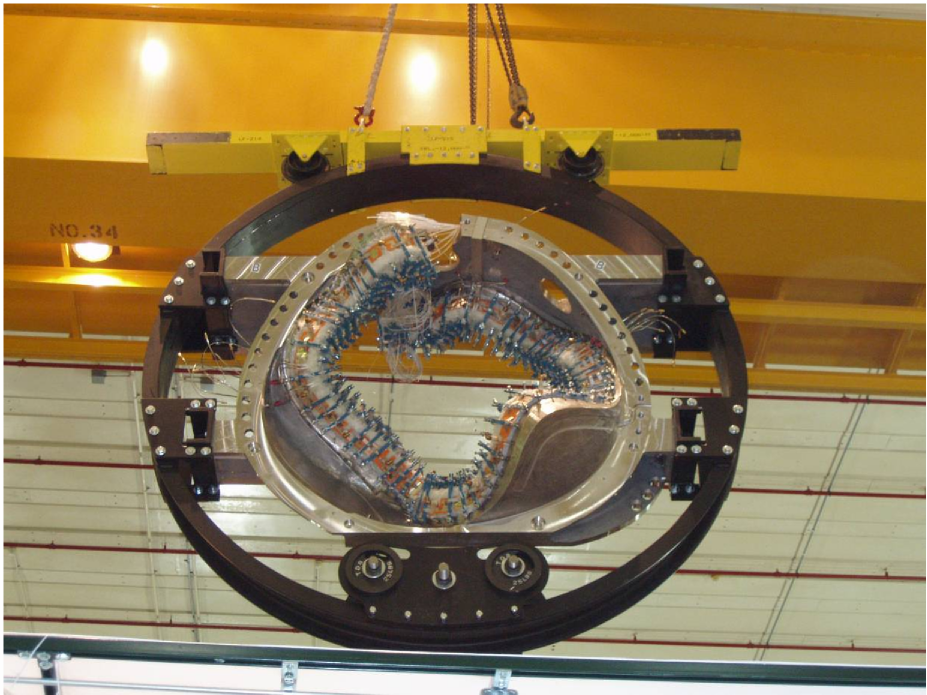


**Modular Coil Manufacturing Update**

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**J. H. Chrzanowski for the NCSX Project**

* Requirements:

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|  | **Requirements, Design & Interfaces** |  |
|  |

– Manufacture 18 modular coils that meet the design requirements

as defined in the GRD and SRD.

* Maintain Stellerator symmetry
* Maintain tight current center tolerances [+/-0.5 mm accuracy]
* Operate at liquid nitrogen temperatures
* Design:

– Design documents are complete

* SRD, Specifications, drawings, manufacturing procedures
* Interfaces:

– MC interfaces with numerous systems as outlined in SRD

* These interfaces are continuing to evolve as machine assembly is

completed

* Vacuum vessel, TF coils Cryo-systems, FPA, etc.

**Modular Coil Status**



* **Progress at last Project Meeting- August 16, 2007 :** – **13 Coils have been Vacuum Pressure Impregnated (VPI) and 14**

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**through the winding process**

* **Today's Status [April 8, 2008]** – **16 Coils have been VPI’d and 17 are through the winding process**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **MC ID  Number** | **VPI Date** | **VPI Status** | **Post VPI  Completion Date** | **Post VPI Status** |
| **A5** | 9-20-07 | Complete | Complete | Complete |
| **C6** | 2-14-08 | Complete | 4-18-08 | In progress |
| **B5** | 2-28-08 | Complete | 5-9-08 | Not started |
| **B6** | 5-15-08 | Bag Mold Prep | 6-23-08 | Not started |
| **A6** | 7-15-06 | Pre-winding | 9-1 7-08 | Not started |

