ESS CEA Coordination Meeting, 21 June 2017

Meeting Date
21 june 2017

Location
CEA Saclay

Chair
Anne-Isabelle Etienvre

Secretary
Pierre Bosland

Attendees
Roland Garoby, Mats Lindroos, Hakan Danared, Wojtek Fabianowski, Anne-Isabelle Etienvre, Florence Ardellier-Desages, Pierre Bosland, Patricia Roussel-Chomaz, N. Judas

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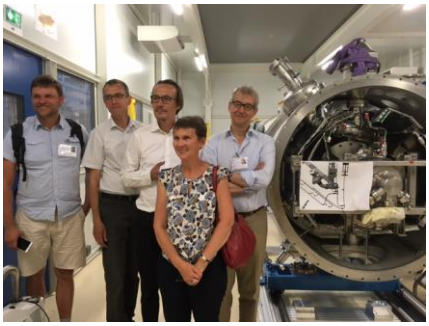
1. Lab tour

The M-ECCTD could be seen with the cavity string inserted inside the vacuum tank that was still open. The RF power test bench is close to completion before the installation of the M-ECCTD schedule during July. Wave guides at RF distribution system are in place as well as the cryogenic pipes. The last checks of the C/C system are being done. The RF power conditioning stand for RF power couplers is being prepared for the installation of the second RF power source that will be delivered after summer.



2. General information about ESS (R. Garoby)

ESS reached 34% of the total earned value of the project.

The 1st Value Engineering exercise is completed and the decision is taken to produce all the High Beta Cryomodule. They will be installed in the tunnel and kept at Cryogenic temperature with cavities tuned to be transparent to the beam. The RF Power Sources will be installed later.

The ESS Council requires a second exercise of additional budget reduction which must represent some 10M€ for the accelerator. ESS will try to avoid amendments of the signed contracts with IK partners.

3. ESS Accelerator Status (Mats Lindroos)

The slides presented by Mats are on the Indico page of this meeting. The following lines highligth some items discussed during the presentation.

- Recommendation from TAC: all cryomodules will be installed inside the tunnel, even the last high beta ones that will not be connected to a RF power source. Those cryomodules will be kept at 2K with cavities tuned to be transparent to the beam.
- The two periods of machine shut down initially scheduled in 2021 and 2022 for the installation of the high beta cryomodules will be grouped in one period. High beta cryomodules shall be produced in the continuity of the medium beta ones. This strategy is optimized with the industrial production of the series of the cryomodules.
- Preparation of a risk workshop between ESS and CEA ESSI scheduled on the 5th of July.
- 30 months are presently scheduled for the installation inside the tunnel up to the medium beta section included. This is challenging.
- P6 time schedule with the beam production in June 2019 remains the reference. However a more realistic time schedule is being established taking into account the contracts already signed.
- A new schedule integrating resources for the installation, testing and commissioning is being prepared on basis of "best estimates for RFI dates".
- The objective is to complete all remaining IK contracts before the end of 2017 (55% are already signed). Almost all IK schedules in place. Still missing 3 on 41.
- Order of the klystrons for the medium beta: 18 to TOSHIBA and 18 to CPI.
- Issues with procurement office from CNRS, with the order of modulators by Bilbao, and at ELETTRA (agreement between ALETTRA and INFN not yet finalized) Licensing/safety: Application for the installation close to finalization. Application for the commissioning phase is in progress and the ARR is scheduled in Jan 2018.
- Reduction of the LINAC power: 3MW and 2MW reliable. RG is pushing for installing 3MW. The target is designed for the final goal of 5MW that remains unchanged.

4. ESS Control System Status (Wojtek Fabianowski for Henrik Carling)

The slides prepared by Henrik were presented by Wojtek and are on the Indico page of this meeting. The following lines highligth some items discussed during the presentation.

- The ICS team is expanding: presently 40 people – 50 expected by the end of 2017
- The ICS team has been reorganized
- Hiring people will help to replace costly consultants presently working for ESS
- Some training are being organized for partners (EPICS, µTcA, …)
- The control room is being equipped with the first desks on site (Norway IK contribution)
- Saturation of the contributions starts to be reached.
- The Control System of the diagnostics NPN and nBLM delivered by CEA cannot be an IK contribution because CEA saturates its contribution to the accelerator construction. A collaboration Agreement similar to the Fr-Sw agreement signed in 2010 could be a solution for solving this issue.

5. CEA ESSI Status and CEA IKC Follow Up (Florence Ardellier-Desages)

The slides presented by Florence are on the Indico page of this meeting. The following lines highligth some items discussed during the presentation.

