DCN 1075

**CAPACITY ANALYSIS:
DATA CALL #4 WORK SHEET FOR
TECHNICAL CENTER or LABORATORY:**

NAVSURFWARCENDIVCRANE, CRANE SITE

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**********If any responses are classified, attach a separate classified annex. **********

7 April 1994

1. Historical and Projected Workload. Use Tables 1.1, 1.2, 1.3 & 1.4 below to provide historical and currently projected workload data for your activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Dollar amounts should be in then-year dollars. Workyears should be separated for in-house government efforts and on-site contractor work.

a. Use Table 1.1 to provide data on your site.

b. Use Table 1.2 to provide data on your Detachments that did not receive this Data Call directly. Compile the information from all of these Detachments into one table. Attach a list of the titles & UIC's of the Detachments included in the table.

c. For FY's 1993 thru 1997 provide a breakout of the "Total Funds Budgeted" line showing the appropriation and amounts of funding budgeted from your major customers. Major resource Sponsors are defined as, but not limited to, all systems commands, ONR, SSPO, CNO, FLT CINCs, Other DON, Other DOD by Department, Other Federal Government, All other. Use Table 1.3 to report this breakout for your site. Use Table 1.4 to report this breakout for your compiled Detachments that did not receive this Data Call directly. Provide separate tables for FY's 1993 thru 1997.

Use the following definitions when providing data for the tables below:

Workyears: Consistent with those used in the preparation of inputs to the President's budget.

In-House government efforts or In-House workyears: Includes both military and civil servant employees

On-Site Contractor workyears: Actual or estimated workyears performed by support contractors with workyears defined consistent with the definition used in the President's budget.

On-site Contractors: Those contractors that occupy space directly on the site on nearly a full time basis.

Total Funds Budgeted: The funds used as inputs to the President's Budget.

Civilian Personnel On-Board: Full Time Permanent employees (FTP).

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Naval Surface Warfare Center Crane Division Crane, Indiana Site
UIC: N00164

Table 1.1 Historical and Projected Workload for NAVSURFWARCENDIV CRANE, CRANE SITE (UIC N00164)

Fiscal Year	Total Funds Budgeted ($K)	Total Funds Received w/o Direct Cite ($K)	Direct Cite Funds Received ($K)	Budgeted Wkyrs	Actual In-House Wkyrs	Actual Onsite Contract Wkyrs	
86	245600	232300	39853	3210	4010	241.0	
87	268700	255800	95713	3505	3785	344.0	
88	191000	282200	143728	3490	3860	380.0	
89	253000	277000	135874	3708	3997	466.3	
90	302200	295800	113787	3671	4164 R	464.2	R
91	300000 R	347600	103794	4002	4298	598.5	R
92	322100	382293	111735	3867	4299	692.3	
93	316300	402744	90926	3648	4178	748.4	
94	352898			3796			
95	317919			3609			
96	331716			3163			
97	332724			2973			

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Table 1.1 Historical and Projected Workload for NAVSURFWARCENDIV CRANE, CRANE SITE (UIC N00164)

Fiscal Year	Total Funds Budgeted ($K)	Total Funds Received w/o Direct Cite ($K)	Direct Cite Funds Received ($K)	Budgeted Wkyrs	* Actual In-House Wkyrs	** Actual Onsite Contract Wkyrs
86	245600	232300	39853	3210	4010	241.0
87	268700	255800	95713	3505	3785	344.0
88	191000	282200	143728	3490	3860	380.0
89	253000	277000	135874	3708	3997	466.3
90	302200	295800	113787	3671	4124	464.2
91	322100	347600	103794	4002	4298	598.5
92	322100	382293	111735	3867	4299	692.3
93	316300	402744	90926	3648	4178	748.4
94	352898			3796		
95	317919			3609		
96	331716			3163		
97	320086			2973		

* FOR FY94-97 THE CRANE AND LOUISVILLE SITES OF THE CRANE DIVISION SUBMIT A JOINT BUDGET. FOR THE SITE SPECIFIC TABLE THE BUDGET WAS SPLIT ACCORDING TO THE RATIO OF PERSONNEL (63% CRANE SITE AND 37% LOUISVILLE SITE)

Table 1.2 Historical and Projected Workload for Detachments of NAVSURFWARCENDIV CRANE, CRANE SITE (UIC N00164)

Fiscal Year	Total Funds Budgeted ($K)	Total Funds Received w/o Direct Cite ($K)	Direct Cite Funds Received ($K)	Budgeted Wkyrs	Actual In-House Wkyrs	Actual Onsite Contract Wkyrs
86	N/A					
87						
88						
89						
90						
91						
92						
93						
94						
95						
96						
97						

TABLE 1.3 FY 1993 BREAKOUT OF FUNDS BUDGETED for NAVSURFWARCENDIV CRANE, CRANE SITE (UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT&E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NAVSEA	0	0	190	3050	4475	0	0	0	55620	0	11879 1	17895	38278	1142	16336
NAVAIR	0	0	0	1668	4398	0	261	0	8364	14400	11193	411	0	0	917
SPO	0	0	0	0	67	0	0	0	7346	0	1151	7668	2597	0	1604
SPC 0	0	0	0	0	0	0	0	0	8	0	718	0	0	0	9753
SPW	0	0	0	0	2828	0	26	0	1008	0	103	0	0	0	142
FAC 0	0	0	0	0	0	0	0	0	317	0	0	0	0	55	447
CCA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	435
CCP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	290
ARMY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29408
US MC	0	250	211	0	254	15	1524	0	14	0	0	0	0	0	25019

TABLE 1.3 FY 1993 BREAKOUT OF FUNDS BUDGETED for NAVSURFWARCENDIV CRANE, CRANE SITE (UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT &E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NUWC 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	152
DOD 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2779
OTHER GOVT	0	0	0	0	0	0	0	0	4	0	0	0	0	0	3890
OTHER	0	0	0	0	62	0	0	0	0	0	0	0	0	0	1756
OTHER NAVY	0	3789	4827	5144	5379	397	59	0	15030	1413	2042	10002	164	1347	25024
NSWC	0	0	0	0	0	0	0	0	1136	0	0	0	0	0	14468
NAWC	0	0	0	0	0	0	0	0	0	800	0	0	0	0	2216
DAF	0	0	0	0	0	0	0	4578	0	0	0	0	0	0	3830

TABLE 1.3 FY 1994 BREAKOUT OF FUNDS BUDGETED for
NAVSURFWARCENDIV CRANE, CRANE SITE
(UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT&E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR 0&M N OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NAVSEA			240	5833	5092	107	279	923	39157		80895	9736	32033		18317
NAVAIR				980	2429		1168		7883	7676	15166	213		110	198
SPO									11724		590	10970	15		1121
SPC									930		258	15		12153	1109
SPW					2350				1876		971		70		
FAC									282					478	181
CCA									80						
CCP									336						
NSW		310		400					100		92			6577	7
NAW									272	1533	66	20		4753	10

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TABLE 1.3 FY 1994 BREAKOUT OF FUNDS BUDGETED for
NAVSURFWARCENDIV CRANE, CRANE SITE
(UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Othe r RDT &E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NUWC											10			46	54
OTHER NAVY		400	5683	270	5	50		170	14123	210	523		31	15099	3067
USMC		763	65	455	492	100	430								11459
ARMY								2735							20074
DAF								2009	16						3917
DOD											2000				751
OTHER GOVT								1380	100						1734
OTHER															1403

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TABLE 1.3 FY 1995 BREAKOUT OF FUNDS BUDGETED for
NAVSURFWARCENDIV CRANE, CRANE SITE
(UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT &E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NAVSEA			350	1084 0	5222	122		1340	48244		62611	6933	29037		11848
NAVAIR				787	3717	73	1181		8960	11734	8437	169		100 R	377
SPO									10721		884	10167	315		965
SPC									2285		300	30		12468	898
SPW					1200				2000						
FAC									266					501	182
CCA									200						
CCP									221						
NSW		300		690					80		100			5554	7
NAW									235	2060				4783	10

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TABLE 1.3 FY 1995 BREAKOUT OF FUNDS BUDGETED for
NAVSURFWARCENDIV CRANE, CRANE SITE
(UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT&E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NAVSEA			350	10840	5222	122		1340	48244		62611	6933	29037		11848
NAVAIR				787	3717	73	1181		8960	11734	8437	169			377
SPO									10721		884	10167	315		965
SPC									2285		300	30		12468	898
SPW					1200				2000						
FAC									266					501	182
CCA									200						
CCP									221						
NSW		300		690					80		100			5554	7
NAW									235	2060				4783	10

TABLE 1.3 FY 1995 BREAKOUT OF FUNDS BUDGETED for
NAVSURFWARCENDIV CRANE, CRANE SITE
(UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT&E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NUWC											10			11	40
OTHER NAVY		370	4500	275		290		585	16678	380	439		21	10899	3556
USMC		763		2400	502	114	720								19505
ARMY								1885							19846
DAF								3521	5						3379
DOD															943
OTHER GOVT								1593	450						3950
OTHER															895

TABLE 1.3 FY 1996 BREAKOUT OF FUNDS BUDGETED for
NAVSURFWARCENDIV CRANE, CRANE SITE
(UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT&E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NAVSEA			150	10723	3848	137		1875	43784		40010	8526	25441		11508
NAVAIR				839	3973	82	1167		9740	11818	8437	161		100	366
SPO									10144		834	9382			925
SPC									2820		300			13484	920
SPW					1000				1900						
FAC									270					527	183
CCA									200						
CCP									221						
NSW		300		750					80		100			5427	7
NAW									239	2181				4986	10

TABLE 1.3 FY 1996 BREAKOUT OF FUNDS BUDGETED for
NAVSURFWARCENDIV CRANE, CRANE SITE
(UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT&E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NUWC														11	40
OTHER NAVY		380	4200	280		378		348	18058	428	545		21	11166	3717
USMC		918	20	1383 0	400	128	770								18292
ARMY								1685							22275
DAF								3368	5						3717
DOD															1168
OTHER GOVT								1501	200						3183
OTHER															869

TABLE 1.3 FY 1997 BREAKOUT OF FUNDS BUDGETED for
NAVSURFWARCENDIV CRANE, CRANE SITE
(UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT&E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NAVSEA			150	9325	3897	152		1510	44931		40696	11555	23706		11961
NAVAIR				892	4085	91	1180		10117	11330	8212	182		26	302
SPO									9849		1884	8769			1082
SPC									2858		200			14934	1073
SPW					700				2050						
FAC									280					553	184
CCA									300						
CCP									221						
NSW		300		720							105			5421	7
NAW									242	2407				2473	10

TABLE 1.3 FY 1997 BREAKOUT OF FUNDS BUDGETED for
NAVSURFWARCENDIV CRANE, CRANE SITE
(UIC N00164)

SPONSOR	RDT&E(N) (LIFECYCLE)							Other RDT &E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		0&M NR0& MN OMN	APN	OPN	WPN	SCN	MISC Other Navy	All Other
NUWC														11	40
OTHER NAVY		400	3894	285		650		350	17933	470	551		21	11223	3892
USMC		928	52	1526 3	150	142	785								17592
ARMY								1250							22284
DAF								2930	5						3532
DOD															1284
OTHER GOVT								1409	200						1961
OTHER															910

TABLE 1.4 FY 1994 BREAKOUT OF FUNDS BUDGETED for DETACHMENTS of NAVSURFWARCENDIV CRANE, CRANE SITE (UIC N00164)

SPONSOR	RDT&E(N)							Other RDT&E	Other Appropriation						
	6.1	6.2	6.3a	6.3b	6.4	6.5	6.6		OMN	APN	OPN	WPN	SCN	Other Navy	All Other
N/A															

2. **Current Class 2 Assets.** Complete Tables 2.1 thru 2.6 below as directed. Tables 2.1, 2.2 & 2.3 will define the Class 2 property owned or leased by your activity (less Detachments). Tables 2.4, 2.5 & 2.6 will define the combined Class 2 assets owned or occupied at your Detachment sites which did not receive this Data Call directly. Report space holdings and assignments as of 31 March 1994. Provide numbered notes to explain imminent changes, additions & deletions such as previous BRAC realignments, MILCON (including BRAC related MILCON) & Special Projects that are currently programmed in the FYDP. Give the project number & title, cost, short description, quantity of additional square footage, award date, estimated/actual construction start date and estimated BOD. Square footage of space is to be reported in "Gross Floor/Building Area" (GF/BA) as defined in NAVFAC P-80. Many of the P-80 Category Code Numbers (CCN's) have assets that are reported in units of measure other than square feet (SF). The only unit of measure desired for this Data Call is SF. Only report the assets in each CCN that are normally reported in SF.

For your Site:

a. Use Table 2.1 below to indicate the total amount of Class 2 space at your site for which you are the plant account holder as of 31 March 1994.

b. Use Table 2.2 below to indicate the total amount of your Class 2 space reported in Table 2.1 that is assigned to your tenant commands and/or independent activities at your site as of 31 March 1994.

c. Use Table 2.3 below to indicate the total amount of Class 2 space, for which you are not the plant account holder, but which is utilized/leased by you (less Detachments). Provide numbered notes to identify the title and UIC of the plant account holder/lessor, quantity of leased space and the associated lease cost.

Table 2.1 Main Site Class 2 Assets of NAVSURFWARCENDIV Crane, Crane Site
(UIC N00164)

Building type	NAVFAC (P-80) category code	Gross Floor/Building Area (KSF)			
		Adequate	Sub-standard	In-adequate	Total
Operational & Training	100	106.9	0	0.4	107.3
Maintenance & Production	200	2,332.9	0	53.9	2,386.8
Science labs	310	11.4	0	0	11.4 R
Aircraft labs	311	0	0	0	0
Missile and Space labs	312	0	0	0	0
Ship and Marine labs	313	0	0	0	0 R
Ground Transportation labs	314	0	0	0	0
Weapon and Weapon Systems labs	315	0	0	0	0
Ammunition, Explosives, & Toxics labs	316	0	0	0	0
Electrical Equip. labs	317	0	0	0	0
Propulsion labs	318	0	0	0	0
Miscellaneous labs	319	1.6	0	0	1.6
Underwater Equip. labs	320	0	0	0	0
Technical Services labs	321	0	0	0	0
Supply Facilities	400	7,742.5	0	2.4	7,744.9
Hospital & other Medical	500	15.5	0	0	15.5
Administrative Facilities	600	214.7	0	0.8	215.5
Housing & Community	700	328.4	0	1.9	330.3
Utilities & Grounds	800	74.6	0	0	74.6
Other					
Totals		10,828.5	0	59.4	10,887.9

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Table 2.1 Main Site Class 2 Assets of NAVSURFWARCENDIV Crane, Crane Site (UIC N00164)

Building type	NAVFAC (P-80) category code	Gross Floor/Building Area (KSF)			
		Adequate	Sub-standard	In-adequate	Total
Operational & Training	100	106.9	0	0.4	107.3
Maintenance & Production	200	2,332.9	0	53.9	2,386.8
Science labs	310	11.4	0	0	2.3
Aircraft labs	311	0	0	0	0
Missile and Space labs	312	0	0	0	0
Ship and Marine labs	313	0	0	0	9.1
Ground Transportation labs	314	0	0	0	0
Weapon and Weapon Systems labs	315	0	0	0	0
Ammunition, Explosives, & Toxics labs	316	0	0	0	0
Electrical Equip. labs	317	0	0	0	0
Propulsion labs	318	0	0	0	0
Miscellaneous labs	319	1.6	0	0	1.6
Underwater Equip. labs	320	0	0	0	0
Technical Services labs	321	0	0	0	0
Supply Facilities	400	7,742.5	0	2.4	7,744.9
Hospital & other Medical	500	15.5	0	0	15.5
Administrative Facilities	600	214.7	0	0.8	215.5
Housing & Community	700	328.4	0	1.9	330.3
Utilities & Grounds	800	74.6	0	0	74.6
Other					
	Totals	10,828.5	0	59.4	10,887.9

d. In accordance with NAVFACINST 11010.44E, an Inadequate facility cannot be made Adequate for its present use through "economically justifiable means". For all the categories above where Inadequate facilities are identified provide the following information:

(1) FACILITY TYPE/CODE:
(2) WHAT MAKES IT INADEQUATE?
(3) WHAT USE IS BEING MADE OF THE FACILITY?
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD?
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST?
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING:
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP?

(1) FACILITY TYPE/CODE: B-2104 Ordnance Operations Building\143-20
(2) WHAT MAKES IT INADEQUATE? Uneconomical to repair.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Empty.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Cost greater than 50% of current plant value. No repair recommended.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None, should be demolished.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-1818 Automotive Vehicle Maintenance Shop/ 214-20
(2) WHAT MAKES IT INADEQUATE? Significant structural damage and exterior deterioration.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Automotive Vehicle Maintenance Shop.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Exceeds 50% of crrent plant value.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? Uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: MILCON P-276 has been submitted for replacement of the building but is not programmed.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-1820 Automotive Vehicle Maintenance Shop/214-10
(2) WHAT MAKES IT INADEQUATE? Significant structural damage and exterior deterioration.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Automotive Vehicle Maintenance Shop.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Exceeds 50% of the current plant value.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? Uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: MILCON P-276 for replacement of the facility has been submitted but is not programmed.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No. BASEREP.

(1) FACILITY TYPE/CODE: B-2117 Automotive Vehicle Maintenance Shop/214-20
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost greater than 50% of current plant value.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? No other use. Uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: none
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2118 Automotive Vehicle Maintenance Shop/214-20
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Boxcar repair and painting facility.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost greater than 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None. Uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: Plans are to replace by construction. A minor construction project has been submitted but is unfunded.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2891 Automotive Vehicle Maintenance Shop/214-20
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost greater than 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? Uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2780 Automotive Vehicle Maintenance Shop/214-20
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? uneconomical to repair. Cost great than 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None. Uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-3115 Guided Missle Intergration Facility/212-10
(2) WHAT MAKES IT INADEQUATE? Building is inside ESQD arc.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Guided Missle Intergration Facility. Engineering offices.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Cannot be upgraded due to site location.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? Operations compatible to ordnance operations in the area. No cost should be incurred.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2893 Automotive Vehicle Maintenance Shop/214-20
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost greater than 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2820 Quality Evaluation Laboratory/216-60
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost greater than 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2837 Quality Evaluation Laboratory/216-60
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost is greater than 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2919 Quality Evaluation Laboratory/216-60
(2) WHAT MAKES IT INADEQUATE? Original portion of building in overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Quality Evaluation Laboratory.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost greater than 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2896 Electronics Spares Storage/217-77
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost greater than 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2962 Electronics Spares Storage/217-77
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2889 Public Works Shops/219-10
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Public Works Paint Shop
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-1908 Public Works Maintenance Storage/219-77
(2) WHAT MAKES IT INADEQUATE? Overall Deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2776 Public Works Maintenance Storage/219-77
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING:None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2890 Public Works Maintenance Storage/219-77
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2883 General Purpose Warehouse/441-10
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.

(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2892 General Purpose Warehouse/441-10
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Storage.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None, uneconomical to repair.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2709 Automated Data Processing Installation/610-20
(2) WHAT MAKES IT INADEQUATE? Improper utilization of building for function.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Offices.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? None.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? Offices, which is current utilization of building. No cost, reclassify.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-1869 Public Toilet/730-75
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Not Used.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Unknown, Toilet is listed as possible historical construction.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? Historical construction monument. Cost unknown.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-1870 Public Toilet/730-75
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Not Used.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Unknown, Toilet is listed as possible historical construction.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? Historical construction monument. Cost unknown.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2828 Public Toilets/730-75
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Public toilet.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-1866 Boathouse/740-87
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Boathouse.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV. No military support funding available.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

(1) FACILITY TYPE/CODE: B-2119 Boathouse/740-87
(2) WHAT MAKES IT INADEQUATE? Overall deteriorated condition.
(3) WHAT USE IS BEING MADE OF THE FACILITY? Public toilet.
(4) WHAT IS THE COST TO UPGRADE THE FACILITY TO SUBSTANDARD? Uneconomical to repair. Cost exceeds 50% of CPV. No military support funds available.
(5) WHAT OTHER USE COULD BE MADE OF THE FACILITY AND AT WHAT COST? None.
(6) CURRENT IMPROVEMENT PLANS AND PROGRAMMED FUNDING: None.
(7) HAS THIS FACILITY CONDITION RESULTED IN C3 OR C4 DESIGNATION ON YOUR BASEREP? No.

Table 2.2 Main Site Class 2 Space of NAVSURWARCENDIV CRANE (UICN00164)

Assigned to Tenants

TENANT		NAVFAC (P-80) Category Code	GF/BA Assigned (KSF)
Name	UIC		
Defense Reutilization and Marketing Office	N00164	200	15.5
Defense Reutilization and Marketing Office	N00164	400	24.7
Officer in Charge of Construction	N00164	600	2.9
Navy Security Group Detachment	N63904	200	10.2
Navy Security Group Detachment	N63904	400	6.0
Navy Resale Activity Detachment	N63904	700	8.1
DECA Defense Commissary Agency Detachment	N49109	700	9.4
Scheduled Airlines Traffic Office	N00164	600	0.6
Defense Finance and Accounting Service	N00164	600	4.6
Coast Guard	N00164	200	1.4
Crane Army Ammunition Activity	NARWSC	100	49.2
Crane Army Ammunition Activity	NARWSC	200	509.6
Crane Army Ammunition Activity	NARWSC	319	1.6
Crane Army Ammunition Activity	NARWSC	400	6,465.3
Crane Army Ammunition Activity	NARWSC	600	48.7
Crane Army Ammunition Activity	NARWSC	700	74.3
Crane Army Ammunition Activity	NARWSC	800	7.0
Explosive Ordnance Disposal	N30702	100	5.0
Explosive Ordnance Disposal	N30702	400	4.8
		Total:	7,248.9

3. Class 2 Space Available for Expansion. An activity's expansion capability is a function of it's ability to reconfigure and/or expand existing facilities to accept new or increased roles. Such a reconfiguration may require rehabilitation or buildout of a space to support the new or expanded role. A space expansion could include converting an underutilized storage space into laboratory spaces, or buildout of a high bay area into a multifloor office/laboratory space. All questions refer to Class 2 property for which you are the plant account holder as of 31 March 1994. Do not report any currently programmed changes or additions previously reported in question #2 above. Expansion opportunities must follow the guidance of NAVFAC P-80 for the appropriate facility category code, as well as applicable fire and safety codes. Personnel loading density should not exceed those specified in the P-80. Space is only available if it is currently unoccupied or the current occupants are officially designated for relocation. Report space as Net Floor Area (GFA) as defined in the P-80. Do not include opportunities that are being reported by your Detachments who received this Data Call directly. Reported expansion opportunities must be able to accommodate the necessary ancillary facilities and equipment, such as adequate parking space, required to support the amount of people projected.

a. What is the maximum quantity of space that could be made available for expansion to accommodate other functions and/or increased efforts? Report in terms of the "Current GFA" as shown in Tables 3.1 & 3.2. 379,000 SQFT.

b. How much of the space reported in question 3.a. above is currently available with minimal or no reconfiguration costs? Report in terms of the "Current GFA" as shown in Tables 3.1 & 3.2. 193,000 SQFT.

c. Use Table 3.1 below to indicate the constrained growth opportunities for accepting expanded or new roles. Constrained growth is defined as growth limited to buildings and structures currently on your Class 2 plant account. Add numbered notes to highlight and explain opportunities that require remediation or waiver of a restriction or encumbrance as part of the expansion. Provide lettered notes to clearly identify each opportunity with the title & UIC of the site it refers to. The "Current GFA (KSF)" column total should match the quantity provided in question #3.a. above. Annotate those opportunities that were used to obtain the answer to question #3.b. above. Report space once, do not use the same space for different expansion opportunities. Include in this table space that will become available once planned downsizing (separate from BRAC realignments) has been completed, provide the estimated completion date of the downsizing effort.

d. Use Table 3.2 below to indicate additional unconstrained growth opportunities for accepting expanded or new roles. Unconstrained growth allows for construction of new facilities on existing buildable Class 1 property. The only constraint being that the land must currently be on your plant account holdings as of 31 March 1994 and free of existing land use constraints. Limit new buildings to three stories. Add numbered notes to highlight and explain additional opportunities that would require remediation or waiver of a land use constraint as part of the expansion. Provide lettered notes to clearly identify each opportunity with the title & UIC of the site it refers to. Do not include space that has been reported in Table 3.1.

Table 3.1 Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE
(UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		GFA (KSF)	# of Personnel		
2/217	22	22	143	13'9"	200
2/441	4	4	23	13'9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15'4"	200
353/441	8	8	50	15'4'	300
354/441	10	10	67	15'4"	500
355/217	4	4	29	15'4"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	500
Tables cont on next page					

Table 3.1 Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		GFA (KSF)	# of Personnel		
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	
3007/216	2			13' 4"	
Totals	379	186	1,225		6,100

Table 3.2 Unconstrained Class 2 Space Available for Expansion at NAVSURWARCENDIVCRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		GFA (KSF)	# of Personnel		
100		240	500		
200		12,000	28,915		
400		36,000	15,490		
500		510	102		
600		240	1,600		
700		720	540		
Totals		49,710	47,147		

4. Class 1 Space Available for Expansion.

a. Identify in Table 4.1 below the real estate resources which have the potential to facilitate future development, and for which you are the plant account holder as of 31 March 1994, or into which, though a tenant, your activity could reasonably expect to expand. Complete a separate table for each individual site (i.e., main base, outlying airfields, special off-site areas, etc.) and Detachment that did not receive this Data Call directly. The unit of measure is acres. Developed area is defined as land currently with buildings, roads, and utilities where further development is not possible without demolition of existing improvements. Include in "Restricted" acreage that is restricted for future development due to environmental constraints (e.g. wetlands, landfills, archaeological sites), operational restrictions (e.g. ESQD arcs, HERO, HERP, HERF, AICUZ, ranges) or cultural resources restrictions. Identify the reason for the restriction when providing the acreage in the table. Specify any entry in "Other" (e.g. submerged lands).

b. Are there any constraints such as parking, utilities, legal restrictions that limit the potential for using Undeveloped land for expansion?

The land identified for development will require varying amounts of additional infrastructure improvements to support construction. Most of the land is in close proximity to major utilities and highways. Extensions of utility services and roadways will be required at all locations. Approximately 400 acres will require significant construction costs in the extension of utilities and roads to the areas. The acreage identified for development was selected based on its ability to accomodate construction at a reasonable cost. Additional developable land is available but at much higher construction costs, with varying constraints.

c. Explain the radio frequency constraints/opportunities within your Class 1 holdings.

Explosive ordnance production and storage places limited constraints on utilization of radio frequency. Three antenna test ranges are in existance and numerous communication radios are used throughout the Center. Physical size and seperation have allowed the expansion of testing for a variety of Navy shipboard antennas at the Crane site.

Class 1 Resources of NAVSURFWARCENDIVCRANE (UIC:00164)
Site Location: Crane, Indiana

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	*498.5
Training	13.4	6.2	0	*7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & Storage Non-ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	*7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	**48,563	0	**44,723	**3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	**56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
Total:	***62,467			

NOTE: All restrictions are due to ESQD arcs.

* Recommended "Best" use but could support all uses marked with an asterisk.
** Overlapping, concurrent land use.
*** Total actual acres. The sum of this column will be larger than the actual acres due to overlapping, concurrent land use.

d. Of the total Unrestricted Acres reported above, how much of it has existing roads and/or utilities that could support expansion efforts? 7,500 Acres. Explain. **All areas identified are well suited for the type of land use with which they are associated. Roads are within reasonable distances and utilities where required are available within reasonable distances. Approximately 400 acres is more remote and will require extensions of roads and utility mains.**

5. Base Infrastructure Capacity. Provide base infrastructure data as of 31 March 1994. Provide numbered notes to explain imminent changes, additions & deletions driven by previous BRAC realignments, MILCON (including BRAC related MILCON) & Special Projects that are currently programmed in the FYDP. Give the project number & title, cost, short description, quantity of additional square footage, award date, estimated/actual construction start date and estimated BOD.

a. Utilize Table 5.1 below to provide information on your activity's base infrastructure capacity and load. Do not report this information if you are a tenant activity.

Table 5.1 Base Infrastructure Capacity & Load

	On Base Capacity	Off base long term contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA transmission capability	Unlimited Supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M transmission capability	Unlimited Supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	250000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking	188,303 sq.yd.	0	19,224 sq. yd.	60,000 sq. yd.

b. Maintenance, Repair & Equipment Expenditure Data: Use Table 5.2 below to provide data on facilities and equipment expenditures at your activity. Project expenditures to FY 1997. Do not include data on Detachments who have received this Data Call directly. Do not report this information if you are a tenant activity. The following definitions apply:

Maintenance of Real Property (MRP) Dollars: MRP is a budgetary term used to gather the expenses or budget requirements for facility work including recurring maintenance, major repairs & minor construction (non-MILCON) inclusive of all Major Claimant funded Special Projects. It is the amount of funds spent on or budgeted for maintenance and repair of real property assets to maintain the facility in satisfactory operating condition. For purposes of this Data Call MRP includes all M1/R1 and M2/R2 expenditures.

Current Plant Value (CPV) of Class 2 Real Property: The hypothetical dollar amount to replace a Class 2 facility in kind with today's dollars. Example: the cost today to replace a wood frame barracks with a wood frame barracks.

Acquisition Cost of Equipment (ACE): The total cumulative acquisition cost of all "personal property" equipment maintained at your activity which includes the cost of installed equipment directly related to mission execution, such as lab test equipment. Class 2 installed capital equipment that is an integral part of the facility will not be reported as ACE.

Table 5.2 Maintenance, Repair & Equipment Expenditure Data for NAVSURFWARCENDIVCrane, Crane Site (UIC: N00164)

Fiscal Year	MRP ($M)	CPV ($M)	ACE ($M)
1985	13.5	978.0	83
1986	13.1	996.8	97
1987	16.6	1,006.8	108
1988	14.7	1,069.6	126
1989	15.6	1,087.7	139
1990	15.3	1,119.8	147
1991	17.1	1,133.5	157
1992	18.2	1,156.1	169
1993	16.4	1,206.0	190
1994	15.0	1,261.9	205
1995	17.9	1,317.9	219
1996	16.9	1,369.6	230
1997	16.9	1,411.8	245

The Current Plant Value (CPV) is the CPV reported in the NAVFAC P-164, Detailed Inventory of Naval Shore Facilities. For projected values, an increase of 4% per yera was used plus the cost of any planned minor or Military Construction Projects that will occur in the respective year.

c. Training Facilities:

(1) By facility Category Code Number (CCN), provide the usage requirements for each course of instruction required for all formal schools on your installation. A formal school is a programmed course of instruction for military and/or civilian personnel that has been formally approved by an authorized authority (ie: Service Schools Command, Weapons Training Battalion, Human Resources Office). Do not include requirements for maintaining unit readiness, GMT, sexual harassment, etc. Include all applicable 171-*xx*, 179-*xx* CCN's.

Type of Training Facility/CCN	School	Type of Training	FY 1993 Requirements			FY 2001 Requirements		
			A	B	C	A	B	C
NONE								

A = STUDENTS PER YEAR
B = NUMBER OF HOURS EACH STUDENT SPENDS IN THIS TRAINING FACILITY FOR THE TYPE OF TRAINING RECEIVED
C = A x B

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(2) By Category Code Number (CCN), complete the following table for all training facilities aboard the installation. Include all 171-*xx* and 179-*xx* CCN's.

For example: in the category 171-10, a type of training facility is academic instruction classroom. If you have 10 classrooms with a capacity of 25 students per room, the design capacity would be 250. If these classrooms are available 8 hours a day for 300 days a year, the capacity in student hours per year would be 600,000.

Type Training Facility/CCN	Total Number	Design Capacity (PN)[1]	Capacity (Student HRS/YR)
Academic Inst./CCN 171-10	2 Rooms	30	108,000
Academic Inst./CCN 171-10	1 Room	12	21,600
Academic Inst./CCN 171-10	1 Room	122	219,600
Academic Inst./CCN 171-10	1 Room	120	57,600
Academic Inst./CCN 171-10	1 Room	24	7,680
Small Arms Range/CCN 171-50	1 Range	10	1,920

(3) Describe how the Student HRS/YR value in the preceding table was derived.

All rooms were available for training 8 hours/day. For CCN 171-10, the rooms which had a design capacity of 120 and 24 were only available for training a total of 60 and 40 days respectively. All other rooms for CCN 171-10 were available 225 days per year. For CCN 171-50, the range is only available for training 24 times per year (2 days per month). The student HRS/YR, or Capacity was derived by multiplying the Design Capacity times 8 hours/day, times the number of days available per year.

[1] Design Capacity (PN) is the total number of seats available for students in spaces used for academic instruction; applied instruction; and seats or positions for operational trainer spaces and training facilities other than buildings, i.e., ranges. Design Capacity (PN) must reflect current use of the facilities.

6. Ship Berthing Capacity. If your activity has the capacity to berth ships fill out the data sheets provided at TAB A.

7. Operational Airfield Capacity. If your activity owns and operates an operational airfield fill out the data sheets provided at TAB B.

8. Depot Level Maintenance Capacity. Fill out the data sheets provided at TAB C if you or your subordinate activities perform depot level maintenance on a piece of equipment or system.

9. Ordnance Storage Capacity. If your activity has the capability to store or maintain weapons and ordnance fill out the data sheets provided at TAB D.

6. Ship Berthing Capacity. If your activity has the capacity to berth ships fill out the data sheets provided at TAB A.

The Crane Division of the Naval Surface Warfare Center does not have any ship berthing capacity.

7. Operational Airfield Capacity. If your activity owns and operates an operational airfield fill out the data sheets provided at TAB B.

The Crane Division of the Naval Surface Warfare Center does not have an operational airfield.

TAB A

SHIP BERTHING CAPACITY

Note: Question numbers in [ ]'s are for internal BSAT purposes.

The Crane Division of the Naval Surface Warfare Center has no Ship Berthing Capacity.

SHIP BERTHING CAPACITY

1. [11.] For each Pier/Wharf at your facility list the following structural characteristics. Indicate the additional controls required if the pier is inside a Controlled Industrial Area or High Security Area. Provide the average number of days per year over the last eight years that the pier was out of service (OOS) because of maintenance, including dredging of the associated slip:

Table 11.1

Pier/ Wharf & Age[1]	CCN[2]	Moor Length (ft)	Design Dredge Depth[3] (ft) (MLLW)	Slip Width[4] (ft)	Pier Width (ft)[5]	CIA/Security Area? (Y/N)[6]	ESQD Limit[7]	# Days OOS for maint.
NA								

[1]Original age and footnote a list of MILCON improvements in the past 10 years.
[2]Use NAVFAC P-80 for category code number.
[3]Comment if unable to maintain design dredge depth
[4]Water distance between adjacent finger piers.
[5]Indicate if RO/RO and/or Aircraft access.
[6]Describe the additional controls for the pier.
[7]Net explosive weight. List all ESQD waivers that are in effect with expiration date.

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2. [12.] For each Pier/Wharf at your facility list the following ship support characteristics:

Table 12.1

Pier/ Wharf	OPNAV 3000.8 (Y/N)	Shore Pwr (KVA) & 4160V (KVA)	Comp. Air Press. & Capacity[1]	Potable Water (GPD)	CHT (GPD)	Oily Waste[1] (gpd)	Steam (lbm/hr & PSI)[2]	Fendering limits[3]
NA								

[1]List only permanently installed facilities.
[2]indicate if the steam is certified steam.
[3]Describe any permanent fendering arrangement limits on ship berthing.

3. [13.] For each pier/wharf listed above state today's normal loading, the maximum capacity for berthing, maximum capacity for weapons handling evolutions, and maximum capacity to conduct intermediate maintenance.

Table 13.1

Pier/Wharf	Typical Steady State Loading[1]	Ship Berthing Capacity	Ordnance Handling Pier Capacity[2]	IMA Maintenance Pier Capacity[3]
NA				

[1] Typical pier loading by ship class with current facility ship loading.
[2] List the maximum number of ships that can be moored to conduct ordnance handling evolutions at each pier/berth without berth shifts. Consider safety, ESQD and access limitations.
[3] List the maximum number of ships that can be serviced in maintenance availabilities at each pier without berth shifts because of crane, laydown or access limitations.

4. [14.] For each pier/wharf listed above, based on Presidential Budget 1995 budgeted infrastructure improvements in the Presidential Budget 1995 through FY 1997 and the BRAC-91 and BRAC-93 realignments, state the expected normal loading, the maximum capacity for berthing, maximum capacity for weapons handling evolutions, and maximum capacity to conduct intermediate maintenance.

Table 14.1

Pier/ Wharf	Typical Steady State Loading[1]	Ship Berthing Capacity	Ordnance Handling Pier Capacity[2]	IMA Maintenance Pier Capacity[3]
NA				

[1] Typical pier loading by ship class with current facility ship loading.
[2] List the maximum number of ships that can be moored to conduct ordnance handling evolutions at each pier/berth without berth shifts. Consider safety, ESQD and access limitations.
[3] List the maximum number of ships that can be serviced in maintenance availabilities at each pier without berth shifts because of crane, laydown, or access limitations.

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5. [15.a.] How much pier space is required to berth and support ancillary craft (tugs, barges, floating cranes, etc.) currently at your facility? Indicate if certain piers are uniquely suited to support these craft.

NA

6. [15.b.] What is the average pier loading in ships per day due to visiting ships at your base. Indicate if it varies significantly by season.

NA

7. [15.c.] Given no funding or manning limits, what modifications or improvements would you make to the waterfront infrastructure to increase the cold iron ship berthing capacity of your installation? Provide a description , cost estimates, and additional capacity gained.

NA

8. [15.d.] Describe any unique limits or enhancements on the berthing of ships at specific piers at your base.

NA

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TAB B

OPERATIONAL AIRFIELD CAPACITY

Note: Question numbers in []'s are for internal BSAT purposes.

The Crane Division of the Naval Surface Warfare Center does not have an operational airfield.

1. [1a.] For the **main airfield and each auxiliary airfield,** answer the following questions: NA

Airfield Name ____________________

For each runway, give its designation, length, width, load capacity, lighting configurations, and arresting gear types. For each runway list any approach obstructions or any restrictions on flight patterns.

Runway	Length (ft)	Width (ft)	Max load	Lighting				Arresting Gear Type(s)
				F	P	C	N	
NA								

F -- Full lighting (runway edge, center, and threshold)
P -- Partial lighting (less than full)
C -- Carrier deck lighting simulated
N -- No lighting

2. [1b.] Provide the **composition** (concrete, asphalt) and **load bearing capacity** of your aprons, ramps and taxiway.

Apron/ramp/taxiway Location - ID	SF	Comp.	Load Bearing Capacity	Comments
NA				

3. [1c.] Do you have **high speed taxiways?** Discuss number and impact on airfield operations.
NA

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4. [1d.] Are **all runways** with approved instrument approaches served by **hi-speed taxiways**?

NA

5. [1e.] List any restrictions to **runways with approach obstructions** or any **restrictions on flight patterns.** Explain

NA

6. [1f.] For the main airfield and each auxiliary and outlying field, discuss any **runway design features** that are specific to particular types of aircraft (i.e., are the airfield facilities designated primarily fixed wing jet, prop, or helo aircraft?)

NA

7. [2a.] List the **number of flight operations** (take-off, landing, or approach without landing) that the main airfield and all auxiliary fields can support on an hourly basis in both VMC and IMC. Comment on the factors at each field that limit this capacity (e.g., taxiway/runway limitations, airspace, ATC restrictions, environmental restrictions).

Airfield	# Flight Ops/Hr		Comments on Limiting Factors
	IMC	VMC	
Main	NA		
Auxiliary ________			
Auxiliary ________			
Auxiliary ________			

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8. [2b.] Provide the average number of **(historical) flight operations** per month conducted at this station and the total number of days during which these operations were conducted. If data is not normally recorded, include estimates (and how derived). A flight operation is defined as a take-off, landing, or approach without a landing.

FY	Main Airfield		Auxiliary Field ______		Auxiliary Field ______		Auxiliary Field ______	
	# Ops	# Days	# Ops	# Days	# Ops.	# Days	# Ops.	# Days
1991	NA							
1992								
1993								

9. [2c.] What percent of your flight operations are Fleet Carrier Landing Practices (FCLPs)? NA

10. [2d.] Are you designated as an **authorized divert field** for any non-DoD aircraft? Explain. NA

11. [2d.] Is your airfield designated as a **joint use airfield** (i.e. civilian/military)? Explain. NA

12. [2e.] What **percentage of total operations are civilian**? NA

13. [2f.] Describe the major **civilian air traffic structures** (routes, terminal control areas, approaches, etc.) discuss the present and likely future impact of each on air station operations. NA

14. [2g.] Are there any **air traffic control constraints**/procedures that currently, or may in the future, limit air station operations? If yes, fully explain impact.

NA

15. [4.] List all **NAVAIDS** with published approaches that support the main airfield and/or your auxiliary airfields. Note any additions/upgrades to be added between now and FY1997., NA

NAVAID	DESCRIPTION/LOCATION
NA	

16. [5a.] List all **active duty Navy/USMC squadrons/detachments** and the number of aircraft by type, model, and series (T/M/S), that will be permanently stationed/are scheduled to be stationed at this air station at the end of the indicated fiscal years.

Squadron/Det	# of Aircraft (PAA)	Aircraft (T/M/S)	FY 1994	FY 1995	FY 1997	FY 1999	FY 2001
NA							

17. [5b.] Summarize average **visiting squadron/det loading** on air station operations(i.e. airwing/wing weapons deployment).

Squadron/Det Size (#A/C)	Apron Space Used	Hangar Space Assigned	Maintenance Support	Ave length of stay
NA				

18. [5c.] If a major percent of flight operations at your air station is from other than permanently stationed squadron/detachments, provide explanation. NA

19. [6a.] List all **reserve Navy/USMC squadrons/detachments** and the number of aircraft by type, model, and series (T/M/S), which will be stationed/are scheduled to be stationed at this air station at the **end** of the indicated fiscal years. NA

Squadron/Det	# of Aircraft (PAA)	Aircraft (T/M/S)	FY 1994	FY 1995	FY 1997	FY 1999	FY 2001
NA							

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20. [7.] List all **Station aircraft** by number, type, model, and series (T/M/S), which will be parked or stationed/are scheduled to be stationed at this air station at the **end** of the indicated fiscal years.

Squadron/ Custodian	# of Aircraft (PAA)	Aircraft (T/M/S)	FY 1994	FY 1995	FY 1997	FY 1999	FY 2001
NA							

21. [8.] List all **DoD and non-DoD aircraft** not previously listed, by custodian, including number, type, model, and series (T/M/S) of aircraft, which will be parked or stationed/are scheduled to be stationed at this air station at the **end** of the indicated fiscal years.

Service/ Agency/ Custodian	# of Aircraft (PAA)	Aircraft (T/M/S)	FY 1994	FY 1995	FY 1997	FY 1999	FY 2001
NA							

22. [9a.] List other **operational command or support units** (ie. air wing staffs, MWSG, MWSS, MACG, MASS, etc.) stationed at this installation. For each Unit, give the unit identification number/UIC, mission, and facilities required (currently being used) to support the unit (i.e. equipment parking - 2500 SF; maintenance shop-200 SF; etc.).

Support Unit Identification/ UIC	Mission	Facilities Required	Equipment Laydown Requirement (covered/ uncovered in SF)
NA			

23. [9b.] Due to BRAC or other realignments, what increases/decreases in operational command or support units will occur at your installation. Provide expected gains/losses by year through 2001. NA

24. [10a.] List all **other USN/USNR, USMC/USMCR, and other DoD or non-DoD active and SELRES units** not listed previously, that are scheduled to be stationed at this air station at the **end** of the indicated fiscal years.

Unit	Active or Reserve	FY 1994	FY 1995	FY 1997	FY 1999	FY 2001
NA						

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25. [12b.] For each **Special Use Airspace (SUA)** or airspace-for-special use routinely used by squadrons/units assigned to your installation (regardless of location[1]), indicate how many hours per year are **required for** each user to maintain required **readiness.** Special Use Airspace includes alert areas, military operating areas (MOA), restricted areas, and warning areas which are used for air-to-air, air-to-ground, electronic (EW, ECM), low level training routes (MTRs), and other training.

[1] include RON/domestic deployment training

SUA	Location/ Distance	Types/Uses	Scheduling Authority (UIC)	Squadron/Unit	Training Requirement (types of training)	Yearly Usage Rate (Hrs)
NA						

Remarks:

26. [12c.] For each **Special Use Airspace (SUA)** or airspace-for-special-use complete the following table:

---

[1] include RON/domestic deployment training

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SUA	Location/ Distance	Types/Uses	Scheduling Authority (UIC)	Fiscal Year	Scheduled	Utilized[1]	Operating Limitations[2]
					# Hours	# Hours	
NA				1991			
				1992			
				1993			
				1991			
				1992			
				1993			
				1991			
				1992			
				1993			

[1] For the "Utilized" values, provide reasons for hours scheduled, but not utilized (e.g. 40% cancelled due to weather; 10% cancelled for unscheduled range maintenance, etc.).
[2] Provide any comments on operating limitations.

