

NCSX IPT Meeting Minutes

The minutes from the NCSX IPT meeting of Tuesday, Dec 20, 2005 at 11:00AM are as follows:

Attendees: DOE-PSO: G. Pitonak, J. Makiel

DOE HQ: B. Sullivan, K. Chao

ORNL: J. Lyon

PPPL: R. Strykowski, W. Reiersen, R. Templon, H. Neilson

1. DOE News (Barry)

- a) The NCSX FY06 budget authority is \$15.5M PPPL and \$1.691M ORNL = 17.191M total. However, there will be a 1% rescission. The adjusted budget authority will be \$15.345 PPPL and \$1.674 ORNL = \$17.019;
- b) The draft report from the last Lehman Review (Nov 2005) is being finalized. Greg requested that PSO review the revised report prior to being issued. [Done]

2. Safety Management (Jerry)

- a) The safety record on NCSX and at PPPL continues to be outstanding with no recordable or non-recordable cases lab-wide since Nov 1st. To date, PPPL has experienced only 3 recordable cases in calendar year 2005, and none have been DART (i.e., lost workday) cases;
- b) PPPL Safety and Industrial Hygiene have been involved in all fabrication processes as well as participated in design. A recent example of IH input was on the type and use of insulation material between the vacuum vessel and the modular coil shell;
- c) There was some discussion of the Clay Sell memo which outlines 6 compliance criteria for projects. Further analysis is required to interpret the implementation of this memo;
- d) PPPL will undergo site-wide ISM re-verification on March 6-10, 2006.

3. Lehman Review

- a) As stated above, the draft report from the Lehman Review on Nov 2005 is being finalized;
- b) During a briefing to Anne and SC-2 (Decker) by Kin on the Lehman Review on Nov 9th, SC-2 and Anne recommended that NCSX provide an assessment of progress to be presented in February. Barry and Jeff will discuss these plans with Anne [Done];
- c) PPPL continues to be on the SC Watch List due to the increased level of production activities and vendor performance concerns over the next 6 months;
- d) The next Lehman Review is planned for May 9-10 at PPPL.

4. Project technical progress (Hutch)

The following provide a brief status on the major components:

MC Winding

- a) The C-1 MC successfully completed conductor winding activities on both sides of the coil. Due to delays in vendor delivery on the receipt of the C-1 casting, the revised goal was to complete winding by Dec 30th. Work was completed 2 weeks ahead of this revised goal. Clamp adjustment for establishing the current center, and lacing operations, are underway in preparation for the next step, epoxy impregnation. The March 2006 coil completion date looks good.
- b) The C-2 MC was received, inspected and mounted in the winding fixture. The C-2 casting showed marked improvement over the C-1 casting (the first casting received). Winding operations, now in the casting prep phase, are now underway. It is PPPL's goal to wind one complete turn, consisting of four conductors, during each winding shift. Overall, the winding operation is going well.

MCWFs

Vendor performance by Major Tool & Machine (MTM), who is subcontractor to Energy Industries of Ohio, continues to be of concern to the NCSX Project Team. MTM has indicated that they are not optimistic that they will achieve a 12 week turn around on machining of the MCs as hoped. The Project Team is investigating if some of the non-critical tolerances can be relaxed to relieve low value, high cost machining efforts. The Project Team will send a design team to visit MTM on January 3rd to discuss further.

The following is the status of MCWFs in vendor production:

- a) C-2 MCWF is finished and was received at PPPL as discussed above;

- b) C-3 is in the 5-axis machining phase at Major Tool and Machine (MTM) with anticipated delivery at the end of January;
- c) C-4 is in the 3-axis (Mitsubishi) machining phase at MTM with anticipated delivery by mid-March;
- d) C-5 is in the rough machining phase at MTM;
- e) C-6 has been poured and is in foundry operations;
- f) A-1 will be machined next after C-5;
- g) A-2, 3 & 4 have been poured and are in foundry operations;
- h) B-1 has been poured and is undergoing inspection.

In summary 2 MCWFs are completed, and 9 MCWFs are in vendor production. Also, a casting has now been poured for all three coil types.

