	NCSX Work Approval	Form (\	WAF)	
	Imber: 31 Ie: Magnetic Diagnostic Sy			
Job Title	nber: 3101 e: Magnetic Diagnostic Sys	tems		
Job Mar	nager: Brent Stratton			
Description:	This effort covers the design, procurement of installation of the magnetic diagnostics for the include diamagnetic loops, flux loops, saddle provide signals to measure the magnetic flux to determine the magnetic field geometry usin	NCSX mach loops, Rogov change in the	nine. The magnetic sensors vski coils and B-coils that we many geometries necess	s vill
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: 31									
WBS Title: Magnetic Diagnos	stic Sys	stems					••••••		
Job Number: 3101									
Job Title: Magnetic Diagnost Job Manager: Brent Stratton									
Description:									
Included in Table II					1				
			 		ļ		 	 	
				1	1	1	1	1	

WB	S Number: 31								
WB	S Title: Magnetic Diagnostic Sy	stems							
	Number: 3101								
		tomo							
	Title: Magnetic Diagnostic Sys	lems							
Job	Manager: Brent Stratton								
					L I		L		
Mate	erials and Subcontracts (M&S)								Basis of Estimate
	Description	Ma	aterial			Labor			
		Туре	Cost \$						
Now Sc	ope Cost for Exiting T/Cs and Heater Power Leads at Port 12		(Note 1)	EMEM	EMSM	EMTB	EADM	EEEM	
	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								
5a	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					
	Peer Review			30			30		Based on previous experience on similar jobs 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
9	Install Extra Length Wire and Connect (Solder) Power								Included in Job 1810
	Feedthroughs								
	Machine Twelve 2.75 CF Blanks Rubber Seal				36				Based on previous experience on similar jobs
12	Machine 6 Commercial Aluminum Boxes				36				Based on previous experience on similar jobs
NOTE:	M&S in Job 1204	TOTAL	\$28,700	231	72	0	30	0	
	Description	Ma Type	aterial Cost \$	EMEM	EMSM	Labor EMTB	EADM	EEEM	
Existin	g + Added Cost for Co Wound Loops for Modular Coils	туре	COSLØ		LWOW	LINITO	LADIN		
	Design Protective Boxes								Work Completed
	Drawings								Work Completed
	Purchase SS Sheet								Work Completed
I	Purchase PTFE Tubing and Fiber Glass Sheath								Work Completed Work Completed
	Prototype Formal Issue of Drawings Rev 0		+				-		Work Completed Work Completed
	Form 18 Protective Boxes				-				Work Completed
	Weld end plates								Work Completed
L	Drawing Change , add extra slots								Work Completed
I	Formal Issue of Drawings Rev 1 Engineering Support Field/Fab Activities (Title III)								Work Completed Work Completed
⊨	Fab MC co-wound loops								Work Completed Work Completed
<u> </u>									
		TOTAL	\$0	0	0	0	0	0	
			<u></u>	l v					
L		1	1	L					

