

**FAC 2231 Ship Production Plant**

RUC: \$134.76 SF

Source: Marshall and Swift  
Heavy Manufacturing, Section 15 Page 15  
Class C (Good)  
Added: 3 X 25T Bridge crane, craneways, dry sprinkler system  
In V12, Tri-Service and USACE PAX Newsletter values were updated while all other values were inflated only.

SUC: \$2.20 SF

Source: Cost Works model in \$FY-08, inflated to \$FY-09 using Green Book Table 5-6 (O&M less DHP)  
In V12, values were inflated only.

Model follows:

Chart: A chart showing relative annual sustainment requirements follows:

**FAC 2231 Ship Production Plant**  
**CostWorks 2008 Quarter 2**

Design Life= 55  
Average S.F= 19,381

C.S.F=100 S.F; MSF=1000  
S.F  
Sq=100 S.F; M.L.F=1000 L.F

This spreadsheet was exported from  
R.S. Means CostWorks

Terminal Cutoff is the removal of a single task occurrence if that task occurs within  
10% of the end of the design life and if the frequency of the task exceeds 20% of the  
design life. This prevents scheduling major work near the end of the design life.

Description	Frequency	Crew	Qty	Unit	Total In-House	Total Incl. O&P	Release	Occurrences In Design Life	Adjusted Occurrences	Terminal Cutoff
Repair brick wall - 1st floor	25	1 Bric	817.700	S.F.	30,254.90	36,763.79	2008 Qtr 2	2	1	\$ 36,763.79
Replace glass - 1st floor (1% of glass)	1	1 Carp	5.600	S.F.	50.68	59.47	2008 Qtr 2	55	55	\$ 3,270.96
Repair 2'-0" x 3'-0" aluminum window - 1st floor	20	1 Carp	9.400	Ea.	1,080.62	1,280.28	2008 Qtr 2	2	2	\$ 2,560.56
Replace 2'-0" x 3'-0" aluminum window - 1st floor	50	1 Carp	94.000	Ea.	41,228.40	48,221.06	2008 Qtr 2	1	0	\$ -
Replace glass - 2nd floor (1% of glass)	1	1 Carp	26.000	S.F.	1,304.94	1,592.24	2008 Qtr 2	55	55	\$ 87,573.20
Repair 3'-9" x 5'-5" steel frame window - 2nd flr.	20	1 Carp	12.900	Ea.	3,892.70	4,585.05	2008 Qtr 2	2	2	\$ 9,170.09
Refinish 3'-9" x 5'-5" steel frame window - 2nd flr.	6	1 Pord	129.000	Ea.	16,051.47	19,779.57	2008 Qtr 2	9	9	\$ 178,016.13
Replace 3'-9" x 5'-5" steel frame window - 2nd flr.	45	1 Carp	129.000	Ea.	204,563.04	235,774.59	2008 Qtr 2	1	1	\$ 235,774.59
Finish new 3'-9" x 5'-5" st. fr. window - 2nd flr.	45	1 Pord	129.000	Ea.	14,912.40	18,363.15	2008 Qtr 2	1	1	\$ 18,363.15
Repair 12' x 12' steel roll-up door	10	1 Carp	0.300	Ea.	249.78	289.36	2008 Qtr 2	5	5	\$ 1,446.81
Refinish 12' x 12' steel roll-up door	5	1 Pord	3.000	Ea.	506.49	616.62	2008 Qtr 2	11	11	\$ 6,782.82
Replace 12' x 12' steel roll-up door	35	2 Carp	3.000	Ea.	9,975.81	11,548.65	2008 Qtr 2	1	1	\$ 11,548.65
Repair steel, painted, door	14	1 Carp	0.400	Ea.	232.98	274.54	2008 Qtr 2	3	3	\$ 823.63
Refinish 3'-0" x 7'-0" steel, painted, door	8	1 Pord	4.000	Ea.	131.64	161.24	2008 Qtr 2	6	6	\$ 967.44
