

Session 1

Operation in 2008 and Outlook for 2009

chair K.Hanke

secretary G.Bellodi

Operations review 2008 and beam status in the different machines

D.Manglunki

ISOLDE:

- lack of support, in particular **vacuum and vacuum controls**. Lost a lot of people through retirement

East Area:

- supercycle strained
- TOF back on with parasitic beams without disruption to other users, but cannot provide intensity requested by all users (more rapid cycles?)

AD:

- low pbar yield, see further

SPS (CNGS and SFT):

Downtime caused by TS/EL 18kV and compensators failures+PE.W8L

SEH31 problems should be solved passing to MTE.

- CNGS number of protons below request, limited in intensity, hiding behind PS losses but is SPS a bottleneck? Serious problem with **ageing SPS RF tubes**, which might jeopardize future high intensity operation (see E Jensen, Session 3)
- $3.1E19$ requested for CNGS in 2009, cannot be satisfied
- good availability of LHC beams, within or close to specs.
- **MKDV outgassing main limit for LHC beam intensity**, not sparking in SPS. 50ns LHC beam currently limited to **80% intensity**

Operation scenarios for 2009 – all beams required in 2009

M.Lamont

ISOLDE:

- no particular issues, high use of RFQ and REX in 2009

East Hall:

- all 3 branches active

nTOF:

- new user, 1.97×10^{19} requested, but only 0.7×10^{19} realistic, unless different scheduling

North Area:

- normal year as 2008

CNGS:

- request 3.1×10^{19} (SPSC), unrealistic

AD:

- normal run; machine studies needed to improve pbar yield
- target+horn to be replaced in 2009
- could RF noise be a problem?

Operation scenarios for 2009 – all beams required in 2009

M.Lamont

PS:

- MTE to become operational as soon as possible, problem with S.Gilardoni's absence?

SPS:

- new cycling strategy, economy runs for SFTPRO user, control cables need replacement

Ions:

- Linac3 with new source, need first to reproduce intensity 27[μ A]
- LEIR needs to be re-commissioned: long HW tests period + dry runs.
- PS in good shape but nominal still to be produced
- MD time needed in parallel with SPS commissioning

SPS:

- commissioning of consolidated RF hardware
- extraction of synchronized bunches
- 1st priority is commissioning of “early beam”
- finish Ion commissioning in SPS – 21st September
- ions down T12 if possible (lower priority)

Operation scenarios for 2009 – all beams required in 2009

M.Lamont

MD blocks:

3x72hrs, 3x64hrs +1 + special Wednesday MDs for MTE

schedule:

Normal operation until November 2009, then LHC only beams on request until April 2010, normal operation again until October 2010. Technical stop at Xmas, **length should be defined in the summer to guarantee availability of manpower**

Only subset of LHC beams needed in 2009, at low intensity and ~nominal emittance (pilot/probe).

2010: 50ns beams with crossing angles on is favorite scenario (allows tuning luminosity for experiments without changing optics)

Nothing should be scheduled after November but LHC operation, MDs included
BE-CO MDs can be carried out if they don't require cycling the machine
Physics shutdown activities should be restricted where they enter in conflict with LHC commissioning (RP)

Progress and first experience with MTE

S.Gilardoni

MTE commissioning in 2008 was hampered by instrumentation unavailability in the PS

open questions from last year:

- large core emittance, chromaticity too small, even negative in some cases, different ξ choice
- Matching with SPS, best matching optics w/wo the TT10 phase exchange start without phase exchange
- Instabilities and losses in the SPS, debunched beam from PS required
- Capture optimization using chirp excitation, no need of large emittance beam from PSB
- Longitudinal gymnastics , debunching from h8/h16 before capture
- Definitive choice of magnetic cycle/extraction timing

proposal for this year:

- **Start to provide SFTPRO-CNGS beams with the classical CT.**
- **Prepare in parallel an MTE extracted beam with the same intensity as SFTPRO**
- Once the SPS starts, an MD cycle should be included in the Super-Cycle, even without acceleration, to optimise the PS-SPS matching.
- **Provide as soon as possible SFTPRO with MTE extraction.**
- CNGS will start with a normal CT.
- Initially, one CNGS cycle could be served by MTE. The intensity will be the highest compatible with the status of the MTE setting up.

Instrumentation Status throughout the Acc complex in 2008 (OP PoV)

B.Mikulec

Booster:

new wire scanners: calibration done, new electronics, connection to OASIS and commissioning in 2009

worry: transformers in TL, old electronics, no spares, being consolidated, to be commissioned in 2009

orbit being modified for YASP (simultaneous h+v read out)

BLMs: 12 out of 58 not working, being followed up, response to be verified at startup, up to CCC

ISOLDE:

scanners are ongoing worry, problem is fragility of mechanics in highly irradiated areas, need a new design and full consolidation of all devices; this is crucial

(same exercise as for PS complex wire scanners?)

