



Plenary RRB

October 2021

Draft Minutes of the 53rd Plenary Session of the
LHC Resources Review Boards
CERN, Geneva, 25th October 2021

Documents and slides of all presentations can be found on the RRB Indico pages, accessible via the LHC-RRB home page <http://cern.ch/committees/LHCRRB>

The minutes of the last Plenary Session, CERN-RRB-2021-056, were approved.

CERN Status and News. J. Mnich, Director for Research and Computing

In the last months, about 6000 individuals are entering the CERN sites every weekday. The CERN COVID-19 scale is at yellow mode.

About 2 weeks ago, the 50 years of Hadron Colliders at CERN have been celebrated in the main auditorium. In August, Latvia became an Associate Member of CERN and on September 24, the CERN Council adopted a resolution admitting Brazil as an Associate Member.

There were no questions following this presentation.

Status of the Accelerator Complex post LS2. R. Steerenberg, on behalf of M. Lamont, Director for Accelerators

R. Steerenberg presented the latest version of the 2021 injectors schedule indicating that by now all fixed target facilities receive beam on a regular basis. The Pb ion commissioning in the SPS in preparation for the 2022 LHC and SPS North Area Pb ion run is progressing well. At the moment, the LHC beam test run is progressing, and all beams will be stopped on November 15 for the YETS. After Christmas the first beam is expected to be back on February 7, followed by the LHC closure on February 21 and the first beam on March 7. This schedule will be revisited at the November 1st meeting with the experiments.

LHC Injectors status: After the start of the SPS North Area physics campaign, the beam availabilities of LINAC4, PSB and PS were excellent, the SPS beam availability, after some initial problems e.g. with a quality problem of the ceramic of a kicker in vacuum, is now steadily rising toward the target value.

LHC hardware commissioning: The magnet training in all sectors except S23 and S78 has been completed. Of the 6 completely trained sectors, three sectors were trained to 7 TeV, three other sectors to 6.8 TeV. For the sectors S23 and S78, where repairs were required, a total of ~65 magnet quenches are needed to reach the 6.8 TeV level. To reach a level of 7 TeV for all sectors ~340 magnet quenches would be required, which would imply non negligible risks. Therefore, the decision was taken to have the target energy for Run-3 at 6.8 TeV. The 2-weeks beam test, which is currently ongoing, aims to re-establish circulating beams at 450 GeV and to debug the

machine systems. Splash events have already been provided to the experiments, collisions at injection energy are foreseen today or tomorrow. Up to now, no major issues on the machine side have been encountered.

R. Tenchini wanted to know, if the issue with the ceramic in vacuum of the kicker is related to a new component or related to the fatigue of the old material. R. Steerenberg confirmed that this a new component, which has been received in batches and it was a bad part in one batch.

Status of the Experiments, including Phase II Upgrades. J. Mnich, Director for Research and Computing

Summary:

Several physics highlights from the LHC experiments have been presented: The ALICE result on the Charm meson nuclear modification, which constrains the GGP diffusion coefficient, the ATLAS result on the observation of the WWW production, the very precise measurements of the W branching ratios of CMS and the LHCb tests of the lepton universality. The rate of publications remains high in all 4 experiments, although no new data has been collected in the last ~3 years.

Status of LS2: All 4 large LHC experiments take part in the ongoing pilot run. On November 1st, a LS2 scheduling meeting between the machine and the experiments is planned. ALICE has installed all upgrades and its commissioning is in full swing. The New Small Wheel NSW-A of ATLAS was lowered into the pit on July 12. After having fully connected it, it takes now part in the pilot run. The mechanical integration of the NSW-C has been completed on September 13, the lowering is planned for early November. CMS has now a fully refurbished Pixel detector. After several improvements, the magnet is now back at full field. The LHCb schedule remains very tight for the installation of the VELO and the UT detector, after the SciFi installation behind the beam pipe was completed and the beam pipe installed and baked out.

For the Computing, the commissioning of the Run-3 data taking is ongoing with further tests, after the Run-3 data taking workflow has been exercised and the readiness of the services and infrastructure was tested in summer.

Phase-II progress: Good overall progress in many areas, but significant delays are accumulated in some projects, since the pandemic continues to severely hinder the progress on prototyping and on production preparation. The most critical projects are the ATLAS Pixel, the ATLAS Strip Tracker, the CMS HGAL and the CMS Tracker. In line with the SPC recommendation, an assessment of the Run-3 schedule should be carried out by the machine and the experiments in the next weeks.

The preparation for HL-LHC computing is ongoing. In November 2021, the LHCC will review event generators, simulation software, core software foundations, analysis tools, data management software and services.

The Working Group for the long-term Support of the LHC experiments, where a new (sub-) category Experimental Project Associate (EXAS, modelled on PJAS) should receive a Subsistence Allowance from Third Part Funding, is still discussing the implementation details. A report is expected by end of October 2021, followed by a concertation process.

