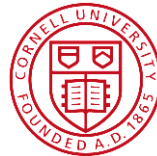


CTF Down: Impact on CM Production

What-If Schedule Discussion



Presented by E. Daly



Jan 10, 2017

Outline

- Background - UIM
- Overview
- Mitigations for LCLS-II
- Schedule Analysis
- Summary
 - New cold box from Linde containing turbines currently resides in the CTF building.
 - Preparations for piping work are on-going now.



Utilities Infrastructure Modernization (UIM) (1/2)

- The current cryogenic, power distribution, cooling water, and communication utility system gaps at TJNAF jeopardize its capability to provide the unique competencies to deliver its mission and customer focus within the DOE laboratory system. This infrastructure is essential to operation of TJNAF.
- This project includes replacement and upgrading of the accelerator site electrical distribution feeders, replacement of cooling towers serving accelerator operations, providing additional cooling and uninterruptable power for the computer center, **upgrading of the cryogenics test facility to support cryomodule development and testing**, and improving site communications infrastructure. This project will extend the life of existing utilities infrastructure and provide additional capacity to meet the Lab's science mission. The design will emphasize more open, collaborative, and flexible environments to respond to future mission needs.

<https://www.jlab.org/fm/construction/UIM/>

Utilities Infrastructure Modernization (UIM) (2/2)

- Managed as a project with a series of critical decision dates
- LCLS-II production overlaps with UIM
 - Last JLab CM shipment is DEC 2018

The Schedule

Milestone Description	Date
CD-0: Approve Mission Need	9/18/2009 (actual)
CD-1: Approve Alternative Selection and Cost Range	10/14/2010 (actual)
CD-2/3A: Approve Performance Baseline and Start of Construction - Phase A	August 2014
CD-3B: Approve Start of Construction - Phase B	October 2014
CD-3C: Approve Start of Construction - Phase C	June 2015
CD-4: Approve Project Completion	December 2018

<https://www.jlab.org/fm/construction/UIM/>

Overview

- CTF Down begins 17-Feb:
 - 3.5 Months for equipment installation
 - 2 Months for commissioning and restart
- Impacts all SRF programs at JLab without mitigations
- LCLS-II Impacts
 - Cavity qualification
 - Production ramp-up
 - CM acceptance testing

Impacts and Mitigations (1/2)

- Cavity Qualification
 - Plan to qualify cavities for CM03 and CM04 before down in VTA
 - Need cavities for CM05, CM06 and possibly CM07 qualified elsewhere to bridge gap
 - Assume re-test in qualification rate
 - Assume TD material from RI to avoid customs issues
 - Mitigation - Plan to have RI/DESY qualify cavities at a rate of 4 – 6 cavities per month starting February 2016
 - Received quotation from RI for four batches of tests at DESY
 - Mitigation – Prepare dewar 5 for testing up to four cavities per cycle during CTF down
 - Creates additional capacity in order to catch up with qualification activities
 - Consider having cavities tested at FNAL
 - Discussing options with FNAL STL – need to take into account re-rinse rate and R&D priorities at FNAL