Replace 3'-0" x 7'-0" steel, painted, door	45	1 Carp	4.000	Ea.	2,128.32	2,480.16	2008 Qtr 2	1	1	\$ 2,480.16
Debris removal and visual inspection built-up roofing	1	2 Rofc	19.300	M.S.F.	566.26	682.26	2008 Qtr 2	55	55	\$ 37,524.03
Non-destructive moisture inspection built-up roofing	5	2 Rofc	19.300	M.S.F.	1,752.05	2,119.14	2008 Qtr 2	11	11	\$ 23,310.54
Minor membrane repairs - (2% of roof area) built-up roofing	5	G5	3.800	Sq.	1,309.18	1,546.75	2008 Qtr 2	11	11	\$ 17,014.27
Minor membrane replacement - (25% of roof area) built-up roofing	20	G5	48.400	Sq.	28,770.41	34,319.47	2008 Qtr 2	2	2	\$ 68,638.94
Place new membrane over existing built-up roofing	20	G5	0.000	Sq.	0.00	0.00	2008 Qtr 2	2	2	\$ -
Total roof replacement built-up roofing	28	G1	193.800	Sq.	110,617.16	130,999.11	2008 Qtr 2	1	1	\$ 130,999.11
Repair steel painted interior door	14	1 Carp	0.400	Ea.	67.10	79.26	2008 Qtr 2	3	3	\$ 237.77
Refinish 3'-0" x 7'-0" steel painted interior door	12	1 Pord	4.000	Ea.	197.60	243.28	2008 Qtr 2	4	4	\$ 973.12
Replace 3'-0" x 7'-0" steel painted interior door	60	1 Carp	4.000	Ea.	3,750.16	4,359.84	2008 Qtr 2	0	0	\$ -
Repair solid core wood door interior	11	1 Carp	0.800	Ea.	134.20	158.51	2008 Qtr 2	5	5	\$ 792.56
Refinish 3'-0" x 7'-0" solid core wood door interior	12	1 Pord	8.000	Ea.	337.76	415.84	2008 Qtr 2	4	4	\$ 1,663.36
Replace 3'-0" x 7'-0" solid core wood door interior	40	1 Carp	8.000	Ea.	2,933.60	3,400.96	2008 Qtr 2	1	1	\$ 3,400.96
Repair 8" concrete block wall - (2% of walls) painted	25	1 Bric	1.600	C.S.F.	1,617.94	1,942.43	2008 Qtr 2	2	1	\$ 1,942.43
Refinish concrete block wall painted	8	1 Pord	82.600	C.S.F.	8,026.24	9,757.54	2008 Qtr 2	6	6	\$ 58,545.23
Replace 8" concrete block wall painted	75	2 Bric	82.600	C.S.F.	89,027.11	107,065.29	2008 Qtr 2	0	0	\$ -
Repair 5/8" drywall - (2% of walls)	20	1 Carp	42.800	S.F.	68.05	81.75	2008 Qtr 2	2	2	\$ 163.50
Replace 5/8" drywall	75	2 Carp	21.400	S.F.	47.72	57.57	2008 Qtr 2	0	0	\$ -
Refinish concrete floor finished	25	2 Cefi	169.000	C.S.F.	59,055.36	71,096.61	2008 Qtr 2	2	1	\$ 71,096.61
Replace vinyl floor	18	1 Tilf	83.700	S.Y.	3,996.68	4,879.71	2008 Qtr 2	3	2	\$ 9,759.42
Acoustic tile repairs - (2% of ceilings)	9	1 Carp	0.400	C.S.F.	178.67	212.67	2008 Qtr 2	6	6	\$ 1,276.01
Replace acoustic tile ceiling, fire-rated	20	1 Carp	24.700	C.S.F.	9,957.81	11,831.30	2008 Qtr 2	2	2	\$ 23,662.60
Repair sheetrock ceiling - (2% of ceilings)	20	1 Carp	0.200	C.S.F.	69.85	85.25	2008 Qtr 2	2	2	\$ 170.51
Replace sheetrock ceiling	40	2 Carp	12.900	C.S.F.	4,622.46	5,643.88	2008 Qtr 2	1	1	\$ 5,643.88
Check / minor repairs drinking fountain	1	1 Plum	4.000	Ea.	150.32	189.36	2008 Qtr 2	55	55	\$ 10,414.80

