

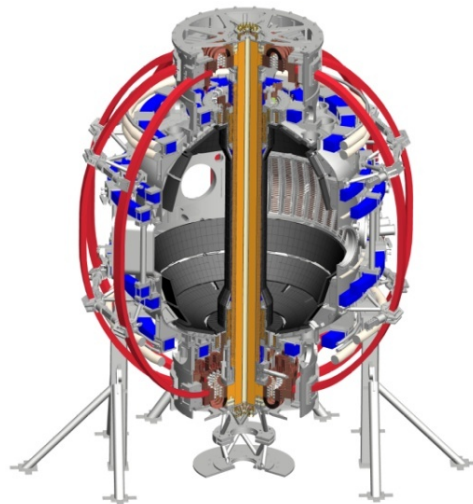
XP Approval and Execution on NSTX-U

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Thanks to Dennis Mueller and Bill Blanchard

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**Pre-Operational Meeting #1
B-318
December 16th, 2014**



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What is an XP?

- PPPL document that describes the conditions, machine configuration, and steps to conduct the experiment.
- Signed by:
 - XP Author (who is almost always the session leader as well).
 - SG, TSG, or TF leader... whoever the Run Coordinator assigns depending on the nature of the XP.
 - Run Coordinator, who is accountable for all XPs that run during his/her tenure.
- A single XP should be capable of producing a paper or talk if successfully executed.

Princeton Plasma Physics Laboratory NSTX-U Experimental Proposal		
Title:		
OP-XP-	Revision:	Effective Date: <i>(Approval date unless otherwise stipulated)</i> Expiration Date: <i>(2 yrs. unless otherwise stipulated)</i>
PROPOSAL APPROVALS		
Responsible Author:		Date
SG, TSG or TF Leader (assigned by RC):		Date
Run Coordinator (RC):		Date
Responsible Division: Experimental Research Operations		
RESTRICTIONS or MINOR MODIFICATIONS <i>(Approved by Experimental Research Operations)</i>		

What is the Process For Getting an XP Approved?

See OP-ADX-03

- XPs are prioritized at (and following) the Research Forum.
 - Not this talk...
- Then, within the SG/TSG structure
 - **Strongly recommended** to hold a preliminary review of the XP plan
 - “TSG Review” if the XP fits within a single TSG
 - “SG Review” if the XP bridges the TSGs within the SG
 - XP form is filled out
 - Once the SG (or TF) leader is content that the XP is ready to review, they notify the Run Coordinator.
- At the Run Coordinator (RC) level:
 - Copies of the XP should be emailed to the TSG and SG leaders, and anybody else the RC thinks should get a copy.
 - And they should look for commonality with XPs in their area.
 - The RC will determine who needs to be at the **mandatory Team Review** to review and critique the XP.
 - Formally, this is the “CHIT Review Board”.
 - CHITs are generated at the team review, and addressed at the CHIT Review Board Meeting.
 - CHIT Review Board Meeting will essentially always immediately follow the team review
 - XP form is updated, including responses to the CHITs.
 - The Run Coordinator looks at the CHIT responses and XP form, and approves it (or not).
 - Disputes between the XP author and the CHIT Review Board are handled as per OP-ADX-03.

XMPs are Used to Qualify Specific Operations Scenarios, Control Algorithms, of Diagnostics

- Semi-random examples *might* include:
 - Startup of the machine
 - Testing an upgrade to the RWM controller for basic function.
 - But not for improvements to the plasma performance.
 - Taking a low power beam shot to transfer the neutron calibration.
 - RF conditioning
- Typically 2-4 hours of NSTX-U operations time.
 - But can be longer in some cases
- Separate XMP form (though it is quite similar to the XP form).
 - Approved by Physics Operations Branch Head and Research Operations Head.
 - See OP-ADX-02
- If you need more info, talk to Dennis or me.

