

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

**SUMMARY DESCRIPTION**

|   |                               |
|---|-------------------------------|
| <b>WBS Number: 21</b>   | <b>Title: Fueling Systems</b> |
| <b>Originator: W. Blanchard</b>   |                               |
| <b><u>Description</u></b>   |                               |
| <p>This WBS element consists of all the effort and systems to provide operational gas and pellet injection fueling systems for the NCSX device. The pellet injector will not be installed for initial plasma operation but will be a future upgrade. The fueling system will consist of one pulse valve based gas injectors. It will also be comprised of the of the gas delivery line and associated vacuum system. System control will be partially manual and partially PLC control.</p> |                               |
| <p><u>Description of Existing Equipment/Facilities to be Reused:</u> . The existing PBX-M legacy equipment will be used as available.</p>   |                               |
| <p><u>Description of Major Modifications Required to Existing Equipment/Facilities:</u> The gas delivery/gas injection system will be essentially new installations using existing components as available. The control of the system will be partially manual and partially automated. The control of the gas injection system will be a combination of a PLC and NCSX's central computer system.</p>  |                               |