

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

SUMMARY DESCRIPTION

WBS Number: 163	Title: Coil Protection System
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<p><u>Description:</u> This WBS element consists of the development of the overall coil protection system logic and limitation and the design and fabrication of the any coil protection system-specific sensors (e.g., temperature sensors, etc.) not specified in other WBS elements. The overall design and fabrication of the coil protection system is divided among three major WBS elements as follows:</p> <ul style="list-style-type: none">• WBS 163 – as described above;• WBS 445 (Electrical Coil Protection System) - provides the digital coil protection system and ground fault detection system for the Modular, PF, and TF coil systems and will be designed to include the trim coils as an upgrade. The digital coil protection system uses the coil current measurements as input and declares a fault if electrical, thermal, or mechanical limits are exceeded. The ground fault detection system declares a fault if excessive ground current flow is detected.• WBS 5 – provides DC current transformer (DCCT) signal conditioners and interface with the control computer and hardwired control circuits. Provides signal transmission from C-Site to D-Site, including temperature of the coils and actual voltages across the coil. The Field Coil Power Convertors (FCPC) computer will perform real time calculation of coil impedances.	
<p><u>Description of Existing Equipment/Facilities to be Reused:</u> None</p>	
<p><u>Description of Major Modifications Required to Existing Equipment/Facilities:</u> None</p>	