**FAC 2231 Ship Production Plant**  
**CostWorks 2008 Quarter 2**

Design Life= 55  
Average S.F= 19,381

C.S.F=100 S.F; MSF=1000  
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Sq=100 S.F; M.L.F=1000 L.F R.S. Means CostWorks

Terminal Cutoff is the removal of a single task occurrence if that task occurs within 10% of the end of the design life and if the frequency of the task exceeds 20% of the design life. This prevents scheduling major work near the end of the design life.

Description	Frequency	Crew	Qty	Unit	Total In-House	Total Incl. O&P	Release	Occurrences In Design Life	Adjusted Occurrences	Terminal Cutoff
Repair internal leaks drinking fountain	4	1 Plum	4.000	Ea.	140.56	173.72	2008 Qtr 2	13	13	\$ 2,258.36
Correct water pressure drinking fountain	2	1 Plum	4.000	Ea.	128.84	162.00	2008 Qtr 2	27	27	\$ 4,374.00
Replace refrigerant drinking fountain	2	1 Plum	4.000	Ea.	63.36	75.44	2008 Qtr 2	27	27	\$ 2,036.88
Repair drain leak drinking fountain	4	1 Plum	4.000	Ea.	90.52	108.12	2008 Qtr 2	13	13	\$ 1,405.56
Replace fountain drinking fountain	10	2 Plum	4.000	Ea.	4,023.36	4,774.28	2008 Qtr 2	5	5	\$ 23,871.40
Inspect and clean spray heads, emergency eye wash	3	1 Plum	1.000	Ea.	37.80	47.44	2008 Qtr 2	18	18	\$ 853.92
Replace eye wash station, emergency eye wash	25	2 Plum	1.000	Ea.	573.92	695.88	2008 Qtr 2	2	1	\$ 695.88
Inspect and clean shower head emergency shower station	3	1 Plum	1.000	Ea.	37.80	47.44	2008 Qtr 2	18	18	\$ 853.92
Replace shower emergency shower station	25	2 Plum	1.000	Ea.	726.39	873.58	2008 Qtr 2	2	1	\$ 873.58
Replace washer in spud connection lavatory, vitreous china	7	1 Plum	10.000	Ea.	240.10	283.30	2008 Qtr 2	7	7	\$ 1,983.10
Replace washer in faucet lavatory, vitreous china	2	1 Plum	10.000	Ea.	98.50	122.90	2008 Qtr 2	27	27	\$ 3,318.30
Replace faucets lavatory, vitreous china	10	1 Plum	10.000	Ea.	1,234.90	1,490.60	2008 Qtr 2	5	5	\$ 7,453.00
Clean out strainer and P trap lavatory, vitreous china	2	1 Plum	10.000	Ea.	270.40	335.70	2008 Qtr 2	27	27	\$ 9,063.90
Replace lavatory, vitreous china	35	2 Plum	10.000	Ea.	5,301.90	6,357.00	2008 Qtr 2	1	1	\$ 6,357.00
Replace faucet washer sink, iron enamel	2	1 Plum	2.000	Ea.	19.58	24.38	2008 Qtr 2	27	27	\$ 658.26
Clean trap sink, iron enamel	3	1 Plum	2.000	Ea.	13.20	16.50	2008 Qtr 2	18	18	\$ 297.00
