

## NSTX CSU Peer Review Chits

Chit No.	Comment/Recommendation/ Concern	Originator
▼ Analysis		
9	All analysis should be using the Len Myatt adopted 9 worst case load scenarios	Freudenberg
12	Use real world geometry for existing component where possible in all analysis	Freudenberg
30	<b>VV Plates - 1.The 5% “Theta”~10 is too high a damping factor for SST. SST&lt;0.1% ~ 0.05% (.0005), 2. Stability criteria (buckling) due to sum of all stress vacuum + support (TF) + dynamic is buckling of vessel</b>	Mangra
32	Requirement to be given in a coordinate / plane independent value rather than shear, tension, etc when possible	Mangra
▼ Analysis - Inner PF		
6	Need to look at forces on PF1A,B,C including plasma current (use Woolley models of plasma current distribution) Is this effect important?	Menard
▼ Analysis - OH Coil		
18	Cold OH - Hot TF could lead to vertical tension in OH stack due to Friction or interference at interface with TF	Gwinn
▼ Analysis - OH Cooling		
23	I’m not quite sure the cooling flow analysis took into account that the new OH coils may have for example up to eight 90° bends. Note: The model I gave Ali did not have the most current connections (it was still a work in progress)	Upcavage
▼ Analysis - OTF		
11	Look at how many cycles have already been performed on components -> get accurate count. Then specify how many new/ extra cycles are needed. Is it 30,000 / 3,000 more or 60k?	Freudenberg
13	See if analysis of existing TF structure matches what is observed in field. If off by a lot examine why. You may be under / over estimating here.	Freudenberg
▼ Analysis - TF Joint		
10	Move to go to Cu-Zr is based on one hot spot. Stress that is from an idealized model. If Cu-ZR cost is high then re-examine this model. Place in Global model that does not have idealized constraints. Also check field calcs (hand)	Freudenberg
▼ Analysis - Thermal		

Chit No.	Comment/Recommendation/ Concern	Originator
7	Divertor surfaces could get quite hot. Need thermal analysis of temp. in o-ring region to ensure o-rings wont melt, or spec. cooling requirement	Menard
36	Need to consider effect of possible lithium coating on center stack on expected temperatures under radiative thermal equilibrium model	Bell
▼ Aux Sys - Gas Inj		
8	May need some gas injection ports on bottom of CS for CHI and divertor detachment. Contact Raman and Soukhanovskiii	Menard
▼ Data Acquisition		
1	Need to append GRD to include future option of 10s pulses at reduced performance. This could impact protection systems and data acquisition.	Menard
2	NSTX-U pulse length will increase 5x. Increasing memory of CAMAC likely does not increase speed of data read-out and archiving. Should consider options that can return data as fast as we presently achieve instead of 5x longer.	Menard
24	Evaluate eliminating CICADA with state of the art equipment	Ramakrishnan
▼ Diagnostics		
3	For Kaita may need / want more TC-s in divertor region due to higher power load to divertor. Need to make sure have enough organ pipes for additional leads.	Menard
▼ FMEA		
35	Raising TF feed current to 130Ka raises concerns about inductive energy stored in busswork, switchgear etc and consequences of failures. Need thorough FMEA including power supplies.	Bell
▼ OH Coil		
14	OH conductor- Consider 4 in hand (or 3) vs 2 in hand to limit or eliminate inline brazes	Gwinn
▼ PF Support Cage		
19	Cutting vessel Ribs - need to perform reanalysis of vessel stress if modifications are being made. New design should try to avoid existing structure.	Viola
25	Build a simple mockup of the PF coil support structure to evaluate the design concept during the 2009 outage.	Labik
26	PF support system require to be insulated. Shall be then grounded by a single point ground	Ramakrishnan

Chit No.	Comment/Recommendation/ Concern	Originator
28	Need to ensure that proposed PF coil support cage will define and maintain concentricity of outer PFs with TF bundle and OH solenoid. Concerned that whole cage could wander out of alignment.	Bell
▼ Power Supplies		
4	Recent CHI experiments indicate fast response (high slew rate) of absorber coils is very important. The PF1BU and PF1CU coils may now be too inductive to use TRANSREX supplies. Need to assess if SPA or other supply is needed, or if coil needs to be redesigned.	Menard
▼ Requirements		
5	Support structure for PF3,4,5 system adds significant structure and many interferences to NSTX. Need to find out what is required to not modify PF3 supports, and to use vessel as coil support.	Menard
15	Advertised doubling of TF field is misleading. One suspects that there is an unstated underlying technical reason.	Gwinn
34	Need to have appropriate physics validation for choice of aspect ratio. Less than 5% of NSTX shots have been run with $A > 1.5$	Bell
▼ TF Bundle		
16	Stir Welding: 1. When will it be qualified? 2. If this fails, what are alternatives? 3. Is qualification of at least one of those (alternatives) in the plan	Gwinn
20	Consider additional increase in TF ground wall insulation for Mechanical purposes	Neumeyer
21	TF turn -to-turn transitions should be balanced between top and bottom of machine in terms of toroidal progression. Error field (eg at plasma boundary) after best possible nullification by PF coils to be assessed.	Neumeyer
27	Is it not desirable to design the TF coil insulation system assuming 2k applied voltage?	Ramakrishnan
▼ TF Joint		
17	Tensioning, verification, and monitoring of TF bolted connection - Monitor 1. Bolt Tension 2. Voltage Drop	Gwinn
22	Depth of threaded inserts in bolted TF joint should be increase to reduce “mushrooming” effect. Peaking of pressure around both is undesirable.	Neumeyer
29	TF joint should go through full scale testing (mechanical only) prior to design approval	Perry

Chit No.	Comment/Recommendation/ Concern	Originator
31	1. Experimental data of pullout strength of inset is conservative to this situation, 2. actual situation is differential heating copper is heated by current. Stainless steel insert is room temperature (hot gets larger)	Mangra
33	For TF flex laminate joint consider polishing thread and using dry lubricant possible silver plate (.0005") to ensure clampin load is achieved without creating a torsional spring from the 3/8 x 6" bolt.	Labik
37	Determine availability and cost of C1500 copper being suggested for TF flex (normally only rod, bar and wire)	Perry