WBS Number: 53	Title: NCSX Data Acquisition and Facility Computing

Originator: G. E. Oliaro

Description

General Description of Work to be Performed:
The design will use the existing MIT developed MDSplus software for data acquisition, data archiving and display. Individual diagnostic local control and data acquisition hardware will be designed with standard PC architecture or in Compact PCI chassis. The work will include Day One support of Diagnostic Field Line Mapping with a maximum of 32 channels of Magnetics sensors. Two diagnostic operator interface units and two PCs/CPCI units with I/O channels as specified by WBS3 will be purchased and deployed for Day One operations. Legacy CAMAC will not be used in the design of the NCSX DAS. An additional facility compute server/cluster will be deployed for the data acquisition system. A tape library expandable to 0.5PB-1.0PB, and disk storage area network (RAID 5) will be deployed after the first year of operations. A standard Computer Interface Specification will be designed for use at PPPL and remote collaborators. The standard will be composed of a set of interfaces specifications to MDSplus, Timing Systems, Inter-process Communications (IPCS), and networking. This specification will insure a smooth integration of diagnostics and facility systems into the DAS. For example, the MDSplus specification will include interface specifications for Labview VIs, IDL functions, Visual Basic DLLs, COM objects, VC++ DLLs, Java, Fortran and EPICS.

Description of Existing Equipment/Facilities to be Reused:
The Data Acquisition System will make use of existing PPPL compute and data storage resources as much as possible. Additional capacity will be added to meet NCSX requirements.

Description of Major Modifications Required to Existing Equipment/Facilities:
No modifications to existing Lab facilities will be required for the design of the NCSX DAS.