

NCSX Work Approval Form (WAF)

WBS Number: 12

WBS Title: Vacuum Vessel Systems

Job Number: 1204

Job Title: Vacuum Vessel System Procurements

Job Manager: Larry Dudek

Description:

This WBS element includes all of the non-VVSA procurements.

Schedule:

See Attached

Approvals:

Job Manager

Date

Responsible Line Manager

Date

Project Manager

Date

Engineering Department Head

Date

**NCSX June 2007 ETC
TABLE I - Design Labor**

WBS Number: 12

WBS Title: Vacuum Vessel Systems

Job Number: 1204

Job Title: Vacuum Vessel System Procurements

Job Manager: Larry Dudek

Description:

Procure necessary parts and consumables to support assembly and fabrication of Vacuum Vessel Segments. This job only covers M&S support - labor to procure the parts and consumables is covered under WBS 82 (where L. Dudek labor is covered). Details of requirements shown on drawings prepared under WBS 19.

No Design Work in this Job.

NCSX June 2007 ETC
TABLE II - Materials and Subcontracts

WBS Number: 12								
WBS Title: Vacuum Vessel Systems								
Job Number: 1204								
Job Title: Vacuum Vessel System Procurements								
Job Manager: Larry Dudek								
Materials and Subcontracts (M&S)							Basis of Estimate	
Description:								
	Unit	PPPL EMTB Suppt (Hrs)	Rate	Qty	Subtotal	TOTALS		
VV Vertical Supports							Work Completed	
VV Personal Acces Port & Lateral Supports							ORNL estimate. See worksheet below.	
				3	19504	58,511		
Insulation Boots Total							55,750	
Insulation Boots								
	Boots for Some Ports		250	150	37500		Requisition 405021 - see Table V	
	Boots for Some Ports		75	150	11250		Requisition 405024 (150 pcs x \$25 each) - see Table V	
	Miscellaneous hardware				7000		Engineering judgement of miscellaneous parts (G-11 rings, fasteners, etc.)	
Pourable Insulation							80,000	Rough Order of Magnitude from Cabot - see Table V
Port Thermal Insulation							25,000	Verbal estimate from Aspen Aerogel Inc. to ORNL. Based on projected production in new facility.
VV Local I&C							26,960	See Omega Quote - seeTable V
	Thermocouples: 4 each x 83 appendages		80	337	26960			
Heater Tapes for Port Stubs							15,400	See Brisk Heat Quote - seeTable V
			70	220	15400			
VV Interface Hardware								
T/C and Heater Tape Leads Port 12							28250	See G. Labik estimate detailed in Job 3101 dated 4/10/2007 (Updated 5/3/2007)
Flux Loops Junction Boxes							9620	See G. Labik estimate detailed in Job 3101 dated 4/10/2007 (Updated 5/3/2007)
VV Heating Cooling Tubing (COMPLETED)								
M&S Total							299,491	
Worksheet:								
COST OF NB PORT DUCT/COVER OPTION								
Pumping will be from port 4 or 12.								
150 C bakeout operation								
Option uses basic geometry of the mod kit drawings and gives credit for incorporating existing NB blankoff flange in new design. It uses a stainless steel, 22" wire seal, commercial (MDC) flange with Viton o-ring.								
The interface (boot) to the cryostat is not included.								
Option 3 does not include any hardware for port 4 pumping. Supplied by WBS 22.								
Simplified Duct								
	Cost							
Duct Material/fab(l625)	5009						Based on material cost based on Inconel at ~\$30/lb - See Table V	
22 inch port flange	1950						Price out of MDC catalog	
22 inch blankoff Flange	2850						Price out of MDC catalog.	
Lateral supports	5000						My estimate on labor time to machine detail parts outside.	
NB duct flg rework	1800						Based on set up and labor time for machining cost to bore hole in house.	
Assy fab	2640						Based on 24 hour estimate to do fab.	
Bolt kit/o-ring	255						Price out of MDC catalog.	
subtotal	19504							
Engineering	15600		COMPLETE					

NCSX June 2007 ETC
TABLE III - Fabrication/Assembly Installation

In-house Fabrication and Assembly and Installation															
Description: N/A															

