

ISR PERFORMANCE REPORTRun 251, R1/R2, 11 GeV/cRunning-in of the B.P.M.S. in the "single turn" mode

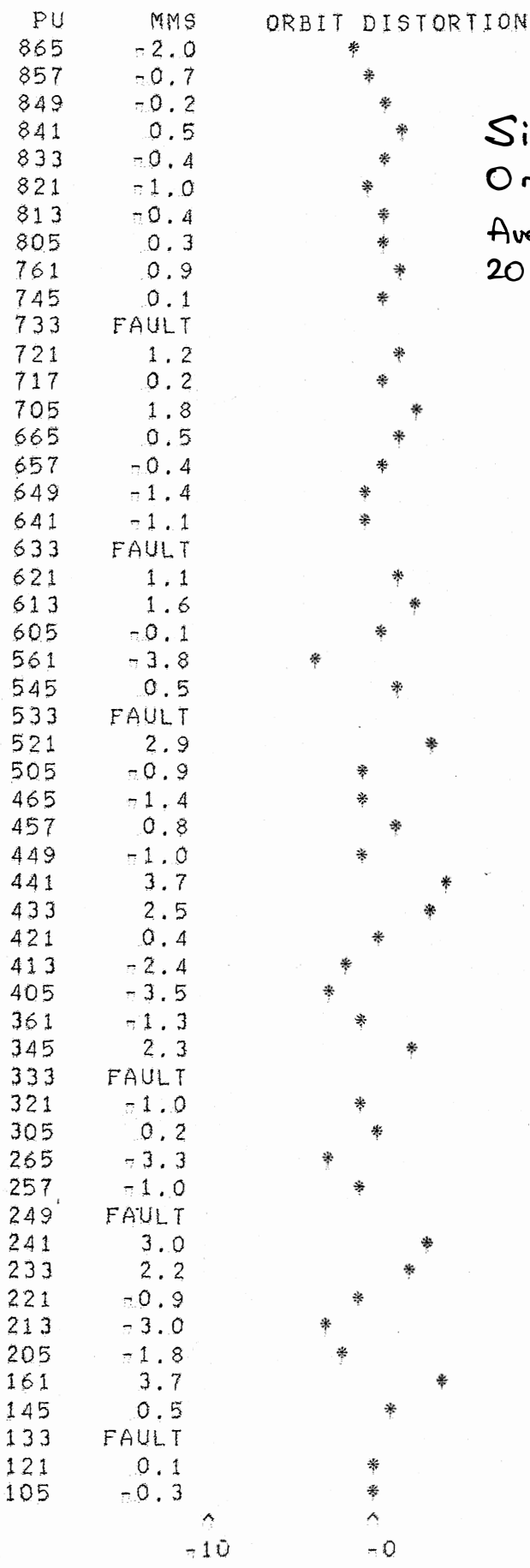
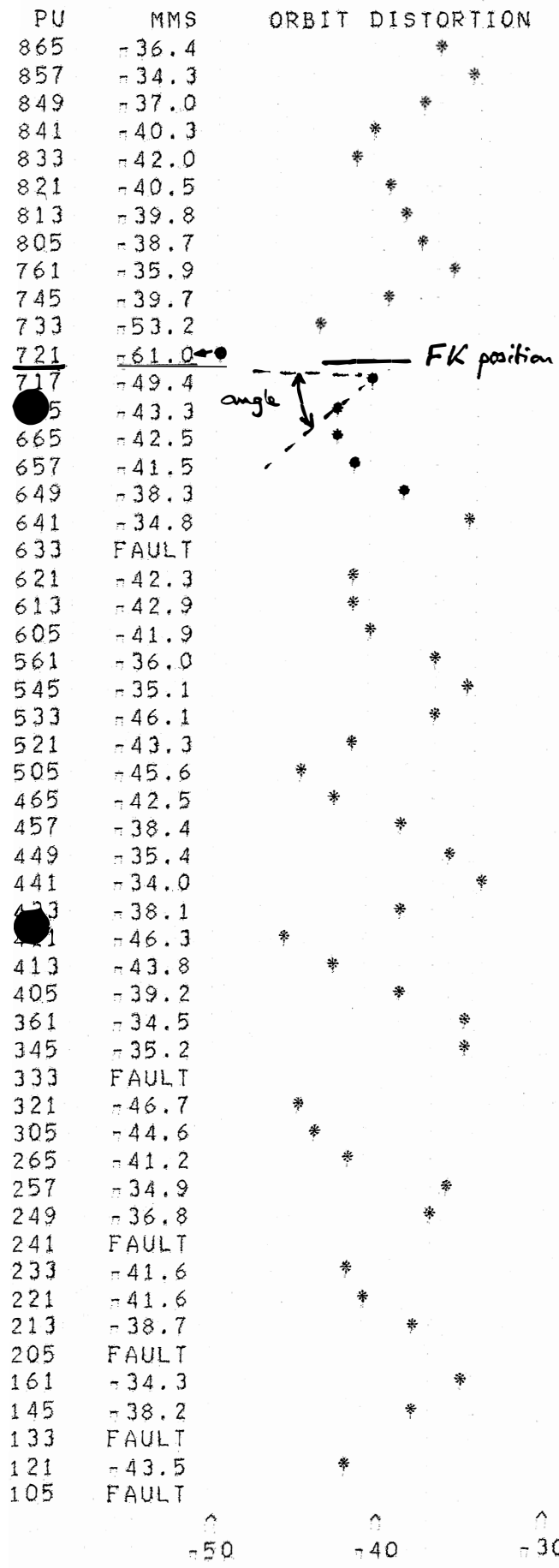
The purpose of this machine development time was to check the timing of the system. Due to a leak in the ISR we had only part of our time and we were able to check the system in two A Buildings only. In these Buildings the timing is o.k. We tried also to measure the first turn orbit in R1. The injection tuning was very poor at that time and gave the plot of Fig. 1. One sees the betatronic oscillation very well. On P.U. 721 one sees the position of transfer line trajectory (last measurable point of the transfer line). The F Kicker being between P.U. 721 and 717, the P.U. 717 reads the first ISR trajectory point. One also sees well the radial injection error (mainly angle). The betatronic oscillation is about 10 mm pp. The Injection Optimisation program was applied and the first turn orbit was measured again: Fig. 2. One sees clearly the improvement. This orbit, besides the reading of P.U. 721, should now be the same as the average orbit measured in "average" mode: Fig. 3. One can see that the fit is quite good, taking into account that the signal processors in "single turn" mode are not yet fully calibrated. This trial shows that the "single turn" mode of the B.P.M.S. is a very useful tool to the operators to visualise the injection error.