WB	S Number: 31								
WB	S Title: Magnetic Diagnostic Sy	/stems							
	Number: 3101								
	o Title: Magnetic Diagnostic Sys	stems							
JOC	Manager: Brent Stratton								
	Description		laterial			Labor			
		Туре	Cost \$	EMEM	EMSM	EMTB	EADM	EEEM	
Existin	g + Added Cost for Co Wound Loops for 18 TF and 6 PF and 2	SolenoidCoils							
	Design Protective Boxes			110					TF Complete
	Drawings			60					TF Complete.
	Purchase SS Sheet		\$870	1					Partial.
	Purchase Heat Shrink Tubing, 20 @ 100 ft		\$2,000	6					12 ordered in Dec 06 => 6 of 12 Received.
	Purchase additional CoAxial cable 3500 ft		\$4,550	2					Placed order for 1900 ft
	Prototype				12				TF Complete.
	Formal Issue of Drawings Rev 0						0		Work Completed
	Form 26 Protective Boxes				102				6 TF completed.
	Weld end plates					18			6 TF completed.
	Engineering Support Field/Fab Activities (Title III)			36					
	Develop Convective Air Furnace		\$0		0 130				Work Completed
	Fab TF, PF & solenoid co-wound loops				130				9 of 26 completed.
		TOTAL	\$7,420	215	244	18	0	0	
	Description	Туре	Material Cost \$	EMEM	EMSM	Labor EMTB	EADM	EEEM	
Existin	+ Added Cost for Flux Loop Junction Boxes and 20 Spacer F				2				
Existin	l g + Added Cost for Flux Loop Junction Boxes and 20 Spacer F Purchase Material - 2 75 ConFlat Flances		ve Boxes	2					Based on previous experience
Existin	Purchase Material - 2.75 ConFlat Flanges		ve Boxes \$900			2			Based on previous experience
Existin	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate		Ve Boxes \$900 \$820			2			Based on previous experience
Existin	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - 316 SS flat head screws		Boxes \$900 \$820 \$400			2		32	Based on previous experience Based on previous experience
Existin	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		Ve Boxes \$900 \$820					32	Based on previous experience Based on previous experience Based on previous experience
Existin	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 #		Boxes \$900 \$820 \$400					32	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810
Existin	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)		Boxes \$900 \$820 \$400					32	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810
Existin	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		Boxes \$900 \$820 \$400	2	12			32	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience
Existin	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)		re Boxes \$900 \$820 \$400 \$3,200					32	Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Based on previous experience Based on previous experience
Existin	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		Boxes \$900 \$820 \$400	2 				32	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
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate 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		re Boxes \$900 \$820 \$400 \$3,200 \$3,500	2 120				32	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 Based on previous experience Based on previous experience
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate 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 # 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		re Boxes \$900 \$820 \$400 \$3,200	2 		2		32	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
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - J16 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		re Boxes \$900 \$820 \$400 \$3,200 \$3,500	2 		2		32	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
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate 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 # 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		re Boxes \$900 \$820 \$400 \$3,200 \$3,500	2 		2		32	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
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - AI and SS Plate 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 20 Templates Install 20 Templates Install 20 Templates Install Spacer Flux Loops		re Boxes \$900 \$820 \$400 \$3,200 \$3,500	2 		2		32	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 Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - AL and SS Plate Purchase Material - Circuit Boards RF Filtered w/TB Install 24 JB (410 cables) Act # Terminate 2		re Boxes \$900 \$820 \$400 \$3,200 \$3,500	2 		2		32	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 Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Included in Job 1810
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate 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) Act # Terminate .275 Conflat Flatges 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 Spacer Flux Loops Twist leads Design Protect Box & Prepare Dwg		re Boxes \$900 \$820 \$400 \$3,200 \$3,500 \$3,500 \$240	2 	12	2		32	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 Based on previous experience Based on previous experience Included in Job 1810 Included in Job 1810 Based on previous experience
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - AI and SS Plate Purchase Material - Circuit Boards RF Filtered w/TB Install 24 JB (410 cables) Act # Terminate 24 JB (410 cables) Act # 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 Spacer Flux Loops Twist leads Design Protect Box & Prepare Dwg Fab G Prot Boxes		re Boxes \$900 \$820 \$400 \$3,200 \$3,500 \$3,500 \$240	2 	12	2			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 Based on previous experience Included in Job 1810 Included in Job 1810 Included in Job 1810 Based on previous experience Based on previous experience
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - AI and SS Plate Purchase Material - Circuit Boards RF Filtered w/TB Install 24 JB (410 cables) Act # Terminate 200 ft 0.059 CoAx-Spacer AutoCAD Drawings of Field Runs/Tag#/Port Assignments Install Spacer Flux Loops Twist leads Design Protect Box & Prepare Dwg Fab 6 Prot Boxes Install Prot Bo		re Boxes \$900 \$820 \$400 \$3,200 \$3,500 \$3,500 \$240	2 	12	2			Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Based on previous experience Based on previous experience 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 Included in Job 1810 Based on previous experience Based on previous experience Included in Job 1810
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - AI and SS Plate Purchase Material - Circuit Boards RF Filtered w/TB Install 24 JB (410 cables) Act # Terminate 200 ft 0.059 CoAx-Spacer AutoCAD Drawings of Field Runs/Tag#/Port Assignments Install Spacer Flux Loops Twist leads Design Protect Box & Prepare Dwg Fab 6 Prot Boxes Install Prot Bo		re Boxes \$900 \$820 \$400 \$3,200 \$3,500 \$3,500 \$240	2 	12	2	60		Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Based on previous experience Based on previous experience 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 Included in Job 1810 Based on previous experience Based on previous experience Included in Job 1810
	Purchase Material - 2.75 ConFlat Flanges Purchase Material - AL and SS Plate Purchase Material - AL and SS Plate Purchase Material - Circuit Boards RF Filtered w/TB Install 24 JB (410 cables) Act # Terminate 2000 ft 0.059 CoAx-Spacer AutoCAD Drawings of Field/Fab Activities (Title III) Purchase 2000 ft 0.059 CoAx-Spacer Install 20 Templates Install 20 Templates Install Spacer Flux Loops Twist leads Design Protect Box & Prepare Dwg Fab 6 Prot Boxes Install Prot Boxes Prepare Drawing of Spacer Loops	lux Loops and 6 Protectiv	re Boxes \$900 \$820 \$3,200 \$3,200 \$3,500 \$240 \$2200	2 120 2 1120 2 112 2 22 22 22 22	12	8	60		Based on previous experience Based on previous experience Based on previous experience Included in Job 1810 Based on previous experience Based on previous experience 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 Included in Job 1810 Based on previous experience Based on previous experience Included in Job 1810