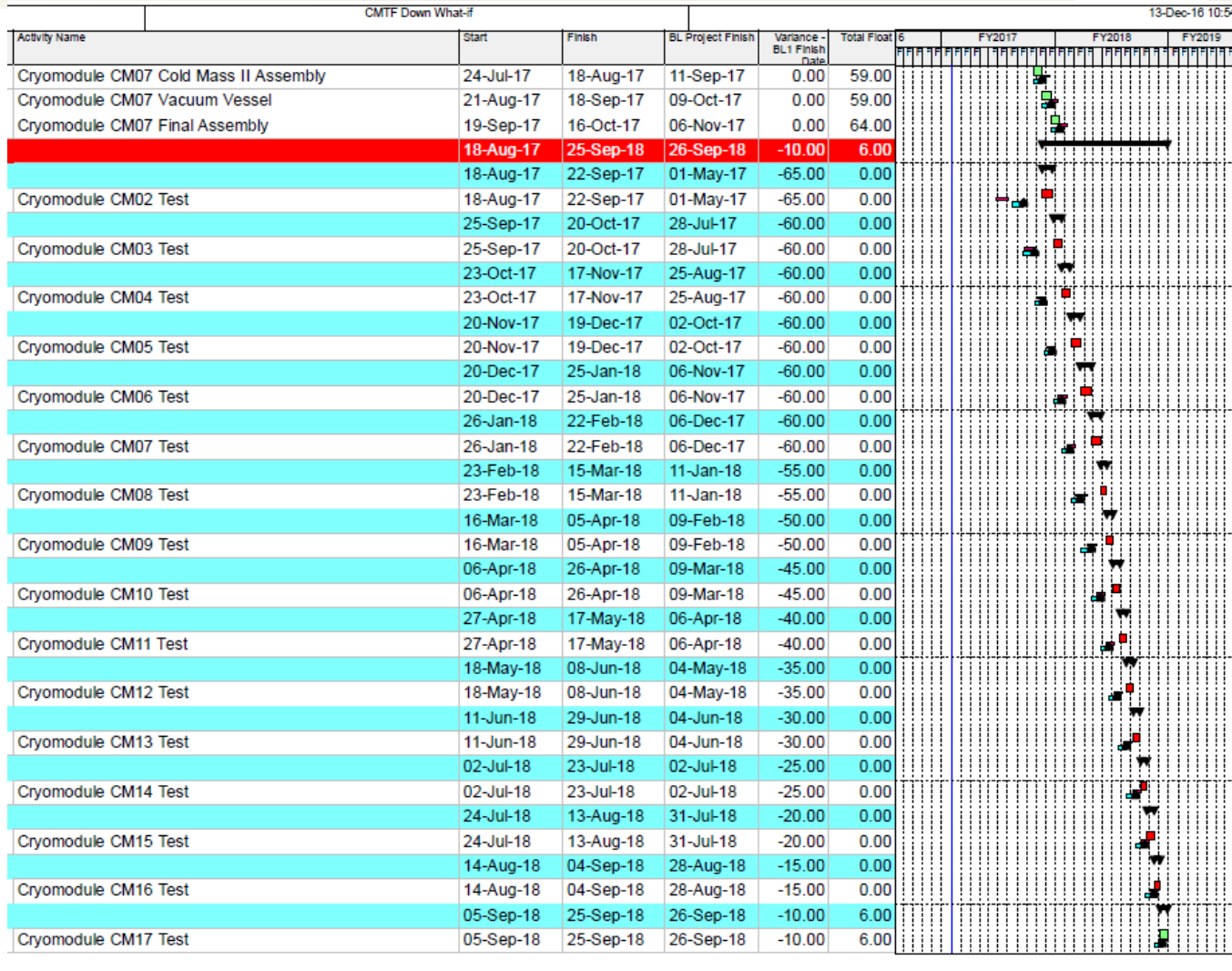
Impacts and Mitigations (2/2)

- Production Ramp-Up
 - Lack of cavities would create gap in production
 - Mitigation – test qualified cavities for CM03 and CM04 at JLab in advance of CM05 deliveries from RI/DESY
 - Retains smooth labor profile to avoid standing army costs by loading up CM assembly work stations
- CM Acceptance Testing
 - 3.5 + 2 month down creates delay in start of pCM re-testing, CM02, CM03...
 - Mitigation – shorten testing cycle on last 10 CMs by 25% to achieve 0 days of float
 - Consider performing shipping test with FNAL pCM
 - Consider not testing some portion of CMs if testing proceeds successfully

