

LSD Director Review Report

Initial response

TLA schedule

Draft re-plan of the Resource Allocation
Meeting

Fulvia Pilat

Director Review Report

Director Review: November 16, December 17 2012

Reviewers:

Cardman (editor)

Dallas

Ent

Hutton

McKeown

Neil

Rode

Sprouse

Report received January 3 and distributed to LSD
distribution.

Director Review Report – Draft response

- **Recommendation 1**
- **Hold an executive session of this review to discuss with appropriate experts, the optimum 2013 cryogenics operations plan which would adequately mitigate the risk to the late 2013 schedule milestones.**

Keeping both CHL 1 and 2 working concurrently as risk mitigation for a 1M\$ cost not compelling

Revised cryogenic plan even more needed after the **CHL-1** piping problem

RESPONSE: LSD will hold executive session. Cryogenic experts already working on mitigation plan

Oren, Harwood, Arenius, Ganni, Wright, Drury

- **Recommendation 2**
- **Develop, distribute, and maintain, a clear, consistent, high level representation of the schedule with well understood and articulated provenance of milestones**

RESPONSE: We will improve the existing high-level Fast-track

Pilat, Napier, Collins

Director Review Report – Draft response

- **Risk Evaluation**
- It is usual to have clear statements of both probability and consequences to assign risk levels; this may have been done, but it wasn't obvious how risk levels were assigned. It would be valuable to **assign two different risk numbers**: one for completion of the formal 12 GeV project (on time, schedule, and budget) and one for readiness for the start of the physics program (as scheduled).

RESPONSE: Not discussed yet (Smith, Pilat, Oren, Napier)

- **Mitigation for possible loss of gradient:**
- The review team was delighted to see a plan evolving for joint OPS/SRF “ownership” of the cavity performance history and analysis and planning. The broad ideas presented for mitigating a possible loss of gradient were good ones. What should happen next is that a **more detailed plan be developed** It was noted that one also needs to have thought through how best to complete the commissioning to meet the formal 12 GeV milestones in the event of various possible gradient problems so we don't lose time thinking about the problem and can implement the solutions as quickly as possible.

RESPONSE: We will produce a more detailed plan once the schedule delays due to CHL-1 piping are better understood (Preble, Drury)

Director Review Report – Draft response

- **Schedule Re-baseline and resource Analysis:**
- **General Critique:**
- The **definitions** of “Start”, “Finish” and “Float” appear to be inconsistent in a number of cases.....
- We also need clear identification of **milestones** that ARE formal 12 GeV project milestones (and the milestone “level”), milestones that are our own intermediate milestones that we regard as important for meeting the formal 12 GeV project milestones, and milestones that are relevant to the preparation for the start of physics.
- There should be a consistent approach to **staff**
- After clarification of these potential uncertainties and inconsistencies, a **follow-up presentation** on this subject in a regular LSD meeting, to which the review team is invited, would be useful

RESPONSE: we will clean up the schedule, identify milestones, fix staff and follow up at LSD Meeting (February 2013)

(Napier, Collins, Pilat + Freyberger, Spata for 12 GeV & operations milestones)

- **Addition to schedule tracking**
- It was generally felt that we should add the TLA commissioning to the LSD schedule if there continue to be serious delays in January

RESPONSE: we will track TLA in within LSD, need to identify responsible person ASAP

Director Review Report – Draft response

- **Hall Issues:**
- The **real status of Hall B was not clear** from the information presented – most importantly whether there are other substantial (and conflicting) responsibilities for many of the staff included in the manpower that was part of the analysis. A further study should fold in required **manpower levels** for 12 GeV detector construction, superconducting magnet needs, installation needs, and separately indicate requirements for ancillary detectors and other operation tasks. A simple method to come up with estimates for such integrated manpower levels should be studied.

RESPONSE: (Ent, Rode)

- The situation is “tight” enough that it is worth the trouble to investigate this, understand the **full load on Hall B staff** (and understand which other division staff could be moved temporarily to help with the situation if needed). It was good that the analysis apparently did include the correct relationship between total staff and man-days of work available. The situation in the other halls appears to be broadly under control.

RESPONSE: (Ent, Rode)

- The question of reworking the hall cryo systems and integrated control systems to be compatible amongst all Halls was raised. We would like to suggest to investigate whether the role and involvement of the cryo group can be made consistent for all Halls (especially Hall C), and whether the Hall A cryo systems can be made more fully compatible with those in the other halls. We strongly support an effort to look into this, but with a caveat – namely that it not add stress to the team that will be bringing multiple cryo systems online over the LSD. That may mean it has to be postponed to a down in 12 GeV operations. It is, however, a worthwhile long-term goal.

