

## Summary of 13-th Meeting for S1-Global module design, Cryomodule and Cryogenics (20090519)

Date: 2009/05/19

Time: 22:00-22:45 (Japan Time)

Attendant: Tom Peterson, Jim Kerby, Paolo Pierini, Serena Barbanotti, Tetsuo Shidara, Hiroataka Nakai, Norihito Ohuchi

### Agenda

1. Schedule of Module-C manufacturing (Paolo Pierini)
2. Component list of Module-C (Norihito Ohuchi)
3. Others

### Discussion

#### (1) Schedule of Module-C manufacturing (Paolo)

- The gas return pipe is now checking for the permeability, and all materials are in house.
- The vacuum vessel is being prepared for cutting plate.
- The gas return pipe will be finished on the last week of July.
- The upper shield will be ready on the same period of completing the gas return pipe.
- At the beginning of September, it is good for KEK to set the temperature sensors, the strain gauges and WPMs from the construction schedule.

C: At the beginning of September, the cold test of Module-C without 5K shield will be being performed, and then this period is not good for KEK people.

C: Zanon will be closed from the 32-th to the 34-th week in August. The end of July will be possible, and INFN will control the production schedule. On the 30-th week in July, all procedure of the gas return pipe is finished.

- On the schedule, the Module-C is departed from Zanon at 15 October.
- For quality control issues of the components of the Module-C, the check sheets have been sent to KEK.

C: The check sheets have been discussed between the KEK concerned people. KEK people want to define the specifications of the check items, for example, the straightness of the gas return pipe and measured positions.

A: Concerning for the gas return pipe, the measured positions are the cavity support legs and the surface of the support posts. These positions are machine processed by a precision milling machine. These positions and precisions are independent on the pipe geometry.

C: KEK wants to know the detail measured positions, tolerance and measured method.

C: The details will be discussed with off-line.

- As for the schedule, INFN will report the status of the module construction next week, and will continue to discuss the quality control issues.

#### (2) Component list of Module-C (Norihito)

##### Module-C

• The updated component list in the Excel format was sent to INFN and FNAL. The columns of the sub-sub-components and the spare components are added in the list.

• For the vacuum vessel, the crawl clamp will be prepared by KEK, but KEK does not know the number of pieces.

C: The number of the crawl clamps for one flange is 12 by information from Serena.

• In the component list, the gas return pipe, the support posts, upper 5K and 80K shields are preassembled. The super-insulations are mounted on the upper shields, and they are transported in a rolled condition. At the assembly in KEK, the super-insulations are closed on the center of the lower shield. Paolo will send the picture of the assembled gas return pipe and shields in DESY to KEK.

• The super-insulation for 80K shields will be assembled in KEK.

• All sensors, two sets of feed-through for sensors and the vacuum port are prepared by KEK.

##### FNAL-Cavity

• The FNAL cavity will be transferred to KEK after vertical testing and in being welded with the helium supply pipe. [Discussed in TILC09]

• FNAL will make the part list from the complete 3D-CAD solid model in a couple of weeks.

• The shown CAD of cavity jacket by Jim is reported in the DOE review, and the CAD data is the previous version. The list will have the spare components, and it will be provided in the

Excel format by Don.

Gate-Valve prepare by KEK for DESY and FNAL cavity string

- The gate valve support design was reported.
- The KEK gate valves have a different configuration for connecting the flanges of DESY and FNAL cavities. The method of connecting flanges was discussed in TILC09. KEK would like to propose that the flanges for connecting DESY and FNAL cavity flanges would be supplied to KEK from DESY and FNAL, and KEK will prepare the pipes and the flanges for the KEK valves. KEK will assemble and weld these components in the KEK site.
- The detail of this reduction pipe from FNAL will be discussed with Jim and Don.
- Serena would ask comments about the mounting structure of the gate valves from Kay in DESY.

The response from Kay (for Serena's quick questioning after this meeting)

Because in my mind you can support the gate valve without a needle support when you designed between the gate valve and the cavity a bellow because is enough space available.

I see two critical points on the current design:

1. At the alignment of the cavity into the cold mass you have to operate in parallel on three supports and this is tricky - we have these problems on the type3+ and XFEL-modules but we have no space for a bellow.
2. To support by only one set of needles there is the risk that when the roller part is not absolute parallel with the support block on the cold mass that during the cool down the needles could be twist and block.

Next meeting date

Date: 1 June (Monday) 2009 22:00 (Japan time), 8:00 (FNAL), 15:00 (INFN and DESY)

Discussion items

- Updated construction schedule and quality control of Module-C (Paolo Pierini)
- Updated sensor list (Norihito Ohuchi)
- Summary of material study-1 (Hirotaka Nakai)
- Others.