Schedule Analysis

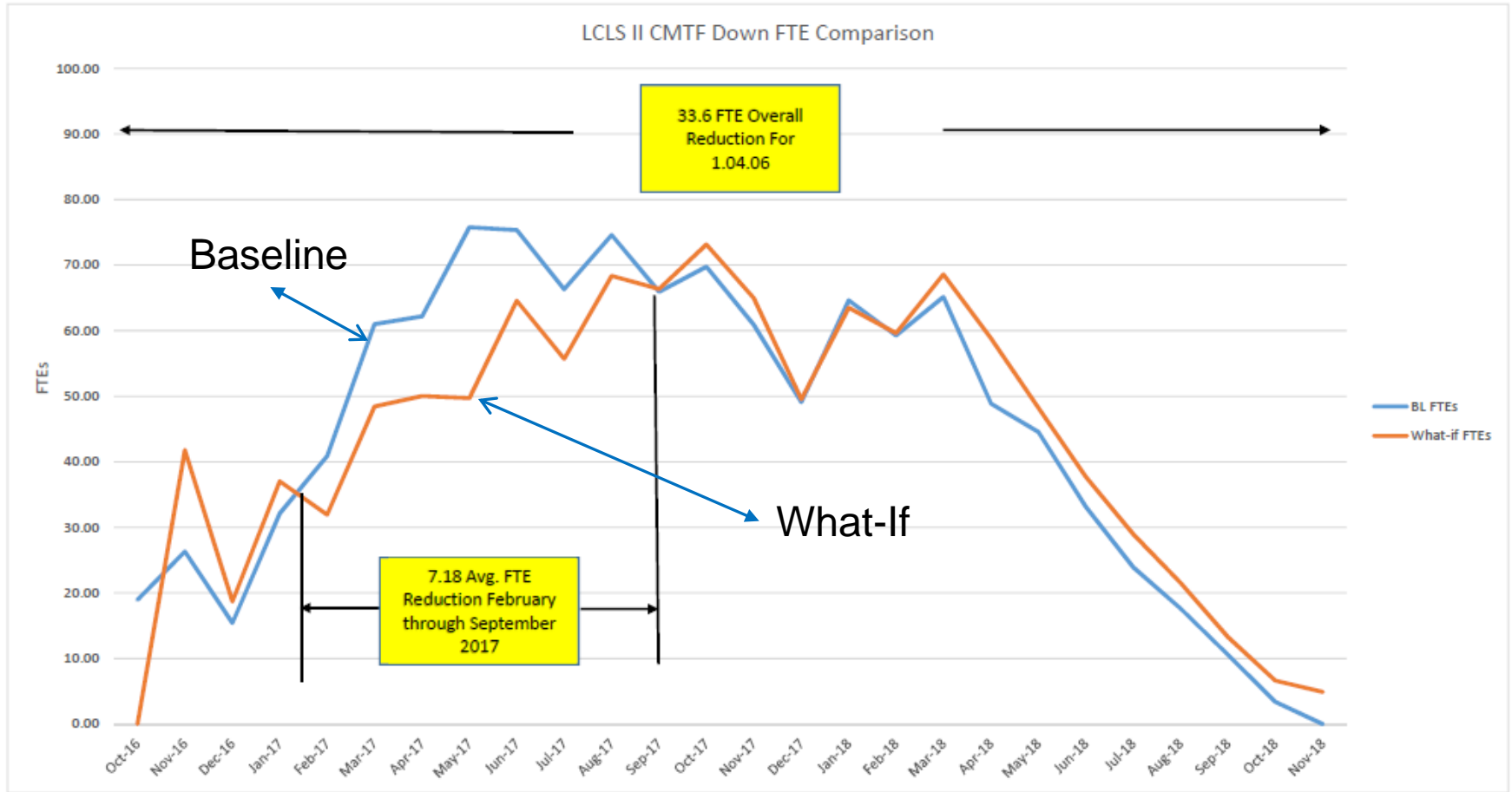
- Snapshot of cavity deliveries
 - Forecast is several months ahead of baseline
 - What-if falls behind forecast but still ahead of baseline
 - No gaps in string assembly start – 26 d float
- Snapshot of CM acceptance testing
 - Forecast is several months ahead of baseline
 - What-if falls behind forecast but still ahead of baseline
 - Gap in CM testing due to 3.5 month down
 - Revised testing duration – 0 d float
- CM Assembly Labor Profile
 - Unchanged at the 10% level (65 FTEs)
 - Have budget to add 4 – 6 techs for CM assembly

CM Acceptance Testing Schedule Analysis



Legend
 Baseline (Red)
 Forecast (Blue)
 What-If (Green)

Labor Profile Schedule Analysis



Summary

- CTF Down begins 17-Feb:
 - 3.5 Months for equipment installation
 - 2 Months for commissioning and restart
- Impacts all SRF programs at JLab without mitigations
 - Actively working to mitigate schedule impacts
- LCLS-II Impacts
 - Cavity qualification – retain 26 d float with RI/DESY testing of up to 24 cavities
 - Production ramp-up – avoiding standing army with proposed solution
 - CM acceptance testing – what if shows 0 d float, reduced testing protocols



Back-Up Slides