**NSTX-U Research Roles and Responsibilities**

**NSTX-U Research Director/Head**

* Line responsibility for ES&H for the Department
* Responsible for achieving NSTX-U Research Notable Outcomes
* Responsible for achieving NSTX-U DOE / OFES Research Milestones
* Leads development of long-term NSTX-U / ST Program.
* Responsible for research assignments, performance goals, and financial planning for NSTX-U Research staff
* Responsible for organization and authorship of annual NSTX-U FWP
* Responsible for updates to mission and research milestones, as appropriate.
  + Represent NSTX-U at/for BHRC, Research Council, and LMR Meetings
* Manages NSTX-U Science Groups, Task Forces, and Working Groups, and oversees Topical Science Groups including approving final run time allocation.
* Primary contact to NSTX-U DOE Program Manager on program/research issues.
* Experimental Research Operations, Physics Analysis, and Run Coordinator support Program Director in formulation of DOE/OFES Milestones and strategic planning
* Defines programmatic requirements for Research Forum working with scientific leadership team
* Organizes the NSTX Research Forum to address programmatic requirements
* Develops research aspects of incoming collaborations, national and international
* Negotiates / approves Model Letters of Agreement (MLA) for incoming collaborators
* Oversight and approval of research aspects of collaborations with other facilities, including ITPA and BPO
* Organizes Program Advisory Committee (PAC) meetings
* Represents (or designates a representative for) NSTX-U in national and international interactions including the Fusion Facility Coordinating Committee (FFCC) and ITPA coordinating committee (ITPA-CC)
* Approves Weekly XP schedule during operations
* Responsible for the NSTX-U input for PPPL reports including the Laboratory Plan and Annual Highlights Report
* Organizes NSTX-U Team Meeting
* Organizes NSTX-U Weekly Research Reports
* Manages NSTX-U departmental administration

**Deputy Research Director**

* The Deputy Research Director provides assistance on Department issues as needed, and take responsibility for the Department if the Director is absent.

## Head, Physics Analysis

* Line responsibility for ES&H for the Division
* Manages the Physics Analysis Division activities and insures quality of physics analysis results and their dissemination.
* Reports to Research Director
* Supports NSTX-U Research Director in formulation and implementation of DOE/OFES Milestones and strategic planning
* Participates in formulation of the short- and long-term programmatic goals of NSTX-U
* Responsible for providing physics analysis support for research team, and that physics analysis tools and data are available in convenient form for use by team in a timely fashion
* Responsible for defining computer hardware and software needs for data analysis and for information technology hardware to support off-site collaboration
* Coordinates internal peer review of presentations and journal articles and approves publications and reports
* Oversees the timely development of scientific articles by staff within the Division and supports the development of scientific articles by all members of the Department, as appropriate
* Review XP’s for Physics Analysis
* Organizes weekly physics presentations of recent results
* Organizes the NSTX-U Results Review
* Organizes NSTX-U APS press releases

**NSTX-U Department Administrator**

* Provides administrative support to the NSTX-U Research Director and Department
* Oversees and coordinates the day-to-day activities of the NSTX-U office
* Serves as the point of contact and liaison with internal and external collaborators and visitors for NSTX-U
* Provides assistance with Laboratory, Department of Energy and University policies and procedures and ensures that the NSTX-U Research Department is in compliance with those procedures. Examples include assisting with and processing entry forms for foreign visitors to PPPL and assisting with Visa issues for NSTX-U collaborators.
* Schedules and organizes travel arrangements including entering foreign travel into the FTMS system
* Drafts incoming collaborator letters of invitation for the NSTX-U Director
* Prepares and processes Model Letters of Agreements for collaborators visiting PPPL longer than two weeks
* Organizes and facilitates meetings and special events for the Department
* Makes purchases with a government issued P-card when requested for NSTX-U
* Serves as the designated records person for NSTX-U – for example archiving NSTX-U documents on the NSTX-U Google drive.
* Updates/edits NSTX-U web-pages with concurrence of NSTX-U Research Director

**Run Coordinator**

* Reports to NSTX-U Research Director
* Develop proposed run-time allocations following NSTX-U Research Forum for approval by NSTX-U Directorate
* Plans daily eXperimental Proposal (XP) run schedule, coordinating with Science Group leaders.
* Runs daily meeting at the end of the shift to assess progress and adjust XP run time.
* Runs weekly meetings to discuss and schedule XPs.
* Reports on run campaign status and plans at NSTX-U weekly physics meeting.
* Approves XPs
* Ensures that XPs are developed in a timely fashion.
* Supports NSTX-U Research Director in formulation of DOE/OFES Milestones and strategic planning.

