

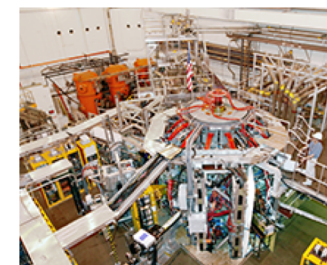
NSTX-U All-Hands

J. N. Galayda
NSTX-U Recovery Director

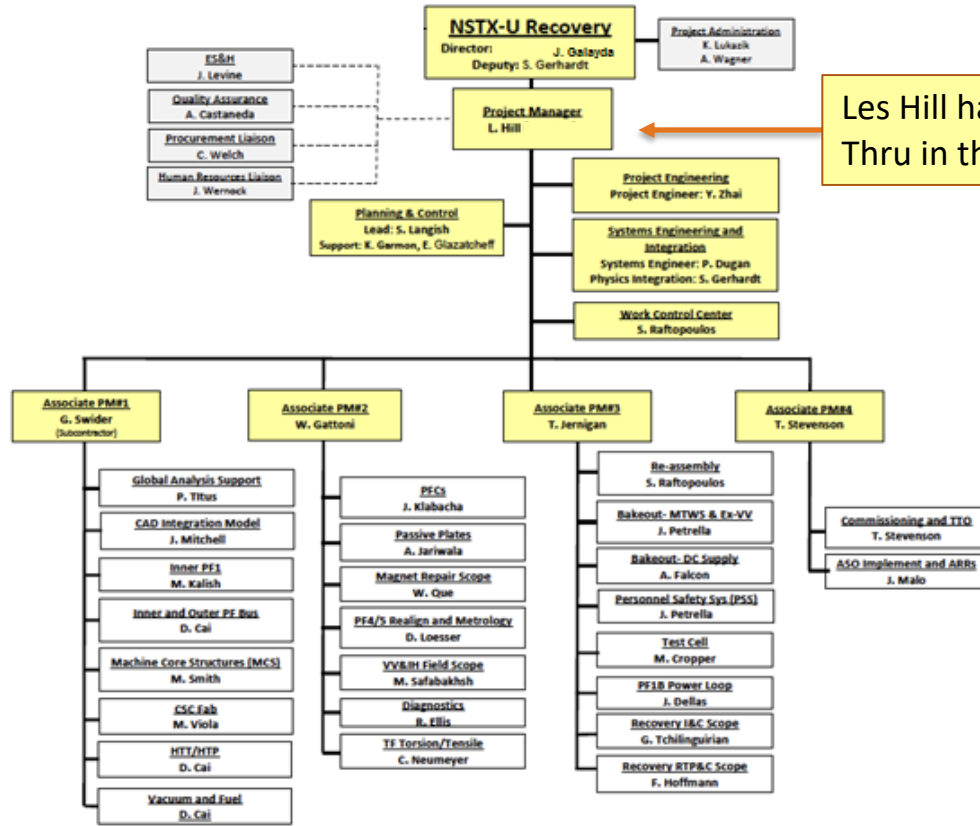
Transform the Lab towards programs of the future, revitalize and diversify capabilities

My History

- 1977-1990: Brookhaven National Laboratory
 - Design, construction and operation of National Synchrotron Light Source
- 1990-2001: Argonne National Laboratory
 - Management of design, construction and operation of Advanced Photon Source accelerator systems
 - Successful free-electron laser (FEL) demonstration, setting the stage for Linac Coherent Light Source at SLAC, the European XFEL and similar facilities in Italy, Japan, Switzerland, China...
- 2001-2019 SLAC National Accelerator Laboratory
 - 2001-2009 Linac Coherent Light Source (LCLS) project director: world's first Angstrom-range SASE FEL
 - 2009-2013 Accelerator research, prepare for LCLS-II
 - 2013-2019 LCLS-II project director- superconducting linac & two new x-ray sources
- August 1 2019: NSTX-U Project Director
 - A Jersey boy comes home



Organization



Les Hill has agreed to see the project Thru in this role.



