

**NCSX Fabrication Project Cost and Schedule Estimating Form  
(Attachment 1c - FAB)**

WBS: 63\_Utility Systems (GN2, Air, Vent)

Responsibility: L. Dudek

Activity Title	Manhours	FY2003 \$\$	Labor Type	Start Date Month/Year	End Date Month/Year	Comments
<b>Labor</b>						
<b>Preliminary Design (Title I)</b>	40		EMEM	11/28/05	2/17/06	
	120		EADM			
<b>Final Design (Title II)</b>	40		EMEM	2/22/06	5/16/06	
	40		EADM			
<b>Lab Fab/Assembly/Installation (Title III)</b>	40		EMEM	5/17/06	7/11/06	
	418		EMTB			Plumber
Testing	8		EMEM			
	40		EMTB			
<b>Level of Effort</b>						
FY2003	60		EMEM	Facility Integration		
FY2004	100		EMEM	Facility Integration		
FY2005						
FY2006						
FY2007						
<b>M&amp;S Costs</b>						
<b>Manufacturing Development</b>						
Purchased Design Services						
Procured Hardware/Material						
<b>Procured Hardware/Material</b>						
<b>Purchased Design Services</b>						
<b>Procured Installation/Assembly Costs</b>		17800		5/17/06	7/11/06	Escalated to 2003 \$
<b>Other Costs</b>						
Travel						
Allocations (WBS 81 only)						

**Instructions for Completing Form**

- (1) One form for each 3 digit WBS element (e.g., 111, 121, 452, etc.) => if no 3 digit WBS, use 2 digit WBS (e.g., 81, 82, 84)
- (2) For Lab labor, provide estimate in manhours => provide estimate by specific labor type.
- (3) For M&S, provide estimate in FY2002 direct dollars if procured by PPPL, or in fully loaded dollars if procured by ORNL
- (4) Start and end date provided in month/year format => March/2003

Engineering Costs

TOTAL JOB WITH G&A & BURDEN	\$87,830	FY = 98		TASKA= 1	TASKB = 10	PPPL/WO	SUM TASKS A THRU B	#REF!							
		EQUIP TAX = 0.01		TASKC= 11	TASKD = 20	PPPL/WO	SUM TASKS C THRU D	#REF!							
BURDEN =		OPER 0		TASKE= 21	TASKF = 30	PPPL/WO	SUM TASKS E THRU F	#REF!							
HOURLY RATES =		0 0 0 0 0 0 0 0 0 0		0 0		PPPL^^									
TASK DESCRIPTION	41MS 48MS STK	EMEM	EMSM	EMTB	EAEM	EADM	EEEM	EESM	EETB	ECEM	W/O B&G	SSUM	BURDE	G&A	TOT PPL
*** *****															
1											0	0	0	0	0
2	Design		80			160					23200	0	0	0	23200
3											0	0	0	0	0
4											0	0	0	0	0
5											0	0	0	0	0
6											0	0	0	0	0
7											0	0	0	0	0
8	Installation		40								5200	0	0	0	5200
9											0	0	0	0	0
10	Air Piping	\$1,500				48					5340	0	375	0	5715
11	Vent Piping	\$14,400.00				322					40160	0	3600	0	43760
12	GN2 Piping	\$1,500.00				48					5340	0	375	0	5715
13											0	0	0	0	0
14											0	0	0	0	0
15											0	0	0	0	0
16											0	0	0	0	0
17											0	0	0	0	0
18											0	0	0	0	0
19	Testing		8			40					4240	0	0	0	4240
20											0	0	0	0	0
21											0	0	0	0	0
22											0	0	0	0	0
23											0	0	0	0	0
24											0	0	0	0	0
25											0	0	0	0	0
26											0	0	0	0	0
27											0	0	0	0	0
28											0	0	0	0	0
29											0	0	0	0	0
30											0	0	0	0	0
Date of Rates 10/97															
Rev Date 10/97	17400	0	0	128	0	458	0	160	0	0	0	0	0	0	0
TOTAL MAN WEEKS				3.2	0	11.45	0	4	0	0	0	0	0	0	0
EM DIV\$ W/O BUR &G&A	\$53,280														
EA DIV\$ W/O BUR &G&A	\$12,800														
EE DIV\$ W/O BUR &G&A	\$0														
*** DIV	\$0														
***** DIV	\$0														
41 M&S W/O G&A	\$17,400														
48 M&S	\$0														
STOCK W/O G&A	\$0														
				FY98				FY98							FY98

ASSIGNMENTS

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TOTAL HRS UNASSIGNED 128 0 458 0 160 0 0 0