27. [12d.] Assuming that the flight training facility is **not constrained by operational funding** (personnel support, increased overhead costs, etc.), with the present equipment, physical plant, etc. , what **additional use of airspace assets** could be realized? Provide details and assumptions for all calculations. NA

28. [12h.] In the event that it became necessary to increase base loading at your installation, does the **airspace** overlying and adjacent to your installation have the **capacity** to assume an additional workload? Estimate the percentage of the possible increase. Provide the basis/calculations for these estimates. NA

29. [17a.] Using the types (and mix) of aircraft currently stationed at your installation, project the additional number of these aircraft (maintain approximate current mix/ratio of A/C) that could be based and parked on your **current parking aprons.**
Provide two estimates:

1. Using NAVFAC P-80 standard measures
2. Using real world planning factors to accomodate a surge demand for space (maintaining safe operating procedures).

Aircraft Type	Current # of Aircraft Parked/Stationed	Maximum Additional Capacity (# of Aircraft)		Total	
		NAVFAC	Surge	NAVFAC	Surge
NA					

Provide the **details of your calculations**, including your assumptions on the minimum separation between aircraft, parking angle, folding of aircraft wings and any obstructions that may limit the placement of aircraft on the parking apron spaces. Indicate if taxiway aprons are used in the projection.

30. [18a.] List the **hangars** at the air station. Identify by (P-80) type, year built, dimensions.

Hangar ID/#	Type I, II or (O)ther	Year Built	Hangar Deck Dimensions	Limiting Height	Current Usage	In SF			
						Adequate	Substandard	Inadequate	Total
NA									

In accordance with NAVFACINST 11010.44E, an inadequate facility cannot be made adequate for its present use through "economically justifiable means". For all the categories above where inadequate facilities are identified describe why the facility is inadequate; indicate how it is being used and list other possible uses; and specify the costs to remove the deficiencies that make it inadequate. Indicate current plans to remove these deficiencies and the amount of any programmed funds. Discuss any material conditions of substandard facilities which have resulted in a C3 or C4 designation on your BASEREP.

31. [18b.] For each **hangar** provide **space allocation** information listed in table below. Indicate if OPS/ADMIN space is in a non-contiguous building, Provide subtotal for each hangar.

Hangar #/ID/Type	SQD/Mod# Assignment [1]	Ops + Admin Spaces SF/ Module	Maint Shops SF/ Module (O Level)	Hangar Deck SF/Module	A/C Line parking spaces [2,3]		
					#/ Module	SF	Elec. Pwr.
NA							
TOTAL							

[1] Provide which SQD/Det was assigned to the specific module at receipt of this Data Call. (i.e., VFA-15, Hgr 1, Mod C)

[2] Dedicated aircraft parking spaces per Module and total square feet (SF) of A/C line parking spaces

[3] Are there A/C line parking spaces supported by permanently installed electric power? (Y/N)

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32. [18f.] List all **squadrons/detachments** normally homeported at this air station that were deployed and **not assigned** hangar/maintenance spaces at receipt of this data call.

Squadron/Detachment	#/Type Aircraft	Deployed Location
NA		

33. [18g.] List all **squadrons/detachments** normally homeported at this air station that were deployed and **were assigned** hangar/maintenance spaces at receipt of this data call.

Squadron/Detachment	#/Type Aircraft	Hanger Module Assignment
NA		

34. [18h.] Using the types (and mix) of **aircraft** currently stationed at your installation, project the maximum additional number of these aircraft (maintain approximate current mix/ratio of A/C) that could be housed and maintained in **your current hangars**. Provide two estimates:

1. Using NAVFAC P-80 standard measures
2. Using real world planning factors to accomodate a surge demand for space (maintaining safe operating procedures).

Aircraft Type	Current # of Aircraft Parked/Stationed	Maximum Additional Capacity (# of Aircraft)		Total (Current + Additional)	
		NAVFAC	Surge	NAVFAC	Surge
NA					

Provide the **details of your calculations**, including your assumptions on the minimum separation between aircraft, folding of aircraft wings and any obstructions that may limit the placement of aircraft in the hangars.

35. [19.] Do you have any of the following **special use facilities** at the Air Station?

CCN	Type of Facility	In SF				# of Units	Year Built
		Adequate	Substandard	Inadequate	Total		
211-01	Aircraft Acoustical Enclosure	NA					
211-02	Nose Hangar						
211-03	Corrosion Control Hangar						
211-75	Parachute/Survival Equipment Shop						
211-81	Engine Test Cell						
211-88	Power Check Pad with Sound Suppression						
211-89	Power Check Pad without Sound Suppression						
211-96	Maintenance, Aircraft Spares Storage						
116-10	Airfield Washrack Pavement						
116-15	Aircraft Rinse Facility						
214-30	Refueling Vehicle Shop						
218-60	Aircraft Ground Support Equipment						
	Other						

In accordance with NAVFACINST 11010.44E, an inadequate facility cannot be made adequate for its present use through "economically justifiable means". For all the categories above where inadequate facilities are identified describe why the facility is inadequate; indicate how it is being used and list other possible uses; and specify the costs to remove the deficiencies that make it inadequate. Indicate current plans to remove these deficiencies and the amount of any programmed funds. Discuss any material conditions of substandard facilities which have resulted in a C3 or C4 designation on your BASEREP.

36. [21a.] For the following **aircraft support facility** category codes, provide the amount of adequate substandard, and inadequate facilities.

CCN	Facility Type	Unit of Measure	Adequate	Substandard	Inadequate	Total	Number of Units
111-20	Landing Pads	SF	NA				
121-10	Direct Fueling	OL/GM					
124-30	Fuel Storage	GA					
421-xx	Ammunition Storage	CF/TONS					
425-xx	Open Ammunition Storage	SF					
113-20	Parking Aprons	SF					
113-40	Access Aprons	SF					
116-56	Combat Aircraft Ordnance Loading Area	SF					
	Other						

In accordance with NAVFACINST 11010.44E, an inadequate facility cannot be made adequate for its present use through "economically justifiable means". For all the categories above where inadequate facilities are identified describe why the facility is inadequate; indicate how it is being used and list other possible uses; and specify the costs to remove the deficiencies that make it inadequate. Indicate current plans to remove these deficiencies and the amount of any programmed funds. Discuss any material conditions of substandard facilities which have resulted in a C3 or C4 designation on your BASEREP.

TAB C

DEPOT LEVEL MAINTENANCE CAPACITY

Maintenance and Industrial Activities

Activities that actually perform Depot Level Maintenance shoudl complete **PART I** of this TAB. Warfare Center Headquarters (Owners & Operators) whose subordinate activities actually perform Depot Level Maintenance should complete **PART II** of this TAB. Depot and/or industrial workload capacity is to be reported as a function of the following categories for the period requested.

JCSG-DM: Maintenance and Industrial Activities

Commodity Groups List

1. Aircraft Airframes:
   - Rotary
   - VSTOL
   - Fixed Wing
     - Transport / Tanker / Bomber / Command and Control
     - Light Combat
     - Admin / Training
   - Other
2. Aircraft Components
   - Dynamic Components
   - Aircraft Structures
   - Hydraulic/Pneumatic
   - Instruments
   - Landing Gear
   - Aviation Ordnance
   - Avionics/Electronics
   - APUs
   - Other
3. Engines (Gas Turbine)
   - Aircraft
   - Ship
   - Tank
   - Blades / Vanes (Type 2)
4. Missiles and Missile Components
   - Strategic
   - Tactical / MLRS
5. Amphibians
   - Vehicles
   - Components (less GTE)
6. Ground Combat Vehicles
   - Self-propelled
   - Tanks
   - Towed Combat Vehicles
   - Components (less GTE)
7. Ground and Shipboard Communications and Electronic Equipment
   - Radar
   - Radio Communications
   - Wire Communications
   - Electronic Warfare
   - Navigational Aids
   - Electro-Optics / Night Vision
   - Satellite Control / Space Sensors
8. Automotive / Construction Equipment
9. Tactical Vehicles
   - Tactical Automotive Vehicles
   - Components
10. Ground General Purpose Items
    - Ground Support Equipment (except aircraft)
    - Small Arms / Personal Weapons
    - Munitions / Ordnance
    - Ground Generators
    - Other
11. Sea Systems
    - Ships
    - Weapons Systems
12. Software
    - Tactical Systems
    - Support Equipment
13. Special Interest Items
    - Bearings Refurbishment
    - Calibration (Type I)
    - TMDE
14. Other

Refer to the following notes when filling out the tables in this TAB.

Notes:

1. "Production" equates to the number of items processed per Fiscal Year (FY), unless otherwise specified.

2. Base your responses for FY 1994 and previous years on executed workload, and for FY 1995 and subsequent years on workload as programmed. Unless otherwise specified, use workload mixes as programmed. In estimating projected workload capabilities, use the Activity's configuration as of completion of implementation of the BRAC-88/91/93 actions.

3. Use single shift operations (1-8-5) as the basis for your calculations. Report in specified units of throughput and Direct Labor Man Hours (DLMHs).

4. If any responses are classified, so annotate the applicable question and include those responses in a separate classified annex.

5. Capacity Index and Utilization Index will be calculated in accordance with the Defense Depot Maintenance Council approved update to Department of Defense Instruction (DoDInst) 4151.15H, "Depot Maintenance Capacity/Utilization Index Measurement."

6. The Major Owner/Operator questions will be answered by the Major Claimant/Systems Commander.

7. Utilize the tables provided to answer each question. Answer the questions for all of the commodity groups that are applicable to your activity. In the Aircraft Airframes and Engines (Gas Turbine) commodity groups break out the information by aircraft type, model, series or by engine type as applicable when filling out the tables.

PART I: MAINTENANCE & INDUSTRIAL ACTIVITIES

1. Historic and Predicted Workload

1.1 Given the current configuration and operation of your activity, provide the depot/industrial level maintenance by commodity group (from the List above) that was executed in and is programmed for the Fiscal Years (FY) requested in units throughput (Tables 1.1.a and 1.1.b) and in Direct Labor Man Hours (DLMHs) (Tables 1.1.c and 1.1.d). Add additional rows as required to report all commodity types serviced at this activity.

Table 1.1.a: **Historic and Predicted Depot/Industrial Workload**

Commodity Type	Throughput (Units)							
	FY 1986	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993
2.g	11,549	10,279	9,855	8,456	9,584	10,420	8,711	9,210
4.a	225	206	148	135	94	24	19	6
4.b	0	0	187	0	343	678	800	800
7.e	0	0	0	8	21	17	19	32
7.f		0	0	23	278	852	1,244	5,330
11.a	0	0	0	8	21	17	19	32
11.b	8,442	9,503	10,179	9,886	10,899	12,655	10,723	11,719
14	0	0	0	0	0	214	554	401
Total:	20,216	19,988	20,369	18,516	21,240	24,877	22,089	27,530

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

R

Table 1.1.b: **Historic and Predicted Depot/Industrial Workload**

Commodity Type	Throughput (Units)								
	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	
2.g	10,373	9,598	8,942	8,481	8,127	7,886	7,947	8,103	R
4.a	4	0	0	0	0	0	0	0	
4.b	0	1,260	1,260	1,260	1,260	1,260	1,260	1,260	
7.e	44	39	38	48	58	57	57	57	
7.f	6,162	6,277	10,596	11,588	16,179	21,845	31,235	31,235	
11.a	20	25	23	22	19	18	18	18	
11.b	14,516	16,045	18,114	18,034	17,535	17,733	18,091	18,121	R
14	186	150	150	530	250	250	250	250	
Total:	31,305	33,394	39,123	39,963	43,428	49,049	58,858	59,044	R

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

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Table 1.1.b: **Historic and Predicted Depot/Industrial Workload**

Commodity Type	Throughput (Units)							
	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001
2.g	10,373	9,118	8,437	8,006	7,668	7,441	7,494	7,641
4.a	4	0	0	0	0	0	0	0
4.b	0	1,260	1,260	1,260	1,260	1,260	1,260	1,260
7.e	44	39	38	48	58	57	57	57
7.f	6,162	6,277	10,596	11,588	16,179	21,845	31,235	31,235
11.a	20	25	23	22	19	18	18	18
11.b	14,516	14,436	16,884	15,973	16,023	14,724	14,917	15,207
14	186	150	150	530	250	250	250	250
Total:	31,305	31,305	37,388	37,427	41,457	45,595	55,231	55,668

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

TAB C
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Table 1.1.c: **Historic and Predicted Depot/Industrial Workload**

Commodity Type	Throughput (DLMHs)							
	FY 1986	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993
2.g	296,740	331,530	317,072	293,864	273,367	284,510	276,966	284,226
4.a	2,190	2,193	15,728	13,979	8,806	1,728	1,368	432
4.b	0	0	4,000	0	8,000	17,000	20,000	20,000
7.e	0	0	0	0	0	4,181	2,091	3,286
7.f	0	0	0	563	6,805	20,856	30,453	35,207
11.a	0	0	0	600	18,480	18,060	18,210	18,755
11.b	179,444	198,417	210,090	184,179	170,897	243,834	241,072	244,333
14	0	0	0	0	0	1,605	4,432	4,041
Total:	478,374	532,140	546,890	493,185	486,355	591,774	594,592	610,280

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

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Table 1.1.d: **Historic and Predicted Depot/Industrial Workload**

Commodity Type	Throughput (DLMHs)							
	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001
2.g	268,409	280,601	248,097	249,856	248,289	247,988	245,612	245,612
4.a	288	0	0	0	0	0	0	0
4.b	37,800	37,800	37,800	37,800	37,800	37,800	37,800	37,800
7.e	3,528	1,843	1,845	4,245	6,645	6,346	6,346	6,346
7.f	40,730	41,491	86,000	92,000	107,800	144,000	206,500	206,500
11.a	7,349	16,741	16,840	16,840	9,800	9,800	9,800	9,800
11.b	316,511	369,061	383,447	385,050	371,097	389,063	388,771	385,599
14	2,635	2,500	2,500	4,200	4,200	4,200	4,100	4,000
Total:	677,250	750,037	776,529	789,991	785,631	839,197	898,929	895,657

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

1.2 For each commodity type reported in Tables 1.1.a through 1.1.d, assume (a) the current projected total depot / industrial workload remains as assigned; (b) that sufficient production demand is available to justify maximum hiring, optimum (repeat order manufacturing lead times) procurement, and maximum equipment support; and (c) no major MILCON additional to that already programmed: what is the maximum extent to which depot / industrial maintenance operations could be expanded at this activity, based on the current and future planned workload mixes, for the requested period? Please provide your response in both the absolute maximum number of units and DLMHs that could be processed at this activity by applicable commodity group. Add additional rows as necessary to accommodate all commodity types serviced at this activity.

REVISED
10/24/94

Table 1.1.d: **Historic and Predicted Depot/Industrial Workload**

Commodity Type	Throughput (DLMHs)							
	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001
2.g	268,409	266,601	234,097	235,856	234,289	233,988	231,612	231,612
4.a	288	0	0	0	0	0	0	0
4.b	38,000	38,000	38,000	38,000	38,000	38,000	38,000	38,000
7.e	3,528	1,843	1,845	4,245	6,645	6,346	6,346	6,346
7.f	40,730	41,491	70,039	76,597	106,943	144,395	206,463	206,463
11.a	7,349	16,741	16,840	16,840	9,800	9,800	9,800	9,800
11.b	316,511	332,370	357,122	341,097	338,818	323,014	320,514	323,567
14	2,635	2,500	2,500	4,200	4,200	4,200	4,100	4,000
Total:	677,450	699,546	720,443	716,835	738,695	759,743	816,835	819,788

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

1.2 For each commodity type reported in Tables 1.1.a through 1.1.d, assume (a) the current projected total depot / industrial workload remains as assigned; (b) that sufficient production demand is available to justify maximum hiring, optimum (repeat order manufacturing lead times) procurement, and maximum equipment support; and (c) no major MILCON additional to that already programmed: what is the maximum extent to which depot / industrial maintenance operations could be expanded at this activity, based on the current and future planned workload mixes, for the requested period? Please provide your response in both the absolute maximum number of units and DLMHs that could be processed at this activity by applicable commodity group. Add additional rows as necessary to accommodate all commodity types serviced at this activity.

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Table 1.2.a: **Maximum Potential Depot/Industrial Workload**

Commodity Type	Throughput (Units)						
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001
2.g	11,703	14,198	16,706	20,099	20,186	20,186	20,186
4.a	248	260	273	287	301	317	332
4.b	2,520 R	2,520 R	2,520 R	2,520 R	2,520 R	2,520 R	2,520 R
7.e	173	487	567	622	624	624	624
7.f	10,741	14,826	96,369	96,369	96,369	96,369	96,369
11.a	37	47	47	47	47	47	47
11.b	35,363	39,799	41,595	42,069	42,926	43,447	43,996
14	1,108	1,163	1,222	1,283	1,347	1,414	1,485
Total:	61,893	73,300	159,299	163,296	164,320	164,924	165,559

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles, 7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships, 11.b - Sea System Weapons Systems, 14 - Other

Table 1.2.a: **Maximum Potential Depot/Industrial Workload**

Commodity Type	Throughput (Units)						
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001
2.g	11,703	14,198	16,706	20,099	20,186	20,186	20,186
4.a	248	260	273	287	301	317	332
4.b	2,640	2,640	2,640	2,640	2,640	2,640	2,640
7.e	173	487	567	622	624	624	624
7.f	10,741	14,826	96,369	96,369	96,369	96,369	96,369
11.a	37	47	47	47	47	47	47
11.b	35,363	39,799	41,595	42,069	42,926	43,447	43,996
14	1,108	1,163	1,222	1,283	1,347	1,414	1,485
Total:	62,013	73,420	159,419	163,416	164,440	165,044	165,679

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

Revised pg

Table 1.2.b: **Maximum Potential Depot/Industrial Workload**

Commodity Type	Throughput (DLMHs)							
	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001
2.g	341,781	376,918	409,918	409,918	421,918	426,987	426,987	426,987
4.a	8,806	24,140	25,347	26,615	27,946	29,343	30,810	32,351
4.b	76,000 R	76,000 R	76,000 R	76,000 R	76,000 R	76,000 R	76,000 R	76,000 R
7.e	26,632	17,217	53,220	36,702	71,197	71,214	71,214	71,214
7.f	58,300	71,000	98,000	637,000	637,000	637,000	637,000	637,000
11.a	16,998	17,264	31,392	31,392	31,392	31,392	31,392	31,392
11.b	815,115	1,019,316	1,112,356	1,127,234	1,142,857	1,168,261	1,185,485	1,203,570
14	4,432	8,864	9,307	9,772	10,261	10,774	11,312	11,878
Total:	1,348,064	1,610,719	1,815,540	2,354,633	2,418,571	2,450,971	2,470,200	2,490,392

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles, 7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships, 11.b - Sea System Weapons Systems, 14 - Other

1.3 Provide details of your calculations including assumptions on additional space utilized, major equipment required, production rates, and constraints that limit increased workload by commodity group at this activity.

Commodity Group 2.g:

Microwave Tubes

Maximum Potential Depot/Industrial Workload was calculated based on existing available space and additional space resulting from an already programmed MILCON. Pesonnel were not considered a constraint. Work positions were not considered a constraint but the equipment making up these work positions consist of numerous long lead items thus affecting the number of work positions available in each year. Maximum Potential Capacity was calculated in accordance with the Defense Depot Maintenance Council approved update to DoD 4151.15H dated December 5, 1990.

Maximum Potential Capacity = 1 + (1 - UI)) x Predicted Workload for each fiscal year.

Table 1.2.b: **Maximum Potential Depot/Industrial Workload**

Commodity Type	Throughput (DLMHs)							
	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001
2.g	341,781	376,918	409,918	409,918	421,918	426,987	426,987	426,987
4.a	8,806	24,140	25,347	26,615	27,946	29,343	30,810	32,351
4.b	78,000	78,000	78,000	78,000	78,000	78,000	78,000	78,000
7.e	26,632	17,217	53,220	36,702	71,197	71,214	71,214	71,214
7.f	58,300	71,000	98,000	637,000	637,000	637,000	637,000	637,000
11.a	16,998	17,264	31,392	31,392	31,392	31,392	31,392	31,392
11.b	815,115	1,019,316	1,112,356	1,127,234	1,142,857	1,168,261	1,185,485	1,203,570
14	4,432	8,864	9,307	9,772	10,261	10,774	11,312	11,878
Total:	1,350,064	1,612,719	1,817,540	2,356,633	2,420,571	2,452,971	2,472,200	2,492,392

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

1.3 Provide details of your calculations including assumptions on additional space utilized, major equipment required, production rates, and constraints that limit increased workload by commodity group at this activity.

Commodity Group 2.g:

Microwave Tubes

Maximum Potential Depot/Industrial Workload was calculated based on existing available space and additional space resulting from an already programmed MILCON. Pesonnel were not considered a constraint. Work positions were not considered a constraint but the equipment making up these work positions consist of numerous long lead items thus affecting the number of work positions available in each year. Maximum Potential Capacity was calculated in accordance with the Defense Depot Maintenance Council approved update to DoD 4151.15H dated December 5, 1990.

Maximum Potential Capacity = 1 + (1 - UI)) x Predicted Workload for each fiscal year.

Electronic Warfare

Data for units developed by each depot personnel utilizing their expertise. Data provided didn't include all hours, only technician/bench hours. A formula was developed based on FY-93 actual technician hour data and FY-93 actual depot labor expended. For each technician hour there are several other supporting personnel hours. Doubling workload does not result in all supporting hours doubling. A multiplication factor was established, based on historical data, to account for support hour growth with respect to workload growth. Utilized formula and Maximum Potential technician hours data provided to calculate maximum throughput.

Assumed current spaces (constraint), high percentage of utilization of work positions and receiving new TTS, ETS, RADCOM, use of CASS, ASPJ testers(4), build specific ATE to improve efficiencies.

Commodity Group 11.b:

Microwave Tubes

Maximum Potential Depot/Industrial Workload was calculated based on existing available space and additional space resulting from an already programmed MILCON. Pesonnel were not considered a constraint. Work positions were not considered a constraint but the equipment making up these work positions consist of numerous long lead items thus affecting the number of work positions available in each year. Maximum Potential Capacity was calculated in accordance with the Defense Depot Maintenance Council approved update to DoD 4151.15H dated December 5, 1990.

Maximum Potential Capacity = 1 + (1 - UI)) x Predicted Workload for each fiscal year.

Electronic Warfare

A MILCON (Bldg 3251) is in progress at NSWCCD to house Ship Self Defense Electronic Warfare Systems (EWS) (AN/SLQ-32(V), AN/SLA-10, AN/ULM-4, AN/WLR-1H, AN/SSQ-82, AN/ULQ-13, AN/SSQ-95 and MK-53). The contract completion date is September 1995, however, construction is three months ahead of schedule. This facility will provide 72,000 square feet to support Design Agent, In-Service Engineering Agent, Acquisition Engineering Agent, Depot, Technical Direction Agent, Software Support Agent and Tactical System Support Center assignments for EWSs.

Bldg 3251 provides the space to allow system repairs, overhauls and restorations to proceed through depot processes in a very cost effective and efficient manner. The government has procured twelve AN/SLQ-32(V) unique test stations with associated software, engineering papers and special tooling, with delivery scheduled to begin in May 1994. The receipt of this specialized equipment will increase the depot capacity and provides NSWCCD with full System unit level test capability. Bldg 3251 will house six AN/SLQ-32(V) test beds for Navy system and module depot efforts while the existing Systems Lab, at Bldg 41, will provide space for Foreign Military Sales system overhauls and Navy Training workload. Bldg 3224 will house Other EW workload.

NSWCCD does not require any additional major equipment beyond that described above.

Production rates will depend on the amount of personnel tasked to test, repair, overhaul, upgrade and restore complete Systems, Shipboard Replaceable Units and Shipboard Replaceable Assemblies. Throughput and capability to perform system (Restorations and Comprehensive Repair, Align and Calibrate) and lower level work will increase upon the receipt of the test equipment. NSWCCD is involved in a public/private teaming effort to perform AN/SLQ-32(V) Restorations due to the cessation of production by the Original Equipment Manufacturer. NSWCCD is unique in that it is the only activity (DOD and commercial) that is certified to perform
Comprehensive Repair, Align and Calibrate to support the Fleet.

Upon receipt of the test equipment there will not be any workload constraints.

Radar

Current planned MILCONS will free up additional floor space within Bldg. 41N to allow expansion of radar work. In FY 95, we were able to add an additional 9,840 sq. ft. for LRU production due to MILCON P-242. In FY 96 we gained 2,080 sq. ft. total (2200 for LRUs and 880 for overhauls)due to MILCON P-266. In
FY 97 we gained 2,000 sq. ft. for overhauls due to MILCON P-262.

For the LRU and overhaul areas, we calculated production rates (units per sq. ft.) using today's actual production numbers and existing test stations available. We then did a straight multiplication of units/sq. ft. times the space that would be available in that year to obtain total maximum throughput.

We assumed equipment would be made available to support the increased production rates relative to the space available. The number of work stations over what now exists was increased as follows:

FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01
54	57	65	75	75	78	78	78

Commodity Group 7.f:

Additional space utilized:

FY95	add 2400 sq ft (module 4)
FY96	add 2400 sq ft (module 1)
	add 2800 sq ft (bldg 41)
FY97	add 52237 sq ft MILCON (maintenance space)

Major equipment required: No major equipment is currently planned to be procured. (major defined as greater than $300K in cost)

Production rates: Based on historical data our average production rate is 6.61 hours per item. (244 units per work year)

Constraints: Prior to FY97 floor space is a constraining factor.

HISTORICAL WORKLOAD

Historic workload was derived from through many methods. Some maintenance groups utilized historical workload information system data and/or actual project index report data to determine DLHMS. Standard equipment repair times were then factored into these data to estimate throughput unit quantities. In the absence of historical workload system data, maintenance group (travelers, repair records, etc.) were used to establish unit throughput and these values were multiplied by standard equipment repair times to yield DLHMS.

PREDICTED WORKLOAD

Predicted workload was primarily derived from outyear workload information system data. Units of throughput were estimated in the same manner as they were with historical workload system data as explained in the previous paragraph.

MAXIMUM POTENTIAL WORKLOAD

Maximum hiring, equipment support and optimum procurement conditions were assumed as per the instructions in section 1.2. The most significant limiting factor was space availability with a secondary consideration of selected equipment shortages. Each performing activity then considered work stations, storage, material staging and other space requirements to determine optimum shop layouts. In some cases, additional space projected to become available in the future was factored into the planning process. For example, in the hydrophone repair/production areas, a production project will be finished by 1998. That area will then be available for maintenance workload. In the electronic module repair area, a 71,000 square feet MILCON will be completed in July, 1994. Equipment requirements were evaluated and essentially included in work station planning.

NOTE: Detailed information is available detailing workload data and work station quantities.

1.4 Given an environment unconstrained by funds or manning, what Industrial Plant Equipment (IPE) would you change (add, delete, or modify) to increase your activity's capability to perform workload in each of the applicable commodity groups? Describe quantitatively how the changes above would increase your activity's depot/industrial level maintenance capabilities. What would the associated costs be? What would be the payback period and return on investment?

Commodity Group 2.g:

Microwave Tubes

The Industrial Plan Equipment to support the additional work positions would be added to increase to maximum potential depot/industrial workload. Average estimated costs per work positions would be $1.6 million. Estimated payback of a single work position loaded 90% of the time would be between 3 and 4 years.

Electronic Warfare

The Industrial Plant Equipment to support the additional work positions would be added to increase the maximum potential Depot/Industrial workload. Average estimated costs per work position would be $250K. Past experience has shown that the payback of a single work position with a utilization of 80% would be between 1 and 2 years. This is due to the increase in efficiencies by incorporating automation and standardization in the development and utilization of Depot Test Equipment.

Commodity Group 11.b:

Microwave Tubes

The Industrial Plan Equipment to support the additional work positions would be added to increase to maximum potential depot/industrial workload. Average estimated costs per work positions would be $1.6 million. Estimated payback of a single work position loaded 90% of the time would be between 3 and 4 years.

Electronic Warfare

No additional IPE is required due to the procurement of the AN/SLQ-32(V) unique test equipment.

Radar

The additional test stations, required per paragraph 1.3 above, consists of general purpose microwave test equipment. The average cost per station is estimated to be $200K. Hence the dollar investment by fiscal year in K$ would be as follows:

FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01
$10,800K	$11,400K	$13,000K	$15,000K	$15,000K	$15,600K	$15,600K	$15,600K

Throughput in units would be increased as follows:

FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01
6263	6611	7539	8699	8699	9046	9046	9046

Commodity Group 7.f:

One IRST test set would be procured in 1998 (~$525K). This allows support of the Infra-Red Search and Track system which is programmed into Crane's workload. The equipment currently planned to support IRST is also used to support other programs. The procurement of a dedicated test system would allow an increase in throughput by a factor of 3. Payback period is roughly 2 years based on 10 system overhauls per year.

One automatic distortion/resolution analyzer would be procured in 1998 (~$350K). This unit automates work that is now done manually. This would allow workload to increase by a factor of two (2) for the equipments it supports. The machine would pay for itself in roughly 12 weeks based on tube population and historical recovery rates.

COMMODITY GROUP - 7E

EQUIPMENT	COST (K)	PAYBACK (YR)	SAVINGS/YR (K)
AUTOMATED WIRE MARKING/TERMINATION EQUIPMENT	30	0.9	32.4
INJECTION PRESS	150	3.8	39.0
TOTAL	150	3.8	71.4

COMMODITY GROUP - 11B & 14

Given an environment unconstrained by funds or manning the expansion of the automated depot information system to cover the full range of shops would be the first priority. The improved support of repair operations would result in the long term reduction of the support staff by 7 people. With the total savings being 24 full time equivalents. The major portion of the time saved comes from the floor staff being releived of the requirements of time keeping and locating information and repair piece parts needed to do thier jobs.

The planned supported life cycle for the equipment would be 7 years, with straight line depreciation used to recover the value of the investment.

INVESTMENT

Initial investment for equipment is:

equipment	1,349,500
installation	140,000
	1,489,500

Labor cost supporting initial investment is $871,494 over 3 years.

The total investment cost is $2,360,994.

RETURN

The payback period for this effort would be 4 years.
The return on investment would be $6,163,407, or about 2.8:1.
The annualized rate of return is 14.7% over the life of the system.

Cost Savings on Model Depot

Based on a fully operational system during FY 96

elminated positions

3 production controllers	3	1770	5310
2 material expediters	2	1770	3540
2 documentation clerk	2	1770	3540

other hours saved

data entry

1 data clerk 20 hrs/week	1	885	885

time keeping

3 time keepers 10 hrs/week	3	442.5	1327.5
98 floor staff .5hrs/week	98	22.125	2168.25

parts control

98 floor staff 1.5 hrs/day 98 265.5 26019

per year work hour avoidance 42789.75

24 full time equivalents

Implementation costs

Depot support		dollars	
Depot support ADP equipment			1,241,000
labor	FY95 3 workyears	5310hrs	255,304
	FY96 3 workyear	5310hrs	262,951
Installation costs		140,000	
		1,756,255	

Repository support

Documentation support ADP equipment			108,500
labor	FY95 3 workyears	5310hrs	262,951
	FY96 1 workyear	1770hrs	90,288
		461,739	

implementation cost 2,217,994

annual support, engineering and maintance

3 work years per year

FY	labor rate	hours	cost
95	48.08	5310	255,305
96	49.52	5310	262,951
97	51.01	5310	270,863
98	52.53	5310	278,934
99	54.11	5310	287,324
00	55.73	5310	295,926
			1,651,304

economic analysis

	95	96	97	98	99	00	01	02
savings								
labor								
support staff	0	0	24 wkyr 2,182,705	24 wkyr 2,247,746	24 wkyr 2,315,353	24 wkyr 2,384,673	24 wkyr 2,384,673	24 wkyr 2,384,673
costs								
hardware	1,241,000 108,500							
labor system eng/maint	3 wkyr 255,305	3 wkyr 262,951	3 wkyr 270,863	3 wkyr 278,934	3 wkyr 287,324	3 wkyr 295,926	3 wkyr 295,926	3 wkyr 295,926
repository conv		3 wkyr 262,951	1 wkyr 90,288					
maintance contract		140,000	140,000	140,000	140,000	140,000	140,000	140,000
depreciation		318,500	318,500	318,500	318,500	318,500	318,500	318,500
running total	-1,604,805	-2,589,207	-1,226,153	284,159	1,853,688	3,483,935	5,114,182	6,744,429

Note: Italicized entries represent investment elements.

1.5 Are there any environmental, legal, or otherwise limiting factors that inhibit further the development of depot/industrial level workload and this activity (AICUZ encroachment, pollutant discharge, etc.)?

No, on the contrary, the location and attributes of this activity are conducive to expansion. Its facilities are unique from the standpoint they are Navy owned and operated. This gives **complete control over physical security**. An added benefit is location in a **remote rural area which naturally reduces public relations concerns**. A virtually unlimited storage capacity and extensive material handling capability is available at this site. This makes the prospect of bringing additional workload to this site especially attractive. This is imperative since many programs no longer receive any form of original equipment manufacturer support and current defense contractors are downsizing due to economy of scale considerations. Vast quantities of out of service material must be retained for cannibalization of obsolete critical parts. In addition, **these storage and material handling capabilities furnish invaluable mobilization capacity.** In addition, many **preexisting structures could be converted to maintenance facilities** more **cost effectively** than new construction at other sites.

2. **Workload Summary**

2.1 Enter the information from the Predicted and Potential Workload sections of the previous question into the table below and calculate the variance between projected and potential workloads. Again, clearly identify each commodity and include all commodities serviced at this activity.

R

Table 2.1.a: **PREDICTED WORKLOAD VARIANCE FOR FY 1995**

FY 1995 Commodity Type	Product (units)			DLMHs			
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance	
2.g	9,598	11,703	2,105	280,601	376,918	96,317	R
4.a	0	248	248	0	24,140	24,140	
4.b	1,260	2,520	1,260	37,800	76,000	38,200	R
7.e	39	173	134	1,843	17,217	15,374	
7.f	6,277	10,741	4,464	41,491	71,000	29,509	
11.a	25	37	12	16,741	17,264	523	
11.b	16,045	35,363	19,318	369,061	1,019,316	650,255	R
14	150	1,108	958	2,500	8,864	6,364	
Total	N / A	N / A	N / A	750,037	1,610,719	860,682	R

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles, 7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships, 11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.a: **PREDICTED WORKLOAD VARIANCE FOR FY 1995**

FY 1995 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	9,118	11,703	2,585	266,601	376,918	110,317
4.a	0	248	248	0	24,140	24,140
4.b	1,260	2,520R	1,260R	38,000	76,000R	38,000R
7.e	39	173	134	1,843	17,217	15,374
7.f	6,277	10,741	4,464	41,491	71,000	29,509
11.a	25	37	12	16,741	17,264	523
11.b	14,436	35,363	20,927	332,370	1,019,316	686,946
14	150	1,108	958	2,500	8,864	6,364
Total	N / A	N / A	N / A	699,546	1,610,719	911,173

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2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles, 7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships, 11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.a: **PREDICTED WORKLOAD VARIANCE FOR FY 1995**

FY 1995 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	9,118	11,703	2,585	266,601	376,918	110,317
4.a	0	248	248	0	24,140	24,140
4.b	1,260	2,640	1,350	38,000	78,000	40,000
7.e	39	173	134	1,843	17,217	15,374
7.f	6,277	10,741	4,464	41,491	71,000	29,509
11.a	25	37	12	16,741	17,264	523
11.b	14,436	35,363	20,927	332,370	1,019,316	686,946
14	150	1,108	958	2,500	8,864	6,364
Total	N / A	N / A	N / A	699,546	1,612,719	913,173

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".
[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.b: **PREDICTED WORKLOAD VARIANCE FOR FY 1996**

FY 1996 Commodity Type	Product (units)			DLMHs			
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance	
2.g	8,942	14,198	5,256	248,097	409,918	161,821	R
4.a	0	60	260	0	25,347	25,347	
4.b	1,260	2,520	1,260	37,800	76,000	38,200	R
7.e	38	487	449	1,845	53,220	51,375	
7.f	10,596	14,826	4,230	86,000	98,000	12,000	R
11.a	23	47	24	16,840	31,392	14,552	
11.b	18,114	39,799	21,685	383,447	1,112,356	728,909	R
14	150	1,163	1,013	2,500	9,307	6,807	
Total	N / A	N / A	N / A	776,529	1,815,540	1,039,011	R

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles, 7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships, 11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.b: **PREDICTED WORKLOAD VARIANCE FOR FY 1996**

FY 1996 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	8,437	14,198	5,761	234,097	409,918	175,821
4.a	0	60	260	0	25,347	25,347
4.b	1,260	2,520R	1,260R	38,000	76,000R	38,000R
7.e	38	487	449	1,845	53,220	51,375
7.f	10,596	14,826	4,230	70,039	98,000	27,961
11.a	23	47	24	16,840	31,392	14,552
11.b	16,884	39,799	22,915	357,122	1,112,356	755,234
14	150	1,163	1,013	2,500	9,307	6,807
Total	N / A	N / A	N / A	720,443	1,815,540	1,095,097

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2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles, 7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships, 11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.b: **PREDICTED WORKLOAD VARIANCE FOR FY 1996**

FY 1996 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	8,437	14,198	5,761.00	234,097	409,918	175,821
4.a	0	260	260	0	25,347	25,347
4.b	1,260	2,640	1,380	38,000	78,000	40,000
7.e	38	487	449	1,845	53,220	51,375
7.f	10,596	14,826	4,230	70,039	98,000	27,961
11.a	23	47	24	16,840	31,392	14,552
11.b	16,884	39,799	22,915	357,122	1,112,356	755,234
14	150	1,163	1,013	2,500	9,307	6,807
Total	N / A	N / A	N / A	720,443	1,817,540	1,097,097

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".
[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.c: **PREDICTED WORKLOAD VARIANCE FOR FY 1997**

FY 1997 Commodity Type	Product (units)			DLMHs			
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance	
2.g	8,481	16,706	8,223	249,856	409,918	160,062	R
4.a	0	273	273	0	26,615	26,615	
4.b	1,260	2,520	1,260	37,800	76,000	38,200	R
7.e	48	567	519	4,245	36,702	32,457	
7.f	11,588	96,369	84,781	92,000	637,000	545,000	R
11.a	22	47	25	16,840	31,392	14,552	
11.b	18,034	41,595	23,561	385,050	1,127,234	742,184	R
14	530	1,222	692	4,200	9,772	5,572	
Total	N / A	N / A	N / A	789,991	2,354,633	1,564,642	R

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles,
7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships,
11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.c: **PREDICTED WORKLOAD VARIANCE FOR FY 1997**

FY 1997 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	8,006	16,706	8,700	235,856	409,918	174,062
4.a	0	273	273	0	26,615	26,615
4.b	1,260	2,520R	1,260R	38,000	76,000R	38,000R
7.e	48	567	519	4,245	36,702	32,457
7.f	11,588	96,369	84,781	76,597	637,000	660,403
11.a	22	47	25	16,840	31,392	14,552
11.b	15,973	41,595	25,622	341,097	1,127,234	786,137
14	530	1,222	692	4,200	9,772	5,572
Total	N / A	N / A	N / A	716,835	2,354,633	1,737,798

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2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles,
7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships,
11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.c: **PREDICTED WORKLOAD VARIANCE FOR FY 1997**

FY 1997 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	8,006	16,706	8,700	235,856	409,918	174,062
4.a	0	273	273	0	26,615	26,615
4.b	1,260	2,640	1,380	38,000	78,000	40,000
7.e	48	567	519	4,245	36,702	32,457
7.f	11,588	96,369	84,781	76,597	637,000	660,403
11.a	22	47	25	16,840	31,392	14,552
11.b	15,973	41,595	25,622	341,097	1,127,234	786,137
14	530	1,222	692	4,200	9,772	5,572
Total	N / A	N / A	N / A	716,835	2,356,633	1,739,798

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".
[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.d: **PREDICTED WORKLOAD VARIANCE FOR FY 1998**

FY 1998 Commodity Type	Product (units)			DLMHs			
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance	
2.g	8,127	20,099	11,972	248,289	421,918	173,629	R
4.a	0	287	287	0	27,946	27,946	
4.b	1,260	2,520	1,260	37,800	76,000	38,200	R
7.e	58	622	564	6,645	71,197	64,552	
7.f	16,179	96,369	80,190	107,800	637,000	529,200	R
11.a	19	47	28	9,800	31,392	21,592	
11.b	17,535	42,069	24,534	371,097	1,142,857	771,760	R
14	250	1,283	1,033	4,200	10,261	6,061	
Total	N / A	N / A	N / A	785,631	2,418,571	1,632,940	R

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles, 7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships, 11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.d: **PREDICTED WORKLOAD VARIANCE FOR FY 1998**

FY 1998 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	7,668	20,099	12,431	234,289	421,918	187,629
4.a	0	287	287	0	27,946	27,946
4.b	1,260	2,520R	1,260R	38,000	76,000R	38,000R
7.e	58	622	564	6,645	71,197	64,552
7.f	16,179	96,369	80,190	106,943	637,000	530,057
11.a	19	47	28	9,800	31,392	21,592
11.b	16,023	42,069	26,046	338,818	1,142,857	804,039
14	250	1,283	1,033	4,200	10,261	6,061
Total	N / A	N / A	N / A	738,695	2,418,571	1,679,876

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2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles,
7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships,
11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.d: **PREDICTED WORKLOAD VARIANCE FOR FY 1998**

FY 1998 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	7,668	20,099	12,431	234,289	421,918	187,629
4.a	0	287	287	0	27,946	27,946
4.b	1,260	2,640	1,380	38,000	78,000	40,000
7.e	58	622	564	6,645	71,197	64,552
7.f	16,179	96,369	80,190	106,943	637,000	530,057
11.a	19	47	28	9,800	31,392	21,592
11.b	16,023	42,069	26,046	338,818	1,142,857	804,039
14	250	1,283	1,033	4,200	10,261	6,061
Total	N / A	N / A	N / A	738,695	2,420,571	1,681,876

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".
[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.e: **PREDICTED WORKLOAD VARIANCE FOR FY 1999**

FY 1999 Commodity Type	Product (units)			DLMHs			
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance	
2.g	7,886	20,186	12,300	247,988	426,987	178,999	R
4.a	0	301	301	0	29,343	29,343	
4.b	1,260	2,520	1,260	37,800	76,000	38,200	R
7.e	57	624	567	6,346	71,214	64,868	
7.f	21,845	96,369	74,524	144,000	637,000	493,000	R
11.a	18	47	29	9,800	31,392	21,592	
11.b	17,733	42,926	25,193	389,063	1,168,261	779,198	R
14	250	1,347	1,097	4,200	10,774	6,574	
Total	N / A	N / A	N / A	839,197	2,450,971	1,611,774	R

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles,
7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships,
11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.e: **PREDICTED WORKLOAD VARIANCE FOR FY 1999**

FY 1999 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	7,441	20,186	12,745	233,988	426,987	192,999
4.a	0	301	301	0	29,343	29,343
4.b	1,260	2,520R	1,260R	38,000	76,000R	38,000R
7.e	57	624	567	6,346	71,214	64,868
7.f	21,845	96,369	74,524	144,395	637,000	492,605
11.a	18	47	29	9,800	31,392	21,592
11.b	14,724	42,926	28,202	323,014	1,168,261	845,247
14	250	1,347	1,097	4,200	10,774	6,574
Total	N / A	N / A	N / A	759,743	2,450,971	1,691,228

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2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles,
7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships,
11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.e: **PREDICTED WORKLOAD VARIANCE FOR FY 1999**

FY 1999 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	7,441	20,186	12,745	233,988	426,987	192,999
4.a	0	301	301	0	29,343	29,343
4.b	1,260	2,640	1,380	38,000	78,000	40,000
7.e	57	624	567	6,346	71,214	64,868
7.f	21,845	96,369	74,524	144,395	637,000	492,605
11.a	18	47	29	9,800	31,392	21,592
11.b	14,724	42,926	28,202	323,014	1,168,261	845,247
14	250	1,347	1,097	4,200	10,774	6,574
Total	N / A	N / A	N / A	759,743	2,452,971	1,693,228

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".
[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.f: **PREDICTED WORKLOAD VARIANCE FOR FY 2000**

FY 2000 Commodity Type	Product (units)			DLMHs			
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance	
2.g	7,947	20,186	12,239	245,612	426,987	181,375	R
4.a	0	317	317	0	30,810	30,810	
4.b	1,260	2,520	1,260	37,800	76,000	38,200	R
7.e	57	624	567	6,346	71,214	64,868	
7.f	31,235	96,369	65,134	206,500	637,000	430,500	R
11.a	18	47	29	9,800	31,392	21,592	
11.b	18,091	43,447	25,356	388,777	1,185,485	796,708	R
14	250	1,414	1,164	4,100	11,312	7,212	
Total	N / A	N / A	N / A	898,935	2,470,200	1,571,265	R

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles,
7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships,
11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.f: **PREDICTED WORKLOAD VARIANCE FOR FY 2000**

FY 2000 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	7,494	20,186	12,692	231,612	426,987	195,375
4.a	0	317	317	0	30,810	30,810
4.b	1,260	2,520R	1,260R	38,000	76,000R	38,000R
7.e	57	624	567	6,346	71,214	64,868
7.f	31,235	96,369	65,134	206,463	637,000	430,537
11.a	18	47	29	9,800	31,392	21,592
11.b	14,917	43,447	28,530	320,514	1,185,485	864,971
14	250	1,414	1,164	4,100	11,312	7,212
Total	N / A	N / A	N / A	816,835	2,470,200	1,653,365

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2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles,
7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships,
11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.f: **PREDICTED WORKLOAD VARIANCE FOR FY 2000**

FY 2000 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	7,494	20,186	12,692	231,612	426,987	195,375
4.a	0	317	317	0	30,810	30,810
4.b	1,260	2,640	1,380	38,000	78,000	40,000
7.e	57	624	567	6,346	71,214	64,868
7.f	31,235	96,369	65,134	206,463	637,000	430,537
11.a	18	47	29	9,800	31,392	21,592
11.b	14,917	43,447	28,530	320,514	1,185,485	864,971
14	250	1,414	1,164	4,100	11,312	7,212
Total	N / A	N / A	N / A	816,835	2,472,200	1,655,365

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".
[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.g: **PREDICTED WORKLOAD VARIANCE FOR FY 2001**

FY 2001 Commodity Type	Product (units)			DLMHs			
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance	
2.g	8,103	20,186	12,083	245,612	426,987	181,375	R
4.a	0	332	332	0	32,351	32,351	
4.b	1,260	2,520	1,260	37,800	76,000	38,200	R
7.e	57	624	567	6,346	71,214	64,868	
7.f	31,235	96,369	65,134	206,500	637,000	430,500	R
11.a	18	47	29	9,800	31,392	21,592	
11.b	18,121	43,996	25,875	385,599	1,203,570	817,971	R
14	250	1,485	1,235	4,000	11,878	7,878	
Total	N / A	N / A	N / A	895,657	2,490,392	1,594,735	R

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles,
7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships,
11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.g: **PREDICTED WORKLOAD VARIANCE FOR FY 2001**

FY 2001 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	7,641	20,186	12,545	231,612	426,987	195,375
4.a	0	332	332	0	32,351	32,351
4.b	1,260	2,520R	1,260R	38,000	76,000R	38,000R
7.e	57	624	567	6,346	71,214	64,868
7.f	31,235	96,369	65,134	206,463	637,000	430,537
11.a	18	47	29	9,800	31,392	21,592
11.b	15,207	43,996	28,789	323,567	1,203,570	880,003
14	250	1,485	1,235	4,000	11,878	7,878
Total	N / A	N / A	N / A	819,788	2,490,392	1,670,604

R

2.g - Avionics/Electronics, 4.a - Strategic Missiles, 4.b - Tactical Missiles,
7.e - Navigational Aids, 7.f - Electro/Optics Nightvision, 11.a - Sea System Ships,
11.b - Sea System Weapons Systems, 14 - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".