Replace faucets sink, iron enamel	10	1 Plum	2.000	Ea.	246.98	298.12	2008 Qtr 2	5	5	\$ 1,490.60
Unstop sink sink, iron enamel	2	1 Plum	2.000	Ea.	64.42	81.00	2008 Qtr 2	27	27	\$ 2,187.00
Replace sink, P.E.C.I. sink, iron enamel	35	2 Plum	2.000	Ea.	1,105.44	1,315.38	2008 Qtr 2	1	1	\$ 1,315.38
Replace flush valve diaphragm tankless water closet	10	1 Plum	10.000	Ea.	707.40	830.60	2008 Qtr 2	5	5	\$ 4,153.00
Rebuild flush valve tankless water closet	20	1 Plum	10.000	Ea.	1,319.80	1,600.10	2008 Qtr 2	2	2	\$ 3,200.20
Unplug clogged line tankless water closet	5	1 Plum	10.000	Ea.	1,682.60	2,101.80	2008 Qtr 2	11	11	\$ 23,119.80
Replace tankless water closet	35	2 Plum	10.000	Ea.	5,480.00	6,483.60	2008 Qtr 2	1	1	\$ 6,483.60
Replace tankless flush valve	25	1 Plum	10.000	Ea.	2,095.00	2,453.70	2008 Qtr 2	2	1	\$ 2,453.70
Replace wax ring gasket tankless water closet	5	1 Plum	10.000	Ea.	1,095.70	1,372.00	2008 Qtr 2	11	11	\$ 15,092.00
Replace flush valve diaphragm urinal	7	1 Plum	5.000	Ea.	353.70	415.30	2008 Qtr 2	7	7	\$ 2,907.10
Rebuild flush valve urinal	20	1 Plum	5.000	Ea.	659.90	800.05	2008 Qtr 2	2	2	\$ 1,600.10
Unplug line urinal	5	1 Plum	5.000	Ea.	560.70	699.55	2008 Qtr 2	11	11	\$ 7,695.05
Replace wall-hung urinal	35	2 Plum	5.000	Ea.	4,208.15	5,032.85	2008 Qtr 2	1	1	\$ 5,032.85
Repair circulator pump, 1/12 - 3/4 H.P.	5	1 Stpi	1.000	Ea.	70.99	84.25	2008 Qtr 2	11	11	\$ 926.75
Replace circulator pump, 1/12 - 3/4 H.P.	15	Q1	1.000	Ea.	2,484.44	2,870.47	2008 Qtr 2	3	3	\$ 8,611.41
Replace pipe and fittings, copper 3/4"	20	2 Plum	32.000	L.F.	\$567.04	\$687.36	2008 Qtr 2	2	2	\$ 1,374.72
Replace pipe and fittings, copper 2"	25	2 Plum	16.000	L.F.	\$652.96	\$785.76	2008 Qtr 2	2	1	\$ 785.76
Repair damaged pipe insulation, fiberglass 3/4"	5	Q14	4.000	Ea.	62.88	76.72	2008 Qtr 2	11	11	\$ 843.92
Repair damaged pipe insulation, fiberglass 2"	5	Q14	2.000	Ea.	36.92	45.06	2008 Qtr 2	11	11	\$ 495.66
Replace pipe insulation, fiberglass 3/4"	5	Q14	0.030	M.L.F.	188.67	229.84	2008 Qtr 2	11	11	\$ 2,528.23
Replace pipe insulation, fiberglass 2"	5	Q14	0.010	M.L.F.	74.26	90.69	2008 Qtr 2	11	11	\$ 997.60
Drain and flush water heater, electric, 120 gallon	7	1 Plum	1.000	Ea.	226.43	283.04	2008 Qtr 2	7	7	\$ 1,981.28
Check operation water heater, electric, 120 gallon	3	1 Plum	1.000	Ea.	1.98	2.48	2008 Qtr 2	18	18	\$ 44.64