NCSX June 2007 ETC
TABLE III - Fabrication/Assembly Installation

WBS Number: 12																								
WBS Title: Vacuum Vessel Systems																								
Job Number: 1204																								
Job Title: Vacuum Vessel System Procurements																								
Job Manager: Larry Dudek																								
<u>Uncertainty of the Estimate</u>																								
			<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Uncertainty Range (%)</u>	<u>Comments/Other Considerations</u>																	
	Design Maturity		X			-5%/+10%	Design completed																	
	Design Complexity				X		Standardized components																	
Note: High/Medium/Low uncertainty assessment from Job Manager. Uncertainty range based on ACEI recommended practice 18R-97 as amended for NCSX.																								
<u>Residual Impacts</u>																								
														<u>Cost Impact</u>	<u>Schedule Impact</u>									
<u>Job</u>	<u>Risk Description</u>					<u>Likelihood of Occurring</u>	<u>Mitigation Plan</u>	<u>Basis of estimate</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>												
NONE																								
<u>Notes:</u>																								
[1]	Low cost and schedule impacts are considered the minimum (0-percentile) impacts should the event occur.																							
	High cost and schedule impacts are considered the maximum (100-percentile) impacts should the event occur																							
[2]	Cost impacts should be entered as man-hours (by demographic) and M&S direct cost under basis of estimate.																							
	Cost impacts should NOT include standing army costs which are separately calculated from the schedule impact																							
	Project control is responsible for quantifying the low and high cost impacts based on the labor hours and M&S identified																							
[3]	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.																							
[4]	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 Unlikley (P<10%), NC=Non-credible (P<1%)																							

**NCSX June 2007 ETC
TABLE V - Basis of Estimate**

WBS Number: 12
WBS Title: Vacuum Vessel Systems
Job Number: 1204
Job Title: Vacuum Vessel System Procurements
Job Manager: Larry Dudek

M&S Backup

Heater Tape

Backup on Pourable Insulation



Confidential Quotation Form

8055 944ard Ave
 Columbus, OH 43201
 Phone: 614-294-2072
 Fax: 614-294-2072
<http://www.briskheat.com>

Customer: Princeton Plasma Physics Lab
Address: Head, PFM Division
 PO Box 451
 Princeton, NJ 08543
 PO Box 451

Quotation No.: SD1402
Date: 5/9/2007
Prepared By: Susan Blank

Contact: P.E. Lawrence E. Dudek
Phone: 609-243-2195
Fax: 609-243-3249
Email: ldudek@pppl.gov

Payment Terms: Terms Net 30 Days
Delivery: See Below
Quote Valid: Sixty (60) Days
F. O. B.: Columbus, Ohio
Freight Charge: Collect
 Please advise carrier and account number
Total Pages: 2

Item	Qty	Product Description	Unit Price	Net Price
1	200	Custom BH1 Style Heating Tape: 1/2" W X 10 Ft L, Heavy insulated Heating Tape, 520 Total Watts, To be constructed with alloy 180. This alloy consists of 22% Ni with a balance of Cu and it is non-magnetic. 24" Leads Same End, With Split Plug, 120 Volt	\$60.25	\$13,650.00
2	48	Custom BH1 Style Heating Tape: 1/2" W X 6 Ft L, Heavy insulated Heating Tape, 310 Total Watts, To be constructed with alloy 180. This alloy consists of 22% Ni with a balance of Cu and it is non-magnetic. 24" Leads Same End, With Split Plug, 120 Volt	\$44.25	\$2,124.00
TOTAL:				\$15,774.00

Larry, I included a 25% quantity discount off of our manufactured list price in the above quoted price. Price quoted does not include shipping cost.

Lead-time since the tape will be custom-made is 3 to 5 weeks as the most.

The lead-time begins upon receipt of complete information to design and manufacture. The lead-time is subject to change based on order volume and availability of components. Please confirm lead time when placing the order.

Please use the assigned quote number when placing your order.

Please do not hesitate to call with any questions regarding this quotation.

Sincerely,

Susan Blank

Account Representative
BriskHeat® Products (BH Thermal)
 Phone: 614-294-2072 ext.156
 Fax: 614-294-3807
 Email: sblank@briskheat.com

Assumed ~\$70 x 220 (based on current NCSX estimate) = ~\$15,400

From: Geoffrey J. Gettelfinger
 Sent: Wednesday, May 09, 2007 4:56 PM
 To: Paul Goranson; Lawrence E. Dudek; Wayne T. Reierzen; Ronald L. Strykowski; Mike Coley; Bradley E. Nelson
 Cc: Jerry D. Levine; William V. Slavin
 Subject: WBS 12 - Insulation

Follows:

Allow me to share the origin of the cost estimate for Paul Goranson's aerogel vacuum vessel insulation.