[2] Commodity 14 is circuit card repair for signal intelligence system.

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Table 2.1.g: **PREDICTED WORKLOAD VARIANCE FOR FY 2001**

FY 2001 Commodity Type	Product (units)			DLMHs		
	Predicted Workload	Potential Workload	Variance	Predicted Workload	Potential Workload	Variance
2.g	7,641	20,186	12,545	231,612	426,987	195,375
4.a	0	332	332	0	32,351	32,351
4.b	1,260	2,640	1,380	38,000	78,000	40,000
7.e	57	624	567	6,346	71,214	64,868
7.f	31,235	96,369	65,134	206,463	637,000	430,537
11.a	18	47	29	9,800	31,392	21,592
11.b	15,207	43,996	28,789	323,567	1,203,570	880,003
14	250	1,485	1,235	4,000	11,878	7,878
Total	N / A	N / A	N / A	819,788	2,492,392	1,672,604

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

[1] This workload is not duplicative of any previously reported workload. Detail all production categorized as "other".
[2] Commodity 14 is circuit card repair for signal intelligence system.

1. Interservicing Candidates

1.1 Specify all depot and/or industrial workload programs, performed by any of your activities, that are possible candidates for interservicing, *both* in to and out from the activity. Provide detailed supporting data for your recommendations.

Industrial Capability

The **facilities at this site essentially provide every conceivable maintenance service "in-house"**. This industrial network provides cost avoidance from complications such as contracting delays, non-uniform testing, excessive material shipping/handling time and expense as well as redundant coordination efforts. Materials science and failure analysis laboratories provide metallurgical and sophisticated electronics analysis. Manufacturing capabilities can provide items ranging from ceramic module production to high tolerances heavy machined parts. Extensive environmental test facilities can provide support from acceptance testing of upgraded systems to electronic stress screening of production items. Virtually unlimited storage capacity is already in place.

An abundance of inert buildings stand ready to be converted to industrial facilities with minimal amounts of funding relative to the new construction costs that would be required at many other facilities. An additional benefit is the large geographical area and location of this activity. Not only is a tremendous amount of navy owned acreage available for expansion, but its remote location in a rural area provides freedom from encroachment and public relations concerns.

These facilities already have a history of shared use. Customers have included the **Surface, Undersea and Air Warfare Center, Special Operations, Strategic Systems, the Naval Research Laboratory, the Army and a host of private contractors**. The clustered facilities at this activity represent a **full spectrum capability that is unmatched at any other DoD activity** "Smart buyer" services, mobilization surge capacity, private sector manufacturing backup, and an interdependent depot/industrial base **present customers with a "one stop" shopping opportunity** during both normal an emergency situations.

Recommendation

Depot maintenance work should be interserviced to the Crane Division, Naval Surface Warfare Center in any or all of the product areas discussed below.

Supporting Rationale

The existing workload at the Crane Division provides depot maintenance for both modern Navy airborne and surface electronic warfare systems, night vision and electro-optical equipments, radar systems and microwave tubes. Work in these product areas has been in process at Crane for twenty years or more and the expertise has continued to grow and improve. Depot processes have made use of automation for both testing, asset tracking and management, providing an extremely cost effective operation. Extensive industrial facilities are in place at Crane to support workload in all of these areas.

Microwave tubes (MWTs) are today, and will be in the foreseeable future, the source of high power microwave energy for Air and Surface Surveillance and Detection, Engagement, Electronic Warfare, Theater Air Defense and Communication Systems which are vital contributors to the current and future defense mission. The Naval Surface Warfare Center, Crane Division (Crane) is recognized as the DoD microwave tube expert. After 30 years Crane remains the only DoD activity with a complete range of MWT test, evaluation and repair facilities integrated with experienced MWT engineers and full material and MWT process analysis facilities. These facilities comprise specialized and fully operational state-of-the-art microwave and high voltage equipment with a current replacement value of over $115 million housed in 90,000 square feet of modern facilities. The combination of MWT test and analysis capabilities and "hands on" involvement of highly skilled personnel in the entire life cycle of MWTs is unique, not existing elsewhere in either the government or private industry. Crane is responsible for the full spectrum of life cycle management of MWTs, from initiation of requirements through design/development, transitioning these designs into production and Fleet operation.

The Crane Division is the only DoD activity that has demonstrated the capability to provide Depot level maintenance and repair of the complete spectrum of Night Vision and Electro-Optical equipment, systems and components to include lasers, image intensification devices and thermal imagers. This includes the capability to repair the following types of equipments:

Image Intensification Tubes - Generation I, II and III

Image Intensification Devises - Aviator Goggles, Weapon Sights, Night Vision Goggles, Surveillance Scopes

Lasers - Rangefinders, Designators, Markers, Weapon Aiming, Signalling

Thermal Imaging/Infrared - Weapon Sights, Fire Control, Target Detection and Tracking, Surveillance/Navigation

Multi-Sensor Systems - Thermal Imaging, TV and Low Light Level TV Sensors

The Crane Division is the last source of repair, commercial or government, for generation I image intensification tubes. This workload, presently supporting both Army and Navy, would be extremely difficult to transfer since no capability exists anywhere else in the USA.

The unique capability of the Airborne and Surface Electronic Warfare Depots, the Acoustic System Depot, the Radar Depot, Night Vision and Electro-optical Equipment Depot and Microwave Tube Test, Evaluation and Repair Facility are their existence in close proximity to a host of supporting and complementing engineering activities and other industrial operations in related product areas. The collocation of these Depots allows sharing of costly test and repair facilities such as the Corrosion Control Facility, RF Test Range, RF Anechoic Test Chamber, Solid State Devices Facility, Microwave Tube Facility, Printed Circuit Card Facility and Cable Fabrication Facility.

The support from engineering facilities such as the Failure Analysis Lab and Materials Analysis Lab allow rapid solution to problems found during depot repair but which generally exceed the capabilities of other depots. Equally as important is the location of the engineering and logistics functions supporting most of the same products as the depot. This collocation allows the lessons learned in the depot to be quickly fed back to the designers and manufacturers through the acquisition and logistics support.

This depots maintenance facility and its collocated facilities can be readily applied to other electronic and electro-mechanical workload. Engineering, acquisition, logistics, and maintenance personnel have the broad based backgrounds to effectively transition to other workload categories. Simply stated, the processes would stay the same, only the products would change. This would be possible because the work force is already acclimated to a wide variety of products and is comprised of technical disciplines ranging from specialized electronics to hydraulics and mechanics. The result is a **highly adaptive work force capable of accepting changing workload scenarios with minimal non recurring investments by new customers.**

Conclusion

This unique combination of engineering, depot and analysis facilities located at the same activity offers and opportunity unmatched elsewhere in DoD or the private sector to provide depot repair for systems and equipment in the product areas described above.

2. Core Requirements

2.1 Given the current programmed configuration and operation for these activities, provide the projected Core Workload, Directed workload, Core "Plus" Workload, and Workload required to be retained to meet the Secretary of the Navy's Title 10 responsibilities. Within each Fiscal Year (FY) requested, provide your response in Units of throughput (where applicable) and Direct Labor Man Hours (DLMHs) for the categories in the following Tables. Core workload includes all Core work performed for other Military Departments (please specify such work within each commodity category).

- Core workload calculations are to be performed in accordance with the Office of the Under Secretary of Defense (Logistics) (OUSD(L)) Memorandum dated 15 November 1993 (subject: "Policy for Maintaining Core Depot Maintenance Capability").

- Directed workload includes: Foreign Military Sales (FMS); Low Quantity Non-Core; Low Quantity Above Core; Best Value; Engineering Support; and Last Source of Repair. Directed workload is tabulated in Section 2.2, following.

- Core-Plus workload is the sum of Core workload and Directed workload.

- Title 10 workload is that portion of Core workload that must be retained within the Department of the Navy in order to meet the Secretary of the Navy's Title 10 responsibilities.

Table 2.1.a: **Workload Requirements FY 1993**

FY 1993 Commodity Type	Core Workload (DLMHs)			
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	232,226	52,000	284,226	232,226
4.a	0	432	432	0
4.b	75,600	0	75,600	75,600
7.e	0	3,286	3,286	0
7.f	107,800		107,800	107,800
11.a	3,311	15,444	18,755	3,311
11.b	296,218	73,764	369,982	296,218
14	0	4,041	4,041	0
Total:	715,155	148,967	864,122	715,165

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

Note: The hours shown reflect only work performed by the Naval Surface Warfare Center. Naval Surface Warfare Center does not have visibility into the total (i.e., public and private) depot maintenance requirement for surface warfare systems.

Table 2.1.b: **Workload Requirements FY 1994**

FY 1994 Commodity Type	Core Workload (DLMHs)			
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	213,409	55,000	268,409	213,409
4.a	0	288	288	0
4.b	75,600	0	75,600	75,600
7.e	298	3,230	3,528	298
7.f	107,800		107,800	107,800
11.a	3,283	4,066	7,349	3,283
11.b	291,617	82,374	377,890	291,617
14	0	2,635	2,635	0
Total:	692,007	147,593	843,499	692,017

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

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Table 2.1.c: **Workload Requirements FY 1995**

FY 1995 Commodity Type	Core Workload (DLMHs)				
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload	
2.g	202,601	78,000	280,601	188,601	R
4.a	0	0	0	0	
4.b	37,800	0	37,800	0	R
7.e	447	1,396	1,843	447	
7.f	41,491	0	41,491	27,300	R
11.a	3,272	13,469	16,741	3,272	
11.b	292,652	76,409	369,061	292,652	
14	0	2,500	2,500	0	
Total:	578,263	171,774	750,037	526,463	R

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

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Table 2.1.c: **Workload Requirements FY 1995**

FY 1995 Commodity Type	Core Workload (DLMHs)			
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	188,601	78,000	266,601	188,601
4.a	0	0	0	0
4.b	75,600	0	75,600	75,600
7.e	447	1,396	1,843	447
7.f	107,800		107,800	107,800
11.a	3,272	13,469	16,741	3,272
11.b	292,652	76,409	371,682	292,652
14	0	2,500	2,500	0
Total:	668,372	171,774	842,767	668,382

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

R

Table 2.1.d: **Workload Requirements FY 1996**

FY 1996 Commodity Type	Core Workload (DLMHs)				
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload	
2.g	178,097	70,000	248,097	164,097	R
4.a	0	0	0	0	
4.b	37,800	0	37,800	0	R
7.e	447	1,398	1,845	447	
7.f	86,000		86,000	27,300	R
11.a	3,942	12,898	16,840	3,942	
11.b	300,248	83,199	383,447	293,220	R
14	0	2,500	2,500	0	
Total:	606,534	169,995	776,529	489,006	R

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

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Table 2.1.d: **Workload Requirements FY 1996**

FY 1996 Commodity Type	Core Workload (DLMHs)			
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	164,097	70,000	234,097	164,097
4.a	0		0	0
4.b	75,600	0	75,600	75,600
7.e	447	1,398	1,845	447
7.f	107,800		107,800	107,800
11.a	3,942	12,898	16,840	3,942
11.b	293,220	83,199	376,419	293,220
14	0	2,500	2,500	0
Total:	645,106	169,995	815,101	645,116

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

R

Table 2.1.e: **Workload Requirements FY 1997**

FY 1997 Commodity Type	Core Workload (DLMHs)				
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload	
2.g	178,856	71,000	249,856	164,856	R
4.a	0	0	0	0	
4.b	37,800	0	37,800	0	R
7.e	843	3,402	4,245	843	
7.f	92,000	0	92,000	27,300	R
11.a	4,408	12,432	16,840	4,408	
11.b	300,248	84,611	385,050	293,411	R
14	0	4,200	4,200	0	
Total:	614,346	175,645	789,991	490,818	R

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

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Table 2.1.e: **Workload Requirements FY 1997**

FY 1997 Commodity Type	Core Workload (DLMHs)			
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	164,856	71,000	235,856	164,856
4.a	0	0	0	0
4.b	75,600	0	75,600	75,600
7.e	843	3,402	4,245	843
7.f	107,800		107,800	107,800
11.a	4,408	12,432	16,840	4,408
11.b	293,411	84,611	378,022	293,411
14	0	4,200	4,200	0
Total:	646,918	175,645	822,563	646,928

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

R

Table 2.1.f: **Workload Requirements FY 1998**

FY 1998 Commodity Type	Core Workload (DLMHs)				
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload	
2.g	191,289	57,000	248,289	177,289	R
4.a	0	0	0	0	
4.b	37,800	0	37,800	0	R
7.e	843	5,802	6,645	843	
7.f	107,800	0	107,800	27,300	R
11.a	4,305	5,495	9,800	4,305	
11.b	300,393	70,704	371,097	293,365	R
14	0	4,200	4,200	0	
Total:	642,430	143,201	785,631	503,102	R

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

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Table 2.1.f: **Workload Requirements FY 1998**

FY 1998 Commodity Type	Core Workload (DLMHs)			
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	177,289	57,000	234,289	177,289
4.a	0	0	0	0
4.b	75,600	0	75,600	75,600
7.e	843	5,802	6,645	843
7.f	107,800		107,800	107,800
11.a	4,305	5,495	9,800	4,305
11.b	293,365	70,704	364,069	293,365
14	0	4,200	4,200	0
Total:	659,202	143,201	802,403	659,212

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

R

Table 2.1.g: **Workload Requirements FY 1999**

FY 1999 Commodity Type	Core Workload (DLMHs)				
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload	
2.g	222,988	25,000	247,988	208,988	R
4.a	0	0	0	0	
4.b	37,800	0	37,800	0	R
7.e	843	5,503	6,346	843	
7.f	107,800	36,200	144,000	27,300	R
11.a	5,515	4,285	9,800	5,515	
11.b	300,234	88,829	389,063	293,206	R
14	0	4,200	4,200	0	
Total:	675,180	164,017	839,197	535,852	R

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

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Table 2.1.g: **Workload Requirements FY 1999**

FY 1999 Commodity Type	Core Workload (DLMHs)			
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	208,988	25,000	233,988	208,988
4.a	0	0	0	0
4.b	75,600	0	75,600	75,600
7.e	843	5,503	6,346	843
7.f	107,800	36,200	144,000	107,800
11.a	5,515	4,285	9,800	5,515
11.b	293,206	88,829	382,035	293,206
14	0	4,200	4,200	0
Total:	691,952	164,017	855,969	691,962

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

R

Table 2.1.h: **Workload Requirements FY 2000**

FY 2000 Commodity Type	Core Workload (DLMHs)			
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	228,612	17,000	245,612	214,612
4.a	0	0	0	0
4.b	37,800	0	37,800	0
7.e	843	5,503	6,346	843
7.f	107,800	98,700	206,500	27,300
11.a	5,515	4,285	9,800	5,515
11.b	300,003	88,768	388,771	292,981
14	0	4,100	4,100	0
Total:	680,573	218,356	898,929	541,251

R
R
R
R
R

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

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Table 2.1.h: **Workload Requirements FY 2000**

FY 2000	Core Workload (DLMHs)			
Commodity Type	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	214,612	17,000	231,612	214,612
4.a	0	0	0	0
4.b	75,600	0	75,600	75,600
7.e	843	5,503	6,346	843
7.f	107,800	98,700	206,500	107,800
11.a	5,515	4,285	9,800	5,515
11.b	292,981	91,765	384,726	292,981
14	0	4,100	4,100	0
Total:	697,351	221,353	918,684	697,361

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

R

Table 2.1.i: **Workload Requirements FY 2001**

FY 2001 Commodity Type	Core Workload (DLMHs)				
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload	
2.g	228,612	17,000	245,612	214,612	R
4.a	0	0	0	0	
4.b	37,800	0	37,800	0	R
7.e	843	5,503	6,346	843	
7.f	107,800	98,700	206,500	27,300	R
11.a	5,515	4,285	9,800	5,515	
11.b	290,781	94,818	385,599	283,753	R
14	0	4,000	4,000	0	
Total:	671,351	224,306	895,657	532,023	R

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

2.2 Given the current programmed configuration and operation of the NADEPs, provide the projected Directed Workload. Within each Fiscal Year (FY) requested, provide your response in units throughput (where available) and Direct Labor Man Hours (DLMHs) for the categories requested.

- Foreign Military Sales (FMS) include airframe, engine and component maintenance and manufacturing support.

- Modifications (Mods) include *only those modifications* performed concurrently with scheduled depot level work packages constituting Core workload.

- Low Quantity Non-Core (LQNC) is that Non-Core workload with insufficient programmed quantity for competition. This category also includes above threshold Core workload for weapons systems which have a total projected workload greater than the computed core quantity (above core workload).

- Best Value (BV) includes items that have been offered for maintenance under competitive rules and no offerer has provided a bid that is equal to or better than the value provided by a current organic source.

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Table 2.1.i: **Workload Requirements FY 2001**

FY 2001 Commodity Type	Core Workload (DLMHs)			
	Core Workload	Directed Workload	Core "Plus" Workload	Title 10 Workload
2.g	214,612	17,000	231,612	214,612
4.a	0	0	0	0
4.b	75,600	0	75,600	75,600
7.e	843	5,503	6,346	843
7.f	107,800	98,700	206,500	107,800
11.a	5,515	4,285	9,800	5,515
11.b	283,753	94,818	387,779	283,753
14	0	4,000	4,000	0
Total:	688,123	224,306	921,637	688,133

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

2.2 Given the current programmed configuration and operation of the NADEPs, provide the projected Directed Workload. Within each Fiscal Year (FY) requested, provide your response in units throughput (where available) and Direct Labor Man Hours (DLMHs) for the categories requested.

- Foreign Military Sales (FMS) include airframe, engine and component maintenance and manufacturing support.

- Modifications (Mods) include *only those modifications* performed concurrently with scheduled depot level work packages constituting Core workload.

- Low Quantity Non-Core (LQNC) is that Non-Core workload with insufficient programmed quantity for competition. This category also includes above threshold Core workload for weapons systems which have a total projected workload greater than the computed core quantity (above core workload).

- Best Value (BV) includes items that have been offered for maintenance under competitive rules and no offerer has provided a bid that is equal to or better than the value provided by a current organic source.

- Engineering Support (Engr) consists of Engineering Support to field, modify, operate, and maintain aviation weapon systems (i.e. RCM analysis, defining maintenance intervals, developing maintenance concepts, modification management, industrial support, investigations, bulletins and flight safety, and environmental issues). R

- Last Source of Repair (LSOR) comprises Non-Core workload which has been offered for maintenance under competitive rules and no offerer has provided a bid, and for which a workload requirement exists and the organic depot is the only remaining source of repair.

Table 2.2.a: **Directed Workloads - FY 1993**

FY 1993 Commodity	DLMHs						Total	
	FMS	Mods	LQNC	BV	Engr	LSOR		
2.g		46,000			6,000		52,000R	R
4.a			432				432	
7.e						3,286	3,286	
7.f							0	
11.a			510			14,934	15,444	
11.b	3,836R		0		5,262	64,666	73,764R	R
14			4,041				4,041	
FY 1993 Total:	3,836R	46,000	4,983	0	11,262	82,886	148,967R	R

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

- Engineering Support (Engr) consists of Engineering Support to field, modify, operate, and maintain aviation weapon systems (i.e. RCM analysis, defining maintenance intervals, developing maintenance concepts, modification management, industrial support, investigations, bulletins and flight safety, and environmental issues).

- Last Source of Repair (LSOR) comprises Non-Core workload which has been offered for maintenance under competitive rules and no offerer has provided a bid, and for which a workload requirement exists and the organic depot is the only remaining source of repair.

Table 2.2.a: **Directed Workloads - FY 1993**

FY 1993 Commodity	DLMHs						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		46,000			6,000		5,200
4.a			432				432
7.e						3,286	3,286
7.f							0
11.a			510			14,934	15,444
11.b	3,533		0		5,262	64,666	73,461
14			4,041				4,041
FY 1993 Total:	3,533	46,000	4,983	0	11,262	82,886	101,864

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- Engineering Support (Engr) consists of Engineering Support to field, modify, operate, and maintain aviation weapon systems (i.e. RCM analysis, defining maintenance intervals, developing maintenance concepts, modification management, industrial support, investigations, bulletins and flight safety, and environmental issues).

- Last Source of Repair (LSOR) comprises Non-Core workload which has been offered for maintenance under competitive rules and no offerer has provided a bid, and for which a workload requirement exists and the organic depot is the only remaining source of repair.

Table 2.2.a: **Directed Workloads - FY 1993**

FY 1993 Commodity	Units Throughput						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		46,000			6,000		5,200
4.a			432				432
7.e						3,286	3,286
7.f							0
11.a			510			14,934	15,444
11.b	3,533		0		5,262	64,666	73,461
14			4,041				4,041
FY 1993 Total:	3,533	46,000	4,983	0	11,262	82,886	101,864

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

Table 2.2.b: **Directed Workloads - FY 1994** Revised pg

FY 1994 Commodity	DLMHs						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		53,000			2,000		55,000
4.a			288				288
7.e			423			2,987	3,230
7.f							0
11.a			349			3,717	4,066
11.b	8,430	4,182	23,790	3,514	5,648	36,810	82,374
14			2,635				2,635
FY 1994 Total:	8,430	57,182	27,485	3,514	7,648	43,514	147,593

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Table 2.2.b: **Directed Workloads - FY 1994**

FY 1994 Commodity	Units Throughput						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		53,000			2,000		55,000
4.a			288				288
7.e			423			2,987	3,230
7.f							0
11.a			349			3,717	4,066
11.b	8,430	4,182	23,790	3,514	5,648	36,810	82,374
14			2,635				2,635
FY 1994 Total:	8,430	57,182	27,485	3,514	7,648	43,514	147,593

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

Revised pg

Table 2.2.c: **Directed Workloads - FY 1995**

FY 1995 Commodity	DLMHs						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		76,000			2,000		78,000
4.a							0
7.e			203			1,193	1,396
7.f							0
11.a			325			13,144	13,469
11.b	17,242	5,675	10,526	8,785	4,841	29,340	76,409
14			2,500				2,500
FY 1995 Total:	17,242	81,675	13,554	8,785	6,841	43,677	171,774

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Table 2.2.c: **Directed Workloads - FY 1995**

FY 1995 Commodity	Units Throughput						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		76,000			2,000		78,000
4.a							0
7.e			203			1,193	1,396
7.f							0
11.a			325			13,144	13,469
11.b	17,242	5,675	10,526	8,785	4,841	29,340	76,409
14			2,500				2,500
FY 1995 Total:	17,242	81,675	13,554	8,785	6,841	43,677	171,774

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

Table 2.2.d: **Directed Workloads - FY 1996**

FY 1996 Commodity	DLMHs						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		68,000			2,000		70,000
4.a							0
7.e			203			1,195	1,398
7.f							0
11.a			325			12,573	12,898R
11.b	18,706	5,622	10,556	8,785	4,802	34,728	83,199
14			2,500				2,500
FY 1996 Total:	18,706	73,622	13,584	8,785	6,802	48,496	169,995

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2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **7.e** - Navigational Aids
7.f - Electro-Optics/Night Vision, **11.a** - Sea Systems Ships, **11.b** Sea Systems Weapons Systems, **14** - Other

Table 2.2.d: **Directed Workloads - FY 1996** Revised pg

FY 1996 Commodity	DLMHs						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		68,000			2,000		70,000
4.a							0
7.e			203			1,195	1,398
7.f							0
11.a			325			12,573	12,573
11.b	18,706	5,622	10,556	8,785	4,802	34,728	83,199
14			2,500				2,500
FY 1996 Total:	18,706	73,622	13,584	8,785	6,802	48,496	169,670

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Table 2.2.d: **Directed Workloads - FY 1996**

FY 1996 Commodity	Units Throughput						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		68,000			2,000		70,000
4.a							0
7.e			203			1,195	1,398
7.f							0
11.a			325			12,573	12,573
11.b	18,706	5,622	10,556	8,785	4,802	34,728	83,199
14			2,500				2,500
FY 1996 Total:	18,706	73,622	13,584	8,785	6,802	48,496	169,670

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

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Table 2.2.e: **Directed Workloads - FY 1997**

FY 1997 Commodity	DLMHs						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		69,000			2,000		71,000
4.a						0	0
7.e			203			3,199	3,402
7.f							0
11.a			325			12,107	12,432
11.b	19,583	3,777	8,676	8,785	4,796	38,994	84,611
14			4,200				4,200
FY 1997 Total:	19,583	72,777	13,404	8,785	6,796	54,300	175,645

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Table 2.2.e: **Directed Workloads - FY 1997**

FY 1997 Commodity	Units Throughput						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		69,000			2,000		71,000
4.a						0	0
7.e			203			3,199	3,402
7.f							0
11.a			325			12,107	12,432
11.b	19,583	3,777	8,676	8,785	4,796	38,994	84,611
14			4,200				4,200
FY 1997 Total:	19,583	72,777	13,404	8,785	6,796	54,300	175,645

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

Table 2.2.f: **Directed Workloads - FY 1998**

Revised pg

FY 1998 Commodity	DLMH's						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		55,000			2,000		57,000
4.a						0	0
7.e			203			5,599	5,802
7.f							0
11.a			325			5,170	5,495
11.b	21,355	1,757	7,766	8,785	4,838	26,202	70,703
14			4,200				4,200
FY 1998 Total:	21,355	56,757	12,494	8,785	6,838	36,971	143,200

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Table 2.2.f: **Directed Workloads - FY 1998**

FY 1998 Commodity	Units Throughput						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		55,000			2,000		57,000
4.a						0	0
7.e			203			5,599	5,802
7.f							0
11.a			325			5,170	5,495
11.b	21,355	1,757	7,766	8,785	4,838	26,202	70,703
14			4,200				4,200
FY 1998 Total:	21,355	56,757	12,494	8,785	6,838	36,971	143,200

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

Table 2.2.g: **Directed Workloads - FY 1999** Revised PJ

FY 1999 Commodity	DLMH's						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		23,000			2,000		25,000
4.a						0	0
7.e			203			5,300	5,503
7.f				36,200			36,200
11.a			325			3,960	4,285
11.b	23,544		6,946	8,785	4,818	44,736	88,829
14			4,200				4,200
FY 1999 Total:	23,544	23,000	11,674	44,985	6,818	53,996	164,017

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Table 2.2.g: **Directed Workloads - FY 1999**

FY 1999 Commodity	Units Throughput						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		23,000			2,000		25,000
4.a						0	0
7.e			203			5,300	5,503
7.f				36,200			36,200
11.a			325			3,960	4,285
11.b	23,544		6,946	8,785	4,818	44,736	88,829
14			4,200				4,200
FY 1999 Total:	23,544	23,000	11,674	44,985	6,818	53,996	164,017

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

Table 2.2.h: **Directed Workloads - FY 2000** Revised pg

FY 2000 Commodity	DLMH's						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		14,000			3,000		17,000
4.a						0	0
7.e			203			5,300	5,503
7.f				98,700			98,700
11.a			325			3,960	4,285
11.b	25,290		9,981	8,785	4,790	39,922	88,768
14							
			4,100				4,100
FY 2000 Total:	25,290	14,000	14,609	107,485	7,790	49,182	218,356

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Table 2.2.h: **Directed Workloads - FY 2000**

FY 2000 Commodity	Units Throughput						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g		14,000			3,000		17,000
4.a						0	0
7.e			203			5,300	5,503
7.f				98,700			98,700
11.a			325			3,960	4,285
11.b	25,290		9,981	8,785	4,790	39,922	88,768
14							
			4,100				4,100
FY 2000 Total:	25,290	14,000	14,609	107,485	7,790	49,182	218,356

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

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Table 2.2.i: **Directed Workloads - FY 2001** Revised pg

FY 2001 Commodity	DLMH's						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g			14,000		3,000		17,000
4.a						0	0
7.e			203			5,300	5,503
7.f				98,700			98,700
11.a			325			9,360	4,285
11.b	25,290		13,034	8,785	4,790	42,919	94,818
14							4,000
FY 2001 Total:	25,290	0	27,562	107,485	7,790	57,579	224,306

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Table 2.2.i: **Directed Workloads - FY 2001**

FY 2001 Commodity	Units Throughput						Total
	FMS	Mods	LQNC	BV	Engr	LSOR	
2.g			14,000		3,000		17,000
4.a						0	0
7.e			203			5,300	5,503
7.f				98,700			98,700
11.a			325			9,360	4,285
11.b	25,290		13,034	8,785	4,790	42,919	94,818
14							4,000
FY 2001 Total:	25,290	0	27,562	107,485	7,790	57,579	224,306

2.g - Avionics/Electronics, **4.a** - Strategic Missiles, **4.b** - Tactical Missiles, **7.e** - Navational Aids
7.f - Electro/Optics Nightvision, **11.a** - Sea System Ships, **11.b** - Sea System Weapons Systems, **14** - Other

3. Organization

3.1 Can the depot/industrial level workload be transferred to other sources such as other Navy activities, interservice to other DoD entities, or outsourced to commercial activities? Identify all applicable considerations to your recommendations.

Yes, but with extremely high costs in both Fleet readiness and operations and maintenance funds. In the case of the microwave tube test, evaluation and repair facility and the night vision electro-optical equipment depot not other similar expertise exists within the Navy or DoD with the demonstrated capability to test and repair the entire spectrum of equipment, systems and components supported by the Crane Division. For all the depot operations at the Crane Division the customers are provided the best value (highest quality, fastest turnaround time and lowest cost) available from any activity, either commercial or government. As discussed in paragraph 1.1 the synergy arising from the collocation of both the range of industrial capabilities and engineering functions is unique in both the DoD and the private sector. The specialized laboratory and test facilities available at the Crane Division provide capabilities no single depot has or can afford to duplicate. The range of operations at the Crane Division allows each operation to benefit from the expertise and facilities of all others.

TAB D

ORDNANCE STORAGE CAPACITY

ORDNANCE STORAGE CAPACITY

Please answer the following questions if your activity performs any stowage or maintenance on any of the following ordnance commodities types:

ORDNANCE COMMODITY TYPES		
Mines	Expendables	LOE: Rockets
Torpedoes	INERT	LOE: Bombs
Air Launched Threat	CADS/PADS	LOE: Gun Ammo (20mm-16")
	Strategic Nuclear	LOE: Small Arms (up to 50 cal.)
Surface Launched Threat	Tactical Nuclear	LOE: Pyro/Demo
		Grenades/Mortars/Projectiles

1. Ordnance Stowage and Support

1.1 Provide present and predicted inventories (coordinate with inventory control manager) and maximum rated capability of all stowage facilities at each weapons storage location controlled by this activity. In predicting the out year facility utilization, distribute overall ordnance compliment to the most likely configuration. The maximum rated capability is also an out year projection taking into account any known or programmed upgrades that may increase current stowage capacity. When listing stowage facilities, group by location (e.g. main base, outlying field, special area).

Table 1.1: **Total Facility Ordnance Stowage Summary**

Facility Number	PRESENT INVENTORY		PREDICTED INVENTORY FY 2001		MAXIMUM RATED CAPABILITY	
	TONS	SQ FT	TONS	SQ FT	TONS	SQ FT
299	13.4	3200	75.0	5356	5356	5356
309	0.0	0	0.0	0	5356	5356
374	0.0	0	0.0	0	5356	5356
380	0.0	0	0.0	0	5356	5356
382	0.0	0	0.0	0	5356	5356
438	10.2	3400	75.0	5356	5356	5356
557	13.5	3000	75.0	5356	5356	5356
611	4.0	800	40.0	1200	2106	2106
612	91.0	1200	60.0	1200	2106	2106
621	1.0	200	5.0	300	573	573
622	0.5	573	0.5	573	573	573
623	0.2	150	1.0	300	573	573
624	0.5	573	0.5	573	573	573
625	1.0	20	5.0	300	573	573
627	0.0	0	5.0	300	573	573
629	0.7	300	1.0	300	573	573
630	0.5	250	1.0	300	573	573
633	0.7	200	0.8	300	573	573
634	2.0	375	1.0	300	573	573
638	9.8	243	12.0	487	573	573
641	0.0	0	5.0	300	573	573
645	1.2	300	1.0	300	573	573
650	0.0	0	0.0	0	573	573
652	0.0	0	0.0	0	573	573
653	2.8	380	1.0	300	573	573
660	4.8	200	5.0	300	573	573
664	96.0	800	60.0	1200	2106	2106
682	25.0	900	60.0	1200	2106	2106

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Table 1.1: **Total Facility Ordnance Stowage Summary (Cont.)**

Facility Number	PRESENT INVENTORY		PREDICTED INVENTORY FY 2001		MAXIMUM RATED CAPABILITY	
	TONS	SQ FT	TONS	SQ FT	TONS	SQ FT
683	12.0	850	60.0	1200	2106	2106
684	18.6	1200	60.0	1200	2106	2106
685	2.3	500	60.0	1200	2106	2106
856	0.0	896	0.0	1024	1400	1400
857	0.0	509	0.4	789	2106	2106
864	8.0	500	60.0	1200	2106	2106
881	8.0	1600	0.5	1600	2106	2106
883	0.0	0	0.0	0	1886	1886
913	0.0	0	0.0	0	1097	1097
914	0.0	0	0.0	0	1097	1097
915	15.0	300	20.0	400	1097	1097
916	0.0	0	0.0	0	1097	1097
917	0.0	0	0.0	0	1097	1097
918	2.2	250	15.6	1250	1097	1097
919	0.0	0	0.0	0	1097	1097
920	0.0	0	0.0	0	1097	1097
921	0.0	1400	0.0	1400	1400	1400
943	2.0	600	2.0	600	2106	2106
964	71.0	1500	60.0	1200	2106	2106
965	0.0	0	0.0	0	2106	2106
973	0.0	1670	0.0	1670	2106	2106
1019	87.5	1500	60.0	1200	2106	2106
1029	2.1	960	2.2	960	2106	2106
1041	4.4	500	30.0	1200	2106	2106
1043	7.6	1400	7.6	1400	1790	1790
1044	0.0	0	30.0	1200	2106	2106
1045	0.0	0	30.0	1200	2106	2106
1140	1.7	350	1.8	350	2106	2106

Table 1.1: **Total Facility Ordnance Stowage Summary (Cont.)**

Facility Number	PRESENT INVENTORY		PREDICTED INVENTORY FY 2001		MAXIMUM RATED CAPABILITY	
	TONS	SQ FT	TONS	SQ FT	TONS	SQ FT
1144	3.2	240	3.3	240	2106	2106
1150	0.1	192	0.2	192	2106	2106
1161	0.3	573	0.5	573	573	573
1162	1.1	250	1.0	300	573	573
1163	60.6	320	60.0	300	573	573
1172	1.0	275	1.0	300	573	573
1184	6.0	250	1.0	300	573	573
1185	1.0	175	1.0	300	573	573
1186	0.3	573	0.5	573	573	573
1187	7.0	573	20.0	573	573	573
1192	0.1	16	1.0	573	573	573
1193	2.9	250	1.0	300	573	573
1195	2.5	200	2.7	250	573	573
1350	0.2	16	15.0	1200	2106	2106
1356	10.0	1000	15.0	1200	2106	2106
1421	0.0	1790	0.0	1790	2106	2106
1441	0.0	0	0.0	0	2106	2106
1457	0.0	0	0.0	0	2106	2106
1485	0.0	0	0.0	0	2106	2106
1487	0.0	0	0.0	0	2106	2106
1586	21.4	1000	42.8	2000	2106	2106
1708	0.0	0	0.0	0	2106	2106
1750	200.0	1200	300.0	1800	2106	2106
1752	200.0	1500	300.0	1800	2106	2106
1759	40.5	500	90.0	1400	2106	2106
1964	1.0	200	1.0	300	611	611
1965	0.4	100	1.0	300	611	611
1966	0.0	0	0.0	0	611	611

Facility Number	PRESENT INVENTORY		PREDICTED INVENTORY FY 2001		MAXIMUM RATED CAPABILITY	
	TONS	SQ FT	TONS	SQ FT	TONS	SQ FT
1967	0.7	175	1.0	300	611	611
1970	0.0	0	0.0	0	611	611
1974	1.7	120	2.5	300	611	611
1983	2.8	480	3.0	487	611	611
1984	0.3	320	0.5	400	611	611
2202	8.3	3000	75.0	5356	5356	5356
2208	14.1	3500	75.0	5356	5356	5356
2210	10.6	3000	75.0	5356	5356	5356
2265	30.0	2900	40.0	3000	5356	5356
2266	25.6	920	60.0	3000	5356	5356
2370	13.2	2000	75.0	5356	5356	5356
2379	5.2	3400	75.0	5356	5356	5356
2380	7.2	3400	75.0	5356	5356	5356
2381	7.1	3400	75.0	5356	5356	5356
2382	6.9	3500	75.0	5356	5356	5356
2383	9.0	3400	75.0	5356	5356	5356
2384	2.5	3400	75.0	5356	5356	5356
2385	4.4	3000	75.0	5356	5356	5356
2386	12.4	3500	75.0	5356	5356	5356
2389	6.4	3500	75.0	5356	5356	5356
2407	0.0	1500	75.0	5356	5356	5356
2412	0.0	2500	75.0	5356	5356	5356
2414	0.0	3000	75.0	5356	5356	5356
2415	0.0	2000	75.0	5356	5356	5356
2417	3.7	3000	75.0	5356	5356	5356
2418	116.0	2040	100.0	2500	5356	5356
2419	0.0	4500	75.0	5356	5356	5356
2659	0.3	20	0.3	20	63	63
TOTAL	1345.6	108967	3421.8	173429	269687	269687

1.2 For each Stowage facility identified in question 1.1 above, identify the typefacility (specify if "igloo", "box", etc.). Identify the typeordnance commodity (from the list above) which are currently stowed in that facility and all other ordnance types which, given existing restrictions, could be physically accommodated in that stowage facility. Specify below if such additional accommodation would require a modificationthe facility (e.g. enhanced environmental controls, ESQD waiver).

- Identify the reason(s) for which this ordnance is stored at your facility from the following list: own activity use (training); own activity use (operational stock); Receipt/Segregation/ Stowage/Issue (RSSI); transhipment/awaiting issue; deep stow (war reserve); deep stow (awaiting Demil); other. Explain each "other" entry in the space provided, including ordnance stowed which is not a DON asset.

Table 1.2: **Total Facility Ordnance Storage Summary**

Facility Number/Type	Currently Stowed Commodity Type(s)	Reason for Stowage at your Activity	Commodity Type(s) Which Can Be Stowed
299 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
309 / Box	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
374 / Box	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
380 / Box	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
382 / Box	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
438 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
557 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
611 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
612 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
621 / Igloo	Expendables	Own Activity Use; Operational Stock	Rockets/Small Arms
622 / Igloo	INERT	Own Activity Use; Training	All Items Listed Except Nuclear/ Mines/Torpedoes/Air /Surface Launched
623 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
624 / Igloo	Grenades/Mortars/ Projectiles	Awaiting Disposal	All Items Listed Except Nuclear/ Mines/Torpedoes/Air /Surface Launched
625 / Igloo	Rockets	Own Activity Use; Operational Stock	Rockets/Small Arms

Table 1.2: **Total Facility Ordnance Storage Summary (Cont.)**

Facility Number/Type	Currently Stowed Commodity Type(s)	Reason for Stowage at your Activity	Commodity Type(s) Which Can Be Stowed
627 / Igloo	INERT	Own Activity Use; Operational Stock	Rockets/Small Arms
629 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
630 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
633 / Igloo	Pyro/Demo/Grenades/ Projectiles/ Gun Ammo/Small Arms	Other R&D Testing/ Operational Stock	All Items Listed Except Nuclear
634 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
638 / Igloo	Pyro	Own Activity Use; Testing	All Items Listed Except Nuclear
641 / Igloo	INERT	Own Activity Use; Operational Stock	Rockets/Small Arms
645 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
650 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
652 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
653 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
660 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
664 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
682 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear

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Table 1.2: **Total Facility Ordnance Storage Summary (Cont.)**

Facility Number/Type	Currently Stowed Commodity Type(s)	Reason for Stowage at your Activity	Commodity Type(s) Which Can Be Stowed
683 / Igloo	Expendables	Own Activity Use; Testing	All Items Listed Except Nuclear
684 / Igloo	Air Launched Threat	Other Maintenance	All Items Listed Except Nuclear
685 / Igloo	Air Launched Threat	Other Maintenance	All Items Listed Except Nuclear
856 / Igloo	Expendables Classified Inert	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
857 / Igloo	Classified Ordnance	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
864 / Igloo	Air Launched Threat	Other Maintenance	All Items Listed Except Nuclear
881 / Igloo	INERT/Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
883 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
913 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
914 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
915 / Igloo	INERT (Radioactive)	Awaiting Disposal	All Items Listed
916 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
917 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
918 / Igloo	EXPENDABLES	Own Activity Use; Operational Stock	All Items Listed Except Nuclear

Table 1.2: **Total Facility Ordnance Storage Summary (Cont.)**

Facility Number/Type	Currently Stowed Commodity Type(s)	Reason for Stowage at your Activity	Commodity Type(s) Which Can Be Stowed
919 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
920 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
921 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
943 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
964 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
965 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
973 / Igloo	INERT/Expendables	Own Activity Use; Operational Stock	INERT Only
1019 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1029 / Igloo	Pyro/Demo/Grenades	Other Surveillance/ R&D Testing	All Items Listed Except Nuclear
1041 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1043 / Igloo	Pyro/Demo/ Projectiles/Rockets	Other R&D Testing Operational Stock	All Items Listed Except Nuclear
1044 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1045 / Igloo	Expendables	Own Activity Use; Operational Stock	INERT Only
1140 / Igloo	Air Launched Threat	RSSI	All Items Listed Except Nuclear

Table 1.2: **Total Facility Ordnance Storage Summary (Cont.)**

Facility Number/Type	Currently Stowed Commodity Type(s)	Reason for Stowage at your Activity	Commodity Type(s) Which Can Be Stowed
1144 / Igloo	Air Launched Threat	RSSI	All Items Listed Except Nuclear
1150 / Igloo	Air Launched Threat	RSSI	All Items Listed Except Nuclear
1161 / Igloo	Rockets/Gun Ammo/ Pyro/Demo/Grenades/ Mortars/Projectiles	Awaiting Disposal	All Items Listed Except Nuclear/ Mines/Torpedoes/Air /Surface Launched
1162 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1163 / Igloo	Pyro/Demo/ Small Arms/ Projectiles	Other R&D Testing/ Operational Stock	All Items Listed Except Nuclear
1172 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1184 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1185 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1186 / Igloo	Blasting Caps/ Electric Squibs	Own Activity Use; Operational Stock	All Items Listed Except Nuclear/ Mines/Torpedoes/Air /Surface Launched
1187 / Igloo	Gun Ammo/Demo	Own Activity Use; Training	All Items Listed Except Nuclear/ Mines/Torpedoes/Air /Surface Launched
1192 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1193 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1195 / Igloo	Rockets/Pyro/Demo/ Small Arms/ Projectiles	Other Surveillance/ R&D Testing/ Operational Stock	All Items Listed Except Nuclear
1350 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear

Table 1.2: **Total Facility Ordnance Storage Summary (Cont.)**

Facility Number/Type	Currently Stowed Commodity Type(s)	Reason for Stowage at your Activity	Commodity Type(s) Which Can Be Stowed
1356 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1421 / Igloo	INERT	Own Activity Use; Testing	All Items Listed Except Nuclear
1441 / Igloo	INERT	Own Activity Use; Testing	All Items Listed Except Nuclear
1457 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1485 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1487 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1586 / Igloo	EXPENDABLES	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1708 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1750 / Igloo	Gun Ammo/ Small Arms	Own Activity Use; Operational Stock	Rockets/Gun Ammo/ Small Arms
1752 / Igloo	Gun Ammo/ Small Arms	Own Activity Use; Operational Stock	Rockets/Gun Ammo/ Small Arms
1759 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1964 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1965 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1966 / Igloo	INERT	Awaiting Disposal	All Items Listed Except Nuclear

Table 1.2: **Total Facility Ordnance Storage Summary** (Cont.)