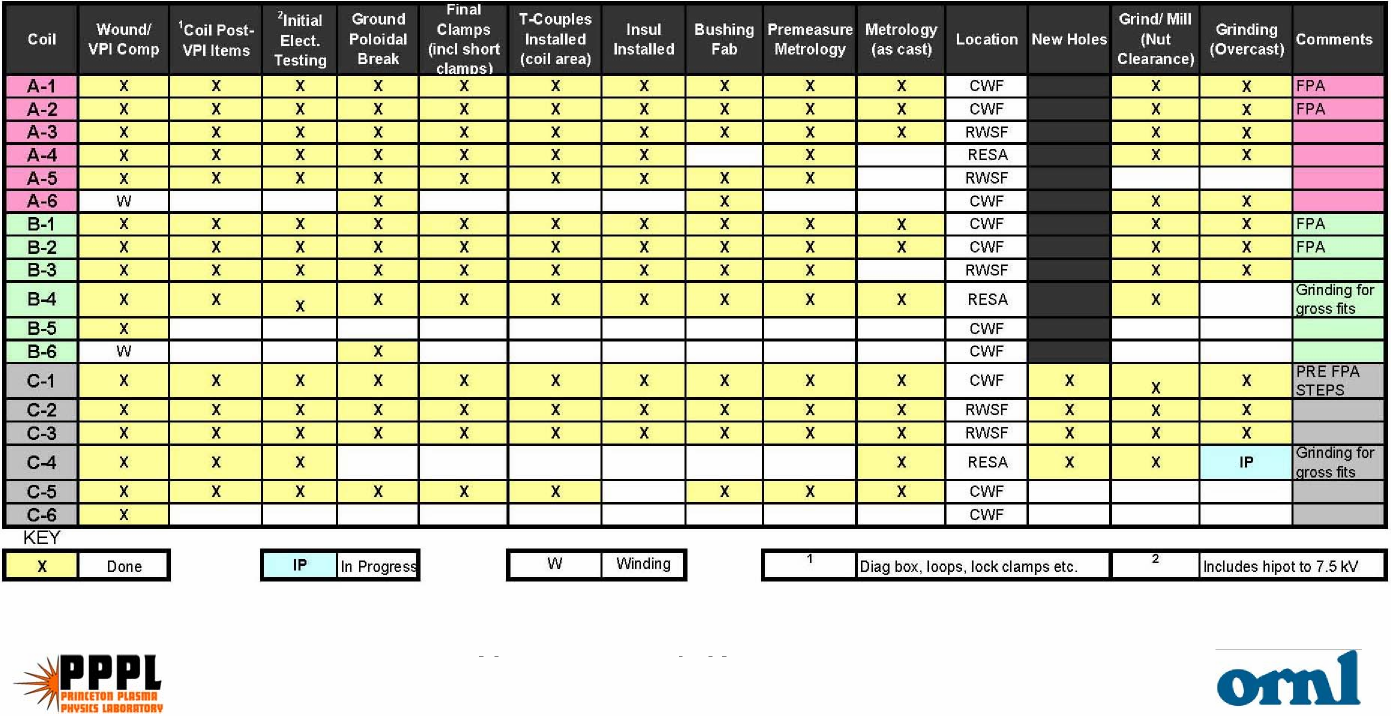
* **The last modular coil will be VPI’d by July 15, 2008**
* **All Post VPI work will be completed by September 17, 2008**

**Tracking Punch List Items**



• Majority of punch list items have been completed.

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• Remaining items include: Strain gages, additional

thermocouples, flange interface modifications [as req’d]

**Cost and Schedule**



• Modular Coil cost estimate is based upon detail task breakdown and

|  |  |  |
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actual in-field times to complete coils

