	1.0	13 (370)	0 (6)	"	"	"	

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

29.08.80

0^{00} Warming & Totsuka on shift

0^{23} new fill ready
LG threshold adjusted

1^{53} "magnet fluctuation" appears on the screen, but DVM looks stable

3^{48} "magnet fluctuation" DVM = 0.7497 ~ 0.7499.

4^{13} — " — — " —

4^{15} IBM gets frequently busy.

4^{20} new filling, 5^{30} beam lost shortly after filling

6^{37} filling ready.

7^{25} Cello calls. They want to chang E_b. Our $\mathcal{L}$ is 29.2 nb^{-1}. We agree.

7^{50} E_b changed to 16.900 GeV. from Run 4837

8^{00} Haidt and Drumm on shift.

≈ 9^{00} Discussion with Tasso and Cello: Luminosities. Tasso Jade ≈ 1.3 - 1.4 $\cdot 10^{30}$
Cello ≈ 2.2 $\cdot 10^{30}$

The beams are — $I^+ \approx 7.40$, $I^- \approx 6.10$

It was decided to leave the filling still for ~~what~~ some time because of the long injection periods before. Tasso will communicate with PKR to get better beam steering and luminosities for them and us.

Nothing happens. We will take some action ~~then~~ at beginning of next fill.

12^{00} We get at every run of the Magnet-field-check-program ~~or~~ magnet fluctuation error of a few Gauss. We try to get an expert. Steve will come after lunch.

$12^{00} \rightarrow \{13^{00}, 13^{30}\}$ Also for the new filling the situation was the same (asymetric filling).
JADE, TASSO ≈ 1.6 - 1.2 10^{+30}, CELLO, MARK J ≈ 2.1 - 2.2 $\cdot 10^{30}$

But our luminosity was comparable to values all over the week (normalized to current). Discussion with experiments and PKR leads to corrections tried by PKR.

Finally success: JADE, TASSO luminosity goes up background better (one stage good)
CELLO, MARK J " stays

All 4 experiments have now about the same luminosity:
currents ≈ 6.0 mA, luminosity ≈ $1.5 \cdot 10^{30}$

14^{25} beam lost, 10 trip.
We have ≈ 30 nb^{-1} at this energy and agree to energy change at new filling.

15^{00} There is considerable 50Hz pickup on the DC analog signal from the magnet current readout. It is not caused by the new cable PKR installed to have an analog signal of our field.

important news

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

Pillat will look into problem on Monday morning.
IF you get a message "IDGS = ... magnet current fluctuates" then IDGS is the σ of 10 successive measurements. The NORD magnet value is only updated if the measurement could be completed without error, especially IDGS < 5 Gauss. The whole procedure is repeated every minute. ⇒ Unless IDGS > 10 constantly acknowledge error until Monday. C.-E.

16^{00} Steinelmann and Watanabe.
waiting for beam.

18^{00} Still waiting. Beams appear not liking to be stored.

20^{00} " But. Sudden alarm. Solenoid tripped off. (also some "BANG" heard)
also the PETRA TV screen blank. Power failure of some sort. Beams accumulated rather promissingly (finally) are also gone.
Could be a disaster ~~Could well be the end of this running period~~ too pessimistic
Connections of Petra Trafo Nr 21 burned ⇒ water cooling pumps and Petra Vacuum pumps stopped working. It is rather serious.
Note that the buzzer of ID's switched off for an obvious reason

too bad I scratched my prediction Yuri

20^{30} This room and the counting room is getting hot. The air conditioner stopped working presumably of no water flow.
Turned off crates for DL 8 and LG.

21^{00} Found the reset buttons for the air conditioner. Turn on Crates for LG.

21^{30} CELLO, coordinating experiment, phoned: there will be most probably no PETRA beams until Monday. More will be known tomorrow Sat.

22.15 Start Cosmic run, magnet off
Nothing changed, except T3-trigger removed
Removed all triggers but the collinear one
by switching air dimming coincidence conditions.
Latch gate width changed from 61 nsec to 140 nsec
noise rate is ~ 0.7 Hz.

Cosmics!

30.8.80

0^{00} M. Minowa and H. Riesberg on shift.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
154																		
4837	29.8	7^{54}	9^{08}	8.3	6.8		4438	7859	1155	53.9	1101	4.8	3840	3568	1771	2230	1295	1090
4838	"	9^{09}	10^{27}	7.2	5.9		4646	7282	1210	57.3	1153	4.2	3436	3128	1833	2153	1131	975
4839	"	11^{02}	12^{04}	9.4	8.5	$3\cdot10^{-10}$ $8\cdot10^{-9}$	3657	7850	953	56.3	896	5.0	4221	3362	1459	2049	1636	930
4840	"	12^{04}	13^{12}	8.5	7.5		4024	7859	1048	60.1	988	5.0	3972	3577	1638	2139	1521	1096
4841	"	13^{33}	14^{27}	7.0	6.3		3205	6166	835	73.4	762	4.9	3029	3743	1239	1664	1102	972
4842	"	22.07					1987	1284	2 events = 1284									
4843							583	444	1778									
4844		22.55	1,32				9383	7439	9167							7439		
4845	30.8.	1.38	6.23				17084	13525	22692							13524		
4846	"	6.25	9.10				9849	7863	30555							7863		
4847	"	11.57					9813	7862	38417									
4851								152	—	no	jet chamber							
4852	"	14.37	18.01				12217	9185	48102									
								48254										
4853	31.8	12.28	12.54	9.9	10.0		1488	3270	387	25.1	362	1.9	1634	1170	607	828	557	377
4854	"	12.54	14:00	9.3	9.4		3864	7859	1005	55	950	4.9	4104	3126	1490	2064	1398	936
4855	"	14:00	14:44	8.1	8.1		2609	5030	679	34.8	644	2.7	2574	1839	1007	1288	1009	632
4856	"	15:21	15:50	11.1	9.6		1724	4448	449	34.8	411	2.5	2505	1434	732	997	999	431
4857	"	18:15	19.13	8.1	8.3		3422	7845	891	62.3	828	10.3	4154	5671	1526	2256	1512	908
4858	"	19.13	20.21	7.6	7.8		4035	7852	1050	59.3	991	9.8	3969	5704	1781	2368	1327	1014
4859	"	20.21	21.39	6.1	6.2		4645	7858	1209	56.5	1153	9.4	3838	5718	1969	2563	1092	1008
4860	"	21.40	22.37	6.8	6.0		3401	5227	885	37.2	848	6.0	2382	3805	1499	1673	670	727
4861	"	23.06	23.54	9.3	8.0		2850	7843	741	62.8	679	10.2	4301	6118	1327	2197	1524	1010
4862	"	23.55	0:58	8.9	7.7		3774	7856	981	61.1	920	8.61	3968	5334	1621	2210	1409	1151
4863	1/9	0:54	2:23	7.5	6.7		4467	7855	1291	129	1162	7.7	3760	4921	1968	2417	1159	1082
4864	"	2:23	2:37	6.4	5.7		810	1306	210	8.9	201	1.1	618	746	326	419	181	200
4865	1/9			TDC Calibration														
4866	—			LG calibration runs (TAPES)														
4892	1/9	19	23.45					8408		Cosmics (Gate width normal = 61 usec)								
4893	"	23.49	0.09				3545	3504		wide = 120 usec								
4894	2/9	8.33					14306	11797		"								
4895	"	12.30						99		now ADC gate wide also								
4896		12.34						11800										
4897	3/9	17.11					10733	8673										
4898		20.10					8145	5385										
4899	3/9						17899	11800										
								61367										

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$ Exp	IBM/Tape	BP	Bhabha	Multihadron	Beam Energy Ew (Gev)	Magnet Energy (Gev)	Frequency (KHz)	
155											
923	1.47	6.54	6.54	IBM	1.0	80	0	16.900	16.900	499.665	new energy, old fill stayed
773	1.19	5.52	12.06	"	0.9	56	0	"	"	499.665	beams dumped
968	1.84	6.74	18.80	"	1.2	65	5	"	"	499.665	new fill
909	1.57	6.30	25.10	"	1.1	60	2	"	"	499.665	
689	1.48	4.75	29.85	"	1.0	58 (319)	2 (9)	"	"	"	beams lost
								~~16.900~~	~~16.900~~	"	Cosmics
											=
											|| 1 track in T2
554	~2.5	3.82	3.82	"	1.3	44	3	16.910	16.910	499.665	new fill
1129	1.99	7.69	11.51	"	1.3	90	2	"	"	"	
692	1.84	4.81	16.32	"	1.2	68	1	"	"	"	
664	2.63	4.53	20.85	"	1.4	48	2	"	"	"	new freeing
851	1.76	6.01	26.86	"	1.7	73	3	"	"	"	new fill
752	1.32	5.31	32.17	"	1.3	67	2	"	"	"	
676	1.05	4.87	37.04	"	1.1	42	2	"	"	"	
382	0.82	2.79	39.83	"	0.9	23 (56)	2 (17)	"	"	"	0.82 x 0.1 ~~0.82~~ 2.05
779	1.92	5.87	5.87		1.7	71	1	16.920			New Fill, New Energy
781	1.47	5.55	11.02		1.3	74	1	"	"	"	
756	1.10	5.44	16.46		1.1	56	1	"	"	"	
115	1.0	0.82	17.28		0.9	8	0	"	"	"	
											new fill

BP off most of the time F11 138
BP on F11 123
" Calo. Matrix ±1 F11 123
IBM
F11 092
IBM
F11 190

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

COSMICS RUNNING !

START : F8 5
Readout Pattern : 7~~6~~710 B
Default Trigger Source : NO
TRIGGER SOURCE : 3000 B
TRIGGER ACTION OVERRIDE : 0 (NOT ONLY RETURN)
LOAD '(D)NSODAR' WRITE TO TAPE ! ~~12860~~ events ~21000
Then continue as normal

In the unprobable case that PETRA comes on again before Monday, please call Beate Naroska for re-installation of the trigger

Aim : T. Nozaki needs 30 000 events
Beate Naroska needs 200 000 events

Rate : ~ 3000 events / h

Notes : Low rates of the TOF counters 16/58 and 30/72 can be explained by the missing ID-cells in Ring 3

Not read out : Tagging and Muonchambers and FWD-counters

1 19 IBM "stürzt ab"

1 30 When IBM comes on again : Message DISK OVER FLOW . I stop the Run (# 4844)
At IBM-ATTENTION :
on terminal 9 M 38 JADJADEO EXPNORM1 DS 10622622
GIVE MESSAGE
and on teletype wild printing IBM JOB PROGRAM ABENDED 5000 V0240
FT 06 F001 CONTAINS MESSAGES
GIVE MESSAGE
MESSAGES ON FT 06 WILL BE PRINTED AS JADJADEO

1 38 Cosmic Ray Run # 4845 started without problems . (Testrun does not stop at 8000 events)

TOF mean ADC of counter 2/44 is higher than normal

6 25 Start Run # 4846
PKR says that fault of last night has caused other faults (like broken rectifier) in the power supply system of the PETRA Magnets

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM / Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

8 00 Kawabata & Sato on shift

14.30 Got IBM BUSY FOR ~200 seconds, then error 54.
Run could not be started any more
EXIT FROM JDAS, Restart, run still hangs: NSO cannot be started.
Restart N10,
Now everything seems to work.

16 00 F Foster here, P. Steffen too.
Beate's number is :-
55 09 88 1 until 23 h (the other?)

17 00 Phon PKR. They cannot say when injection may begin. It could be several hours yet.
~~Gantetour 1 Order~~ Matsumura is on-call for main dipoles - will be in Gästehaus I until 0 nite.

18.00 Run stopped, PKR request for 'Freigabe'

20.00 Triggers restored to normal running conditions.

20.50 Magnet on. There is a problem with one of the compensator controls. Expert arrives. Now fixed.

22.13 TASSO called. They are now [coordinators] since CELLO have stopped taking data. They say machine may have difficulty in reaching 16.91 GeV so suggest 16.49 at bottom end of present scan, WE AGREE.

31.8.80
0 00 Olsson, Matsumura. Injection going on, no success
0 4 Wiederbeginn um 10 00. Fault in PETRA. We decide Notruf goes down.
8 00 E. Elsen + A. Wagner
We find Solenoid on / Compensators off.
PKR says Restart between 10 00 and 12 00. We decide to run magnet down. (→ 2000 A)
12 16 After switching on of Magnet Trip with "Pilotk. Rücklauf >50°".
12 27 PETRA delivers luminosity again. Energy at 16.91 !
12 54 discover that AL (Average Luminosity) is measuring less, while all other Lumi #'s are ok
Consult P. Ditmann per telephone. He suggests that clock on right hand side of Trigger Rack is on 50 Hz. He is right. Back to 1 Hz now
14 20 Beams dumped to get new filling prepared by old PKR-shift. (They change at 15 00)
New shift shall be trained by them. Suggestion of Wolf (Tasso).
15 20 New filling ready. Start run 4856.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

31/8/80

15:49 Beams lost. I.D. trips

16:00 r Goddard + Totsuka on shift

- 4 channels of LG End Cap ~~were~~ dead. [From Run 4853 — Run 4856] repaired, Totsuka.
(i.e. 63, 69, 57, 93)

18:30 LG threshold adjusted.

