

NCSX PRELIMINARY DESIGN PART I - DESCRIPTION

WBS Number: 5	Title: Central I&C Systems
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<u>Description</u>	
<p>NCSX operations are divided into six phases:</p> <ol style="list-style-type: none">1. Initial Operation2. Field Line Mapping3. Initial Ohmic4. Initial Auxiliary Heating5. Confinement and Beta Push6. Long Pulse	
<p>The NCSX Construction Project includes Central I&C capabilities required through the Field Line Mapping Phase of operation (that is, Phases 1 and 2).</p>	
<p>All equipment in the Construction Project will be installed prior to first plasma (that is, the start of Phase 1 – Initial Operation).</p>	
<p>Included in the Construction Project are all the engineering and physics design efforts starting with the preliminary design phase (Title I) and ending with completion of the Construction Project, all the necessary Research and Development (R&D) to support the design effort, all component fabrication, assembly, and installation activities, and all system level commissioning and testing. Integrated systems testing of the entire NCSX device is covered in Integrated Systems Testing (WBS 76).</p>	
<p>This summary-level WBS element consists of the central instrumentation and control (I&C) systems that provide the central supervisory control and data handling systems for NCSX. These systems interface with the subsystem local I&C systems and allow for control and monitoring of NCSX experiments from the control room (local or remote) and the analysis of the results. The central I&C systems covered under this WBS elements include:</p>	
<ul style="list-style-type: none">• TCP/IP Infrastructure Systems (WBS 51),• Central Instrumentation and Control Systems (WBS 52),• Data Acquisition & Facility Computing Systems (WBS 53),• Facility Timing and Synchronization Systems (WBS 54),• Real Time Control Systems (WBS 55),• Central Safety Interlock Systems (WBS 56), and• Control Room Facility (WBS 57)	
<p><u>Description of Existing Equipment/Facilities to be Reused:</u></p>	
<p>These systems will interface to the existing central I&C and data acquisition infrastructure, but will not use any existing components in the design.</p>	
<p><u>Description of Major Modifications Required to Existing Equipment/Facilities:</u></p>	
<p>No major modifications to the existing central I&C and data acquisition infrastructure will be required for this implementation.</p>	