Organization and Management Strategy; Wrap-up

Steve Holmes

DOE Independent Project Review of PIP-II

15 November 2016

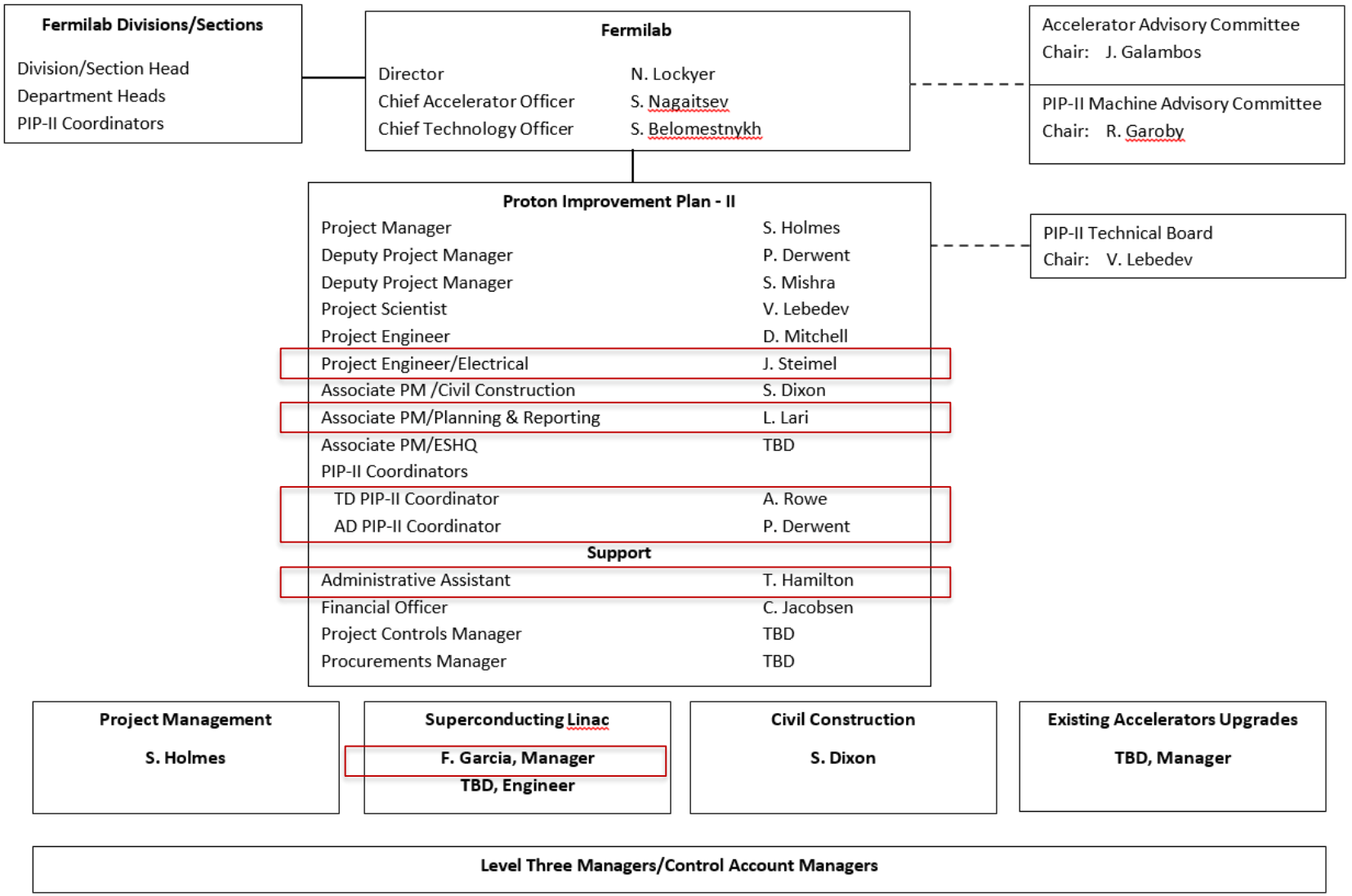
Outline

- Project Organization
- Management Team
- R2A2s
- Project Office Evolution
- Project Strategy
- Wrap-up