A very rough volume calculation yielded a volume of about 2.5 m**3 to fill the annulus between the vessel and the modular coils. I assumed that we should order twice this volume as this is a custom product.

Recall that the stock aerogel from Cabot Corporation has a water dispersant coating that becomes mobile at vessel bake temperatures and was judged an ES&H concern earlier in the design process.

Mr. Jodi Bates, a technical person with Cabot, SNAged that the "calcining" (baking) of the 5 m**3 of aerogel would cost about \$80k-\$90k. Allow me to re-emphasize the rough order of magnitude estimate basis.

When polled about whether NCSX should move ahead with this off-normal product request, the NCSX community felt the best logic was to hold off and to see if this becomes a stock product instead of a "special".

The \$80-\$90k is a soft price that needs a spec and Procurement oversight to make it more dependable.

Geoff

**NCSX June 2007 ETC
TABLE V - Basis of Estimate**

WBS Number: 12
WBS Title: Vacuum Vessel Systems
Job Number: 1204
Job Title: Vacuum Vessel System Procurements
Job Manager: Larry Dudek

Thermocouples

From: Omega Engineering - SCHAALE <EASYLINK@N.VM>
Date: January 12, 2007 4:01:58 PM EST
To: ldudek@pppl.gov
Subject: Sales order # 701979458 PPPL 6092432080
ldudek@pppl.gov
Reply-To: INFO@OMEGA.COM

Hello Mr Dudek,
 Following is a copy of the quote we have been working on, Your
 Ref# NCSX-PRL-12-003-00. Please forward a copy of the tag format
 detail to me at your convenience. If you have any other questions
 please do not hesitate to call me.
 Best regards,
 Bob Schaaale
 800-359-1660 ex 7646
 bschaale@omega.com
 203-968-7364 fx

QUOTATION <<<<<<<<<

 OMEGA ENGINEERING,
 INC. One Omega Drive, Box 4047, Stamford, CT 06907-0047
 PHONE (203)359-1660 FAX (203)359-7990
 http://www.omega.com E-Mail: temp@omega.com

 ISO 9001 CERTIFIED (Stamford, CT USA)

PPPL | Date 01/12/07 |
 X X X | Quote No. Q701979458 |
 | Your No. RDS01005 |
 FAX To ARLENE WHITE
 FAX No. (609)243-2080

In response to your inquiry we are pleased to submit the following:
 (Terms) NET 30 Pending credit approval (F.O.B.) STAMFORD

Item No.	Qty	Part Number	Description	Est. Ship Date	Price	Discount	Net Unit Price	Total Amount
1)	105	EI1106107/XCIB-E-4-2-3-SHX-M			69.25		69.25EA	7,271.25

	XCIB T/C ASSY/UNGROUND	4 - 5 Wks			
2)	105 EI1106107/XCIB-E-4-2-10-SHX-M	83.25	83.25EA	8,741.25	
	XCIB T/C ASSY/UNGROUND	4 - 5 Wks			
3)	210 OSK/TAGGING PROC/ITEM#1 & 2	5.00	5.00EA	1,050.00	
	PROD ID/SEE CASE FOR FORMAT	4 - 5 Wks			
4)	1 SET UP CHARGE	50.00	50.00EA	50.00	
	FOR MFG OF CUSTOM ITEM	4 - 5 Wks			

THIS QUOTATION IS VALID FOR 30 DAYS TOTAL AMT
 17,112.50

Please refer to the QUOTE# Q701979458 AWHITE@PPPL.GOV
 when placing this on order. FAX From CS#622408

TERMS & CONDITIONS
 Omega Engineering, Inc. (the Company) offers this quotation subject
 to its terms and conditions, as stated in the Company published Handbook and
 related literature. The Company does not agree to any additional or different
 terms imposed by individual customers, which are deemed to be material
 alterations, unless signed by the Company prior to shipment of this order.
 All quoted delivery dates are subject to product availability, for exact
 delivery dates, please consult our sales department at time of order.

