Work Approval Form (WAF)

Cost Center: **9417**
Job Number: **8200**
Job Title: **Installation of 6 small ports on NSTX**
Job Manager: **E. Perry**

Description:

Install six 2.75" CFF (w/ 1.5" tube) on the NSTX vacuum vessel. Job includes boring six 1.5" holes in the vacuum vessel wall, fabricating six small ports, welding the ports in the vacuum vessel, fabricating one small support ring and welding on the vacuum vessel and leak checking ports when installed.

Schedule:

See Tab B or attached

Approvals:

Erik Perry
Digitally signed by Erik Perry
DN: cn=Erik Perry, o=PPPL, ou, email=eperry@pppl.gov, c=US
Date: 2012.11.29 07:22:11 -05'00'

Job Manager

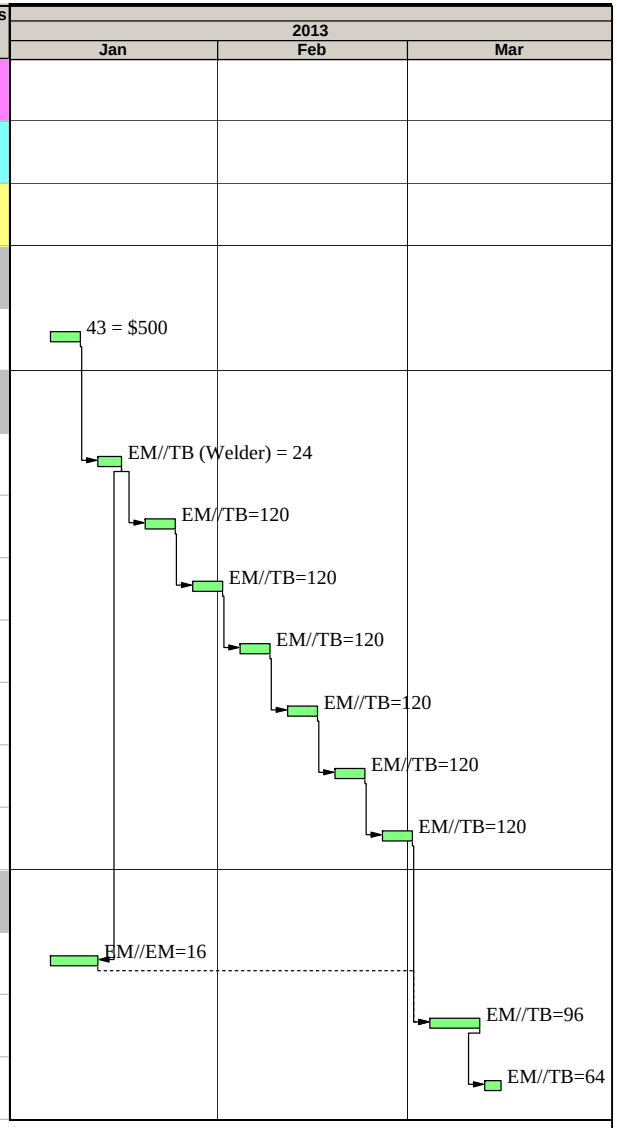
Ron Strykowsky
Digitally signed by Ron Strykowsky
DN: cn=Ron Strykowsky, o, ou=PPPL, email=rstrykow@pppl.gov, c=US
Date: 2012.11.29 07:43:53 -05'00'

Project Manager

Mike Williams
Digitally signed by Mike Williams
DN: cn=Mike Williams, o=PPPL, ou=Engineering and Infrastructure, email=williams@pppl.gov, c=US
Date: 2012.11.29 12:11:11 -05'00'

Engineering Department Head

Activity ID	Activity Name	Original Duration	Activity % Complete	Start	Finish	Budgeted Total Cost	evms rule
Total		49		07-Jan-13	14-Mar-13	$96,951.36	
Job: 8200 - CS & Coil Sprt Struct Instal - PERRY		49		07-Jan-13	14-Mar-13	$96,951.36	
New NSTX VV Ports		49		07-Jan-13	14-Mar-13	$96,951.36	
Procurement		5		07-Jan-13	11-Jan-13	$660.00	
8200-0137A	Purchase flanges and tubing	5	0%	07-Jan-13*	11-Jan-13	$660.00	E
Fabrication / Assembly		35		14-Jan-13	01-Mar-13	$77,393.76	
8200-0137B	Cut tubing for add'l ports to size/weld flanges and fabricate collar	4	0%	14-Jan-13	17-Jan-13	$2,348.16	E
8200-0137C	Bore hole #1: 1.5" OD holes in NSTX vacuum vessel	5	0%	21-Jan-13	25-Jan-13	$12,507.60	E
8200-0137D	Bore hole #2: 1.5" OD holes in NSTX vacuum vessel	5	0%	28-Jan-13	01-Feb-13	$12,507.60	E
8200-0137E	Bore hole #3: 1.5" OD holes in NSTX vacuum vessel	5	0%	04-Feb-13	08-Feb-13	$12,507.60	E
8200-0137F	Bore hole #4: 1.5" OD holes in NSTX vacuum vessel	5	0%	11-Feb-13	15-Feb-13	$12,507.60	E
8200-0137G	Bore hole #5: 1.5" OD holes in NSTX vacuum vessel	5	0%	18-Feb-13	22-Feb-13	$12,507.60	E
8200-0137H	Bore hole #6: 1.5" OD holes in NSTX vacuum vessel	5	0%	25-Feb-13	01-Mar-13	$12,507.60	E
Installation		49		07-Jan-13	14-Mar-13	$18,897.60	
8200-0137I	Installation procedure development	5	0%	07-Jan-13	14-Jan-13	$2,834.24	E
8200-0137J	Weld ports into vacuum vessel	6	0%	04-Mar-13	11-Mar-13	$9,392.64	E
8200-0137K	Leak check 6 new penetrations	3	0%	12-Mar-13	14-Mar-13	$6,670.72	E



