

Summary of the LHC Main Ring Committee [MARIC] meeting held on 20 January 1999

Present: W.Erdt, L.Evans, P.Faugeras, P.Frandsen, J.P.Gourber, O.Gröbner, J.P.Koutchouk, P.Lefèvre, Ph.Lebrun, D.Leroy, M.Mathieu, A.Poncet, P.Proudlock, G.Riddone, P.Rohmig, H.Schmickler, R.Schmidt, N.Siegel, P.Sievers and T.Taylor

Main topic: Arc cryostat heat loads and active screen
Future programme for MARIC

1) General Information

T.Taylor: In future MARIC meetings J.P.Koutchouk will represent SL-AP, and H.Schmickler will represent the other groups with LHC activities of the SL Division. **M.Mathieu** will not only represent the EST design office, but also the other groups with LHC activities in EST.

L.Evans proposed to improve the information on the LHC Project for the general public as well as for CERN staff and users. The WWW pages will be improved, and more articles about the progress of the LHC project will be published in the Weekly Bulletin. All groups are asked to contribute to such effort with proposals for articles. LHC Project Seminars will be organised for the information about the LHC non-specialists. **H.Schmickler** proposes to organise a seminar about the LHC activities of the SL Division in the near future. **R.Schmidt** proposed to organise common LHC Project/SL Seminars in the SL Auditorium with topics of LHC related activities of the SL Division.

L.Evans remarked that an enormous effort went into the assembly of the 15-m long prototype dipole magnet that should be tested before PAC. To keep the time schedule, he expects that the other group being involved will continue to keep up this effort. – A new committee (INB committee, chaired by **G.Rau**) will discuss the conformity of the LEP dismantling and the LHC installation with the French rules. – The reuse of LEP equipment needs considerations and will be discussed in one of the next MARIC meetings. **J.P.Gourber** has been asked to study the implications of a LEP type machine with maximum 60 GeV beam energy installed above the LHC ring. **Ph.Lebrun** announced a new working group on the impedance budget, chaired by **F.Ruggiero**. Market Surveys and Call for Tenders for the period of April-July 1999 should be announced until 27th January.

2) Interface Issues

PLC (P.Lefèvre): In the next PLC the exact parameters of corrector magnets and room temperature magnets will be discussed, in order to move towards a coherent set of parameters. The PLC aims to publish a coherent set of parameters for optics version 6.0 on the Web, although some modifications for version 6.1 are already being envisaged. The cleaning insertions are under study.

Technical Co-ordination (P.Faugeras): In order to better define the space occupation for the preparation of the cryomagnets around SM18 and PMI2 (the construction area at the end of the Meyrin site) a new working group has been established, which will report to MARIC and TCC. The working group shall define all operations to be performed on a magnet from its arrival to the installation into the tunnel. MMS and ICP are requested to propose somebody to represent their group in the WG. - **R.Saban** is preparing a new version of the PBS after the discussions with all groups at the end of last year. The first implementation is expected for end next week.

EST-Support (M.Mathieu): Following the formal request sent on 23/09/98 to Division and Group leaders of LHC, PS and SL Divisions, **M.Mathieu** compiled an overview of the requests for the three years to come.

About 95 senior draughtsmen and draughtsmen are requested for the beginning of 1999 (see slide EST2), and the predictions are about 70 for 2001. This includes only those producing mechanical drawings and listed in HRT as EST-ESI or ESM groups members (see annexed graphs). About 60 % are working on the LHC project. According to figures of January 1999, a number of 80 persons are producing drawings in the EST Division on the CERN site. The complement needed to satisfy the number of 95 persons should be using the three External Contracts (SENER in Spain,

TECHWORK in UK, and ACROTECNA in France). These contacts can afford each a workload up to 6 men-year.

An EXCEL spreadsheet indicates the main task of each member of the drawing office and the name of the Project Engineer in charge (see on the NICE network: **M.Mathieu**/PUBLIC/PROJ0199.XLS). The file is updated every month. Comments should be sent to the author. **M.Mathieu** insisted that a complete and precise technical specification for each job request is required, in order to avoid waste of time and resources.

SL-Division (H.Schmickler): In the SL Division three groups are working on RF systems: a group for the SPS and LHC RF system (**T.Linnecar**), a group for the LEP2000 RF (**G.Geschonke**) and a group for technical aspects of cavity production (**E.Chiaveri**). The interfaces between the LHC groups and the RF groups need clear definition; in particular the LHC vacuum and cryogenic groups are concerned. The organisational structure of the different Divisions will be presented soon to the TCC.

3) Heat load for the arc cryostat: do we need an actively cooled screen? (**A.Poncet**)

The cryostat thermal model (CTM), reconfigured with the latest developments (cold supports, MLI, suppression of cryogenic headers, including the option of a hard, actively cooled 5 K thermal shield), has been used in 1998 to measure the standard arc cryostat heat loads. The results confirmed the expected performance of the 5 K shield, which can be expected to pay for itself in 8 to 10 years of LHC operation. In parallel, the thermal performance of components such as cold supports, MLI blankets and instrumentation capillaries was measured in the cryolab. With the experimental results the estimate of the arc heat loads was revised. There is still ample operational margin in all-possible LHC configurations, even without the use of a 5 K actively cooled shield. **In order to limit the investment, and for reasons of simplicity it was proposed to retain the Yellow Book reference design without an actively cooled 5 K shield. MARIC endorsed the proposal.**

Discussion: The measurements made clear that the superinsulation is less efficient as it has been expected from results obtained earlier. **Ph.Lebrun** proposed that one should study this issue and possibly to reconsider its design. **A.Poncet** said that the Call for Tender for the superinsulation is foreseen for the end of the year. **P.Rohmig:** the impact of the new baseline design for the prototype SSS, which presently features actively cooled screens, will be studied, in particular on the vacuum barrier cryostat interfaces. Since the SSS cryostats are under fabrication no change is proposed. **The issue will be discussed in the SSS-WG. For the review of the dipole cryostats an actively cooled screen will not be considered.**

4) Future program for MARIC

- Report from **D.Leroy** about the activities on sc-cable and wire tests (around Easter)
- What components from LEP can be reused for the LHC main ring?
- Report from the Instrumentation Working Group (**R.Schmidt**), next meeting
- Status of the collaboration with the French institutes on SSS
- Status report from the SL magnet group on resistive magnets
- 6 kA bus bars for the LHC: design and qualification
- Beam-screen support inside the cold bore (before next MAC that is 31/5-6/6)
- Outcome and decisions after the review on arc cryostats
- Outcome and decisions after other reviews
- Specifications for series test benches
- Vacuum piping in the areas without beam screen

Please propose other subjects for discussion either to **T.Taylor** or **R.Schmidt**

