

IMPROVEMENT REPORT NO. 111

Mr. Volker RODEL

E-7

Commissioning of the North Extraction Channelon 29th September 1977

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1. Summary

The North extraction channel was successfully commissioned. A fast resonant extracted beam could be observed near the centre of the first luminescent screen in TT 20 on the first shot. The emergency dump system and all detectors in the extraction channel were tested and proved to work correctly. Minor hardware faults which did not disturb the extraction have been repaired in the meantime, thus making the North extraction channel fully operational.

2. Procedure and main observations

The test was done on a 6 sec 200 GeV cycle which was optimized during the second MD session after period 7. A fast half-integer extraction at  $Q_H = 26.5$  was set up on the flat top using the extraction quadrupole QE 1360 and the octupoles LOE 4340 and LOE 5020. A corresponding scheme had been used for the first operational fast resonant extraction to the West (SPS Comm. Report No. 57).

Fig. 1 shows the fast spill as observed by BSI 21 02 11. Note that the different SPS revolutions can clearly be distinguished.

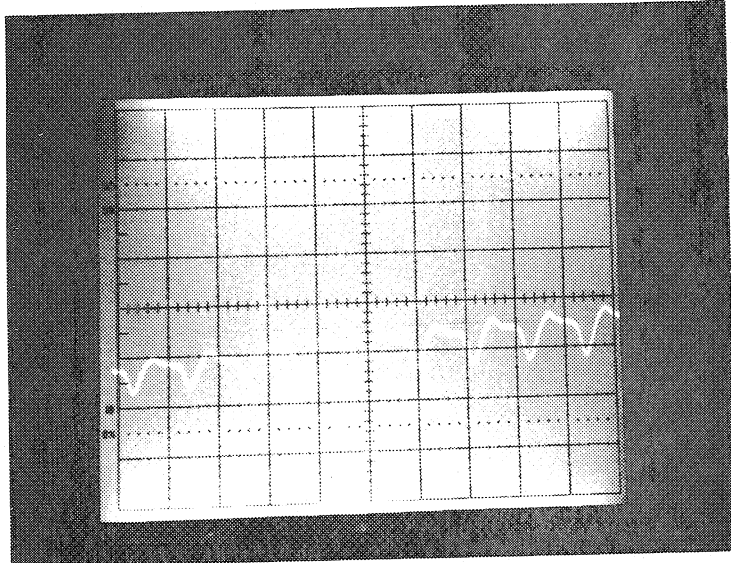
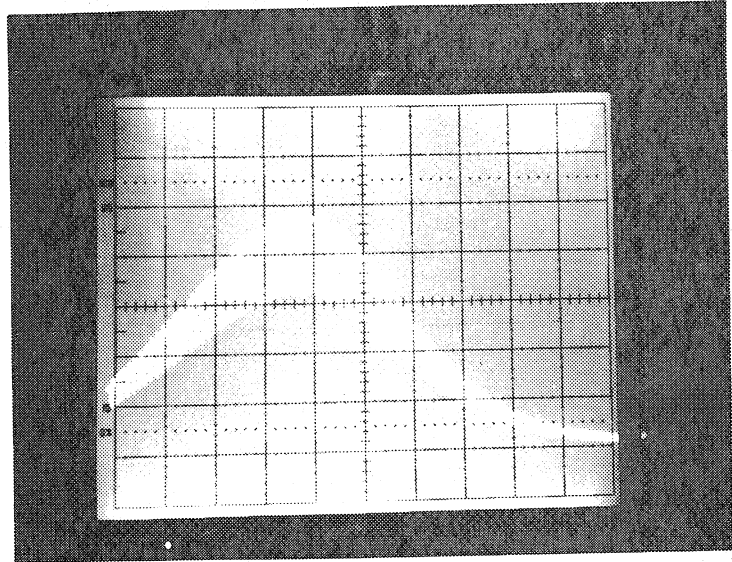
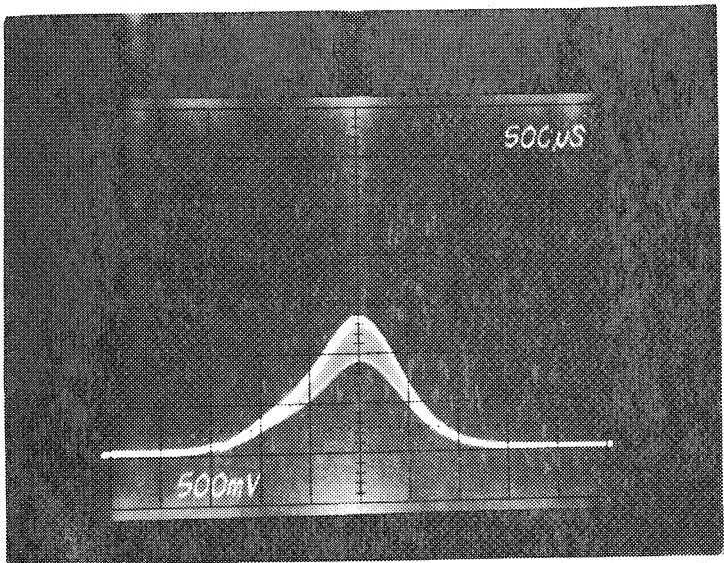
A comparison of Fig. 2 with Fig. 9 of SPS Comm. Report No. 57 proves that the density distribution at the electrostatic septum was the same for both, North and West extraction.