**FAC 2231 Ship Production Plant**  
**CostWorks 2008 Quarter 2**

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Sq=100 S.F; M.L.F=1000 L.F

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Description	Frequency	Crew	Qty	Unit	Total In-House	Total Incl. O&P	Release	Occurrences In Design Life	Adjusted Occurrences	Terminal Cutoff
Replace water heater, electric, 120 gallon	15	2 Plum	1.000	Ea.	9,192.45	10,543.79	2008 Qtr 2	3	3	\$ 31,631.37
Unclog floor drain, PVC	20	1 Plum	1.000	Ea.	37.09	45.87	2008 Qtr 2	2	2	\$ 91.74
Repair joint pipe and fittings, PVC	10	1 Plum	0.000	Ea.	0.00	0.00	2008 Qtr 2	5	5	\$ -
Replace pipe, 4" pipe and fittings, PVC	30	2 Plum	0.000	L.F.	0.00	0.00	2008 Qtr 2	1	1	\$ -
General maintenance & repair drain: roof, scupper, area	1	1 Plum	6.000	Ea.	170.10	214.02	2008 Qtr 2	55	55	\$ 11,771.10
Replace drain: roof, scupper, area	40	1 Plum	6.000	Ea.	2,390.04	2,808.84	2008 Qtr 2	1	1	\$ 2,808.84
Replace roof mounted exhaust fan, 8500 CFM exhaust fan	20	Q20	2.000	Ea.	5,238.96	6,101.28	2008 Qtr 2	2	2	\$ 12,202.56
Repair single zone rooftop unit, 60 ton	10	Q6	1.000	Ea.	39,670.17	46,952.35	2008 Qtr 2	5	5	\$ 234,761.75
Replace single zone rooftop unit, 60 ton	15	Q7	0.500	Ea.	35,405.00	41,446.30	2008 Qtr 2	3	3	\$ 124,338.90
Minor repairs to fire alarm control panel	5	1 Elec	1.000	Ea.	107.84	130.97	2008 Qtr 2	11	11	\$ 1,440.67
Maintenance and inspection fire alarm control panel	0.5	1 Elec	1.000	Ea.	30.54	38.17	2008 Qtr 2	110	110	\$ 4,198.70
Replace fire alarm control panel	15	1 Elec	1.000	Ea.	2,615.62	3,107.84	2008 Qtr 2	3	3	\$ 9,323.52
Inspect sprinkler system	1	1 Plum	1.000	Ea.	26.55	32.89	2008 Qtr 2	55	55	\$ 1,808.95
Replace sprinkler head	20	1 Plum	193.000	Ea.	12,290.24	15,142.78	2008 Qtr 2	2	2	\$ 30,285.56
Replace fire alarm bell, 6"	20	1 Elec	10.000	Ea.	1,422.80	1,715.10	2008 Qtr 2	2	2	\$ 3,430.20
Maintenance and inspection lighting panel, indoor	3	1 Elec	2.000	Ea.	57.00	71.26	2008 Qtr 2	18	18	\$ 1,282.68
Maintenance and repair safety switch, 3 pole safety switch, heavy duty	8	1 Elec	3.000	Ea.	85.50	106.89	2008 Qtr 2	6	6	\$ 641.34
Maintenance and inspection safety switch, 3 pole, heavy duty	1	1 Elec	3.000	Ea.	85.50	106.89	2008 Qtr 2	55	55	\$ 5,878.95
Replace safety switch, heavy duty	25	2 Elec	3.000	Ea.	1,741.44	2,042.13	2008 Qtr 2	2	1	\$ 2,042.13
Repair switchgear 1200 A mainframe	10	1 Elec	1.000	Ea.	1,694.09	1,975.10	2008 Qtr 2	5	5	\$ 9,875.50
Maintenance and inspection switchgear, mainframe	1	1 Elec	1.000	Ea.	45.81	57.01	2008 Qtr 2	55	55	\$ 3,135.55
Replace switchgear 1200 A mainframe	20	3 Elec	1.000	Ea.	4,052.28	4,808.24	2008 Qtr 2	2	2	\$ 9,616.48
Maintenance and repair motor starter, up to 600 V	5	1 Elec	8.000	Ea.	1,366.00	1,660.00	2008 Qtr 2	11	11	\$ 18,260.00
Maintenance and inspection motor starter, up to 600 V	0.5	1 Elec	8.000	Ea.	305.36	382.80	2008 Qtr 2	110	110	\$ 42,108.00
Replace starter motor starter, up to 600 V	18	1 Elec	8.000	Ea.	4,225.44	5,043.28	2008 Qtr 2	3	2	\$ 10,086.56
Replace fluor. ballast for fluorescent lighting fixture, 80 W	15	1 Elec	516.000	Ea.	51,383.28	61,961.28	2008 Qtr 2	3	3	\$ 185,883.84
Replace lamps (2 lamps) fluorescent lighting fixture, 80 W	10	1 Elec	516.000	Ea.	13,127.04	16,088.88	2008 Qtr 2	5	5	\$ 80,444.40
Replace fixture fluorescent lighting fixture, 80 W	20	1 Elec	0.000	Ea.	0.00	0.00	2008 Qtr 2	2	2	\$ -
Maintenance and repair receptacles and plugs	20	1 Elec	158.000	Ea.	4,912.22	6,119.34	2008 Qtr 2	2	2	\$ 12,238.68
Replace receptacle/plug receptacles and plugs	20	1 Elec	158.000	Ea.	8,336.08	10,178.36	2008 Qtr 2	2	2	\$ 20,356.72
Maintenance and repair wiring devices, switches	10	1 Elec	39.000	Ea.	1,212.51	1,510.47	2008 Qtr 2	5	5	\$ 7,552.35
Replace switch wiring devices, switches	15	1 Elec	39.000	Ea.	1,997.19	2,431.65	2008 Qtr 2	3	3	\$ 7,294.95
Check and repair manual pull station	10	1 Elec	4.000	Ea.	276.84	339.48	2008 Qtr 2	5	5	\$ 1,697.40
Replace manual pull station	15	1 Elec	4.000	Ea.	502.96	607.56	2008 Qtr 2	3	3	\$ 1,822.68
Repair smoke detector	10	1 Elec	70.000	Ea.	2,673.30	3,290.00	2008 Qtr 2	5	5	\$ 16,450.00
Check operation smoke detector	1	1 Elec	70.000	Ea.	798.00	1,001.00	2008 Qtr 2	55	55	\$ 55,055.00
Replace smoke detector	15	1 Elec	70.000	Ea.	13,268.50	15,889.30	2008 Qtr 2	3	3	\$ 47,667.90
					\$911,509.10	\$1,081,136.67				
									MR Subtotal	\$ 2,231,931.01