CTF3:

MTVs important, some issues to be solved this run , problems with BPMs (under LAPP responsibility)

Instrumentation Status throughout the Acc complex in 2008 (OP PoV)

B.Mikulec

PS:

CODD unavailable during a large fraction of 2008 (not working during ramping up to June, triggering problems). New system should be fully operational in 2009. Needed for YASP commissioning during start-up and new application DODO (display of data's orbit)

PS tune measurement: old system broke finally down, replaced with BBQ.
current issues: large fluctuations during ramp, moment of tune acquisition not clear, tune not constant during palier

AD:

MWPC crucial, issues at low energy, slow controls, to be consolidated but solution and budget to be sorted out

Schottky: commissioning to be finished, needs application

BIPm: hope to have operational in 2009, work needed on gas injection controls

MTV not very useful, do not work with low intensity pbar beam

AD consolidation budget insufficient to consolidate diagnostics

SPS:

BPMs fundamental for magnet realignment at startup, however:

- limits in performance on LHCPILOT
- random offsets have been cured in 3 sections with attenuators.

Action needed: extend to remaining sections or renovate whole system (maybe profiting from PS)?

IPMs to be upgraded in next shutdown: hardware modifications (new rad-hard camera) and software testing

Upgrade of the wire scanners, in 2009 start with both old and new electronics in parallel, then progressive change to the new one if possible

Controls Issues in 2008 (OP PoV)

R.Steerenberg

Linac3, LEIR:

not running in 2008

many developments carried out in LEIR (LSA).

Dry-run foreseen before startup, possible surprises?

Booster:

archiving is crucial; any modification must be validated!!

CTF3:

machine operation severely affected by frontends at the limit of their capability, HW not available (CPU cards)

ISOLDE:

Situation largely improved, problems with diagnostic front end DISOBEAM
REX controls not yet CO standard and unstable. Renovation foreseen for
next year.

Controls Issues in 2008 (OP PoV): general

R.Steerenberg

Timing problems major worry in 2008

situation with JAVA working sets and knobs improved wrt 2007: old X-motif applications are being replaced but still need support, this takes time

request for more users ignored since years (from 24 to 32), is this a fundamental or “only” a budget problem, then could it at least be quantified (operational beams have no user...)

New cards allow up to 64 users, other options with InCA

JIRA OP issue report works well. Piquet service team of vital importance.

OASIS is most important diagnostic tool

First priority is to have a good reliable working system with strong, efficient and pro-active support. Extension of functionality is only a second priority and new releases and implementations should then be properly validated before being deployed.

More manpower resources might be needed to compensate for scheduled personnel retirements.

Do we understand the low pbar Production in the AD?

T.Eriksson

problems seem to point at AD itself, rather than the production beam or alignment of the TT2

PS beam longitudinal and transverse parameters verified, PS-AD transfer optics reviewed, target alignment & dogleg steering reviewed

no obvious big problem, may be a sum of small problems

2009 strategy: replace target and horn (in use since `99) , reiterate 2008 verifications, stochastic cooling loss studies, ring acceptance studies. Need time for machine studies.

List of recommendations for follow-up

1. ISOLDE vacuum consolidation (long term goal of standardization): allocate real staff manpower rather than relying on students
2. East Area problem of strained supercycle: bring back 600ms scenario, recommend study of 2x PSB extraction to ISOLDE
3. PS instrumentation must work to allow completion of MTE commissioning. HIGH PRIORITY (will also free MD users).
4. SPS concerns: ageing SPS RF tubes, which might jeopardize future high intensity operation (see E Jensen, Session 3). MKDV outgassing is a limit to LHC beam intensity. 50ns LHC beam currently limited to 80% intensity. Recommend to observe MKDV1 outgassing during 2009 run.
5. Planning for Xmas mini-shutdown should be defined by summer to guarantee manpower availability.
6. 50ns LHC beam foreseen to be operational by 2010 in all accelerator chain and needs a dedicated user (2x PSB).

7. No physics and no beam MDs scheduled beyond November. Shutdown planning for experimental zones must be coherent with LHC running.
8. PSB BLMs need to be checked during HW tests and cold checkout (whole chain up to the control room). Recommend to revise the test procedure.
9. Mechanical fragility of ISOLDE scanners: launch a study for a new mechanical design and evaluate timescale and cost of renovation.
10. AD diagnostics consolidation budget is insufficient. Upgrade MTVs in the dogleg (higher sensitivity for pbar).
11. SPS BPMs renovation ongoing: any specific requests?
12. CTF3 frontends are at the limit of their capability. Need for new CPU cards.
13. Number of users problem: CO should make a proposal by modifying present system or moving to InCA.
14. OASIS needs strong and continued support (manpower issue).
15. Allocate MD time to solve AD low pbar yield issue.