Conclusions

This experiment, not yet fully completed, confirms the feasibility of an automatic injection tuning based on B.P.M.S. data collection. A program has been written by D. Kemp, based on a Keil proposal, and is waiting for running-in. Therefore we need machine time urgently to finish the check of the hardware and software and to make this system operational. We would like to introduce it as soon as possible in order to gain some operational experience before the December shut-down.

FILE:PUSQ,PE
 RING 1 HORIZONTAL PLANE
 DATE:721113 TIME:200643
 MOMENTUM(GEV/C)= 11.7800
 DP/P= -0.0216

FILE:PUSQ,PE
 RING 1 VERTICAL PLANE
 DATE:721113 TIME:200643
 MOMENTUM(GEV/C)= 11.7800



Single Turn
 Orbit
 Averaged over
 20 injections.

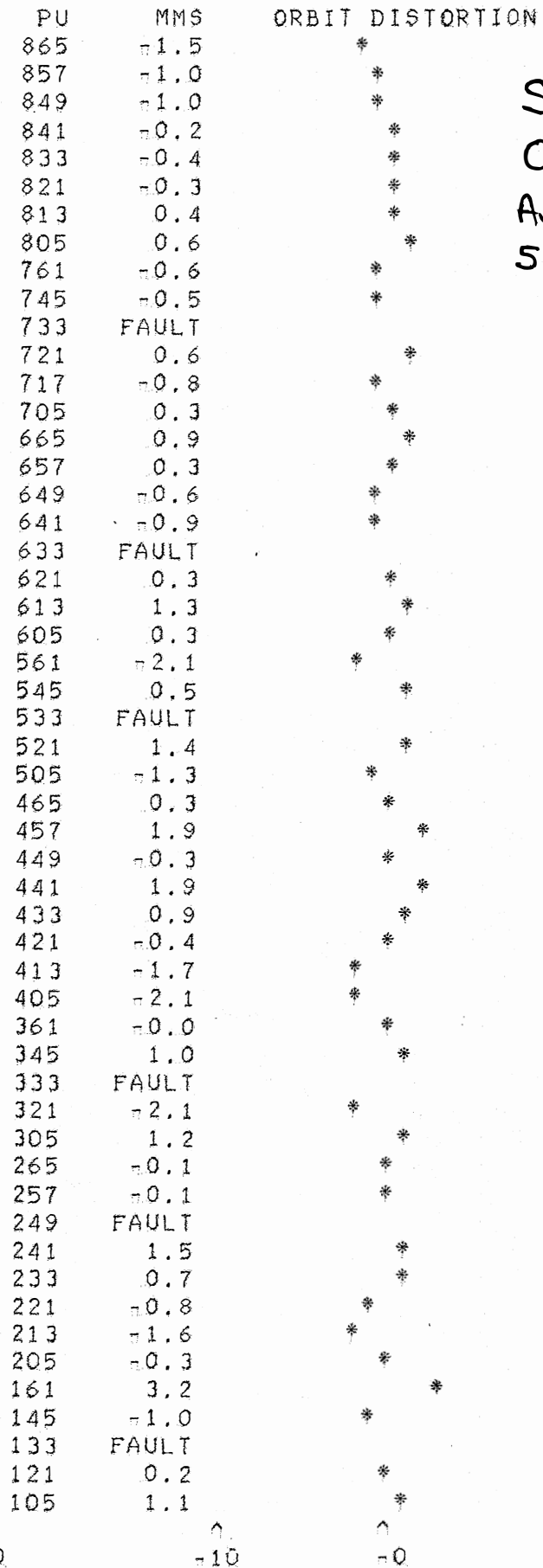
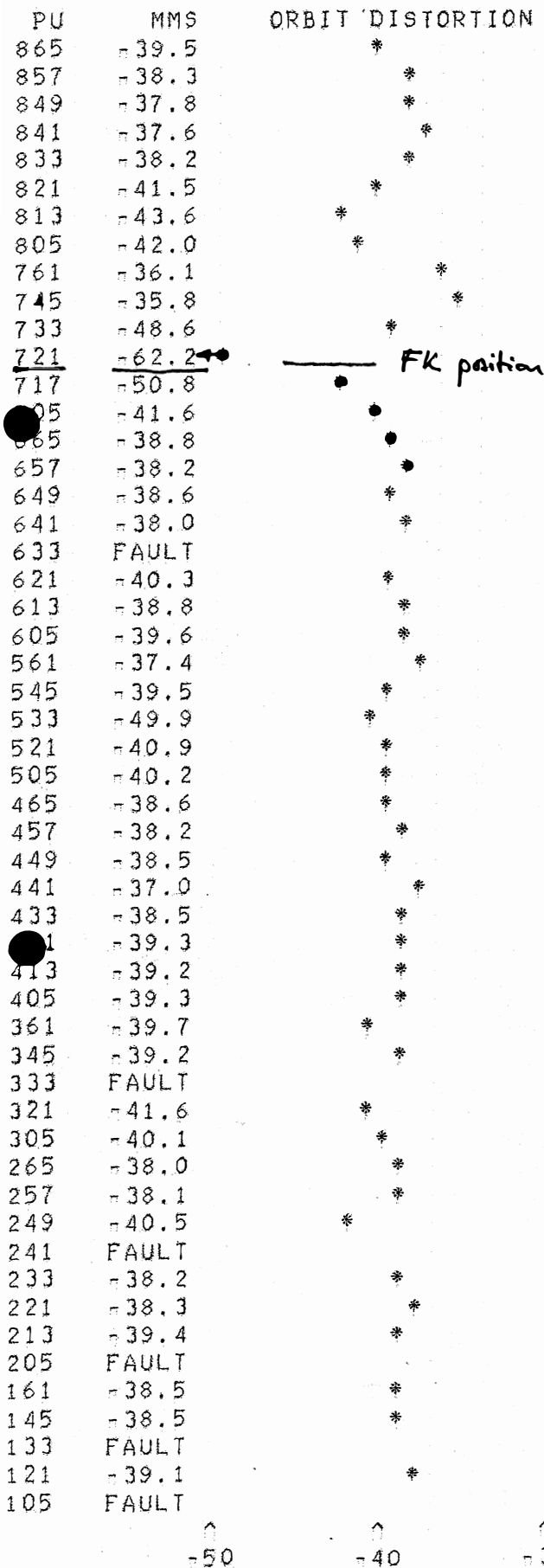
AVERAGE ORBIT(MM)= -40.3
 R.M.S.(MM)= 4.3
 PKTOPK(MM)= 25.1