WBS Number: 31								
WBS Title: Magnetic Diagnostic Sy	stems							
Job Number: 3101								
Job Title: Magnetic Diagnostic Sys	tems							
Job Manager: Brent Stratton								
Description	M	laterial			Labor			
	Туре	Cost \$	EMEM	EMSM	EMTB	EADM	EEEM	
Existing + Added Cost forHigh Temperature Rogowski Coil		<u> </u>						
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			16	16				
Sub contract Winding 3 Mandrels		\$15,000						
Prepare for and Conduct FDR			10					
Formal Issue of Drawings						4	1	
Purchase Material - ARI SS Coax Cable 0.032 inch		\$2,650	2					
Purchase Material - SS Flex and Bendable Smooth Tube		\$300	2					
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				1	
	TOTAL	19,630	281	72	142	4	0	

WBS Number: 31								
WBS Title: Magnetic Diagnostic Sy	/stems							
Job Number: 3101								
Job Title: Magnetic Diagnostic Sys	stems							
Job Manager: Brent Stratton								
						1		
Description	Mat				Labor			
	Туре	Cost \$	EMEM	EMSM	EMTB	EADM	EEEM	
Added Cost for Voltage Loops and Protective Boxes								
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	1				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	

NCSX June 2007 ETC TABLE III - Fabrication/Assembly Installation

In-house Fabrication and Assem	bly and Install	ation			
Included in Table II					

NCSX June 2007 ETC TABLE IV - Uncertainty of Estimate and Residual Risk Assessment

WBS Number: 31 WBS Title: Magnetic Diagnostic Systems Job Number: 3101 Job Title: Magnetic Diagnostic Systems Job Manager: Brent Stratton

Uncertainty of the Estimate

<u></u>	High	Medium	Low	Uncertainty Range (%)	Comments/Other Considerations
Design Maturity	х			-5%/+10%	Exception is Rogowski => Medium - design not finalized
Design Complexity			х	-5 /0/ + 10 /0	Exception is Rogowski => Medium - design not finalized

Note: High/Medium/Low uncertainty assessment from Job Manager. Uncertainty range based on AACEI recommended practice 18R-97 as amended for NCSX.

