



Follow Up Questions (WBS 121.06)

Breakout Session

Steve Dixon

PIP-II IPR

4-6 December 2018

In partnership with:

India/DAE

Italy/INFN

UK/STFC

France/CEA/Irfu, CNRS/IN2P3

Outline

- Responses to Past Reviews
- Risk Management
- Schedule
- Contracting Approach
- Questions

Response to Recommendations

- Director's CD-1 Review (October 2017) ^[1]
 - 2 Recommendations, both closed
- DOE CD-1 Review (December 2017) ^[2]
 - 3 Recommendations, all closed
- P2MAC Review (March 2018) ^[3]
 - 3 Recommendations, all closed

Link to iTrack database: <https://www-esh.fnal.gov/pls/cert/iTrack.html>

[1] Review ID 47866

[2] Review ID 48107

[3] Review ID 48469

Conventional Facilities Risks

- **0 High Risks**
- **15 Medium Risks**
- **31 Low Risks**

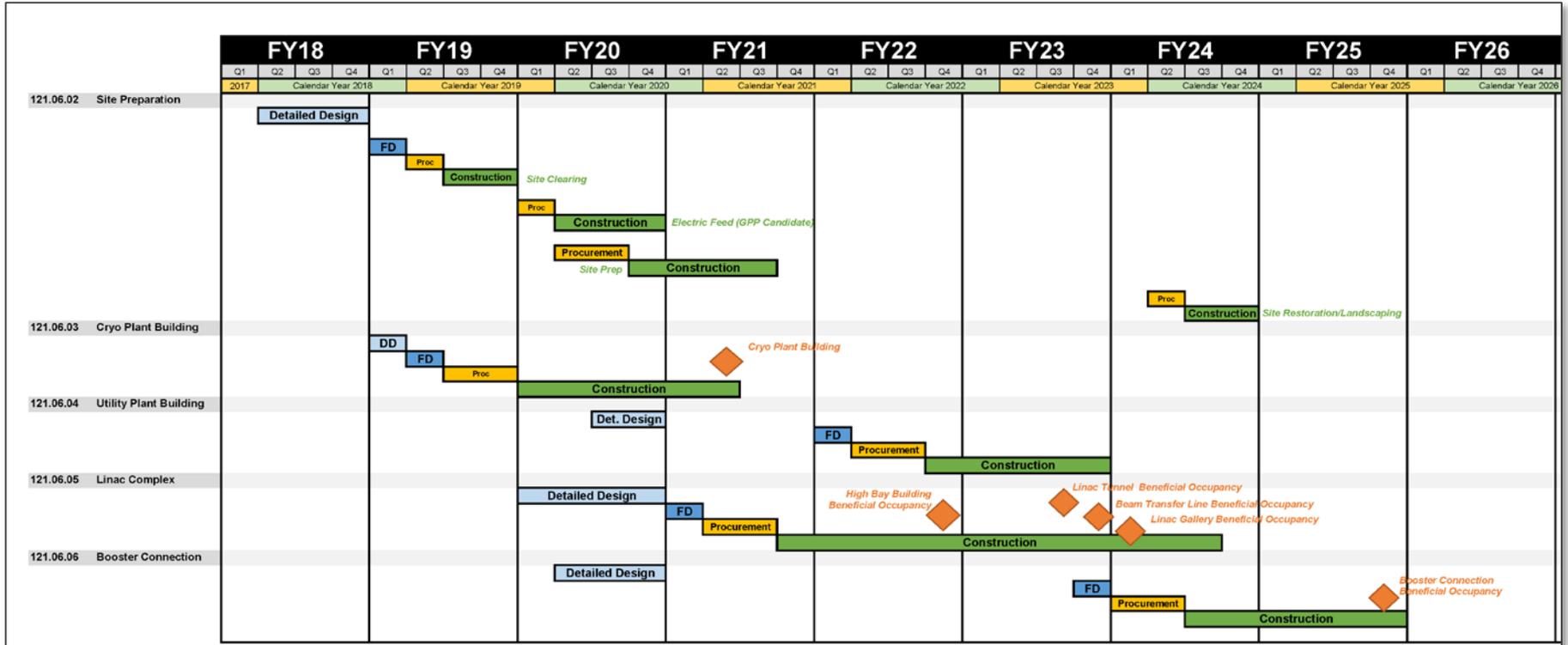
Top 3 Risks

- RT-121-06-001 – Subproject Requirement Changes
- RT-121-06-002 – Accelerator Shutdown Schedule
- RT-121-06-003 – Construction Bids Exceed Estimates

Link to Risk Register:

<https://fermipoint.fnal.gov/organization/ocoo/ippm/Lists/Risk%20Register/all-risks.aspx>

CF Schedule Overview



Contracting Approach

Anticipated Construction Packages:

- Site Clearing;
- Cryogenics Plant Building;
- Site Work;
- Electrical Feeder (possible GPP);
- Linac Complex;
- Booster Connection;
- Site Restoration;

Each construction package will be issued for a firm fixed price procurement.

