

# ATLAS MREFC NSF FDR Director's Review

July 2019

## Overview

### Comments:

1. The ATLAS HL-LHC MREFC is generally in good shape in terms of substance.
  - a. Most elements of the project are currently ready for production and those that require additional effort are on track for an April 2020 start.
  - b. The cost estimates are credible and backed by solid BOE's in all cases.
  - c. The backup documentation is generally well prepared and well organized.
  - d. Risk estimates are generally reasonable, with a few exceptions where the assigned risks appear to be on the low side. The overall level of contingency is appropriate. The "double counting" noted by the PDR has been removed.
  - e. A strong management team is in place and working well.
  - f. The schedule appears to be credible.
2. Some work remains to be done to arrive at a set of presentations that properly reflects the strong substance of the project.
  - a. In some cases, the talks were too long and/or overly detailed.
  - b. There was too much redundancy between the technical and management talks.
  - c. The agenda for the breakout sessions was difficult to follow, leading to a situation where the reviewers were often not clear on what talks to expect in a given session.

- d. The EPO presentation does not adequately highlight the strong opportunities for education and outreach that are embodied in the project.
  - e. The review team noticed that documents in DocDB were being revised as the review progressed. This is tolerable in the context of this review, but should not be done during the FDR.
3. The strong possibility of a one-year delay in the schedule for the HL-LHC may have cost and schedule repercussions for the ATLAS MREFC. Although the project is to first-order insulated from such a change, the possibility of “knock-on” effects remains.

**Recommendations (friendly suggestions):**

1. Prepare talks that concentrate on the key points, without excessive detail (such details can be placed in backup slides to address questions).
2. Keep in mind that the composition of the FDR committee will mostly be well acquainted with the project. The FDR committee will be largely the same as the PDR committee and they will have been examining the material prior to the review.
3. For technical breakout talks, add words to the slides about various prototyping rounds and their lessons learned that give confidence that the prototypes are indicative of future success.
4. For each technical area indicate what constitutes success (have a crisp definition that includes an adequate level of testing).
5. For management breakout talks, limit the technical summary information to the minimum needed to indicate what is being costed,

scheduled, and managed. Additional technical material, needed in response to possible questions, can be placed in the back-up slides.

6. Organize agenda in a manner that is easy to follow. It should be possible to provide for parallel sessions in Indico. Failing that, a separate document should be provided to help review team understand what will be presented when.
7. The science talk should:
  - a. include a brief summary accessible to the layperson
  - b. provide the information needed to help the committee understand the flow down of science requirements to technical requirements (this part can be aimed at experts)
  - c. be one end of a coordinated "hand off" with the individual technical presentations (do this in a uniform way)