WB	S Number: 31								
WBS Title: Magnetic Diagnostic Systems									
lab.	Name to a 2000								
	Number: 3101								
Job Title: Magnetic Diagnostic Systems									
	Job Manager: Brent Stratton								
UUD	Manager: Brent Ottation								
				1					
Mate	erials and Subcontracts (M&S)								Basis of Estimate
	Description	Type	aterial Cost \$			Labor			
		туре	(Note 1)	EMEM	EMSM	EMTB	EADM	EEEM	
New Sc	ope Cost for Exiting T/Cs and Heater Power Leads at Port 12		· ·						
	Remaining Design			136					Design about 50% complete.
	Distribution of wires to 2.75 ConFlat System Diagram								
	Research Amphenol Receptical								Will modify Commercial Bud Box based upon review with tech
	Impact of Cryostat								
	Evaluate magnetic permeability issue								
	Extend Heater Power Leads Support of Procurements under Job 1204			40					Vendor contacts, reqn, etc Labik - support of efforts by Dudek.
	Engineering Support Field/Fab Activities (Title III)			25					remain contacts, required Easily - support of chorts by Budek.
	Peer Review			30					Based on previous experience on similar jobs
7	Design Drafting Issue new drawing						30		Based on previous experience on similar jobs
8	Install and Connect T/C Feedthroughs								Included in Job 1810
	Install Extra Length Wire and Connect ( Solder ) Power								Included in Job 1810
40	Feedthroughs								Parada a seconda a seconda a seconda de la factoria del la factoria de la factoria del la factoria de la factoria del la factoria de la factoria del la factoria del la factoria del la fa
	Machine Twelve 2.75 CF Blanks Rubber Seal				36				Based on previous experience on similar jobs
	Machine 6 Commercial Aluminum Boxes			36					Based on previous experience on similar jobs
			]						
NOTE:	M&S in Job 1204 TOTA Description		\$28,700 aterial	231	72		30	0	
	Description	Type	Cost \$	EMEM	EMSM	Labor EMTB	EADM	EEEM	
Existing	g + Added Cost for Co Wound Loops for Modular Coils	. , , , ,	000.0				27(2)		
	Design Protective Boxes								Work Completed
	Drawings	-							Work Completed
	Purchase SS Sheet Purchase PTFE Tubing and Fiber Glass Sheath								Work Completed Work Completed
	Prototype								Work Completed
	Formal Issue of Drawings Rev 0								Work Completed
	Form 18 Protective Boxes								Work Completed
	Weld end plates  Drawing Change , add extra slots								Work Completed Work Completed
	Formal Issue of Drawings Rev 1								Work Completed
	Engineering Support Field/Fab Activities (Title III)								Work Completed
	Fab MC co-wound loops								Work Completed
	TOTA	L	\$0	0	0	0	0	0	

WB:	S Number: 31							
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	Number: 3101							
Job	Title: Magnetic Diagnostic Systems							
	Manager: Brent Stratton							
	Description	Material	<u> </u>		Labor			
	Тур		EMEM	EMSM	EMTB	EADM	EEEM	
victing	+ Added Cost for Co Wound Loops for 18 TF and 6 PF and 2 SolenoidCoils	COST	LIVILIVI	LINION	LWID	LADIN	LLLIWI	
	Design Protective Boxes		110					TF Complete
	5							·
	Drawings  Drawings	0070	60					TF Complete.
	Purchase SS Sheet	\$870 \$2,000	1					Partial.
	Purchase Heat Shrink Tubing, 20 @ 100 ft	\$2,000 \$4,550	6					12 ordered in Dec 06 => 6 of 12 Received.  Placed order for 1900 ft
	Purchase additional CoAxial cable 3500 ft  Prototype	\$4,550	2	12				Placed order for 1900 ft TF Complete.
	21			12				•
	Formal Issue of Drawings Rev 0 Form 26 Protective Boxes			102		0		Work Completed 6 TF completed.
	Weld end plates			102	18			6 TF completed.
	Engineering Support Field/Fab Activities (Title III)		36		10			o i r completed.
	Develop Convective Air Furnace	\$0	30	0				Work Completed
	Fab TF, PF & solenoid co-wound loops	40		130				9 of 26 completed.