– Based on: 17 coils wound and 16 VPI’d

* Budget increased for procurement and installation of additional

thermocouples that were added to the design

* Budget increased additional shop hours - unidentified work associated

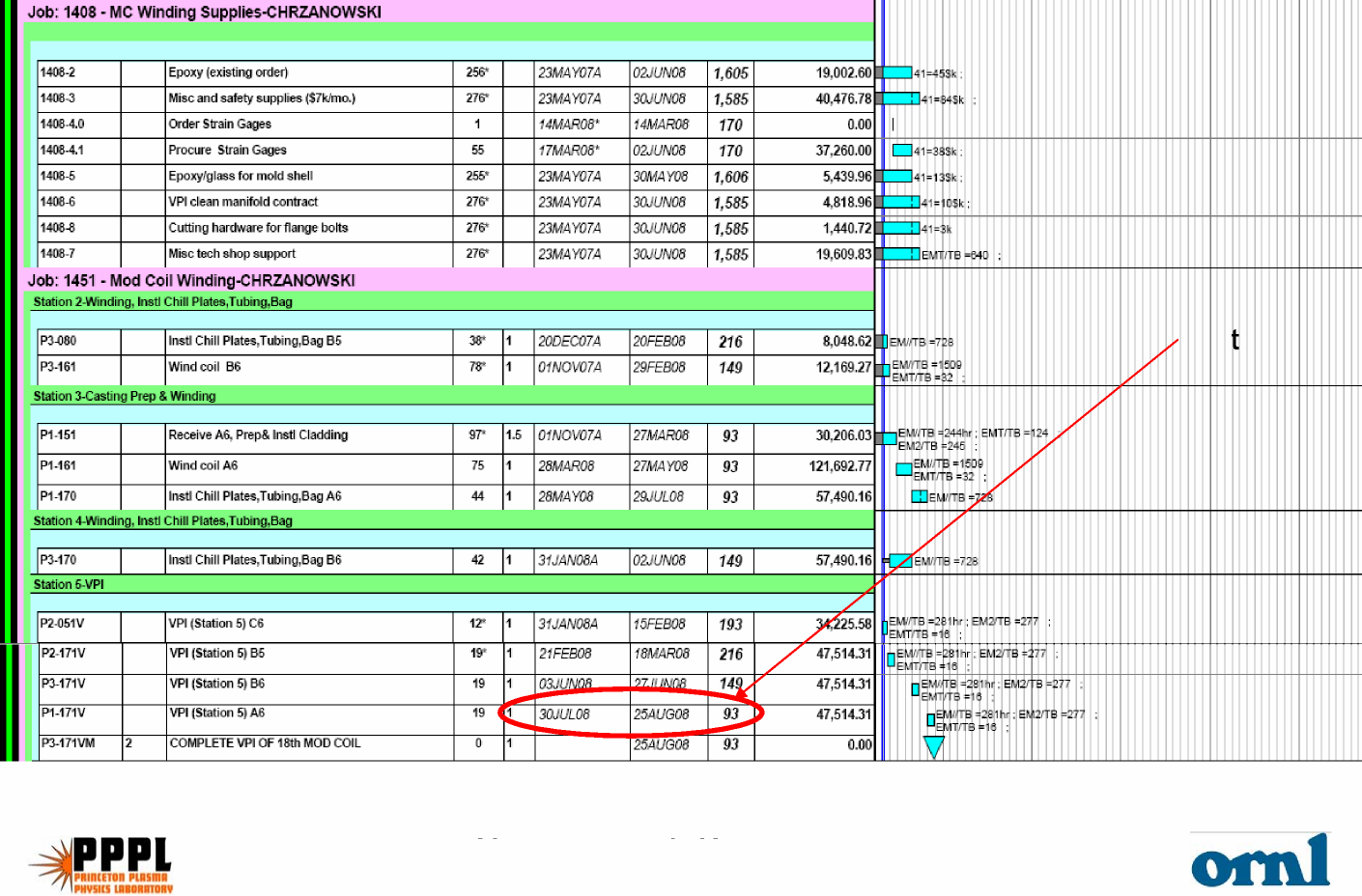
with modifications of winding forms during fit-up in support of FPA

* Last Modular Coil will be VPI’d by 7/15/08 [target date]
* Post VPI items complete by 9/17/08
* Punch list items complete by 11/6/08