RESPONSE: LSD Team will work on this once the main cryogenics plan is understood

- **Dumps:**

- Substantial progress has been made on the dump issue. It should continue as planned to decision and resolution. The goal is to have beam dumps identical, with similar diffuser systems where needed. The only suggestion of consequence is to have, when plans are finalized, an **independent review with experts** such as Charlie Sinclair included in the final review team. Charlie has experience in dump design going back to SLAC and was deeply involved in the planning for CEBAF's dumps and machine protection review. Radiation levels should be projected forward to fold in beam dump work for Hall C.

RESPONSE: Review will be planned when appropriate (Freyberger)

- **Scope Contingency:**

- Good ideas were put forward on potential scope contingency. What is needed next is to **develop a decision process**. We also need to define (for each potential decision) a clear timeline, so the decisions are taken early enough to have maximum impact.

RESPONSE: Pilat

- **ESH&Q Response: Update to ARR**

- **Accelerator Commissioning Plan**

- It has been emphasized that as well as following the ARR process as currently defined and agreed with DOE, the laboratory will convene a Director's Review, likely with some external operations experts to examine the plans for commissioning of the 12 GeV accelerator and beam lines. It will be important to ensure we learn the lessons from other recent accelerator commissioning experiences. The director has taken steps with both TJSO and with ONP to raise the possibility of their providing observers for his review.

RESPONSE: Draft proposal for Commissioning Review submitted to Mont (Freyberger, Spata)

- **Experimental Hall Safety**
- The broad plan of reviewing and enhancing Hall safety is a good one, and simply needs to be pursued effectively and efficiently, using external reviewers with directly relevant expertise. We have an excellent record and a well-defined set of systems and processes. We need to verify the effectiveness (and remaining life) on existing systems, and review our overall systems and processes to identify areas where improvement can be made. Part of that effort should be to make the emergency response procedures in the halls as close to identical as possible (but differing as necessary to deal with particular risks that are unique to particular halls). A plan and schedule for this work would be useful.
- **Other Issues:**
- A couple of issues came up in discussion. In principle they fall beyond the strict purview of the review. Nevertheless, the opinions of the review team are likely quite valuable.
- **Magnet mapping for Hall D solenoid:**
- The committee was not briefed on what is currently planned in detail. In general it is felt that an effort to map the solenoid to 10^{-4} throughout its volume would be a waste of time. However, an effort to do a precision map along a set of straight lines parallel to the solenoid's geometric axis (and at different radii) would be of real value, providing useful information on the relation between the current and the field strength, the stability and correct operation of the superconducting coils and iron, and the repeatability of the central and fringe fields.
- A possible plan might involve:

- **Bubble Chamber Test:**
- There was discussion of the test of a bubble chamber for a future experiment. The proponents should put together a **detailed plan** of exactly what they want to do and the cost in terms of lab resources should be evaluated. With that information available, a **decision** should be taken (at the Director's level, following discussion with both the Physics and Accelerator ADs) as to whether we should try it or not, and under what circumstances would it be postponed or cancelled. It is our understanding (both from the PAC presentation and conversations with Riad) that the bubble chamber test does not involve high risk target materials, and that the cost of carrying it out (in terms of both technical and human resources) would be modest, but this needs to be verified in detail before considering the measurement seriously.

RESPONSE: Prepare detailed plan (Suleiman)

- **Future Management**
- The improvements in coordination between the many pieces of the laboratory during the 6 month shutdown and during this 12 month shutdown have been considerable and such an approach should certainly be considered for future analogous efforts, possibly for future shutdowns. The UIM shutdowns, which have been floated are possible examples.
- At this stage, the review committee takes the view that the Commissioning Plan and Execution and the future “Operations” periods should be coordinated through the line. Specifically, the operations structure within accelerator should lead.
- Nevertheless, the promise offered by improved communications and coordination are evident. Examples in this report are the involvement of the SRF team in the commissioning and the coordination of the beam dump work. The commissioning effort presents an opportunity to enhance that planning and hone it to something that will serve us well during routine 12 GeV operations.
- **Recommendation: The Accelerator Operations and relevant ADs develop a management and coordination plan for operations complete with a clear articulation and implementation in time for the Directors Review of the Commissioning Plan.**