My impressions after 1+ month at PPPL

- Team is competent, energetic and strongly motivated
- DOE has been super-supportive of
 - PPPL
 - project goals and
 - the importance of re-starting NSTXU and plasma physics research here.
- I've received a warm welcome and a lot of help from the Project team
- Special thanks to Richard Hawryluk, Stefan Gerhardt & Les Hill for orienting me to the project



NSTXU-R Project Status

- Project is 42% complete
- Work done to date has cost 2% less than estimated 😊
- Work done to date is 4% less than was planned 🐢



Project is ready & waiting for DOE approval of CDE-2

- August Department of Energy Project Review was a success
- The reviewers agreed the project is ready for CDE-2
 - approval of the design (at ~70% complete)
 - Permission to carry the design thru to completion
 - Approval of the budget and schedule of the entire project



Also, the project will soon have DOE approval of CD-3a

- **CD-3a is permission to start buying and building a \$64M portion of the project**
- A fraction of the upgrade activities were selected for review and baseline approval to support work planned in the near term
 - Plasma-facing components(PFC)
 - Machine core structures
 - Passive plates
 - Heat transfer plate/tubing
 - Center Stack casing
 - PF-4/5 coil alignment
 - Inner PF Coil replacement
 - Interspace vacuum pumping system
 - PFC Diagnostics and Ip Rogowski
 - PF1-b Power Loop
 - Camera Surveillance
 - Shielding
 - Radiation annunciation
 - Personnel Safety System circuit breakers



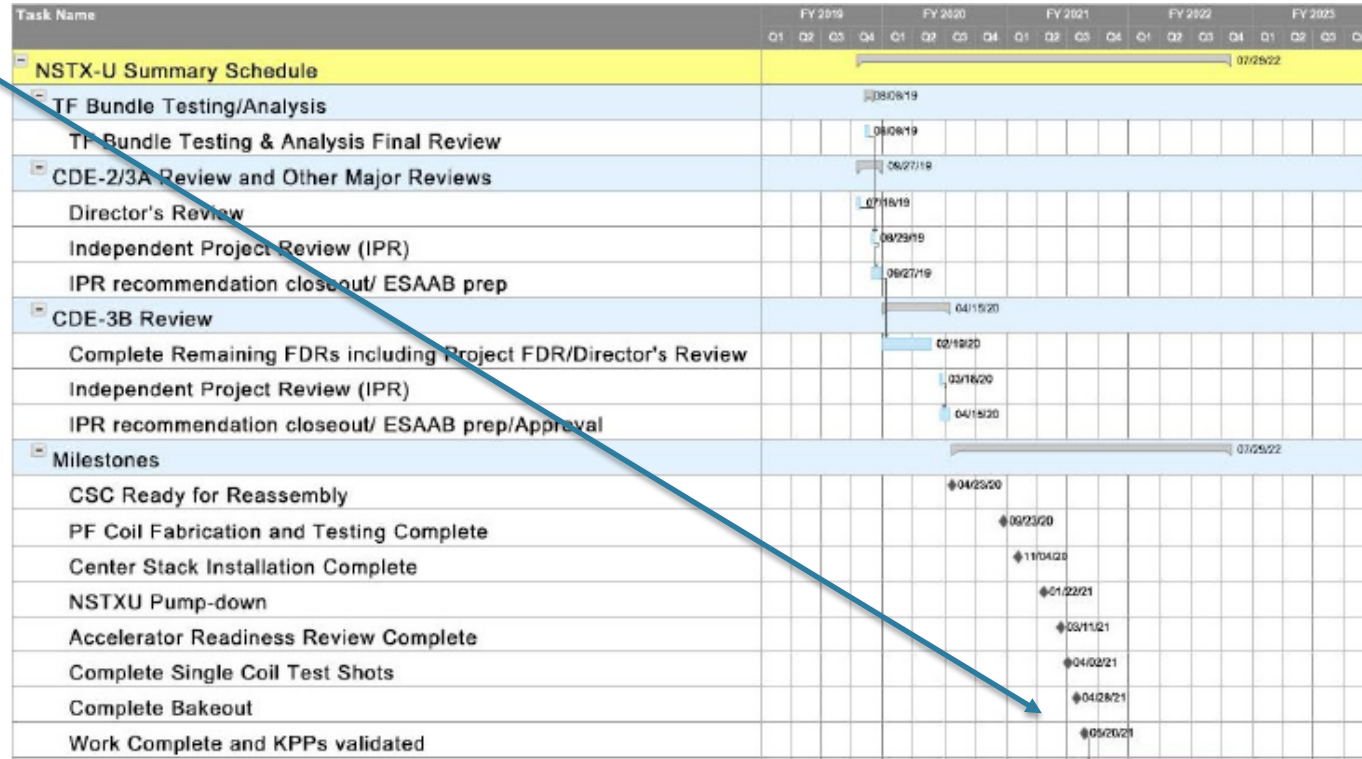
AND Permission to get ready for another review....