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**CostWorks 2008 Quarter 2**

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MR Per Year \$ 40,580.56

PM Per Year \$ 3,362.57

Subtotal \$ 43,943.13

Total Per Unit \$ 2.27

**CostWorks 2008 - FAC 2231 Ship Production Plant**

Qty	Assembly Number	Description	Labor Hours	Total In-House	Total Incl. O&P	Zip Code Prefix	Type	Release
3.000	E1095 122 3950	Crane, electric bridge, over 15 tons, annualized	25.00	1,214.37	1,489.53	200	FMR	2008
3.000	B2035 400 1950	Door, overhead, manual, up to 24' high x 25' wide, annualized	6.59	401.61	484.50	200	FMR	2008
4.000	B2035 225 1950	Door, emergency egress, swinging, annualized	1.04	196.52	228.28	200	FMR	2008
12.000	C1025 110 1950	Fire doors, swinging, annualized	4.70	295.92	355.08	200	FMR	2008
4.000	D2015 800 1950	Drink fountain, annualized	2.48	191.44	229.44	200	FMR	2008
10.000	D2015 100 4950	Lavatories, annualized	3.48	238.00	290.00	200	FMR	2008
10.000	D2015 100 2950	Toilet (vacuum breaker type), annualized	2.28	123.60	154.40	200	FMR	2008
2.000	D5015 260 1950	Panelboard, 225 A and above, annualized	0.88	110.56	131.34	200	FMR	2008
				<b>\$2,772.02</b>	<b>\$3,362.57</b>			

FAC 2231 Sustainment by Year - Terminal Cutoff Applied