AVERAGE ORBIT(MM)= -0.0
 R.M.S.(MM)= 1.8
 PKTOPK(MM)= 7.5

Fig. 1

FILE:PUS0,PE
 RING 1 HORIZONTAL PLANE
 DATE:721113 TIME:201816
 MOMENTUM(GEV/C)= 11.7800
 DP/P= -0.0214

FILE:PUS0,PE
 RING 1 VERTICAL PLANE
 DATE:721113 TIME:201816
 MOMENTUM(GEV/C)= 11.7800



Single Turn
 Orbit.
 Averaged over
 5 injections.

AVERAGE ORBIT(MM)=-39.9
 R.M.S.(MM)= 3.4
 PKTOPK(MM)= 25.0

AVERAGE ORBIT(MM)=-0.0
 R.M.S.(MM)= 1.1
 PKTOPK(MM)= 5.4

Fig 2.

RING 1 HORIZONTAL PLANE
 DATE:721113 TIME:173151
 MOMENTUM(GEV/C)= 11.7800
 DP/P= -0.0216

RING 1 VERTICAL PLANE
 DATE:721113 TIME:173151
 MOMENTUM(GEV/C)= 11.7800

PU	MMS	ORBIT DISTORTION
865	-40.3	*
857	-38.3	*
849	-38.3	*
841	-38.1	*
833	-38.8	*
821	-42.2	*
813	-43.9	*
805	-42.7	*
761	-37.4	*
745	-38.6	*
733	-49.6	*
721	-43.5	*
717	FAULT	
705	-42.3	*
655	-38.9	*
657	-39.1	*
649	-39.2	*
641	-38.3	*
633	FAULT	
621	-40.6	*
613	-40.2	*
605	-39.9	*
561	-38.1	*
545	-39.8	*
533	-50.7	*
521	-42.5	*
505	-40.3	*
465	-38.2	*
457	-39.8	*
449	-39.3	*
441	-38.3	*
433	-38.7	*
421	-40.0	*
413	-39.8	*
405	FAULT	
361	-40.1	*
345	-39.8	*
333	FAULT	
321	-42.8	*
305	-40.9	*
265	-38.5	*
257	-38.8	*
249	-41.6	*
241	-40.5	*
233	-38.7	*
221	-38.6	*
213	-40.8	*
205	-43.0	*
161	-39.6	*
145	-39.2	*
133	-47.1	*
121	-40.1	*
105	-43.2	*

PU	MMS	ORBIT DISTORTION
865	-1.8	*
857	-0.7	*
849	-0.7	*
841	-0.2	*
833	-0.5	*
821	-0.4	*
813	0.2	*
805	0.3	*
761	-0.2	*
745	-0.7	*
733	0.1	*
721	0.9	*
717	-0.3	*
705	0.7	*
665	0.7	*
657	0.5	*
649	-0.7	*
641	-0.6	*
633	FAULT	
621	0.8	*
613	1.1	*
605	0.2	*
561	-2.5	*
545	0.6	*
533	1.0	*
521	1.9	*
505	-1.5	*
465	-0.2	*
457	0.2	*
449	-0.2	*
441	2.2	*
433	1.4	*
421	0.4	*
413	-1.7	*
405	-1.7	*
361	-0.2	*
345	1.5	*
333	FAULT	
321	-2.3	*
305	0.9	*
265	0.4	*
257	-0.1	*
249	1.5	*
241	1.4	*
233	0.5	*
221	-0.8	*
213	-2.0	*
205	-0.6	*
161	3.5	*
145	-0.7	*
133	-0.9	*
121	0.2	*
105	0.6	*

Average Orbit

AVERAGE ORBIT(MM)= -40.2
 R.M.S.(MM)= 1.3
 PKTOPK(MM)= 5.6

AVERAGE ORBIT(MM)= 0.0
 R.M.S.(MM)= 1.2
 PKTOPK(MM)= 6.0

Fig. 3