**Experimental Research Operations Head**

* Line responsibility for ES&H for the Division.
* Reports to the NSTX-U Research Director regarding topics in the division.
* Manages Research Operations Branch Heads with goal of completing associated work scope on-budget and on-schedule
* Provide a high-level interface between the engineering department and the physics program, including review or authorship of relevant requirements document.
* Assist in the prioritization of resources across the various activities.
* Assist the run coordinator in planning XPs and XMPs.
* Reviewing all XMPs following review by the Physics Operations branch head
* Responsible for organizing Weekly Run Planning Meeting during operations
* Oversees the timely development of scientific articles by staff within the Division.
* Supports NSTX-U Research Director in implementing ongoing NSTX-U program in order to achieve DOE/OFES Milestones.
* Leads team-wide discussions of key ongoing programmatic decisions.
* Organizes/co-organizes Run Assessment following run campaign

**Research Operations Deputy**

The Research Operations Deputy is to provide assistance on division issues as needed, and take responsibility for the division if the head is absent.

**Branch Head Roles**

Branch heads have the responsibility to:

* Provide line responsibility for ES&H for the Branch
* Provide interfaces for collaborators
* Provide engineering requirements for innovative technical projects needed by the research program
* Work closely with members of the PPPL engineering and research teams to accomplish facility enhancement and operations tasks, and provide oversight of these activities through completion.
* Work within budgetary and schedule constraints.
* Provide relevant expertise to other elements of the NSTX-U project.

**Boundary Physics Operations**

The branch head for Boundary Physics Operations has responsibility for:

* Interfaces, diagnostics, and R&D elements in the areas of plasma facing component (PFCs), PFC conditioning techniques, and novel plasma fueling techniques
* Oversight of the development and deployment of novel PFC conditioning and fueling techniques, as well as specific PFC and PMI diagnostics.
* Providing Boundary Physics related requirements and recommendations to other sections of the NSTX-U program and to PPPL engineering.
* Serving as the research contact, or assigning appropriate research contacts, for boundary physics related collaborators.
* Drawing on relevant expertise in ME, EE and Fabrication & Operations Divisions within the engineering department, and working with the appropriate Responsible Engineers within the Recovery Project.

**Diagnostics Operations and R&D**

The branch head for Diagnostics Operations and R&D has responsibility for the highest-level physics oversight and operations of all diagnostics, except those explicitly assigned to the RF Physics or Boundary Physics Operations branches. Responsibilities include:

* Ensuring that diagnostic collaborators are assigned appropriate research contacts, and that diagnostic Records of Discussion (RoDs) are completed properly
* Developing clear requirements for diagnostics to be deployed on NSTX-U
* Assisting with diagnostic configuration control (i.e. the port map) and operations
* Providing advice and oversight for diagnostics R&D. They will also provide diagnostics related advice to other elements of the program, including advice on the program letter
* Working with the Diagnostics Responsible Engineer, as well as members of the IT and engineering departments, to accomplish these goals

**RF Physics Operations**

The branch head for RF Physics Operations is responsible for the interface between the NSTX-U research program and Heating Systems engineers within the NSTX-U Recovery project and the Heating Systems Branch within the EE division. This includes:

* Specification of required upgrades to support the research mission and operations support for those systems
* Scoping studies for new RF systems or applications of new RF technology may be motivated and/or overseen by this branch
* Training of RF physics operators, including any requirement of training documentation
* Research contacts for RF related collaborations will generally come from this branch
* Diagnostics specifically motivated by and applied to RF systems.