	ab 11,11 a solenda de wedna loops							
								·
	TOTAL	\$7.420	215			0	0	·
	TOTAL	\$7,420	215		18	0	0	·
			215		18		0	
	Description	Material		244	18 Labor			
	Description Type	Material Cost \$	215 EMEM		18		0 EEEM	
Existing	Description  Typ: + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6	Material Cost \$ Protective Boxes	ЕМЕМ	244	18 Labor			Rased on previous experience
xisting	Description  Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges	Material Cost \$ Protective Boxes \$900		244	Labor EMTB	EADM		Based on previous experience
xisting	Description  Typ:  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate	Material   Cost \$   Protective   Boxes   \$900   \$820	ЕМЕМ	244	Labor EMTB	EADM		Based on previous experience
xisting	Description  Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws	Material   Cost \$	ЕМЕМ	244	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience
Existing	Description  Typ:  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB	Material   Cost \$   Protective   Boxes   \$900   \$820	ЕМЕМ	244	Labor EMTB	EADM		Based on previous experience Based on previous experience Based on previous experience
xisting	Description Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6 Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - 316 SS flat head screws Purchase Material - Circuit Boards RF Filtered w/TB Install 24 JB (410 cables) Act #	Material   Cost \$	ЕМЕМ	244	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810
Existing	Description  Typ:  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables)	Material   Cost \$	ЕМЕМ	EMSM	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810
Existing	Description  Typ:  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables)  Anneal 2.75 Conflat Flanges	Material   Cost \$	<b>EMEM</b> 2	244	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience
Existing	Description Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables)  Anneal 2.75 Conflat Flanges  Engineering Support Field/Fab Activities (Title III)	Material   Cost \$	2 120	EMSM EMSM	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience Based on previous experience
Existing	Description  Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables)  Anneal 2.75 Conflat Flanges  Engineering Support Field/Fab Activities (Title III)  Purchase 2000 ft 0.059 CoAx-Spacer	Material   Cost \$	2 120 2	244 EMSM	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience Based on previous experience Based on previous experience
xisting	Description  Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables)  Anneal 2.75 Conflat Flanges  Engineering Support Field/Fab Activities (Title III)  Purchase 2000 ft 0.059 CoAx-Spacer  AutoCAD Drawings of Field Runs/Tag#/Port Assignments	Material   Cost \$	2 120	244 EMSM	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience
Existing	Description Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables) Act #  Terminate 24 JB (410 cables)  Anneal 2.75 Conflat Flanges  Engineering Support Field/Fab Activities (Title III)  Purchase 2000 ft 0.059 CoAx-Spacer  AutoCAD Drawings of Field Runs/Tag#/Port Assignments  Water Jet Machine Cu Templates	Material   Cost \$	2 120 2	244 EMSM	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience
Existing	Description Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6 Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - 316 SS flat head screws Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act # Terminate 24 JB (410 cables) Anneal 2.75 Conflat Flanges Engineering Support Field/Fab Activities (Title III) Purchase 2000 ft 0.059 CoAx-Spacer AutoCAD Drawings of Field Runs/Tag#/Port Assignments Water Jet Machine Cu Templates Install 20 Templates	Material   Cost \$	2 120 2	244 EMSM	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience Included in Job 1810
Existing	Description Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables) Act #  Terminate 24 JB (410 cables)  Anneal 2.75 Conflat Flanges  Engineering Support Field/Fab Activities (Title III)  Purchase 2000 ft 0.059 CoAx-Spacer  AutoCAD Drawings of Field Runs/Tag#/Port Assignments  Water Jet Machine Cu Templates	Material   Cost \$	2 120 2	244 EMSM	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience
Existing	Description  Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables)  Anneal 2.75 Conflat Flanges  Engineering Support Field/Fab Activities (Title III)  Purchase 2000 ft 0.059 CoAx-Spacer  AutoCAD Drawings of Field Runs/Tag#/Port Assignments  Water Jet Machine Cu Templates  Install 20 Templates  Install Spacer Flux Loops	Material   Cost \$	2 120 2	EMSM  EMSM	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience Included in Job 1810 Included in Job 1810
Existing	Description  Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables) Act #  Terminate 24 JB (410 cables) Conflat Flanges  Engineering Support Field/Fab Activities (Title III)  Purchase 2000 ft 0.059 CoAx-Spacer  AutoCAD Drawings of Field Runs/Tag#/Port Assignments  Water Jet Machine Cu Templates  Install 20 Templates  Install 20 Templates  Install 20 Templates  Install Spacer Flux Loops  Twist leads	Material   Cost \$	2 120 2 112	EMSM  EMSM	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Based on previous experience Included in Job 1810