Residual Impact	<u>ts</u>					Cost In	npact	Schedule lı	mpact	
Job	Risk Description		Likelihood of Occurring	Mitigation Plan	Basis of estimate	Low	High	Low	High	
during installati	re Rogowski Loop damaged on resulting in loss of toroidal ement capability	5%	I	riple redundancy	3 Installed - only one required.	+\$0K	+\$0K	+0.00	+0.00	

Notes:

[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 reponsible 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 Unlikely (P<10%), NC=Non-credible (P<1%)</p>

Activity ID	MILE-	Activity	Duration	Baseline	Baseline	Shifts	Total Float	%	Proposed										_	
D	stones (level 2	Description	(work days	Start	Finish		Float	cmplt	Budgeted	FY07	7	FY0	8	FY	Y09	F	FY10	-	FY11	 FY1
_	& 3)																			Щ
l - Magn	netic Diagr	ostics																		
ob: 3101 - N	Magnetic Diag	nostics-STRATTON																		
lodular Coil C	C-wound Loops																			
3101-229	Eabricat	te(12) MC Protective boxes (completed	43	01MAY07A	01MAY07A				0.00											
Rogowski Coi			45	OTWATOTA	UTWATUTA				0.00											
	115																			
3101-316	CONCE	P DESIGN ROWGOWSKI COIL	30	01MAY07*	12JUN07		188		9,049.20	Пем	1//EN	∕I =60ł	hr;							
8101-317	PRELIM	DESIGN ROWGOWSKI COIL incl prototype	30	13JUN07*	25JUL07		188		16,670.28	De	m//e	m=80);em//:	sm=242	2;em//	tb=20;4	⊧1=0.1k	;		
8101-318	PDR - R	OWGOWSKI COIL	0		25JUL07*		188		0.00	\bigtriangledown	7									
3101-325	FINAL D	DESIGN ROWGOSKI COIL	30	26JUL07*	06SEP07		188		21,435.88]ем/	//EM =	=126h	r ;em//s	sm=16	;ea//sb	=4			
3101-340	subcon	tract winding 3 mandrels	30	26JUL07*	06SEP07		188		19,140.00] 41=	15k								
101-326	3 FDR - R	OWGOSKI COIL	0		06SEP07		188		0.00											
3101-329	FAB RO	WGOWSKI COILS incl clamps	45	07SEP07	08NOV07		188		21,886.09		4	1=4.5	\$k ; E	M//EM	=15hr	; 122hr ;				
101-330	Title III		45	07SEP07	08NOV07		188	LOE	9,434.71			:M//SN :M//EN			//IB =	122hr ;				
	-wound Loops			0.01					e, ie iii i											
101-425	Design	Protective boxes for PF	20	01OCT07*	26OCT07		242		24,881.50		∎e.	A//SB	=60h	; EM//	'EM =1	10hr ;				
101-426	Purchas	se SS Sheet	15	29OCT07*	16NOV07		242		1,218.07		De	EM//TE	3 =1; •	41=0.87	7k					
101-452	Form P	rotective boxes	20	19NOV07	18DEC07		242		13,475.22		ß	lem//s	sm=10	2						
101-454	Weld en	d plates of PF protective boxes	10	19DEC07	10JAN08		242		1,441.98			llem//	′tb=18							
101-427	Purchas	se Heat Shrink tubing	15	04SEP07*	24SEP07		286		3,002.90		Оем	I//TB =	=6; 41	=2.0k						
101-428	Purchas	se aad'l CoAxial cable	40	04SEP07*	29OCT07		261		5,973.11		ШE	М//ТВ	s =2hr	; 41=4.	.5\$k ;					
3101-450	Prototy	pe PF Loops	10	30OCT07*	12NOV07		261		1,585.32		le	m//sm	n=12							
8101-458	FabTF,F	PF & solenoid co-wound loops	40	13NOV07	18JAN08		261		17,174.30		R	llem//	/sm=1	30						
8101-456	Title III		70	29OCT07	14FEB08		242	LOE	5,788.44		C	D em	//em=	36						
/C and Heate	er Tape Leads																-	-		
	1				1	1														
204-140		T/C and Heater Tape Leads	20	01AUG07*	28AUG07		116		20,511.52		lem/	/EM =	136							
204-140.2	Design	Drafting T/C and Heater Tape Leads	20	01AUG07*	28AUG07		126		3,373.80		lea//	sb=30)							
204-140.1	Peer Re	view T/C and Heater Tape Leads	5	08AUG07	14AUG07		126		4,524.60			'EM =:	30							
204-141		as Signed T/C and Heater Tape Leads	0		28AUG07		116		0.00											
204-146		ment support T/C and Heater Tape Leads	20	29AUG07	26SEP07		116		6,032.80			1//EM								
204-147	Field/Fa	b support (title III) T/C&Heater Tape	65	27SEP07	08JAN08		116		4,012.08			₿ем//	/EM =	25						
204-148	Machine	e 12 2.75 cf blanks	20	29AUG07	26SEP07		181		4,461.12	1	Dem	n//sm=	-36							
204-150	Rubber	seal	20	29AUG07	26SEP07		181		0.00	l										
204-151	Machine	e 6 commercial aluminum boxes	20	29AUG07	26SEP07		181		4,461.12	1	llem	n//sm=	-36							
ux loop junc	ction boxes and	spacer templates																		
204 460	Desire	Protective Poyce	40	01144.107	14144 107		407		2 240 04											
204-160	Design	Protective Boxes	10	01MAY07	14MAY07		187		3,318.04	EM/	//EM	=22								
n Date	18JUL07	07-31	ETCZ	N	CSX Project		Sheet 58	3 of 99												
Date	1000107				e Loaded Sche	edule														