VPI

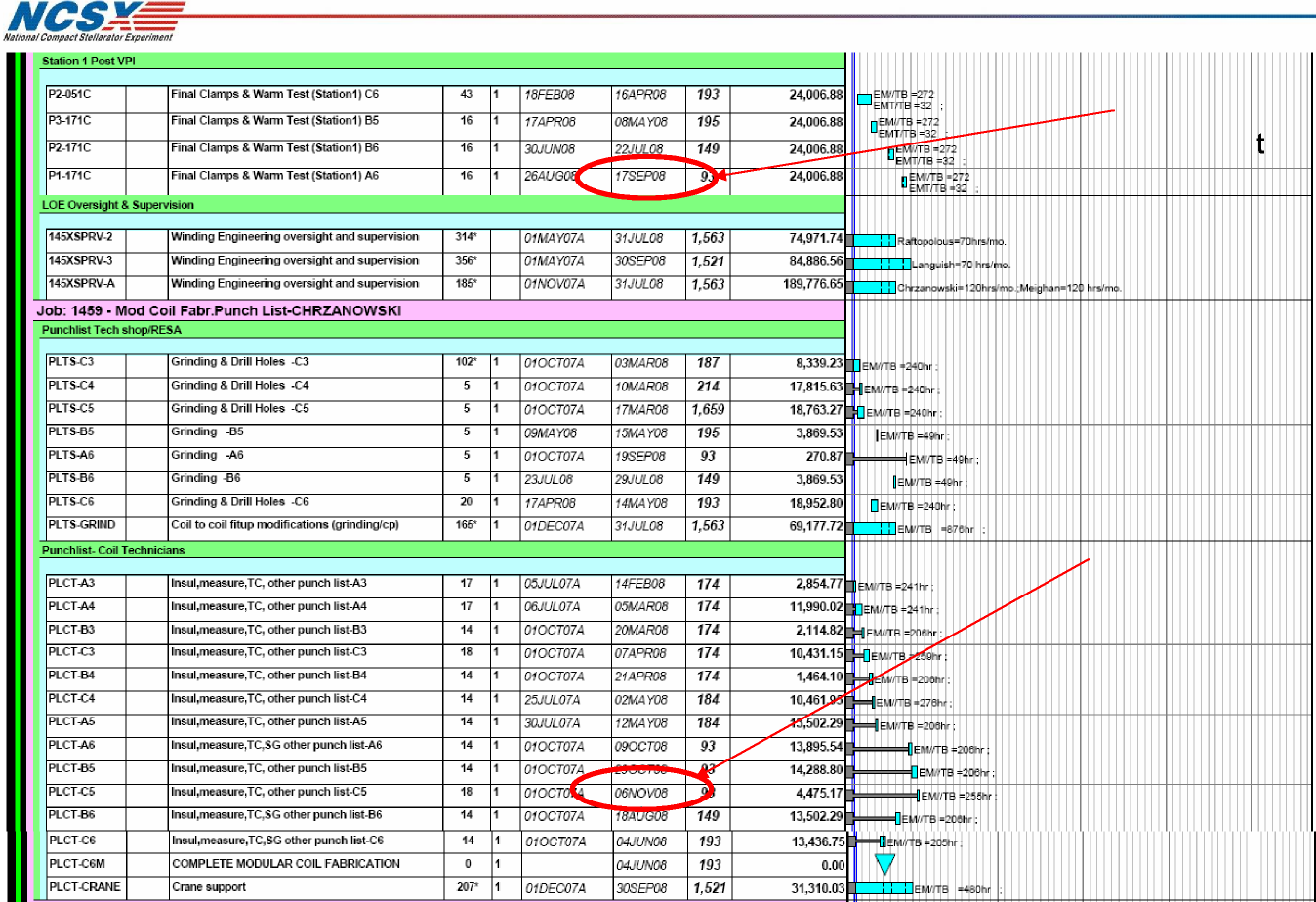
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**Schedule**