Facility Number/Type	Currently Stowed Commodity Type(s)	Reason for Stowage at your Activity	Commodity Type(s) Which Can Be Stowed
1967 / Igloo	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1970 / Igloo	INERT	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
1974 / Igloo	Pyro	Other LAT/R&D Testing	All Items Listed Except Nuclear
1983 / Igloo	Pyro	Other Manufacturing	All Items Listed Except Nuclear
1984 / Igloo	Pyro	Other Manufacturing	All Items Listed Except Nuclear
2202 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2208 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2210 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2265 / Box	Surface Launched Threat	Other Maintenance	All Items Listed Except Nuclear
2266 / Box	Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
2370 / Box	Expendables	Deep Stow (Awaiting Demil)	All Items Listed Except Nuclear
2379 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2380 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2381 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear

Table 1.2: **Total Facility Ordnance Storage Summary (Cont.)**

Facility Number/Type	Currently Stowed Commodity Type(s)	Reason for Stowage at your Activity	Commodity Type(s) Which Can Be Stowed
2382 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2383 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2384 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2385 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2386 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2389 / Box	Surface Launched Threat	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2407 / Box	INERT/Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
2412 / Box	INERT/Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
2414 / Box	INERT/Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
2415 / Box	INERT/Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
2417 / Box	Expendables	RSSI Transhipment Awaiting Issue	All Items Listed Except Nuclear
2418 / Box	Strategic Nuclear	Own Activity Use; Testing	All Items Listed
2419 / Box	INERT/Expendables	Own Activity Use; Operational Stock	All Items Listed Except Nuclear
2659 / Box	INERT (Radioactive)	Awaiting Disposal	Small Arms

Additional comments:

The activity owns 1,667 ordnance storage magazines. The remaining magazines not listed in Table 1.1 above are licensed to the Crane Army Ammunition Activity. These 1,559 magazines are based on a negotiated agreement with the Crane Army Ammunition Activity and can be modified if ordnance storage requirements change.

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1.3 Identify the rated category, rated NEW and statusESQD arc for each stowage facility listed above.

Table 1.3: **Facility Rated Status**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
299 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
309 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	125,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
374 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	95,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
380 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	125,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
382 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	250,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc Established (Y / N)	ESQD Arc Waiver (Y / N)	ESQD Arc Waiver Expiration Date
438 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	140,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
557 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	55,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
611 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	500,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
612 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	500,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
621 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	10,000 PHY CAP PHY CAP PHY CAP PHY CAP 140,000 PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
622 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	10,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
623 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
624 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	65,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
625 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
627 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	40,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
629 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
630 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
633 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	20,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
634 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
638 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
641 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	20,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
645 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
650 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	60,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
652 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	40,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
653 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	40,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc Established (Y / N)	ESQD Arc Waiver (Y / N)	ESQD Arc Waiver Expiration Date
660 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
664 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	500,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
682 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	90,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
683 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	160,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
684 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	160,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
685 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	200,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
856 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	500,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
857 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	500,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
864 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	NONE NONE NONE PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
881 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
883 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	140,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
913 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
914 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
915 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
916 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
917 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
918 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
919 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
920 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
921 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	500,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc Established (Y / N)	ESQD Arc Waiver (Y / N)	ESQD Arc Waiver Expiration Date
943 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	500,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
964 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	160,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
965 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	190,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
973 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	NONE NONE NONE NONE NONE NONE NONE	Y	N	N/A
1019 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	120,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
1029 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	8,000 NONE NONE NONE PHY CAP 100,000 PHY CAP	Y	N	N/A
1041 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	100,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1043 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	NONE NONE NONE PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1044 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	90,000 NONE PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1045 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	5,000 NONE NONE NONE PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc Established (Y / N)	ESQD Arc Waiver (Y / N)	ESQD Arc Waiver Expiration Date
1140 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	500,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1144 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	225,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1161 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	20,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1162 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	30,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1163 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
1172 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1184 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	40,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1185 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	40,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1186 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	40,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1187 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
1192 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1193 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1195 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1350 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	150,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1356 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	200,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
1421 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	140,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1441 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	35,000	Y	N	N/A
1457 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	170,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1485 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	200,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1487 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	180,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc Established (Y / N)	ESQD Arc Waiver (Y / N)	ESQD Arc Waiver Expiration Date
1586 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	180,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1708 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	160,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1750 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	200,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1752 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	150,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1759 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	275,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
1964 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1965 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1966 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1967 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1970 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
1974 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1983 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
1984 / Igloo	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2202 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	125,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2208 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	50,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
2210 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	70,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2265 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	NONE NONE NONE NONE NONE NONE PHY CAP	Y	N	N/A
2266 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	NONE NONE NONE NONE PHY CAP 100,000 PHY CAP	Y	N	N/A
2370 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	100,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2379 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	35,000 NONE NONE PHY CAP PHY CAP 400,000 PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
2380 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	100,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2381 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	120,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2382 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	7,000 NONE NONE NONE PHY CAP PHY CAP PHY CAP	Y	N	N/A
2383 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	35,000 NONE NONE PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2384 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	150,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
2385 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	40,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2386 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	250,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2389 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	10,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2407 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	40,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
2412 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	175,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2415 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	250,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2417 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	250,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2418 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	250,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A
2419 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	125,000 PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP PHY CAP	Y	N	N/A

Table 1.3: **Facility Rated Status (Cont.)**

Facility Number / Type	Hazard Rating (1.1-1.4)	Rated NEW	ESQD Arc		
			Established (Y / N)	Waiver (Y / N)	Waiver Expiration Date
2659 / Box	1.1 1.2(18) 1.2(12) 1.2(8) 1.2(4) 1.3 1.4	NONE NONE NONE NONE NONE NONE PHY CAP	Y	N	N/A

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1.4 Identify any restrictions which prevent maximum utilizationyour facilities. If restrictions are based on facility conditions, specify reason, the cost to correct the deficiency, and identify any programmed projects that will correct the deficiency and/or increase your capability.

An aggresssive maintenance and repair program at the activity has kept the storage magazines in good condition. The only restrictions limiting a magazine's ability to be fully utilized is the typematerial that will be stored in the magazine. For example, two magazines at the activity are used for storagedud-fired or deteriorated ordnance awaiting disposal. The maximun storage limit for this typematerial is 1,000 pounds NEW in accordance with NAVSEA OP-5. The magazine condition has no impact on the ability to store additional explosives.

1.5 Identify if your activity performs anythe following functions on anythe ordnance commodities previously listed. Technical support includes planning, financial, administrative, process engineering and SOP support. Within each related function identify each ordnance commodity type for which you provide these services and the total Direct Labor Man Hours (DLMHs) expended (FY 1994); identify only those DLMHs expended by personnel under your command.

Table 1.5 Related Ordnance Support

Related Functions	Performed? (Y / N)	TypeCommodity	DLMHs
Maintenance (specify level)	Y-Depot	Air Launched Threat	25,576
Testing	Y		31,258
Manufacturing	N		
Outload	N		
Technical Support	Y		8,878
Maintenance (specify level)	Y-Eye Level	Surface Launched Threat	17,570
Testing	N		
Manufacturing	N		
Outload	Y		10,542
Technical Support	Y		5,271
Maintenance (specify level)	N	Expendables	
Testing	Y		2,156
Manufacturing	N		
Outload	N		
Technical Support	Y		9,770
Maintenance (specify level)	N	Strategic Nuclear	
Testing	Y		24,598
Manufacturing	N		
Outload	N		
Technical Support	Y		8,785

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Table 1.5 **Related Ordnance Support (Cont.)**

Related Functions	Performed? (Y / N)	TypeCommodity	DLMHs	
Maintenance (specify level)	N	Pyro/Demo		
Testing	Y		51,212	
Manufacturing	Y		10,542	
Outload	N			
Technical Support	Y		14,934	
Maintenance (specify level)	N	Grenades/Projectiles		
Testing	Y		650	
Manufacturing	N			
Outload	N			
Technical Support	Y		150	
Maintenance (specify level)	N	Rockets		
Testing	Y		3,196R	R
Manufacturing	N			
Outload	Y		548R	R
Technical Support	Y		3,230R	R
Maintenance (specify level)	N	Small Arms		
Testing	Y		19,921R	R
Manufacturing	Y		2,158R	R
Outload	Y		1,280R	R
Technical Support	Y		7,337R	R

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Table 1.5 **Related Ordnance Support (Cont.)**

Related Functions	Performed? (Y / N)	TypeCommodity	DLMHs	
Maintenance (specify level)	N	Pyro/Demo		
Testing	Y		51,212	
Manufacturing	Y		10,542	
Outload	N			
Technical Support	Y		14,934	
Maintenance (specify level)	N	Grenades/Projectiles		
Testing	Y		650	
Manufacturing	N			
Outload	N			
Technical Support	Y		150	
Maintenance (specify level)	N	Rockets		
Testing	Y		1,515	
Manufacturing	N			
Outload	Y		875	R
Technical Support	Y		252	
Maintenance (specify level)	N	Small Arms		
Testing	Y		558	
Manufacturing	Y		3,500	R
Outload	Y		875	R
Technical Support	Y		152	

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Table 1.5 **Related Ordnance Support (Cont.)**

Related Functions	Performed? (Y / N)	TypeCommodity	DLMHs
Maintenance (specify level)	N	Pyro/Demo	
Testing	Y		51,212
Manufacturing	Y		10,542
Outload	N		
Technical Support	Y		14,934
Maintenance (specify level)	N	Grenades/Projectiles	
Testing	Y		650
Manufacturing	N		
Outload	N		
Technical Support	Y		150
Maintenance (specify level)	N	Rockets	
Testing	Y		1,515
Manufacturing	N		
Outload	Y		0.5
Technical Support	Y		252
Maintenance (specify level)	N	Small Arms	
Testing	Y		558
Manufacturing	Y		2
Outload	Y		0.5
Technical Support	Y		152

R

Table 1.5 **Related Ordnance Support (Cont.)**

Related Functions	Performed? (Y / N)	TypeCommodity	DLMHs	
Maintenance (specify level)	N	Gun Ammo		
Testing	Y		10,691R	R
Manufacturing	N			
Outload	Y		182R	R
Technical Support	Y		4,357R	R
Maintenance (specify level)	N	Inert		
Testing	Y		1,278	
Manufacturing	N			
Outload	N			
Technical Support	Y		1,278	
Maintenance (specify level)				
Testing				
Manufacturing				
Outload				
Technical Support				
Maintenance (specify level)				
Testing				
Manufacturing				
Outload				
Technical Support				

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Table 1.5 **Related Ordnance Support (Cont.)**

Related Functions	Performed? (Y / N)	TypeCommodity	DLMHs
Maintenance (specify level)	N	Gun Ammo	
Testing	Y		9,036
Manufacturing	N		
Outload	Y		875
Technical Support	Y		1,172
Maintenance (specify level)	N	Inert	
Testing	Y		1,278
Manufacturing	N		
Outload	N		
Technical Support	Y		1,278
Maintenance (specify level)			
Testing			
Manufacturing			
Outload			
Technical Support			
Maintenance (specify level)			
Testing			
Manufacturing			
Outload			
Technical Support			

R

Table 1.5 **Related Ordnance Support (Cont.)**

Related Functions	Performed? (Y / N)	TypeCommodity	DLMHs
Maintenance (specify level)	N	Gun Ammo	
Testing	Y		9.036
Manufacturing	N		
Outload	Y		0.5
Technical Support	Y		1,172
Maintenance (specify level)	N	Inert	
Testing	Y		1,278
Manufacturing	N		
Outload	N		
Technical Support	Y		1,278
Maintenance (specify level)			
Testing			
Manufacturing			
Outload			
Technical Support			
Maintenance (specify level)			
Testing			
Manufacturing			
Outload			
Technical Support			

TAB D
Page 39 of 39
UIC: N00164

ACTIVITY CERTIFIED: NSWC CRANE DIVISION
DATA CALL #4

JL
SEA 09X
5/12/94

~~I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.~~

~~NEXT ECHELON LEVEL (if applicable)~~

~~NAME (Please type or print~~ ~~Signature~~

~~Title~~ ~~Date~~

~~Activity~~

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type of print

Signature

Commander
Title

5/11/94
Date

Naval Surface Warfare Center
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STERNER
NAME (Please type or print

Signature

5-13-94
Date

Commander
Title

Naval Sea Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

J. B. Greene, Jr
NAME (Please type of print

Signature

Acting
Title

19 May 1994
Date

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

S. HOWARD
NAME (Please type or print)

Signature

COMMANDER
Title

6 May 94
Date

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
Activity

NSWC CRANE DIVISION
Crane Site
Data Call 4

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

S. HOWARD
NAME (Please type of print)

Signature

COMMANDER
Title

6/3/94
Date

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
Activity

Revision to the Crane Division, Crane Site, BRAC-95 Data Call 4, page 16.

Additional details of changes described on attached sheets.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print	Signature
Title	Date
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr. NAME (Please type of print	Signature
Commander Title	6/3/94 Date
Naval Surface Warfare Center Activity	

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STEINER NAME (Please type or print	Signature
Title [illegible] Sea Systems Command	7-1-94 Date
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

J. B. GREENE, JR. NAME (Please type of print	Signature
ACTING Title	08 JUL 1994 Date

203

DATA CALL #4
CRANE SITE

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print	Signature
Title	Date
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr. NAME (Please type of print	Signature
Commander Title	8/17/94 Date
Naval Surface Warfare Center Activity	

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

E. S. McGINLEY, II Rear Admiral, U.S. Navy NAME (Please type or print ACTING	Signature
Title Systems Command	8/21/94 Date
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER NAME (Please type of print	Signature
Title	8/25/94 Date

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
DATA CALL #4

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

S. HOWARD
NAME (Please type or print)

Signature

COMMANDER
Title

8/12/94
Date

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
Activity

1. Section 1 - Table 1, page 2. FY 91 total funds budgeted states 322,100,000, should be 300,000,000. FY 90 actual in house workyears states 4124, should be 4164.

Continued on next page

TAB C:

2. Table 1.2.a, Maximum Potential Depot/Industrial Workload. Maximum potential units should be 2,520 instead of 2,640 for Commodity Type 4.b.

3. Table 1.2.b, Maximum Potential Depot/Industrial Workload. Maximum potential DLMHs should be 76,000 instead of 78,000 for Commodity Type 4.b.

4, Tables 2.1.a through 2.1.g, Predicted Workload Variance for FY 1995 through FY 2001. The errors in Tables 1.2.a and 1.2.b were carried through into the Variance Tables for Commodity Type 4.b.

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
DATA CALL #4

Continuation:

2. Table 1.3--An amount in MISC Other Navy was omitted.

3. The Heading in Tables 2.2a through 2.2i was changed to indicate that the Information is Direct Labor Man Hours and not Units Throughput.

TAB D:

1. Three entries in Tab D page 38 and one in Tab D page 39 were reported in workyears. This was revised to Direct Labor Man Hours as requested.

202 Rev pg DATA CALL #4 CRANE SITE
pg C 39, 42, D38, 39

~~I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.~~

~~NEXT ECHELON LEVEL (if applicable)~~

~~NAME (Please type or print~~ ~~Signature~~

~~Title~~ ~~Date~~

~~Activity~~

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type of print

Signature

Commander
Title

9/14/94
Date

Naval Surface Warfare Center
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print
G. R. STERNER

Signature

Commander
Title
Naval Sea Systems Command

9-12-94
Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

NAME (Please type of print

Signature

Title

10/1/94
Date

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
DATA CALL #4

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

J. M. CARNEY — JMCarney
NAME (Please type or print) — Signature

COMMANDER — 9/12/94
Title — Date

CRANE DIVISION, NSWC
Activity

Tab C, Page 39R. Total for 2.g revised. FMS workload for 11.b revised. Totals revised to reflect these changes.

Tab C, Page 42R. Total for 11.a revised.

Tab D, Pages 38R and 39R. DLMHs revised for various Related Functions.

R pg. 202
4, 6, 19-25
32-38
XABC

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print) Signature

Title Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

Dr. Ira M. Blatstein
NAME (Please type or print)

Signature: Ira M Blatstein

Technical Director
Title

Date: 10/26/94

Naval Surface Warfare Center
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print)

Signature: G R Sterner

G. R. STERNER
Title Commander
Naval Sea Systems Command

Date: 10/26/94

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

NAME (Please type or print)

Signature: [illegible]

Title

Date: 10/27/94

DATA CALL #4
BSAT CLARIFICATION
CRANE

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
DATA CALL #4
BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

J. M. CARNEY
NAME (Please type or print)

JMCarney
Signature

COMMANDER
Title

10/24/94
Date

CRANE DIVISION, NSWC
Activity

1. GUIDANCE - The Crane Division received a FAX transmission on 13 October 94 reporting a "mismatch" in our depot workload tables in Data Call #14. After review of our data and several phone conversations, we could not find a rational for change. On 20 October 94 the Crane Division received written guidance from the Base Structure Analysis Team which stated that: "the sum of Core Workload (Table 13.1) and Above Core Workload (Table 14.1.h) should add up to Programmed Workload (Table 3.1.b)". Data Call #14 was modified using this guidance. For consistency, this revision changes the "Historic and Predicted Workload" (Table 1.1.d) in Data Call #4 TAB C to agree with this equation.

2. ORIGINAL RESPONSE - Our original response was based on an interpretation that "Programmed Workload" was our best estimate of future work. "Programmed Workload" is a misnomer to us in that our repair workload is not scheduled maintenance tied to a ship overhaul schedule and is not "programmed" into the POM . Rather, the majority of our depot work is repair of subsystems, circuit cards, and components after they fail and are returned. The original response was a prediction developed using factors such as: a system retirement schedule; any new start-up; and our historical experience.

3. OTHER TABLES - The modification of Table ~~1.1.c~~ 1.1.d MLP NSWC 033 10/24/94 carries over to other tables. Historic Workload (Units) (Table 1.1.b), Predicted Workload Variance (Tables 2.1.a - 2.1.g), and Workload Requirements (Tables 2.1.c - 2.1.i) were also modified.

4. TITLE 10 CORE - In the process of this review, it was found that we had not properly indicated the Title 10 core. This is corrected in the Workload Requirements Tables (2.1.c through 2.1.i).

Document Separator

202

DATA CALL 64
CONSTRUCTION COST AVOIDANCES

Table 1: Military Construction (MILCON) Projects (Excluding Family Housing Construction Projects)

Installation Name:	**CRANE IN NAVSURFWARCENDIV**
Unit Identification Code (UIC):	**N00164**
Major Claimant:	**NAVSEA**

Project FY	Project No.	Description	Appn	Project Cost Avoid ($000)
1994	278	ORDNANCE ENVIROMENTAL TESTING FACILITY	MCON	9,600
		Sub-Total - 1994		**9,600**
1995	265	ELECTRO-OPTICS CENTER	MCON	7,970
1995	283T	RECHARGEALE BATTERY EVALUATION FAC *	BRAC	465
		Sub-Total - 1995		**8,435**
1999	268	RADAR MAINTENANCE FACILITY	MCON	6,200
		Sub-Total - 1999		**6,200**
2000	276	AUTOMOTIVE VEH MAINT SHOP	MCON	4,850
2000	279	MINE COUNTERMEASURES FAC	MCON	2,300
2000	280	CHEM/BIO WARFARE DETECT CT	MCON	4,000
		Sub-Total - 2000		**11,150**
2001	070	WATER SYS IMPROVEMENTS	MCON	5,500
		Sub-Total - 2001		**5,500**
		Grand Total		**40,885**

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

J. E. BUFFINGTON, RADM, CEC, USN
NAME (Please type or print)

Jack Buffington
Signature

COMMANDER
Title

12/9/94
Date

NAVAL FACILITIES ENGINEERING COMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

W Earner
Signature

Title

12/17/94
Date

BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MICHAEL D. THORNTON
NAME (Please type or print)

CDR, CEC, USN
Title

MILCON PROGRAMMING DIVISION
Division

NAVAL FACILITIES ENGINEERING COMMAND
Activity

M D Thornton
Signature

9 Dec 94
Date

Document Separator

DATA CALL 64

CONSTRUCTION COST AVOIDANCES

Table 1: Military Construction (MILCON) Projects (Excluding Family Housing Construction Projects)

Installation Name:	CRANE IN NAVSURFWARCENDIV
Unit Identification Code (UIC):	N00164 # 202
Major Claimant:	NAVSEA

Project FY	Project No.	Description	Appn	Project Cost Avoid ($000)
1994	278	ORDNANCE ENVIROMENTAL TESTING FACILITY	MCON	6,393
		Sub-Total - 1994		**6,393**
1995	283T	RECHARGEALE BATTERY EVALUATION FAC	BRAC	568
		Sub-Total - 1995		**568**
1998	265	ELECTRO-OPTICS CENTER	MCON	8,140
		Sub-Total - 1998		**8,140**
1999	268	RADAR MAINTENANCE FACILITY	MCON	6,200
		Sub-Total - 1999		**6,200**
2000	263	HYDROACOUSTICS TEST COMPLX	MCON	3,560
2000	276	AUTOMOTIVE VEH MAINT SHOP	MCON	4,850
2000	277	ELECTRONIC SYSTEMS SUP FAC	MCON	5,000
2000	279	MINE COUNTERMEASURES FAC	MCON	2,300
2000	280	CHEM/BIO WARFARE DET CTR	MCON	4,000
		Sub-Total - 2000		**19,710**
2001	070	WATER SYS IMPROVEMENTS	MCON	5,500

DATA CALL 64

CONSTRUCTION COST AVOIDANCES

Table 1: **Military Construction (MILCON) Projects (Excluding Family Housing Construction Projects)**

Installation Name:	**CRANE IN NAVSURFWARCENDIV**
Unit Identification Code (UIC):	**N00164** #207
Major Claimant:	**NAVSEA**

Project FY	Project No.	Description	Appn	Project Cost Avoid ($000)
		Sub-Total - 2001		5,500
		Grand Total		46,511

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

J. E. BUFFINGTON, RADM, CEC, USN
NAME (Please type or print)

Jack E Buffington
Signature

COMMANDER
Title

7/13/94
Date

NAVAL FACILITIES ENGINEERING COMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

W A Earner
Signature

Title

7/18/94
Date

BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MARK E. DONALDSON
NAME (Please type or print)

M E Donaldson
Signature

CDR, CEC, USN
Title

12 July 1994
Date

MILCON PROGRAMMING DIVISION
Division

FACILITIES PROGRAMMING AND CONSTRUCTION DIRECTORATE
Department

NAVAL FACILITIES ENGINEERING COMMAND
Activity

Enclosure (1)

BRAC DATA CALL NUMBER 64
CONSTRUCTION COST AVOIDANCE

Information on cost avoidance which could be realized as the result of cancellation of on-going or programmed construction projects is provided in Tables 1 (MILCON) and 2 (FAMILY HOUSING). These tables list MILCON/FAMILY HOUSING projects which fall within the following categories:

1. all programmed construction projects included in the FY1996 - 2001 MILCON/FAMILY HOUSING Project List,

2. all programmed projects from FY1995 or earlier for which cost avoidance could still be obtained if the project were to be canceled by 1 OCT 1995, and,

3. all programmed BRAC MILCON/FAMILY HOUSING projects for which cost avoidance could still be obtained if the project were to be canceled by 1 OCT 1995.

Projects listed in Tables 1 and 2 with potential cost avoidance were determined as meeting any one of the following criteria:

Projects with projected Work in Place (WIP) less than 75% of the Current Working Estimate (CWE) as of 1 OCT 1995 .

Projects with projected completion dates or Beneficial Occupancy Dates subsequent to 31 March 1996.

Projects with projected CWE amount greater than $15M.

The estimated cost avoidance for projects terminated after construction award would be approximately one-half of the CWE for the remaining work. Close-out, claims and other termination costs can consume the other half.

Document Separator

0202

Complete Revision Dated 13 & 14 JUNE 94

"LAB" JOINT CROSS-SERVICE GROUP GUIDANCE PACKAGE

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
CRANE, INDIANA SITE

PLUS REVISIONS DATED:
7-21-94
8-20-94
9-12-94
9-13-94
9-20-94

SECTION II: CAPACITY OF DOD COMPONENTS

2.1 **Workload.** Use the following table to describe historic and projected workload at each activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Projected funding will be derived from FY95 President's Budget Submission (Then year dollars). Past fiscal year data shall begin with FY86 or at the inception of the activity as it existed on 1 Oct 93. (BRAC Criteria I & IV)

Information Required	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Programmed ($M)	245.6	268.7	191.0	253.0	302.2	322.1	322.1	316.3	352.9	317.9	331.7	320.0
Total Actual Funds ($M)	232.3	255.8	282.2	277.0	295.8	347.6	382.3	402.7				
Programmed Workyears	3210	3505	3490	3708	3671	4002	3867	3648	3796	3609	3163	2973
Actual Workyears	4010	3785	3860	3997	4124	4298	4299	4178				

- Budgeted workyears are the selected indicator of the "lab" infrastructure's capacity at an aggregate level for each Military Department. They include both workyears funded directly by the Military Department and the workyears funded from organizations outside the Military Department.

Workyears = government personnel and on-site FFRDCs and SETAs

2.2 **Excess "Lab" Capacity -- Measured at the DOD Component Level**

- Excess "Lab" Capacity = Sum of the Peak Workyears - Sum of the Projected Workyears
  -- Peak at each activity = Highest value between FY86 (or since inception of organization) and FY93
  -- Projected at each activity = Estimated at FY97

AIR VEHICLES/FIXED/AVIONICS
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at the Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC's at the Crane Site.

* The mission related to this CSF is to perform the following tasks in the **Electronic Warfare** Technical Capability:

- In-Service Engineering for Airborne and Surface Ship Electronic Warfare

- Logistics Support for Airborne and Surface Electronic Warfare

- Depot Maintenance for Airborne and Surface Electronic Warfare

- Microwave Tube Test, Evaluation and Repair

- Failure Analysis Laboratory

- Materials Analysis Laboratory

- Solid State Devices Facility

- Printed Circuit Card Facility

- Electrochemical Power Systems Facility

- Electronic Module Test and Repair Facility

*The mission for the **Electrochemical Power Systems** Technical Capability is:

- To assure affordable, safe, and reliable Electrochemical Power sources (batteries).

-To meet current and future performance requirements in operational environments; for the Navy and Marine Corps, the Army and Air Force, and other government agencies.

-Provide a full spectrum of support for batteries and related equipments from Research and Development (R&D) through system retirement.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered
requirements for the accomplishment of the mission.

High Level Radiation Testing - This remote geographic location, with its low population density, has reduced FCC requirements and regulations for radiation of energy. Our "Blue Sky" facility, located in a valley and directed straight into space (thus the facility name "Blue Sky") has a restricted fly zone that provides the free space that high power microwave radiation testing requires. The valley location, surrounded by large indeciduous trees, minimizes outside interference and blocks horizontal radiation. In addition, large available acreage allows adaptability for all DoD antenna range requirements.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

PERSONNEL ADVANTAGES - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

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3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various
Air Vehicle	EA-6B/A-6E	Universities/Colleges	100 Miles	0.5	0.5

This relationship is described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical to accomplishing the mission of NSWC Crane Division. R

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

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All CSF's	Crane TC's	Technical support	Co-located	Various	Various
Air Vehicle	EA-6B/A-6E	Universities/Colleges	100 Miles	0.5	0.5

This relationship is described in the following paragraphs.

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

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Purdue University, Indiana University, University of Louisville, Notre Dame plus several others universities are located nearby and provide critical technical support. Example of this type of activity is the support provided by Purdue University for design and development of a wind tunnel to test critical design elements of an airborne EW system.

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- AIR VEHICLES/FIXED/AVIONICS

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	75R	0	0	0	R
Management (Supv)	5	0	0	0
Other	0R	0	0	0	R

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(BRAC Criteria I)

CSF- AIR VEHICLES/FIXED/AVIONICS

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	73	0	0	0
Management (Supv)	5	0	0	0
Other	2	0	0	0

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	33	0	0
Associates	10	1	0
Bachelor	32R	4	0R
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

R

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	41R	22R	5	7
Management	0	2	0	0	3
Other	0	0R	0R	0	0
Total	0	43	22	5	10

R

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	33	0	0
Associates	10	1	0
Bachelor	30	4	2
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	40	21	5	7
Management	0	2	0	0	3
Other	0	1	1	0	0
Total	0	43	22	5	10

R

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicles/ Fixed/ Avionics	2 R	Reducing Aircraft Battery Maintenance Costs in the U.S. Navy[1] The Lithium Battery[2]

R

[1]IEEE Spectrum, 1992
[2]American Society of Naval Engineers Publication, August 1992

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicles/ Fixed/ Avionics	10	Reducing Aircraft Battery Maintenance Costs in the U.S. Navy Navy Primary & Secondary Batteries Design and Manufacturing Guidelines Standard Power Supply Applications Handbook State-of-the-Art Research and Development Projects: Environmental Issues, Safety Issues, Degree of Maturity Aircraft Battery Standardization Handbook of Batteries Navy Power Supply Design and Manufacturing Guidelines Safe and Environmentally Benign Lithium Battery Testing The Lithium Battery Lithium Battery Disposal

R

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

AIR VEHICLE/FIXED/AVIONICS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0.35	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	65.0 R	0	0	0

R

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

AIR VEHICLE/FIXED/AVIONICS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0.35	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	55.0	0	0	0

R

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	2	0.2	26K	F-14D[1] EA-6B[1]

R

[1]This project functions as Cognizant Field Activity (CFA) for all technical matters pertaining to the basic design engineering, production engineering, maintenance engineering, acquisition, in-service use engineering and logistic management of all NAVAIRSYSCOM electrochemical power source systems and associated equipment for all aircraft types.

Also performs as Participating Field Activity (PFA) to provide technical assistance to activities have CFA responsibilities for specific hardware items such as engine starters, auxiliary power units (APU), etc., which contain electrochemical power devices.

This type of work is battery system development for all U.S. Navy and U. S. Marine Corps aircraft applications.

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	2	0.2	26K	F-14D EA-6B

R

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicles/ Fixed/Avionics	Engr Investigations	5,917K	42.3	AN/ALQ-99 AN/ASQ-155
Air Vehicles/ Fixed Avionics	Integrated Logistics Support	5,699K	22.5	AN/SLQ-99 AN/ASQ-155
Air Vehicles/ Fixed/Avionics	ILS, Production Engr Support, Engr Investigations, Lifecycle Support	16.5K	.2	A-6, C-130, F-14, F/A-18A/D, P-3, T-2, T-38, T-45, AV-8B

R

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicles/ Fixed/Avionics	Engr Investigations	5,917K	42.3	AN/ALQ-99 AN/ASQ-155
Air Vehicles/ Fixed/Avionics	Integrated Logistics Support	5,699K	22.5	AN/SLQ-99 AN/ASQ-155

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Fixed/Avionics	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Fixed/ Avionics	5,821K	7,486K	8,347K	8,735K

R

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)	
		DOD	Federal Gov't	U. S.		
Air Vehicles/ Fixed/ Avionics	Electrochemical Power Systems Facility			X	35,000K	
Air Vehicles/ Fixed/ Avionics	Bldg 41 Airborne EW Depot				920.4K	R
Air Vehicles/ Fixed/ Avionics	Bldg 40 Airborne EW Depot				374.8K	R
Air Vehicles/ Fixed/ Avionics	Microwave Tube Test Facility				111.8K	R

R

Air Vehicles/ Fixed/ Avionics	Corrosion Control Facility				394.2K	R
Air Vehicles/ Fixed/ Avionics	RF Test Range, RF Anechoic Test Chamber				79.2K	R
Air Vehicles/ Fixed/ Avionics	Failure Analysis Laboratory				21.3K	R
Air Vehicles/ Fixed/ Avionics	Materials Analysis Laboratory				21.3K	R
Air Vehicles/ Fixed/ Avionics	Wind Tunnel Test Facility				86.2K	R
Air Vehicles/ Fixed/ Avionics	Metal Parts Fabrication				24.9K	R
Air Vehicles/ Fixed/ Avionics	Cable Fabrication				5.9K	R
Air Vehicles/ Fixed/ Avionics	Printed Circuit Card Fabrication				27.2K	R

R

This portrays the Electronic Warfare equipment and facilities showing the interconnectivity to other functions and the percentages:

Equipment/Facility	Function Sharing and Percentages
Specialized System Test Equipment	Airborne EW Depot (45% this CSF) (55% other)
Microwave Tube Test Facility	Microwave Tube Test, Surface EW Engineering Surface EW Depot Surface Radar Engineering Surface Radar Depot (2% this CSF) (98% other)
Corrosion Control Facility	Surface EW Engineering Surface EW Depot Surface Radar Engineering Surface Radar Depot (5% this CSF) (95% other)
RF Test Range, RF Anechoic Test Chamber	Airborne EW Depot Surface EW Depot Surface EW Engineering Surface Radar Depot Surface Radar Engineering (10% this CSF) (90% other)
Failure Analysis Laboratory	All Electronic Functions in the Crane Division (1% this CSF) (99% other)
Materials Analysis Laboratory	All Technical Functions in the Crane Division (1% this CSF) (99% other)

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Air Vehicles/ Fixed/ Avionics	Electrochemical Power Systems Facility			X	35,000K
Air Vehicles/ Fixed/ Avionics	Bldg 41				920.4K
Air Vehicles/ Fixed/ Avionics	Bldg 40				374.8K

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries*. Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

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ELECTROCHEMICAL POWER SYSTEMS FACILITY	
FUNCTION	**PERCENTAGE UTILIZATION**
Air Vehicles, Fixed Wing, Avionics	0.5 %
Air Vehicles, Fixed Wing, Flight Subsystems	5.2 %
Air Vehicles, Rotary Wing, Avionics	0.7 %
Air Vehicles, Rotary Wing, Flight Subsystems	3.8 %
Weapons, Conventional Missiles/Rockets	1.5 %
Space Systems, Satellites	4.4 %
C4I Systems, Airborne C4I	0.5 %
Other Functions *	83.4 %

* The Electrochemical Power Systems Facility at Crane is a national asset providing a full spectrum of support for electrochemical power systems (batteries), including RDT&E, engineering, acquisition, depot rework, manufacturing, fleet support and system retirement. Programs and projects supported include missiles and weapons, aircraft, ground support equipment, shipboard and underwater, special warfare, satellites and other space-based equipment, transportation and various other systems. This facility provides support for a wide variety of batteries incorporated within systems and platforms of the Department of the Navy (NAVSEA, NAVAIR, NSWC, NAWC, NUWC, SSPO, SPECWAR, ONR, SOCOM, SPCC & NELO), United States Marine Corps. (USMC), the Department of the Army, the Department of the Air Force, the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), Special Operations Command, Advanced Research Projects Agency (ARPA), Defense General Supply Command (DGSC), the Federal Aviation Administration (FAA), Coast Guard, Foreign Military Sales (FMA), and Private Industry.

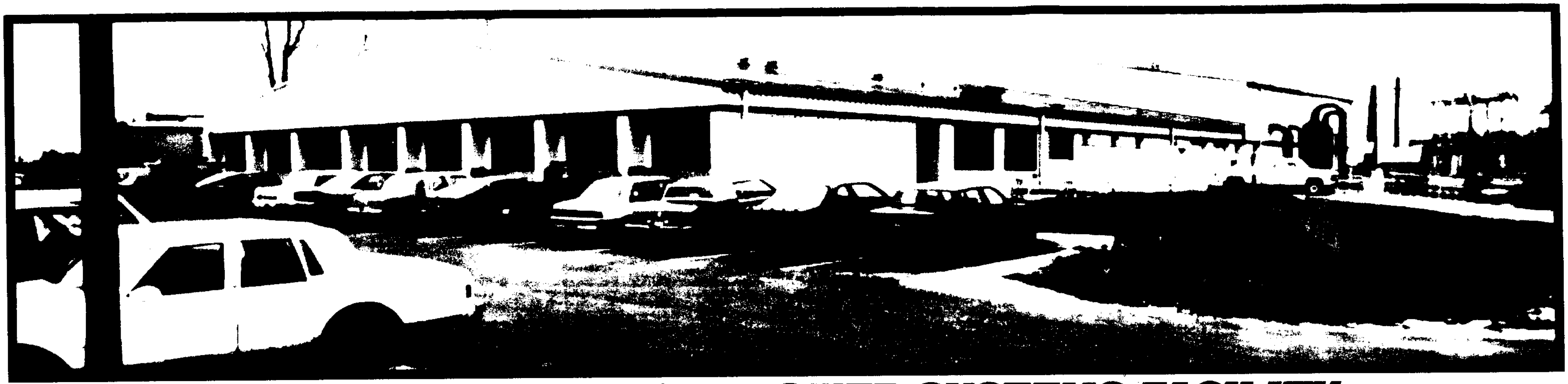
R

The Electronic Warfare Technical Capability has the following major equipment and facilities to support this CSF:

Crane Division provides an unduplicated combination of state-of-the-art equipment and facilities and highly specialized expertise. Over 150,000 sq ft of modern facilities and $120M of specialized test equipment are integrated and dedicated to Electronic Warfare (EW) support. These resources are utilized in all facets of EW support such as test and evaluation, specification verification, engineering analysis, maintenance/overhaul, logistic support, design and development. Resident at Crane are an outdoor antenna range, RF anechoic chambers, EMI/RFI chambers, Ram Air Turbine wind tunnel test facility, high and low power RF/Digital/Analog/High voltage test and measurement equipment, Automatic Test Equipment software development facility, EW system test beds and a new $7.5M environmentally safe corrosion control and physical repair facility. The facilities and equipment are adequate to support present and future projected EW In-Service Engineering requirements.

R

Wind Tunnel Test Facility	Airborne EW Depot (20% this CSF) (80% other)
Metal Parts Fabrication	All Technical Functions in the Crane Division (1% this CSF) (99% other)
Cable Fabrication	All technical Functions in the Crane Division (1% this CSF) (99% other)
Printed Circuit Card Fabrication	All Technical Functions in the Crane Division (1% this CSF) (99% other)



ELECTROCHEMICAL POWER SYSTEMS FACILITY
NSWC CRANE DIVISION

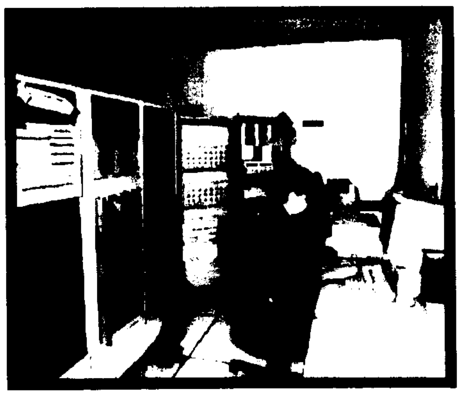
FAILURE ANALYSIS

FAMILY OF BATTERIES

TEST CELLS

ENVIRONMENTAL

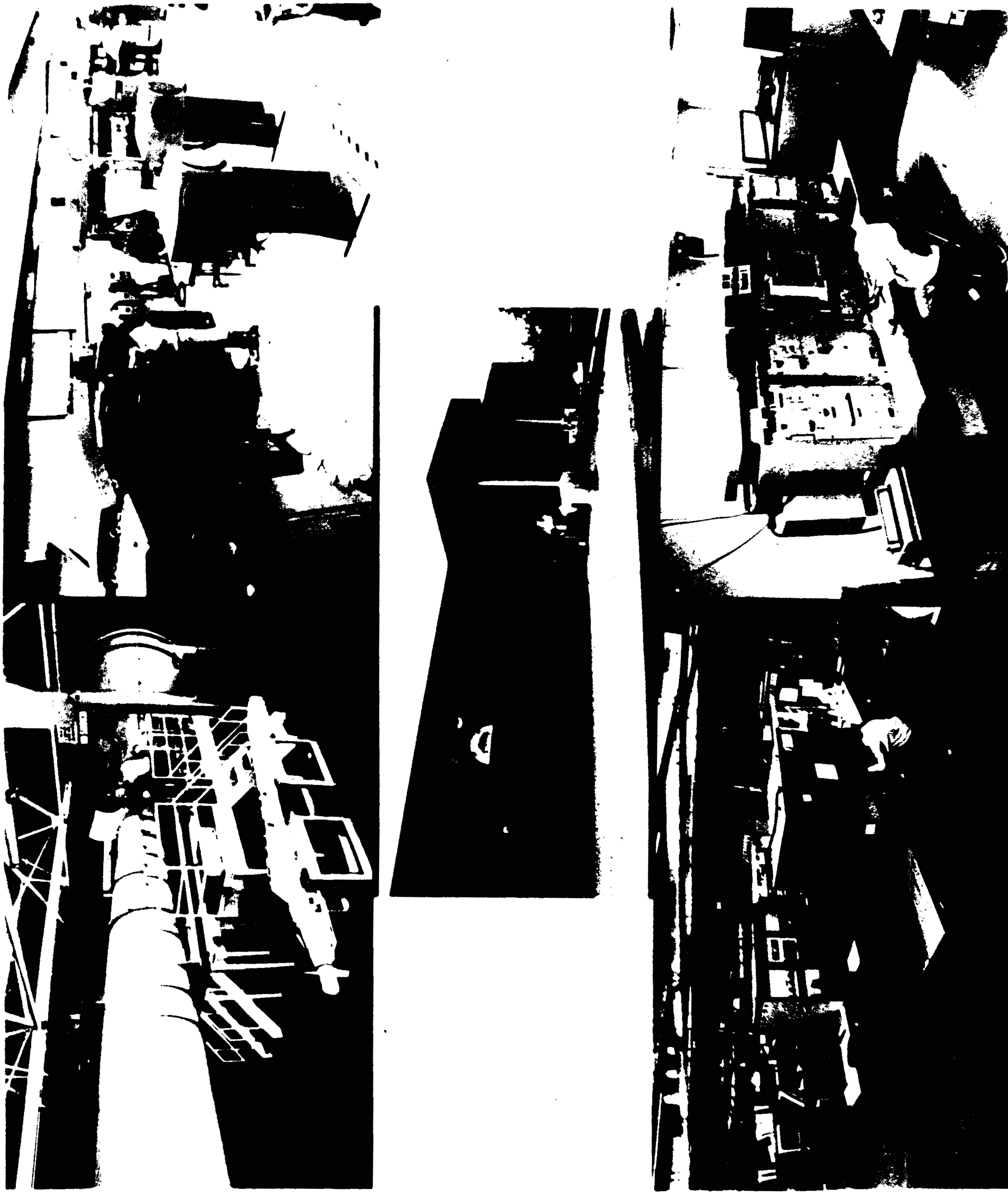
PROTOTYPE



PERFORMANCE EVALUATION

SAFETY EVALUATION

MATERIAL ANALYSIS



3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicle/ Fixed/ Avionics	Bldg 34	Technical	33.6	33.6	0
Air Vehicle/ Fixed/ Avionics	Bldg 38	Technical	18.1	18.1	0
Air Vehicle/ Fixed/ Avionics	Bldg 3235	Technical	27.4	27.4	0
Air Vehicle/ Fixed/ Avionics	Bldg 369	Storage	5.4	5.4	0
Air Vehicle/ Fixed/ Avionics	Bldg 2919	Technical	3.8	3.8	0
Air Vehicle/ Fixed/ Avionics	Bldg 2949	Technical	5.1	5.1	0
Air Vehicle/ Fixed/ Avionics	Bldg 355	Storage	.7	.7	0
Air Vehicle/ Fixed/ Avionics	Bldg 650	Storage	.6	.6	0

Air Vehicle/ Fixed/ Avionics	Bldg 652	Storage	.6	.6	.6
Air Vehicle/ Fixed/ Avionics	Bldg 916	Storage	1.1	1.1	0
Air Vehicle/ Fixed/ Avionics	Bldg 917	Storage	1.1	1.1	1.1
Air Vehicle/ Fixed/ Avionics	Bldg 157	Storage	2.1	2.1	0
Air Vehicle/ Fixed/ Avionics	Bldg 181	Technical	1.7	1.7	1.7
Air Vehicle/ Fixed/ Avionics	Bldg 301	Storage	5.4	5.4	0
Air Vehicle/ Fixed Avionics	Bldg 41	Technical	19.2	19.2	0
Air Vehicle/ Fixed/ Avionics	Bldg 40	Technical	3.7	3.7	0

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Electrochemical Power Sources - The Electrochemical Power Sources facility has a flexible facility to allow for considerable workload expansion. These include state-of-the-art equipments designed with the foresight to accommodate a wide variety of batteries, capable of multiple use, and easily upgradable. Also available are environmental equipments capable of simulating field conditions and material analysis capabilities required by each of the three services.

