



Plenary RRB

November 2022

Draft Minutes of the 55th Plenary Session of the LHC Resources Review Boards CERN, Geneva, 24th October 2022

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-2022-052, were approved.

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

A scientific symposium was held on 4 July 2022 to celebrate the 10th anniversary of the Higgs Boson discovery. The start of Run 3 happened on July 5th.

On June 17th, the Council declared that it intends to terminate CERN's International Cooperation Agreements (ICAs) with the Russian Federation and the Republic of Belarus at their expiration date in 2024. However, the situation will continuously be monitored, and the Council stands ready to take any further decision in the light of the developments in Ukraine. The Council also decided to review CERN's future cooperation with JINR well in advance of the expiration of the current ICA in January 2025. The impact on the LHC experiments is that the institutes in Russia, Belarus and JINR remain members of the collaborations until 2024/25. The LHCC strongly recommends developing plans to become as much as possible independent of the ~20 MCHF contributions to ATLAS and CMS Phase II upgrades, especially for (time-)critical in-kind contributions, from institutes in Russia, Belarus and JINR. The contributions to the HL-LHC accelerator upgrade have been fully in-sourced by CERN. The four big LHC experiments proposed a suspension of publications, but none of the discussed options, how to deal with the publications in the future, have yet found consensus. A compromise must be found!

CERN responded to the energy crisis by starting the 2022 Year-End-Technical-Stop (YETS) two weeks earlier, preparing reduced power configurations for possible EDF load shedding scenarios and reducing the operation of the accelerator complex in 2023 by 20%. To address the potential longer-term impact of high electricity costs, a package of possible measures for 2024-2032 is being prepared to be discussed with Council in December.

There were no questions following this presentation.

Status of the Accelerator Complex post LS2. M. Lamont, Director for Accelerators

EDF/RTE foresees possible stress on the French electrical network from 15th October 2022 onwards, which may impact CERN due to the load shedding for a few hours with pre-warning. In the worst case possible complete power cut may arise. Therefore, several load shedding scenarios for CERN have been defined. Various measures have been implemented to save energy at CERN. As just presented, an earlier stop of the accelerator complex has been implemented. During normal running, ~1.3 TWh per year are consumed at CERN. As a consequence of the earlier stop in 2022 no 2022 LHC ion run will be performed, which will be compensated in future years. The YETS in 2023/2024 will be 4 weeks longer as initially scheduled.

The achieved availability of the injectors at CERN in 2022 were mostly higher than expected. All physics will end on 28 November 2022 at 6am. Earlier this year, on the 5th of July first stable beams energy record of 13.6 TeV has been achieved. Afterwards, the intensity ramp-up proceeded smoothly, but was finally limited to 2400b due to the heat load limitation in S78. Good production of luminosity has been achieved, however on 23rd of August the cooling was lost in pt4, leading to the rupture of three RF cavity pressure discs and consequently a loss of three weeks of beam time. The process to completely close the VELO at LHCb is still ongoing.

C. Parkes mentioned that the VELO was completely closed the first time on Friday evening with 300 bunches and testing with 600 bunches is now ongoing.

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

The data taking efficiency after the restart of the LHC operation in all four LHC experiments was very high, but the experiments have problems to fill the shifts for the detector operation likely due to difficulties in international travel and reduced travel support at the collaborating institutes. Although the experiments have moved online tasks to remote as much as possible, shift crews at the experiments are still essential. The experiments need the help of the FAs for travel support. Some new physics results have been presented: First measurement of the top-pair cross section at 13.6 TeV by CMS, Hypermatter studies by ALICE, new measurement of the Higgs Boson Mass by ATLAS, Limit on Di-Higgs Boson production by ATLAS and new exotic states by LHCb.

The Phase II upgrades of ATLAS and CMS are progressing well, there are concerns about ASIC design, validation and procurement, general price increases and procurement issues and contributions from Russian institutes. WLCG is operating efficiently in Run 3. The construction of the Data Centre in Prévessin makes progress, the inauguration is foreseen at the end of 2023. The Open Science Policy was recognised in 2020 as a key organizational issue for the field in the European Strategy for Particle Physics and is now increasingly recognised as a key element of international, national and research funder policies. It is developed collaboratively by working groups consisting of representatives from across departments and LHC and non-LHC experiments.

There were no questions following this presentation.

M&O Resources Scrutiny Group Report. H. Sandaker, Chairperson, Scrutiny Group

One member of the Scrutiny Group will be stepping down, many thanks for all his contributions. A new member is being proposed to be endorsed by the RRB.

Summary:

Several minor discrepancies with the CERN Finance Reports had to be sorted out. However, when understood, an excellent agreement was found. The M&O-B carry-over for all experiments is below the agreed 30% of the yearly budget or the experiments will execute a down spending according to the plans.

The long-term projections for the special online computing replacement accounts of all experiments were presented. The total amount of accumulated funds shows now an increasing trend with time. For the tracking of the entry fees, no issues were found. The collection of Common Funds proceeds according to the plans.

This year's specific topics were the impact of the war in Ukraine, where the experiments have presented budgets for 2023 according to the decisions taken by the June Council. Secondly, all experiments presented plans for the transition to the new detectors and the corresponding modification in the future budgets. First discussion on the implementation of the division between upgrades and M&O were held. The trend for delayed contributions as observed already in 2020 and 2021 continues in 2022. Increased concerns about the rise of cost for power, inflation, exchange rates, shortage of raw materials and other shortages have been raised.

The approval of the M&O-A and M&O-B closing reports for 2021 and the budget requests for 2023 of all four LHC experiments were recommended.

There were no questions following this presentation.

Computing Resources Scrutiny Group Report. P. Sinervo, Chairperson, CRSG

In 2022, 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 plans. Run 3 is now dominating all computing activities. It is believed that the 2024 estimates are needed to achieve the approved physics programs.

Overall, the usage and the requirements for 2022 and 2023 are in line with the needs for the Run 3 data processing and simulation.

For ALICE an expected growth of computing resources in 2024 is driven by the planned p-p and Pb-Pb running. The expected increase for ATLAS, CMS and LHCb in 2024 reflects the full year of running with the estimated luminosity. CMS will use the legacy HLT system for offline. For ALICE and LHCb the full implementation of the new computing models is taken into account. Recommendations to the four experiments have been expressed.

F. Gianotti wanted to know more about the over-use of HPC resources and less use of internal resources. P. Sinervo mentioned that the experiments have pushed to use more HPCs even for those which are not necessarily optimised to support LHC computing. On the other hand, some of the opportunistic resources like the HLT systems would not be available during Run 3 data taking, which is reflected in the reduced availability of opportunistic resources. Upon a following-up question by F. Gianotti regarding the O2 system for ALICE, it is being used as an opportunistic resource but required porting code to the GPU architecture. It will also be unavailable for opportunistic data processing for the Run 3 period.

Summary. J. Mnich

The proposed dates for the next RRB are 24-27 April 2023.

C. Meroni wanted to know why there are now 4 afternoons proposed instead of 3 afternoons in the past. J. Mnich explained that there is now an additional afternoon used for the new upgrades of ALICE and LHCb. The RRBs should still stay only in the afternoons to allow Zoom participations from the US. C. Meroni asked why those upgrade RRBs are not part of the normal RRBs. J. Mnich explained that different sets of FAs are concerned for the normal RRBs and the RRBs for the new upgrades. As example he mentioned the institutes from Russia which are still members of the collaboration but following the Council resolution they cannot participate in the new upgrades. That is the reason why the proposal is to keep these meetings separate.

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

Reported by: W. Funk