**Assumed ~\$80 unit rate based on the above x 337
 (count off drawing) = \$26, 960**

**NCSX June 2007 ETC
TABLE V - Basis of Estimate**

WBS Number: 12
WBS Title: Vacuum Vessel Systems
Job Number: 1204
Job Title: Vacuum Vessel System Procurements
Job Manager: Larry Dudek

Boots - Requisition 405021

Requisition Print Form #

05/10/2007 09:07 AM



Requisition 405021 created on 03-12-2007 for
NCSX Winding Form Boot Assembly

Requisitioner: Thomas Meighan	Buyer:	Assigned:	Suggested Sources:
Deliver to: Thomas Meighan		Temp Shield, Laura Sweeney, Bar Harbor	(207) 667-9686
MS41 C-Site B313		Others	

Phone: (609) 243-3053

CC/W/Obj/Exp Cts	FY1 - Amount	FY2 - Amount	Signature Authority
------------------	--------------	--------------	---------------------

Line Item 1: Assembly Dwg. No. se122-340-r0.pdf, Detail Dwg. No. se122-343-r0.pdf Port 2 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 2: Assembly Dwg. No. se122-344-r0.pdf, Detail Dwg. No. se122-347-r0.pdf Port 5 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 3: Assembly Dwg. No. se122-348-r0.pdf, Detail Dwg. No. se122-351-r0.pdf Port 6 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 4: Assembly Dwg. No. se122-352-r0.pdf, Detail Dwg. No. se122-355-r0.pdf Port 7 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 5: Assembly Dwg. No. se122-360-r0.pdf, Detail Dwg. No. se122-363-r0.pdf Port 9 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 6: Assembly Dwg. No. se122-364-r0.pdf, Detail Dwg. No. se122-367-r0.pdf Port 10 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
----------------------	--

<https://bones.pppl.gov/printreq/?req=405021>

Page 1 of 4

Requisition Print Form #

05/10/2007 09:07 AM

9450 1*** 1204	2007 - \$1800.00	2008 - \$0.00	R. Strykowski
9450 1*** 1204	2007 - \$1800.00	2008 - \$0.00	R. Strykowski

Line Item 7: Assembly Dwg. No. se122-368-r0.pdf, Detail Dwg. No. se122-371-r0.pdf Port 11 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 8: Assembly Dwg. No. se122-372-r0.pdf, Detail Dwg. No. se122-375-r0.pdf Port 15 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 9: Assembly Dwg. No. se122-376-r0.pdf, Detail Dwg. No. se122-379-r0.pdf Port 17 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 10: Assembly Dwg. No. se122-380-r0.pdf, Detail Dwg. No. se122-383-r0.pdf Port 18 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 11: Assembly Dwg. No. se122-384-r0.pdf, Detail Dwg. No. se122-387-r0.pdf Port 8 Winding Form Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 12: Assembly Dwg. No. se122-388-r0.pdf, Detail Dwg. No. se122-391-r0.pdf Spacer Port Winding Form Boot Assy Material: NOMEX

Qty: 3 ea @ \$200.00	Total Price: \$600.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$600.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 13: Assembly Dwg. No. se122-392-r0.pdf, Detail Dwg. No. se122-396-r0.pdf Neutral Beam Port Seal Boot 3 Material: NOMEX

Qty: 1 ea @ \$300.00	Total Price: \$300.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$300.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

Line Item 14: Assembly Dwg. No. se122-401-r0.pdf, Detail Dwg. No. se122-405-r0.pdf Port 12 Seal Boot Assy Material: NOMEX

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)
9450 1*** 1204	2007 - \$1800.00
9450 1*** 1204	2008 - \$0.00
	R. Strykowski

<https://bones.pppl.gov/printreq/?req=405021>

Page 2 of 4

**NCSX June 2007 ETC
TABLE V - Basis of Estimate**

WBS Number: 12
WBS Title: Vacuum Vessel Systems
Job Number: 1204
Job Title: Vacuum Vessel System Procurements
Job Manager: Larry Dudek



Requisition Print Format

05/10/2007 09:07 AM

Requisition Print Format

05/10/2007 09:07 AM

Line item 15: Assembly Dwg. No. SE122-004, Detail dwg. no. se122-409-r0.pdf Port 4 Winding Form Boot Assy. Material: NOMEX

se122-409-r0.pdf (Line item 15)