Activity	MILE-	Activity	Duration	Baseline	Baseline	Shifts	Total	%	Proposed						-	_	
ID ID	stones (level 2 & 3)	Description	(work days	Start	Finish		Float	cmplt	Budgeted	FY07	· 	FY08	- F1	Y09	FY10	FY11	FY12
1204-165		Issue req,Bid & Award- Flux Loop Junction Boxes	25	15MAY07	19JUN07		187		0.00	۵							
1204-170		Autocad dwgs of field runs/tag#/ports assignmt	10	01AUG07*	14AUG07		193		16,891.84) E	EM//ei	m=112					
1204-161		Fab Protective Boxes	10	09AUG07	22AUG07		187		5,623.76	De	EM//S	SM=36; 4	41=0.44k	; em//tb	=8		
1204-171		Prep Dwgs of spacer loops	10	01AUG07*	14AUG07		593		6,747.60	le	ea//sb	=60					
1204-172		Title III	96	15MAY07	28SEP07		1,249	LOE	18,098.40		ЕМ//	/em=120)				
1204-173		Purchase material for boxes&spacers (in job 1204	35	20JUN07	08AUG07		187		6,111.88	∎e	e//em	n=32;em	//em=4;e	em//tb=4			
Voltage Loop	os & Prote	ective Boxes															
		Γ															
3101-800		Design Routing and Boxes	20	01OCT07*	26OCT07		239		9,794.54		lem/	//em=46	;ea//sb=2	20			
3101-802		Fab 3 protective Boxes	10	29OCT07	09NOV07		249		1,118.28		841	=0.12k;	em//tb=1	2			
3101-804		Purchase 900ft cable	20	29OCT07*	23NOV07		239		2,414.38		∎41	=1.6k;e	m//em=2	2			
3101-806		Title III	20	29OCT07	23NOV07		239	LOE	964.74		I en	n//em=6					
Subtotal			0		14FEB08		1,159		290,617.50		\vdash						

un Date 18JUL07 07:3	ETCZ	TCZ NCSX Project Resource Loaded Schedule	Sheet 59 of 99
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