21:50 TASSO 32 nb^{-1}
JADE 37 "
M-J 42 " at 16.190 GeV

22:25 Tasso calls. Fill in 10 min. and go to the new energy.

22:35 New Fill and New Energy

0:00 Bell + Petersen on shift

2:10 IBM Busy: Nr Events etc ... for a few minutes. Pinned IBM. Problem went away.

2:39 Beam dumped.

4:31 PKR says a klystron is damaged and it will be 10 o'clock at least before it is repaired. Asked TASSO (LW-ordinary shift) if they were interested to run at 11 GeV or 11 GeV, but there is only a few hours left so it is not worth it.

4:45 ~~Em~~ Compensating magnets turned down to 50A and main magnet switched off. I.D. alarm tripped when we switched off the main magnet, and I.D. alarm is now switched off.

4.52 Switched off manually the negative H.T. supply to the drift chambers.

7:44 Informed PKR that our magnets are off.

16.00 TDC Calibration
leave Cabling changed!

4/9/80
YHDISP errors on pages 42 & 49 Fixed HETT

22/9/80 15.20 — Run paused for approximately 1 hour to carry out checks on forward muon counters. CFH.

23/9/80 $9^{32} - 12^{15}$ Preliminary ID RDH

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

14.9. Cosmics run continued.

Run	events	seconds	tape/ibm		remarks
4900	11800	16692	F11 193	14.9./8.26	Chamber behind counter 33
4901	6478	13034	F11 120	14.9./13.10	broken V 34 ? stopped (pedtp.) rep.
4902	4968	5977	H	/16.49	
4903	11798	14227	F11	/18.33	
4904	11801	14162	F11 101	15.9 / 0.46	

Disc-Drum errors - Oh Dear - Nord seems to be dying HET
Only when HETT writes on disk. Rubbish

4905	8370	10332	F11 137	15.9/ 8.20	

Run 4905 stopped at ~8.5 k events to try to mend disc. HET

4906	10494	12821	F11 220	15.9/12.17	
4910	8879	19369	F11 196	16.9/19.27	with N50 reduction
4911	9749	24690	F11 197	17.9/ 0.53	
4912	10139	25390	F11 129	17.9/ 8.32	
4913	10633	19341	F11 016	17.9/16.51	
4915	26~~73~~	41017	F11 100	17.9/22.~~25~~	only horizontal trigger counters. Rate 0.1-0.2 Hz Lasted 5 min. Perhaps on µ-cntr.!

— Run 4916–4936 LG-TEST (TAPES)

4937	770	14673	F22 ~~B~~ B69	18.9/19.14	Stopped because of LG Ped ~~Run~~
4938	1828	33313	"	/23.19	
4943	9604	65695	F22 CA 2	/16.45	NO LG, but µ-chambers (at low volts)
4944	2185	14392	F11 048	19.9/11.03	µ volts on fully.
4945	734	6656	F11 049		stopped by Tsuzuki. Noise = 23 kHz.
4946	3354	22177	F11 180	20.9/19.19	
4947	6114	51787	F22 B91	21.9/ 1.33	No µ-chambers (too much pedestal)
4948	4880	45658	F22 B96	21.9/20.30	
	137000				

~250,000 cosmic triggers on tape!!!

19/9/80 14:40 Muon system H.T. is back on (standby) A3/2A
21.00 Muon system H.T. on full (but see muon chamber log book) ge. volts only

22/9/80 11:00 ~~Switched off~~ muon system H.T. back to standby only. A3/4S. (i.e. $V_S - V_B = 1500$ V)

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

LG system employs now new ADC, processors and new crates (old crate controllers)

26.9.80

16 30 Event header extended by 6 words

	word 29	beam energy corrected for frequency shifts
	30	field
↓new	31	beam energy uncorrected
	32	frequency (MHz)
	33	frequency 100 Hz
	34	e^+ lifetime
	35	e^--beam lifetime
	36	time of update (hours, min)

Camac clock changed to winter-time. Please restart Nord10 on next Sunday
RAE

CHANGES IN NSO SOFTWARE (version 8009)

1) On-line rejection of COSMICS implemented.
Switch on/off by typing on command terminal: (F11) NSO-DIALOG, (F4) REDUCTION-FLAGS, 1, return, return (can be done at any time)

Monitoring: Run-Summary:
RECORDS IN = # of records from CAMAC (the term 'records' includes all triggers, pedestal records, scales mess etc.)
EVENTS = # of triggers (the term 'events' means only triggers from Krakbiel's box)
ANALYSED = " analysed
REJECTED = " rejected (at the moment identified COSMICS with $|z_v| > 25$ cm)
RECORDS OUT = # of records sent to IBM

Color-TV:
EVENTS&READ — N10 # of records in — N50 # of records out — and — NSO REJECTION percentage

The REJECT percentage should be monitored in the LOG-book. The COSMIC histograms appended to the standard histograms should be inspected regularly: (F12) RESULTS, (F13) 4-COSMIC-HISTS.

2) Change of tagging histograms: energy distributions for LUMI and TAGG events.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

29/09/80 0∞ John Hassard and Sadio Komamiya on shift
No beam until 0700 according to Tasso. Tasso also claim to be coordinator. PKR say physics will start at least until 0700 which I interpret as being the earliest time (Single beam in PETRA before that time)

8.00 B. Naroska + K. Stephens

Magnet errors. Call Pillad
9.00 Magnet works, but shunt changed. R Marshal and J. Pearce try measuring.

9.45 TV-Screen finally changed to Luminosity run.

Change in TDC-Timing: TDC-Start at TDC's 12 nsec earlier than before.
Before the early particles gave no decent TDC readings.
Change ADC gate when beam available.

11.00 Injection still in progress I^- only, so far (at present ~ 7.64 mA)

*** Magnet calibration has possibly been changed by small amount.
At present we have established two possibilities
1) Change is very small
2) Change is about 500 A at 7500 A. (i.e. set to 7500 A means current is really 7000)
Possibility 1) is favoured though possibility 2) is not entirely excluded.
Precise calibration will be done at first opportunity. For the present run with DVM at 7500 as before.

14.30 Petra still has problems injecting. They don't know when there will be beam.

15.15 W. Bartel phone from PdF and says we should switch off comp magnets & solenoids DONE.

MAGNETS OFF

15.20 H. Drumm phoned — he has a meeting and night be called for his shift — he can be contacted on x 2489.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
~~7992~~	~~30/9~~																	
4992																		
4993	1/10/80	3:52	4:35	4.4	4.7		2599	7847	676	574	102	3.17	6426	534	226	335	5254	635
4994	"	6:02	6:18	5.3	5.3		919	2850	239	231	8	0.18	2673	17	4	27	2693	39
4995	"	6:34	6:53	4.8	4.8		950	2998	247	236	11	0.16	2804	10	14	29	2839	40
4996	"	7:35					no	data										
4997	"	18:21	12:39	5.9	5.4		994	3540	258	207	51	2.96	2889	199	137	169	2544	236
4998	"	18:34	18:51	5.5	4.9		1131	4389	294	189	105	4.4	3276	338	248	303	2702	395
5000	"	19:53	20:34	7.07	7.05		1613	7690	420	223	196	8.1	3719	1226	468	738	1269	1107
5001	"	20:34	21:03	5.95	5.40		1685	7459	439	109	338	7.3	3919	1424	614	1014	1149	1826
5002	"	21:04	21:19	5.39	5.33		924	3884	240	37	203	3.3	1885	739	387	602	559	976
5003	"	21:20	21:55	4.6	4.5		2075	7860	539	63	476	5.8	3681	1349	870	1191	1083	2059
5004	"	21:55	22:09	4.4	4.4		503	1844	131	13.6	117	1.23	850	334	205	304	242	474
5005	"	22:09	22:40	4.43	4.35		2104	7153	548	65	483	5.1	4728	1410	802	1235	1673	850
5006	"	22:40	23:03	3.8	3.7		1320	4839	346	42	304	2.7	2862	800	510	715	1049	538
5007	2/10/80	00:49	00:55	7.8	7.9		249	953	65.3	52.3	13.0	0.9	693	83	32	64	225	37
5008	"	01:40	02:14	6.4	6.4		1848	7807	480	359	121	5.0	5366	1015	266	542	1650	453
5009	"	02:15	02:42	5.73	5.72		1624	7255	422	220	202	5.7	4494	1416	415	753	1535	515
5010		03:32	03:56	6.50	6.17		1322	6022	344	107	237	9.4	3316	1463	521	901	1293	453
5011		04:00		5.98	5.68		118	598	30.6	6.7	23.9	0.7	278	136	66	73	106	31
5012	"	5:48	6:18	7.0	7.2		1791	7803	466	310	156	13.5	4303	1465	550	783	1608	378
5013	"	6:19	6:47	6.4	6.6		1693	7698	440	238	203	8.7	4608	1666	497	779	1539	529
5014	"	6:48	7:15	5.8	6.0		1630	7630	424	196	228	7.2	4507	1856	504	829	1574	581
5015	"	7:15	~~8:16~~	5.76	5.95		1623	7597	422	155	267	6.3	4463	1946	529	924	1647	666
5016	"	7:43	8:13	4.8	5.0		1630	7858	424	111	313	5.7	4412	2050	583	1033	1681	647
5017	"	8:13	8:42	4.5	4.6		1716	7796	446	79	367	5.4	4250	2165	627	1124	1597	730
5018	"	8:48	9:03	4.2	4.3		870	3770	226	31	195	2.4	1990	952	345	571	701	397
5019	"	9:04	9:14	4.1	4.2		590	2294	154	17	136	1.5	1146	606	240	377	398	255
5020	"	9:17	9:50	3.7	3.8		1922	7072	500	53	447	4.3	3745	1957	746	1228	1357	768
5021	"	12:51	12:59	5.7	5.7		462	1688	120	19	101	3.5	1104	~~2802~~	~~2454~~	339	507	191
5022	"	13:04	13:43	5.1	5.0		2099	6438	548	59	489	11.5	3903	2412	980	1497	1629	694
5023	"	13:44	14:23	4.6	4.5		2325	5933	605	49	556	8.4	3557	2372	1050	1494	1419	746
5024	"	14:23	14:34	4.4	4.4		632	1482	165	11	153	1.8	852	593	244	398	366	211
5025	"	14:37	14:44	4.4	4.3		351	850	91	6.3	85	0.9	471	343	132	291	198	123
5026	LG Test runs. (Power Supply was replaced)																	

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$ Exp	IBM / Tape	BP	BHABHA	MULTI-HADRON	BEAM ENERGY E_B (GeV)	MAGNET ENERGY (FeV)	FREQUENCY (KHz)
	REJECT FRACTION %				2nd					
1				No Events	2.1					
149	-0.02	-0.05	0.05	IBm	~~2.1~~ 2.1	3	0	17.867	17.867	
12	0.05	0.04	0.09	IBm	2 ~~2.1~~	0	0	"	"	
10	0.06	0.06	0.15	~~No Events~~ IBm	1.9	0	0	"	"	
				No Events	~~2.1~~					
87	0.29	0.29		IBM	3.0	5	0	17.860		
149	0.51	0.58	0.87	"	2.6	4	0	"		
578	0.20	0.32	0.32	"	2.7	12	0	17.874		
622	0.18	0.30	0.62	"	2.2	19	1	"		
266	0.41	0.38	1.00	"	2.0	10	0	"		
601	0.64	1.32	2.19	"	1.9	22	1	17.860		
160	1.02	0.51	2.70	"	1.8	4	0	"		
717	0.60	1.26	3.96	"	1.6	27	0	"		
374	0.45	0.60	4.56	"	1.6	10	0	"		
71	!! 1.49	!! 0.37	4.56	"	2.9	1	0	"		
578	-1.03	-1.90		"	2.4	5	0	"		
505	-0.25	-0.40		"	2.2	12	0	"		
441	1.46	1.11	5.67	"	2.4	12	1	"		
40	0	0	5.67			0	0			
444	-0.13	-0.24	5.67		2.6	13	0	"		
563	-0.25	-0.42	"		2.5	8	0	"		
509	-0.23	-0.38	"		2.3	7	0	"		
480	-0.14	-0.23	"		2.0	12	0	"		
478	0.11	0.17			2.0	9	2	"		
486	0.36	0.61		~~TAPE~~ IBM F22B94	/	6	0	"		
224	0.53	0.46			/	9	0	"		
247	0.50	0.29		IBM	/	5	0	"		
424	0.54	1.04		F22CA3	1.9	18	1	"		
135	1.42	0.66	0.66	IBM	2.1	7	1	"		
486	1.55	3.25	3.91	~~F11~~ IBM 100	2.1	26	0	"		
438	1.28	2.97	6.88	F11 100	1.85	21	1	"		
100	1.11	0.70	7.58	IBM	1.65	7	0	"		
59	1.17	0.41	7.99	IBM	1.6	4	0	"		

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~~Beg~~ ~~end~~ ~~of~~ ~~monitoring~~ ~~period~~

BOOST RUN, NO RUN SUMMARY PRINTED

~~Run~~ ~~aborted~~ ~~by~~ ~~operator~~ ~~for~~ ~~unknown~~ ~~reason~~

IBM PROBLEM 54 (OCT)

RUBBISH! NOTE ENERGY. NEW FILLING

PROBABLY RUBBISH

NEW FILLING — NOTE ENERGY
LG threshold = ~~3.5~~ 1.8 GeV for TR trist

RUN STOPPED TO ALLOW ENERGY CHANGE
NOTE ENERGY CORRECTION

RUN STOPPED AFTER LG THRESHOLD CHANGE.
LG threshold now 1.5 GeV for T2.
BEAMS DUMPED FOR NEW FILLING.