Qty: 6 ea @ \$300.00	Total Price: \$1800.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$1800.00	2008 - \$0.00	R. Strykowski
9450 1*** 1204	2007 - \$1800.00	2008 - \$0.00	R. Strykowski

Requisition Total: \$24,300.00

Excess Inventory: Not Listed
 Stockroom Inventory: Not Stocked
 Receipt Inspection Required: Yes
 Sole Source: No
 BOA: Not Applicable

Attachments:
 NCSX-PRL-12-001-00-Signed.pdf
 se122-340-r0.pdf (Line item 1)
 se122-343-r0.pdf (Line item 1)
 se122-344-r0.pdf (Line item 2)
 se122-347-r0.pdf (Line item 2)
 se122-348-r0.pdf (Line item 3)
 se122-351-r0.pdf (Line item 3)
 se122-352-r0.pdf (Line item 4)
 se122-355-r0.pdf (Line item 4)
 se122-390-r0.pdf (Line item 5)
 se122-393-r0.pdf (Line item 5)
 se122-394-r0.pdf (Line item 6)
 se122-397-r0.pdf (Line item 6)
 se122-398-r0.pdf (Line item 7)
 se122-371-r0.pdf (Line item 7)
 se122-372-r0.pdf (Line item 8)
 se122-375-r0.pdf (Line item 8)
 se122-376-r0.pdf (Line item 9)
 se122-379-r0.pdf (Line item 9)
 se122-380-r0.pdf (Line item 10)
 se122-383-r0.pdf (Line item 10)
 se122-384-r0.pdf (Line item 11)
 se122-387-r0.pdf (Line item 11)
 se122-388-r0.pdf (Line item 12)
 se122-391-r0.pdf (Line item 12)
 se122-392-r0.pdf (Line item 13)
 se122-396-r0.pdf (Line item 13)
 se122-401-r0.pdf (Line item 14)
 se122-405-r0.pdf (Line item 14)
 se122-004-r0.pdf (Line item 15)

Reviews:
 Chemical - No
 Desktop IT - No
 AC Power - No
 Telecomm - No
 PAAA - No
 Quality Assurance - Yes
 Machining Resource - No
 Safety - No
 Non-Desktop IT - No
 Labor Resources - No
 Radiological - No
 Printing - No
 Lift Manager - No

<https://bones.ppl.gov/printreq/?req=405021>

Page 4 of 4

<https://bones.ppl.gov/printreq/?req=405021>

Page 3 of 4

**NCSX June 2007 ETC
TABLE V - Basis of Estimate**

WBS Number: 12
WBS Title: Vacuum Vessel Systems
Job Number: 1204
Job Title: Vacuum Vessel System Procurements
Job Manager: Larry Dudek

Boots - Requisition 405024

Requisition Print Form

05/10/2007 09:08 AM



Requisition 405024 created on 03-12-2007 for
NCSX Winding Form Seal Plates

Requisitioner: Thomas Meighan
Buyer: Thomas Meighan
Deliver to: MS41 C-Ste B313
Phone: (609) 243-3053

CO/Wkg/DOB/Exp Cts	FY1 - Amount	FY2 - Amount	Signature Authority
--------------------	--------------	--------------	---------------------

Line Item 1: Assembly Dwg. No. se122-340-r0.pdf, Detail Dwg. No. se122-341-r0.pdf Port 2 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 2: Assembly Dwg. No. se122-340-r0.pdf, Detail Dwg. No. se122-342-r0.pdf Port 2 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 3: Assembly Dwg. No. se122-344-r0.pdf, Detail Dwg. No. se122-345-r0.pdf Port 5 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 4: Assembly Dwg. No. se122-344-r0.pdf, Detail Dwg. No. se122-346-r0.pdf Port 5 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 5: Assembly Dwg. No. se122-348-r0.pdf, Detail Dwg. No. se122-349-r0.pdf Port 6 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 6: Assembly Dwg. No. se122-348-r0.pdf, Detail Dwg. No. se122-350-r0.pdf Port 6 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 7: Assembly Dwg. No. se122-352-r0.pdf, Detail Dwg. No. se122-353-r0.pdf Port 7 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	