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Electrochemical Power Sources - Electrochemical Power Sources can easily accomodate 40 additional workyears in any combination across the four common support functions.

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

AIR VEHICLES/FIXED/FLIGHT SUBSYSTEMS
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at the Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC'S at the Crane Site.

*The mission for the Electrochemical Power Systems Technical Capability is:

- To assure affordable, safe, and reliable Electrochemical Power sources (batteries).

-To meet current and future performance requirements in operational environments; for the Navy and Marine Corps, the Army and Air Force, and other government agencies.

-Provide a full spectrum of support for batteries and related equipments from Research and Development (R&D) through system retirement.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered
requirements for the accomplishment of the mission.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

PERSONNEL ADVANTAGES - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills**. The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

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3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity	
All CSF's	CraneTC's	Technical support	Co-located	Various	Various	
Air Veh Fixed Wing,FlSubsys	Vitro Corp	Private Industry	30 miles	5.7	1.0	R
"	NAWC,IN	Government	90 miles	5.7	0.03	R
"	Cummins	Private Industry	60 miles	5.7	0.03	R

This relationship is described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical in accomplishing the mission of NSWC Crane Division. R

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

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Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs.

R

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- o *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- o *X-ray facilities including real-time capability;*
- o *Ordnance materials analysis lab;*
- o *Battery engineering and test support;*
- o *Failure Analysis of components;*
- o *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- o *Circuit card engineering and repair support;*
- o *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

Finally, NAWC Indianapolis and private industry are relied upon very little and there R
nearby location is not considered critical to the mission.

ADVANTAGE OF SYNERGIES IN CO-LOCATION

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- *System interface testing;*

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R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- AIR VEHICLES/FIXED/FLIGHT SUBSYSTEMS

Types of personnel	Number of Personnel				
	Government		On-Site FFRDC	On-Site SETA	
	Civilian	Military			
Technical	7R	0	0	0	R
Management (Supv)	0	0	0	0	
Other	1R	0	0	0	R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- AIR VEHICLES/FIXED/FLIGHT SUBSYSTEMS

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	5	0	0	0
Management (Supv)	0	0	0	0
Other	3	0	0	0

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	4	0	1
Associates	0	0	0
Bachelor	3R	0	0R
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

R

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	2R	1	0	4R
Management	0	0	0	0	0
Other	1	0R	0	0	0R
Total	1	2	1	0	4

R

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	4	0	1
Associates	0	0	0
Bachelor	1	0	2
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	1	1	0	3
Management	0	0	0	0	0
Other	1	1	0	0	1
Total	1	2	1	0	4

R

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicles/ Fixed/ Flight Subsystems	1 R	Reducing Aircraft Battery Maintenance Costs in the U.S. Navy[1]

R

[1] IEEE Spectrum, 1992

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicles/ Fixed/ Flight Subsystems	8	Reducing Aircraft Battery Maintenance Costs in the U.S. Navy High Power Vented Nickel-Cadmium Cells Designed for Ultra-Low Maintenance Navy Primary & Secondary Batteries Design and Manufacturing Guidelines Standard Power Supply Applications Handbook State-of-the-Art Research and Development Projects: Environmental Issues, Safety Issues, Degree of Maturity Aircraft Battery Standardization Handbook of Batteries Navy Power Supply Design and Manufacturing Guidelines

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

AIR VEHICLE/FIXED/FLIGHT SUBSYSTEMS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0.4	0	0	0
Engineering Development	4.1	0	0	0
In-Service Engineering	1.2	0	0	0

R

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	8	5.3	678K	F/A-18C-F[1] F-22[1] P-3[1] A-6[1] AV-8B[1] T-45[1] T-2[1] T-34[1]

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[1]Program description on following page.

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[1]This project functions as Cognizant Field Activity (CFA) for all technical matters pertaining to the basic design engineering, production engineering, maintenance engineering, acquisition, in-service use engineering and logistic management of all NAVAIRSYSCOM electrochemical power source systems and associated equipment for all aircraft types.

Also performs as Participating Field Activity (PFA) to provide technical assistance to activities have CFA responsibilities for specific hardware items such as engine starters, auxiliary power units (APU), etc., which contain electrochemical power devices.

This type of work is battery system development for all U.S. Navy and U. S. Marine Corps aircraft applications.

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	8	5.3	678K	F/A-18C-F F-22 P-3 A-6 AV-8B T-45 T-2 T-34

R

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicles/ Fixed/Flight Subsystems	ILS, Prod Engr Support, Engr Investigations, Life Cycle Support	145.9K	1.2	A-6, C-130, F-14, F/H-18A/D, P-3, T-2, T-38, T-45, AV-8B

R

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicles/ Fixed/Flight Subsystems	None			

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Fixed/Flight Subsystems	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Fixed/ Flight Subsystems(1)	1016K	751K	768K	763K

Note (1) Some Fixed Wing and Rotary Wing Flight Subsystems projects share funding for common or similar applications

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Air Vehicles/ Fixed/ Avionics	Electrochemical Power Systems Facility			X	35,000K

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries*. Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

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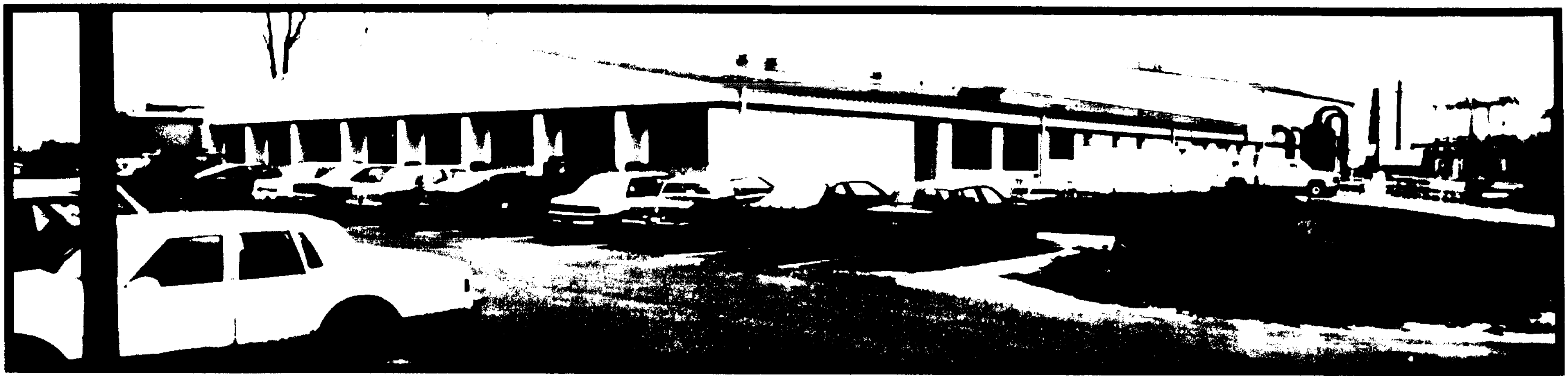
ELECTROCHEMICAL POWER SYSTEMS FACILITY	
FUNCTION	**PERCENTAGE UTILIZATION**
Air Vehicles, Fixed Wing, Avionics	0.5 %
Air Vehicles, Fixed Wing, Flight Subsystems	5.2 %
Air Vehicles, Rotary Wing, Avionics	0.7 %
Air Vehicles, Rotary Wing, Flight Subsystems	3.8 %
Weapons, Conventional Missiles/Rockets	1.5 %
Space Systems, Satellites	4.4 %
C4I Systems, Airborne C4I	0.5 %
Other Functions *	83.4 %

* The Electrochemical Power Systems Facility at Crane is a national asset providing a full spectrum of support for electrochemical power systems (batteries), including RDT&E, engineering, acquisition, depot rework, manufacturing, fleet support and system retirement. Programs and projects supported include missiles and weapons, aircraft, ground support equipment, shipboard and underwater, special warfare, satellites and other space-based equipment, transportation and various other systems. This facility provides support for a wide variety of batteries incorporated within systems and platforms of the Department of the Navy (NAVSEA, NAVAIR, NSWC, NAWC, NUWC, SSPO, SPECWAR, ONR, SOCOM, SPCC & NELO), United States Marine Corps. (USMC), the Department of the Army, the Department of the Air Force, the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), Special Operations Command, Advanced Research Projects Agency (ARPA), Defense General Supply Command (DGSC), the Federal Aviation Administration (FAA), Coast Guard, Foreign Military Sales (FMA), and Private Industry.

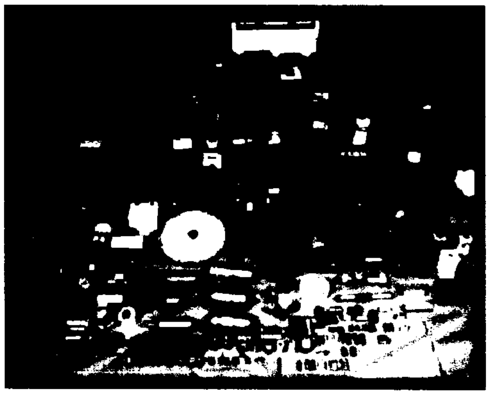


ELECTROCHEMICAL POWER SYSTEMS FACILITY

NSWC CRANE DIVISION

FAILURE ANALYSIS

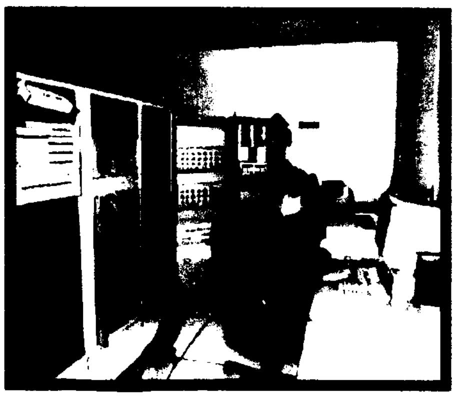
FAMILY OF BATTERIES



TEST CELLS

ENVIRONMENTAL

PROTOTYPE



PERFORMANCE EVALUATION

SAFETY EVALUATION

MATERIAL ANALYSIS

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF) Current	Used	Excess
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 34	Technical	33.6	33.6	0
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 38	Technical	18.1	18.1	0
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 3235	Technical	27.4	27.4	0
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 369	Storage	5.4	5.4	0
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 2919	Technical	3.8	3.8	0
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 2949	Technical	5.1	5.1	0

Air Vehicle/ Fixed/ Flight Subsystems	Bldg 355	Storage	.7	.7	0
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 650	Storage	.6	.6	0
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 652	Storage	.6	.6	.6
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 916	Storage	1.1	1.1	0
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 917	Storage	1.1	1.1	1.1
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 157	Storage	2.1	2.1	0
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 181	Technical	1.7	1.7	1.7
Air Vehicle/ Fixed/ Flight Subsystems	Bldg 301	Storage	5.4	5.4	0

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Electrochemical Power Sources - The Electrochemical Power Sources facility has a flexible facility to allow for considerable workload expansion. These include state-of-the-art equipments designed with the foresight to accommodate a wide variety of batteries, capable of multiple use, and easily upgradable. Also available are environmental equipments capable of simulating field conditions and material analysis capabilities required by each of the three services.

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250 R
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Electrochemical Power Sources - Electrochemical Power Sources can easily accomodate 40 additional workyears in any combination across the four common support functions.

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

AIR VEHICLES\ROTARY\AVIONICS
COMMON SUPPORT FUNCTIONS

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at the Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC's at the Crane Site.

*The mission for the **Electrochemical Power Systems** Technical Capability is:

- To assure affordable, safe, and reliable Electrochemical Power sources (batteries).

-To meet current and future performance requirements in operational environments; for the Navy and Marine Corps, the Army and Air Force, and other government agencies.

-Provide a full spectrum of support for batteries and related equipments from Research and Development (R&D) through system retirement.

* The mission related to this CSF is to perform the following tasks in the **Night Vision/Electro-Optic** Technical Capability is:

- Specialized Thermal Imaging Test Equipment

- Proximity of Surface Navy Electro-Optics ISEA

- Proximity of Special Warfare Electro-Optics ISEA

- Engineering Investigation Procedures Established

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered
requirements for the accomplishment of the mission.

Night Vision - An additional advantage of the rural location of this facility is the ability to test and evaluate Night Vision and Electro-Optics devices and systems **under true "natural" light conditions** at the outdoor test range. As no urban areas are near the facility, urban "back lighting" of the sky is not present to adversely affect testing to simulate operational conditions.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

PERSONNEL ADVANTAGES - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

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3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical in accomplishing the mission of NSWC Crane Division. R

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs.

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

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3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- Air Vehicles/Rotary/Avionics

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	3R	0	0	0
Management (Supv)	0	0	0	0
Other	0R	0	0	0

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3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- Air Vehicles/Rotary/Avionics

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	2	0	0	0
Management (Supv)	0	0	0	0
Other	1	0	0	0

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	2	0	0
Associates	0	0	0
Bachelor	1R	0	0R
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

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3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	1R	1	1	0
Management	0	0	0	0	0
Other	0	0R	0	0	0
Total	0	1	1	1	0

R

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	2	0	0
Associates	0	0	0
Bachelor	0	0	1
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	0	1	1	0
Management	0	0	0	0	0
Other	0	1	0	0	0
Total	0	1	1	1	0

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3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicles/ Rotary/ Avionics	2 R	Reducing Aircraft Battery Maintenance Costs in the U.S. Navy[1] The Lithium Battery[2]

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[1]IEEE Spectrum, 1992
[2]American Society of Naval Engineers Publication, August 1992

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicles	11	Reducing Aircraft Battery Maintenance Costs in the U.S. Navy Evaluation of a Type "D" Maintenance-Free Sealed Lead-Acid Cell for a Dipping Sonar Application Navy Primary & Secondary Batteries Design and Manufacturing Guidelines Standard Power Supply Applications Handbook State-of-the-Art Research and Development Projects: Environmental Issues, Safety Issues, Degree of Maturity Aircraft Battery Standardization Handbook of Batteries Navy Power Supply Design and Manufacturing Guidelines Safe and Environmentally Benign Lithium Battery Testing The Lithium Battery Lithium Battery Disposal

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

AIR VEHICLE/ROTARY/AVIONICS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0.35	0	0	0
Engineering Development	0.20	0	0	0
In-Service Engineering	0.36	0	0	0

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3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	1	0.4	51K	SH-60[1]

R

[1]This project functions as Cognizant Field Activity (CFA) for all technical matters pertaining to the basic design engineering, production engineering, maintenance engineering, acquisition, in-service use engineering and logistic management of all NAVAIRSYSCOM electrochemical power source systems and associated equipment for all aircraft types.

Also performs as Participating Field Activity (PFA) to provide technical assistance to activities have CFA responsibilities for specific hardware items such as engine starters, auxiliary power units (APU), etc., which contain electrochemical power devices.

This type of work is battery system development for all U.S. Navy and U. S. Marine Corps aircraft applications.

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	1	0.4	51K	SH-60

R

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicles/ Rotary/ Avionics	Night Eagle Flir Prod Engr Supp, ILS, Engr Investigations, Life Cycle Support	$56.5K R	.36 R	UH-1, AH-1W, H-2, H-3, H-46, H-53, H-60

R

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Rotary/Avionics	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Rotary/ Avionics	185K	235K	235K	235K

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicles/ Rotary/ Avionics	Night Eagle Flir	$40K	.16	

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Rotary/Avionics	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Rotary/ Avionics	185K	235K	235K	235K

R

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To: DOD	Unique To: Federal Gov't	Unique To: U. S.	Replacement Cost ($K)	
Air Vehicles/ Rotary/ Avionics	Cleanroom				$250K	R
Air Vehicles/ Rotary/ Avionics	Office Area				$100K	
Air Vehicles/ Rotary/ Avionics	Test Equip			X	$1,500K	R
Air Vehicles/ Rotary/ Avionics	Electrochemical Power Systems Facility			X	$35,000K	

* The test equipment is used for the Catseye Night Vision Goggle System and does not exist anywhere else in the U.S.

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Air Vehicles/ Rotary/ Avionics	Cleanroom	X			$250K
Air Vehicles/ Rotary/ Avionics	Office Area				$100K
Air Vehicles/ Rotary/ Avionics	Test Equip	X			$1,500K
Air Vehicles/ Rotary/ Avionics	Electrochemical Power Systems Facility			X	$35,000K

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The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries*. Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

The Night vision cleanroom and laboratory equipment is used 20% of the time for the Avionics CSF. The other 80% is utilized in support systems in the following functions: Ship Vulnerability and Survivability; Air and Surface Surveillance and Detection; Mine Countermeasures; Amphibious Warfare; and Special Warfare. R

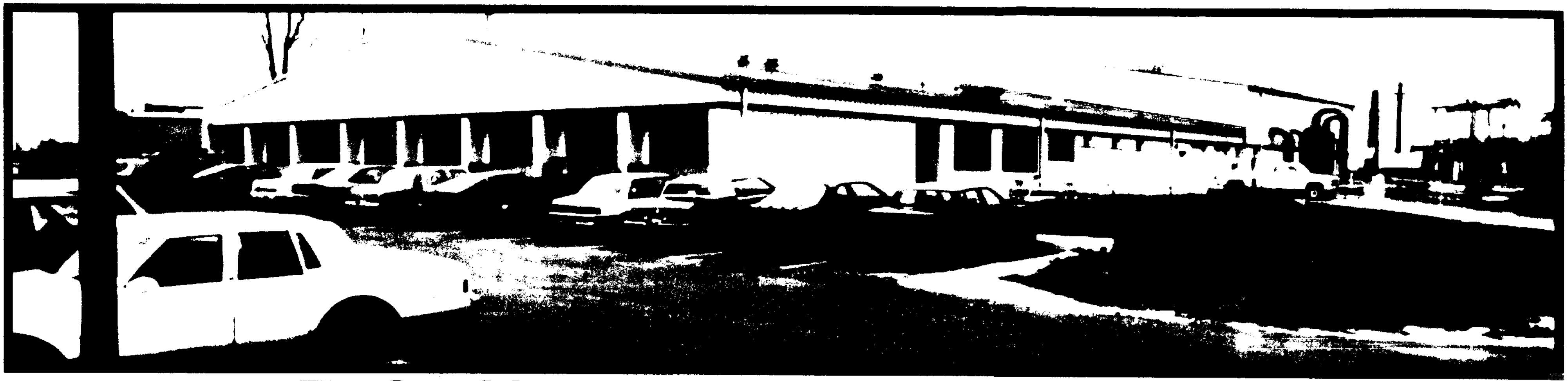
R

ELECTROCHEMICAL POWER SYSTEMS FACILITY

FUNCTION	PERCENTAGE UTILIZATION
Air Vehicles, Fixed Wing, Avionics	0.5 %
Air Vehicles, Fixed Wing, Flight Subsystems	5.2 %
Air Vehicles, Rotary Wing, Avionics	0.7 %
Air Vehicles, Rotary Wing, Flight Subsystems	3.8 %
Weapons, Conventional Missiles/Rockets	1.5 %
Space Systems, Satellites	4.4 %
C4I Systems, Airborne C4I	0.5 %
Other Functions *	83.4 %

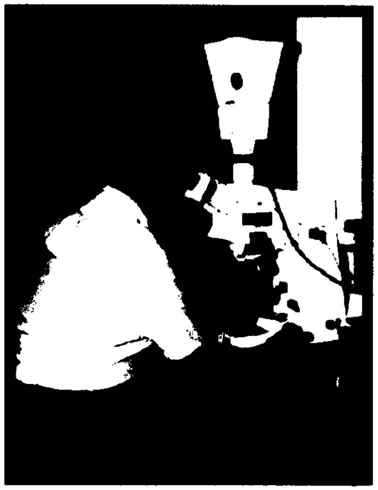
* The Electrochemical Power Systems Facility at Crane is a national asset providing a full spectrum of support for electrochemical power systems (batteries), including RDT&E, engineering, acquisition, depot rework, manufacturing, fleet support and system retirement. Programs and projects supported include missiles and weapons, aircraft, ground support equipment, shipboard and underwater, special warfare, satellites and other space-based equipment, transportation and various other systems. This facility provides support for a wide variety of batteries incorporated within systems and platforms of the Department of the Navy (NAVSEA, NAVAIR, NSWC, NAWC, NUWC, SSPO, SPECWAR, ONR, SOCOM, SPCC & NELO), United States Marine Corps. (USMC), the Department of the Army, the Department of the Air Force, the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), Special Operations Command, Advanced Research Projects Agency (ARPA), Defense General Supply Command (DGSC), the Federal Aviation Administration (FAA), Coast Guard, Foreign Military Sales (FMA), and Private Industry.

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries.* Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

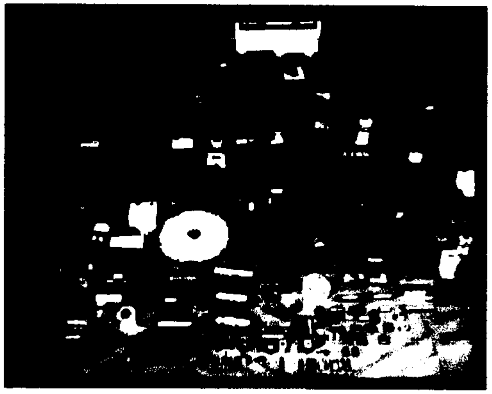


ELECTROCHEMICAL POWER SYSTEMS FACILITY
NSWC CRANE DIVISION

FAILURE ANALYSIS



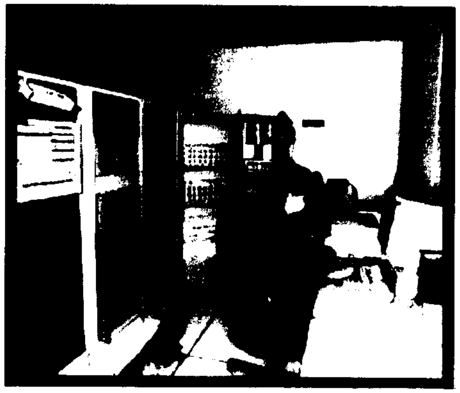
FAMILY OF BATTERIES



TEST CELLS

ENVIRONMENTAL

PROTOTYPE



PERFORMANCE EVALUATION

SAFETY EVALUATION

MATERIAL ANALYSIS

61a

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicle/ Rotary/ Avionics	Bldg 34	Technical	33.6	33.6	0
Air Vehicle/ Rotary/ Avionics	Bldg 38	Technical	18.1	18.1	0
Air Vehicle/ Rotary/ Avionics	Bldg 3235	Technical	27.4	27.4	0
Air Vehicle/ Rotary/ Avionics	Bldg 369	Storage	5.4	5.4	0
Air Vehicle/ Rotary/ Avionics	Bldg 2919	Technical	3.8	3.8	0
Air Vehicle/ Rotary/ Avionics	Bldg 2949	Technical	5.1	5.1	0
Air Vehicle/ Rotary/ Avionics	Bldg 355	Storage	.7	.7	0
Air Vehicle/ Rotary/ Avionics	Bldg 650	Storage	.6	.6	0

Air Vehicle/ Rotary/ Avionics	Bldg 652	Storage	.6	.6	.6
Air Vehicle/ Rotary/ Avionics	Bldg 916	Storage	1.1	1.1	0
Air Vehicle/ Rotary/ Avionics	Bldg 917	Storage	1.1	1.1	1.1
Air Vehicle/ Rotary/ Avionics	Bldg 157	Storage	2.1	2.1	0
Air Vehicle/ Rotary/ Avionics	Bldg 181	Technical	1.7	1.7	1.7
Air Vehicle/ Rotary/ Avionics	Bldg 301	Storage	5.4	5.4	0

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Electrochemical Power Sources - Electrochemical Power Sources can easily accomodate 40 additional workyears in any combination across the four common support functions.

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Electrochemical Power Sources - Electrochemical Power Sources can easily accomodate 40 additional workyears in any combination across the four common support functions.

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

AIR VEHICLES/ROTARY/FLIGHT SUBSYSTEMS
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at the Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC at the Crane Site.

*The mission for the Electrochemical Power Systems Technical Capability is:

- To assure affordable, safe, and reliable Electrochemical Power sources (batteries).

-To meet current and future performance requirements in operational environments; for the Navy and Marine Corps, the Army and Air Force, and other government agencies.

-Provide a full spectrum of support for batteries and related equipments from Research and Development (R&D) through system retirement.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered
requirements for the accomplishment of the mission.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

<u>PERSONNEL ADVANTAGES</u> - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

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3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various
AirVeh,Rotary Wing,Flt Subsystem	Vitro Corp.	Private Industry	30 miles	4.2	0.2

R

These relationships are described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical to accomplishing the mission of NSWC Crane Division. R

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs.

R

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

Finally, the contribution of private industry is not considered critical to the mission. R

ADVANTAGE OF SYNERGIES IN CO-LOCATION

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- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- AIR VEHICLES/ROTARY/FLIGHT SUBSYSTEMS

Types of personnel	Number of Personnel				
	Government		On-Site FFRDC	On-Site SETA	
	Civilian	Military			
Technical	4R	0	0	0	R
Management (Supv)	1	0	0	0	
Other	0R	0	0	0	R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- AIR VEHICLES/ROTARY/FLIGHT SUBSYSTEMS

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	2	0	0	0
Management (Supv)	1	0	0	0
Other	2	0	0	0

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	1	0	0
Associates	1	0	0
Bachelor	2R	1	0R
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

R

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	2R	0	1R	1
Management	0	0	0	0	1
Other	0	0R	0	OR	0
Total	0	2	0	1	2

R
R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	1	0	0
Associates	1	0	0
Bachelor	0	1	2
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	1	0	0	1
Management	0	0	0	0	1
Other	0	1	0	1	0
Total	0	2	0	1	2

R

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	**0**	0	
Total	**0**	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicles/ Rotary/ Flight Subsystems	1 R	Reducing Aircraft Battery Maintenance Costs in the U.S. Navy[1]

R

[1]IEEE Spectrum, 1992

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicles/ Rotary/ Flight Subsystems	9	Reducing Aircraft Battery Maintenance Costs in the U.S. Navy Evaluation of a Type "D" Maintenance-Free Sealed Lead-Acid Cell for a Dipping Sonar Application High Power Vented Nickel-Cadmium Cells Designed for Ultra-Low Maintenance Navy Primary & Secondary Batteries Design and Manufacturing Guidelines Standard Power Supply Applications Handbook State-of-the-Art Research and Development Projects: Environmental Issues, Safety Issues, Degree of Maturity Aircraft Battery Standardization Handbook of Batteries Navy Power Supply Design and Manufacturing Guidelines

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

AIR VEHICLE/ROTARY/FLIGHT SUBSYSTEMS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0.4	0	0	0
Engineering Development	2.9	0	0	0
In-Service Engineering	0.9	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	6	3.8	486K	V-22[1] SH-60[1] H-2[1] H-3[1] H-53[1] AH-1W[1]

R

[1]Program description on following page.

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[1]This project functions as Cognizant Field Activity (CFA) for all technical matters pertaining to the basic design engineering, production engineering, maintenance engineering, acquisition, in-service use engineering and logistic management of all NAVAIRSYSCOM electrochemical power source systems and associated equipment for all aircraft types.

Also performs as Participating Field Activity (PFA) to provide technical assistance to activities have CFA responsibilities for specific hardware items such as engine starters, auxiliary power units (APU), etc., which contain electrochemical power devices.

This type of work is battery system development for all U.S. Navy and U. S. Marine Corps aircraft applications.

ADDED PAGE

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	6	3.8	486K	V-22 SH-60 H-2 H-3 H-53 AH-1W

R

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicles/ Rotary/Flight Subsystems	ILS, Prod Engr Support, Engr Investigations, Life Cycle Support	107.1K	0.9	UH-1, AH-1W, H-2, H-3, H-46, H-53, H-60

R

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicles/ Rotary/Flight Subsystems	None			

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Rotary/Flight Subsystems	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicles/ Rotary/ Flight Subsystems(1)	569K	521K	509K	520K

Note (1) Some Fixed Wing and Rotary Wing Flight Subsystems projects share funding for common or similar applications

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Air Vehicles/ Rotary/ Avionics	Electrochemical Power Systems Facility			X	35,000K

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries*. Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-

Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

R

ELECTROCHEMICAL POWER SYSTEMS FACILITY	
FUNCTION	**PERCENTAGE UTILIZATION**
Air Vehicles, Fixed Wing, Avionics	0.5 %
Air Vehicles, Fixed Wing, Flight Subsystems	5.2 %
Air Vehicles, Rotary Wing, Avionics	0.7 %
Air Vehicles, Rotary Wing, Flight Subsystems	3.8 %
Weapons, Conventional Missiles/Rockets	1.5 %
Space Systems, Satellites	4.4 %
C4I Systems, Airborne C4I	0.5 %
Other Functions *	83.4 %

* The Electrochemical Power Systems Facility at Crane is a national asset providing a full spectrum of support for electrochemical power systems (batteries), including RDT&E, engineering, acquisition, depot rework, manufacturing, fleet support and system retirement. Programs and projects supported include missiles and weapons, aircraft, ground support equipment, shipboard and underwater, special warfare, satellites and other space-based equipment, transportation and various other systems. This facility provides support for a wide variety of batteries incorporated within systems and platforms of the Department of the Navy (NAVSEA, NAVAIR, NSWC, NAWC, NUWC, SSPO, SPECWAR, ONR, SOCOM, SPCC & NELO), United States Marine Corps. (USMC), the Department of the Army, the Department of the Air Force, the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), Special Operations Command, Advanced Research Projects Agency (ARPA), Defense General Supply Command (DGSC), the Federal Aviation Administration (FAA), Coast Guard, Foreign Military Sales (FMA), and Private Industry.

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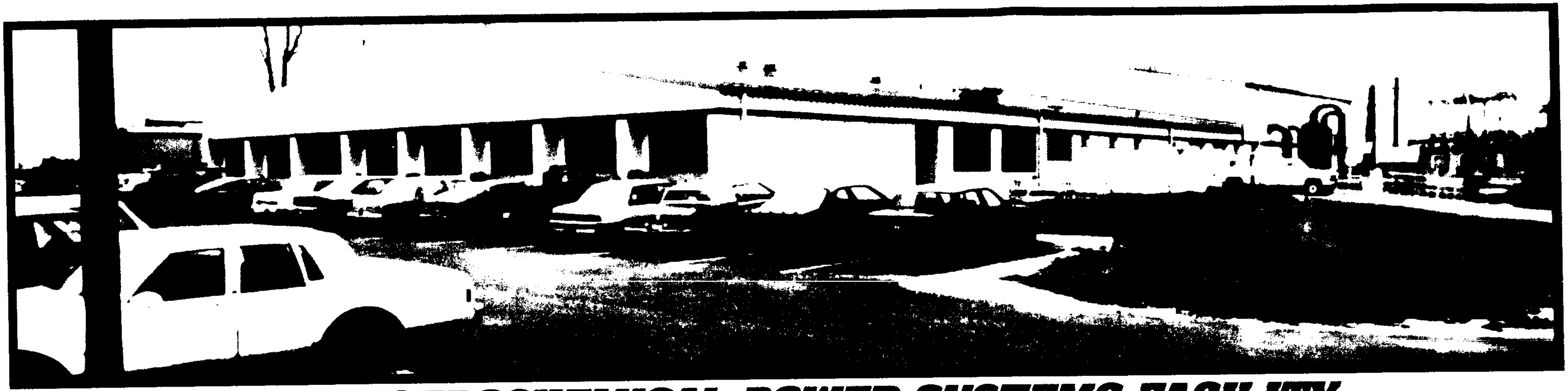
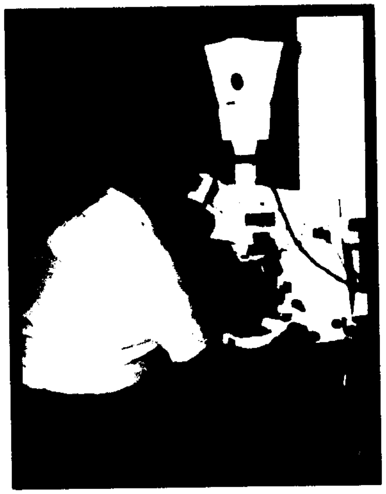


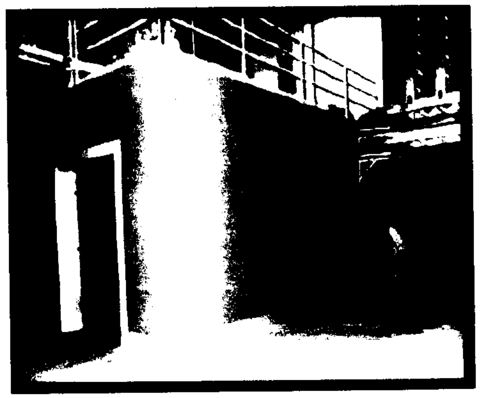
ELECTROCHEMICAL POWER SYSTEMS FACILITY
NSWC CRANE DIVISION

FAILURE ANALYSIS



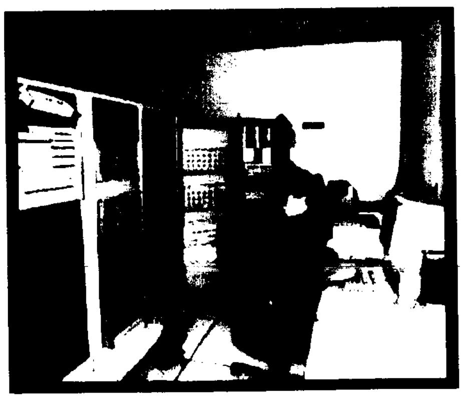
FAMILY OF BATTERIES

TEST CELLS

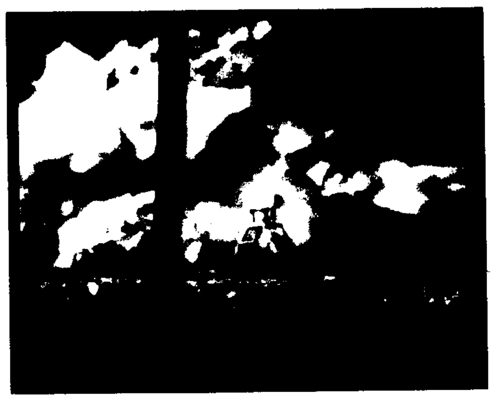


ENVIRONMENTAL

PROTOTYPE



PERFORMANCE EVALUATION



SAFETY EVALUATION

MATERIAL ANALYSIS

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 34	Technical	33.6	33.6	0
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 38	Technical	18.1	18.1	0
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 3235	Technical	27.4	27.4	0
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 369	Storage	5.4	5.4	0
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 2919	Technical	3.8	3.8	0
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 2949	Technical	5.1	5.1	0

Air Vehicle/ Rotary/ Flight Subsystems	Bldg 355	Storage	.7	.7	0
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 650	Storage	.6	.6	0
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 652	Storage	.6	.6	.6
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 916	Storage	1.1	1.1	0
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 917	Storage	1.1	1.1	1.1
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 157	Storage	2.1	2.1	0
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 181	Technical	1.7	1.7	1.7
Air Vehicle/ Rotary/ Flight Subsystems	Bldg 301	Storage	5.4	5.4	0

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Electrochemical Power Sources - The Electrochemical Power Sources facility has a flexible facility to allow for considerable workload expansion. These include state-of-the-art equipments designed with the foresight to accommodate a wide variety of batteries, capable of multiple use, and easily upgradable. Also available are environmental equipments capable of simulating field conditions and material analysis capabilities required by each of the three services.

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Electrochemical Power Sources - Electrochemical Power Sources can easily accomodate 40 additional workyears in any combination across the four common support functions.

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

WEAPONS/CONVENTIONAL MISSILES/ROCKETS
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at the Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC's at the Crane Site.

*The mission for the **Electrochemical Power Systems** Technical Capability is:

- To assure affordable, safe, and reliable Electrochemical Power sources (batteries).

-To meet current and future performance requirements in operational environments; for the Navy and Marine Corps, the Army and Air Force, and other government agencies.

-Provide a full spectrum of support for batteries and related equipments from Research and Development (R&D) through system retirement.

*The mission for the **Conventional Ammunition** Technical Capability is:

-Provide engineering support for Marine Corps conventional missiles/training systems including modification, repair and testing.

-Assure all technical requirements are met to provide safe, reliable and effective products for field use.

-Provide configuration management support including technical data package and ECP control.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered requirements for the accomplishment of the mission.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

<u>PERSONNEL ADVANTAGES</u> - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

R

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various
Weapons/ Conventional Missiles/ Rockets	CAAA	Ammunition Production	1 mile		2 Est.
Weapons/ Conventional Missiles/ Rockets	COMARCO	Engr Support	8 miles		8 Est.

This relationship is described in the following paragraphs. There are no other supporting organizatons/activities nearby which are critical to accomplishing the mission of NSWC Crane Division. R

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various
Weapons/ Conventional Missiles/ Rockets	CAAA	Ammunition Production	1 mile		2 Est.
Weapons/ Conventional Missiles/ Rockets	COMARCO	Engr Support	8 miles		8 Est.

This relationship is described in the following paragraphs.

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

R

Specifically applicable to this CSF, co-location of engineering functions supporting surface ship, air launched and Marine Corps ammunition (e.g., acquisition, ammunition logistics management, surveillance, modification, maintenance, testing, demilitarization and disposal) provides a synergism and efficiency that would be unavailable if these efforts were dispersed among several activities. R

Crane Army Ammunition Activity - Co-location of the Program Management and engineering functions with a major DOD ammunition production, storage, maintenance, and disposal activity, the Crane Army Ammunition Activity (CAAA) provides rapid response capability throughout the life cycle to major regional conflicts such as Operation Desert Shield/Desert Storm. Fifty-eight percent of CAAA's magazine storage (1.9 Million sq ft) contain Navy/marine Corps Ammunition assets. R

Co-location of Navy acquisition, maintenance, and demilitarization and disposal engineering functions with SMCA production operations at Crane offers excellent opportunities to support commodities applicable to this CSF.

Comarco - The availability of the Comarco contractor is beneficial but is not critical to the accomplishment of the mission of this CSF. R

Co-location of engineering functions supporting surface ship, air launched and Marine Corps ammunition (e.g., acquisition, ammunition logistics management, surveillance, modification, maintenance, testing, demilitarization and disposal) provides a synergism and efficiency that would be unavailable if these efforts were dispersed among several activities. Co-location of the Program Management and engineering functions with a major DOD ammunition production, storage, maintenance, and disposal activity, the Crane Army Ammunition Activity (CAAA) provides rapid response capability throughout the life cycle to major regional conflicts such as Operation Desert Shield/Desert Storm. Fifty-eight percent of CAAA's magazine storage (1.9 Million sq ft) contain Navy/marine Corps Ammunition assets.

Co-location of Navy acquisition, maintenance, and demilitarization and disposal engineering functions with SMCA production operations at Crane offers excellent opportunities commodities.

R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- WEAPONS/CONVENTIONAL MISSILES/ROCKETS

Types of personnel	Number of Personnel				
	Government		On-Site FFRDC	On-Site SETA	
	Civilian	Military			
Technical	24R	0	0	0	R
Management (Supv)	1	0	0	0	
Other	0R	0	0	0	R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- WEAPONS/CONVENTIONAL MISSILES/ROCKETS

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	22	0	0	0
Management (Supv)	1	0	0	0
Other	2	0	0	0

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	8	0	0
Associates	2	0	0
Bachelor	8	1	0
Masters	3	0	0
Doctorate (include Med/Vet/etc.)	3R	0	0R

R

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	6	4R	5	9R
Management	0	0	0	0	1
Other	0	0	0R	0	0R
Total	0	6	4	5	10

R

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	8	0	0
Associates	2	0	0
Bachelor	8	1	0
Masters	3	0	0
Doctorate (include Med/Vet/etc.)	1	0	2

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	6	3	5	8
Management	0	0	0	0	1
Other	0	0	1	0	1
Total	0	6	4	5	10

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
Total	0	0	

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3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Weapons/ Conventional Missiles/Rockets	1 R	The Lithium Battery[1]

R

[1]American Society of Naval Engineers Publication, August 1992

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Weapons/ Conventional Missiles/Rockets	13	Navy Primary & Secondary Batteries Design and Manufacturing Guidelines Handbook of Batteries Navy Power Supply Design and Manufacturing Guidelines Safe and Environmentally Benign Lithium Battery Testing The Lithium Battery Lithium Battery Disposal Analysis of Fluoboric Acid for Free Fluoride Ion Content Materials Science Charactreization of a Thermal Battery Special Sample Cell for Determining Surface Area of Whole Battery Plates Correlation of Whole Plate Surfae Area with Plate Capacities for Silver and Zinc Plates Krypton vs. Nitrogen in Surface Area Measurements of Silver-Zinc Battery Plates Measurements of Fielded-Qualified 10,000 Amp-Hr Lithium/Thionyl Chloride Submodules Measuring Surface Area of Whole Battery Plates Using ASAP 2000

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

WEAPONS/CONVENTIONAL MISSILES/ROCKETS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	1.7	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	21.7	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Weapons/ Conventional Missiles/Rockets	Prod Engr/ILS	2,096K	21.7	Marcorp Missiles

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Weapons/ Conventional Missiles/Rockets	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Weapons/ Conventional Missiles/Rockets	**1,683K**	**1,549K**	**1,567K**	**1,432K**

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3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

The facilities applicable to this CSF are assets of the **Conventional Ammunition Engineering and Electrochemical Power Systems** TC's at NSWC Crane. The facilities are described in pages 108 through 112.

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Weapons/ Conventional Missiles/ Rockets	Electrochemical Power Systems Facility			X	35,000K
"	Ordnance Environmental Test Facility				15,100K
"	Ordnance Radiographic Facility				5,200K
"	Ordnance Material Characterization Laboratory			X	7,400K
"	Missile Maintenance Facility				6,300K
"	Ordnance Test Area			X	5,700K

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

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Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Weapons/ Conventional Missiles/ Rockets	Electrochemical Power Systems Facility			X	35,000K
"	Ordnance Environmental Test Facility				15,100K
"	Ordnance Radiographic Facility				5,200K
"	Missile Fuze Test Facility				11,800K
"	Ordnance Material Characterization Laboratory			X	7,400K

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Weapons/ Conventional Missiles/ Rockets	Electrochemical Power Systems Facility			X	35,000K
Weapons/ Conventional Missiles/ Rockets	Ordnance Environmental Test Facility				15,100K
Weapons/ Conventional Missiles/ Rockets	Ordnance Radiographic Facility				5,200K
Weapons/ Conventional Missiles/ Rockets	Missile Fuze Test Facility				11,800K

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"	Missile Storage Facility				10,000K
"	Ordnance Ready Magazine Storage				7,600K
"	Missile Fuze Test Facility				11,800K

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The following describes the assets of the **Electrochemical Power Systems** TC and their utilization relative to this CSF and other related functions.

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries*. Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

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"	Missile Storage Facility				10,000K	
"	Ordnance Ready Magazine Storage				7,600K	

The following describes the assets of the **Electrochemical Power Systems** TC and their utilization relative to this CSF and other related functions.

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries*. Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

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"	FBM Ordnance Components Test Facility					14,700K
"	Missile Maintenance Facility					6,300K
"	Ordnance Test Area				X	5,700K
"	Missile Storage Facility					10,000K
"	Ordnance Ready Magazine Storage					7,600K

The following describes the assets of the **Electrochemical Power Systems** TC and their utilization relative to this CSF and other related functions.

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries*. Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

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ELECTROCHEMICAL POWER SYSTEMS FACILITY	
FUNCTION	**PERCENTAGE UTILIZATION**
Air Vehicles, Fixed Wing, Avionics	0.5 %
Air Vehicles, Fixed Wing, Flight Subsystems	5.2 %
Air Vehicles, Rotary Wing, Avionics	0.7 %
Air Vehicles, Rotary Wing, Flight Subsystems	3.8 %
Weapons, Conventional Missiles/Rockets	1.5 %
Space Systems, Satellites	4.4 %
C4I Systems, Airborne C4I	0.5 %
Other Functions *	83.4 %

* The Electrochemical Power Systems Facility at Crane is a national asset providing a full spectrum of support for electrochemical power systems (batteries), including RDT&E, engineering, acquisition, depot rework, manufacturing, fleet support and system retirement. Programs and projects supported include missiles and weapons, aircraft, ground support equipment, shipboard and underwater, special warfare, satellites and other space-based equipment, transportation and various other systems. This facility provides support for a wide variety of batteries incorporated within systems and platforms of the Department of the Navy (NAVSEA, NAVAIR, NSWC, NAWC, NUWC, SSPO, SPECWAR, ONR, SOCOM, SPCC & NELO), United States Marine Corps. (USMC), the Department of the Army, the Department of the Air Force, the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), Special Operations Command, Advanced Research Projects Agency (ARPA), Defense General Supply Command (DGSC), the Federal Aviation Administration (FAA), Coast Guard, Foreign Military Sales (FMA), and Private Industry.

