

**NCSX Preliminary Design Cost Estimate Summary Form  
(Attachment 1a)**

**SUMMARY DESCRIPTION**

<b>WBS Number: 121</b>	<b>Title: Vacuum Vessel Assembly</b>
<b>Originator: Paul Goranson</b>	
<p><u>Description:</u> This WBS element consists of the vacuum vessel shell, ports and extensions, blank port covers, PFC support rib interfaces, vacuum vessel support interfaces, and cooling tubes. The vessel port extensions are needed to transfer the vacuum interface flanges on the ports to an accessible location outside the modular coil structure. Each extension includes the flanges, extension tube with weld prep, and seal/bolting hardware and will come with a blank port cover. The port extensions must be welded onto the three vessel sub-assemblies after installation of the modular coils and prior to final assembly. Port stubs are provided on the vessel to permit the modular coils to slip on first, followed by welding of port extensions. Port extension welding performed prior to field period or final assembly is in this WBS element. Port extension welding performed during field period assembly is part of WBS 18. During final assembly, additional port extensions may be welded to facilitate assembly of the cryostat. Port extension welding performed during final assembly (in the NCSX Test Cell) is part of WBS 7. Modification of the blank port covers to accommodate end users, e.g. Diagnostics (WBS 3), is the responsibility of the primary end user.</p>	
<p><u>Description of Existing Equipment/Facilities to be Reused:</u> <b>None</b></p>	
<p><u>Description of Major Modifications Required to Existing Equipment/Facilities:</u> <b>None</b></p>	