Collimator Design Meetings

Minutes of the meeting 51 (25/11/2004)

Present: Assmann, Bertarelli, Calatroni, Hänni, Kadi, Kershaw, Mayer, Perret

Minutes # 50: No remarks on previous minutes

RF CONTACT FINGER DESIGN

1. Ralph informed that, in the absence of F. Ruggiero, he contacted F. Kaspers to discuss about the RF design choices. Fritz asked Ralph to get in touch with Erk Jensen to perform 3D calculations, which, anyway, would take several weeks!
2. Ralph also stated that in his view no major change on the RF concept should be made as during the tests, the RF system proved to be ok! The only change should affect the contact resistance at the jaw ends which is still too high.
3. Sergio informed that he checked with Vasilis the energy deposition on all IR7 collimators: only the "hottest" collimator (TCSGA6L7) seems to be really posing a problem for heat evacuation of RF fingers, the others showing much lower energy levels. Therefore the design modifications in this regard could be limited

MANPOWER IN DESIGN OFFICE

1. Manfred informed that an additional designer, helping Roger, will be available by January 2005.

NEWS FROM FINANCE DEPARTMENT

1. Enrico being absent, no answer was given. Ralph shall contact Enrico to verify the situation.

LIST OF MISSING DATA TO FINALIZE MECHANICAL DESIGN

1. Roberto was absent so no new element could be given.
2. In order to answer as many questions as possible concerning the electronic equipment, Roberto should give a presentation at next design meeting.
3. Step-motor torque: Roger prepared and provided the drawings of the torque measure mechanical device to P. Françon.
4. Displacement sensors: according to Ralph only 2 sensors per collimator shall be installed for phase 1. Roberto shall decide which sensors to use.
5. Temperature sensors: all sensor probes (8) are necessary and must be foreseen.
6. Acoustic sensor: no answer available yet. Roger will foresee a dedicated threaded hole to possibly mount the sensor support.
7. Water plug-in: with a radiation dose of 10 MGy, it is very hard to imagine installing a quick water connection which necessarily adopts elastomeric seals. The alternative solution is a hose, some meters long with a quick connection at its end hanging from the collimator. Roger stresses that this would greatly complicate the handling and installation of the collimator. It is proposed to invite Daniel Gasser from TS/CV to take a final decision.

AOB

1. K. Kershaw gave a short presentation on collimator handling for installation and removal. A sketch of a handling vehicle was presented. This vehicle was conceived to move in the tunnel and not to pass through chicanes protecting shielded areas. More details can be found in CollHandlingKK(041125).pdf
2. Collar flanges in AISI 316LN: Raymond shall check with JM Jimenez about quantity and availability of flange forged blanks for flanges (**action** Raymond).
3. Thickness of plates for collimator tank: machining test are ongoing to compare residual deformations of machined pieces from 25mm treated plates and 20 mm raw plates. Results should be available by next week. If 20mm raw plates performs well, 18mm blanks will be ordered.
4. Agreed priority list for collimator drawings:
    a. TCP/TCS final dossier

b. TCS/TCP supporting system
c. TCT/TCLI preliminary drawings
d. TCDI drawings

ACTION LIST to be followed up:

Divisional request for motors MS	#31	Oliver, Fabrice, Stefano
Contact fingers – model for tests top and side	#34	Sergio, Roger
Play between motor spindle and jaw	#34	Roger
Non-symmetric heating of vacuum flanges	#34	Vasilis, Oliver, Miguel, Rathjen
Radiation issues – heat evacuation, air duct, space, shielding		Ralph
Detailed information on electrical plug-in and sensors (**URGENT**)	#45	Roberto
Detailed information on water plug-in (**URGENT**)	#45	Manfred
New Fluka simulation for 7TeV accident case	#47	Vasilis
Updated calculation on beam optics during transient	#49	Ralph
Acceptable RF design by RF people	#50	Ralph
Check about alignment system requirement (**URGENT**)	#50	Ralph, Oliver, J-P Quesnel
Radiation dose on electrical components (**URGENT**)	#50	Vasilis, Roberto
Availability of flange blanks	#51	Raymond

COLLIMATOR HANDLING FOR INSTALLATION AND REMOVAL

RADIATION IMPLICATIONS

- NEED TO ENSURE HANDLING OK WITH MINIMUM OR NO HUMAN INTERVENTION – SIMPLE, GOOD VISIBILITY, SELF GUIDING

DISCUSSIONS WITH R PERRET

- LIFTING POINTS
- CENTRE OF GRAVITY ADJUSTMENT FOR VERTICAL HANGING
- GUIDANCE DURING LOWERING
- PLUG IN MODULE POSITIONS

OUTLINE IDEAS FOR HANDLING EQUIPMENT

- ARTICULATED ARM AT EACH END OF COLLIMATOR
- COLLIMATORS TRANSPORTED ON MODULE FITTED WITH TWO ARMS
- VEHICLE ASPECTS –SEVERAL OPTIONS

INTEGRATION

- SPACE REQUIRED FOR TRANSPORT
- SPACE ABOVE COLLIMATORS FOR HANDLING

NEXT STEPS

- DESIGN OFFICE JOB TO STUDY IN MORE DETAIL
- SEQUENCE OF OPERATIONS
- INTEGRATION
- OUTLINE DESIGN ARMS + TRANSPORT EQUIPMENT
- ATTACHMENT METHODS
- DETAIL OF RADIATION IMPLICATIONS

Keith Kershaw 25 Nov 04