**Physics Operations**

The branch head for Physics Operations has primary responsibility for control room physics operations. This includes:

* Ensuring that physics operators are available at all times during operations
* Ensuring that new physics operators go through proper training, including documentation of that training
* Providing first review of all XMPs
* Providing the physics operations guidance to other aspects of the project as appropriate. This may include attending design reviews or assisting with XP development.
* Authoring, or supervising the writing of, the initial commissioning XMP(s) for each run campaign.

**Plasma Control System Operations**

The branch head for Plasma Control Systems is responsible for:

* The reliable upgrade and operations of the Plasma Control System physics algorithms within the GA PCS
* Working with physicists and engineers to develop both requirements and testing strategies, and then assist in the testing and deployment of codes
* Drawing on relevant expertise in EE division and IT department, and working with the Instrumentation and Protection Responsible Engineer as appropriate.

**Science Groups (SGs)**

* Work with Research Director/TSGs to set run-time allocation guidance
* Coordinate research of TSGs within the SG – promote experiments / plans that achieve multiple scientific goals
  + Critical to maximizing scientific output per shot
  + “Coordinated” XPs will receive higher priority / more run time
* Inform Run Coordinator when XP is ready for final/team review
* Provide summaries and highlights of scientific progress at/for NSTX-U team meetings, FES/quarterly reviews, other venues
* Aid dissemination of results with Physics Analysis Division
  + Journal pubs, invited talks, seminars, colloquia, conferences, ITPA, BPO
* Coordinate / down-select milestone ideas from TSGs in SG
* Provide feedback / comment on annual Field Work Proposal
* Assist / report to the NSTX-U Program and Project directors

**Topical Science Groups (TSGs)**

* Lead brainstorming, organization, writing of 5 year plan topics
* Determine and address highest priority scientific issues through discussion and consensus at open meetings
* Organize the NSTX-U Research Forum sessions for the TSG
* Draft scientific milestone ideas utilizing expertise of the TSG
* Propose and execute experiments to achieve milestones and address priorities
* With SG leaders, define facility and theory resources to achieve research goals
* Present TSG / SG results and plans at NSTX-U PAC meetings
* Assist / report to the NSTX-U Science Group leaders
* Responsible for advertising TSG meetings to entire NSTX-U team

**TSG University Representatives**

* Contribute to prioritization within TSGs
  + Help decide/draft milestones, XMP/XP prioritization
  + Help identify how your tools/codes/diagnostics/personnel can contribute to the group and the larger NSTX-U program
  + Advocate for university research within your TSG and for the needs of the larger NSTX-U research program
* Advocate for your TSG research outside of NSTX-U
  + Seek input/interest from those not funded by NSTX-U
  + Particularly from your own University and other universities
  + Includes giving seminars at other Universities / institutions describing NSTX-U and/or your research
  + Note: this kind of outreach is encouraged for all NSTX-U team-members
* Help identify best tools for remote participation, and remote experimentation

**Task Forces (TFs)**

* Address specific operational and/or scientific goal that cuts across or impacts multiple SGs / TSGs
* Goal must be very high priority within research program
* Receives dedicated run-time, and has dedicated session at Research Forum
* Similar to a TSG, but may not necessarily have theory/modelling or university representatives – depends on duration or scope
* Organizes experimental proposals to achieve goal
* Finite duration - nominally 1-2 years, renewable if necessary
* TF leadership should nominally have a leader and a deputy, and should include at least 1 collaborator if possible
* Reports directly to Research Director

**Working Groups (WGs)**

* Respond to specific programmatic or technical charge from Research Director
* Addresses issues that cross-cut more than one SG or TSG
* Nominal lifetime = 1-2 years, can be extended/renewed
* Provides points of contact between NSTX-U and other groups as necessary (e.g. PPPL theory, FESAC, ITPA, ITER)
* Does not have dedicated NSTX-U run time, but provides recommendations on XP prioritization, other resource needs
* WG leadership should nominally have a leader and a deputy, and should include at least 1 collaborator if possible