



**Injectors Re-commissioning Working Group
Minutes**

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INDEX

1	LAST MEETING MINUTES	3
2	LINAC 2 & LINAC 3 FEEDBACK	3
3	LEIR FEEDBACK	4
4	AOB.....	4

1 LAST MEETING MINUTES

First meeting minutes acceptance has been postponed to the next meeting. They are available at <https://indico.cern.ch/event/366808/>

2 LINAC 2 & LINAC 3 FEEDBACK

D. Kuechler presents the Linac2 and Linac 3 start-up feedback.

The first preparative meeting for the start-up of Linac2 took place already in June 2013, which was useful.

Even if all related equipments specialists were invited not all of them showed up.

Linac3 was only briefly mentioned.

The first planning was fixed in December 2013 and was globally adequate. Several iterations were however necessary to adapt to the injector complex general schedule. One important issue came from the fact than Linac2 and Linac3 share the same manpower.

As the Linacs are the first machines to start the availability of water, electricity, access and the controls define a hard edge.

During commissioning there was a short follow up meeting once a week.

The elogbook is used for means of progress tracking during the machine preparation. D. Kuechler insists on the importance of making detailed elogbook entries during commissioning. Not everybody took the time to document the progress in the elogbook with sufficient detail.

A difficulty faced during the commissioning was the integration of the RF systems in the EIS-M.

Another limitation came from the fact that many beam diagnostic systems need beam time for their commissioning.

Last start-up key points are:

- Equipment groups should request test time for commissioning of any modified (or new) hardware (HW) and software
- Responsibilities between operation, equipment specialists and controls have to be clearly defined
- Software (SW) and access systems shall be ready and commissioned before the machine commissioning
- Handover from shutdown to operation must be clearly defined.



As a conclusion D. Kuechler adds that communication is the key for a smooth start-up.

V. Kain asks about the Linac2 start-up duration, D. Kuechler answers that it took 10 weeks.

G. Metral points out that one of the biggest limitations for software-related issues was the suppression of the CO piquet.

B. Lefort adds that a hardware test should not be considered as passed until it has been successfully performed using OP tools (instead of specialist tools).

S. Pasinelli also says that a modification done for one machine may have consequences on others. Consequently software deployment should be carefully scheduled and the potentially impacted machine should be informed.

M. Lozano also notices that creating tickets is too passive to solve time critical issues.

It seems that many issues could be avoided if HW (or SW) modifications would have triggered automatically commissioning periods.

As additional point D. Kuechler mentioned that the clean up after a long shutdown shot not be forgotten.

3 LEIR FEEDBACK

S. Pasinelli is presenting the LEIR feedback.

S. Pasinelli says that as a rule of thumb, the HW test started 5 weeks before the start-up and had a duration of 1 week; then followed by the controls tests (4 w before start-up) and by the cold check-out (one week before start-up).

Last control tests and dry run periods have shown a great deal of SW issues mainly due to a lack of prior testing of the different SW packages.

After the commissioning period (during machine run), there were still many issues to solve and even now (in 2015) there are still some left.

As a conclusion, S. Pasinelli says that the main issues LEIR has planned to study are the software availability, the lack of resources and the time required to solve a problem.

He also points out the fact that LEIR is considered a low priority machine is a problem per-se.

V. Kain reminds that the different systems must be tested as soon as possible and that some of the tests should be performed much before the commissioning period itself.

M. Bodendorfer adds that these systematic pre-tests may require more manpower and are inherently less reliable. For this reason and due to the low energy of the ion beam in LEIR, they prefer to deploy new HW/SW during beam time in order to see the immediate consequences and to avoid potential latent bugs.

V. Kain adds that this modus operandi is not possible with high-energy machines.

4 AOB

During the next meeting the AD and the SPS (TBC) machines start-up experiences after LS1 will be presented.



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