Existing	Description  Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6  Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables) Act #  Terminate 24 JB (410 cables)  Anneal 2.75 Conflat Flanges  Engineering Support Field/Fab Activities (Title III)  Purchase 2000 ft 0.059 CoAx-Spacer  AutoCAD Drawings of Field Runs/Tag#/Port Assignments  Water Jet Machine Cu Templates  Install 20 Templates  Install Spacer Flux Loops  Tiwist leads  Design Protect Box & Prepare Dwg	Material   Cost \$	2 120 2 112	EMSM 12	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience Included in Job 1810 Included in Job 1810 Included in Job 1810 Based on previous experience
Existing	Description Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6 Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - 316 SS flat head screws Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act # Terminate 24 JB (410 cables) Anneal 2.75 Conflat Flanges Engineering Support Field/Fab Activities (Title III) Purchase 2000 ft 0.059 CoAx-Spacer AutoCAD Drawings of Field Runs/Tag#/Port Assignments Water Jet Machine Cu Templates Install 20 Templates Install Spacer Flux Loops Twist leads Design Protect Box & Prepare Dwg Fab 6 Prot Boxes	Material   Cost \$	2 120 2 112	EMSM 12	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience Included in Job 1810 Included in Job 1810 Included in Job 1810 Based on previous experience Based on previous experience Based on previous experience
Existing	Description  Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6 Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables) Act #  Terminate 24 JB (410 cables) Teld/Fab Activities (Title III)  Purchase 2000 ft 0.059 CoAx-Spacer  AutoCAD Drawings of Field Runs/Tag#/Port Assignments  Water Jet Machine Cu Templates  Install 20 Templates  Install 20 Templates  Install 20 Templates  Install Spacer Flux Loops  Twist leads  Design Protect Box & Prepare Dwg Fab 6 Prot Boxes  Install Prot Boxes	Material   Cost \$	2 120 2 112	EMSM 12	Labor EMTB	EADM	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience Included in Job 1810 Included in Job 1810 Included in Job 1810 Based on previous experience Included in Job 1810
Existing	Description  Typ  + Added Cost for Flux Loop Junction Boxes and 20 Spacer Flux Loops and 6 Purchase Material - 2.75 ConFlat Flanges  Purchase Material - AL and SS Plate  Purchase Material - 316 SS flat head screws  Purchase Material - Circuit Boards RF Filtered w/TB  Install 24 JB (410 cables) Act #  Terminate 24 JB (410 cables) Act #  Terminate 24 JB (410 cables) Teld/Fab Activities (Title III)  Purchase 2000 ft 0.059 CoAx-Spacer  AutoCAD Drawings of Field Runs/Tag#/Port Assignments  Water Jet Machine Cu Templates  Install 20 Templates  Install 20 Templates  Install 20 Templates  Install Spacer Flux Loops  Twist leads  Design Protect Box & Prepare Dwg Fab 6 Prot Boxes  Install Prot Boxes	Material   Cost \$	2 120 2 112	244 EMSM	Labor EMTB	EADM 60	EEEM	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Based on previous experience Based on previous experience Included in Job 1810

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WBS Number: 31								
WBS Title: Magnetic Diagnostic Sy								
Job Number: 3101								
	1							
Job Title: Magnetic Diagnostic Sys	tems							
Job Manager: Brent Stratton								
Description	M	aterial			Labor			
	Туре	Cost \$	EMEM	EMSM	EMTB	EADM	EEEM	
Existing + Added Cost forHigh Temperature Rogowski Coil								
CDR + Peer Reviews			60					
Preliminary Design			60					
Fabricate Prototype		\$50			20			
Test Prototype		\$50		24				
Prepare for and Conduct PDR			20					
Final Design			60					
Purchase Spec for Winding Mandrel			40					
Trip to Vendor Sub contract Winding 3 Mandrels		\$15,000	16	16				
Prepare for and Conduct FDR		\$15,000	10					
Formal Issue of Drawings			10			4		
Purchase Material - ARI SS Coax Cable 0.032 inch		\$2,650	2				'	
Purchase Material - SS Flex and Bendable Smooth Tube		\$300	2					
r dichase material - 33 riex and bendable shiboth rube		\$300						
Purchase Material - Nextel Tape		\$300	1					
Purchase Material - Inconel Bar		\$1,200	2					
Fabricate coil clamps - 36 (3 Field Periods 12 ea)					90			
Fabricate ends			4	32				
Fixture to Straighten Smooth SS Tube		\$30	4		32			
Install Wound Coil into Protective SS Flex		\$50						Included in Job 1810
Install 3 Rogowski Coils								Included in Job 1810
Weld 36 coil clamps								Included in Job 1810
Engineering Support Field/Fab Activities (Title III)			60					
	TOTAL	19,630	281	72	142	4	0	

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WE	SS Number: 31								
WE	S Title: Magnetic Diagnostic	Systems							
	Number: 3101								
Job	o Title: Magnetic Diagnostic S	Systems							
Jok	Manager: Brent Stratton								
	<b>D</b> 1.0	-							
	Description	Type	aterial Cost \$	EMEM	EMSM	Labor EMTB	EADM	EEEM	
Δdded	Cost for Voltage Loops and Protective Boxes	туре	COSE \$	CIVICIVI	EINIOINI	CMID	EADW	CCCIVI	
Audeu	Drawings- Engineering Sketch of Routing			20					Based on previous experience
	Drawings- Layout						16		Based on previous experience
	Formal Release of Layout Drawing						4		Based on previous experience
	Protective Box Design			6					Based on previous experience
	Protective Box Drawing			20					Based on previous experience
	Install Voltage 12 Loops on VV								Included in Job 1810
	Twisted leads to Prot. Boxes								Included in Job 1810
	Fab 3 Protective Boxes	316 SS by 0.048 Thk	\$120			12			Based on previous experience
	Install 3 Protect. Boxes								Included in Job 1810
	Engineering Support Field/Fab Activities (Title III)			6					Based on previous experience
	Purchsae additional 900 ft cable	0.059 OD Inconel CoAx	\$1,600	2					
		TOTAL	\$1,720	54	0	12	20	0	
	Total		\$28,770	550	316	172	24	0	