

Crab Cavities Technical Coordination XXVII



Location: 376/01-020

Date: 22th May 2017, week 21

Time: 10.30

Scope: coordination and alignment of tasks involved in the preparation of SPS tests, follow up of master plan.

Attendees: Rama Calaga, Mateusz Sosin, Aurelio Berjillos Barranco, Karl Schirm, Ofelia Capatina, Frank Gerigk, Alick Macpherson, Carlo Zanoni, Giovanna Vandoni, Alejandro Castilla Loeza, Ilan Ben-Zvi

Master schedule: EDMS 1747466

Logbook: <http://elogbook.cern.ch/eLogbook/eLogbook.jsp?lgbk=387>

Status:

Cavity #1 (Workshop)

The HOMs are being mounted on the jacketed cavity. The cavity will come out of the clean room on the 24th

Cavity #2 (Workshop)

Cavity#2 is being dressed (tank welding).

With the current status and planning, the cryomodule will arrive to SPS on the 31.1.2018. Cavity #2 is on the critical path, while cavity #1 has just a few days of margin.

Cold tests of US cavities:

The DQW cavity already tested has been re-tested with one HOM mounted. The cavity quenches at 2.8 MV, but follows a curve that overlaps well the bare cavity test. No noticeable radiation or field emission are observed close to the quench. RF pulsing was applied close to the quench voltage for better diagnostics: the temperature of the FPC flange followed the same modulation, with only mK amplitude. It seems the quench originates on a coated flange on the FPC port. This is supported by the fact the flanges have been substituted prior to this test. The results are not conclusive, though. Multipacting on the HOMs is found at lower voltages, as expected, but no spectrum analysis at the multipacting was done, as this is not trivial to perform.

The test plan in the US foresees now testing the second DQW, then installing the HOM and re-measure

Issues with the Pickup:

The three manufactured pickups have been leak checked after a cold thermal shock. All the welds between niobium and copper remained tight. However, after the thermal shock leaks were observed on two pickups, the ones treated by the subcontractor 4030 without supervision. One pick-up has a leak on the copper-ceramics brazing, the other on the titanium-ceramics brazing. The procedure of the test has not been supervised for those two tests although the supplier affirms to have followed the same procedure. The two broken pickups will have to be fixed, using the two spare ceramics

During the cavity cold-test, the helium evaporated by power deposition on the pick-up may not be well evacuated through the small evacuation duct. On the other hand, the pickup does not see any pressure in

the cryomodule. As the pickup is not strictly required during the test, it will therefore not be used. If possible, one unit will be mounted inside the vertical cryostat for a controlled cool-down to check that the issue with the ceramic is due to the rapid cooldown and does not appear with normal thermal stress.

Cold test plan:

Alick presented the plans for the cold test of the dressed cavities. The installation on the cryostat is foreseen for Friday the 26th. Notable parameters of the test are:

- Thermal gradient during cool down < 50 K
- Voltage < 3.6 MV
- Absolute temperature < 2.2 K

The RF powering plan is available in the slides on indico and on the EDMS 1807930. The cavity will be handled and rotated in SM18 by means of a dedicated machine available there for the magnets. Rama asked someone from the workshop to be present, as they performed the operation several times. The operator will be someone from the EN/HE transports team who has the authorization for that machine.

Rama also highlighted the fact that the HOMS feedthroughs are easily bent and asks to pay particular attention and mount them after the cavity is rotated. If this remains critical, last minute supports will be needed.

AOB:

- Giovanna commented the EDMS document by EN/ACE on the duration and dates of YETS. She wrote that the SPS crab-cavity test stand will require tunnel access for validation and check-out tests beyond the end of week 8, into the hardware-commissioning slot. Lucio commented after her, insisting that this comment should be taken into account;
- Giovanna has asked to collect all action lists for YETS 2017, work is being done by Kurt and Mateusz, but no other answer was received so far;
- It will be possible to leave the table temporarily in BA6 between the 14th and the 18th December, then it will go straight down into the tunnel for temporary storage behind the beam line. The charges and circulators are stored in BA6 as well and go into the tunnel on the table or to intermediate storage behind the beam line.

Action list:

General and Planning:

| ID | Action | Responsible | Opened | Closed | Result, Comment |
|----|---|-----------------------|-----------|-----------|-------------------------------------|
| 49 | Define detailed test sequence of Cryomodule in SM18 | Alick (inputs needed) | 27.2.2017 | | Inputs needed (RF, cryo, vacuum...) |
| 55 | Comment on YETS2018 first plan draft | Giovanna | 8.5.2017 | 23.5.2017 | Extra access requested for 2 weeks |
| 56 | Bottom-up planning of SPS activities | Giovanna | 8.5.2017 | | |
| 57 | Draft initial operational scenario for SPS tests | Rama | 22.5.2017 | | |

Documentation:

| ID | Action | Responsible | Opened | Closed | Result, Comment |
|----|---|--------------|------------|--------|---|
| 32 | Approve and/or comment acceptance criteria | Task leaders | 19.12.2016 | | Approval resumed after comments |
| 44 | MTF to be updated with actions on chemical processing, heat treatment and RF conditioning | Carlo | 30.1.2017 | | Input needed by Alick. Karl will follow this up too |

Design:

| ID | Action | Responsible | Opened | Closed | Result, Comment |
|----|--------|-------------|--------|--------|-----------------|
|----|--------|-------------|--------|--------|-----------------|

SM18:

| ID | Action | Responsible | Opened | Closed | Result, Comment |
|----|---|-------------------------|----------|--------|-----------------|
| 54 | List of tests in SM18 | Alick (inputs from all) | 8.5.2017 | | |
| 58 | Provide feedback on activities in front of clean room | Marco, Ofelia | 8.5.2017 | | |

Tools & Ancillaries:

| ID | Action | Responsible | Opened | Closed | Result, Comment |
|----|--------|-------------|--------|--------|-----------------|
|----|--------|-------------|--------|--------|-----------------|

Space:

| ID | Action | Responsible | Opened | Closed | Result, Comment |
|----|--|-------------|-----------|-----------|---|
| 14 | Follow up reservation of assembly and storage areas in SM18 | Karl, Rama | 1.8.2016 | | Space request in SMA18, 200 m ² . Visit service agreed in leaving us the sofas space in SM18. Space between bunkers in SM18 can be used, but it's not a working area and it cannot be accessed while tests in cryostats are running (radiation). Alick to provide test plan to Marco |
| 38 | Buffer space for transfer table | Kurt, Rama | 9.1.2017 | 22.5.2017 | Table can go directly underground and use the transport zone as buffer |
| 48 | Make sure the space in front of the clean room is free when needed (portique installation) | Karl | 27.2.2017 | 24.4.2017 | |
| 53 | Storage for cavity toolings | ? | 10.4.2017 | | |
| 57 | Follow-up of space in bldg. 2002 | Frank | 8.5.2017 | | |

Minutes taken by Carlo

Next meeting: Monday 12th of June 2017