**Schedule-continued**



Post VPI items comple

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Punch list

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Present

Schedule

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145

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• **MC Manpower Plan:**

– **Presently working single shift x 5 days a week**

– **We have a plan for the orderly down sizing of modular coil**

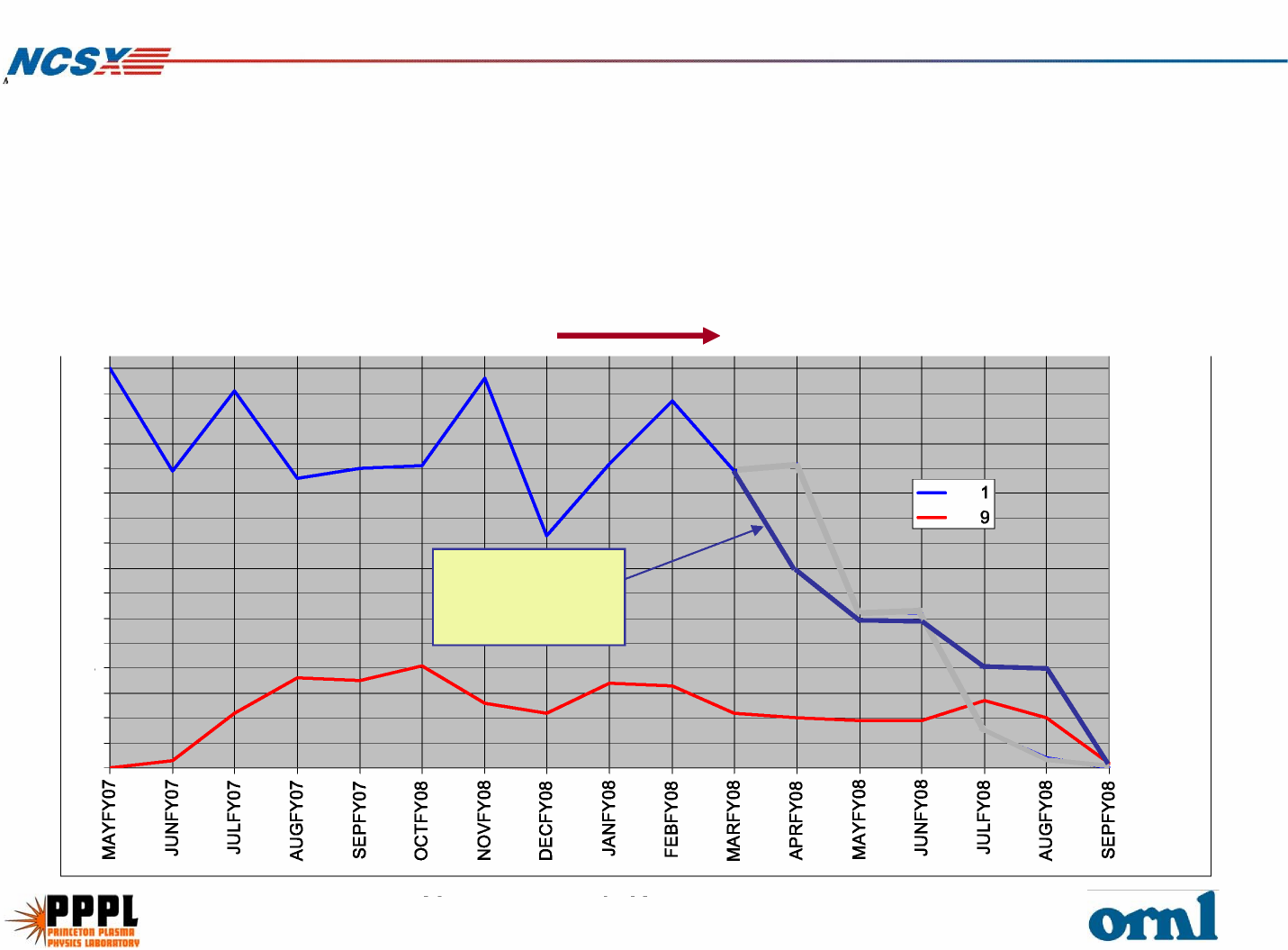
**manufacturing team**

– **Size of production team will vary as required to complete modular**

