Review of the commissioning of Sector 45

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CERN

Book of abstracts

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Identification of main issues appearing during the commissioning Sector 45

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- Event driven by view from operation - invitation to an open discussion
- Scenarios: commissioning to 450 GeV, 2 TeV and 4 .. 6 TeV
- Key dates in preparation for the next sector and outlook to planning
- Discussions on improvements: what can be done in the next 3-4 weeks?
- 2 shifts during 5 days versus 3 shifts during 7 days, , MPP analysis, what can be done in a nightshift – WE? Bottlenecks in manpower
- Organisation: HC coordinator on a weekly basis? For coordination between sectors etc.
- (written) guidelines for operators (coordination tools, conditions for powering)
- Commissioning meetings efficient? How continue activities during meetings?
- Follow-up by mini teams on: Automatic commissioning and controls issues, Tools required to optimize commissioning, Organisation, System upgrades and improvements

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Powering Test Overview

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- What happens before powering tests after cooldown
- Main issues that slowed us down
- ELQA: Continue as for sector 45? Further optimisation of the strategy?
- What has been done during the powering tests? During what time? By whom? Efficiency?
- How to ensure minimization of re-commissioning 45 and to secure what has been achieved?
- How to avoid that changes during the “shutdown” require re-commissioning?

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Safety and access I

FUNKEN, Anne [1]

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- Electrical safety during interventions, “consignation”
- Electrical safety subsectors

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Safety and access II

GRUWE, Magali [1]

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- Hardware commissioning using the access system
- Set the rules for access, different modes

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Safety and access III

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- Tunnel access during powering – what can access during powering as a function of current in the different circuits? Clear and transparent rules.

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Cryo Performance & Operation

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- Availability for cryogenic system
- Recovery time after quenches: what can we expect?
- Operation overnight and over the weekend: is it possible?
- Operation with several sectors in parallel, what will change?
- Presence in the CCC
- Level measurements
- How to ensure a correct Helium level for operation?

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Cryogenic conditions for powering tests

Dr. SIEMKO, Andrzej [1]

[1] *CERN AT-MTM*

- What can be done at what temperature? (e.g. below 2.8 K low current tests), and when can we start the tests?
- Relaxed operation at reduced current (e.g. can we operate without cold compressors a magnet currents corresponding to 2 TeV)?
- Table for all steps and all circuits?
- Orbit correctors 60 / 120 A – what conditions? What needs to be watched by operators?
- Procedure: masking of interlocks to provide CryoStart and CryoMaintain

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Power Converters

NISBET, David [1]; THUREL, Yves [1]

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- 600 A spikes during 0 V crossing and QPS system
- Spikes and how to avoid them (IERROR and IEARTH)
- RB power converter performance, is there an issue?

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Quench Protection and Energy Extraction System

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[2] *CERN*

- Partial heater firing if switches do not open – yes/no?
- Access to the tunnel for 600 A extraction switches, can be optimised?
- Firing heaters without current in the magnet circuit – Why? EMC due to other tests?
- Closing switches for many circuits

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Time for commissioning versus objectives

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- 450 GeV, 2 TeV and 5 .. 6 TeV: what circuits at what current? What can be left for later? (remember: it is always possible to bring in other circuits on the fly)
- How much time is required to commission for injection, for ~2 TeV, 4-6 TeV and 7 TeV? What could be gained? What circuits could be left out?
- When is tunnel access required? By whom? How to optimise it? What can be done without access to the tunnel?

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Procedures

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- Procedures and their realisation in sequences: can they be lighter?
- EDMS approval of procedures and their changes
- Analysis and approval of test steps in CCC – can it be improved?

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What quenches did we observe? What is expected?

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- What circuits?
- What quenches?
- Why did it quench?

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Tools provided by CO

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- Status of PM system? Data gets sometimes stuck?
- PM event builder
- Can we become more efficient with more automatic analysis?
- Coherence MTF – LSA etc.
- Long tests: can one reduce the time of the test online, for example due to a long plateau? PASS TO THE NEXT STEP button.
- Managing powering: better SOC names to avoid confusion? SOCs per day?
- Tools for powering groups of circuits ((based on SOCs?)

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Tools for coordination

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- How to improve the Powering Test Visualisation tool, etc.
- How to improve the planning tool (EXCEL?) Can both be merged?

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Feed Back

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Summary and Discussions

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