Fig. 3 and 4 show characteristic beam profiles at the North extractor magnet.

### 3. Acknowledgements

Many members of the SPS Division had to work hard to enable the commissioning of the North extraction channel at such an early stage. The authors would like to thank all of them.

Reported by: K. H. Kissler



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Fig. 1 - Fast half-integer spill to the North observed by BSI 210 211

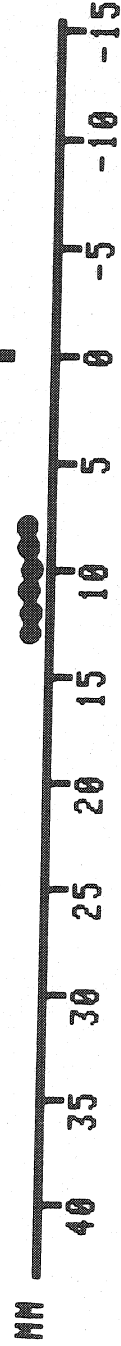
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BBSH 21638

YMAX = 2.88 V

MEASUREMENT TERMINATED

ZS



POSITION

START -2.0  
STOP 13.2

TIMING

START 1 \ 2000 MS  
STOP 4 \ 5020 MS

NO OF STEPS 15

NO OF CYCLES/STEP 1

67931

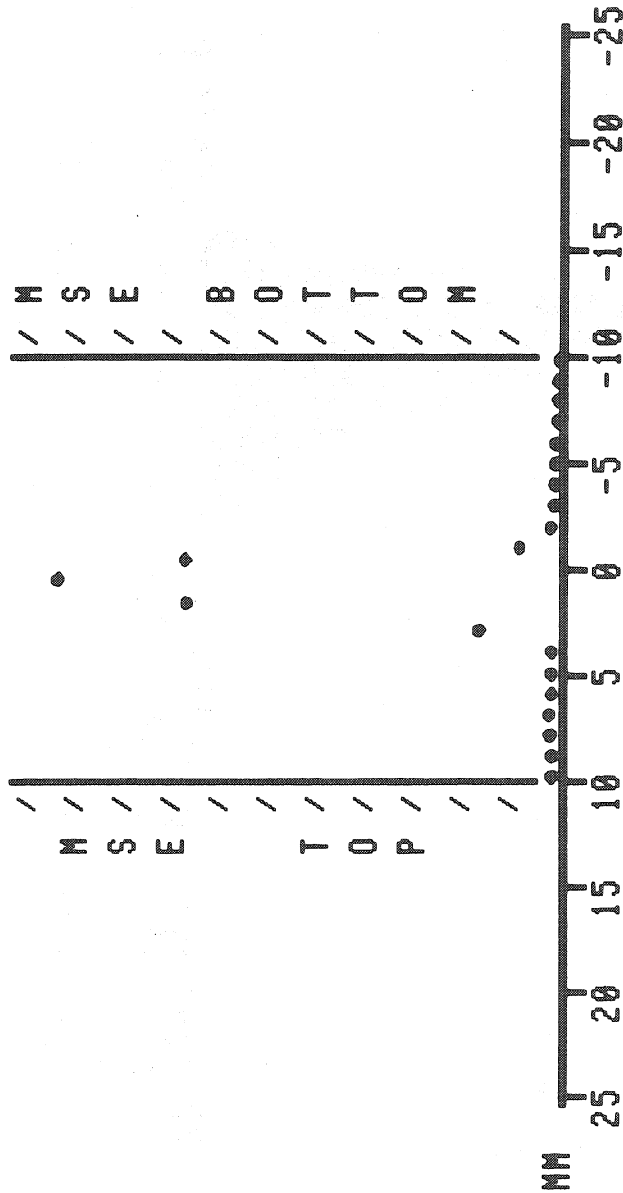
Fig. 2 - Density distribution at the North electrostatic septum