Project Organization

- We have established an organizational structure that is appropriate for a DOE413.3b project
- This organization has been leading the R&D phase, and has managed the transition to formal project status over the last year.
  - The organization is currently ~90% populated through level 3; open positions will be filled as conditions warrant
- This organization is fully capable of successfully constructing and commissioning an accelerator that will perform as specified

Project Organization/Management Team



Project Organization/Management Team

Project Management S. Holmes	Superconducting Linac F. Garcia TBD, Engineer	Conventional Facilities S. Dixon	Existing Accelerator Upgrades TBD
Fermilab and USA Coordination S. Holmes	Project Management F. Garcia	Project Management S. Dixon	Booster B. Pellico
International Coordination S. Mishra	Accelerator Physics Design V. Lebedev	Conventional Faciilties S. Dixon	Recycler I. Kourbanis
Business Office L. Lari Project Controls: TBD Procurements: TBD Finance: C. Jacobsen	IS & LEBT L. Prost	Beam Transfer Line D. Johnson	Main Injector I. Kourbanis
ESH/QA TBD	RFQ J. Steimel	Beam Absorber D. Johnson	
System Engineering & Integration D. Mitchell Electrical/J. Steimel	MEBT A. Shemvakin	Beam Instrumentation V. Scarpine	
	HWR Z. Conway	Control System J. Patrick	
	SSR1/SSR2 L. Ristori	Vacuum A. Chen	
	LB650/HB650 T. Nicol	Elec/Mech Support Systems C. Baffes	
	RF Power D. Peterson	Safety Systems TBD	
	RF Integration B. Chase	Test Infrastructure CMTF: J. Leibfritz MDB: J. Ozelis	
	Cryogenic Systems A. Klebaner	Installation/Commissioning TBD	
	Warm Units TBD		
	Magnet Power Supplies B. Hanna		

Project Organization/Advisory Committees

- Accelerator Advisory Committee reports to the Fermilab Director
  - Charged to provide advice on the strategic approach and effectiveness of the accelerator program at Fermilab
    - Operations and Performance Improvements
    - Projects
    - Advanced Accelerator R&D
  - Chair: John Galambos/Accelerator Physics, Beam Instrumentation, and Ion Source Group Leader/SNS
- PIP-II Machine Advisory Committee reports to the Accelerator Division Head
  - Charged to provide advice on the technical approach to PIP-II and the corresponding development program
  - Formally convened as a subcommittee of the AAC
  - Chair: Roland Garoby/Technical Director/European Spallation Source
- Technical Board advised the Project Scientist
  - Charged with controlling the technical configuration of PIP-II
  - Chair: Valeri Lebedev/PIP-II Project Scientist

Management Team

- The PIP-II management team has extensive experience in DOE construction projects and in the commissioning/operations of accelerators
  - S. Holmes: Main Injector Project Manager, Accelerator Division Head, Associate Laboratory Director for Accelerators
  - P. Derwent: NOvA Associate Project Manager, PIP-II Department Head, Recycler Department Head, Antiproton Source Department Deputy Head
  - S. Mishra: Main Injector Commissioning Coordinator, Main Injector Department Head, ILC/Fermilab Deputy Director, India Collaboration Development
  - V. Lebedev: CEBAF Commissioning Team, Tevatron Run II accelerator physics
  - D. Mitchell: Design/Drafting Department Head, U.S. LHC Accelerator Project
  - S. Dixon: NOvA construction manager, Short Baseline Neutrino GPP manager
  - L. Lari: Lead planner ESS linac, LHC installation coordination team

R2A2s

Roles, responsibilities, authorities, and accountabilities exist in draft form for all members of the Project Management Team

- The Management Team is currently operating according to these descriptions

Example: PIP-II Project Manager

Authority and responsibility for organization, management, and execution of the PIP-II Project including:

- Develop a complete PIP-II Conceptual Design, followed by a Technical Design appropriate for construction;
- Develop and manage the PIP-II R&D Program;
- Establish the PIP-II baseline including the project scope, and associated technical performance, cost, and schedule goals;
- Manage the construction phase of PIP-II;
- Coordinate with the Fermilab Division and Section Heads to assure that resources are appropriately identified and managed;
- Coordinate efforts of national and international partners;
- Coordinate all project documentation and reporting as required by DOE 413.3b;
- Serve as Accelerator Division Associate Head;
- Provide oversight for all activities required to assure successful integration of PIP-II within the accelerator complex;
- Organize and manage the PIP-II Project Office.