**coils [Peak 18 technicians today 8 technicians]**

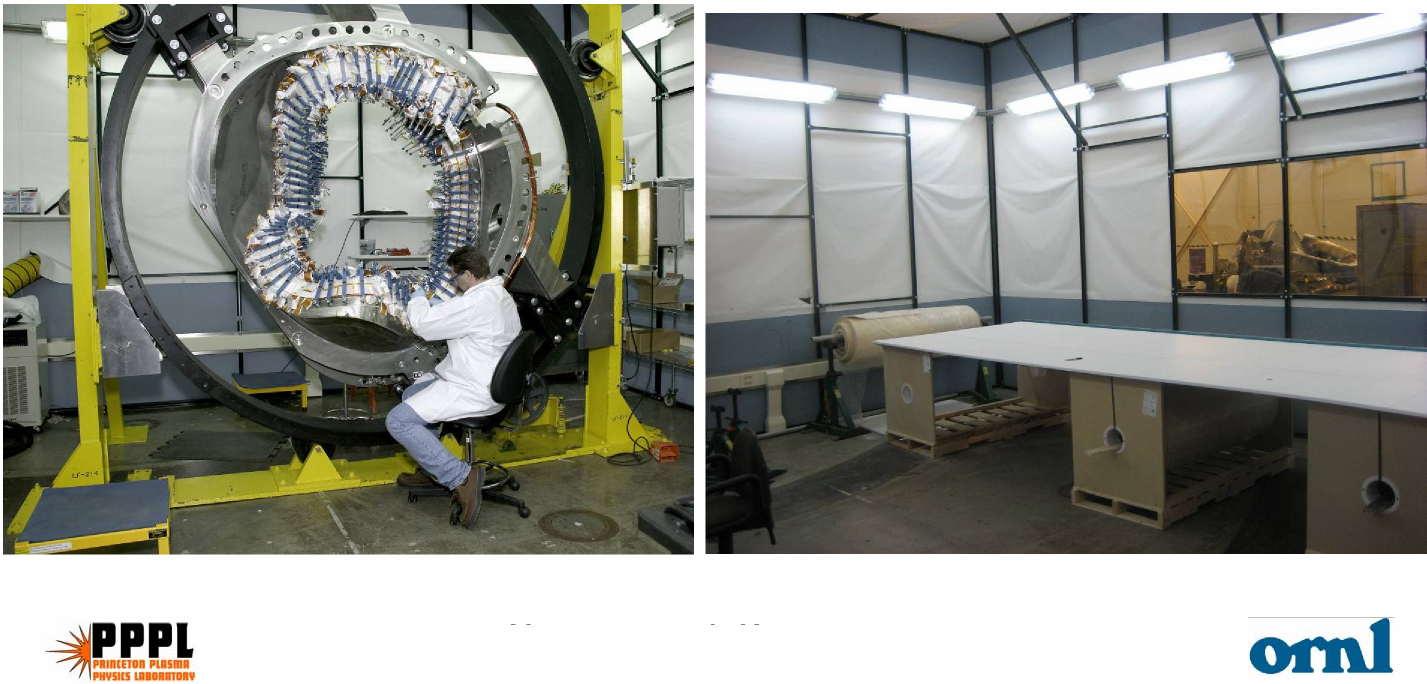
**Manpower Down Sizing Plan**

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• We have begun transferring real estate to FPA teams as MC stations

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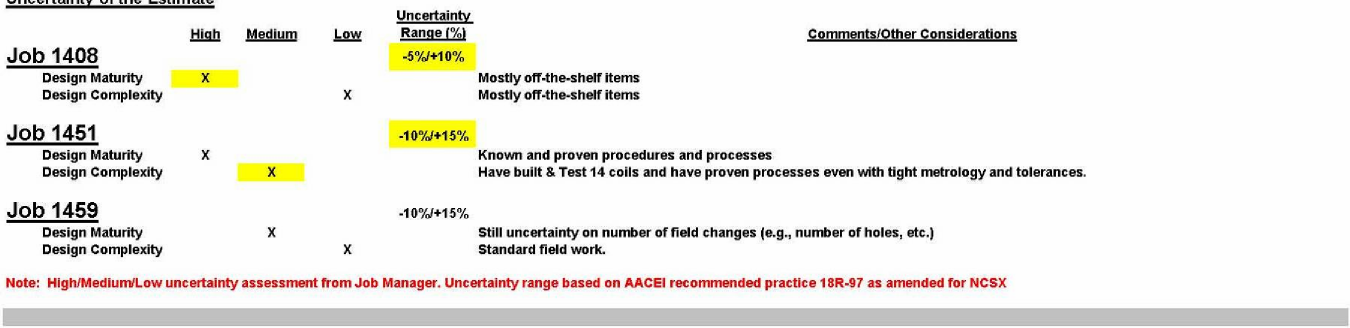
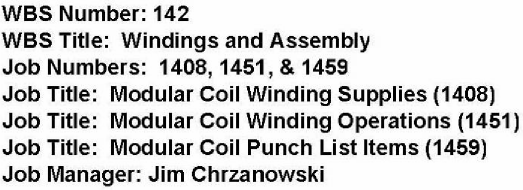
|  |  |  |
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|  | **Manufacturing Area** |  |
|  |

are shut down.