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Uncertainty of the Estimate

		High	Medium	Low	Uncertainty Range (%)	Comments/Other Considerations
	Design Maturity		x		15	
	Design Complexity			x	15	

Residual Impacts

	Risk Description	Likelihood of Occurring	Mitigation Plan	Basis of estimate	Cost Impact Low ($K)	Cost Impact High ($K)	Schedule Impact Low (weeks)	Schedule Impact High (Weeks)
1	Leak	**Small**	Re-weld	experience	1	5	0.2	1
2								
3								
4								
5								

Notes:

(1) Cost impacts should NOT include standing army costs which are separately calculated from the schedule impact

(2) The schedule impacts should be entered as the min and max impacts on the critical path.

If there is no critical path impact then the schedule entries should be zero.

(3) Likelihood of occurrence should be entered consistent with our risk classification methodology, i.e.

VL= Very Likely (P>80%), L=Likely (80%>P>40%), U=Unlikley (40%>P>10%), VU=Very Unlikely (P<10%), NC=Non-credible (P<1%)

Design Maturity	Design Complexity: Low		Medium		High	
Low	-15%	+25%	-20%	+40%	-30%	+60%
Medium	-10%	+15%	-15%	+25%	-20%	+40%
High	-5%	+10%	-10%	+15%	-15%	+25%

Design Maturity Definition

High

Final design available. All design features/requirements well known. No further design development or evolution expected that will impact estimate.

Medium

Preliminary design available. Some additional design evolution likely. Further developments can be somewhat expected or anticipated and reflected in estimate.

Low

No better than conceptual design basis currently available. Design details, procedures, etc. still need much development and evolution of requirements beyond estimate basis is likely and expected.

Design Complexity Definition

Low

Work is fairly well understood -- either standard construction or repetition of activities performed in past. Little likelihood of estimate not being well understood and requirements not being well defined.

Medium

More complex work requirements that have potential to impact cost and schedule estimates. Limited experience performing similar tasks, so ability to estimate accurately is somewhat suspect

High

Extremely challenging tasks and/or requirements. Unique or firstof-a-kind assembly or work tasks. No good basis for estimating work exists so there is a high degree of estimate uncertainty.

Based on standard industry and DOE estimate classifications (Per AACEI Recommended

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Materials and Subcontracts (M&S)		**Basis of Estimate**
Description:		
CF flanges	192	vendor (6)
Tubing	75	vendor (6)

CATEGORIZATION CODES:				
1 - National Standards	**1**	**$**	**-**	**0%**
2 - Engineering Judgement/Experience	**2**	**$**	**-**	**0%**
3 - Estimates/Data from External Sources (e.g., W7X, ATF, etc.)	**3**	**$**	**-**	**0%**
4 - Previous PPPL/ORNL Experieince (e.g., TFTR, NSTX, PLT, etc.)	**4**	**$**	**-**	**0%**
5 - Prototype Data/Test Results	**5**	**$**	**-**	**0%**
6 - Catelogue Price/Vendor Quote	**6**	**$**	**267**	**100%**
7 - Placed Contracts	**7**	**$**	**-**	**0%**
8 - Actual experience for NCSX Work	**8**	**$**	**-**	**0%**
9 - Other	**9**	**$**	**-**	**0%**
	TOTALS	**$**	**267**	**100%**

Resource Overview

	Data			
Resource ID Name	Sum of 1-Jan-13	Sum of 1-Feb-13	Sum of 1-Mar-13	Total
43.43-Credit card	500			500
EM//EM.EM//EM-FOM Engrg	16			16
EM//TB.Machine Techs	216	480	88	784
EMTWTB.Welder	48		192	240
Grand Total	780	480	280	