https://bones.ppl.gov/printreq/?req=405024

Page 1 of 4

Requisition Print Form

05/10/2007 09:08 AM

9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 8: Assembly Dwg. No. se122-352-r0.pdf, Detail Dwg. No. se122-354-r0.pdf Port 7 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 9: Assembly Dwg. No. SE122-004, Detail Dwg. No. se122-356-r0.pdf Neutral Beam Port Seal Fill Plate Assy. Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 10: Assembly Dwg. No. se122-360-r0.pdf, Detail Dwg. No. se122-361-r0.pdf Port 9 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 11: Assembly Dwg. No. se122-360-r0.pdf, Detail Dwg. No. se122-362-r0.pdf Port 9 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 12: Assembly Dwg. No. se122-364-r0.pdf, Detail Dwg. No. se122-365-r0.pdf Port 10 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 13: Assembly Dwg. se122-364-r0.pdf, Detail Dwg. No. se122-366-r0.pdf Port 10 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 14: Assembly Dwg. No. se122-368-r0.pdf, Detail Dwg. No. se122-369-r0.pdf Port 11 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 15: Assembly Dwg. No. se122-368-r0.pdf, Detail Dwg. No. se122-370-r0.pdf Port 11 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 16: Assembly Dwg. No. se122-372-r0.pdf, Detail Dwg. No. se122-373-r0.pdf Port 15 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	
9450 1***1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line Item 17: Assembly Dwg. No. se122-372-r0.pdf, Detail Dwg. No. se122-374-r0.pdf Port 15 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00		Total Price: \$0.00 (Pct tolerance 10%)	

https://bones.ppl.gov/printreq/?req=405024

Page 2 of 4

**NCSX June 2007 ETC
TABLE V - Basis of Estimate**

WBS Number: 12
WBS Title: Vacuum Vessel Systems
Job Number: 1204
Job Title: Vacuum Vessel System Procurements
Job Manager: Larry Dudek



Requisition Print Format 05/10/2007 09:08 AM

9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line item 18: Assembly Dwg. No. se122-376-r0.pdf, Detail Dwg. No. se122-377-r0.pdf, Port 17 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00	Total Price: \$0.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line item 19: Assembly Dwg. No. se122-376-r0.pdf Detail Dwg. No. se122-378-r0.pdf Port 17 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00	Total Price: \$0.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line item 20: Assembly Dwg. No. se122-380-r0.pdf Assembly Dwg. No. se122-381-r0.pdf Port 18 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00	Total Price: \$0.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line item 21: Assembly Dwg. No. se122-380-r0.pdf Detail Dwg. No. se122-382-r0.pdf Port 18 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00	Total Price: \$0.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line item 22: Assembly Dwg. No. se122-384-r0.pdf Detail Dwg. No. se122-385-r0.pdf Port 8 Winding Form Seal Outer Plate Material: G-11CR			
Qty: 6 ea @ \$0.00	Total Price: \$0.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line item 23: Assembly Dwg. No. se122-384-r0.pdf Detail Dwg. No. se122-386-r0.pdf Port 8 Winding Form Seal Inner Plate Material: G-11CR			
Qty: 6 ea @ \$0.00	Total Price: \$0.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line item 24: Assembly Dwg. se122-388-r0.pdf Detail Dwg. No. se122-389-r0.pdf Spacer Port Winding Form Seal Outer Plate 3 Material: G-11CR			
Qty: 3 ea @ \$0.00	Total Price: \$0.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line item 25: Assembly Dwg. No. se122-388-r0.pdf Detail Dwg. No. se122-390-r0.pdf Spacer Port Winding Form Seal Inner Plate Material: G-11CR			
Qty: 3 ea @ \$0.00	Total Price: \$0.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski
Line item 26: Assembly Dwg. No. se122-356-r0.pdf Detail Dwg. No. se122-393-r0.pdf Neutral Beam Port Winding Form Seal Fill Plate Material: G-11CR			
Qty: 6 ea @ \$0.00	Total Price: \$0.00 (Pct tolerance 10%)		
9450 1*** 1204	2007 - \$0.00	2008 - \$0.00	R. Strykowski

Requisition Total: \$0.00

<https://bones.pplf.gov/printreq/?req=405024>

Page 3 of 4

Requisition Print Format

Excess Inventory: Not Listed
 Stockroom Inventory: Not Stocked
 Receipt Inspection Required: Yes
 Sole Source: No
 BQA:
 Attachments:
 None