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BBSV 21836

VMAX = 4.96 V

MEASUREMENT TERMINATED



POSITION TIMING  
 START -1.0000000E1 TART 1 \ 2000 MS  
 STOP 10.0 STOP 4 \ 5020 MS  
 NO OF STEPS 20 NO OF CYCLES/STEP 1

67932

Fig. 3 - Vertical profile of the extracted beam at the North extractor magnet

BSGH 21856

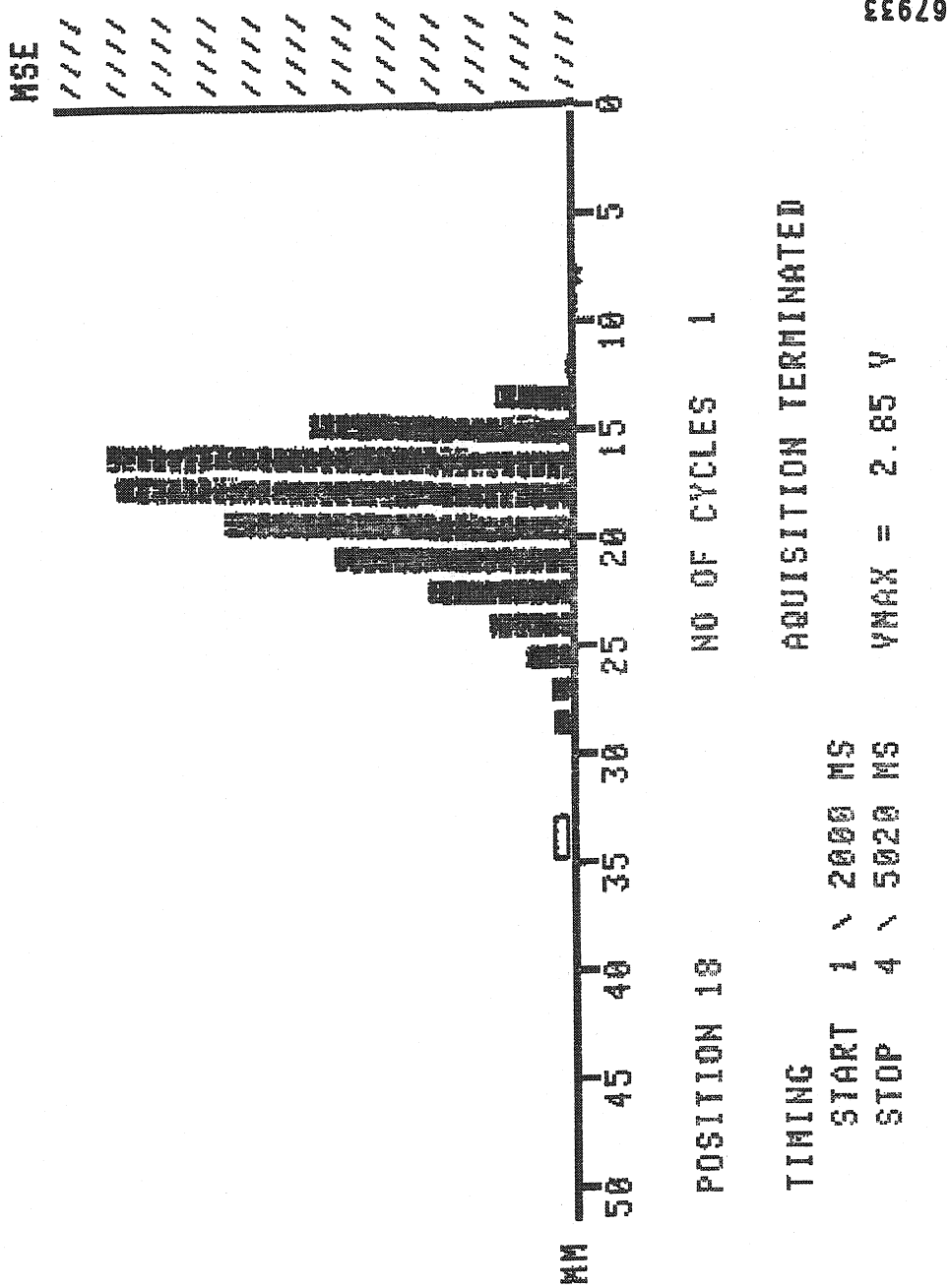


Fig. 4 - Horizontal profile of the extracted beam at the North extractor magnet