R. Tenchini wanted to know the impact on the accelerator when the end of Run-3 would be postponed. J. Mnich pointed out that the assessment of this possible delay would take into account both, the experiments and the accelerator at the same time.

S. Bohleber asked when the FAs will be informed about the outcome of the LS3 schedule meeting. J. Mnich explained, that he believes that the final decision on this will be taken in Council meeting in March 2022.

C. Meroni wanted to know to whom the upcoming report of the Working Group for the long-term Support of the LHC experiments will be presented and asked if the new status will be completely equivalent from the point of view of fiscality and related things compared to PJAS. J. Mnich said that, as far as he knows, it will be a copy of the conditions of the PJAS. The report of this working group will be presented at the next Council session and the final decision on this will be taken after the concertation process.

C. Jamieson encouraged that the details for the decisions on the LS2/LS3 schedules should be shared with the FAs in a timely way to allow them to understand the implications on the costs, funding, physics and risks associated with the decisions being made. J. Mnich confirmed that CERN will do his best to keep the FAs informed and in the loop. CERN has tried to concentrate on a very limited number of options for the decision, in order that the FAs are able to consider well in advance the respective implications.

M. Garcia Borge asked, what is the impact and what are the possibilities, which could be considered, if LHCb might be late next year. J. Mnich believes that, if nothing unexpected happens, then the conclusion on November 1 will be, that the schedule can be kept. Assuming, that at least the installation of the detectors including the services will be finished, then there might be little time to do commissioning of the late detectors. Some minor installation like cabling work could even be done during the year, depending on the machine schedule.

F. Gianotti commented that the decision will be taken by the CERN directorate together with the experiments and the machine team and will be presented to the Council and its subordinate bodies at the latest in March 2022.

M&O Resources Scrutiny Group Report. H. Sandaker, Chairperson of the LHC RRB Resources Scrutiny Group

Several members of the Scrutiny Cycle will be stepping down, many thanks for all their contributions. New members are being proposed to be endorsed by the RRB.

Summary:

The general topics of the Scrutiny Group comprises the cash balance reconciliation between CERN Finance reports and the M&O-A budgets of the experiments, where quite a few discrepancies were found this year. However, when understood, the excellent agreement was maintained; The long-term projections for the special online computing replacement accounts, where all experiments presented their projections; the M&O-B carry-over, where all experiments are below the agreed 30% of the yearly budget; and the tracking of entry fees, where no issues were found.

This year's specific topics were the impact of COVID-19, where this year the situation appears to be better under control due to the extraordinary effort of the experiments to keep the spending as close to normal as possible, the LS2 work and the inclusion of new detectors, where all experiments presented their plans and their collection of the Common Funds, which proceeded as planned.

Issues, which were raised during this cycle, were the level of subsistence for users, which may be effectively reduced by the different application of the existing French tax laws. The trend with delayed contributions as observed in 2020 continues in 2021. The Scrutiny Group would like to review the relation between upgrade and operation in 2022.

The approval of the M&O-A and M&O-B closing reports for 2020 and the budget requests for 2022 of all five LHC experiments were recommended.

There were no questions following this presentation.

Computing Resources Scrutiny Group Report. P. Sinervo, Chairperson of the LHC Computing Resources Scrutiny Group

In 2021, there was no change in the members of Computing Resources Scrutiny Group.

Summary:

The four LHC experiments have given updates on their computing and data processing activities and plans including the COVID-19 impacts on operation and material, which has been largely mitigated. 2022 will be the first full year of Run-3 data taking. The pledged resources appear adequate to support data-processing. The changes of the computing models of LHCb and ALICE are considered in the request for 2022 and 2023 and are approximately in-line with the expectations.

Overall, the usage and the requirements for 2021 and 2022 are in line with the plans and expectations. The experiments were able to continue Run-2 analysis while preparing for Run-3. ALICE will be taking both PbPb and pp data with the new computing model, where GPUs are playing an increasing role. ATLAS and CMS anticipate significant increases in CPU/data driven by the integrated luminosities, while continuing the usage of significant opportunistic resources. LHCb has a fast ramp, which is ambitious but credible. Personnel limitation remains a concern.

There were no questions following this presentation.

Summary. J. Mnich

AOB: C. Jamieson went back to something which was said earlier on. She wanted to stress that actually any change in the schedule has a direct impact on the budget and the planning for the future. For the FAs, sometimes changes in technical design aspects of the experiments can be hard to be financially accommodated. Therefore, the FAs are required to be a partner to make the decisions. J. Mnich confirmed that this is well understood.

There being no further business, the Chairperson closed the meeting.

The proposed and approved dates for the next RRB are 25-27 April 2022 and 24-26 October 2022.

Reported by: W. Funk