- Test at FREIA: the PPT modulator was damaged and shall now be repaired. The tests in HNOOS of the high beta cavity will be performed with the Ampegon modulator as previously expected, however a delay of about 6 weeks is foreseen before starting the RF on the cavity compared to the expected starting during summer time. CEA will send the cavity to FREIA as expected next week (Week 26).
- Cryomodules components supply - AIK 5.2:
  - CDR medium beta has been split in two CDR.
  - CDR1 was held on the 3rd and 4th of April 2017. Green light given for the procurement of the 30 cryomodules components.
  - CDR2 will be organized mid-Sept (TBC after the tests of the M-ECCTD)
  - Some call for tenders are put in standby until the interfaces are frozen (cryogenic lines)
- Some issues appeared on engineering files exchanged between CEA and ESS leading to some difficulties for reading the files and also for defining precisely the interfaces with the environment of the components. ESS is aware of these issues and is reorganizing for offering tools to partners for getting the needed information in an easier way. Nick
- CEA highlighted the information given during the SRF collaboration meeting held the week before at LASA about the expected delivery rate of the medium beta cavities at 2 cavities every 3 weeks. This rate is not compatible with the present time schedule with a production rate of one cryomodule every month, thus 4 cavities every month. All contracts prepared by CEA with the industry are based on one cryomodule per month. The main issue for CEA would be with the contract for the cryomodules assembly which call for tender is presently close to completion before being launched. It is still possible to modify it and take into account a more realistic time schedule in order to avoid useless expenses.
  A new planning has to be proposed to CEA by ESS before the 10th of July. In the meantime CEA will analyse the possibility to give more flexibility in extending the engineering phase of the preparation of the industry and trying to increase the assembly rate during the second phase of the industrial production.
- In case of cavity has to be considered "out of work" after acceptance at Saclay and before the assembly inside the cryomodule, CEA demands that the cavity could be sent back to the partner for retreatment (HPR + tests in VC or flash BCP+ HPR + test in VC). The corresponding cost could be paid by the company in charge of the assembly in case its responsibility is clearly established. CEA needs to put this cost in the technical specifications for the cryomodule assembly. CEA requests that the cost for the retreatment is fixed at a reasonable value by ESS partners LASA and STFC. A second case to be considered is when the responsibility of the industry in charge of the assembly cannot be established. CEA thinks that it should be a responsibility shared at a higher level of the project.
- RFQ: progress of the manufacturing have been presented. The gap on the EV curve is explained by the delay of the mock up. The impact on the general time schedule is limited because the raw machining has been anticipated on sections 2 and 3. A closed follow up of Mecachrome has been put in place by CEA.
- Diagnostics
  - EMU – AIK#7.1 schedule close on 01/2017
    The below has been repaired. Measurements showed very high performances of this system equipped with a high dynamic range electronic.
    CEA requests that if additional travels are requested by ESS, travel expenses shall be paid by ESS.

ESS replies that the reimbursement of travels expenses are subjected to an analysis on individual cases.
  - Doppler – AIK#7.2 schedule close on 12/2016
    Successfully commissioned and hand-over of the system to ESS in Dec 2016.
  - nBLMs (AIK#7.3) and NPM (AIK# 7.9): technical progress were presented
- Control System
  - ESS source & LEBT control – AIK#01
    Acceptance tests planned in July (TBC for the LEBT control acceptance)
  - Contribution to the RFQ control – AIK#05
    Instrumentation can't be specified before beginning of 2018.
- The Earned Value of the total ESSI project is around 21%, 16556k€ to be compared to 18690k€ planned.
- Register tables of changes requests and of non-conformities have been presented with their costs impacts.
- The risk register and risks mitigation have been presented. Risk workshop between ESS and CEA ESSI scheduled on the 5th of July.

Summary of actions

Action Nr.	Action	Who	Due
20170621_CC_1	Feedback from ESS about the change of time schedule for the cryomodule production	H. Danared	10th July 2017
20170621_CC_2	Inputs for the management process and costs for reprocessing the cavities "out of work"	H. Danared	30th July 2017
20170621_CC_2	Final reports of the two closed AIK#7.1 and 7.2 schedules	F. Ardellier	1rst Sept. 2017
20170621_CC_3	Change request for the delay of the RFQ (3.5ms)	F. Ardellier	1rst Sept. 2017
20170621_CC_4	Proposal for a collaboration agreement or a contract on the Control System of the nBLMs and NPM diagnostics.	H. Carling (W. Fabianoswski)	20th July 2017
20170621_CC_5	Template of the final report of the IK schedules to be sent to CEA	M. Lindroos/H. Carling	20th July 2017

Next coordination meeting will be held at Lund on the last week of November 2017.