

Minutes of the 49th Machine-Time Committee Meeting

Date and time: November 18, 2011; 13:30–15:15

Place: RIBF Bldg., Room 203

Attendees: Sakai^a (Chair), Abe^a, Aoi^{d,†}, En'yo^{a,†}, Fukunishi^a, Haba^{a,†}, Kubo^a, Motobayashi^{a,†}, Morimoto^{a,†}, Nishimura^{a,†}, Sakurai^a, Shimoura^b, Suda^{c,†,‡}, Takeuchi^{a,†}, Ueno^a, Wakasugi^a, Yoneda^{a,†}, A. Yoshida^{a,†}

Absent: Kamigaito^a, Kase^a, Kubono^b, Morita^a, Uesaka^a, Uwamino^a, K. Yoshida^{a,†}

^a RNC / ^b CNS / ^c RIBF-UEC / ^d RIBF User / [†] Observer / [‡] TV Attendee

(in random order)

Reports

1. Change of the beam time schedule (Ueno)

- Due to a delay in a ²³⁸U beam delivery, the beam-time (BT) schedule of the SRC-used experiments was changed on Oct. 31 as follows :
 - MS11-09 (Kubo): The end time was shifted to 09:00, Nov.5 after a delay of 5 days.
 - NP0702-RIBF30-04 (Yoneda): The start time of the secondary beam tuning was shifted to 21:00, Nov.09 after a delay of 3 days.
- In response to a request from the CNS director, and given its significance in the physics aspect of the experiment, the MT Committee chair has extended the BT of NP1006-AVF09-02 (Duy) for one day. Due to this change, the BT schedule of AVF-used experiments was changed on Oct. 31 as follows:
 - NP1006-AVF09-02 (Duy): The end time was shifted to 09:00, Nov.5.
 - RI0702-AVF04-30 (Haba): The BT was shifted to 09:00, Nov.2 – 09:00, Nov.4 after a delay of 12 hours.

2. RIBF operation (Fukunishi)

- ²³⁸U beam delivery

Following the previous report, the status of a beam delivery in the current ²³⁸U beam series was reported. With the installation of the 28-GHz Superconducting ECR ion source (28GHz SC-ECRS), RIKEN heavy-ion Linac 2 (RILAC2), and a rotating carbon stripper foil system and others, the beam current and the reliability of the ²³⁸U beam delivery have increased and improved compared with those achieved in 2008–2009. There are, however, issues to be improved as given below.

Beam current: A beam of ²³⁸U was delivered to the BT of MS11-09 (Kubo) at a maximum current $I_{\max} \leq 1$ pA (on an average $I_{\text{ave.}} \sim 0.5$ pA) by Oct. 26. In the next BT of NP0702-RIBF30-04 (Yoneda), the beam was delivered at $I_{\max} \sim 3.8$ pA ($I_{\text{ave.}} \sim 2.5$ pA), which is 10 times higher than that had been delivered in 2008. However, the BT has been suspended as of Nov. 18 due to the trouble of SRC, details of which are described below. Before the suspension when the accelerator condition was stable, 70 % of the requested BT was delivered.

Accelerator tuning: It took a long time to increase the transmission efficiency of accelerators in the current ²³⁸U beam series. With the installation of a new first-stage stripper carbon foil system, a rotating carbon foil system set up at downstream of RRC (A02 site), the endurance time of foils has improved as much as by 3 to 4 days. However, a momentum spread of beams passing through the

foil is wider than expected due to thickness inhomogeneity, preventing an increase in the transmission efficiencies of the subsequent accelerators. A second-stage stripper carbon foil, a fixed type stripper, is set up at downstream of fRC (M04 site). Its endurance time is up to 8 hours. In addition, the condition of the 28GHz SC-ECRIS suddenly turned unstable, the cause of which is under investigation. The subsequent re-conditioning took some time.