Reviews: Chemical - No
 Desktop IT - No
 AC Power - No
 Telecomm - No
 PAAA - No
 Quality Assurance - Yes
 Machining Resource - No

Safety - No
 Non-Desktop IT - No
 Labor Resources - No
 Radiological - No
 Printing - No
 Lift Manager - No

05/10/2007 09:08 AM

<https://bones.pplf.gov/printreq/?req=405024>

Page 4 of 4

NCSX June 2007 ETC
TABLE V - Basis of Estimate

WBS Number: 12
WBS Title: Vacuum Vessel Systems
Job Number: 1204
Job Title: Vacuum Vessel System Procurements
Job Manager: Larry Dudek

From:FERGUSON METALS

04/20/2007 16:44 #165 P.001/001

3475 Symmes Road
Hamilton, OH 45015
Phone: 1-800-347-2376
Fax: 513-874-6857



FACSIMILE

TO: Fred FROM: Frank Mefford
fmefford@fergusonmetals.com

COMPANY: Princeton University DATE: 4/20/2007

FAX NUMBER: 609-243-3030 TOTAL NO. OF PAGES INCLUDING COVER: 1

REP: RPQ QUOTE VALID FOR: 15 Days

SALES QUOTE

Description	AMS	Width	Length	Quantity	Weight	Price
625 .500 36x120	5599	36	120	20	13,560#	16.00#RUZ
625 .750 36x120	5599	36	120	6	6,090#	16.00#RUZ

Quoted + surcharge at the time of shipment

16.0
11.5
w/ surc. #/lb → # 27.50

A286?

FOB:45015
Estimated Lead Time:14 weeks
** Subject to prior sale.

Thanks for the opportunity.


Frank Mefford

Inconel 625 Quote

A286

In-Stock and On-Time
Specialty Stainless Steels & Alloys



3475 Symmes Road
Hamilton, OH 45015

Surcharge Totals for February 2007 - June 2007

Grades	February 2/1/07 - 2/28/07	March 3/1/07 - 3/31/07	April 4/1/07 - 4/30/07	May 5/1/07 - 5/31/07	June 6/1/07 - 6/30/07
15-5	0.6606	0.7188	0.8284	0.9719	1.0645
15-7	1.6736	1.7734	1.9641	2.2500	2.4095
17-4	0.5820	0.6346	0.7327	0.8630	0.9468
17-7	1.2753	1.3793	1.5773	1.8250	2.0024
18SR	0.1254	0.1318	0.1555	0.2028	0.2246
201	0.8050	0.8784	1.0079	1.1733	1.2887
301 7.0%	1.2545	1.3462	1.5370	1.7785	1.9520
302/304/304L	1.4215	1.5257	1.7421	2.0128	2.2098
304-8.5%	1.4924	1.6127	1.8419	2.1263	2.3341
305	2.0182	2.1772	2.4821	2.8553	3.1332
309	2.0786	2.2427	2.5561	2.9401	3.2309
310	3.2314	3.4810	3.9604	4.5393	4.9847
316/316L	2.2533	2.3962	2.6703	3.0543	3.2930
317L	2.6845	2.8430	3.1467	3.5894	3.8544
321	1.5916	1.7166	1.9552	2.2522	2.4679
347	1.5710	1.6970	1.9374	2.2351	2.4519
409/409 Mod	0.0940	0.1079	0.1319	0.1758	0.1861
410/410S	0.0793	0.0942	0.1201	0.1651	0.1777
430	0.0941	0.1105	0.1382	0.1865	0.2074
434	0.2898	0.3082	0.3398	0.4103	0.4320
439	0.1248	0.1404	0.1660	0.2140	0.2353
440A	0.0941	0.1105	0.1382	0.1865	0.2074
Alloy 286	1.4924	1.6127	1.8419	2.1263	2.3341
Alloy 625	10.9488	10.7978	11.5031	12.1638	13.6292
Alloy 718	9.2413	9.1268	9.7192	10.2307	11.4262
Alloy HX	9.2413	9.1268	9.7192	10.2307	11.4262

Order Hotline

1.800.347.2376

fax: 513.874.6857

www.fergusonmetals.com

salesquote@fergusonmetals.com

5/7/2007 1:08:00 PM