Questions

1. What scope is CD being asked to complete for technical groups?
2. Please walk through ED0006218 (LCW Building Infrastructure) to show how requirements flow to design and installation. - **Jonathan Hunt**
3. Why use IDIQ for such a large scope of design?
4. Basis of Estimate for Cryoplant shows 200 days in design and procurement. Is this correct?
5. How are dimensional concerns in the Cryoplant and Linac Tunnel addressed?

Questions - Cryoplant

1. What building codes are being used in the design of the cryogenic plant? Do they include seismic?
2. Is the Cryoplant delivered turnkey?
3. How are local code requirements met by foreign partners (Cryoplant)?
4. How can you have the technical interface requirements when the vendor is unknown?
5. Does the partner have experience building cryo plants? In the USA?
6. Walk us through the Cryoplant requirements in ED0006718.

Cryoplant Requirements

Requirement #	Requirement Statement
F-121.06.03-A001	The CPB shall provide a safe environment for employees and the public.
F-121.06.03-A002	The CPB shall provide space and infrastructure with the proper floor load rating for the warm compressors.
F-121.06.03-A003	The CPB shall provide space and infrastructure with the proper floor load rating for the cold box.
F-121.06.03-A004	The CPB shall provide space and infrastructure for unloading/loading activities
F-121.06.03-A005	The CPB shall provide exterior space for storage tanks/dewars.
F-121.06.03-A006	The CPB shall provide space for operating the cryoplant including control room space, meeting/planning space and support space.
F-121.06.03-A007	The CPB shall comply with the overall character of the PIP-II campus and applicable portions of the Fermilab Campus Plan.
F-121.06.03-A008	The CPB shall connect to existing Fermilab infrastructure. This includes electrical, domestic water, industrial cooling water, sanitary sewer, chilled water and data/communication.
F-121.06.03-A009	The CPB shall be located adjacent to the PIP-II Linac Complex such that the cryogenic distribution system feeds the front end of the Linac.
F-121.06.03-A010	The CPB shall provide foundations for gaseous helium storage tanks.
F-121.06.03-A011	The CPB shall provide foundations for a liquid helium dewar.
F-121.06.03-A012	The CPB shall provide foundations for a liquid nitrogen dewar.
F-121.06.03-A013	The CPB shall provide truck access for helium and nitrogen deliveries.
F-121.06.03-A014	The CPB shall provide space and infrastructure to support a 4.5 K cold box upgrade option

Functional Requirements Specifications (ED0006718)

Requirement ID	FRS Reference	Requirement Statement
General		
T-121.06.03-A001	F-121.06.03-A009	The CPB shall be located at the upstream end of the Linac Complex
Architectural		
T-121.06.03-B001	F-121.06.03-A007	<p>The CPB shall be developed based on the 2018 Fermilab Campus Master Plan including the desire that the "design of buildings and open spaces should encourage interaction, creating the settings to bring staff, users and visitors together, becoming vibrant centers of laboratory life."</p> <p>To this end, the CPB will incorporate the appropriate portions of the design guidelines including:</p> <ul style="list-style-type: none"> • Entrances and ground floors that are welcoming and provide an opportunity for interactions; • Entrances that are evident in the daytime and at night; • The ground floor will emphasize transparency; • Service and utilities areas will be located so...as to not negatively affect pedestrian paths or building entrances; • Provide long term flexibility and life cycle value; and • Uphold the unique character of Fermilab.
Cold Box Station		
T-121.06.03-C001	F-121.06.03-A004	<p>The Cold Box Station (CBS) shall include an overhead bridge crane with the following criteria:</p> <ul style="list-style-type: none"> • Capacity of 25 tons (50,000 pounds); • Hook limits to provide coverage for the major equipment and loading dock; • Hook height of 20 feet above finished floor;
T-121.06.03-C002	F-121.06.03-A004	The CBS shall include at grade loading dock space to accommodate a standard 55-foot-long semi-trailer.
T-121.06.03-C003	F-121.06.03-A004	The CBS shall include, as a minimum, a 16-foot-wide by 16-foot-tall overhead door;
T-121.06.03-C004	F-121.06.03-A003	The flatness and levelness of the new floor slabs built as part of the conventional facilities shall be designed for normal construction tolerances and a ASTM E1155 floor flatness value of F(F) 25 and a floor levelness F(L) of 20.

Technical Requirements Specifications (ED0006719)

END