VVSA

- a) The VVSA effort continues. Welding of the ports on the first period section is complete. Due to the complexity of the VVSA design, work is taking longer than anticipated by MTM. The delays are attributed to skill-mix and resource coordination issues within MTM. The work that is yet to be accomplished on the first period assembly includes surface polishing, thermal cycle, perform a 100% dimensional scan, and vacuum testing. MTM has indicated that the first VVSA will now be delivered on March 27th.
- b) Work on the other two VV periods also continues. Delivery is scheduled for mid May and mid June, respectively. Although the VVSA is delayed about 2 months, this work is about 6 months off the critical path and is not a significant schedule concern to the Project Team. However, the Project Team has obtained a more detailed schedule for closer tracking of MTM's in-house production work.

Other components and facilities

- a) The Twisted Racetrack Coil (TRC) has completed its investigation phase and this effort has now concluded. Thermal tests are satisfactory. Electrical tests (including destructive testing) demonstrated that the grounding design is satisfactory. Strain gauge measurements were not successful; this is being studied. Dimensional analysis is complete;

- b) The NCSX Project Team is investigating if China (ASIPP) is capable of manufacturing the TF coils, and perhaps the PF coils. A delegation went to China in December to review their capabilities and discovered that ASIPP's technical capabilities are quite good and appear to have superior conductor forming techniques compared to domestic techniques, including PPPL. The Project Team will continue to examine this option and address any potential schedule concerns with this option. More on this topic is discussed in the Procurement section below.
- c) Field Period Assembly Station. The fixture that holds the vacuum vessel first field period for attachment of cooling/heating tubes, diagnostic loops, and other parts has been designed and now in fabrication. Fabrication will be completed by early January. Fabrication of a second fixture is now being considered.

5. Procurement (Rod)

- a) There is approximately \$200K of parts on order, and another \$360K in requisitions.
- b) PPPL Procurement is strategizing the potential procurement from China as part of a procurement plan that will also solicit domestic interests to procure the TF coils as a best-value procurement.

6. Review of critical issues (Hutch/Wayne)

There are currently no category I critical issues at this time. Several lower category critical issues were discussed at the Lehman Review and continue to be tracked by the Project Team. Some lower tier (category 2) critical issues discussed were:

- a) Issue regarding the high cost of TF wedge castings may be resolved if the TF coils are provided by China. The project has discussed incorporating the wedge plates as an integral part of the TF coil fabrication;
- b) The schedule delays of the vacuum vessel deliveries, although not a critical path item, may be added to the critical issues list as a lower tier issue;
- c) Availability of parts for the MC winding operations is a concern because timely actions are important to ensure that the many parts are procured and received when needed. The project is managing this risk by ensuring adequate staffing of design activities, and close coordination of design, fabrication, and procurement organization on procurement priorities to support on-time availability. The project team should make sure that their integrated procurement plan is updated and understood by all parties.

7. Planning for the next 6 months (Hutch/Ron)

- a) The NCSX Project has about \$2.5M of management reserve which will be used for advancing the cryostat design, coil design services, field period assembly station(s), PF design acceleration and other opportunities. Many of these items are scheduled for FY07 execution;

8. Project performance thru October (Ron)

PARS data thru November:

SPI = .97
CPI = .99

Schedule variance due to: (1) vacuum vessel delivery schedule slip; (2) MCWF delivery slip; (3) drawing support for detail hardware behind; and (4) delivery of hardware components behind.

Contingency remains at \$9.6M or ~22% of work remaining.

9. ECP status (Ron)

The following are current and anticipated Engineering Change Proposals (ECPs) that require DOE approval:

- a) No further ECPs requiring DOE approval have been identified at this time. ECP41 will be issued to account for schedule slip on the VVSA; no cost changes will be made.

10. Planned IPT meetings (and other events) are as follows:

Dec 22, 2005 OFES Monthly Briefing at 3:00pm
Jan 17, 2006 Next IPT at 11:00am
Jan 18, 2006 DOE Watch List Brief
Mid Feb 2006 Project Interim Assessment to SC2 & OFES
May 9-10, 2006 Next Lehman Review at PPPL