Weapons/ Conventional Missiles/ Rockets	Proximity Fuze Free Space Facility				400K
Weapons/ Conventional Missiles/ Rockets	FBM Ordnance Components Test Facility				14,700K
Weapons/ Conventional Missiles/ Rockets	Missile Maintenance Facility				6,300K
Weapons/ Conventional Missiles/ Rockets	Marine Corps Weapons Command & Control Systems Development & Production				900K
Weapons/ Conventional Missiles/ Rockets	Missile Storage Facility				10,000K
Weapons/ Conventional Missiles/ Rockets	Ordnance Ready Magazine Storage				7,600K

R

The following table lists the **major** facilities of the **Conventional Ammunition Engineerng** TC. The information in the table describes the percent the facilities are shared between CSF's applicable to Data Call #12 and other related functions. Some facilities are described in the text that are not included in the table because they are **minor and supporting facilities.** Other related functions includes support to acquisition engineering functions at NSWC Crane. Support is provided primarily for components of Air/Surface Ship Combat systems using energetics, pyrothechnics, propellents and explosives.

Major Facility or Equipment Description	Weapons Guns & Ammunition	Weapons Conventional Missiles & Rkts	Cruise Missiles	Other Related Functions
Ordnance Environmental Test Facility	49.6%	20.9%	0.0%	29.5%
Ordnance Radiographic Test Facility	64.9%	8.1%	0.0%	27.0%
Ordnance Ready Magazine Storage	52.3%	23.4%	0.0%	24.3%
Ordnance Material Characterization Laboratory	13.0%	9.0%	0.0%	78.0%
Ordnance Test Area	70.0%	21.0%	0.0%	9.0%
Missile Maintenance Facility	0.0%	100.0%	0.0%	0.0%
Missile Storage Facility	0.0%	100.0%	0.0%	0.0%
Missile Fuze Test Facility	0.0%	97.3%	1.0%	1.7% R

R

The following table lists the **major** facilities of the **Conventional Ammunition Engineerng** TC. The information in the table describes the percent the facilities are shared between CSF's applicable to Data Call #12 and other related functions. Some facilities are described in the text that are not included in the table because they are **minor and supporting facilities**. Other related functions includes support to acquisition engineering functions at NSWC Crane. Support is provided primarily for components of Air/Surface Ship Combat systems using energetics, pyrothechnics, propellents and explosives.

Major Facility or Equipment Description	Weapons Guns & Ammunition	Weapons Conventional Missiles & Rkts	Other Related Functions
Ordnance Environmental Test Facility	49.6%	20.9%	29.5%
Ordnance Radiographic Test Facility	64.9%	8.1%	27.0%
Ordnance Ready Magazine Storage	52.3%	23.4%	24.3%
Ordnance Material Characterization Laboratory	13.0%	9.0%	78.0%
Ordnance Test Area	70.0%	21.0%	9.0%

In the **Ordnance Environmental Test** facilities the design, selection and procurement of test equipment and facilities have been made with the test and evaluation of explosive and other hazardous materials in mind. Environmental test facilities and equipment are available to do vibration, shock, temperature, humidity, altitude, jolt, jumble, sunshine and rain, sand and dust, and salt spray. Environmental test facilities are contained in four buildings with 20,000 square feet.

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The following table lists the **major** facilities of the **Conventional Ammunition Engineerng** TC. The information in the table describes the percent the facilities are shared between CSF's applicable to Data Call #12 and other related functions. Some facilities are described in the text that are not included in the table because they are **minor and supporting facilities**. Other related functions includes support to acquisition engineering functions at NSWC Crane. Support is provided primarily for components of Air/Surface Ship Combat systems using energetics, pyrothechnics, propellents and explosives.

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Ordnance Material Characterization Laboratory	13.0%	9.0%	78.0%	
Ordnance Test Area	70.0%	21.0%	9.0%	
Missile Maintenance Facility	0.0%	100.0%	0.0%	R
Missile Storage Facility	0.0%	100.0%	0.0%	R

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries*. Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

In the Ordnance Environmental Test facilities the design, selection and procurement of test equipment and facilities have been made with the test and evaluation of explosive and other hazardous materials in mind. Environmental test facilities and equipment are available to do vibration, shock, temperature, humidity, altitude, jolt, jumble, sunshine and rain, sand and dust, and salt spray. Environmental test facilities are contained in four buildings with 20,000 square feet. This facility is used approximately 10 percent of the time in support of "laboratory" operations. The remainder of the usage is for acquisition support.

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The **Ordnance Radiographic Facility** provides radiographic testing of ordnance items for the three Services. Radiographic inspection capabilities include both real time and conventional X-ray. A special high bay exposure room with a high energy accelerator is available for radiographic inspection of very large items, e.g. 2,000 pound bombs, that can be brought in on trucks/trailers and X-rayed without unloading. The radiographic facilities are in two buildings with 7,100 square feet.

Ordnance Ready Magazine Storage in Support of Ordnance Engineering Directorate provides ordnance receiving, shipping and storage for the various Programs of the Directorate. The facilities are used to receive a wide variety of ammunition and explosives for the Directorate. After receipt, the ordnance is either forwarded immediately to the user or placed in storage magazines temporarily until ready for evaluation. Total number of magazines is 37 with 57,400 square feet of storage space.

The **Ordnance Material Characterization Laboratory** provides chemical and metallurgical laboratories for performing failure evaluations, thermal characterization analyses, physical and chemical properties of materials and materials compatibility of explosives, propellants, pyrotechnics, metals, polymers, ceramics, adhesives, coatings and compositions. Accelerated aging studies of ordnance materials complete with temperature controlled environments for isothermal studies as well as temperature cycling studies are provided in an ordnance qualified facility. In addition to the normal quality evaluation and safety tests of ordnance materials such as impact, friction and electrostatic sensitivity, vacuum and thermal stability, self-heating and ignition the Division operates a complete thermal characterization laboratory. This laboratory has six microcalorimeters to infer long term aging characteristics, an Accelerated Rate Calorimeter and numerous thermal analyzers and differential scanning calorimeters.

The **Ordnance Test Area** provides test ranges and facilities for first article, lot acceptance, surveillance, qualification and safety testing of pyrotechnic, demolition and conventional ammunition items. The test areas have a total of 88 unencumbered acres and are supported by eleven buildings (5600 square feet). In addition to normal function testing the ranges also support Insensitive Munitions Testing on All-Up-Rounds (pyrotechnic, demolition and conventional ammunition) including Fast and Slow Cookoff, Bullet Impact and Sympathetic Detonation. Specialized equipment includes a Remote

R

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The **Missile Fuze Test Facility** provides for testing a wide variety of missile fuzing components (warhead section components). Equipment used includes centrifuge, burn rate/velocity tester, active optical test ranges, leak detectors and many specialized pieces of equipment. This test equipment supports production acceptance, surveillance, and maintenance of these fuzing components. Approximately 25 missiles are supported including STANDARD, TOMAHAWK and SIDEWINDER. This effort supports the Navy as well as joint programs with the Air Force, Army, Foreign Military Sales and private parties.

The **Proximity Fuze Free Space Facility** (10,000 ft reflectivity plane) is the certified Navy Standard used to establish the electronic values of Radio Frequency Fuze Standard Monitors. These Standard Monitors are used for correlation of systems used in production and testing of Proximity Fuzes by both the private and public sectors. Radio Frequency Proximity Fuzes are used on all the major caliber ammunition in the Navy stockpile.

Fleet Ballistic Missile, Ordnance Components Test Facility provides support to the Fleet Ballistic Missile Strategic Weapons System ordnance evaluation programs throughout the life cycle of the Trident I and II Missiles. This is accomplished through the design manufacture of ordnance test systems and the test and evaluation of missile ordnance components utilized in the Launch, Missile Body and Reentry Systems. This facility is unique in respect to its design, construction and safety site approval which allows ordnance components and assemblies to be destructively tested safely. This building allows explosive operations and still meets the quantity-distance requirements of NAVSEA OP-5.

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Ammunition Breakdown Facility, a Rockeye Bomblet Drop and Air Launch Facility, a Forty Foot Drop Tower, a Grenade Launch Range and 100 and 300 foot Towers for suspension and testing of Aircraft Parachute Flares, Practice Bombs, Infrared Decoy Flares and Obscurants.

Missile Maintenance Facility performs intermediate level maintenance on STINGER air defense missiles and TOW and DRAGON anti-armor missiles. Engineering support services are available for test equipment and test fixture design, maintenance line layout and missile configuration monitoring and control. The larger of two facilities is a 19,000 square foot reinforced concrete multi-bay structure designed to minimize personnel injuries and capability loss in the event of an explosive incident. A second smaller facility is a 5,000 square foot earth covered structure designed to allow performance of minor maintenance and double as a shipping and receiving facility. Both structures are protected by static and ordnance grounding systems and lightning protection systems. Both facilities are DOD safety site approved and with no explosive operating waivers or exemptions.

Missile Storage Facilities perform storage of preposition war reserve Navy and Marine Corps Stinger Missiles and Marine Corps Tow and Dragon Missiles. Perform receipt, storage, and issue of training missiles for the Marine Corps. Urgent missile delivery capability to operational areas worldwide is provided via Wright Patterson Air Force Base, Dayton, Ohio. Total storage space for Risk Category 1 arms, ammunition and explosives (AA&E) is 45,000 square feet. Total storage space for Risk Category 2 AA&E is 50,000 square feet.

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3.5 Expansion Potential

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Marine/Corps Weapons Command and Control Systems Development and Production performs prototype development and low rate initial production of Command and Control electronics shelters. Engineering support services available for systems integration and configuration control. Three separate facilities comprise the prototype complex. A 5,000 square foot facility is used for subsystem assembly and checkout. Two 4,000 square foot facilities are used for complete system assembly and checkout. All three facilities are pre-engineered steel structures. No special equipment or utilities are required.

Missile Storage Facilities perform storage of preposition war reserve Navy and Marine Corps Stinger Missiles and Marine Corps Tow and Dragon Missiles. Perform receipt, storage, and issue of training missiles for the Marine Corps. Urgent missile delivery capability to operational areas worldwide is provided via Wright Patterson Air Force Base, Dayton, Ohio. Total storage space for Risk Category 1 arms, ammunition and explosives (AA&E) is 45,000 square feet. Total storage space for Risk Category 2 AA&E is 50,000 square feet.

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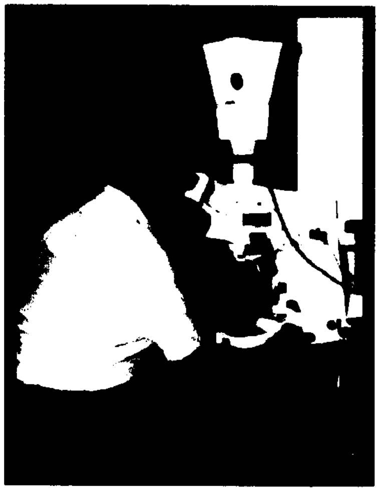
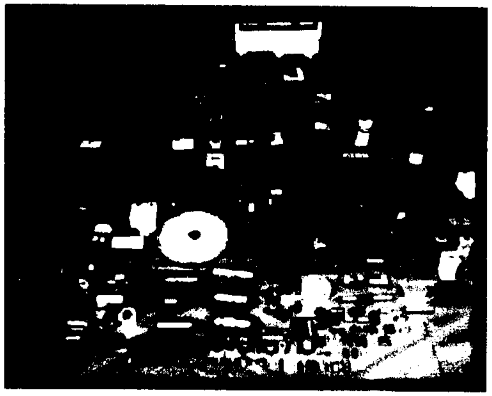
ELECTROCHEMICAL POWER SYSTEMS FACILITY
NSWC CRANE DIVISION

FAILURE ANALYSIS



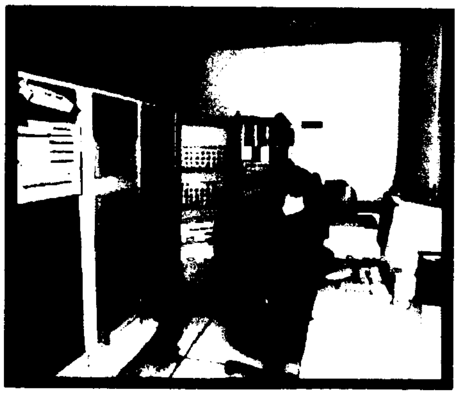
FAMILY OF BATTERIES



TEST CELLS

ENVIRONMENTAL

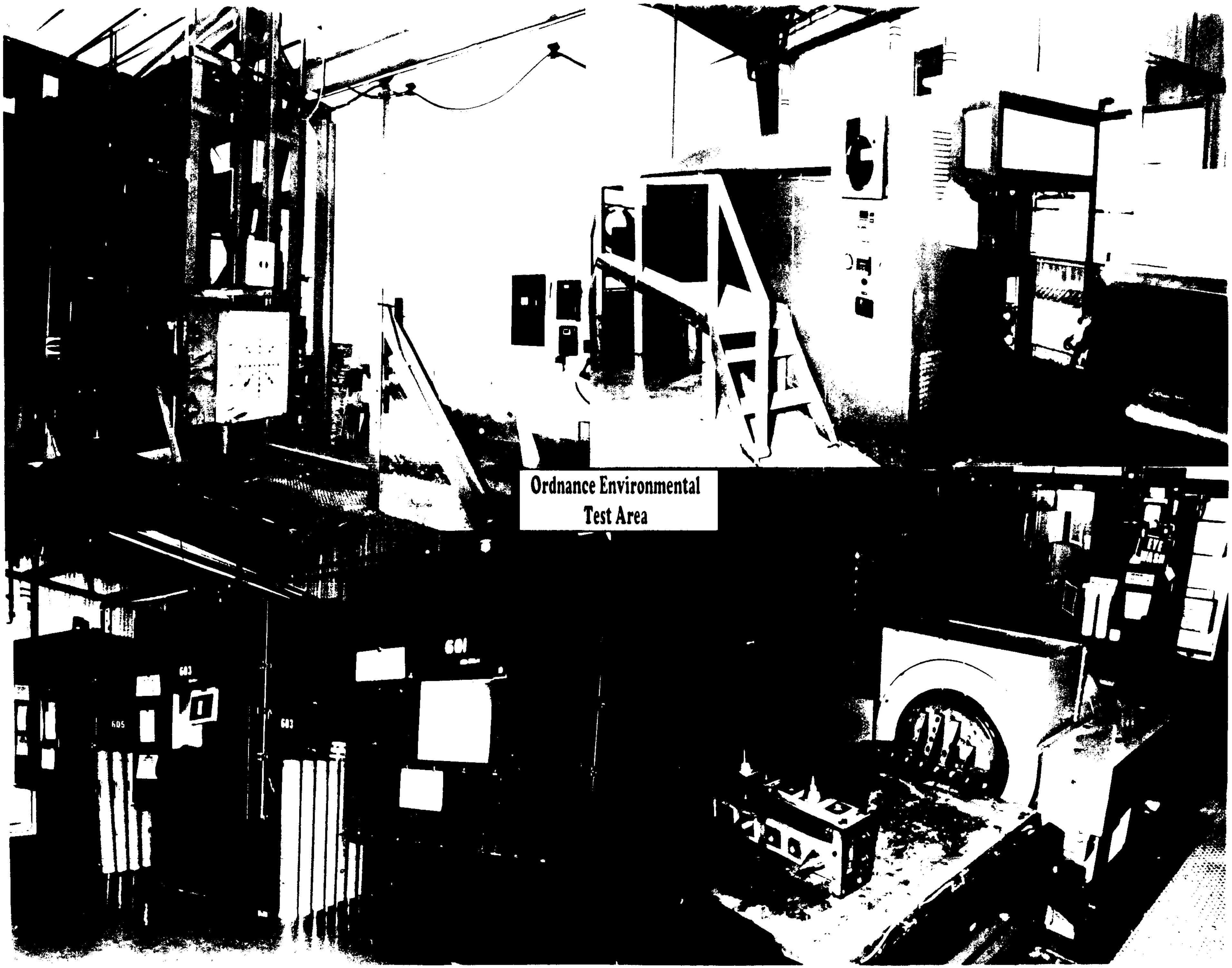
PROTOTYPE



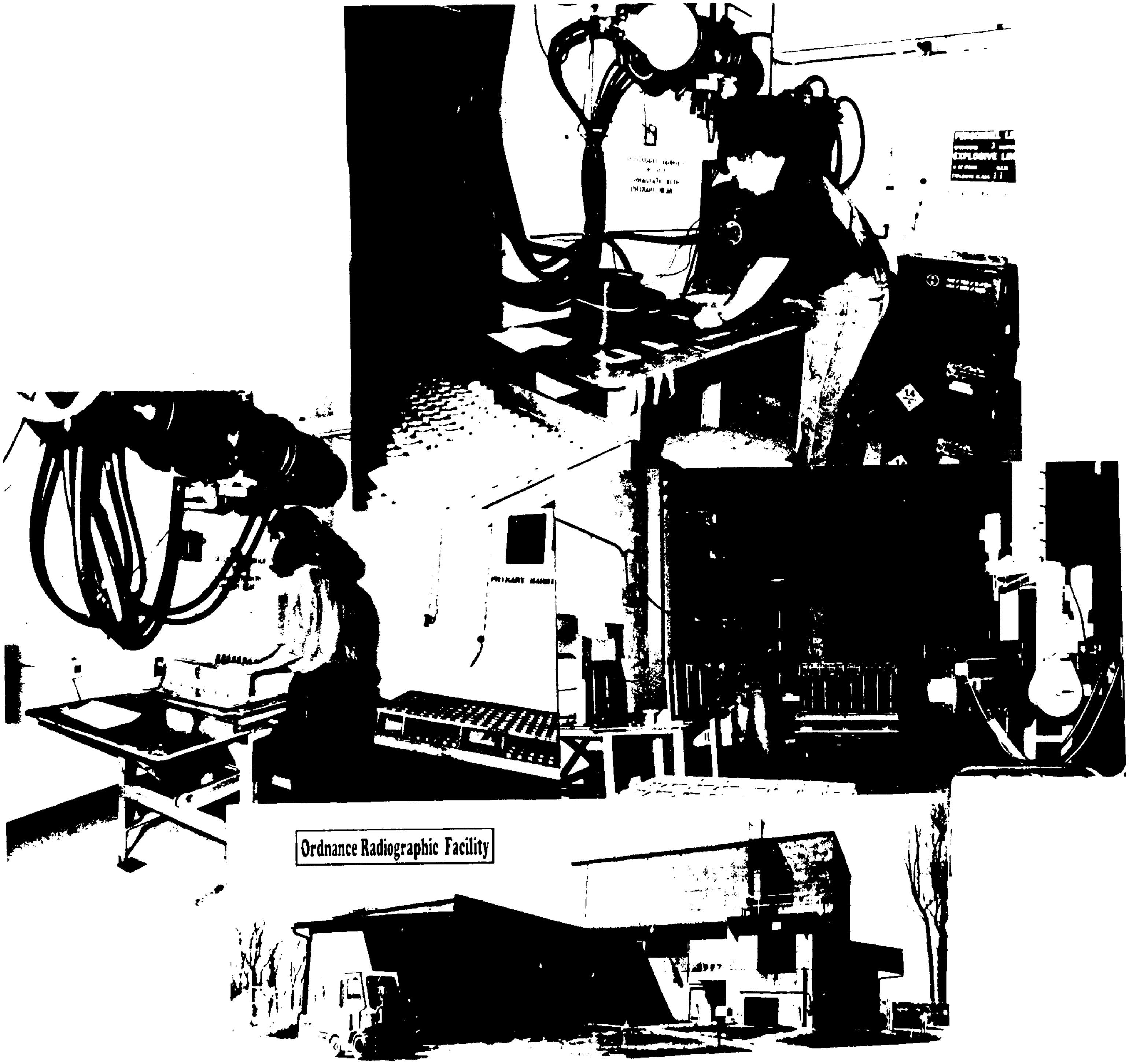
PERFORMANCE EVALUATION

SAFETY EVALUATION

MATERIAL ANALYSIS

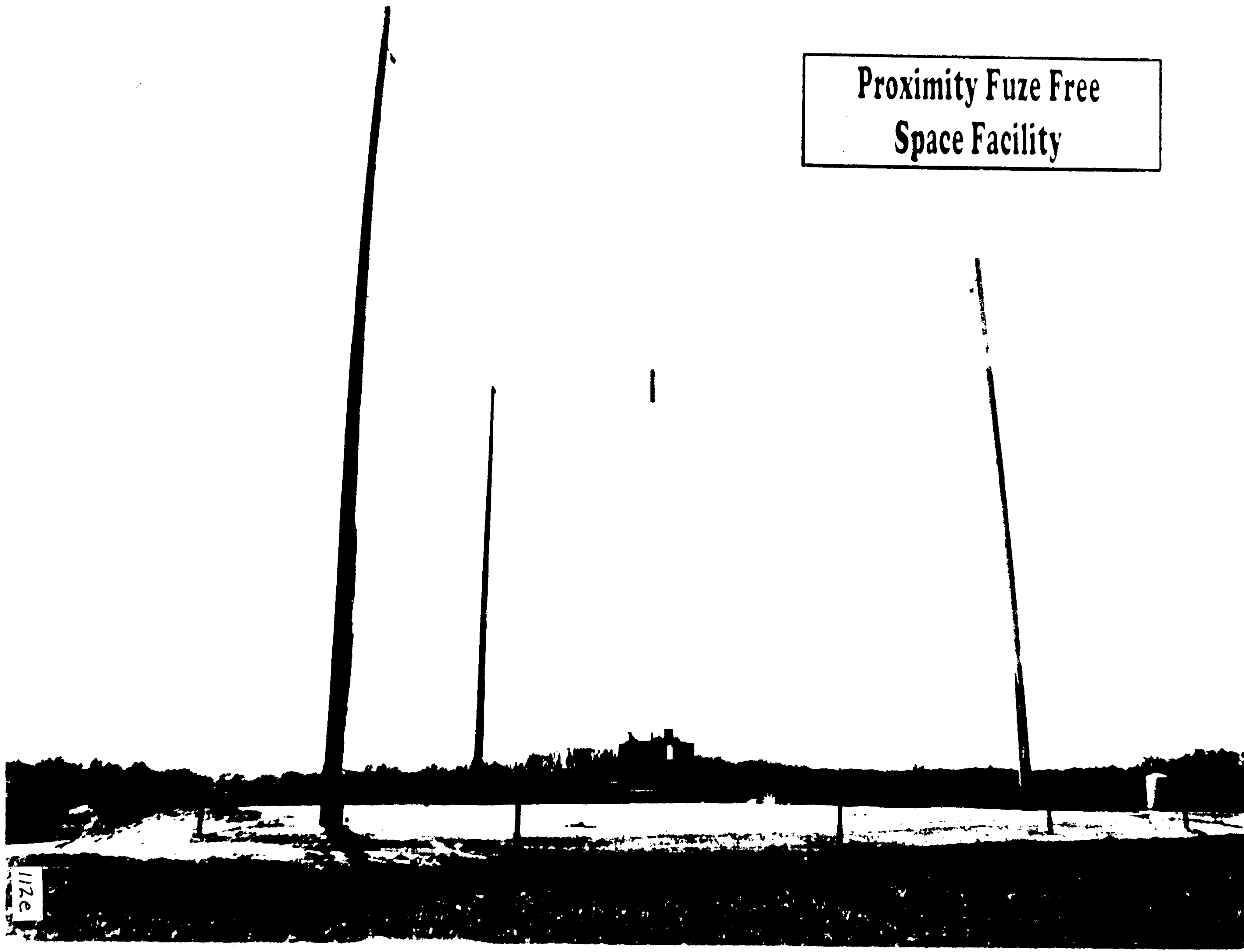


1126

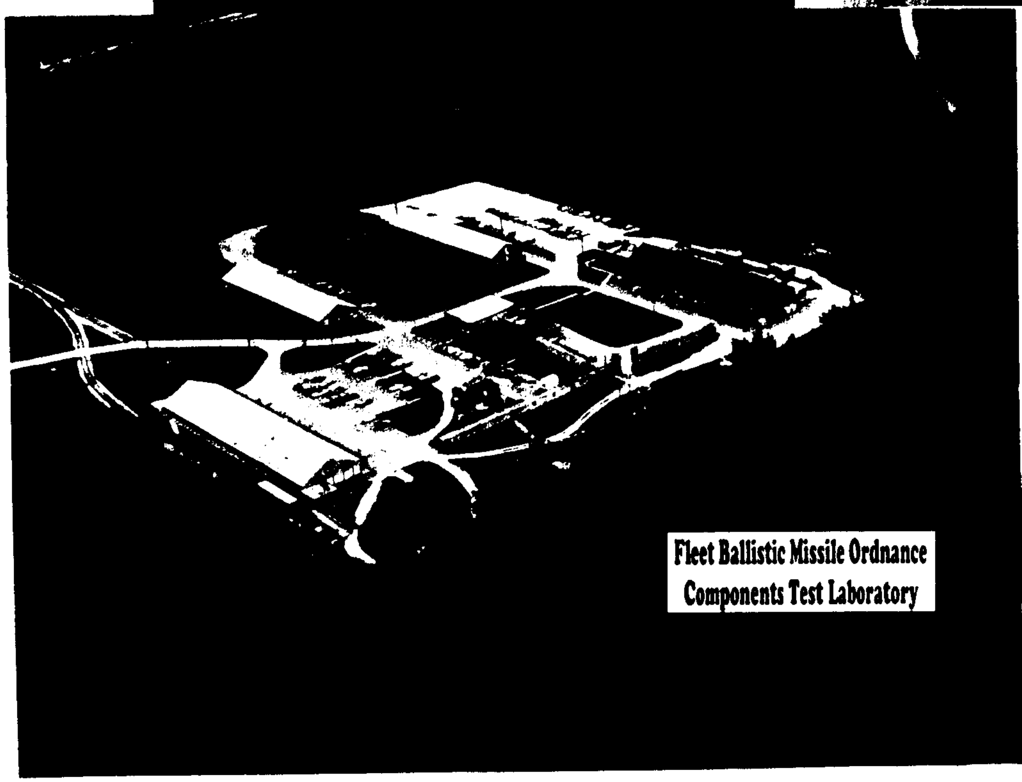

Ordnance Radiographic Facility

PZ11

Missile Fuze
Test Laboratory

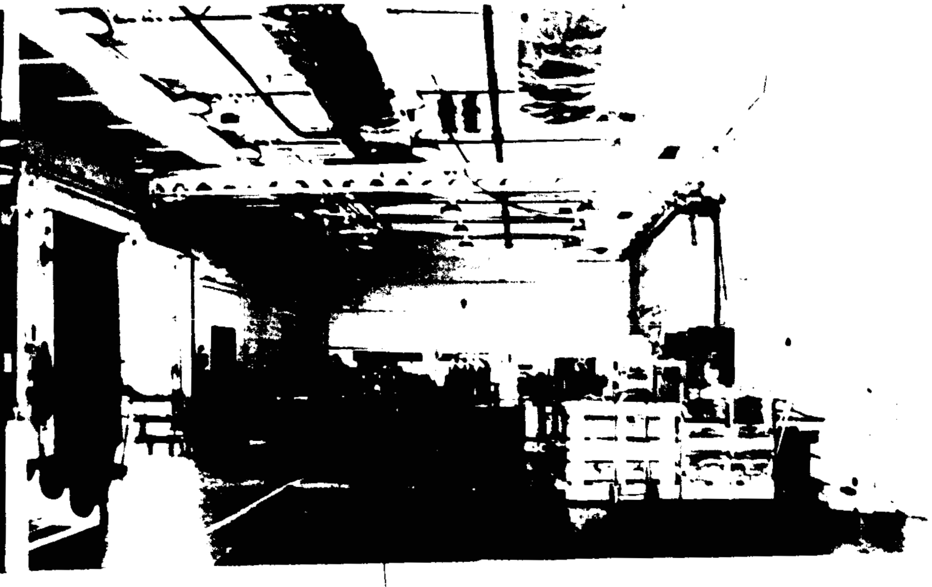


Proximity Fuze Free
Space Facility



Fleet Ballistic Missile Ordnance
Components Test Laboratory

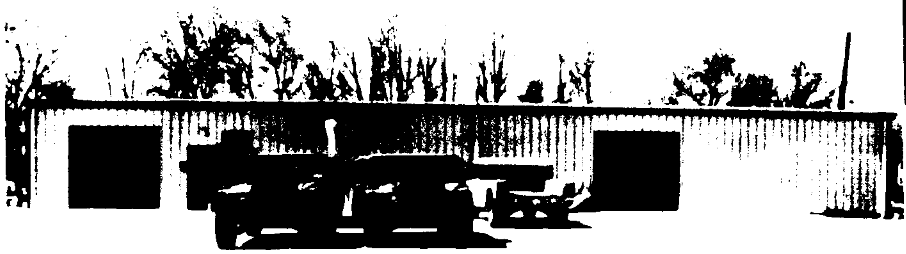
112F



Missile Maintenance Facility

1129

Marine Corp Weapons
Command & Control Systems




Missile Storage Facility
2372

Ordnance Ready
Magazine Storage

112.

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Weapons/ Conventional Missiles/ Rockets	Bldg 34	Technical	33.6	33.6	0
Weapons/ Conventional Missiles/ Rockets	Bldg 38	Technical	18.1	18.1	0
Weapons/ Conventional Missiles/ Rockets	Bldg 3235	Technical	27.4	27.4	0
Weapons/ Conventional Missiles/ Rockets	Bldg 369	Storage	5.4	5.4	0
Weapons/ Conventional Missiles/ Rockets	Bldg 2919	Technical	3.8	3.8	0
Weapons/ Conventional Missiles/ Rockets	Bldg 2949	Technical	5.1	5.1	0

Weapons/ Conventional Missiles/ Rockets	Bldg 355	Storage	.7	.7	0
Weapons/ Conventional Missiles/ Rockets	Bldg 650	Storage	.6	.6	0
Weapons/ Conventional Missiles/ Rockets	Bldg 652	Storage	.6	.6	.6
Weapons/ Conventional Missiles/ Rockets	Bldg 916	Storage	1.1	1.1	0
Weapons/ Conventional Missiles/ Rockets	Bldg 917	Storage	1.1	1.1	1.1
Weapons/ Conventional Missiles/ Rockets	Bldg 157	Storage	2.1	2.1	0
Weapons/ Conventional Missiles/ Rockets	Bldg 181	Technical	1.7	1.7	1.7
Weapons/ Conventional Missiles/ Rockets	Bldg 301	Storage	5.4	5.4	0

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Electrochemical Power Sources - The Electrochemical Power Sources facility has a flexible facility to allow for considerable workload expansion. These include state-of-the-art equipments designed with the foresight to accommodate a wide variety of batteries, capable of multiple use, and easily upgradable. Also available are environmental equipments capable of simulating field conditions and material analysis capabilities required by each of the three services.

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Electrochemical Power Sources - Electrochemical Power Sources can easily accomodate 40 additional workyears in any combination across the four common support functions.

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

C4I SYSTEMS/GROUND MOBILE C4I
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at the Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC at the Crane Site.

*The mission for the <u>Conventional Ammunition</u> Technical Capability is:

-Provide engineering support for Marine Corps ground equipmnent/systems including modification, repair and testing.

-Assure all technical requirements during acquisition are incorporated into equipment to ensure safe, reliable and effective products for field use.

-Provide configuration management services including technical data documentation and ECP control.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

<u>TECHNICAL ADVANTAGES</u> - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered <u>requirements</u> for the accomplishment of the mission.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

PERSONNEL ADVANTAGES - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various
C4I Systems/ Ground Mobile C4I	CAAA	Ammunition Production	1 mile		6 Est.
C4I Systems/ Ground Mobile C4I	COMARCO	Engr Support	8 miles		15 Est.

This relationship is described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical to accomplishing the mission of NSWC Crane Division. R

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3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various
C4I Systems/ Ground Mobile C4I	CAAA	Ammunition Production	1 mile		6 Est.
C4I Systems/ Ground Mobile C4I	COMARCO	Engr Support	8 miles		15 Est.

This relationship is described in the following paragraphs.

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

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Specifically for this CSF, co-location of engineering functions supporting surface ship, air launched and Marine Crops ammunition (e.g., acquisition, ammunition logistics management, surveillance, modification, maintenance, testing, demilitarization and disposal) provides a synergism and efficiency that would be unavailable if these efforts were dispersed among several activities. R

Crane Army Ammunition Activity - Co-location of the Program Management and engineering functions with a major DOD ammunition production, storage, maintenance, and disposal activity, the Crane Army Ammunition Activity (CAAA) provides rapid response capability throughout the life cycle to major regional conflicts such as Operation Desert Shield/Desert Storm. Fifty-eight percent of CAAA's magazine storage (1.9 Million sq ft) contain Navy/marine Corps Ammunition assets. R

Co-location of Navy acquisition, maintenance, and demilitarization and disposal engineering functions with SMCA production operations at Crane offers excellent opportunities to support commodities applicable to this CSF.

Comarco - The availability of the Comarco contractor is beneficial but is not critical to the accomplishment of the mission of this CSF. R

Co-location of engineering functions supporting surface ship, air launched and Marine Crops ammunition (e.g., acquisition, ammunition logistics management, surveillance, modification, maintenance, testing, demilitarization and disposal) provides a synergism and efficiency that would be unavailable if these efforts were dispersed among several activities. Co-location of the Program Management and engineering functions with a major DOD ammunition production, storage, maintenance, and disposal activity, the Crane Army Ammunition Activity (CAAA) provides rapid response capability throughout the life cycle to major regional conflicts such as Operation Desert Shield/Desert Storm. Fifty-eight percent of CAAA's magazine storage (1.9 Million sq ft) contain Navy/marine Corps Ammunition assets.

Co-location of Navy acquisition, maintenance, and demilitarization and disposal engineering functions with SMCA production operations at Crane offers excellent opportunities commodities.

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- C4I SYSTEMS/GROUND MOBILE C4I

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	28	0	0	0
Management (Supv)	2	0	0	0
Other	0	0	0	0

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	4	0	0
Associates	4	0	0
Bachelor	20	0	0
Masters	0	2	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	14	4	1	9
Management	0	0	0	0	2
Other	0	0	0	0	0
Total	0	14	4	1	11

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
C4I Systems/ Ground Mobile C4I	0	

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

C4I SYSTEMS/GROUND MOBILE C4I

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0.0	0	0	0
Engineering Development	14.6	0	0	0
In-Service Engineering	15.6	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

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Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	5	14.6	1,827K	Marine Corp Ground Equip: HAWK[1] Light Armored Vehicle Air Defense Variant (LAV-AD)[2] AVENGER[3] Amphibious Assault Vehicle (AAV) Mine Rake[4] Air Defense Command and Control (AD-C&C)[5]

[1]HAWK Missile Ground Support Equipment: The Marine Corps, the only remaining Service with a HAWK Missile requirement, is involved with Raytheon Corporation in the downsizing of ground support equipment in order to make it more rapidly deployable. NSWC Crane Division is acting as the Marine Corps Technical Agent to review engineering changes proposed by the contractor and advise the Marine Corps on the effectiveness and impact of these changes.

[2]Light Armored Vehicle Air Defense Variant (LAV-AD): The Marine Corps has chosen the General Electric Company version of the LAV-AD and is proceeding with its testing. NSWC Crane Division is supplying Blast Test Vehicles built around the STINGER launch motor to test the vehicles ability to withstand missile launches. In addition, the Crane Division is providing the Marine Corps with information on a possible compatible missile to STINGER, whether foreign or domestic in origin for improved anti-helicopter defense.

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[3]AVENGER - The Marine Corps is fielding a modified AVENGER System to support its low altitude air defense capability. NSWC Crane Division is providing engineering and technical support in developing a Command and Control capability using non-developed items. In addition, the Crane Division is analyzing the AVENGER for weaknesses in original design when compared with Marine Corps requirements. Determined weaknesses will be identified with solutions.

[4]Amphibious Assault Vehicle (AAV) Mine Rake: The Marine Corps continues to look for equipment to proof beaches and other areas of land mines. NSWC Crane Division has provided engineering and rapid prototype fabrication capability to build full size models for the purpose of testing to prove a concept. This has employed the large fabrication capabilities of the Louisville Site. Concepts that are proven will then go through the regular Milestone process to final competitive procurement.

[5]Air Defense Command and Control: The Marine Corps is moving to net its low altitude air defense capabilities into a unified command and control structure. This will involve various inputs such as HAWK radar, AWACS, Aegis, etc. feeding information that can be used to assist the AVENGER and man-portable STINGER teams in locating hostile aircraft and helicopters. NSWC Crane Division is providing prototype design capability and systems integration capability to produce hardware and test the ideas being developed using Fleet Marine input.

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3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None
Other	5	14.6	1,827K	Marine Corp Ground Equip: HAWK LAV-AD AVENGER AAU RAKE AD-C&C

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
C4I Systems/ Ground Mobile C4I	Prod Engr Support/ILS	2,725K	15.6	Marine Corps Ground Equipment

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
C4I Systems/ Ground Mobile C4I	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
C4I Systems/ Ground Mobile C4I	3,754K	3,300K	2,340K	2,095K

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3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

The facility utilized for this CSF is dedicated to this function only. It is described as follows.

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
C4ISystems/ ground Mobile C4I	Marine Corps Weapons Command & Control Systems Development & Production				900K

The Marine/Corps Weapons Command and Control Systems Development and Production performs prototype development and low rate initial production of Command and Control electronics shelters. Engineering support services available for systems integration and configuration control. Three separate facilities comprise the prototype complex. A 5,000 square foot facility is used for subsystem assembly and checkout. Two 4,000 square foot facilities are used for complete system assembly and checkout. All three facilities are pre-engineered steel structures. No special equipment or utilities are required.

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To: DOD	Unique To: Federal Gov't	Unique To: U. S.	Replacement Cost ($K)
C4I Systems/ Ground Mobile C4I	Missile Maintenance Facility				6,300K
C4I Systems/ Ground Mobile C4I	Marine Corps Weapons Command & Control Systems Development & Production				900K
C4I Systems/ Ground Mobile C4I	Missile Storage Facility				10,000K
C4I Systems/ Ground Mobile C4I	Ordnance Ready Magazine Storage				7,600K

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Missile Maintenance Facility performs intermediate level maintenance on STINGER air defense missiles and TOW and DRAGON anti-armor missiles. Engineering support services are available for test equipment and test fixture design, maintenance line layout and missile configuration monitoring and control. The larger of two facilities is a 19,000 square foot reinforced concrete multi-bay structure designed to minimize personnel injuries and capability loss in the event of an explosive incident. A second smaller facility is a 5,000 square foot earth covered structure designed to allow performance of minor maintenance and double as a shipping and receiving facility. Both structures are protected by static and ordnance grounding systems and lightning protection systems. Both facilities are DOD safety site approved and with no explosive operating waivers or exemptions.

Marine/Corps Weapons Command and Control Systems Development and Production performs prototype development and low rate initial production of Command and Control electronics shelters. Engineering support services available for systems integration and configuration control. Three separate facilities comprise the prototype complex. A 5,000 square foot facility is used for subsystem assembly and checkout. Two 4,000 square foot facilities are used for complete system assembly and checkout. All three facilities are pre-engineered steel structures. No special equipment or utilities are required.

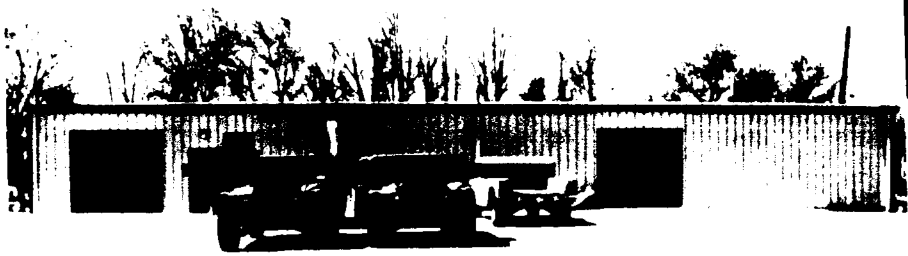
Missile Storage Facilities perform storage of preposition war reserve Navy and Marine Corps Stinger Missiles and Marine Corps Tow and Dragon Missiles. Perform receipt, storage, and issue of training missiles for the Marine Corps. Urgent missile delivery capability to operational areas worldwide is provided via Wright Patterson Air Force Base, Dayton, Ohio. Total storage space for Risk Category 1 arms, ammunition and explosives (AA&E) is 45,000 square feet. Total storage space for Risk Category 2 AA&E is 50,000 square feet.

Ordnance Ready Magazine Storage in Support of Ordnance Engineering Directorate provides ordnance receiving, shipping and storage for the various Programs of the Directorate. The facilities are used to receive a wide variety of ammunition and explosives for the Directorate. After receipt, the ordnance is either forwarded immediately to the user or placed in storage magazines temporarily until ready for evaluation. Total number of magazines is 37 with 57,400 square feet of storage space.



Missile Maintenance Facility

Marine Corp Weapons
Command & Control Systems



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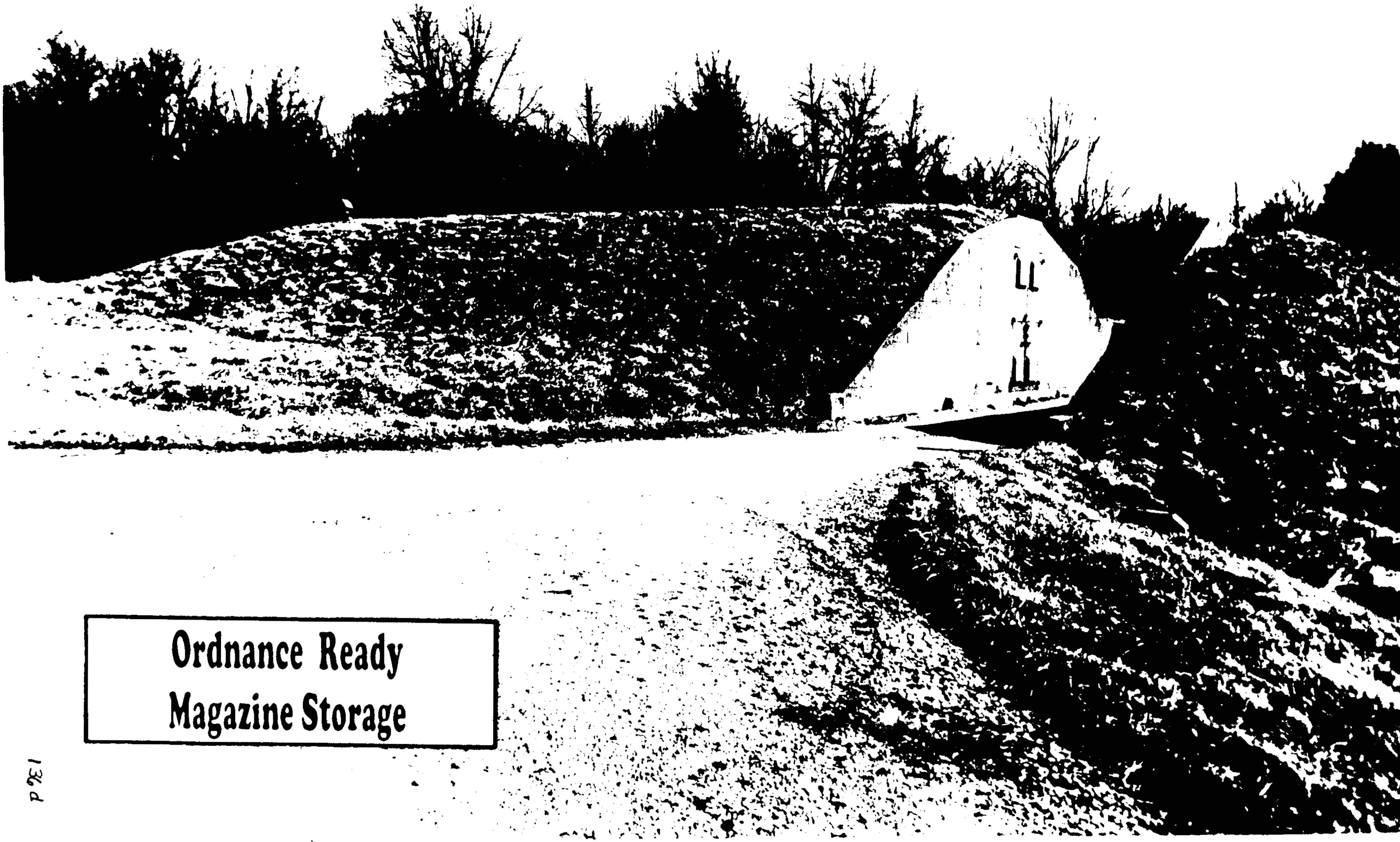

Ordnance Ready
Magazine Storage

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
C4I Systems/ Ground Mobile C4I	None				

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

**WEAPONS/GUNS AND AMMUNITION
COMMON SUPPORT FUNCTION**

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at the Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC's at the Crane Site.

* The mission for the **Pyrotechnics** Technical Capability is:

- Perform research, design, development, test and evaluation and engineering support for navy pyrotechnics

- Provide technical support to pyrotechnic producers to assure safe, reliable and effective pyrotechnics for fleet use

- Provide program management support to headquarters for pyro technics

- Technical support focal point office for airborne expendables and aircraft self-protection

* The mission for the **Conventional Ammunition** Technical Capability is:

- Provide program management support for Navy Conventional Ammunition

- Assure all fleet requirements are incorporated into conventional ammunition and safe, reliable effective products are available for fleet use.

