

**NCSX Project Work Breakdown Structure (WBS) Dictionary**  
**Test Cell Preparation and Machine Assembly (WBS 7)**  
**NCSX-WBS-07-03**  
**July 16, 2007**

<b>Prepared by:</b>	
R. Simmons	
<b>Reviewed by:</b>	
WBS 7 (Test Cell Preparation and Machine Assembly)	E. Perry (WBS Manager)
WBS 7 (Test Cell Preparation and Machine Assembly)	L. Dudek (RLM)
<b>Approved by:</b>	
H. Neilson	

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**Record of Revisions**

<b>Revision</b>	<b>Date</b>	<b>Author</b>	<b>Description</b>
<b>0</b>	<b>9/8/2003</b>	<b>Simmons</b>	<b>Initial issue</b>
<b>1</b>	<b>1/21/2004</b>	<b>Simmons</b>	<b>Updated WBS dictionary to delete technical requirements and reflect CD-2 milestone scope.</b>
<b>2</b>	<b>7/3/2007</b>	<b>Simmons</b>	<b>Updated WBS to Reflect Scope for 2007 Rebaseline.</b>
<b>3</b>	<b>7/16/2007</b>	<b>Simmons</b>	<b>Corrected signature page to reflect Perry as WBS Manager and Dudek as RLM.</b>

## Work Breakdown Structure (WBS) Dictionary

### Test Cell Preparation and Machine Assembly (WBS 7)

<b>WBS Element: 7</b>		<b>WBS Level: 2</b>
<b>WBS Title:</b>	<b>Test Cell Preparations and Machine Assembly</b>	
<b>Description:</b>	<p>This summary-level WBS element consists of the necessary engineering and field labor to prepare the test cell and install the stellarator core systems, provide special machine assembly tools and equipment, and measurement systems. The Construction Manager is responsible for this WBS element. The Construction Manager shall participate in design reviews to assure the constructability of the NCSX facility.</p> <p>This WBS element includes the following sub-elements:</p> <ul style="list-style-type: none"> <li>• Shield Wall Reconfiguration (WBS 71);</li> <li>• Control Room Refurbishment (WBS 72);</li> <li>• Platform Design and Fabrication (WBS 73);</li> <li>• Machine Assembly Planning and Oversight (WBS 74);</li> <li>• Test Cell Assembly Operations (WBS 75);</li> <li>• Tooling Design and Fabrication (WBS 76); and</li> <li>• Measurement Systems (WBS 77) – <i>No longer used.</i></li> </ul>	

<b>WBS Element: 71</b>		<b>WBS Level: 3</b>
<b>WBS Title:</b>	<b>Shield Wall Reconfiguration</b>	
<b>Description:</b>	<p>This WBS element includes the activities associated with modifications to shield walls to be meet seismic and shielding requirements. Before the assembly phase, the shield walls will be reconfigured and seismically supported. The work scope includes:</p> <ul style="list-style-type: none"> <li>• Reconfiguring and seismically supporting shield walls to meet seismic requirements; and</li> <li>• Increasing the height of the shield walls of the Test Cell as appropriate.</li> </ul> <p><i>This work is being accomplished as a GPP Project.</i></p>	

<b>WBS Element: 72</b>		<b>WBS Level: 3</b>
<b>WBS Title:</b>	<b>Control Room Refurbishment</b>	
<b>Description:</b>	<p><b>MIE Project Scope:</b> None. NCSX will utilize the old PBX-M control room and refurbishment of this facility is covered by PPPL infrastructure improvement project funds.</p>	

<b>WBS Element: 73</b>		<b>WBS Level: 3</b>
<b>WBS Title:</b>	<b>Platform Design and Fabrication</b>	
<b>Description:</b>	<p>This WBS element consists of the activities associated with design and fabrication of the NCSX machine platform. This work scope encompasses the design and fabrication of a platform around the NCSX device, in support of various diagnostics and systems required for operation. It includes all platform material procurements.</p>	

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<b>WBS Element: 74</b>		<b>WBS Level: 3</b>
<b>WBS Title:</b>	<b>Machine Assembly Planning and Oversight</b>	
<b>Description:</b>	This WBS element includes those activities associated with planning the assembly and installation, of the NCSX device. It includes the Construction Management coordination between WBS elements whose activities directly involve the assembly of the NCSX components in the NCSX test cell and basement. It also includes participation in design reviews by the Construction Manager to assure the constructability of the NCSX facility.	

<b>WBS Element: 75</b>		<b>WBS Level: 3</b>
<b>WBS Title:</b>	<b>Test Cell Assembly Operations</b>	
<b>Description:</b>	<p>This WBS element consists of those activities associated with the final assembly of the stellarator core in the NCSX Test Cell and includes:</p> <ul style="list-style-type: none"> <li>• Installation and leveling of machine base plate</li> <li>• Installation and leveling of the machine support columns;</li> <li>• Installation of the machine platform</li> <li>• Installation of lighting and fire detection/suppression systems under the platform</li> <li>• Installation of the lower cryostat floor;</li> <li>• Installation of the lower PF-3 &amp; 4 coils in preliminary positions;</li> <li>• Installation of the three (3) field periods</li> <li>• Labor support for WBS 22 for the performance of the pump down and vacuum leak test PTPs;</li> <li>• Placement of the lower PF-3 &amp; 4 into their final position;</li> <li>• Installation of the upper PF-3 &amp; 4 coils;</li> <li>• Installation of the PF-1 &amp; PF-2 solenoid;</li> <li>• Installation of external Cryostat walls and ceiling; and</li> <li>• Cold power test PTP.</li> </ul> <p><i>WBS 75 shall have responsibility to coordinate all in-test cell installation activities, but does not have direct installation responsibilities for the installation of the following systems in the test cell (the individual WBS element will have this responsibility):</i></p> <ul style="list-style-type: none"> <li>• Installation of any of the power or bus systems (WBS 4);</li> <li>• Installation of the cryogenic systems (WBS 62);</li> <li>• Installation of the bakeout and/or cooling systems (WBS 63); and</li> <li>• Installation of diagnostic systems (WBS 3).</li> </ul>	

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<b>WBS Element: 76</b>		<b>WBS Level: 3</b>
<b>WBS Title:</b>	<b>Tooling Design &amp; Fabrication</b>	
<b>Description:</b>	<p>This element covers the design and fabrication of the tooling and fixtures for machine assembly including the base support structure used during assembly. It covers constructability analyses.</p> <p>Work includes engineering design, R&amp;D and analysis in support of the design, procurement, and fabrication. All procurements of miscellaneous items required for assembly such as safety equipment, general tools, hardware, disposable items, specific procurement of welding supplies (e.g., weld wire) and equipment required to assemble the NCSX device are included in this element. Work in this WBS ends with the delivery and installation (as appropriate) of tooling for field period assembly.</p>	

<b>WBS Element: 77</b>		<b>WBS Level: 3</b>
<b>WBS Title:</b>	<b>Measurement Systems</b>	
<b>Description:</b>	<b>MIE Project Scope: None. <i>This WBS element is no longer used and is closed.</i></b>	