**RESPONSE: Plan end of LSD to integrate with the RECO and commissioning plans.
Effort started already (Pilat+Team)**

New approach to the RAM (Wednesday Meeting)

Goals:

- Increase effectiveness of meeting, more a working than reporting meeting
- Support the LSD integration effort
- Start to “think” RECO/Commissioning

Proposal:

- geographical (areas) rather than organizational (resource groups)
- Add “TAG” to LSD schedule entries
- Identify people responsible for integration of areas (in progress) (similar to 6 GeV org)

- **Injector**
- **Arcs + S/R**
- **Linacs**
- **Hall A transport + dump**
- **Hall B transport + dump**
- **Hall C transport + dump**
- **Hall D transport + dump**
- **Halls A**
- **Hall B**
- **Hall C**
- **Hall D**
- **FEL**
- **TLA/Test-Lab**

BACK-UP SLIDES

Response to November 16 report - 1

- So it is critical the **CMTF commissioning** be accomplished on schedule, with test of a C100 cryomodule to begin Nov. 26

C100-6 cool-down to start on Dec 17 (contingency: skip cryomodule testing in CMTF)

- **Hall D solenoid test** is critical

Cool-down to start this week

- The LSD management should consider whether it needs to **incorporate the TLA schedule** within its own schedule

Present rough estimate is for 80% of functionality recovered by February 2013.

If schedule slides further at the beginning of January, **we will include TLA as a CR.**

- There is a sense that the LSD should be more aggressive with its use of the **risk registry**

New risk table worked out. S. Smith presentation

- Fulvia **reporting** her concerns to relevant lab leadership, say monthly

Will do (starting December 19) and proactively try and resolve issues at ALD level.

- Ensure that the different **schedules** (shutdown work, project, planning for commissioning ops, etc.) are all **synchronized**

D. Napier presentation

Response to November 16 report - 2

- *It will be important for us to have a clear view of what is and what is not a requirement for the **12 GeV Project** formalities, as well as what is desirable with respect to the effective and **efficient startup** of the 12 GeV physics program and the eventual achievement of full **accelerator and Hall performance***

Striking a balance between 12 GeV Project deliverables (shorter term) and accelerator performance and physics program (longer term) is one of the very reasons of having the LSD organization. Milestones, Risk table, scope contingency list have been drafted and maintained with this in mind.

- *There is unanimity that the **cryogenics scope** is the highest concern. The team should seek a more conservative plan for the December review. Attempts should be made to take scope out of the cryo- plan.*

Will Oren presentation, Risk table.

- *Contingency responses **for loss of gradient** should be worked through with care ahead of time, so that the effort required to carry out such a response (should it be necessary) can be undertaken smoothly and with minimum incremental planning.*

Joe Preble presentation, Risk table.

Response to November 16 report - 2

- The **Hall B manpower** is being stressed, but the situation appears manageable. Other halls seem to be doing fine
- Review the **Hall cryogenic systems** NOW for potential steps that would improve their maintainability and ease of operation
- Are we in control of the **flood recovery** in Hall C?
Walt Akers presentation, including resource analysis of Halls personnel
- The **beam dump situation for Halls A and C** should be reviewed thoroughly and quickly, decisions taken shortly on what enhancements are desirable, and then those enhancements should be undertaken quickly so they can comfortably be in place before first beam delivery to the Halls.
Arne Freyberger presentation
- **Safety procedures in the Halls:** 1. to verify that all of the equipment is in excellent condition and ready for a decade of use with routine monitoring. 2. synchronize/reduce the differences in the procedures between the halls as much as is possible
- The LSD team and ESHQ should consider establishing a formal system to review and document the **safety systems and procedures in the halls** as part of the LSD process
Mary Logue presentation

Scope contingency

- Cancel warm-up of CHL-1 in summer, run CHL-1 and 2 for CM commissioning and cold-box 2 re-commissioning
- Skip preventive maintenance cycle at CTF
- Put off replacing LN2 dewar at CTF
- Last 3 Cryomodules tested only in tunnel (no CMTF)
- Shortening or cancellation of the FEL run (after May)
- Delay Admiral
- Defer Bubble Chamber tests to UIM shutdown
- Defer 11 GeV separators installation in tunnel after LSD
- Defer oLO4 (R100) design/installation of RF zone
- Defer Hall A dump
- Delay Hall C flood recovery (lots of float)