- **Slow-discharge operation mode of SRC**

The cryogenic cooling system for SRC became unstable on Nov. 16 during the BT of NP0702-RIBF30-04 (Yoneda). While the problem was being fixed, a coil quench of SBM (Superconducting Bending Magnet for beam injection to SRC) and the second, third, and fourth turbines' trip occurred at 16:38. The operation of the SRC sector magnets was automatically changed into a slow-discharge mode for protection, where liquid helium was also automatically recovered to the tanks. Because of this accident, the BT has been suspended as of Nov. 18. Through investigations after the accident, it was clarified that the SBM quench had been caused not by trouble of the superconducting coils but by the interrupt signal for power cut off emitted from the He refrigerator. It was also found that the first turbine entrance valve which defines the total flow in the He refrigerator did not work correctly. Its positioner which controls the opening of the valve automatically was broken, indicating that the He flow was not under control. The positioner was changed.

3. Status of the Machine Study (Kubo)

Preliminary results obtained in the BT of MS11-09 (Kubo) conducted from Oct. to Nov. were reported.

4. Status of the PAC meetings (Ueno)

- 10th NP-PAC: Preparations for the 10th NP-PAC meeting to be held on December 9-10, 2011 are underway.
 - Nov. 9: The preliminary document screening has been requested to the PAC. The program of the PAC meeting was disclosed to public.
 - Nov. 20: The in-house technical review will be completed. The report will be sent to both the PAC and the representatives.
 - Nov. 23: The submission of the follow-up status reports will be closed. From the 10th meeting, those who conducted a part of BT, as well as those who completed the BT, are requested to submit a report. In addition to the 9 second-updated and 17 third-updated BTs, 24 new BTs have been requested. The NP-PAC secretariat will collect all reports which will then be submitted to the PAC.
- 9th ML-PAC:
 - With the upcoming expiration of the second term of office, half of the PAC members will be changed.
 - The 9th ML-PAC meeting will be held in April. BTs to be conducted in the RAL facility are scheduled for Feb. to May.

Topics discussed

1. Approval of the minutes of the previous meeting (Sakai)

2. Change of BT schedule due to the SRC trouble (Sakai)

In response to the SRC trouble given above in the Report-2, a plan for significant BT-schedule changes in Dec. was proposed (Ueno). After discussions, the plan was approved. Further discussions will take place with relevant departments and administration offices based on this plan. The revised BT schedule will be announced as soon as possible.

3. Machine Study category to promote industrial cooperation (A. Yoshida)

- In the Machine Study (MS) category, there was no BT request called for individual device developments but instead, there will be a detector development category for the AVF stand-alone operation mode. Among the proposals approved by the NP-PAC in the construction category, the MS category is applicable to the developments of accelerators, key devices approved as the RIBF upgrade program, and users' devices which the MT Committee regarded as common-use devices. Their BTs will be scheduled in accordance with the discussion and approval by the MT Committee.
- A legal framework of charged and trial uses of RIBF for an industrial cooperation program is under preparation by the Industrial Cooperation Team together with the Accelerator-based Research Promotion Section. For the RIBF use which will be charged, it has been requested that the Team also apply for the BT scheduling in the MS category to ensure the supply of primary and secondary beams for the above program, and for the beam delivery/test that must be secured/tested in advance.

4. FY2012 BT schedule (Sakai)

An outline of the FY2012 BT schedule was discussed. The Call-for-BT-scheduling-requests for the first half year of FY2012 will start in mid-Jan. (Ueno).

5. Disclosure of the subject titles of NP-PAC proposals (Sakai)

The presentations by representatives are open to public in the NP-PAC meetings. Their research titles are, however, disclosed only if they are approved. In addition, it is possible not to disclose the title if requested. Discussions ensued on the disclosure of the subject title. Hearing of opinions of RIBF-UEC will be conducted.

6. Next meetings

- The next MT Committee meeting will be held on Friday, December 16, 2011, at 13:30.
- The meeting after the next will be held on Friday, January 20, 2012, at 13:30.