Negative lumi!

beams lost

beams lost.

Beams lost

No forward μ-trigger
see note 13:40

↓ Lumi increases 12

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

29.9.80

16^{00} Drumm and Totsuka on shift

~20 Beam is read. but big background.

TOF # 11 – has bad dynode signal, ADC is very low! Found loose connection.

23.00 Crate 16 "missing" caused by removing "Run Status" unit and replacing it !! W.S. HMC

Called Elsen because of "Magnet Read Errors". He made us check all cables. But the test program had disappeared from disk. There doesn't seem to be very much we can do about it.

TAG HV of Mainframes 56, and 61 were all wrong. Checked when there is no beam, now ~~seems~~ everything seems ok.

TRIGGER STILL AS BEFORE. NEW TRIGGER NOT YET ACTIVE.

21^{30} Start data taking. Bad event structure → call Eichler
Magnet gives frequent DVM-errors call Elsen

30.9.80 Marshall + Sato on shift

1^{15} found error in ZREAD which caused bad event structure. This error was an aftereffect of the increased header length and happend only under special circumstances.

2^{10} DVM-errors come from missing Q-response in CC10-crate for DVM-reading. Test crate with Borer dataway display + Q is missing on whole crate occasionaly. Change crate-controller → ~~codes~~ New crate controller does not understand address 4. Change back old crate controller and pull out all unnecessary electronics → works o.k. Elsen/Eichler.

5^{00} Peta KR say they are ready to try injection
Had difficulty turning EHT off – found the main counter Lecroy control didn't turn off. Need to do it by hand

8.^{00} Kinoz, Krehbiel on shift.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

11.30 PKR tell us to "SWITCH ON THE HIGH VOLTAGE". Beam currents are 2.64 and 2.88 mA!!
Also the background ~~is~~ is 4v. Not a great deal of use !!!
Ring Tasso. They agree that this filling is hopeless, but PKR don't know what to do now, because they have problems getting more than ~3mA into the machine !!

11.37. Beam pipe counters reading down to 1.3v ⇒ DATA AT LAST. After 439 events "SWITCH OFF THE HIGH VOLTAGE" appears.

16^{00} Drumm, Olsson

17^{45} Tasso: In the late evening luminosity may be tried out, at low currents. Tomorrow morning a klystron repair is scheduled.

21^{00} Petra switched on again

1/10/80 0:00 Bell, Stetten on shift.

2:36 beams + luminosity, high background in beampipe counters (~40)
, low currents in the machine (5.7 + 5.5 mA)
Magnet + compensator switched on

3:50 Start run 4993: trigger rate 3 Hz. ~70% ~~background~~ deadtime (dominant due to computer)
beam pipe counter show now a rate of 20 unit, but event are very noisy: lots of hits in TD
+ lots of TOF counters fire.
L6 thresholds have been readjusted (pulseheight (at scope) = 5 mV)

4:43 Beam lost

5:55 Beam filled

6:18 Run 4944 stopped because of IBM error message "IBM problem 54(OUT)"

(*) ~~Run 4945 was started with wrong trigger thresholds~~ "IBM problem 54(OUT)"

6:53 Run 4945 stopped due to IBM error message "IBM problem 54(OUT)"

7:00 After discussion with Brafe: we reduce the fraction of histogrammed events from 100 to 20% : no effect
: we take out the T2 I : trigger rate increases from 3 to 5.7 Hz
dead time decreases from 93 to 41%

Our co

(*) Petra orbit change and moving of collimator has been tried without any effect.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

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7:35 Tried to scan a new run, run 4996. "IBM ~~Energy~~ PROBLEM 54 (047)" appeared. No data written, stop run.

8:00 D. Cords and H. Riesberg on shift.

Beate Naroska phones with PKR to improve background conditions : Only a small decrease (10%–20%) of ID-Chamber current can be reached.
TASSO has a background which is twice as high as normal, but their trigger is not yet in order.

Observations: 1.) BP-rate is normal (1.5 V)
2.) ID-Anode current is 1 to 2 mA, ~1 mA/cell horizontal, ~2 nA/cell at top and bottom in Ring 1
~~3.) Event Rate~~ → current is too high for 5 mA e^+/e^- currents
3.) Event Rate without NORD 50 is 19 Hz !
4.) TOF Multiplicity : There is a second peak with a multiplicity ≥ 20
5.) BP Multiplicity : " " " " " " " " ~16
6.) Trigger Bits : Tagg * LG (threshold 1) is much too frequent. Probably due to wrong LG-threshold. ~~HH~~

Action: Total Energy LG thresholds changed from (x=) 5 mV to 35 mV, which is the actual pulse height

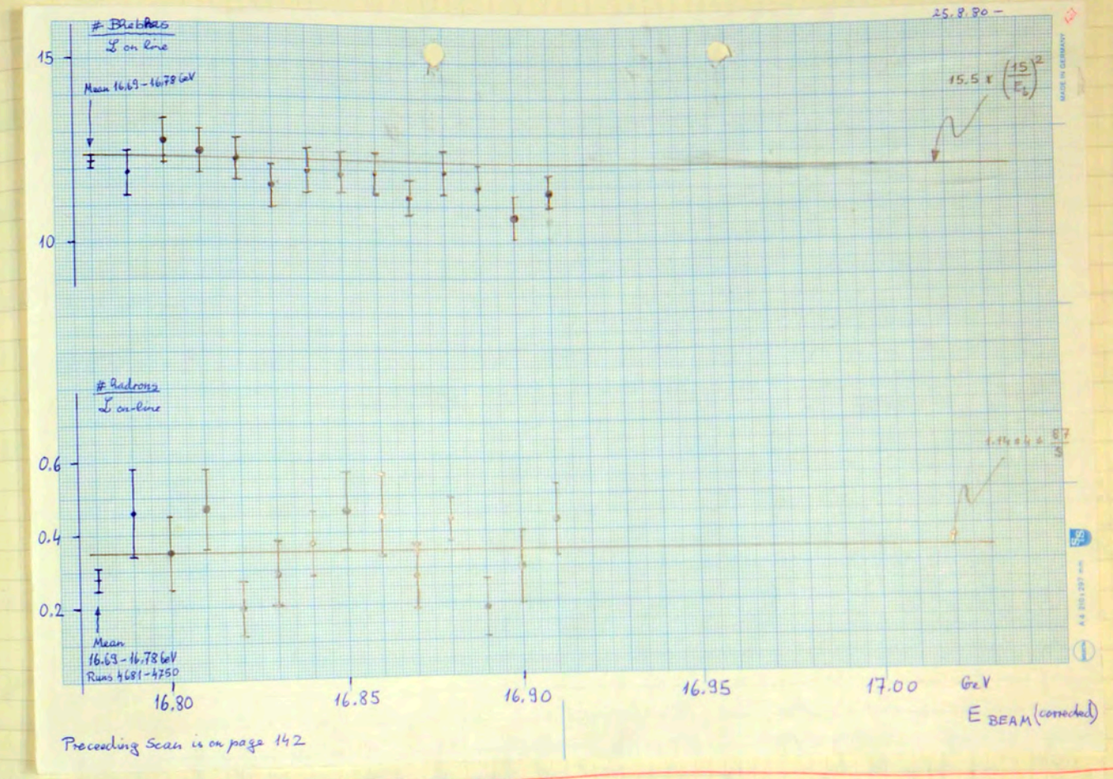
8:43 Freigabe for New Filling

11:10 Ask PKR about situation. Instabilities of the beam do not allow a normal acceleration of the beams. → A normal operation of PETRA is not possible at the time being. The instabilities depend on the position of the pistons of the cavities. At the moment they are trying to find out which transmitter causes the problem. No time estimates are possible.
14:10 machine: Cavities and restaurant: das kann Stunden dauern. (Rotinonen)

16:00 Hedgcock and Totsuka
18:22 Started Run 4994 background conditions did not look good.
18:59 Beams dumped.
20:05 from run 5000 LG threshold for T2 is raised to ~~2.5~~ 1.8 GeV.
21:23 ID Jumped in anode current 40.0 — 130. reset normally.
~~18~~ 00 Forward Muon Counters. Discriminator thresholds adjusted to 70 mV to cut down the dead time. Here has been a definite improvement.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

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Preceding Scan is on page 142

22:00 from Run 5005 LG thresholds are readjusted. Now they are 1.5 GeV and 4 GeV. They still seem to be lower than the should-be values. will be investigated later. Totsuka.

23:00 several " IBM-ON-LINE ERROR CHECK" 9 " appear. ex IBM error 54

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC.	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4

2.10.80

00^{00} Thursday 2 October 1980 Ball + O'Neill on the Graveyard

00^{42} Beams available. I.D. alarm as soon as I touch green button. Can't really have overcurrent; never got on. "Hv input voltages"
Trips second time right after green light goes on. This was just an anode current

00^{51} Finally get on. Run 5007. Beate Naroska fiddling around with the trigger.
$\Sigma bp = 2.9$. Dead time ~15%

00^{57} IBM ONLINE-JOB ERROR CHECK 9. Stop Run. Beate wants to take some "Data not written" runs for the moment anyway

01^{18} B. Naroska discovers that since Monday the collinear trigger has been requiring three tracks at T2. Wrong!! This↑ statement wrong

01^{32} B. Naroska discovers that B. Naroska's previous statement was incorrect.

01:36 ID trip. Reset OK.

01:40 Tests completed. Run 5008 started. Trigger is as before.
Event rate is 4.5 Hz. DT. 77%. Triggers dominated by tag. 1 track. Luminosity is negative, because accidentals > signal.
All this is just symptomatic of appalling beam conditions. PKR say they are trying.....

02:06 IBM online-job error check 0 — not listed in JADAS section on error messages.
closely followed by: " " 9 = synchronisation error. What does this mean?

02:07 ID trip. Reset OK.
another few error check 9's.

02:14 Run 5008 ended. Start run 5009
Now getting ~ 1 error check 9 per 30 events.

02:31 PKR are going to try an asymmetric vertical beam bump to see if they can improve background conditions for us

02:50 Luminosity less negative, but event rate > 5 Hz.
PKR request info on whether background from e^+ or e^-

02:51 Beams lost! — background conditions now perfect — tempted to make a sarcastic phone call to PKR, but we restrain ourselves.
Stop run 5009

03^{00} Check standard histograms. One new dead JETC wire.

03:37 New fill ready. Start run 5010. BP ~2.5, DT ~ 40%, nice luminosity!, event rate ~4.5 Hz.
No error check 9's. ie great improvement.

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

03^{54} Get IBM DISC 96% Full. Call IBM. Our dump job died. They will start it by hand.

03^{57} We stop! DISC full. IBM says job nearly done. We'll wait. Answer no to stop run question. No more error messages on terminal? but also no data. Stop Run 5010

04^{01} Still get flashing "IBM DISC overflow"! Does this clear without a new run start? Start Run 5011. DISC overflow flashes up a few more times, then disappears. Now get more of these online-job error check 9's.

04^{16} Beam lost.

05^{50} Going again. We have this "input high voltage" trip again the instant the green rerup button for the I.D. is pushed. Reset after a couple of attempts.

05^{53} Run 5012 going. 4.2 nb 70% dead time and lots of IBM online-job error check 9's. At least the luminosity is positive.
Complain to TASSO, which also has trouble. (They are coordinating.)
TASSO will ring PKR.

06:11 Error check 9's so frequent that requires constant messing to keep data-taking going
PKR attempts to reduce background by moving collimators + orbits. Slight improvement.

06^{57} Check L.G. thresholds. X=40. Thresholds all right on.