- March 2020, the project must get ready AND demonstrate readiness for approval of
- **CD-3b**, permission to go ahead to completion of the project
- Demonstrate maturity of designs- getting the last 10% done
- Well-developed plan for installation AND commissioning safely



Project Schedule

- Note early finish 5/21
- An ambitious schedule by choice
- We're still looking for ways to shorten the schedule-
- Les Hill will tell you why



My Priorities for NSTXU-R

- Build it right
 - The design effort has been thorough and careful
 - Exhaustively reviewed at PPPL and by outside experts
 - Time to transit from emphasis on design to acquisition, receiving, Inspection and installation
- Build it on schedule- any design can be improved but
 - If the design is good enough, it's time to buy and build
- Produce well-organized, easy-to-understand SOW's, specifications and drawings
 - A confusing drawing set or bid package will scare away bidders and induce those who DO bid to crank up the price



My Priorities for NSTXU-R

- Bring designs to closure -
- Get properly prepared procurement packages out the door!
- Prepare to receive, inspect, store, install, check
- People
 - Prepare for two-shift installation
 - Term workers will need orientation, training to work planning/ctl at PPPL, and oversight
- In parallel, check and ensure readiness of the rest of the facility
 - Maintenance and Run Preparation- \$69.1M to ensure technical facilities readiness



Above all, work safely

- Nobody gets injured
- The Stone Age is OVER, we're in the 21st century
- You don't have to risk injury or your life to feed your family.



- I like the STOP program
- Classic STOP places emphasis on observation & verification of safe work **practices**, as well as safe work conditions
- While there are certainly some out-of-the-ordinary high-tech hazards at a national lab, they are generally managed down to a level below routine workplace hazards
- **Most workplace injuries at national labs are the result of actions or conditions that are no different than those that must be handled at a typical civil construction site**
- **Best practices for a civil construction site are pretty close to what NSTXU-R needs to be successful**

Two – Shift Installation Schedule

- This was a significant concern of the DOE reviewers
- This CAN and MUST be done safely
- Successful two-shift installation will depend on consistently good work planning/control/oversight on second shift
- When extended hours have gone badly at a national lab, it's NOT because it was dark outside-
- It went bad when implemented as an on-the-fly as a “catch-up” tactic to recover schedule
 - Stretching staff – extended hours
 - Rushed work
 - Short-handed shift supervision



NSTXU-R work

- Most workplace hazards at a National Lab are the same as civil construction, public utilities maintenance, ...
- National lab policies and procedures for work planning/control are generally very close to best practices for any civil construction (OSHA, NEC,..)
- ENFORCEMENT of best practices are MUCH more strict
- We'll need to bring on temporary workers for a portion of the work
- They may be surprised by our emphasis on safety



Thank you!