

9.6.1982

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INSTALLATION OF NEW FERRITES ON PRECOOLING SYSTEM

The shut-down time required for that installation has become a major issue in the discussions on the 1983 schedule. Over the last days I have gathered information and considerations listed below. This should help us to find the best planning for that activity and defend it, as is unfortunately necessary for all improvements requiring down-time, in the forthcoming scheduling discussions.

① Why change the ferrites ?

- The bandwidth of the precooling system is 150 - 500 MHz. However, already from 200 MHz upwards, the losses in the ferrites increase and the coupling to the beam therefore decreases. The resulting low signal/noise ratio leads to power saturation.
- Since the beginning of this year, Philips has developed a new type of ferrite, promising good performance over the full bandwidth.
- The improvement factor that may be gained with better ferrite depends on the number of \bar{p} injected at every pulse. With the present $\sim 6 \times 10^6 \bar{p}$ pulse a factor 1.2 may be gained at the very best: higher trapping efficiency and/or higher accumulation efficiency with smaller bunches (less upwards diffusion into the shutter).
After the summer 82 shut-down, the new target+horn assembly may gain us a factor 1.3 in \bar{p} yield, another factor 1.2 may come towards the end of the year through higher PS intensity. The precooling is then much more limiting and the improvement factor due to better ferrites consequently higher, maybe 1.5. In other words, the above improvements come to bear only with the new ferrites.

② Situation

- Samples of new ferrite will arrive ~ 20 June.
- Lars T. counts 2 months at 100% for tests and specifications.
- Delivery of ferrites 5½ months from placing of order.
- Ferrites will arrive too late for installation in Jan/Feb 83 shut-down.
- Alain P. can put at most 8 people on the job and they can change the ferrites in 6 weeks. Demounting + reinstallation + base-out is another 2 weeks.
- We need an 8-week shut-down later in 83, preferably July/Aug 83. (holidays, thunderstorms, preparation for next p run in autumn 83) -
- Physics directors have shown strong unhappiness about a mid-83 8-week shut-down.

③ Some ifs and buts

- Alain P. would like to have ferrite change and precooling slides in Jan/Feb 83 shut-down. Reason: that half of ring will be opened then and new shutter-pivots installed on KPM 9. Base-out necessary anyway.
- Maybe, one could get Phillips to deliver half of the ferrites by end Dec 82, other half later (June). Then one could fulfill Alain's wishes and shorten summer 83 shut-down (to ~ 5 weeks).
- For this, Lars would have to drop his work for LEAR, i.e. cannot finish it this year. Also, Fiebig would have to be mobilized, i.e. be withdrawn from LEP injector work.
- Changing slider ferrites and PU ferrites at different times, requires new electronics + matching PU/slider twice, instead of only once. About 2 weeks of Lars' time wasted. Also more total shut-down time needed.

- Changing the ferrites is a chain-kind of work. Hiring contract labour, couldn't one envisage 2 shifts per day, if the limiting factor is really the number of people who can work simultaneously.

Distribution

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