07:55 ID trip. Reset OK.

8:00 Hellenbrand, Meier on shift

Run 5016, 5017 to IBM, but IBM-Online Job Error now every 10 s. We called Cords.

8:48 Run 5018 to tape

9:04 Run 5019 to IBM, again Online Error, → Run 5020 to tape

10:00 Disabled forward μ-trigger for next run because of high rate.

9:50 Beams lost

11:00 IBM Interface tested with Free and live disk: If IBM time-out occured on intermediate computer, it could lead to synchronisation error. Free will increase this time-out constant from 5 msec to 100 msec.
JADAS error 9 (synchronisation error) during last night resulted in a loss of 3 to 5% of Run event. This has to be taken into account, when calculating the cross sections.

D. C.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 OF LG>1 ≥ 1 TR	T1 LG>4

12:51 Run 5021 started, again IBM-Online Error 9
12:59 Run 5021 stopped
13:03 Run 5022 to IBM (Online Error comes again but we decided not to use the tape, because we will only loose ~3% of the events (according to Cords))
13:40 FWD muon counters back in trigger, but the 4 counters nearest beam pipe, (~~the~~ cables 5, 12, 13, 18) removed from trigger. → cable position 4
13:44 Run 5023 on tape
14:23 Tried again with IBM, same error (Run 5024)
14:35 Problem with Online-Error seems to be solved (Run 5025 to IBM)
14:42 IBM-Error 53 + IBM busy
14:44 Beams dumped for new Filling (hardware work on PETRA-scrapers necessary, needs ~30 min)
15:20 Power supplies of LG ADC have been exchanged with new ones. H.T & T.W. (high power)
12.50 – 14.50 Tagging discriminator thresholds increased in several steps.
↘ Runs accidentals rate comes down, TAGG + 1 track rate comes down. PW

16⁰⁰ Bell and Komamiya on shift.
16:34 Problem of fixing T2 ~~at~~ location of dead cells in ring 3 tracked to V34 amplifiers with no cards in. We pulled out two ribbon cables from V34 9.3 and 9.4 to T2 logics. This disconnects the test line in the cable and disables the receivers. Check T2 input distribution carefully. (Dead cells are 9, 364 and 17 364)
17:13 New fill. B.P reading of 2.8, asked PKR to try to reduce this. Decided to switch on H.V.s.

17:17 Start run 5027. IBM Problem 54/53 occurs. Call D. Cords.
17:28 Scare run 5028.
17:40 Run 5028 terminated by D. Cords to debug a fault
17:45 Run 5029 started but no data taken due to IBM error 54 (OCT)
17:47 Run 5030 started but no data taken due to IBM error 54 (OCT)
18:05 ~~Run 5030~~ Run 5031 started but IBM busy and no-data for 40 seconds. Run stopped. ~~This run is bad~~
18:20 Run 5032 started

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

18:26 PKR say they have moved the horizontal scrapers in to their maximum position. We reported seeing no change in the B.P. current. They are now going to move in the vertical scrapers to see if this reduces the B.P. current
18:38 PKR say vertical scrapers in to their maximum position, still no change in B.P. current. PKR say they shall remove scrapers to their old position as they are not doing any good.
19:06 Run 5032 stopped
19:08 Run 5033 started
19:09 Found that run 5032 which lasted about 50 minutes had 2 events in run summary. However the TV screen said that there should be ~6000 events, and there should be on tape.
19:20 D. Cords has fixed JOAS error. Seems to be working o.k. now ← Run 5032 may have lost a large fraction of events
19:50 Trigger 2 / input histogram seems O.K.

19:53 Run 5033 stopped to enable D. Cords to do a test run
20:05 TASSO asked us new filling at 8 20²⁰ we agree with it.
20:58 Run 5035 started with new tagging discriminator thresholds. (Note Run 5034 was a short test run)
20:17 Run 5035 stopped
20:17 Run 5036 started
20:21 Run 5036 stopped as PKR wish to dump beam
21:18 New Filling is ready. Background level is very high B.P ≈ 10.0 TASSO has same problem. Phone to PKR. They say they will try to improve it.
21:50 TASSO said their background is as same as ~~that~~ of previous run. ~~If the background is still high after the improvement~~ We cannot start run.
22:00 phone to Cello. They just turn on the H.V. of inner chambers, but the current is almost maximum level.
22:10 We proposed to dump the beams and ~~put~~ to fill new beams.
22:15 TASSO, MARKJ. CELLO agreed!
22:50 New beam. BP reading 2.8
22:53 Start new run. Run 5037.
23:04 Cello has background problem as we had before
23:17 Message on JOAS screen "IBM ONLINE-JOB ERROR CHECK ϕ"
23:30 'IBM ONLINE-JOB ERROR CHECK 2' appears often on the display terminal. 'IBM ONLINE-JOB ERROR CHECK 3' occurs again. Call R. Eichler
23:40 LG. threshold looks O.K. (except LG threshold 1 -- too low)

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
5027	No data due to IBM error							54 (OUT)										
5028	02/10	17:25	17:38	7.1	6.9	–	771	3055	201	61.9	139	9.3	1987	726	402	433	1166	341
5029	No data due to IBM error							54 (OUT)										
5030	DITTO																	
5031	No data due to IBM busy and no events for 40 seconds. Run stopped																	
5032	This run lasted for about 50 minutes, but no data on disk, JDAS error. Should be data on tape! (see below)																	
5032	2/10/80	19:08	19.08	5.1	4.5		2935	2	764	118	645	10.1	4146	2122	1171	0	0	0
5033	"	19.09	1954	4.6	4.0	–	2652	6130	690	48.2	642	2883	3487	1768	1115	1295	1902	865
5034	"	~~19:56~~	~~19:56~~															
5035	"	20.00	20:17	4.3	3.8		976	1990	254	14.9	239	1.7	1077	~~941~~ 942	432	~~550~~ 454	568	328
5036	"	20.18	20:22	4.3	3.8		217	368	56.3	2.7	53.5	0.3	191	129	85	82	105	61
5037	"	~~23:50~~ 23	23:25	6.9	6.8		2033	~~7731~~	529	189	340	20.3	5003	2122	992	1091	3183	965
5038	"	23.25	0:00	6.1	6.0		2100	7859	546	172	374	12.3	5367	2034	853	1000	3762	997
5039	3/10/80	0:03	0:55	5.1	5.0		3003	7853	781	68	713	12.8	4316	3155	1411	1761	2048	1823
5040	"	0:58	1:13	4.9	4.8		901	2078	234	16.6	218	2.7	1113	773	414	499	526	357
5041	3/10/80	1:47	2:22	6.8	6.8		2101	7668	546	109	437	23.8	4581	2693	1213	1402	2302	1051
5042	"	2:26	3.09	5.8	5.8		2594	7850	675	79	596	16.5	4622	2978	1259	1595	2325	1158
5043	"	3:13	4:08	4.8	4.8		3301	7855	859	66.3	793	11.4	4222	3078	1513	~~2006~~ 1824	2006	1300
5044	"	4:10	4:28	4.5	4.5		993	1991	258	16.5	242	2.3	1002	803	445	499	421	344
5045	"	4:52	5:31	6.8	6.8		2094	7574	545	43.3	111	23.3	4495	2952	1213	1496	2199	1062
5046	"	5:33	6:21	5.7	5.7		2796	7850	727	~~654~~ 737	654	17.5	4267	3536	1446	1704	1882	1269
5047	"	6:23	7:24	4.6	4.5		3384	7841	880	66.9	813	11.0	4220	3422	1499	1968	1972	1392
5048	"	7:28	7:32	4.5	4.4		178	399	46	2.8	44	0.4	183	165	84	106	74	74
~~5049~~ 5051	"	10:21	10:38	6.8	6.8	6.2×10^{-3}	835	2740	217	33.1	184	3.1	1482	833	510	556	684	395
5052	"	10:50	11:19	6.3	6.3		1090	3237	284	35.0	249	10.1	1744	3140	776	679	698	485
5053	"	14:52	15:31	7.5	7.5		2168	7594	564	101	463	28.6	4074	7270	1775	1435	1409	983
5054	"	15.35	16:18	6.3	6.3		2375	7353	470	53	417	13	3833	7258	1607	1336	1309	1031
5055	"	16.21	17:11	5.61	5.59		2821	7358	734	65.6	668	14	3831	7639	1635	1534	1294	1090
5056	"	17:13	18:09	4.84	4.82		3181	7364	828	60.5	767	10.9	3845	7460	1704	1605	1292	1110
5057	TEST RUN ONLY																	
5058	"	18:43	19:16	6.88	6.83		1981	7851	515	100	415	18.6	4600	7264	1387	1258	1600	1014
5059	"	19:17	19:55	5.5	5.1		2277	7853	592	80	512	18.2	4330	9237	1576	1435	1562	1131
5060	"	19:56	~~20:40~~ 20:40	5.47	5.10		2605	~~7852~~	678	78	600	16.7	4222	10228	1676	1481	1619	1136
5061	"	20:40	20:54	4.74	4.46		777	2109	202	18	184	3.5	1069	2266	457	429	394	336
5062	NO EVENTS RECORDED.																	
5063	JDAS		105 EVENTS RECORDED.															

T1 LUMI	$\langle \mathcal{L} \rangle \times 10^{30}$	$\int \mathcal{L} dt$ Run [nb^{-1}]	$\int \mathcal{L} dt$ [nb^{-1}]	IBM/ TAPE	BP.	Rejected Event Fraction	# BHABHA	# Multi Hadron	Beam Energy [GeV]	
241	0.90	0.69	8.68	IBM	2.7	70%	17	0	17.860	
0	0.95	2.79	11.47	"	2.0	100%	0	0	17.860	JDAS error.
369	0.83	2.19	13.66	"	1.8	72%	13	1	"	
										Test run
105	~~0.78~~	~~0.76~~	~~14.42~~	"	1.5	~~75~~ %	6	0	"	
19	0.59	0.13	14.55	"	1.5	67%	2	1	"	
510	1.28	2.60	17.15	"	2.8	6% | 69%	25	0	"	
447	1.14	2.39	19.54	"	2.0	7% | 71%	21	1	"	JDAS error (IBM)
570	1.34	4.01	23.55	tape F11190	1.8	15% | 72%	31	0	"	
131	1.07	1.07	24.62	F11138	1.7	17% | 68%	8	2	"	beams dumped
579	1.83	3.84	3.84	F11098	2.5	9% | 70%	49	2	17.870	new energy, new fill
597	1.58	4.09	7.93	F11193	2.0	12% | 72%	30	0	"	
575	1.29	4.25	12.18	F11092	1.8	16 | 70	41	2	"	
140	1.12	1.12	13.30	F11120	1.7	20 | 71	9	0	"	beams dumped
534	1.64	3.44	16.74	F11220	2.5	8 | 70	27	2	"	new fill
590	1.48	4.15	20.89	F11137	2.4	13 | 70	36	0	"	
501	1.10	3.73	24.62	F11101	≈2.3	17 | 71	40	0	"	
21	0.85	0.15	24.77	F11103	≈2.2	25 | 73	2	0	"	beams lost
227	1.67	1.39	26.16	F11 ~~123~~ 81	2.6	10 | 68	15	0	"	new fill
239	1.35	1.48	27.64	F11048	2.3	6 | 71	21	0	"	beams lost
761	1.52	3.29	30.93	F11108	2.9	5 | 70	47	1	"	
694	1.47	3.49	34.42	F11123	2.3	7 | 69	33	3	"	
599	1.10	3.11	37.53	F11112	2.2	10 | 70	26	0	"	
526	0.83	2.65	40.18	F11106	2.0	12 | 70	31 (40)	0 (0)	"	BEAMS DUMPED. TEST RUN ONLY BY D CORDS.
644	0.96	1.90	1.90	IBM	2.8	4 | 70	34	2	17.880	NEW FILLING, NEW ENERGY.
572	1.08	2.45	4.35	IBM	2.60	7 | 72	36	0	"	
538	0.96	2.51	6.86	"	2.40	8 | 72	21	2	"	
154	0.92	0.72	7.58	"	2.0	11 | 70	6	1	"	
	TESTS ONLY									NEW FILLING.

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RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

18:26 PKR say that they have moved the horizontal scrapers in to their optimum position. We reported seeing no change in the B-B current. They are now going to move in the vertical scrapers to see if this helps to reduce the B.P. current. Currently at 2.1.

18:38 Vertical scrapers put to maximum, still no change in B.P. current. PKR say they shall take them out and leave them as they were.

23:57 LG. threshold readjusted to 50 mV
on-line job error check 9 very frequently (they come in burst) about 5/min.