Accountable to: Accelerator Division Head

Plan to Populate the Project Office

- At CD-1 we expect to have in place the people listed as TBD on slide 4
  - APM_ESHQ
  - Project Controls Manager
  - Procurements Manager
  - Existing Accelerators Manager
  - Superconducting Linac Lead Engineer
- Eventually the Office staff will include a few more support staff, including additional project controls specialists
- When fully staffed (CD-2) it is estimated the Project Office will comprise 21 FTE

Project Strategy

- Goal is 1.2 MW at start of LBNF/DUNE operations (~2025)
- Construction phase is 6 years: 2020-25

$\Rightarrow$ CD-3 in FY20
  - CD-2/3a in FY18/19
  - CD-1 in FY17
  - CD-0 in FY16
- CD-1: Q4FY17 (early date)
  - CDR
  - RLS/Cost Estimate
  - Independent Cost Review
  - Independent Design Review
  - Initiate NEPA
  - Keep R&D on track
  - Management Additions: APM-ESHQ, PCM, L2Ms

Project Strategy

- CD-2/3a: Q1FY19 (early date)
  - Engineering Design: More engineers, designers, drafters
  - EVMS: More project controls specialists
  - Complete NEPA documentation
  - Keep R&D on track, national and international
  - Independent design reviews (following Fermilab process)
  - Joint (Fermilab-India) technical reviews
  - Finalize international deliverables
  - Management Additions: CAMs
- CD-3: Q4FY20 (early date)
  - Final Design
  - Independent design reviews
  - Joint (Fermilab-India) technical reviews
  - EVMS operational
  - Complete R&D
  - Long-lead procurements: Nb, initial cavity contract, cryoplant, civil construction initial site activities
- CD-4: Q3FY26 (early date)
  - KPPs

Wrap-up

Suggested Charge responses

1. Yes. Yes.
2. Yes.
3. Yes.
4. Yes. Yes. Yes.
5. Yes.
6. Yes. Yes.

More specifically…

Wrap-up

- PIP-II conceptual design is responsive to the goals established by the Mission Need Statement
  - Draft CDR exists
  - CDR to be reviewed by P2MAC in April 2017
- R&D program mitigates risks associated with the conceptual design
  - Front end systems test (PIP2IT) and RF controls; SRF development
  - In collaboration with India/DAE laboratories
  - Monitored by P2MAC
  - Planning for completion in FY2020
- Cost estimate prepared in June 2015 corresponds to the scope included in the conceptual design
  - Point estimate: $516M; Upper cost range: $650M
    - Cost to DOE after incorporating international offsets
  - Some known adjustments to be incorporated at CD-1
    - Beam commissioning per KPPs
    - Escalation per assumed funding profile
    - To be developed as part of RLS

Wrap-up

- Resource Loaded Schedule is under development
  - WBS established
  - Major elements of the R&D phase incorporated
  - Major milestones for R&D and construction phases identified
  - Will extend through construction phase at CD-1
- An experienced management team is in place that can be expected to successfully execute the PIP-II project.
- ESH is being integrated into the project, following laboratory policies and procedures
  - Accelerator shielding and operations requirements at PIP2IT
  - NEPA strategy developed and initial steps in process
    - Wetlands delineation
    - EENF
- The collaboration with India/DAE labs is maturing and starting to deliver collaboratively developed hardware
  - Joint R&D document defines the R&D phase deliverables
- Potential European contributions under discussion
- We expect to be ready for a CD-1 review in 6-8 months
  - Most required elements are currently moving forward