Size	Labor Manhours	Material Cost (\$)	Total Labor (Mhours)	M&S (\$)
<b>304 SS</b>				
<b>Sch10 with Clevis hangers</b>				
<i>(in 1991 \$)</i>				
<b>Linear Feet</b>				
1"	0.160	\$5	0	\$0
1-1/4"	0.176	\$6	0	\$0
1-1/2"	0.193	\$7	0	\$0
2"	0.239	\$9	0	\$0
1-1/2"	0.314	\$11	0	\$0
3"	0.348	\$13	0	\$0
4"	0.381	\$17	114	\$4,983
5"	0.457	\$23	0	\$0
6"	0.600	\$27	0	\$0
8"	0.727	\$41	0	\$0
10"	0.960	\$56	0	\$0
12"	1.140	\$70	0	\$0
14"	1.552	\$96	0	\$0
16"	2.027	\$125	0	\$0
<b>Sch 5 and 10 NO JOINTS</b>				
1"	1.000	0	0	\$0
1-1/4"	1.250	0	0	\$0
1-1/2"	1.500	0	0	\$0
2"	2.000	0	0	\$0
2-1/2"	2.500	0	0	\$0
3"	3.000	0	0	\$0
4"	4.000	60	0	\$0
5"	5.000	0	0	\$0
6"	6.000	0	0	\$0
8"	8.000	0	0	\$0
10"	10.000	0	0	\$0
12"	12.000	0	0	\$0
14"	14.000	0	0	\$0
16"	20.000	0	0	\$0
<b>ELBOWS</b>				
<b>Quantity</b>				
1"	1.070	\$6	0	\$0
1-1/4"	1.140	\$11	0	\$0
1-1/2"	1.230	\$10	0	\$0
2"	1.450	\$12	0	\$0
1-1/2"	2.000	\$19	0	\$0
3"	2.670	\$20	0	\$0
4"	4.000	\$39	48	\$468
5"	5.330	\$305	0	\$0
6"	6.000	\$115	0	\$0
8"	8.000	\$185	0	\$0
10"	12.000	\$430	0	\$0
12"	15.290	\$685	0	\$0
14"	20.811	\$932	0	\$0
16"	27.182	\$1,218	0	\$0
<b>45 Deg. ELBOWS</b>				
<b>Quantity</b>				
1"	1.070	\$10	0	\$0
1-1/4"	1.140	\$15	0	\$0
1-1/2"	1.230	\$9	0	\$0
2"	1.450	\$12	0	\$0
1-1/2"	2.000	\$19	0	\$0
3"	2.670	\$18	0	\$0
4"	4.000	\$39	16	\$156
5"	5.330	\$215	0	\$0
6"	6.000	\$174	0	\$0
8"	8.000	\$130	0	\$0
10"	12.000	\$290	0	\$0
12"	15.290	\$460	0	\$0
14"	20.811	\$932	0	\$0
16"	27.182	\$1,218	0	\$0
<b>TEES</b>				
<b>Quantity</b>				
1"	1.600	\$25	0	\$0
1-1/4"	1.780	\$45	0	\$0
1-1/2"	2.000	\$26	0	\$0
2"	2.290	\$28	0	\$0
1-1/2"	3.200	\$78	0	\$0
3"	4.000	\$51	0	\$0
4"	8.000	\$71	80	\$710
5"	8.000	\$285	0	\$0
6"	9.230	\$185	0	\$0
8"	12.000	\$450	0	\$0
10"	13.330	\$740	0	\$0
12"	17.140	\$935	0	\$0
14"	23.329	\$1,273	0	\$0
16"	30.471	\$1,662	0	\$0
<b>FLANGES, SLIP ON 150</b>				
<b>Quantity</b>				
1"	0.296	\$20	0	\$0
1-1/4"	0.364	\$25	0	\$0
1-1/2"	0.400	\$30	0	\$0
2"	0.444	\$38	0	\$0
1-1/2"	0.571	\$55	0	\$0
3"	0.800	\$60	0	\$0
4"	1.330	\$80	0	\$0
5"	1.600	\$140	0	\$0
6"	1.710	\$155	0	\$0
8"	2.000	\$350	0	\$0
<b>VALVES</b>				
<b>4" (Motorized)</b>				
	8.000	\$2,000	0	\$0
	12.000	\$500	0	\$0
	16.000	\$800	0	\$0
<b>Ball VALVES 150 #, Threaded (Bronze)</b>				
1/2"	0.364	\$4.45	0	\$0
1"	0.421	\$9.25	3.368	\$74
2"	0.727	\$25.00	0	\$0
<b>Pipe</b>				
1"	0.160	\$5	0	\$0
2"	0.239	\$9	0	\$0
3"	0.348	\$13	0	\$0
4"	0.381	\$17	0	\$0
5"	0.457	\$23	0	\$0
6"	0.600	\$27	0	\$0
8"	0.727	\$41	0	\$0
10"	0.960	\$56	0	\$0
Install Pump	32.000	\$10,000	0	\$0
Install Ht Xchgr	40.000	\$0	0	\$0
Install Instru	16.000	\$200	0	\$0
Install Pwr	120.000	\$5,000	0	\$0
Install Tank	96.000	\$5,000	0	\$0
<b>For Small Quantities M&amp;S add:10%</b>				
<b>TOTAL</b>			322	\$6,391
<b>ManWeeks</b>			8.04	
<b>M&amp;S In FY 2002 \$</b>				\$14,393.76