10. By inspection of ~~run~~ IBM on-line disk we lose about 5% of all events due to transfer errors

3.10.80 We decide to write on tape

0:00 Since trigger is dominated by 16 dE + 1 track we raise threshold to 1.5 GeV (50 mV)
Trigger rate is now 2.5 - 3 Hz, 10% dead time
Drumm - Eichler on shift

0:50 Tasso calls they have 40 nb^{-1}, Mark-J 50 nb^{-1} we have only 23 nb^{-1}
we agree to run for another 30 min. with this filling and change energy afterwards.

1:45 New energy, new fill

4:50 New fill

8:00 Tolmuka, Wiedl

8:20 LINAC has a problem (e^+). Will be repaired in 20 min.

9:00 "Short break" - will last at least 30 min claims PKR. We lower the magnet currents.

9:30 Petra injection started. Magnet currents reset.

9:32 Magnet trip. Blow Pillat.
Temperature warning

9:50 Beams are ready BP = 3.0 V
In order to avoid magnet trips like the previous one, please raise the magnet current according to Pillat's recipe:
Raise the current to ~ 5000 A, then wait a certain time (~~10~~ ~5 mins), then continue and raise it to the final value.
Otherwise the steering for the water-cooling might not be fast enough

10:00 Magnet current is set to its original value again.

10:20 Start run 5051, we continue waiting to see IBM link still does not work.

10:50 From run 5052 on user 3 tracks + TOF - trigger included into the trigger-scheme. ← Important

11:15 Beam lost. ID trips
Power failure in power hall

11:45 Magnet currents restored

12:25 Injection started,

12:30 One of the DLS was replaced (dead channels) W872. new DLS # 258 old DLS # 215.

~~13:00~~

13:00 magnet currents back to original values

14:45 New fill ready, background quite high, still 36 V after some beam-steering
We wait for "Beutelpfeifen", which brings the current down to 30 V.

14:52 Run 5053 started

15:02 LG thresholds adjusted to 50 mV

15:50 PKR tries to optimize our background by "Beutelpfeifen". Up to now no success.

16^{00} Hedgecock, Feist on shift

21^{00} Power supply cooling fan in rack (7) decided to take our nerves by starting to scream. Caused run to be switched off suddenly.
Run stopped - H. KREHBIEL called and arrives to repair system.
Power supply replaced S. Marska and H. Krehbiel working hard to recover the copies

22^{80} new filling

=DAS ERROR 56 SUBERROR 405 TASK 1
" " 44 " 703 " 1

4.10.80

0^{00} H. Krehbiel and H. Rieseberg on shift

0^{30} Check of histograms : Everything ok - as far as we can see

0^{35} Run 5069 started, again to IBM via link

0^{40}	$\int$DAS	ERROR 44	SUBERROR 703	TASK 1	timeout in one of the DLS's # 110 ÷ 116
1^{07}	"	" 56	" 405	" 1	TOF Bank wrong length 405 actual
1^{30}	"	" 56	" 405	" 1	
1^{30}	"	" 44	" 703	" 1	

2^{00} Stop for New filling

2^{25} New filling ready. BP-rate 3.2 V !

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2 TOF LG>1 $\geq$1 TR	T1 LG>4

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

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2^{28} Run 5070 started

Bad beam condition : Trigger rate 4.9 Hz, dead time 45%, 99 m sec/event at about event # 2000
Lumi 0.5×10^{30} because of accidentals
at event ≈ 4000 LMZ 1357 Acc 1277
LPZ 1313 Acc 1253
} Is calculated <I> too low?

why ?

3^{01} Run 5071 started under improved background conditions. Background decreases faster than the currents
3^{30} Beam loss of about 1 mA per beam
3^{37} Run 5072 started
4^{02} Again JDAS ERROR 56 in 405
4^{16} IBM TRANSFER ERROR 53 . "Es geht gleich weiter"
4^{28} Run 5073 started
5^{21} Run 5074 started
5^{50} Stop because of DISC overflow
6^{05} New filling requested
6^{55} New filling ready, again with huge Background
7^{05} JADDUMP started only now by intervention of Mr. Cords
Run 5072 started, on tape 4 Hz, 30% dead time
Tagging : +Z chambers missing, HT +2.54V missing
7^{35} Change Energy to 17.89 and start Run 5076
8^{00} Fato, Wiedl
8:16 Tried to send run 5077 to IBM, failed with "disc overflow", after having stop the run, the message went away and we successfully got rid of the data in run 5078.
8:40 Power supply for positive EHT in tagging chambers on +Z exchanged (during run 5078)
9:11 After start of run 5079, μ-crate 13 running, resetted
9:30 Beams lost (no IP trip!)
9:35 Tagging discriminator thresholds increased to cope with background problems.
10:10 New fill ready, terrible background (3.1 V), high rate (~4 sec^{-1}) & dead-time (40-50%)
PKR will try an orbit-correction
LG thresholds adjusted to 50 mV ⇒ dead-time goes down to ~33%, later back to ~50%
tagging discriminator thresholds further increased
10:30 Situation worse, each of the 1 track-triggers contributes with about 25%.
Telephone discussion with B Kasemann, decision: instead of 1 fast track 2 fast tracks are demanded.
10:40 ⇒ trigger-scheme changed:

old	new
2TOF • LG > 1 GeV • 1 track$_{fast}$	⟶ 2TOF • LG > 1 GeV • 2 tracks$_{fast}$
TAGG • 1 track$_{fast}$	⟶ TAGG • 2 tracks$_{fast}$

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11:00 Changing the triggers brings dead-time down to about 20%.
13:00 Run 5083 stopped to change the NORD-programs:
15:10 IBM-Monitoring : on TV screen : MON3 : event counted by IBM got (should be ~~exactly~~ equal to NEO counts)
MON4 : error count of IBM-link (includes recovered errors) D.C.
13:11 Error-message JDAS ERROR 56 (007), Subsector 355 (oct) Task 1 ; no action taken
13:30 PKR has tried orbit-corrections for ~~started~~ ≈ 2 hours, no noticable effect on the background situation.
14:03 Beams dumped for new fill
15:40 New fill ready
15:50 JDAS ERROR 56, Subsector 405, Task 1
15:55 This fill is much better than the previous one, after 15 min. the int. dead-time is down to ≈ 12%
PKR will continue to try optimizing the background.
16:00 Bowdery, Weber on shift
17:15 Beams lost suddenly. We phone PKR - they haven't noticed yet!
We discover that the automatic current update facility has zeroed the currents before we stopped the run : current values lost on run sheet. Is this what we want? Perhaps the program should not update the currents when beams lost until run stops(?)
18:08 New fill ready
18:55 "IBM DISC 96% FULL"
This lead to "DISC OVERFLOW". IBM personal could not dump disk contents.
We write new run (5089) to tape while disk is emptied.
We are also investigating the absence of FWD μ counter #2. Malcolm Goddard will come.
~19:40 ID Temperature alarm sounds. We phone Hellenbrand.
19:49 He arrives. Fixes temperature threshold by 1 degree.
19:53 Stop run 5089. Increase beam energy to 17.900 GeV. Try unsuccessfully to link on IBM. Still "IBM disc overflow". So continue to write on tape.
20.16 Stop run 5091 to go to IBM-link. Run 5092 using IBM-link.
20:31 Beams lost suddenly. Malcolm arrives to check FWD μ counter #2.
21:27 Malcolm is altering the wiring of the discriminators of the FWD μ counters ⇒ will affect written data
21:30 Wiring OK again
22:00 PM tube # 3 for fwd μ cntr seems to produce no output. Must be dead.
This produces holes in FWD MUON counter hit map for counters 3 & 4.
R. Hedgecock will examine further on Monday.
23.36 LG > 4 rate seems high for run 5094. We therefore readjust LG thresholds : 50 → 55 mV
00 00

I AGREE dH

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4
178																		
5064	3/10/80	22.25	23 11	6.3	6.2		2779	7843	710	98	612	31.7	4083	7804	1429	846	1812	1156
5065	"	23 11	23 23	6.3	6.18		678	1640	176	17.7	158	5.6	795	1982	305	216	371	273
5066	# 5067		LOST		DUE		TO	PROBLEM		WITH	IBM	TRANSFER.		—	FAULT	AT	IBM.	
5068	"	23.30	0.33	5.83	5.67		3740	7344	973	74	899	21.8	3606	9336	1312	1060	1563	1330
5069	4.10.80	0 34	1.59	4.93	4.78		5052	7628	1314	70	1245	18.2	3667	9913	1303	1104	1751	1642
5070	4.10.80	2.27	3.00	8.10	8.19		1956	7848	509	~~32~~ 186	323	23.2	4885	6905	957	699	2185	1075
5071	"	3.01	3.36	6.93	7.05		2105	7850	548	119	428	18.5	4594	7682	972	704	2139	1309
5072	"	3.37	4.25	5.39	5.64		2693	7856	701	86	615	16.6	4246	8935	1067	816	2053	1554
5073	"	4.26	~~5.20~~ 4.55	4.68	4.89		3280	7855	854	70	784	15.6	4219	9780	1068	930	1968	1614
5074	"	5.21	5.50	4.03	4.21		1738	3697	453	32	421	6.9	1970	4651	511	446	1009	817
5075	"	7.05		7.74	7.63		1787	6858	465	127	338	23.5	4143	6027	973	647	2060	914
5076	"	7:39	6.18	5.9	5.8		2420	7345	620	86	543	24.2	4192	7447	1116	726	2173	1042
5078	"	8.21	9.11	5.0	4.9		3136	7847	816	80	736	22.3	4329	8614	1245	871	2236	1251
5079	"	9.11	9.31	4.7	4.7		1179	2420	294	23	271	6.1	1282	2516	381	299	641	425
5080	"	10.12	10.44	7.0	6.7		1822	7362	490	203	286	23.3	4515	6436	940	567	1501	1158
5081	"	10.45	11.23	6.1	5.8		2640	7843	671	100	571	24.4	3325	11773	1342	763	1651	2055
5082	"	11.23	12:41	4.8	4.6		4521	7546	1176	76	1100	21.5	3254	12211	1451	1060	1565	1916
5083	"	12.47	13.03	4.7	4.5		868	1243	226	11	215	2.4	518	1316	184	130	230	338
5084	"	13.05	14.06	3.9	3.8		3536	4225	920	35	886	7.2	1705	5149	736	625	783	1171
5085	"	15.35	16.34	7.9	7.7		3356	7803	873	103	770	37.9	3258	10062	1770	1026	1511	1484
5086	"	16.35	17.17	6.3	6.2		2495	4453	650	46	604	15.3	1757	5657	945	630	798	973
5087	"	18.05	18.59	6.3	6.3		3243	7839	844	98	745	36.5	3316	10868	1705	1013	1570	1513
5088	"	19:00	19.11	6.1	6.1		668	1412	173	15.9	157	4.8	593	1997	282	193	303	314
5089	"	19:12	19:58	5.3	5.3		2438	4369	634	43.8	591	13.8	1767	6810	875	588	821	984
5090	"	Try to write to IBM, unsuccessful																
5091	"	19.56	20.16	5.0	5.0		1042	1661	271	15.7	255	4.3	665	2526	322	255	303	397
5092	"	20.17	20.33	4.9	4.8		979	1378	255	12.8	242	3.6	526	2124	292	203	249	329
5093	"	21.00	21.55	6.4	6.3		3159	7836	822	94.5	727	32.2	3418	10849	1634	1040	1585	1569
5094	"	21.57	23.15	5.0	4.9		4645	7845	1208	78.0	1130	23.0	3087	12029	1593	1043	1475	1864
5095	"	23.15	23.44	4.6	4.6		1735	2379	451	21.5	430	5.8	927	3686	463	371	409	620
5096	5.10.80	0.31	1.20	6.6	6.6		2670	7824	746	99.3	646	35.3	3422	11673	1706	959	1470	1451
5097	"	1 20	2 24	6.56	6.54		3818	7837	992	82.4	910	25.9	3230	13149	1623	1091	1210	1748
5098	"	2 24	3 29	4.5	4.4		3858	6048	1003	58.2	945	16.5	2463	10624	1174	884	1130	958

