1X-960223-CLN-01

***TO: DISTRIBUTION***
***FROM: C NEUMEYER***
***SUBJECT: MINUTES OF MEETING ON WBS 1***

The following is a summary of the 2/19/96 meeting.

Status:

1) Some preliminary work on SRDs by J Chrzanowski was given to J Spitzer.

2) It was decided that WBS 1 should have separate SRDs for WBS 11 (PFCs), WBS 12 (Vacuum Vessel), and WBS 13 (Magnets).

3) WBS 14 (Coil Supports) and 15 (Sys Int) being combined into others.

Issues:

1) The availability of CAD support is a problem. Lou Morris was mentioned as a designer with the appropriate background.

*Action: P Heitzenroeder to work CAD support problem, to discuss personnel availability with J Hosea.*

2) The 350 deg C bakeout, and its effect on the vacuum vessel and other components attached thereto is an unresolved issue.

3) The poloidal extent of the passive stabilizer is an unresolved issue.

4) Whether to weld or gasket the VV segments is an unresolved issue.

5) The complexity of the OH, PF1a, and PF1b coil set is cause for concern. It is not entirely clear that the concept and the selection of conductor sizes and locations is optimal. This needs further examination. At present the role of PF1a is unclear.

*Action: M Ono and S Kaye to consider whether or not these coils can be simplified/optimized and to clarify the role of PF1a .*

6) The use of the existing C-site OH power supply may be undesirable from several points of view. Therefore it may be unwise to design the OH coil specifically with the use of this power supply in mind.

*Action: C Neumeyer to investigate power supply options for OH.*

7) It may be desirable to separate the support of the outer TF legs from the vacuum vessel. This would facilitate a future TF upgrade.

8) The idea of flex joints on the connections between the TF coil inner and outer legs was discussed; this seems like a good way to reduce the stress which would otherwise result from the tendency of these parts to deflect in different ways due to thermal and electromagnetic loads.

9) The revised cross section of the TF conductors, hole size, flow rates, should be available soon. Art Brooks is performing the thermal analysis.

10) The turn to turn and ground insulation thicknesses chosen for the TF bundle need to be confirmed versus the operating voltage.

*Action: P Heitzenroeder to confirm adequacy and document findings.*

Major Components of the Design Effort:

1) Thermal/Electrical/Hydraulic Analysis, TF and PF coils

2) Thermal Analysis of Bakeout and resultant heating of Vacuum Vessel and components attached thereto.

3) Stress Analysis; global and detailed

4)* Computation of Heat Loads on PFCs

5) Thermal analysis of PFCs based on 4)

6)* Computation of currents/forces on PFCs/structures due to disruption

7) Analysis of supports for PFCs based on 6)

8)* Start Up and effect of eddy currents on field quality

* Note: These analyses will be performed by the Physics group (WBS 72) and the necessary design information will be provided to WBS 1.

*Action Item: S Kaye to take responsibility for performing the indicated calculations and providing the necessary information. It is recognized that only limited results will be available for the upcoming engineering review. In order to proceed with the engineering design now, initial estimates of heat loads and a simple disruption model (based on current filaments) need to be provided.*

Deliverables for Engineering Review:

1) SRD/SDDs for WBS 11, 12, 13

2) 2-d Space Allocation Drawing

3) Drawings of Coils, VV's, PFC's as necessary to describe design concept and provide basis for cost estimates

4) Analysis

- thermal/electric/hydraulic, TF & PF coils
- thermal analysis of bakeout
- stress analysis (limited)
- thermal analysis of PFCs

5) Cost Estimate

Other Items Discussed:

1) A working group should be established to focus the engineering effort on the resolution of items related to the center stack.

*Action Item: J Spitzer to organize Center Stack Working Group*

2) The responsibility of tracking the expenditure of resources should lie with the WBS manager. To facilitate this, separate job numbers and budgets will be established for each WBS element.

*Action Item: T Egebo to set up individual jobs for each WBS element and track expenditures vs. budget.*

3) Drawings of existing components (PF coils, vacuum vessel) which will be used on NSTX need to be identified, collected, and eventually submitted to the NSTX Drawing File.

*Action Item: J Spitzer to identify (with the help of J Robinson) and obtain copies of drawings of existing equipment to be used on NSTX.*

cc: * = meeting attendee

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| D Bashore | T Egebo* | P Heitzenroeder* | R Katia | S Kaye* |
| M Ono* | R Parsells | E Perry | J Robinson | J Spitzer* |
| R Wilson | NSTX File | | | |