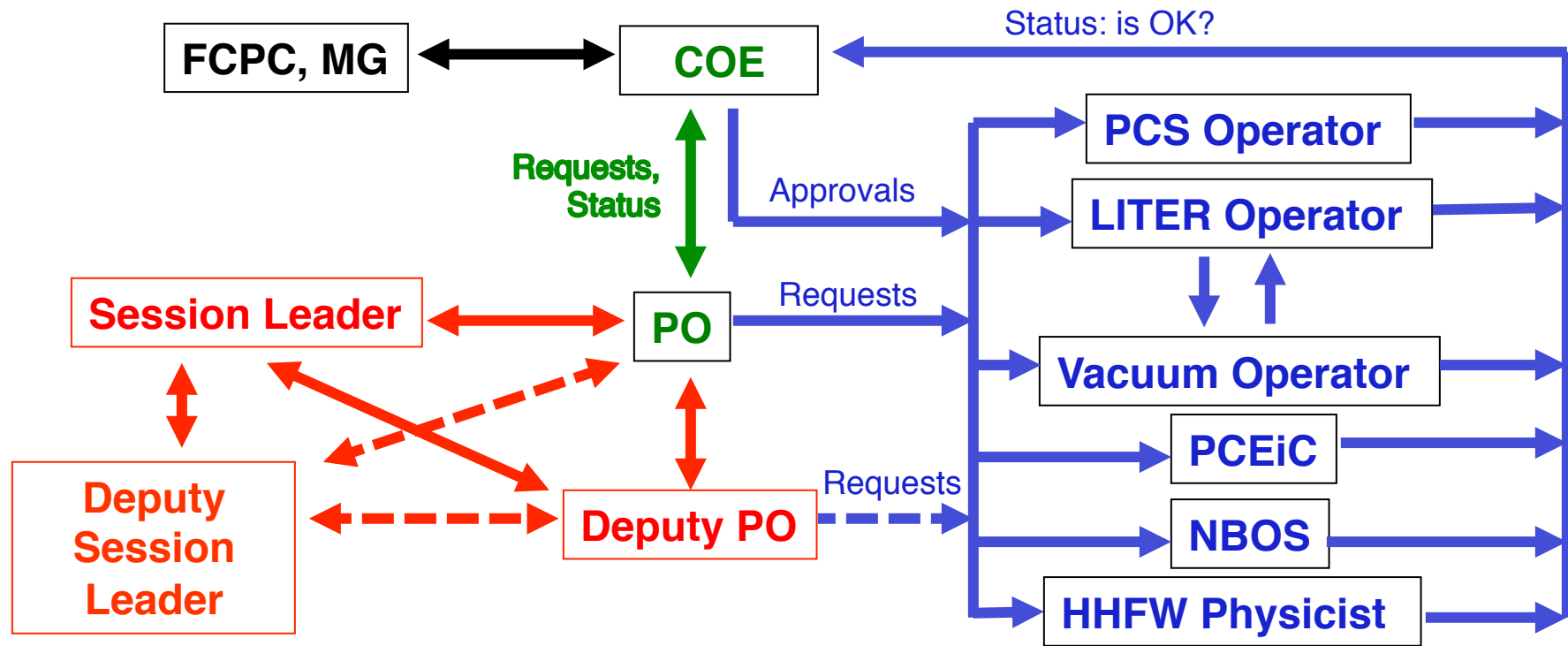
Numerous Rolls Involved in Executing the XP/XMP

See OP-NSTX-12, OP-ADX-03, OP-ADX-02

- **Chief Operating Engineer** (COE) runs NSTX-U, is responsible for human and facility safety, enforcing machine operational boundaries, the shot cycle.
- **Vacuum operator, LITER Operator, PCS Operator (and more)** operate those systems at the direction the COE and Physics Operator.
- **Physics Operator** (PO): responsible for the programming of the shot.
 - There can be a **Deputy Physics Operator** if request by the Physics Operator, Physics Operations Branch head (Dennis M.), Research Ops. Division Head.
 - Would handle specific tasks delegated by the PO, for instance, RWM coil programming.
- **Session Leader** assess progress through the approved XP, decisions about branching points, makes requests to the PO.
 - Is almost always the same person as the XP author.
 - There may be a **Deputy Session Leader** if requested by RC, Session Leader, or Research Ops. Division Head.
 - Would handle specific tasks associated with the XP, as designated by the Session Leader.
 - In general, session leader should only be giving instructions to the PO.

Communication Paths Are Critical During XP Operation

- Typical communications paths in the control room:



- The COE decides when it is acceptable to take the shot.
- Deviations from this path are of course acceptable if agreed to by all parties.
 - But remember, the COE is responsible for human and plant safety and needs to be able to do that job w/o distraction, interference.
- We intend to run a PO course post CD-4.