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]	REMARKS ?
179										
924	1.76	4.80	12.38	IBM	2.7	1/68	67	4	17.880	
194	1.63	1.10	13.48	"	2.4	3/79	14	1	"	
~~837~~	~~1.31~~	~~4.91~~	~~18.39~~	~~FM095~~	~~235~~				"	RUN WRITTEN TO TAPE.
837	1.31	4.91	18.39+ε	FM095	235	3/72	58	3	"	
746	0.91	4.62	23.01+ε	IBM	2.0	5/69	42	1	"	
686	0.64	1.24	24.25+ε	IBM	3.1	1/68	31	1	"	NEW FILLING High background
722	1.00	2.10	26.35+ε	"	2.8	2/73	28	1	"	
724	1.01	2.71	29.06+ε	"	2.3	2/70	34	1	"	
667	0.80	2.62	31.68+ε	"	2.0	3/68	46	0	"	
284	0.65	1.12	32.80+ε	"	1.8	4/72	13	0	"	IBM DISC OVERFLOW NEW FILLING
602	0.97	1.74	34.54+ε	FM094	3.1	1/71	35 ~~46~~	0 ~~17~~	"	
743	1.41	3.42	3.42	FM104	2.7	2/76	39	0	17.890	New 210 nb
342	1.15	3.62	7.04	IBM		2/69	37	2	— —	
291	1.02	1.14	8.18	"	2.2	3/73	18	0	"	Beams lost
514	0.78	1.48	9.66	"	3.2	1/64	22	0	"	trigger-status changed during run
816	1.18	3.09	12.75	"	2.9	2/71	37	2	"	
928	1.35	6.10	18.80	"	2.3	4/67	72	3	"	
150	1.20	1.04	19.84	"	1.6	5/72	12	0	"	
472	0.32	3.24	23.08	"	1.6	3/74	24	1	"	
997	1.93	6.46	29.54	"	3.1	2/70	71	2	"	(because Lost Stop run, wait for new fill.
607	1.65	4.13	31.67	"	2.5	4/74	35	1	"	
1007	2.01	6.51	38.18	"	3.0	2/71	69	1	"	
171	1.69	1.13	39.31	"	2.5?	2/70	9	0	"	IBM DISC OVERFLOW → run ends
539	1.52	3.69	43.00	FM105	2.4	4/76	29	3	"	Not started due to trouble with IBM-Tape
				"	20		~~478~~	15	17900	
202	1.49	1.55	1.55	FM124	20	4/65	5	0	"	Stop run, to go back to IBM-Tape
167	1.21	1.19	2.74	IBM	"	6/78	17	0	"	Stop run after beams are lost due to RF trouble
972	2.06	6.50	9.24	"	3	2/68	61	1	"	New fill.
1007	1.51	6.99	16.23	"	2.3	4/74	77	5	"	
272	1.11	1.93	18.16	"	2.0	6/77	10	0	"	Stop, because TASSO requests a new fill.
911	1.84	5.28	23.44	"	3.1	1/65	38	1	"	New fill.
907	1.50	5.72	29.16	"	2.5	3/67	59	2	"	
635	1.11	4.27	33.43	"	~2	4/73	50	1	"	
										~~New fill~~

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBH/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

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5/10/80

0^{00} Komamiya, King on shift.

0:35 New fill ready. Background is 3.1V. Dead time is ~15% at start of Run 5096.

0 50 LG threshold looks O.K. (for 1.8 GeV and 3 GeV)

3 10 3:30 TASSO want new filling. we agreed

5 00 Inner Detector trip

6 00 Temperature alarm of Inner Detector. phone to K. Hellenbrand. Reset the alarm

6 50 New beams are ready with new energy

30 nb^{-1} this shift! – a ~~record~~ Guinness for me!

8:00 Ball & Soto on shift

08:20 Run 5104 finished normally. Start run 5105

08:22 ID trip. Beams lost.

09:09 PETRA magnet energy stuck at 1.841 GeV for ~40 mins.

– and now the infamous 'Lange Unterbrechung' message appears

09:20 Restart 10:30 a.m.

10:45 Petra engineers in tunnel near JADE

11:08 Injection starting.

12:14 Stable beams. Switch on BP ~2.8V. ID trip. Reset OK.

Start run 5106, but BP current starts to fluctuate, causing another ID trip. Reset OK.

12:19 BP now steady ~3.0V. Start run 5107. 5106 was terminated before parameter setting finished.

12:37 TASSO say they have severe background problem. PKR attempting local corrections.

12:38 ID trip, reset OK.

12:44 ID trip, reset OK.

16^{00} Wagner, Feist on shift

17^{10} Sends an: fall during Energy-ramping → delay.

17^{20} HV on – we can not run BP-rate > 10V!

17^{40} main reason for high BP-current was one counter (cable #16). When disconnected BP = 2.7V

20^{10} check of histograms for run 5112 reveal two problems:

1) Multiplicities of Trigger 1 output: "TOF through matrix" is zero = 0
after checking connectors + consulting B.N. → no action since not relevant for trigger

2) hole in beam pipe mean ADC distribution. Not clear if connected with high BP-current (s. above). → again no action.

20^{27} Recent results from "Bundestags wahl":

CDU	44 %
SPD	42 %
FDP	10.5 %

} Branching Ratios ?

181

21^{20} new filling ready, but after 200 evts. continuous error message 50 appearing on the Nord 10/50 crate – again after (re-loading) restarting Nord 10/50 contact Goto – reload the HV-supervision programs – thereafter run O.K.

24^{00} Pearce/Hellenbrand take the chair.
All is quiet on the North western front.

01^{30} Stop for new filling

02^{20} New filling is ready at same energy (17.920 GeV). Start run 5122.

05^{55} RUN 5122 did not end at 8000 events (10 000 were selected) sorry!
Tagging system HV errors on many channels occur for the 2ND time (MF=61)
Reset the offending power supply as per instruction (SDAS manual). Hopefully this will cure the problem.

I was later told by Beals that these messages are caused by a bug in the computer program, so beware if it happens to you.

6^{38} Beams lost. End run 5126 We have >40 nb^{-1} at this energy.
Ask Tasso for new energy on this filling but neither they nor Mark J are ready yet – they both want to ramp up part way through the new filling. Obviously electrons/positrons prefer SAVE!!
5 mins. later Tasso ring back to say they really do want a new energy after all. Perhaps TASSO prefer JADE too!!!

7^{44} After much fiddling about with the beam energy PKR are happy with the beam.
start run 5127 at new energy of 17.930 GeV
Pedestal error cr 4 cl 97 and Nord 50 continuously busy.
Start a new run – this does not help.
Reload N 10/50 and start from scratch. This works
Run 5129 started.

8^{00} Kreinbiel, Komamiya on shift

8^{30} High Voltage Error due to interference between NORD HV. monitoring program and LG H.V. reset program.

9^{00} Hum crate missing (#13) Reset O.K.

11^{00} I have looked at the signals from P.M. tube #3 and agree that we are getting no signals from this unit. I have disconnected the HT cable for this counter at the back of the Powes Supply. ~~Counter~~ Tube (4) is operating correctly but I do not understand why the histograms ~~do~~ are not recording any data for this channel. The Trigger (1) histogram clearly reads out that PM (4) must be functioning correctly and the input signals to the ADC seems normal at the input to the ADC. I rest my case at this point. C.K. Hodgson

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	T0 REJECT $\times 10^6$	T0 ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2TOF LG>1 $\geq$1 TR	T1 LG>4
182 Run	Date	Start	Stop	I^+	I^-	Vac	Time	Nord Event accept	All triggers $\times 10^6$	T0 Reject $\times 10^6$	T0 Accept $\times 10^6$	T1 Accept + postpone $\times 10^6$	T2 Accept	T3 Reject	T3 Accept	T2 Coll.	T2 $\geq$2TOF LG>1 $\geq$1 TR	T1 LG>4
5099	5.10.80	3.57	4.41	6.6	6.7		2485	7829	646	104	542	31.9	3358	12074	1551	882	1422	1624
5100	"	4.42	4.56	6.3	6.4		837	2252	218	25.6	192	8.2	1020	4057	418	278	456	503
5101	"	5.00	5.52	5.3	5.3		3146	7848	818	82.2	736	23.7	3470	12820	1457	996	1605	1843
5102	"	5.53	6.13	5.0	5.0		1194	2513	310	25.8	285	7.0	1064	4827	506	335	495	625
5103	"	6.50	7.27	7.0	6.9		2182	7846	567	168	400	27.0	3504	11651	1318	790	1735	1613
5104	"	07.27	08.44	6.0	5.9		2800	7855	728	89.6	638	26.3	3703	13403	1422	961	1742	1747
5105	"	08.15	08.22	5.98	5.89		381	1029	99.0	10.1	89.0	2.88	445	1711	195	121	221	242
5106	1 Skip during parameter setting																	
5107	"	12.17	13.10	6.3	6.4		2918	7810	759	108	650	38.0	3505	12897	1815	1221	1428	1491
5108	"	13.11	14.17	5.2	5.3		3936	7839	1023	94.1	929	37.3	3057	13568	2026	1183	1224	1601
5109	"	14.17	15.37	4.2	4.2		4894	7880	1273	49.5	1194	256	3983	13657	1717	1227	1196	1766
5110	"	15.40	16.10	3.8	3.8		2000	2870	521	268	485	7.4	1112	4741	584	468	468	680
5111	"	17.38	18.26	7.3	6.8		2844	7841	740	90	650	28.6	3505	13253	1611	1125	1474	1678
5112	"	18.26	19.31	6.2	5.8		3682	7851	958	81	878	24.8	31.94	13550	1644	1099	1414	1826
5113	"	HV error during parameter setting. Stop run - summary lost																
5114	"	19.30	20.46	5.3	4.9		4344	7844	1130	76	1054	20.4	3195	14255	1501	1127	1411	2030
5115		20.44	20.55	4.3	3.9		649	993	169	9	160	2.5	404	1935	163	136	213	292
5116	"	21^{25}						404	}	nord 200 evts	Nord error message 50 (see page 187)							
5117	"	21^{34}						434	}									
5118	"	22^{02}	22^{49}	7.0	6.7		2792	8002	726	89	637	28.0	3415	14352	1670	957	1592	1538
5119	"	22^{49}	23^{48}	6.0	5.7		3503	8002	911	81	830	25.0	3181	15459	1596	1070	1441	1769
5120	"	23^{48}	1^{05}	5.0	4.8		4566	7846	1188	76	1111	23.5	3154	16571	1571	1222	1256	1857
5121	6.10.80	1^{05}	1^{33}	4.05	3.9		1654	2404	430	23	407	6.9	937	5731	522	381	367	583
5122	6/10/80	2^{20}	2^{59}	7.82	7.78		2393	7824	622	111	512	34.2	3489	14574	1667	923	1496	1424
5123	"	2^{59}		6.77	6.75		2905	7830	755.7	87.6	668	28.3	3323	15267	1601	1028	1400	1585
5124	6/10/80	3^{49}	4^{40}	5.0	5.0		3033	6859	789	69.4	719.7	21.9	2841	14169	1422	978	1206	1495
5125	6/10/80	4^{40}	5^{55}	4.0	4.0		4485	8085	1167	78.9	1088.5	24.3	3293	17430	1671	1232	1366	1880
5126	"	5^{58}	6^{38}	4.03	4.03		2285	3546	594.8	33.16	561.6	9.9	1395	7681	746	550	565	880
5127	6/10/80	7^{43}																
5128																		
5129	6.10.80	7.59	8.53	5.1 (at)	5.4 (end)		3249	8002	846	84.9	760.7	28.2	3127	15779	1699	1099	1290	1694
5130	"	8.58	10.09	4.99	5.27		4213	8002	1097	82	1015	26.4	3079	17460	1735	1231	1180	1822
5131	6.10.80	10.09	10.49	3.7	3.9		2319	3616	604	53.3	550	10.8	8519	7710	809	552	555	820
5032 -33	only tests for IBM LINK																	

T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$ exp.	IBM/ Tape	B.P.	Rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam Energy	Remarks
183										
942	1.93	4.79	38.22	IBM	3.5	1/65	62	0	17.900	New fill
226	1.31	1.10	39.32	"	2.5	2/66	16	0	"	
721	1.27	3.99	43.31	"	2.2	2/69	39	0	"	
214	1.03	1.23	44.54	"	2.1	3/63	8	1	"	
695	0.90	1.97	1.97	"	3.85	1/72	27	0	17.910	New Energy. New Fill
684	1.14	3.19	5.16	IBM	2.5	~~4/68~~ 3/67	42	2	"	
81	1.09	0.41	5.57	"	2.4	3/61	8	0	"	beams lost.
~~915~~										
715	1.64	4.79	10.36	"	3.0	2/67	51	0	"	
803	1.45	5.42	15.78	"	2.7	2/66	45	2	"	
945	1.41	6.90	22.60	"	2.3	4/72	64	1	"	
308	1.11	2.23	24.83	"	2.0	5/74	27	1		
744	1.50	4.27	29.10	"	2.7	2/76	48	4	"	
884	1.69	6.22	35.32	"	2.2	3/72	50	0	"	
824	1.31	5.71	41.03	"	2.0	4/72	61	3	"	
96	1.09	0.71	41.74	"	1.7	4/74	7 (456)	2 (59)		
	~~0.72~~	0.10		IBM	3.0				17.920	new Energy, new fill
	~~0.41~~	0.11	0.21	"	"				"	
860	1.89	5.28	5.49	"	2.5	2/67	57	1	"	
898	1.74	6.11	11.60	"	2.2	3/73	62	5	"	
873	1.36	6.21	17.81	"	1.9	3/78	65	2	"	
232	1.07	1.67	18.97	"	1.6	1/24	76	0	"	
837	1.98	4.73	23.7	IBM	3.0	1/78	56	0	17.920	new fill
909	1.96	5.69	29.39	"	2.5		50	0	"	
774	1.75	5.31	34.70	IBM	2.3		48	0	"	
849	1.33	5.96	40.66	IBM	2.0	3/80	58	1	"	
321	1.0	2.28	42.94	IBM	1.6	2/35	21	2	"	Beams lost.
		0.06	0.06				0	0	17.930	almost nothing
		0.05	~~0.11~~ 0.11				0	0	"	almost nothing
							64	2		
972	1.93	6.27	6.27	IBM	2.4		51 ~~64~~	2	"	
785	1.32	5.57	11.84	IBM	2.0	2/66				
322	1.02	2.37	14.21	IBM	1.7	5/72	16	0	"	

I+, I- out of Runsummary
I+, I- from screne

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2 TOF LG>1 $\geq$1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

11.00 - 11.30 Hessler puts into our gas system (House next to green transformer) a new valve (Rückschlagventil! What's this in english, valve to prevent backward flow.) Technician says all o.k.

