

NCSX Conceptual Design Cost Estimate Summary Form (Attachment 1a)

SUMMARY DESCRIPTION

WBS Number: 2	Auxillary Systems
Originator: Larry Dudek	
<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 Fabrication Project includes all Auxiliary System capabilities required through the Initial Ohmic Phase of operation (that is, Phases 1, 2, and 3).</p>	
<p>Included in the Fabrication Project are all the engineering and physics design efforts starting with the preliminary design phase (Title I) and ending with completion of the Fabrication 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 Testing (WS 76).</p>	
<p>The NCSX Fabrication project includes preliminary evaluation of NBI legacy equipment including localized tests and such maintenance as is necessary to perform those tests to determine fitness for duty on the NCSX project, to improve the preliminary design, and to refine the NBI cost estimate for a future upgrade.</p>	
<p>All equipment in the Fabrication Project will be installed prior to first plasma (that is, the start of Phase 1 – Initial Operation).</p>	
<p>Auxiliary Systems include all the systems and related elements that directly provide fueling, vacuum pumping, and heating to the plasma and plasma chamber. Auxiliary Systems include:</p> <ul style="list-style-type: none">• Fueling Systems (WBS 21);• Vacuum Pumping Systems (WBS 22);• Wall Conditioning Systems (WBS 23);• ICH System (WBS 24);• Neutral Beams (WBS 25); and• ECH Systems (WBS 26)	
<p><u>Description of Existing Equipment/Facilities to be Reused:</u> Components from the legacy PBX-M Systems will be reused.</p>	
<p><u>Description of Major Modifications Required to Existing Equipment/Facilities:</u> No major modifications are needed other than routine maintenance. However, the controls of both systems will be upgraded to more modern PLC systems.</p>	

Date: 8/29/03