- Perform qualification, acceptance, surveillance and failure analysis testing

- Demilitarization and disposal processes

- Provide program management support and information system design to Naval Ordnance Center

* The mission of the Small Arms Technical Capability is:

- Full life-cycle support including design, development, acquisition, engineering, test and evaluation, logistics management and maintenance.

- Secure storage areas for weapons and ammunition.

- Rapid prototyping capability.

- Prototype ammunition loading facility.

- 100-meter underground firing range with capability to test up to 25mm guns in addition to lasers and night-vision equipment under controlled lighting and temperature conditions. Climatic test cell to fire under temperature/humidity extremes and freezing rain.

-1000-yard outdoor firing range with capability to test up to 25mm guns in addition to lasers and night-vision equipment. Six computer-controlled automatic targeting system stations from 50 yards to 1000 yards. Full range of ballistic test equipment including doppler radar, IR video, flash photometer, and ballistic computer.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered
requirements for the accomplishment of the mission.

1000 Yard Outdoor Firing Range - Removal from high density population centers allows for the testing of small arms weapons, mounts and ammunition without restrictions based on noise pollution requirements. Also, **this location reduces security risks due to infiltration or threat of urban riot.**

Low Background Radiation - As an ordnance storage and control facility, radio frequency radiators are controlled internally, enabling testing that requires low background noise (large acreage and remote rural area with no large commercial radiators).

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

PERSONNEL ADVANTAGES - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

Ordnance Test Area - the activity has a variance from open burning regulations of the State of Indiana. The variance is needed to allow the activity to perform cook-off testing. Cook-off testing involves open burning of JP fuel. State of Indiana Regulations 326 IAC 4 prohibits open burning in general. Variances are issued for special needs with approval by The Commissioner of the State Environmental Office.

3.1.3 Environmental Constraints:

The Ordnance Test Area (OTA) is a RCRA solid Waste Management Unit (SWMU). The site was a relatively low priority to the U.S. EPA. RCRA Facility Investigations Release Assessment for groundwater, surface water, and soil should begin within the next two years. Although the SWMU designation and need for sampling dictates caution when expanding the site's volume or spectrum, it is not anticipated that the scope of work at the OTA would be deleteriously constrained.

3.1.4 Special Support Infrastructure:

Ranges - Operational ranges exist for ordnance demolition, ordnance burning, ordnance test area which includes the capability to do various drop tests from 250' towers, destructive tests of ordnance items and pyrotechnics, flare test operations, inside small arms firing range for environmental control and night vision tests, outside small arms firing ranges which includes a 1000 yard range, antenna ranges (for the test of large shipboard antennas and small antennas', and a 120 foot deep by 4000 feet long lake for the test of acoustic devices and other devices as required. These ranges in conjunction with the extensive testing laboratories and equipment gives the Center a extensive testing laboratories and equipment gives the Center a full range of capability to do all tests except for full operation testing of shipboard and aircraft ordnance and electronics at this one location. This virtually eliminates shipping hazards and costs.

Ordnance Storage - The Crane site has 1679 explosive ordnance storage magazines. Most of these magazines are leased to the Crane Army Ammunition Activity who stores navy and Army conventional ammunition. the storage f conventional ammunitions and pyrotechnics has been essential to the testing and evaluations of the products. The site has the ability to store a full spectrum of ammunition products with expansion capability.

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

R

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity	
All CSF's	Crane TC's	Technical Support	Co-located	Various	Various	
Weapons/ Guns & Ammo	Comarco	Engr Support	8 Miles	168.2	12 Est.	R
"	CAAA	Ammo Production	1 Mile	168.2	7 Est.	R
"	Crane Div. Louisville site	Government	100 miles	168.2	1.0	R

These relationships are described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical to accomplishing the mission of NSWC Crane Division. R

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

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Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical Support	Co-located	Various	Various
Weapons/ Guns & Ammo	Comarco	Engr Support	8 Miles		12 Est.
Weapons/ Guns & Ammo	CAAA	Ammo Production	1 Mile		7 Est.

This relationship is described in the following paragraphs.

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

R

Specifically applicable to this CSF, co-location of engineering functions supporting surface ship, air launched and Marine Crops ammunition (e.g., acquisition, ammunition logistics management, surveillance, modification, maintenance, testing, demilitarization and disposal) provides a synergism and efficiency that would be unavailable if these efforts were dispersed among several activities. R

Crane Army Ammunition Activity - Co-location of the Program Management and engineering functions with a major DOD ammunition production, storage, maintenance, and disposal activity, the Crane Army Ammunition Activity (CAAA), provides rapid response capability throughout the life cycle to major regional conflicts such as Operation Desert Shield/Desert Storm. Fifty-eight percent of CAAA's magazine storage (1.9 Million sq ft) contain Navy/marine Corps Ammunition assets. R

Co-location of Navy acquisition, maintenance, and demilitarization and disposal engineering functions with SMCA production operations at Crane offers excellent opportunities to support commodities applicable to this CSF.

Comarco - The availability of the Comarco contractor is beneficial but is not critical to the accomplishment of the mission of this CSF. R

Co-location of engineering functions supporting surface ship, air launched and Marine Crops ammunition (e.g., acquisition, ammunition logistics management, surveillance, modification, maintenance, testing, demilitarization and disposal) provides a synergism and efficiency that would be unavailable if these efforts were dispersed among several activities. Co-location of the Program Management and engineering functions with a major DOD ammunition production, storage, maintenance, and disposal activity, the Crane Army Ammunition Activity (CAAA) provides rapid response capability throughout the life cycle to major regional conflicts such as Operation Desert Shield/Desert Storm. Fifty-eight percent of CAAA's magazine storage (1.9 Million sq ft) contain Navy/marine Corps Ammunition assets.

Co-location of Navy acquisition, maintenance, and demilitarization and disposal engineering functions with SMCA production operations at Crane offers excellent opportunities commodities.

R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- Weapons/Guns & Ammunition

Types of personnel	Number of Personnel				
	Government		On-Site FFRDC	On-Site SETA	
	Civilian	Military			
Technical	158R	0	0	0	R
Management (Supv)	15	0	0	0	
Other	0R	0	0	0	R

R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- Weapons/Guns & Ammunition

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	129 R	0	0	0
Management (Supv)	15	0	0	0
Other	29	0	0	0

R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort.

(BRAC Criteria I)

CSF- Weapons/Guns & Ammunition

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	130	0	0	0
Management (Supv)	15	0	0	0
Other	29	0	0	0

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position			
	Technical	Management (Supv)	Other	
High School or Less	51R	2	OR	R
Associates	7	0	0	
Bachelor	84R	10	0R	R
Masters	12R	2	0R	R
Doctorate (include Med/Vet/etc.)	4	1	0	

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service					
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years	
Technical	0	50R	28R	6R	74R	R
Management	0	0	1	0	14	
Other	0	0R	0R	0R	0R	R
Total	0	50R	29	6	88	R

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position			
	Technical	Management (Supv)	Other	
High School or Less	45	2	6	
Associates	7	0	0	
Bachelor	62 R	10	22	R
Masters	11	2	1	
Doctorate (include Med/Vet/etc.)	4	1	0	

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service					
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years	
Technical	0	33 R	23	4	69	R
Management	0	0	1	0	14	
Other	0	17	5	2	5	
Total	0	50	29	6	88	

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	45	2	6
Associates	7	0	0
Bachelor	63	10	22
Masters	11	2	1
Doctorate (include Med/Vet/etc.)	4	1	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	34	23	4	69
Management	0	0	1	0	14
Other	0	17	5	2	5
Total	0	52	29	6	88

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
Total	0	0	

R

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Weapons/ Guns & Ammunition	0 R	

R

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Weapons/ Guns & Ammunition	7	Integrated Vulnerability & Weaponeering Model Navy User Briefing The U.S. Navy Small Arms Program Crane, the Best Kept Secret in the Navy A Consolidated Need for Frangible Ammunition 40MM High Velocity Canister Cartridge Small Caliber Gun Mount Improvements 5.56 Frangible Ammunition Evaluation for Multi-Service Use

R

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

WEAPONS/GUNS AND AMMUNITION

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	21.0	0	0	0
Engineering Development	34.0	0	0	0
In-Service Engineering	112.5 R	0	0	0

R

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

WEAPONS/GUNS AND AMMUNITION

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	21.0	0	0	0
Engineering Development	34.0	0	0	0
In-Service Engineering	113.2	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	Offensive Handgun	7.5	1,009K	The program is to provide the United States Special Operations Command with an offensive Handgun Weapon system. The system is for use by Special Operations Forces in close-quarter battle during target site infiltration. The system will include an enhanced .45 caliber pistol with detachable suppressor and detachable laser aiming model.

R

ACAT III/IV	**Rifleman's Breaching Munitions**	**4.1**	**65K**	**The Rifleman's Breaching Munitions (RBM) program conducted evaluation testing on a candidate Non-Developmental Item munitions system intended to fulfill the requirements of the U.S. Marine Corps. The evaluation effort determined that additional design efforts were required to enable the RBM system to meet the type classification requirements.**
Other	**11**	**1.5**	**99K**	**Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) High Explosive Anti-Armor (HEAA) Warhead[1]**
		0.6	**120K**	**Ordnance Reclam/Environ[2]**
		0.8	**164K**	**Conventional Munitions[3]**
		11.6	**2,755K**	**Special Purpose Munitions[4]**
		7.9	**475K**	**Navy Small Arms[5]**
		2.8	**174K**	**Craft Life Improvement Program (CLIP)[6]**
		2.5	**381K**	**ALE-47 Block Development[7]**
		5.0	**1,000K**	**Kinematic Decoy Flare Development[8]**
		8.7	**1,550K**	**Advanced Strategic Tactical Expendables (ASTE)[9]**
		1.4	**140K**	**F-22 Flare Tests[10]**
		0.5	**38K**	**Army Missile Tests[11]**

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[1]Shoulder-Launched Multi-Purpose Assault Weapon (SMAW) High Explosive Anti-Armor (HEAA) Warhead: The Marine Corps is developing through NSWC Dahlgren Division a new more capable warhead for the SMAW. NSWC Crane Division, as the In-Service Engineering Agent for both the weapon and the ammunition round, is providing input on Engineering Change Proposals by the developing contractor and is maintaining the configuration data base for eventual use during the warhead's service life.

[2]Develops and demonstrates technologies to treat and/or dispose of propellants, explosives and pyrotechnics addressing specific needs of the Navy to comply with all relevant environmental standards.

R

[3]The objective of this program is to evaluate the performance of commercially available 5.56mm and 9mm frangible ammunition to determine the best cartridge for: (1) eliminating the hazardous waste contaminates; (2) Close Quarter Battle (CQB) indoor training; (3) outdoor training; and (4) possible use for CQB operation and Military Operations in Urban Terrain (MOUT). This program includes evaluation testing and may include a complete type classification of the cartridges.

[4]This program was established by Naval Sea Systems Command to provide non-standard munitions (including small arms ammunition, cartridge and rifle grenades, and shoulder fired rockets) to a specific Navy user activity in a timely manner. Crane provides technical support in the form of procurement package preparation and monitoring, safety and evaluation testing, and field engineering support for this program.

[5]The project provides full life cycle support for the Navy's small arms, ammunition, mounts, and armament systems in the areas of design and in-service engineering, logistics support, maintenance and data management. As the principal field activity, Navy small arms readiness consistent with mobilization requirements is provided and maintained.

[6]The CLIP program supports the SPECWAR small boat Navy by providing an ongoing Product Improvement Program directed at resolving fleet identified and documented problems relative to in-service hardware. The CLIP program encompasses the entire craft; the Crane portion of the program only encompasses small arms related efforts.

[7]The ALE-47 work provides engineering support for the development of the magazines for the ALE-47 Countermeasure Dispensing System. The ALE-47 is the next generation dispensing system for aircraft self-protection expendable countermeasures.

[8]The Kinematic Decoy Flare work is an effort to develop an improved decoy flare to counter advanced infrared missile seeker threats.

[9]The ASTE work is an engineering effort to develop new decoy flare concepts for the Air Force program in Advanced Strategic and Tactical Expendables. The effort involves the design and testing of several different flare concepts.

[10]The F-22 work is an effort to provide infrared spectral and intensity measurements of various Air Force decoy flare concepts designed for the F-22 under flight test conditions. The effort is performed in the Transient Velocity Windstream Apparatus at Crane.

[11]Support Missile Tests is an effort to provide missile test support to the Office of the Test Directorate at White Sands, NM. This is a field test to test various seekers against decoy flares.

ADDED PAGE

ACAT III/IV	Riflemans Breaching Munit	4.1	65K	The Rifleman's Breaching Munition (RBM) program conducted evaluation testing on a candidate Non-Developmental Item munitions system intended to fulfill the requirements of the U.S. Marine Corps. The evaluation effort determined that additional design efforts were required to enable the RBM system to meet the type classification requirements.
Other	11	1.5 0.6 0.8 11.6 7.9 2.8 2.5 5.0 8.7 1.4 0.5	99K 120K 164K 2,755K 475K 174K 381K 1,000K 1,550K 140K 38K	Ammunition Ordnance Reclam Conventional Munitions Special Purpose Munitions Navy Small Arms Craft Life Improvement Program (CLIP) ALE-47 Kinematic Decoy Flare ASTE F-22 Army

3.3.1.3 **In-Service Engineering:** For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

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Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Weapons/ Guns & Ammunition	Life Cycle Support	1518K	16.5	Small Caliber
Weapons/ Guns & Ammunition	Prod Engr Supp	75K	1.1	Bomb Pyro
Weapons/ Guns & Ammunition	Prod Engr Supp/ ILS	555K	3.2	Markers
Weapons/ Guns & Ammunition	Prod Engr Supp/ ILS/FMS	60K	2.0	Decoys
Weapons/ Guns & Ammunition	Prod Engr Supp/ ILS	379K	3.1	Target Flare
Weapons/ Guns & Ammunition	Prod Engr Supp	6,991K	46.1	Navy/MC Ammunition
Weapons/ Guns & Ammunition	Ord Demil/ Disp Engr	565K	11.3	Navy/MC Ammunition
Weapons/ Guns & Ammunition	Prod Engr Supp/ ILS	4,069K R	29.2 R	Navy/MC Ammunition R

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Weapons/ Guns & Ammunition	Life Cycle Support	1518K	16.5	Small Caliber
Weapons/ Guns & Ammunition	Prod Engr Supp	75K	1.1	Bomb Pyro
Weapons/ Guns & Ammunition	Prod Engr Supp/ ILS	555K	3.2	Markers
Weapons/ Guns & Ammunition	Prod Engr Supp/ ILS/FMS	60K	2.0	Decoys
Weapons/ Guns & Ammunition	Prod Engr Supp/ ILS	379K	3.1	Target Flare
Weapons/ Guns & Ammunition	Prod Engr Supp	6,991K	46.1	Navy/MC Ammunition
Weapons/ Guns & Ammunition	Ord Demil/ Disp Engr	565K	11.3	Navy/MC Ammunition
Weapons/ Guns & Ammunition	Prod Engr Supp/ ILS	4,107K	29.9	Navy/MC Ammunition

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3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Weapons/ Guns & Ammunition	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Weapons/ Guns & Ammunition	27,190K R	21,950K R	22,834K R	26,184K R

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3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Weapons/ Guns & Ammunition	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Weapons/ Guns & Ammunition	27,239K	22,020K	22,889K	26,242K

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3.4 Facilities and Equipment

3.4.1 **Major Equipment and Facilities:** Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. BRAC Criteria II)

The facilities applicable to this CSF are assets of the **Conventional Ammunition, Pyrotechnics and Small Arms** TC's at NSWC Crane. The facilities are described in the following pages.

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Weapons/ Guns & Ammunition	Ord Envr Test Fac				15,100K
"	Ord Rad Test Fac				5,200K
"	Demil Eval Fac				6,000K
"	Prox Fuze Test Fac				400K
"	Ord Comp Test Lab (Bldg 142)				3,000K
"	Ord Comp Test Lab (Bldg 365)				1,100K
"	Ord Ready Mag Storage				7,600K

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Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Weapons/ Guns & Ammunition	Weapons Development & Test Facility				2,995K
"	Weapons Development /Administrative				338K
"	Outdoor Firing Range (1000 yard)				523K
"	Automated IR Test Facility			X	3,000K
"	Transient Velocity Windstream Facility			X	700K
"	Ordnance Prototype Manufacturing Facility			X	10,100K
"	Ordnance Material Characterization laboratory			X	7,400K
"	Ordnance Test Area			X	5,700K

Common Support Function	Major Facility or Equipment Description	Unique To: DOD	Unique To: Federal Gov't	Unique To: U. S.	Replacement Cost ($K)
Weapons/ Guns & Ammunition	Ord Envr Test Fac				15,100K
Weapons/ Guns & Ammunition	Ord Rad Test Fac				5,200K
Weapons/ Guns & Ammunition	Demil Eval Fac				6,000K
Weapons/ Guns & Ammunition	Prox Fuze Test Fac				400K
Weapons/ Guns & Ammunition	Ord Comp Test Lab (Bldg 142)				3,000K
Weapons/ Guns & Ammunition	Ord Comp Test Lab (Bldg 365)				1,100K
Weapons/ Guns & Ammunition	Ord Ready Mag Storage				7,600K

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The following table and paragraphs lists the **major** facilities of the **Conventional Ammuntiion** TC at NSWC Crane. The information in the table describes the percent the facilities are shared between CSF's applicable to Data Call #12 and other related functions. In some cases facilities are described in the text that are not included in the table because they are **minor and supporting facilities**.

Other related functions includes support to acquisition engineering functions at NSWC Crane. Support is provided primarily for components of Air/Surface Ship Combat systems using energetics, pyrotechnics, propellents and explosives.

Major Facility or Equipment Description	Weapons Guns & Ammunition	Weapons Conventional Missiles & Rkts	Other Related Functions	
Ordnance Environmental Test Facility	49.6%	20.9%	29.5%	
Ordnance Radiographic Test Facility	64.9%	8.1%	27.0%	
Ordnance Ready Magazine Storage	52.3%	23.4%	24.3%	
Ordnance Material Characterization Laboratory	13.0%	9.0%	78.0%	
Ordnance Test Area	70.0%	21.0%	9.0%	
Demil Evaluation Facility	100.0%	0.0%	0.0%	R
Proximity Fuze Test Facility	100.0%	0.0%	0.0%	R
Ordnance Components Test Facility (Building 142)	100.0%	0.0%	0.0%	R

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Ordnance Radiographic Test Facility	64.9%	8.1%	27.0%
Ordnance Ready Magazine Storage	52.3%	23.4%	24.3%
Ordnance Material Characterization Laboratory	13.0%	9.0%	78.0%
Ordnance Test Area	70.0%	21.0%	9.0%

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Weapons/ Guns & Ammunition	Weapons Development & Test Facility				2,995K
Weapons/ Guns & Ammunition	Weapons Development /Administrative				338K
Weapons/ Guns & Ammunition	Outdoor Firing Range (100 yard)				523K
Weapons/ Guns & Ammunition	Automated IR Test Facility			X	3,000K
Weapons/ Guns & Ammunition	Transient Velocity Windstream Facility			X	700K
Weapons/ Guns & Ammunition	Ordnance Prototype Manufacturing Facility			X	10,100K
Weapons/ Guns & Ammunition	Ordnance Material Characterization laboratory			X	7,400K
Weapons/ Guns & Ammunition	Ordnance Test Area			X	5,700K

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Major Facility or Equipment Description	Weapons Guns & Ammunition	Weapons Conven-tional Missiles & Rkts	Other Related Functions	
Ordnance Components Test Facility (Building 365)	100.0%	0.0%	0.0%	R
Weapons Development & Test Facility	100.0%	0.0%	0.0%	R
Weapons Development/Administrative	100.0%	0.0%	0.0%	R
Outdoor Firing Range (1000 yard)	100.0%	0.0%	0.0%	R
Automated IR Test Facility	100.0%	0.0%	0.0%	R
Transient Velocity Windstream Facility	100.0%	0.0%	0.0%	R
Ordnance Prototype Manufacturing Facility	100.0%	0.0%	0.0%	R

In the **Ordnance Environmental Test** facilities the design, selection and procurement of test equipment and facilities have been made with the test and evaluation of explosive and other hazardous materials in mind. Environmental test facilities and equipment are available to do vibration, shock, temperature, humidity, altitude, jolt, jumble, sunshine and rain, sand and dust, and salt spray. Environmental test facilities are contained in four buildings with 20,000 square feet. This facility is used approximately 10 percent of the time in support of "laboratory" operations. The remainder of the usage is for acquisition support.

The **Ordnance Radiographic Facility** provides radiographic testing of ordnance items for the three Services. Radiographic inspection capabilities include both real time and conventional X-ray. A special high bay exposure room with a high energy accelerator is available for radiographic inspection of very large items, e.g. 2,000 pound bombs, that can be brought in on trucks/trailers and X-rayed without unloading. The radiographic facilities are in two buildings with 7,100 square feet. This facility is used approximately 10 percent of the time in support of "laboratory" operations. The remainder of the usage is for acquisition support.

In the **Ordnance Environmental Test** facilities the design, selection and procurement of test equipment and facilities have been made with the test and evaluation of explosive and other hazardous materials in mind. Environmental test facilities and equipment are available to do vibration, shock, temperature, humidity, altitude, jolt, jumble, sunshine and rain, sand and dust, and salt spray. Environmental test facilities are contained in four buildings with 20,000 square feet. This facility is used approximately 10 percent of the time in support of "laboratory" operations. The remainder of the usage is for acquisition support.

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The **Demilitarization Evaluation Facility** is a new facility just being completed that allows for remote disassembly of various ordnance devices up to 500 lbs. The facility has the capability of pilot operations for the demilitarization of conventional and hazardous ordnance items. The facility's design is such that all waste is contained and disposed of without escaping to the environment.

The **Proximity Fuze Free Space Facility** (10,000 ft reflectivity plane) is the certified Navy Standard used to establish the electronic values of Radio Frequency Fuze Standard Monitors. These Standard Monitors are used for correlation of systems used in production and testing of Proximity Fuzes by both the private and public sectors. Radio Frequency Proximity Fuzes are used on all the major caliber ammunition in the Navy stockpile.

The Ordnance Components Test Facility (Buildings 142/365) provides lot acceptance and surveillance testing of numerous ordnance components and sub-assemblies as well as small explosives devices. The facility has test cells which provide capability for controlled and monitored function testing of components. Test cells are also equipped with capability for remote breakdown and dissection of ordnance components for failure analysis. Ordnance items tested in the facilities include demolition devices, fuzes, linear explosives, detonators and offboard countermeasures.

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Ordnance Ready Magazine Storage in Support of Ordnance Engineering Directorate provides ordnance receiving, shipping and storage for the various Programs of the Directorate. The facilities are used to receive a wide variety of ammunition and explosives for the Directorate. After receipt, the ordnance is either forwarded immediately to the user or placed in storage magazines temporarily until ready for evaluation. Total number of magazines is 37 with 57,400 square feet of storage space.

The **Ordnance Material Characterization Laboratory** provides chemical and metallurgical laboratories for performing failure evaluations, thermal characterization analyses, physical and chemical properties of materials and materials compatibility of explosives, propellants, pyrotechnics, metals, polymers, ceramics, adhesives, coatings and compositions. Accelerated aging studies of ordnance materials complete with temperature controlled environments for isothermal studies as well as temperature cycling studies are provided in an ordnance qualified facility. In addition to the normal quality evaluation and safety tests of ordnance materials such as impact, friction and electrostatic sensitivity, vacuum and thermal stability, self-heating and ignition the Division operates a complete thermal characterization laboratory. This laboratory has six microcalorimeters to infer long term aging characteristics, an Accelerated Rate Calorimeter and numerous thermal analyzers and differential scanning calorimeters. The facility is used approximately 20% for "laboratory" functions. The

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The **Ordnance Test Area** provides test ranges and facilities for first article, lot acceptance, surveillance, qualification and safety testing of pyrotechnic, demolition and conventional ammunition items. The test areas have a total of 88 unencumbered acres and are supported by eleven buildings (5600 square feet). In addition to normal function testing the ranges also support Insensitive Munitions Testing on All-Up-Rounds (pyrotechnic, demolition and conventional ammunition) including Fast and Slow Cookoff, Bullet Impact and Sympathetic Detonation. Specialized equipment includes a Remote Ammunition Breakdown Facility, a Rockeye Bomblet Drop and Air Launch Facility, a Forty Foot Drop Tower, a Grenade Launch Range and 100 and 300 foot Towers for suspension and testing of Aircraft Parachute Flares, Practice Bombs, Infrared Decoy Flares and Obscurants. The facility is used approximately 20% of the time for "laboratory" functions. The remainder of the time is in support of acquisition engineering efforts.

The following faciities are assets of the **Pyrotechnics** TC.

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The **Automated Infrared Test Facility** is identified as the Navy Standard for the measurement of infrared decoy flare intensity performance. The facility is used for development, first article, lot acceptance, surveillance and qualification testing of infrared decoy flares. The facility is contained in Building 366 and consists of a burning chamber capable of burning decoy flares up to 1000 grams, a 70 meter measurement tunnel with an environmentally controlled measurement room and several support rooms adjacent to the tunnel. Because of the many variables associated with infrared intensity measurements a single standard measurement facility is required to provide a legally defensible measurement of decoy flare performance. This facility is used approximately 20 percent of the time for "laboratory" measurements. The remainder of the time is used for acquisition engineering support efforts.

The facility provides at least three unique capabilities that are non-existent at any other facility in the United States. The most significant is that measurements in the facility have been correlated with actual air to air measurements of the intensity and effectiveness of infrared decoys thus providing a baseline for all future development efforts. This baseline allows us to be able to minimize the amount of costly air to air testing required during the development of new devices. The facility provides a controllable air stream profile. In this facility we can change the air stream profile to simulate different flare launch conditions and different profiles for our more advanced flares. The facility also

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The **Transient Velocity Windstream Facility** is a free jet expansion windstream apparatus designed to provide adjustable air velocity versus time profiles to simulate the launch of decoy flares from a moving aircraft. The outdoor apparatus consists of several air compressors, a bank of air storage tanks, a computer controlled valve to control air flow and a nozzle and can produce air flows from 0.1 to 0.9 Mach at either a constant velocity or, under computer control, a variable velocity versus time profile to simulate the observed velocity versus time behavior experienced by a decoy flare when ejected from an aircraft. Radiant and spectral radiant intensity are measured at distances of 30, 80 and 500 meters and at angles from 10 - 300 degrees around the device. The facility is also equipped to measure thrust and drag from next generation flares which might have some kinematic or aerodynamic design properties.

This combination of space, facility and measurement equipment is unique in the United States and is used by all of DOD and several private contractors to assess the performance of decoy flares and concepts in a test apparatus that is much less expensive to operate than an actual air-to-air test. The facility use is 100% "laboratory" testing.

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While not a "laboratory" in the strictest definition, the **Ordnance Prototype Manufacturing Facility** is used for the development and production of prototype models of new designs and product improvements of pyrotechnic devices and explosive components. Mixing, blending and consolidation equipment allows the development and production of a large range of pyrotechnic compositions for infrared, colored and illuminating flares, colored smokes and other devices. Virtually any pyrotechnic composition in the DOD inventory can be made in this facility. Capabilities include remotely operated extruders and presses for consolidating compositions which can then be remotely cut and machined to required configurations. Hardware components from either plastic or metal are fabricated internally with capabilities including vacuum forming machines, foam fabrication equipment, injection molding, lathes, milling machines, etc. Hardware and compositions are assembled into devices to allow test and evaluation to be performed to evaluate the new or modified design. The facility has been used for limited production and low rate initial production during both Vietnam and Desert Storm to produce infrared decoy flares in a short time for Fleet use. The facility is contained in

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The **Transient Velocity Windstream Facility** is a free jet expansion windstream apparatus designed to provide adjustable air velocity versus time profiles to simulate the launch of decoy flares from a moving aircraft. The outdoor apparatus consists of several air compressors, a bank of air storage tanks, a computer controlled valve to control air flow and a nozzle and can produce air flows from 0.1 to 0.9 Mach at either a constant velocity or, under computer control, a variable velocity versus time profile to simulate the observed velocity versus time behavior experienced by a decoy flare when ejected from an aircraft. Radiant and spectral radiant intensity are measured at distances of 30, 80 and 500 meters and at angles from 10 - 300 degrees around the device. The facility is also equipped to measure thrust and drag from next generation flares which might have some kinematic or aerodynamic design properties.

This combination of space, facility and measurement equipment is unique in the United States and is used by all of DOD and several private contractors to assess the performance of decoy flares and concepts in a test apparatus that is much less expensive to operate than an actual air-to-air test. The facility use is 100% "laboratory" testing.

While not a "laboratory" in the strictest definition, the **Ordnance Prototype Manufacturing Facility** is used for the development and production of prototype models of new designs and product improvements of pyrotechnic devices and explosive components. Mixing, blending and consolidation equipment allows the development and production of a large range of pyrotechnic compositions for infrared, colored and illuminating flares, colored smokes and other devices. Virtually any pyrotechnic composition in the DOD inventory can be made in this facility. Capabilities include remotely operated extruders and presses for consolidating compositions which can then be remotely cut and machined to required configurations. Hardware components from either plastic or metal are fabricated internally with capabilities including vacuum forming machines, foam fabrication equipment, injection molding, lathes, milling machines, etc. Hardware and compositions are assembled into devices to allow test and evaluation to be performed to evaluate the new or modified design. The facility has been used for limited production and low rate initial production during both Vietnam and Desert Storm to produce infrared decoy flares in a short time for Fleet use. The facility is contained in four buildings - two of

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The following facilities are assets of the **Small Arms** TC.

The **Weapon Development and Test Facility** features a rapid prototyping shop, engineering test and assembly areas, and a 100 meter underground test range which is unique to the Navy. The underground range has the capability to test calibers up to 25mm and features a climatic test cell for firing weapons under temperature/humidity extremes and freezing rain conditions. State-of-the-art data acquisition and ballistics test equipment compliment developmental efforts. The facility is used approximately 80 percent of the time for laboratory operations. The remainder of the usage is for acquisition support of small arms, lasers, and night vision/electro-optic devices.

The **Outdoor Firing Range (1000 yard)**, encompassing 14 acres, contains six computer-controlled automatic targeting system stations (from 50-1000 yards), and a full range of ballistic test equipment. The range can accommodate sniper weapon firing or large mounts up to 25mm affixed to reinforced concrete and steel pads. This facility is used approximately 40 percent of the time for laboratory operations. The remainder of the usage is for acquisition support of small arms, lasers and night-vision equipment.

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The **Ordnance Material Characterization Laboratory** provides chemical and metallurgical laboratories for performing failure evaluations, thermal characterization analyses, physical and chemical properties of materials and materials compatibility of explosives, propellants, pyrotechnics, metals, polymers, ceramics, adhesives, coatings and compositions. Accelerated aging studies of ordnance materials complete with temperature controlled environments for isothermal studies as well as temperature cycling studies are provided in an ordnance qualified facility. In addition to the normal quality evaluation and safety tests of ordnance materials such as impact, friction and electrostatic sensitivity, vacuum and thermal stability, self-heating and ignition the Division operates a complete thermal characterization laboratory. This laboratory has six microcalorimeters to infer long term aging characteristics, an Accelerated Rate Calorimeter and numerous thermal analyzers and differential scanning calorimeters. The facility is used approximately 20% for "laboratory" functions. The remaining efforts include acquisition engineering support, normal analytical chemistry functions and process control testing of ordnance production.

The **Ordnance Test Area** provides test ranges and facilities for first article, lot acceptance, surveillance, qualification and safety testing of pyrotechnic, demolition and conventional ammunition items. The test areas have a total of 88 unencumbered acres and are supported by eleven buildings (5600 square feet). In addition to normal function testing the ranges also support Insensitive Munitions Testing on All-Up-Rounds (pyrotechnic, demolition and conventional ammunition) including Fast and Slow Cookoff, Bullet Impact and Sympathetic Detonation. Specialized equipment includes a Remote Ammunition Breakdown Facility, a Rockeye Bomblet Drop and Air Launch Facility, a Forty Foot Drop Tower, a Grenade Launch Range and 100 and 300 foot Towers for suspension and testing of Aircraft Parachute Flares, Practice Bombs, Infrared Decoy Flares and Obscurants. The facility is used approximately 20% of the time for "laboratory" functions. The remainder of the time is in support of acquisition engineering efforts.

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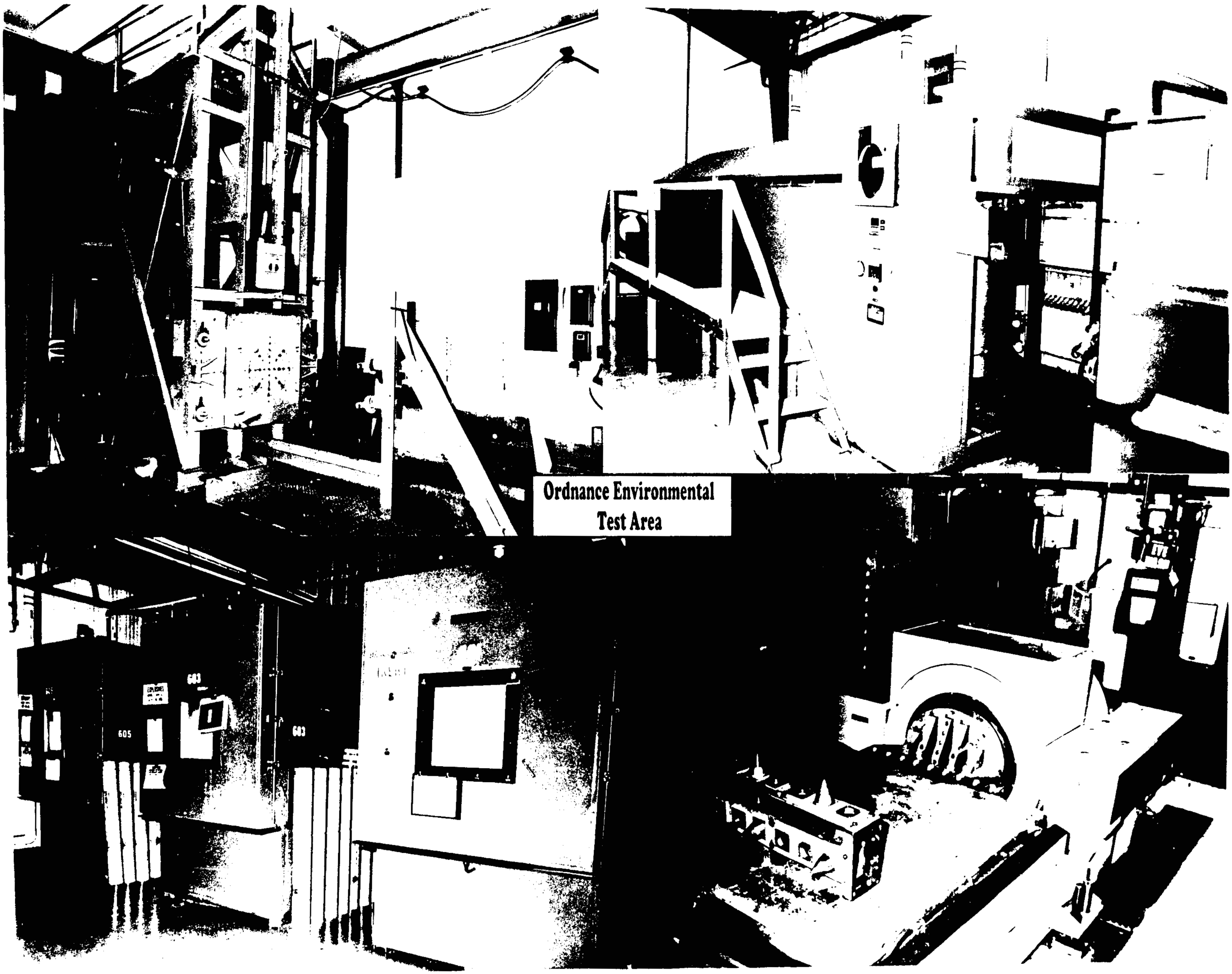
Ordnance Environmental
Test Area
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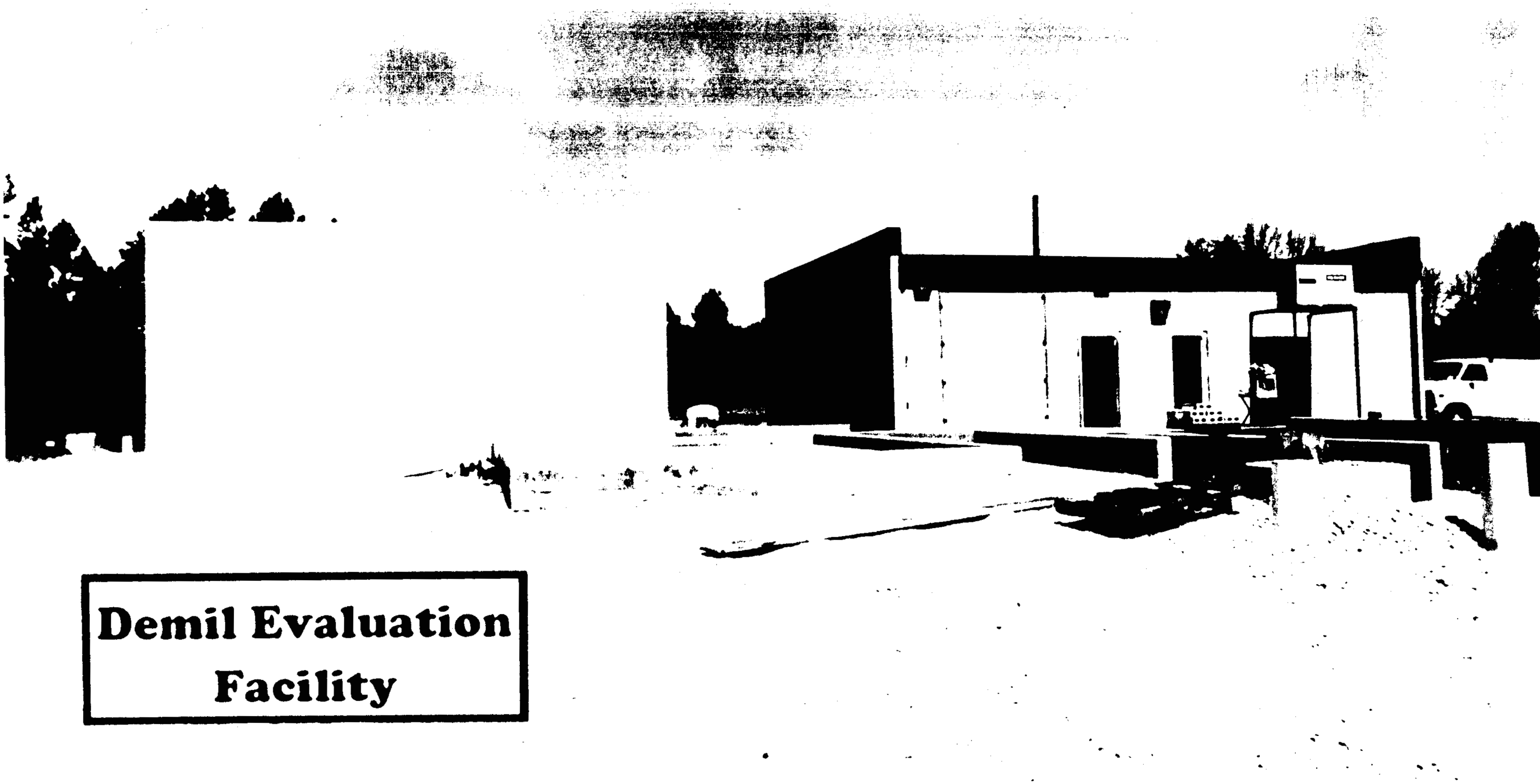

Demil Evaluation Facility

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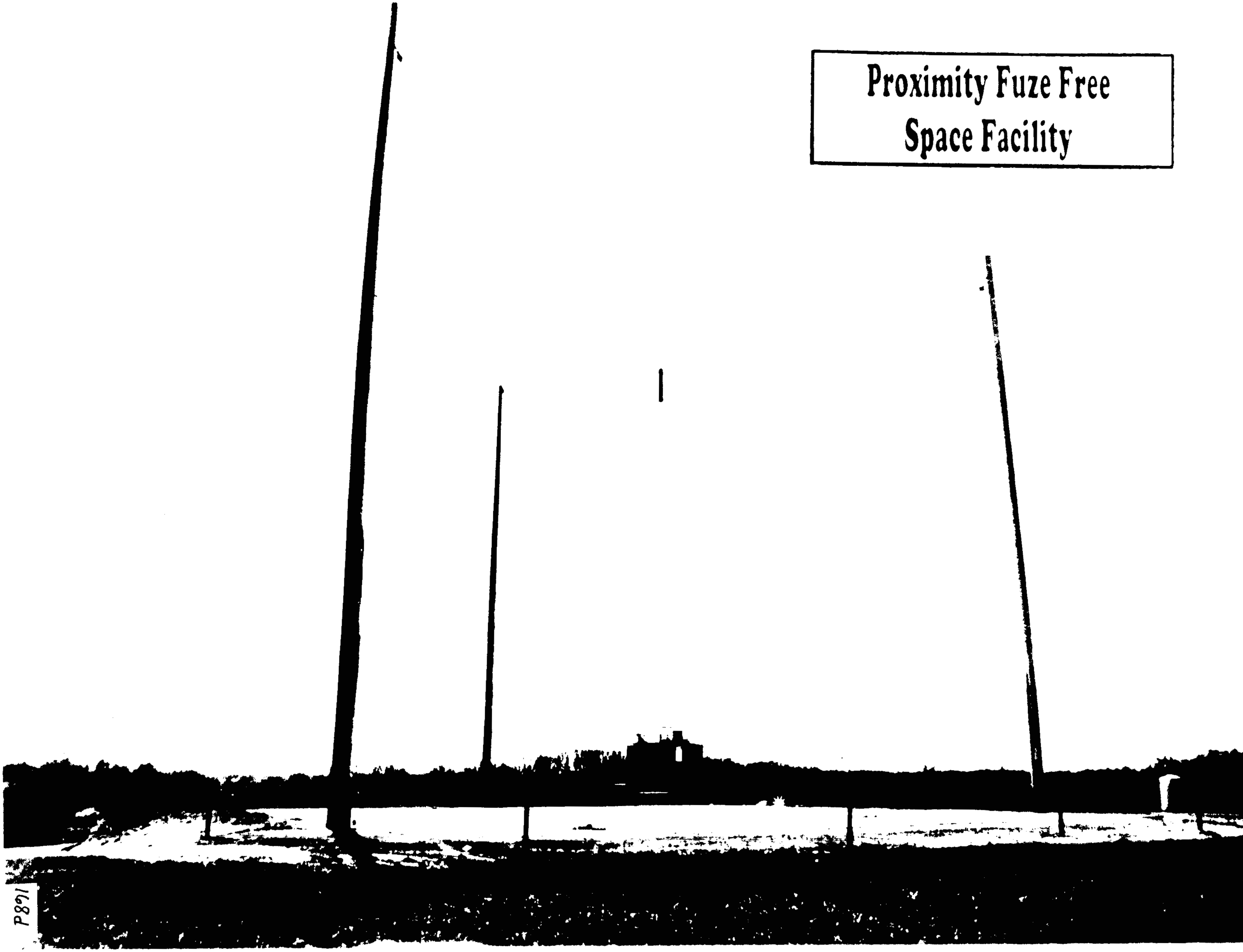
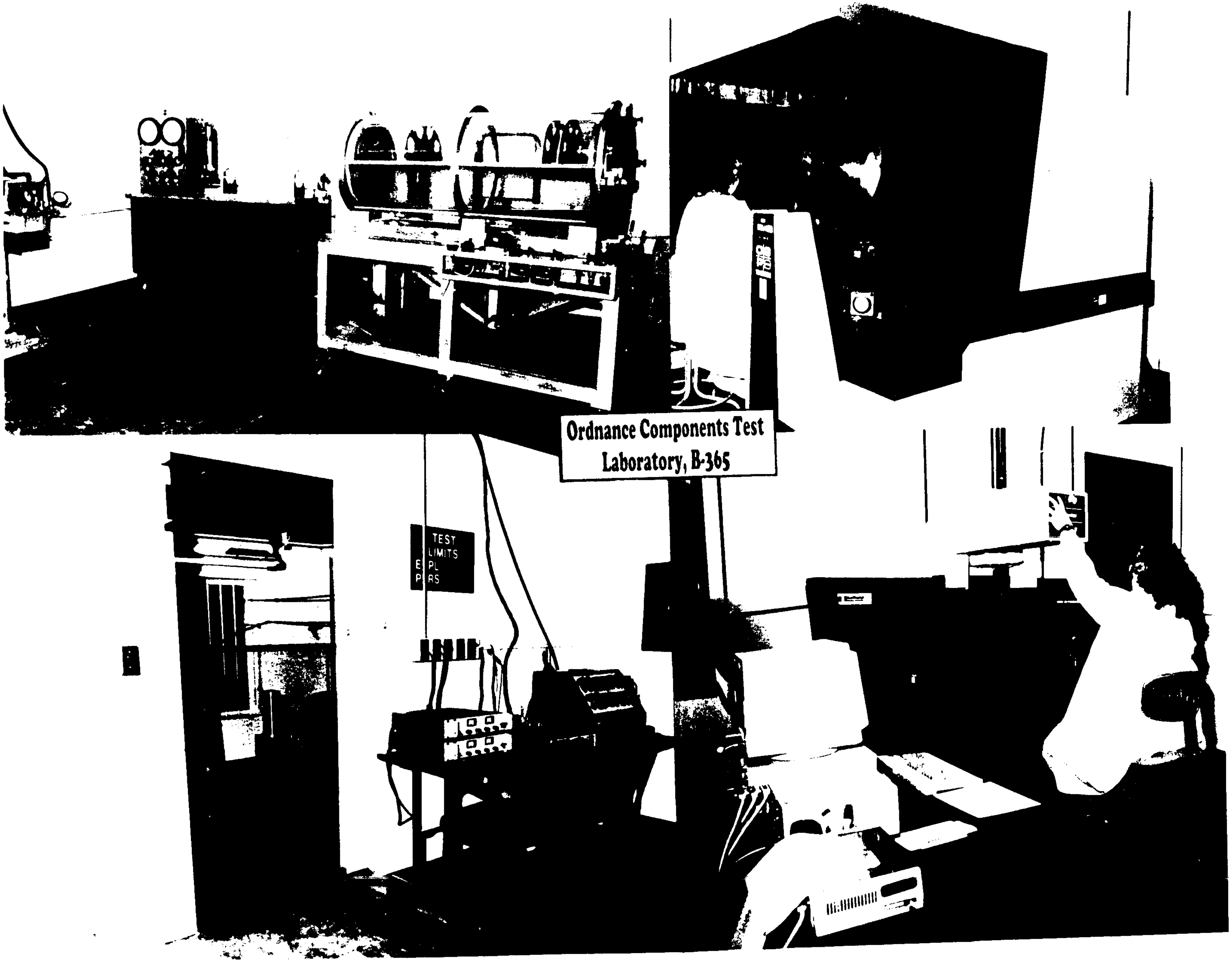