11.40 IBM ON-LINE down. DATA à written on TAPE.

12.20 JOAS-Error 44 subcom 703 Task 1 Run 5135, ca Event 6300
51 146 2 same run, later

12.40 TASSO says PKR wants to do some machine study from 1420 to 1500

16.00 Late, Uphill

16.30 New fill ready, very high background (~4.5 V, fluctuating). PKR chooses high background for TASSO as well and will try to improve it. We wait.

16.45 - 16.50 "Bandenplatten" reduces background from 5-6 V to 2.6 V. We start the run.

17.00 NORD50 often busy. Run 5142 stopped.
Run 5143 started, it seems to be OK.
Prop temp has gone spontaneously.

17.20 IBM busy for ~ 40 sec operators claimed that they had no problems.

17.45 IBM transfer error 54, subcom 140000, error-count 24

19.55 IBM transfer error 54, subcom 140000, run 5144 stopped.

21.10 New fill new energy 17.94 GeV
High background 3.2 V causing ~ 60% dead-time (3.5 - 4.0 Hz)
PKR will try to improve the background; result 2.8 V, ~ 20% dead-time
This fill is worse than the previous one (TASSO agrees), but we just can run with it

21.30 JOAS-Error 44, subcom 703, task 1

22.35 ID-Trip

23.00 IBM transfer error 54, subcom 140000, error-count 24

23.02 JOAS-Error 44 subcom 703, task 1

23.30 MARK-J wants access for 5-10 min. after this fill. We agree.

23.50 ID-Trip

7.10.1980

0.00 Bamford, Olsen

1.45 Tasso phone and say they want to dump the present beam in ~20 minutes. Then Mark J will have ~10 minutes access.

2.03 Again very noisy beams encountered in the start of run 5153. dead times of ~ 40%
PKR can do nothing to improve conditions. Tasso also having problems with noise.

03.10 Suddenly BP rate jumps to 100. We switch everything off. PKR is fiddling, trying to improve our beam, which are all the time local. PKR complains that they cannot watch our BP rates when they turn the beam THIS IS RIDICULOUS
The day shift started nice to this weather! ⟸
Our deadtime this fill started with 50%, is now down to 18% at a steady 4 Hz data taking, and amounts of ~ 6 mA

5.26 Beam dumped

5.53 Again we have large dead times of 45% in the beginning of run 5159. New fill. Stays on 5164 with BP = 3.0 V.

6.45 JOAS error 44 subroutine 703 occurs, a lamp on crate 3 is out so we stop run 5160 and restart to see if the error is. Lamp stays off but error message does not appear.

7.15 Tasso phone and says they would like to change the energy in ~5 minutes we agree.

7.20 New Energy 17.950

7.30 IBM goes down, we get the message IBM runs 54 At least 15 min to wait. We start writing on tape F92 CH4 (F44?)

8.00 Uonamiya, Narodhen
Trigger rate after 2 hours of filling is still > 3.5 Hz, deadtime 11%
LG > 4 GeV is biggest trigger rate, Increase threshold a bit.

8.50 TASSO wants to dump the beam at 09.05 for new filling

9.00 Often IBM transfer error 54

10.12 For run 5166 T2 wrong for trigger 2TOF · LG 1 GeV · 1 track and TAGG · 1 trk.
Tried to install T2 trigger bit read out, which apparently then came too late ?!?!
T3 removed from trigger from run 5166 onwards.
Now 3.1 Hz 15% dt
Nominal LG threshold 4.4 GeV, in display ≈ 3 GeV

10.50 LG crate 1 only the second half of each ADC is read out.
This has been going on since run 5153 (2 am 7.10.80)
Change Miproc → O.K.

11.00 Now command terminal broken, so we can't check whether LG fixed.
YMENY had been overwritten. D.Cords rebuilds it.
LG ADC readout problem from run 5153 – 5167 ??
First good run afterwards 5173
Short runs in between were because of IBM and LG-Miproc problems.

IBM will be down on and off for some time So we write on tape.
(They have 2 dying disk channels)

RUN	DATE	START	STOP	I+	I-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS x10^6	TO REJECT x10^6	TO ACCEPT x10^6	T1 ACCEPT + POSTPONE x10^6	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥2TOF LG>1 ≥1TR	T1 LG>4
5134	6.10.80	~~junk~~																
5135	"	11.46	12.25	6.3 (at start)	6.7 (at end)			7675	607	91	570	28	3032	~~7670~~ 12979	1670	898	7408	7662
5136	"	12.26	13.18	6.26	6.03		3055	~~7733~~	795	88.2	707	27.5	3073	15569	1672	1026	1348	1948
5137	"	13.20		5.31	5.22			4456	530	53	477.5	14.2	1692	9289	921	623	734	1205
~~5139~~																		
~~5140~~	~~6.10~~	~~14.01~~		~~4.71~~	~~4.56~~			~~4456~~	~~530~~	~~53~~	~~477.5~~	~~14.2~~	~~1692~~	~~9289~~	~~921~~	~~623~~	~~734~~	~~1205~~
5140	6.10.80	14.01	14.23	4.71	4.56		1225	2381	319	34	285	7.2	284	4964	491	362	351	627
5141	"	14.24	14.25	4.5	4.3		87	147	22	1.5	21	0.5	30	344	36	20	20	41
5142	"	16.53	16.56	7.0	6.7		185	55	48	45	2.7	0.2	24	78	14	7	6	7
5143	"	16.57	17.40	6.1	5.9		2561	7826	666	111	556	26.3	3606	13206	2057	1681	1308	1735
5144	"	17.40	17.56	6.9	5.6		891	2528	231	30	201	7.3	1110	4507	675	540	379	433
5145	"	17.57	18.47	5.1	4.9		2967	7844	772	79	694	18.3	3473	13339	2076	1699	1228	1483
5146	"	18.47	19.44	4.4	4.3		3337	7838	869	90	799	16.4	3454	13394	2110	1857	1092	1511
5147	"	19.44	20.09	4.2	4.0		1471	3382	383	28	355	5.9	1389	5333	974	772	425	622
5148	"	21.10	21.43	6.7	6.5		2037	7842	530	157	373	26.1	3811	11249	1750	1200	1664	1467
5149	"	21.43	22.26	5.9	5.7		2523	7845	657	83	573	24.4	3584	12557	2071	1594	1357	1341
5150	"	22.26	23.18	5.1	5.0		2579	7848	775	78	697	20.3	3553	13242	2021	1800	1269	1362
5151	"	23.18	0.13	4.5	4.3		3231	7845	841	70	771	16.3	3990	12698	2035	1834	1140	1443
5152	07.10.80	0.13	0.57	~~6.6~~	~~6.4~~		2541	6374	661	55	606	12.6	2797	11246	1642	1458	880	1326
b 5153	"	2.03	2.36	6.9	6.8		1909	7844	495	150	345	26.6	3684	11729	1742	1223	1565	1479
5154	"	2.36	3.04	6.2	6.0		1626	5888	423	86.5	337	15.5	2750	8315	1245	1019	1189	1184
b 5155	"	3.08	3.47	6.5	5.3		2272	7845	591	83.9	508	19.4	3563	13279	1821	1476	1386	1602
5156	"	3.48	4.31	4.9	4.7		2562	7845	667	74.9	592	17.2	3548	13455	1898	1588	1254	1561
5157	"	4.32	5.21	4.3	4.2		2945	7860	767	69.5	697	15.8	3392	13595	2047	1687	1444	1632
b 5158	"	5.22	5.27	4.3	4.1		314	807	82	6.8	75	1.5	325	1313	230	174	99	179
5159	"	5.53	6.30	6.9	6.9		2177	7840	567	135	431	28.3	3588	11777	1975	1424	1414	1313
5160	"	6.31	6.38	6.7	6.7		341	1184	102	13.2	88.5	3.7	532	1583	304	275	188	185
5161	"	6.39	7.17	5.9	5.9		2247	7843	585	92.3	493	21	3571	12353	1797	1417	1388	1569
5162	"	7.18	7.19	5.9	5.9		27	102	7.3	0.9	6.3	0.3	48	171	22	19	15	21
5163	"	7.20	7.30	5.6	5.7		580	2123	153.4	21.0	132	4.9	904	3269	487	385	339	457
5164	"	7.37	8.21	5.53	5.66		2540	7858	661	74.4	587	17.0	3430	12592	1859	1499	1328	1777
5165	"	8.21	9.04	4.91	4.95		2474	6703	644	73.3	571	12.8	2947	10964	1633	1436	990	1562
5166	"	9.50	10.04	7.0 (at start)	7.1 (at end)		~~2260~~ 8.14	2200	212	35.0	177	14.3	956	920	136	698	24	695
5167		10.04	10.42	6.0	(a)		2659	7324	692	92.5	599	32.5	4341	0	0	1811	1491	1823
5168	"	Run summ. last																
5169	"	run ~~end~~ started, IBM byssy ~ 50 events																

T1 Lumi	<L> x10^30	∫L dt Run	∫L dt	IBM/ Tape	B.P.	Reject Event Fraction	# Bhabha	# Multi-Hadrons	Beam Energy [GeV]	Remarks
			comp 14.27							187
~~778~~	2.05	4.74	18.95	~~F11126~~						New fill
791	1.78	5.45	24.40	F11126 IBM	2.3	2/77	42	1	17.930	
475	1.47	3.00	27.40	"	2.1	2/70	66	1	"	
				~~F22B70~~	~~1.9~~	3/69	22	0	"	5138 not existing
~~435~~				~~IBM~~	~~1.9~~					5139 stopped after few events, because IBM was up again
205	1.19	1.45	28.85	IBM	1.9	3/68	18	1	"	see Summary sheet. Tape of 5139 may be overwritten at next IBM clearin
13	1.22	0.11	28.96	"	1.5	5/88	1	0	"	
4	0.10	0.02	28.98	"	~~2.5~~	—	—	—	"	NORD50 Problems
514	1.34	3.43	32.41	"	2.5	7/71	43	3	"	
~~1828~~	~~1.28~~	1.23	33.64	"	2.3	8/72	16	0	"	
513	1.15	3.43	37.07	"	2.0	3/70	25	1	"	
533	1.16	3.86	40.93	"	1.9	12/69	44	3	"	
249	1.28	1.88	42.81	"	1.7	13/70	10	0	"	
504	1.05	2.14	2.14	"	3.2	4/71	28	0	17.940	
561	1.45	3.66	5.80	"	2.5	7/72	22	1	"	
621	1.50	4.47	10.27	"	2.3	9/69	40	1	"	
629	1.44	4.65	14.92	"	2.0	12/72	34	3	"	
349	0.88	2.24	17.16	"	1.8	"/70	17	1	"	Beams lost.
634	1.68	3.19	20.35	"	2.9	2/69	41	0	"	
516	1.72	2.80	23.15	"	2.6	3/71	26	0	"	
581	1.50	3.40	26.55	"	2.3	4/70	29	0	"	
533	1.31	3.35	29.90	"	2.2	5/67	29	0	"	
565	1.16	3.42	33.32	"	2.0	6/68	30	1	"	
44	0.99	0.51	33.83	"	1.8	9/78	3	0	"	Beams dumped.
660	1.90	4.13	37.96	"	3.0	3/71	37	0	"	
134	2.51	0.98	38.94	"	2.5	5/66	7	0	"	run stopped by hand and some 300ms seen on subsum 703.
643	1.64	3.69	42.63	"	2.4	4/72	39	2	"	
8	1.54	0.04	42.67	"	2.3	6/86	1	0	"	
147	1.40	0.83	0.83	"	2.3	5/81	8	0	17.930	IBM down
500	1.18	2.99	3.82	PRIAM	2.2	4/67	31	1	"	
374	1.02	2.53	6.35	IBM	2.0	6/69	21	0	"	
256	1.75	1.42	5.77	"	3.0	2/72	13	1	"	New fill do not use this run! see page 185
790	1.82	4.83	10.60	"	2.5	162/71	53	3		-T3 removed