* Station 2 winding station was transferred to FPA on 3/1/08
* By 7/31/08 all areas except for Station 4 and the autoclave will be

transferred to FPA

**Uncertainty of Estimate**



High level of confidence in estimate

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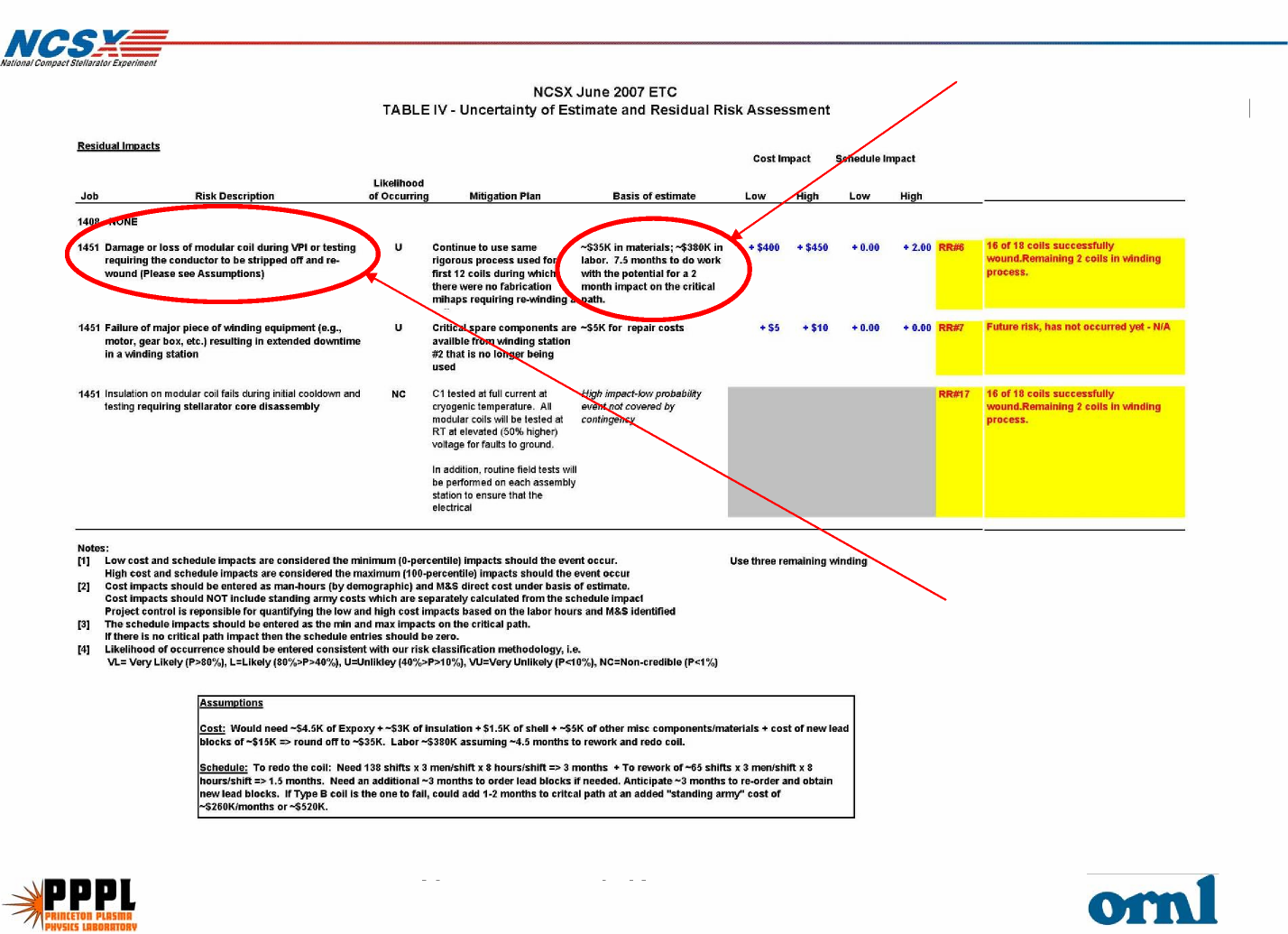
**Results in highest impact [7.5 months to replace coil]**

**[14 coils have been electrically tested]**

**2-3 month impact on project schedule [If coil 18 had to be replaced]**

**Residual Impact**

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* **17 modular coils have been wound and 16 VPI’d**

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|  | **In Summary....** |  |
|  |

* **Have begun down sizing of coil manufacturing team from peak**

**level of 18 technicians to today’s level of 8 technicians**

* **Have begun transferring manufacturing real estate to FPA teams**
* **Successfully addressed all of the technological challenges.**
* **Safety continues to be in the forefront of all planning and**

**performance of field activities**

* ***The NCSX Project is committed to completing the manufacturing of***

***the Modular coils by September 2008. (inc. final electrical tests)***