

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

SUMMARY DESCRIPTION

WBS Number: 422	Title: D-Site AC/DC Converters																		
Originator: Raki Ramakrishnan																			
<u>Description</u>																			
<p>This WBS element consists of the effort to design and reconfigure existing experimental D-Site AC/DC power convertors. Existing Transrex rectifiers in the FCPC building at D-site will be used to power the NCSX Modular, Poloidal Field, and Toroidal Field coils. Rectifier units not in current use for NSTX need to be reactivated and brought to an operating condition. This includes various preliminary tests such as hipot, controls check out, water system check out, trip settings, and dummy load test. Some modifications to the controls may be required to interface with the NCSX real time control system.</p> <p><u>Description of Existing Equipment/Facilities to be Reused:</u> These rectifiers were originally purchased for TFTR duty, manufactured by the Transrex Division of Gulton Industries and were first put in service in 1982. Each unit consists of two sections, each of which consists of a 6-pulse bridge with external bypass thyristor array. The sections may be connected in series/parallel as required. The local (firing generator and fault detector) control of each unit is common to the two sections, yielding 12-pulse operation. The ratings are summarized as follows (per section):</p> <table style="margin-left: auto; margin-right: auto; border: none;"> <thead> <tr> <th style="text-align: left; padding-right: 20px;"><u>Parameter</u></th> <th style="text-align: center; padding-right: 20px;"><u>Value</u></th> <th style="text-align: center;"><u>Units</u></th> </tr> </thead> <tbody> <tr> <td>• No Load Avg. DC Voltage</td> <td style="text-align: center;">1012.85</td> <td style="text-align: center;">volt</td> </tr> <tr> <td>• Nominal DC Current</td> <td style="text-align: center;">24.0</td> <td style="text-align: center;">kA</td> </tr> <tr> <td>• Nominal Pulse ESW</td> <td style="text-align: center;">6.0</td> <td style="text-align: center;">sec</td> </tr> <tr> <td>• Nominal Pulse Repetition Period</td> <td style="text-align: center;">300.0</td> <td style="text-align: center;">sec</td> </tr> <tr> <td>• Maximum Continuous DC Current</td> <td style="text-align: center;">3.25</td> <td style="text-align: center;">kA.</td> </tr> </tbody> </table> <p><u>Description of Major Modifications Required to Existing Equipment/Facilities:</u> No major modifications are needed other than routine maintenance to reactivate the existing C-site AC/DC convertors. Possible minor modifications may be needed to the control interface.</p>		<u>Parameter</u>	<u>Value</u>	<u>Units</u>	• No Load Avg. DC Voltage	1012.85	volt	• Nominal DC Current	24.0	kA	• Nominal Pulse ESW	6.0	sec	• Nominal Pulse Repetition Period	300.0	sec	• Maximum Continuous DC Current	3.25	kA.
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Date: 9/15/03