LG crate 1 prob. see p 185

LG crate 1 prob.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLL ~~2210~~ ~~1621~~ ~~7477~~	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4	T1 LUMI	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ TAPE	B.P.	REJECT EVENT FRACTION	# BHABHA	# MULTI-HADRON	BEAM ENERGY [GeV]	REMARKS
																					10.60							
5170	7.10.80	11.10			5.59	5.67																		2.1				
5171	"	11.23	11.31	5.3	5.4		326	605	84.9	6.3	78.6	2.5	320	0	0	188	68	43	70	1.43	0.46	~~11.06~~	F22A92	2.0	5/61%	5	0	17.950	
5172	"	11.37	11.37					15															IBM	2.0					
5173	"	11.37	12.24	5.2	5.3		2671	5727	695	58	637	17.1	3406	0	0	1621	1124	1554	488	1.24	3.32	14.38	F22A92	1.9	6/69	33	1	17.950	beams lost ↓ LG crate 1 fixed
5174	"	13.21	13.23	7.20	7.34		40	32	11	1.4	0.8	0.1	25	0	0	10	6	5	1	0.04	0.00	14.38	IBM	3.2	3/100	0	0	"	beams lost
5175	"	14.08	14.31	7.12	7.52		1373	4651	357	261	96	8.0	3000	0	0	360	1496	1146	247	0.36	0.50	14.88	"	3.2	0/66	9	1	"	new filling .. high background dead time ≥ 70%
5176	"	14.39	15.41	5.0	5.3		3697	7821	962	120	842	25.3	4683	0	0	2156	1746	2011	810	1.53	5.65	20.53	"	~2.	6/71	51	1	"	
5177	"	15.41	16.39	4.95	5.31		4329	7854	1126	87.1	1039	20.3	4712	0	0	2490	1487	2043	753	1.24	5.37	25.90	"	1.8	8/65%	37	2	"	IBM problems better
5178	"	16.54	17.00	4.0	4.3		301	539	78.3	4.4	73.9	1.2	287	0	0	162	101	148	52	1.08	0.32	26.12	"	1.6	9/63	4	0	"	IBM problem at end of run, 5-9 OCT
5179	"	17.44	18.37	5.9	6.2		3626	7836	787	111	676	29.2	4684	0	0	1570	496	1782	1020	2.15	6.50	32.60	"	1.8	7/67	70	3	"	ALL T2 figures incorrect .. Dittmann
5180	"	18.38	18.44	5.8	6.1		357	746	92.9	7.7	85.2	2.5	416	0	0	168	38	188	107	2.07	0.74	33.34	"	1.8	11/74	4	0	"	"
5181	"	18.45												T3 ACC	T2 ~~3+k~~														
~~5181~~	"	18.45	19.48	4.8	5.4		3725	7186	969	76.6	899	26.6	4158	4	977	2087	1024	1817	981	1.68	6.25	39.59	"	1.6	11/69	73	1	"	
5182	"	20.20	20.56	6.1	6.4		1822	5842	474	93.3	381	26.0	3648	4	969	1322	1101	1319	562	1.59	2.96	2.96	IBM	2.2	5/67	38	0	17.980	
5183	"	20:58	21:07	5.9	6.2		~~1183~~ 424	1183	111	13.8	967	4.96	698	4	151	319	168	312	122	1.63	0.69	3.59	F22SC2	2.1	6/65	3	0	"	
5184	"	21:07	21:58	5.0	5.2		3642	7847	791	85.6	706	27.7	4695	4	1152	2001	1255	2036	743	1.32	4.02	7.61	IBM	1.9	7/65	34	2		
5185	"	21:58	23:03	4.2	4.3		3878	7849	1009	81.1	928	26.1	4599	0	1114	2272	2272	2111	673	1.07	4.15	11.76	IBM	1.8	10/69	51	0	"	
5186	"	23.06	23.38	3.8	3.9		1900	3126	494	30.8	464	10.1	1938	0	~~1098~~ 504	1098	385	807	225	0.80	1.51	13.27	IBM	1.8	13/72	24	1	"	
5187	8.10.80	0.16	7.09	7.4	7.6		~~7823~~	7821	737	104	633	35.8	4837	0	1150	2018	1344	1766	857	1.72	4.87	13.27*	IBM	2.7	6/67	54	0	(*)	* See log book entry Page 191 ↓ LG crate 1 rule fixed. (see p190 bottom)
5188	"	1.09	2.04	5.97	6.20		3281	7840	854	83.5	770	25.4	4824	0	979	2084	~~2084~~ 1507	1910	735	1.34	4.39		"	2.2	8/67	47	0	(*)	
5189	"	2.05	3.10	5.03	5.23		3871	7837	1008	79	929	22.1	4913	0	1057	2202	1574	1999	589	.90	3.49		"	1.9	10/68	37	1	(*)	
5190	"	3.10	4.13	4.20	4.37		3758	6565	978	62.8	915	16.8	4088	0	824	2048	1216	1788	398	0.65	2.46		"	1.6	11/66	36	1	(*)	Run ended for new fill
5191	1	4:58	5.59	7.67	7.54		3103	7801	808	127	681	29.1	4880	0	1131	2062	1498	1647	882	1.82	5.65	18.92	"	2.7	8/66	51	0	17.960	
5192	"	5:59	7:05	5.87	5.97		3926	7853	1022	727	944	23.	4768	0	922	2228	1492	1854	857	1.47	5.77	24.69	"	2.0	10/67	62	3	"	
5193	"	7:06	8.26	4.80	4.89		4770	7020	1241	74.1	1167	19.7	4947	0	1005	2484	1464	1885	654	0.96	4.59	29.28	"	1.7	13/68	49	1	"	
5194	"	8.27	9.14	3.4	3.5		2804	3290	730	350	694	9.2	2333	0	425	1312	631	998	283	0.73	2.04	31.32	"	1.5	15/68	18	1	"	
5195		10.43	10.47	6.8	7.4		241	840	63	16	47	3.8	526	0	144	214	176	158	82	1.40	0.86	31.67	"	2.7	5/72	3	0	"	
5196		10.53	11.39	5.7	6.2		2744	7525	715	99	616	30.3	4862	0	959	1785	1453	1746	865	1.52	4.18	35.86	"	2.5	6/65	42	0	"	
5197		11:39	12:41	4.6	5.1		3481	7316	906	81	825	22.6	4837	0	1027	2094	1244	1703	934	1.45	5.05	40.91	"	2.3	9/70	36	3	"	
5198		12.41	13.34	4.6	5.0		3115	5253	811	53	758	12.1	3203	—	644	1609	849	1323	560	1.06	3.31	44.22	"	2.3	12%	49	1	"	
5199		15.39	16.27	5.9	6.1		2842	7827	739	108	631	28.7	4944	0	~~4917~~	~~1828~~ 1776	1776	1745	779	1.55	4.40	48.62	IBM	2.8	6%	34	3	17.960	
5200		16.28	17.24	4.9	5.01		3387	7840	881	78.8	802	21.7	4745	0	939	1975	1621	1939	831	1.58	5.34	53.96	IBM	2.1	8%	45	3	17.960	
5201		17.25	17.48	4.91	5.08		1348	2796	351	26.2	325	6.9	1730	0	345	808	540	664	276	1.23	1.66	55.62	IBM	2.0	9%	14	2	17.960	Beams Lost.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS. ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 ≥ 2 TOF LG>1 ≥ 1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L} dt$ Run	$\int \mathcal{L} dt$	IBM/ Tape	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

12.10 Inner chamber trips

12.25 Beams lost, I.D. trip

13.20 beams for 3 min, then lost.

14.20 back ground level is very high → dead time ≥ 70%
B.p. ~ 3.1-3.5, chamber current 5μA in a few cells. I.D. anodecurr

Vertical bumps cured background.
Then they decreased the RF power by ~ 70kW/emitter. This did not deteriorate conditions.

15.35 During the whole day many "IBM BUS4"
Installed T2 trigger bit readout.

15.58 JDAS ERROR 44 SUBERR 504 (Timeouts ?ETC)

16.00 Matsumura + Hassard

17.41 ID trip

18.30 Histogram reveals hole in Jet chamber: Rise gone, Matsumura replaces it.

18.45 Runs 5179, 5180 T2 figures incorrect. (Dittmann)

19.00 N50 - program changed a) Trigger bit histogram folded with corresponding T2 accept bit
⟹ 3 TOF trigger (b.in 7) now correct
b) 3 TOF bit on allowed in COSMIC rejection
⟹ COSMIC reject rate will ~~go up~~ increase somewhat.

20.20 Matsumura predicts ID will trip soon.

20.22 ID trip (reset OK) Cosmic reject rate unchanged (within 1%)

20.46 JDAS S6 suberror 405 TOF bank wrong length.

20.59 Run 5183 taken to tape F22SC2

22.43 JDAS S6 suberror 423

22.53 Jet Chamber has a hole in wiremap - wires 640-655 V34 fuse blown. Replaced.
Lead glass has a hole in hit map ~ ~~1050-1060~~ 1049-1061; Kananiya will investigate.

23.50 Histgram of LG barrel-1 has a hole. From Oct 1.
Something wrong with new calibration ?? (12 channels) ← not ADC not HVDST.
bad cable connection. fixed (from run 5187) S.K.

8.10. 0:00 Stephens + Klein on shift

0:15 New filling ready, but when trying to improve background conditions, the PKR decreased energy a bit (to ~ 14.4 GeV). All 3 experiments agree to continue with this (quite good) filling but not to count the Lumi for the scanning point 17.96

0:45 JDAS ERROR 53 Sub Error 140204

0:46 I.D trip (HV. Sparking Ring 3) pause run

0:52 Continue
Histogram check:
Trig 1 output why in TOF matrix missing.
What is Hole in Trig1 output. Now we know it (see page 180)
Jet Chamber Anode currents - shows wrong structure - probably a CAMAC readout error (OK. on scopes) . See comment on page 1 of book V Reg

1:09 Run 5187 ends.

1:09 Run 5188 started

1:40 LG-thresholds adjusted

2:45 Tasso still wants to keep this filling because they have problems and the expert just arrived

3:32 JDAS Error 56 Suberror 000405 → TOF bank wrong length.

4:03 TASSO wish to refill as soon as possible — after a coffee Help!!

5.05 Run 5191 paused after ~100 events for around 2 minutes, ~~because~~ to run down I.D because of high background

5.10 High background fluctuations again, phone to PKR and they improve our background conditions
JDAS ERROR 44 Suberror 703

8.00 Totsuka + Steffen on shift

8:20 Tasso calls, wants to fill in half an hour. We agree.

8:50 " PKR computer is now in bad shape. Filling will be postponed till the computer is cured.

10:00 found that the pulse width of T0 (displayed on the scope) is fluctuating periodically. (Crate overloaded pulled out some units. BN.

10:30 IBM printer 53 (OCT)

10.50 Ch 18 Forward μ-counters dead, ~~try to change Quad~~
PM draws too much current. Cable disconnected. HV ok again.
So one more hole in the FWD μ histogram.

12:17 ID tripped. - overcurrent -

16.00 8/10/80 Bartel / Pearce on shift.
Run 5191 Ended. Note 1 TOF ADC is dead.

RUN	DATE	START	STOP	I^+	I^-	Vac	TIME (sec)	NORD EVTS ACC	ALL TRIGGERS $\times 10^6$	TO REJECT $\times 10^6$	TO ACCEPT $\times 10^6$	T1 ACCEPT + POSTPONE $\times 10^6$	T2 ACCEPT	T3 REJECT	T3 ACCEPT	T2 COLLIN	T2 $\geq$2 TOF LG>1 $\geq$1 TR	T1 LG>4	T1 Lumi	$\langle \mathcal{L} \rangle$ $\times 10^{30}$	$\int \mathcal{L}\,dt$ Run	$\int \mathcal{L}\,dt$	IBH/ Tone	BP	rejected Event Fraction	# BHABHA	# MULTI-HADRON	Beam-Energy [GeV]

16[to] TOF-ADC 43 or 44 overflow call Brett
Observe that on run summary print out we have 2 TOF COLL 1 TR - T3 entries.
However 0 T3 accept. Call Dittmann: He says probably bug in his program
however not severe. Nothing to worry about

Tagging LG block which was spiking on run 5199 returns to normal
on run 5200 when Herring enters control room.
Run 5200 Ended.

17:25 new Tagging chamber TDC module replaced - this should remove a spinning section which should never have data! DCBorrill
Run 5201 started

17:48 Beams lost - water sensor trip. PKR now searching for water

As this book is full, we will move on to the next book for the new energy and filling.