Proximity Fuze Free Space Facility



Ordnance Components Test Laboratory, B-365

Ordnance Components Test Laboratory, B-142

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Ordnance Ready
Magazine Storage

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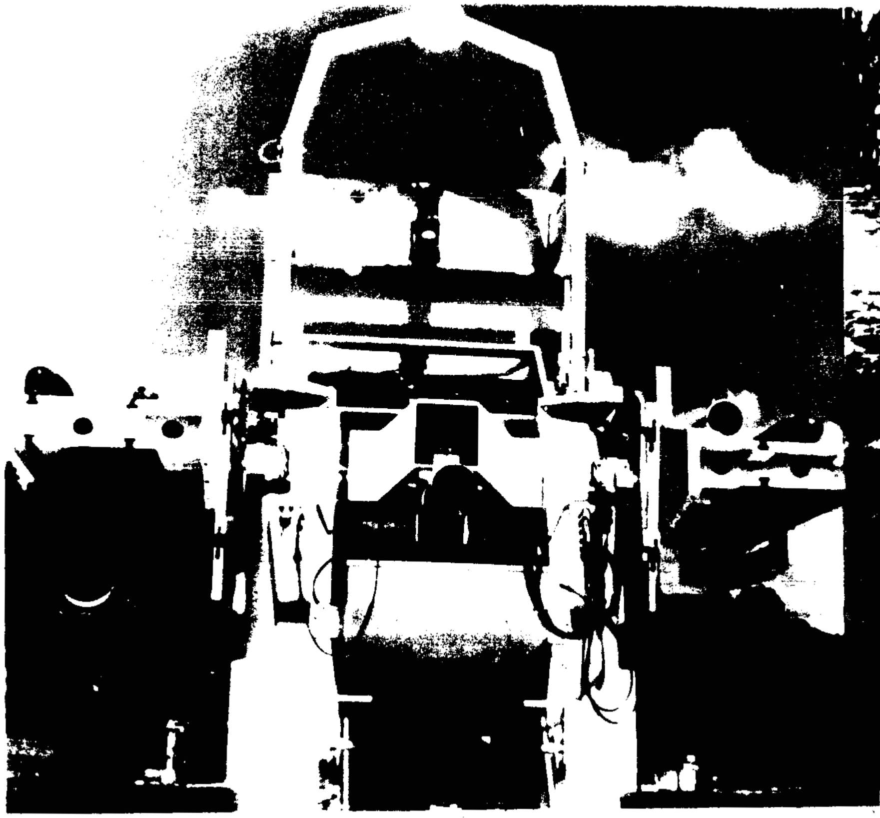
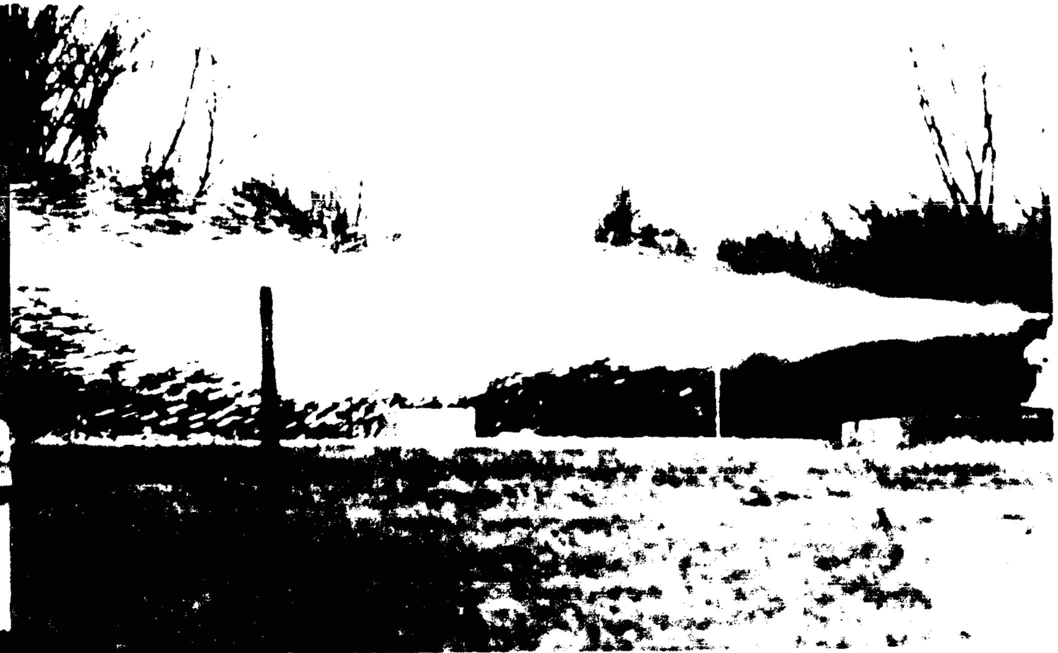
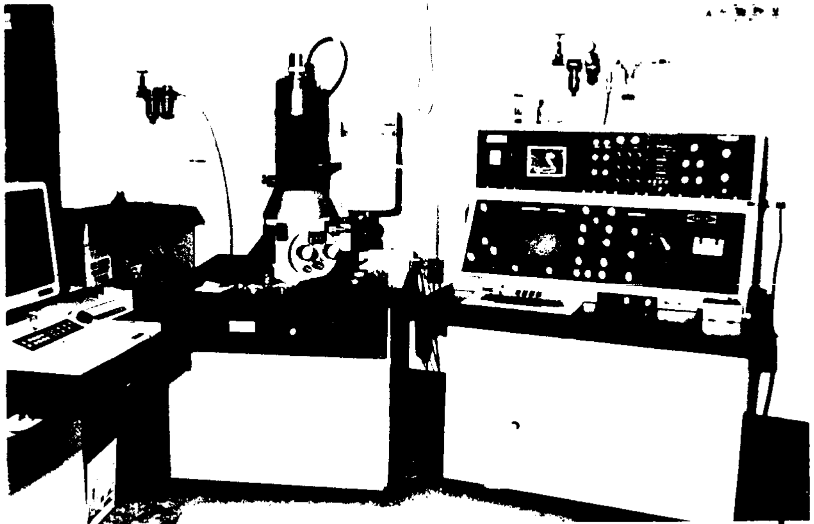
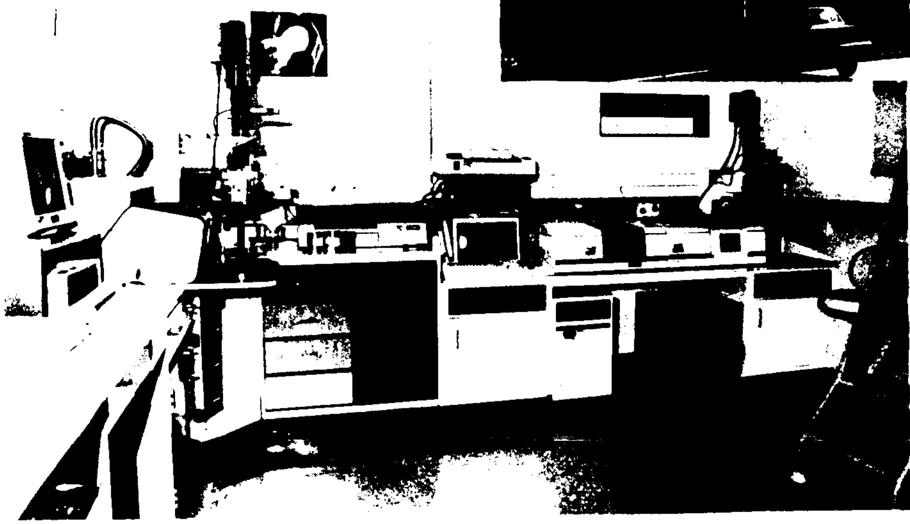




Transient Velocity
Windstream Test Apparatus


Ordnance Prototype
Manufacture





Ordnance Materials Analysis Laboratory

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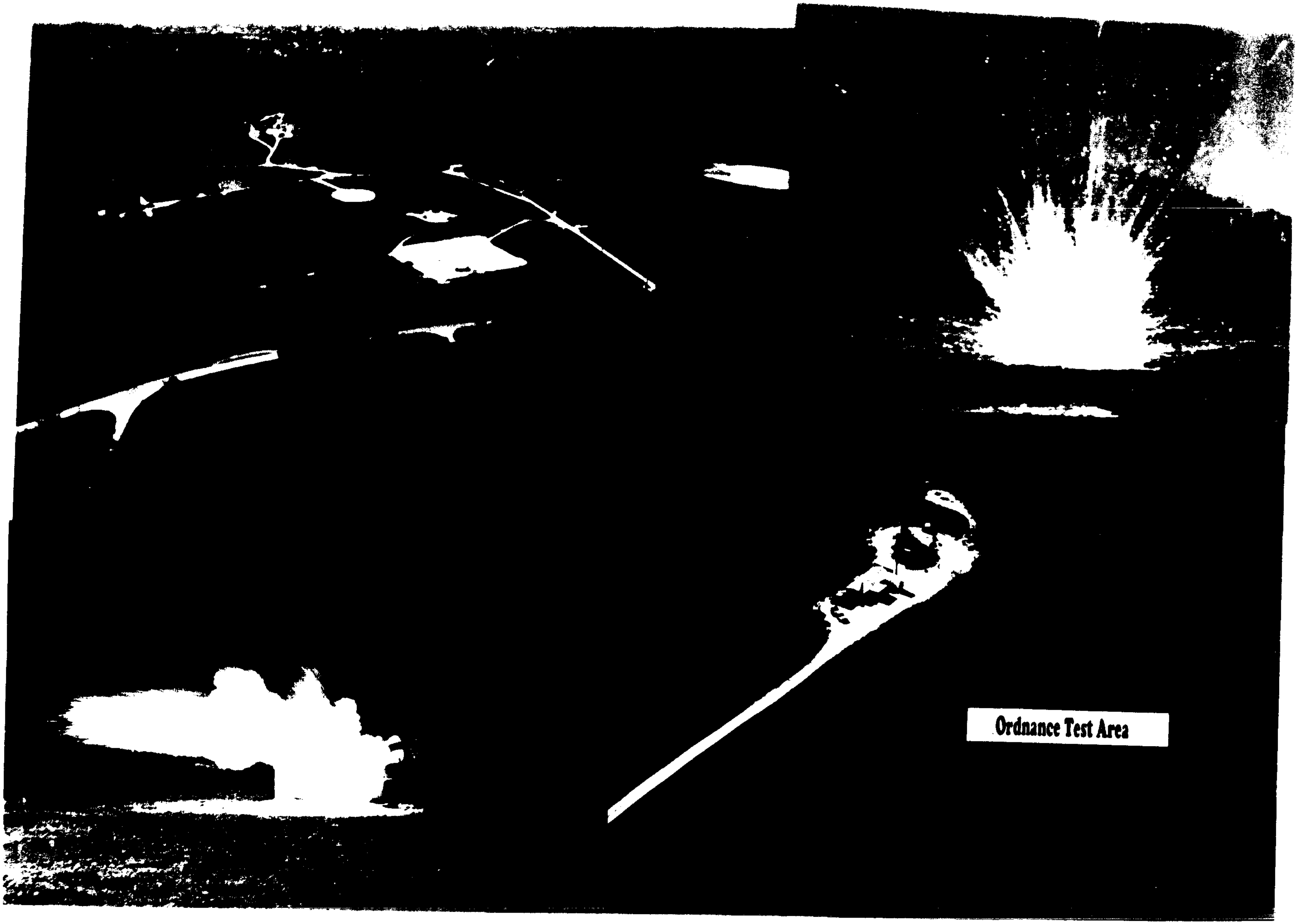

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3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Weapons/ Guns & Ammo	Bldg 2521	Technical	25.6	25.6	0
Weapons/ Guns & Ammo	Bldg 2524	Admin	.5	.5	.5
Weapons/ Guns & Ammo	Bldg 2911	Technical	2.0	2.0	0
Weapons/ Guns & Ammo	Bldg 366	Technical	10.2	10.2	0
Weapons/ Guns & Ammo	Bldg 3087	Technical	.9	.9	0
Weapons/ Guns & Ammo	Bldg 2707	Tecnical	9.1	9.1	0
Weapons/ Guns & Ammo	Bldg2947	Technical	2.3	2.3	2.3
Weapons/ Guns & Ammo	Bldg 2670	Technical	.3	.3	0
Weapons/ Guns & Ammo	Bldg 2888	Technical	0.1	0.1	0
Weapons/ Guns & Ammo	Bldg 2945	Technical	1.0	1.0	0
Weapons/ Guns & Ammo	Bldg 2963	Technical	1.0	1.0	0
Weapons/ Guns & Ammo	Bldg 2995	Technical	1.0	1.0	0
Weapons/ Guns & Ammo	Tower 3086	Technical	N/A	N/A	N/A

Weapons/ Guns & Ammo	Bldg 3107	Storage	1.0	1.0	0
Weapons/ Guns & Ammo	Bldg 2923	Technical	1.0	1.0	0
Weapons/ Guns & Ammo	Bldg 2925	Technical	0.1	0.1	0
Weapons/ Guns & Ammo	Bldg 143	Technical	23.3	23.3	0
Weapons/ Guns & Ammo	Bldg 142	Technical	15.6	15.6	0
Weapons/ Guns & Ammo	Bldg 365	Technical	10.2	10.2	0
Weapons/ Guns & Ammo	Bldg 363	Technical	10.2	10.2	0
Weapons/ Guns & Ammo	Bldg 364	Technical	10.7	10.2	0
Weapons/ Guns & Ammo	Bldg 2987	Technical	6.1	6.1	0
Weapons/ Guns & Ammo	Bldg 2986	Technical	1.0	1.0	0
Weapons/ Guns & Ammo	Bldg 2964	Technical	7.7	7.7	7.7
Weapons/ Guns & Ammo	Bldg 2951	Technical	2.0	2.0	2.0
Weapons/ Guns & Ammo	Bldg 2921	Technical	5.9	5.9	5.9
Weapons/ Guns & Ammo	Bldg 3007	Technical	2.0	2.0	2.0
Weapons/ Guns & Ammo	Bldg 108	Technical	10.2	10.2	0
Weapons/ Guns & Ammo	Bldg 109	Technical	10.2	10.2	0
Weapons/ Guns & Ammo	Bldg 3115	Technical	2.1	2.1	0
Weapons/ Guns & Ammo	Bldg 180	Technical	3.0	3.0	3.0

Weapons/ Guns & Ammo	Bldg 99	Storage	.4	.4	0
Weapons/ Guns & Ammo	Bldg 684	Storage	2.1	2.1	0
Weapons/ Guns & Ammo	Bldg 881	Storage	2.1	2.1	0
Weapons/ Guns & Ammo	Bldg 2418	Storage	5.4	5.4	0
Weapons/ Guns & Ammo	Bldg 3076	Storage	0.1	0.1	0
Weapons/ Guns & Ammo	Bldg 3077	Storage	0.1	0.1	0
Weapons/ Guns & Ammo	Bldg 3082	Storage	0.1	0.1	0
Weapons/ Guns & Ammo	Bldg 2084	Technical	1.6	1.6	0

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Small Arms - The Small Arms Weapons Facility has the potential to absorb additional workyears in the Weapons Common Support Function, with minor to no modifications to the facility. This increase in workload could be realized with administrative, technical and testing work space.

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Small Arms - Approximately nine (9) workyears of additional work could be absorbed with the existing facility.

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

SPACE SYSTEMS/SATELLITES
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at the Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC at the Crane Site.

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*The mission for the **Electrochemical Power Systems** Technical Capability is:

- To assure affordable, safe, and reliable Electrochemical Power sources (batteries).

-To meet current and future performance requirements in operational environments; for the Navy and Marine Corps, the Army and Air Force, and other government agencies.

-Provide a full spectrum of support for batteries and related equipments from Research and Development (R&D) through system retirement.

*The mission for the **Microelectronic Technology** Technical Capability is: R

-Perform research, development, test, and evaluation of weapons system electronics designed to be tolerant to nuclear radiation effects.

-To assure radiation effects work focuses on the development of total dose, dose rate, neutron, and single event upset hardening techniques for electronics.

-Perform failure analysis and modeling of nuclear effects on electronic devices and have been active in this field since 1972 beginning with U. S. Navy Fleet Ballistic Missile hardened electronics development work.

-Utilize facilities to support Electronic Devices CSF.

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- To assure affordable, safe, and reliable Electrochemical Power sources (batteries).

-To meet current and future performance requirements in operational environments; for the Navy and Marine Corps, the Army and Air Force, and other government agencies.

-Provide a full spectrum of support for batteries and related equipments from Research and Development (R&D) through system retirement.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered requirements for the accomplishment of the mission.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

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PERSONNEL ADVANTAGES - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

Navy Radioactive Materials Permit for two (2) Cobalt 60 Irradiators used to perform total dose gamma testing of electronic devices. (13-00164-Q1NP) R

Navy Radioactive Materials Permit for Irradiated Electronic Components which is required to radiation test and retain electronic devices. (13-00164-WINP) R

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3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

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3.1.3 Environmental Constraints:

None

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

Linear Accelerator Facility - Requires 208 volt/3 phase power, 700 gallons/hour of chilled R
water with a 705 gallon reservoir for cooling of system electronics, and 100 psi dry, oil free compressed air for control valves. It also requires about 100 tons of special shielding and occupies about 12,000 square feet in a custom building located at a remote location at the Crane Site. Cobalt 60 sources require isolation by special shielding. Cryogenic testing of electronic devices being developed for use in infrared sensor space applications requires liquid nitrogen (1500 gallon tank) to achieve the extremely low temperatures.

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

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3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical to accomplishing the mission of NSWC Crane Division. R

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs.

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- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- Space Systems/Satellites

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	11	0	0	0
Management (Supv)	1	0	0	0
Other	0	0	0	0

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	4	0	0
Associates	4	0	0
Bachelor	2	1	0
Masters	1	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	2	1	2	6
Management (Supv)	0	0	0	0	1
Total	0	2	1	2	7

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	**Disclosures**	**Awarded**	**Patent Titles (List)**
None	**0**	0	
Total	**0**	0	

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3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Space Systems/ Satellites	0 R	

R

R

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)	
Space Systems/ Satellites	32	Sealed Nickel-Cadmium Cell performance and Optimization of Battery Design	
		Navy Primary and Secondary Batteries Design and Manufacturing Guidelines	
		Air Force NiCd Cell qualification Program	
		NSWC Crane Aerospace cell Test History	
		Handbook of Batteries	
		Space Station Freedom NiH Cell Testing Program	
		Navy power Supply Design and Manufacturing Guidelines	
		Analysis of Residual Charged Nickel in Cathods from Secondary Nickel Cells	
		Analysis for Residual Charged Nickel in Nickel-Cadmium Cell Plates	
		Evaluation of Nickel Electrode Surface Properties as a Function of State-of-Charge	
		Report on Life Cycle DPA Materials Analysis for Ni/Cd Space Cells	
		Material Analysis of Ni/Cd Space Qualified Cells from Life Cycle Testing	
		Reexamination of Nickel Cadmium Materials Analysis Data	
		Long Term Ionization Response of Several BICMOS VLSIC Technologies	R
		Trends in the Total-Dose Response of Modern Bipolar Transistors	R
		Single Event Burnout of Power Bipolar Junction Transistors	R
		Response of Advanced Bipolar Processes to Ionizing Radiation	R

R

CSF	Number Published	Paper Titles (List	
Space Systems/ Satellites		Effects of Ionizing Radiation on the Noise Properties of DMOS Power Transistors	R
		Total Dose and Transient Radiation Effects on a Tuneable Bandpass Filter Operating at Liquid Nitrogen Temperatures	R
		Development of a Test Chip for Radiation-Hardened FPA Readout Electronics	R
		Process Effects on the Ionizing Radiation Hardness of Trench Isolation	R
		Radiation-Hardened Electronics Thermomechanical Shock Testing on the DISKO ELM UGT (Classified)	R
		Radiation-Hardened Electronics Thermomechanical Shock Testing on the Mission CYBER Underground Test (Classified)	R
		Total Dose Hardening of Cryogenic Analog CMOS	R
		Radiation Hardening of a High Voltage IC Technology	R
		Understanding Single Event Phenomena in Complex Analog and Digital Integrated Circuits	R
		Accelerated Testing of Plastic IC's	R
		HAST-It's Use in Accelerated Stress Testing	R
		Reliability Technology to Achieve Insertion of Advanced Packaging (RELTECH) Program	R
		Overview of U. S. Government Advanced Packaging Programs	R
		Plastic Encapsulated Microcircuits in Military Applications	R

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3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Space Systems/ Satellites	13	Sealed Nickel-Cadmium Cell performance and Optimization of Battery Design Navy Primary and Secondary Batteries Design and Manufacturing Guidelines Air Force NiCd Cell qualification Program NSWC Crane Aerospace cell Test History Handbook of Batteries Space Station Freedom NiH Cell Testing Program Navy power Supply Design and Manufacturing Guidelines Analysis of Residual Charged Nickel in Cathods from Secondary Nickel Cells Analysis for Residual Charged Nickel in Nickel-Cadmium Cell Plates Evaluation of Nickel Electrode Surface Properties as a Function of State-of-Charge Report on Life Cycle DPA Materials Analysis for Ni/Cd Space Cells Material Analysis of Ni/Cd Space Qualified Cells from Life Cycle Testing Reexamination of Nickel Cadmium Materials Analysis Data

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3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

SPACE SYSTEMS/SATELLITES

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	12.4 R	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	0	0	0	0

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3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

SPACE SYSTEMS/SATELLITES

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	4.9	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	0	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
Common Support Functions	In-Service Engineering Efforts (List)	Funds Received (Obligation Authority)	Workyears	
Space Systems/ Satellites	None			

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Space Systems/ Satellites	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Space Systems/ Satellites	677K	324K	730K	515K

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Space Systems/ Satellites	Electrochemical Power Systems Facility			X	35,000K

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries.* Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest

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Space Systems/ Satellites	Radiation Effects Facility: Consists of Linear Accelerator, Cobalt 60 Gamma Sources (2), 10 KeV X-Ray Sources (2), Electrical Automatic Test Equipment, Data Acquisition Systems, and Computer Aided Design/Modeling Equipment. Facility is shared (this CSF uses 30%) with private customers (15%) and U.S. Navy Strategic Systems acquisition surveillance of electronic parts (55%)			X (see below)	12,200K

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Note: The Linear Accelerator equipment included in this facility is unique because the radiation dose rates achievable on it are not available elsewhere in the United States. R

The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries*. Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-

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Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

ELECTROCHEMICAL POWER SYSTEMS FACILITY	
FUNCTION	**PERCENTAGE UTILIZATION**
Air Vehicles, Fixed Wing, Avionics	0.5 %
Air Vehicles, Fixed Wing, Flight Subsystems	5.2 %
Air Vehicles, Rotary Wing, Avionics	0.7 %
Air Vehicles, Rotary Wing, Flight Subsystems	3.8 %
Weapons, Conventional Missiles/Rockets	1.5 %
Space Systems, Satellites	4.4 %
C4I Systems, Airborne C4I	0.5 %
Other Functions *	83.4 %

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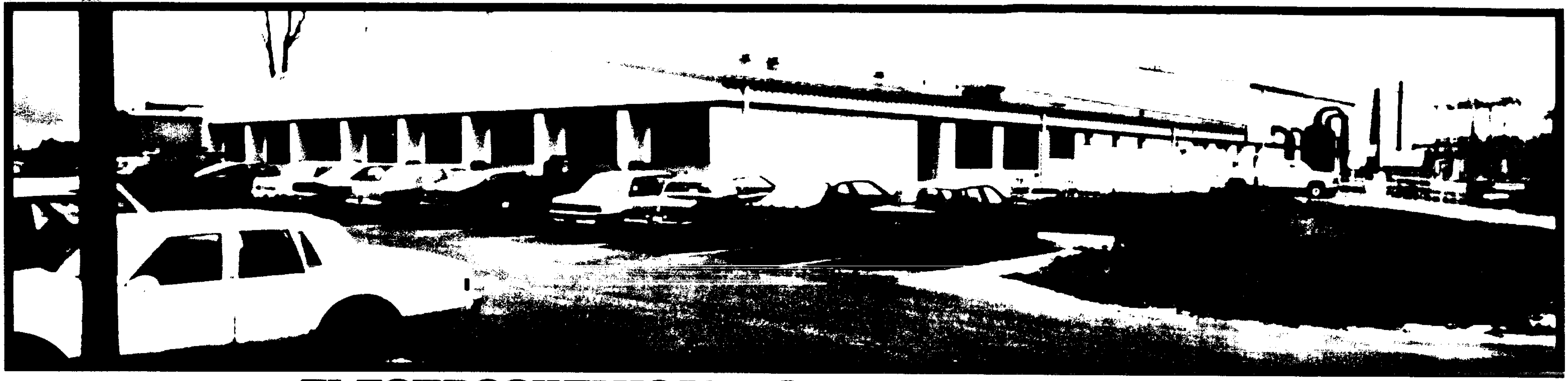
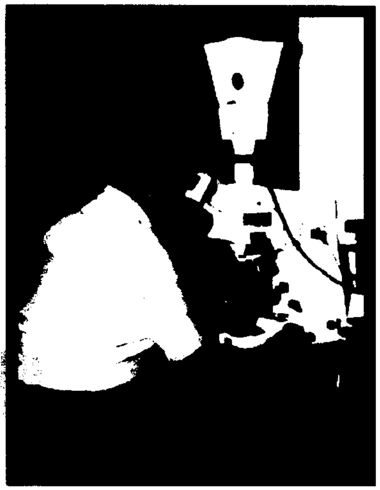
* The Electrochemical Power Systems Facility at Crane is a national asset providing a full spectrum of support for electrochemical power systems (batteries), including RDT&E, engineering, acquisition, depot rework, manufacturing, fleet support and system retirement. Programs and projects supported include missiles and weapons, aircraft, ground support equipment, shipboard and underwater, special warfare, satellites and other space-based equipment, transportation and various other systems. This facility provides support for a wide variety of batteries incorporated within systems and platforms of the Department of the Navy (NAVSEA, NAVAIR, NSWC, NAWC, NUWC, SSPO, SPECWAR, ONR, SOCOM, SPCC & NELO), United States Marine Corps. (USMC), the Department of the Army, the Department of the Air Force, the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), Special Operations

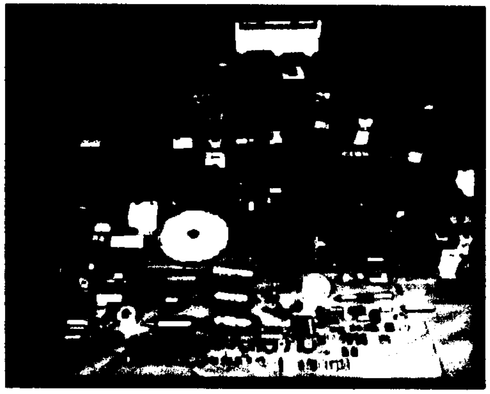


ELECTROCHEMICAL POWER SYSTEMS FACILITY
NSWC CRANE DIVISION

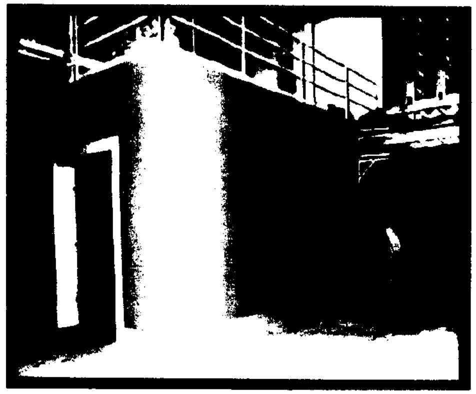
FAILURE ANALYSIS



FAMILY OF BATTERIES

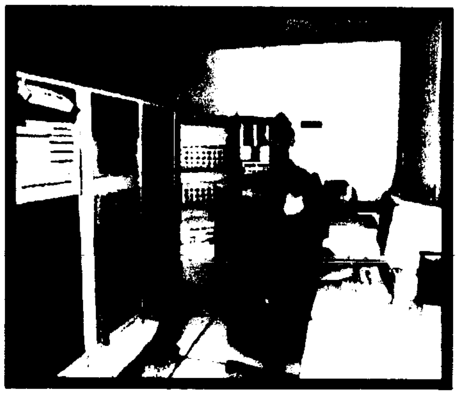


TEST CELLS



ENVIRONMENTAL

PROTOTYPE



PERFORMANCE EVALUATION

SAFETY EVALUATION

MATERIAL ANALYSIS

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technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

ELECTROCHEMICAL POWER SYSTEMS FACILITY R

FUNCTION	PERCENTAGE UTILIZATION
Air Vehicles, Fixed Wing, Avionics	0.5 %
Air Vehicles, Fixed Wing, Flight Subsystems	5.2 %
Air Vehicles, Rotary Wing, Avionics	0.7 %
Air Vehicles, Rotary Wing, Flight Subsystems	3.8 %
Weapons, Conventional Missiles/Rockets	1.5 %
Space Systems, Satellites	4.4 %
C4I Systems, Airborne C4I	0.5 %
Other Functions *	83.4 %

* The Electrochemical Power Systems Facility at Crane is a national asset providing a full spectrum of support for electrochemical power systems (batteries), including RDT&E, engineering, acquisition, depot rework, manufacturing, fleet support and system retirement. Programs and projects supported include missiles and weapons, aircraft, ground support equipment, shipboard and underwater, special warfare, satellites and other space-based equipment, transportation and various other systems. This facility provides support for a wide variety of batteries incorporated within systems and platforms of the Department of the Navy (NAVSEA, NAVAIR, NSWC, NAWC, NUWC, SSPO, SPECWAR, ONR, SOCOM, SPCC & NELO), United States Marine Corps. (USMC), the Department of the Army, the Department of the Air Force, the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), Special Operations R

technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

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3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Space Systems/ Satellites	Bldg 34	Technical	33.6	33.6	0
Space Systems/ Satellites	Bldg 38	Technical	18.1	18.1	0
Space Systems/ Satellites	Bldg 3235	Technical	27.4	27.4	0
Space Systems/ Satellites	Bldg 369	Storage	5.4	5.4	0
Space Systems/ Satellites	Bldg 2919	Technical	3.8	3.8	0
Space Systems/ Satellites	Bldg 2949	Technical	5.1	5.1	0
Space Systems/ Satellites	Bldg 355	Storage	.7	.7	0

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Command, Advanced Research Projects Agency (ARPA), Defense General Supply Command (DGSC), the Federal Aviation Administration (FAA), Coast Guard, Foreign Military Sales (FMA), and Private Industry. R

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
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Space Systems/ Satellites	Bldg 38	Technical	18.1	18.1	0
Space Systems/ Satellites	Bldg 3235	Technical	27.4	27.4	0
Space Systems/ Satellites	Bldg 369	Storage	5.4	5.4	0
Space Systems/ Satellites	Bldg 2919	Technical	3.8	3.8	0
Space Systems/ Satellites	Bldg 2949	Technical	5.1	5.1	0
Space Systems/ Satellites	Bldg 355	Storage	.7	.7	0
Space Systems/ Satellites	Bldg 650	Storage	.6	.6	0
Space Systems/ Satellites	Bldg 652	Storage	.6	.6	.6
Space Systems/ Satellites	Bldg 916	Storage	1.1	1.1	0
Space Systems/ Satellites	Bldg 917	Storage	1.1	1.1	1.1
Space Systems/ Satellites	Bldg 157	Storage	2.1	2.1	0

Space Systems/ Satellites	Bldg 181	Technical	1.7	1.7	1.7
Space Systems/ Satellites	Bldg 301	Storage	5.4	5.4	0
Space Systems/ Satellites	Radiation Effects	Technical	14.4	13.5	.9

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* Administrative, Technical, Storage, Utility

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Space Systems/ Satellites	Bldg 181	Technical	1.7	1.7	1.7
Space Systems/ Satellites	Bldg 301	Storage	5.4	5.4	0

* Administrative, Technical, Storage, Utility

Space Systems/ Satellites	Bldg 650	Storage	.6	.6	0
Space Systems/ Satellites	Bldg 652	Storage	.6	.6	.6
Space Systems/ Satellites	Bldg 916	Storage	1.1	1.1	0
Space Systems/ Satellites	Bldg 917	Storage	1.1	1.1	1.1
Space Systems/ Satellites	Bldg 157	Storage	2.1	2.1	0
~~Space Systems/ Satellites~~	~~Bldg 181~~	~~Technical~~	~~1.7~~	~~1.7~~	~~1.7~~
~~Space Systems/ Satellites~~	~~Bldg 301~~	~~Storage~~	~~5.4~~	~~5.4~~	~~0~~

* Administrative, Technical, Storage, Utility

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3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Electrochemical Power Sources - The Electrochemical Power Sources facility has a flexible facility to allow for considerable workload expansion. These include state-of-the-art equipments designed with the foresight to accommodate a wide variety of batteries, capable of multiple use, and easily upgradable. Also available are environmental equipments capable of simulating field conditions and material analysis capabilities required by each of the three services.

Radiation Effects Facility - This area could absorb additional workyears of similar work (FY97 workyears) using the available facilities. This would require multiple shift operations at the Linear Accelerator Facility, but not major facility modifications. Additional personnel would also be required, however, specialized training and development of new people could be provided by existing personnel. R

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Electrochemical Power Sources - The Electrochemical Power Sources facility has a flexible facility to allow for considerable workload expansion. These include state-of-the-art equipments designed with the foresight to accommodate a wide variety of batteries, capable of multiple use, and easily upgradable. Also available are environmental equipments capable of simulating field conditions and material analysis capabilities required by each of the three services.

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Electrochemical Power Sources - Electrochemical Power Sources can easily accomodate 40 additional workyears in any combination across the four common support functions.

Radiation Effects Facility - 10 workyears could be absorbed. R

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Electrochemical Power Sources - Electrochemical Power Sources can easily accomodate 40 additional workyears in any combination across the four common support functions.

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 **Land Use:** Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

C4I SYSTEMS/AIRBORNE C4I
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC at the Crane Site.

*The mission for the Electrochemical Power Systems Technical Capability is:

- To assure affordable, safe, and reliable Electrochemical Power sources (batteries).

-To meet current and future performance requirements in operational environments; for the Navy and Marine Corps, the Army and Air Force, and other government agencies.

-Provide a full spectrum of support for batteries and related equipments from Research and Development (R&D) through system retirement.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered requirements for the accomplishment of the mission.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

PERSONNEL ADVANTAGES - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

R

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical to accomplishing the mission of NSWC Crane Division. R

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

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Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs.

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- C4I Systems/Airborne C4I

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	2	0	0	0
Management (Supv)	0	0	0	0
Other	0	0	0	0

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0	0	0
Associates	0	0	0
Bachelor	2	0	0
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	1	0	0	1
Management (Supv)	0	0	0	0	0
Total	0	1	0	0	1

R

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
C4I Systems/ Airborne C4I	1 R	The Lithium Battery[1]

R

[1]American Society of Naval Engineers Publication, August 1992

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	**0**	0	
Total	**0**	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
C4I Systems/ Airborne C4I	9	Standard Power Supply Applications Handbook Navy Primary and Secondary Batteries Design and Manufacturing Guidelines Handbook of Batteries Improved Control Technique for Fast Output Charging of a Boost DC-DC Converter Improved Control Technique for Optimum Charging of Boost Converter Capacitance Navy Power Supply Design and Manufacturing Guidelines Safe and Environmentally Benign Lithium Battery Testing The Lithium Battery Lithium Battery Disposal

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

C4I SYSTEMS/AIRBORNE C4I

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0.5	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	0	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
Common Support Functions	In-Service Engineering Efforts (List)	Funds Received (Obligation Authority)	Workyears	
C4I Systems/ Airborne C4I	None			

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
C4I Systems/ Airborne C4I	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

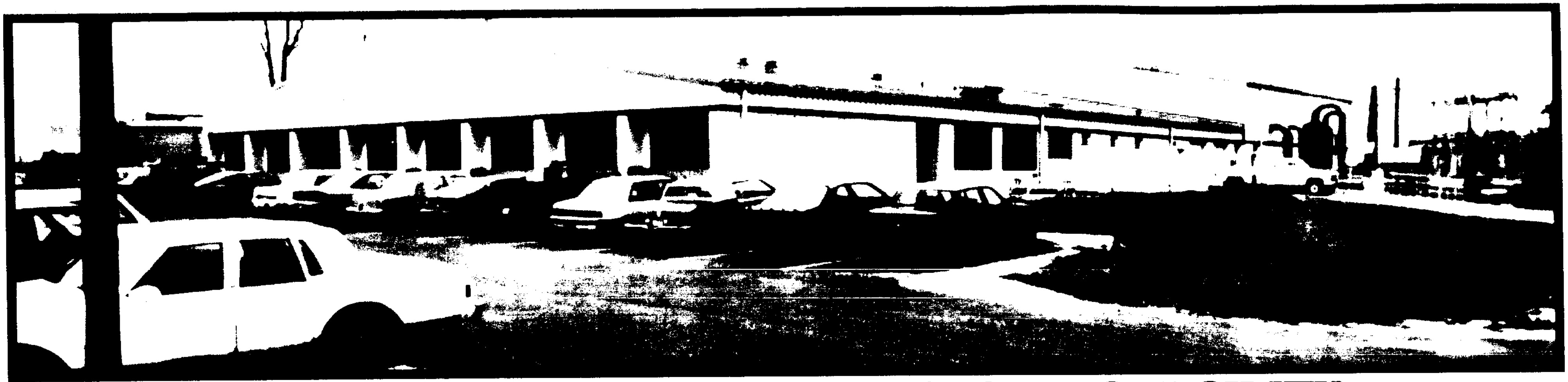
CSF	FY94	FY95	FY96	FY97
C4I Systems/ Airborne C4I	50K	50K	50K	50K

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
C4I Systems/ Airborne C4I	Electrochemical Power Systems Facility			X	35,000K

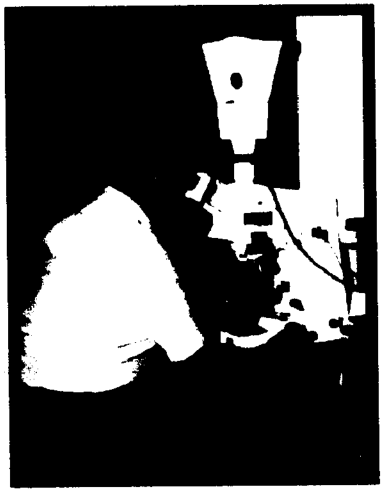
The NSWC Crane Division **Electrochemical Power Systems Facility** is a unique national asset providing *full spectrum* support for electrochemical power systems (batteries) throughout a system's life cycle beginning with RDT&E and continuing through engineering, acquisition, deployment and concluding with system retirement. Services are provided for a wide variety of batteries used in *Navy, Air Force, Army, Marine Corps, NASA, DOE, SOCOM, FAA, FMS* systems & platforms including the Common Support Functions of Air Vehicles, Weapons, Space Systems and C4I. A listing of the systems and platforms supported is provided in the attached Table. This facility is the DoD's largest (101,000 sq ft) and most modern electrochemical power systems complex. The facility includes a $12.5 million plant, and over $23.1 million of *state-of-the-art* test and evaluation equipment, *all dedicated to batteries.* Integrated within the facility is over 150 pieces of specialized equipment. *Unique in all the world* is a 26,400 sq ft High-



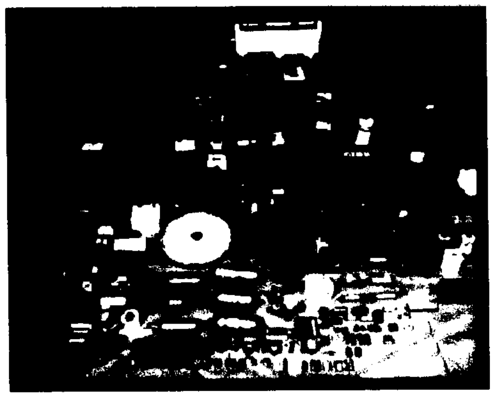
ELECTROCHEMICAL POWER SYSTEMS FACILITY

NSWC CRANE DIVISION

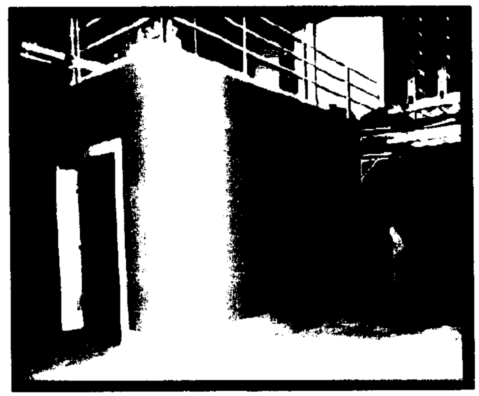
FAILURE ANALYSIS



FAMILY OF BATTERIES



TEST CELLS



ENVIRONMENTAL

PROTOTYPE

PERFORMANCE EVALUATION

SAFETY EVALUATION

MATERIAL ANALYSIS

213a

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Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are ***recognized experts*** in the field of electrochemical power systems. This expertise allows the government to ***buy smart***, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

ELECTROCHEMICAL POWER SYSTEMS FACILITY R

FUNCTION	PERCENTAGE UTILIZATION
Air Vehicles, Fixed Wing, Avionics	0.5 %
Air Vehicles, Fixed Wing, Flight Subsystems	5.2 %
Air Vehicles, Rotary Wing, Avionics	0.7 %
Air Vehicles, Rotary Wing, Flight Subsystems	3.8 %
Weapons, Conventional Missiles/Rockets	1.5 %
Space Systems, Satellites	4.4 %
C4I Systems, Airborne C4I	0.5 %
Other Functions *	83.4 %

* The Electrochemical Power Systems Facility at Crane is a national asset providing a full spectrum of support for electrochemical power systems (batteries), including RDT&E, engineering, acquisition, depot rework, manufacturing, fleet support and system retirement. Programs and projects supported include missiles and weapons, aircraft, ground support equipment, shipboard and underwater, special warfare, satellites and other space-based equipment, transportation and various other systems. This facility provides support for a wide variety of batteries incorporated within systems and platforms of the Department of the Navy (NAVSEA, NAVAIR, NSWC, NAWC, R

Energy Battery Evaluation and Abuse Facility for test and evaluation of the latest technology batteries in a safe and ecologically suitable manner. Batteries are *essential* to all DoD mission areas and are *critical* components of most military systems. The mission of the Electrochemical Power Systems Facility is to assure affordable, safe, and reliable batteries meeting *current and future* performance requirements in all operational environments. Personnel at this facility are *recognized experts* in the field of electrochemical power systems. This expertise allows the government to *buy smart*, avoid technological surprises, advance standardization, assess progress in the battery industry, encourage competition and work with the private sector while preserving *inherently governmental* decision-making functions.

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
C4I Systems/ Airborne C4I	Bldg 34	Technical	33.6	33.6	0
C4I Systems/ Airborne C4I	Bldg 38	Technical	18.1	18.1	0
C4I Systems/ Airborne C4I	Bldg 3235	Technical	27.4	27.4	0
C4I Systems/ Airborne C4I	Bldg 369	Storage	5.4	5.4	0
C4I Systems/ Airborne C4I	Bldg 2919	Technical	3.8	3.8	0
C4I Systems/ Airborne C4I	Bldg 2949	Technical	5.1	5.1	0

NUWC, SSPO, SPECWAR, ONR, SOCOM, SPCC & NELO), United States Marine Corps. (USMC), the Department of the Army, the Department of the Air Force, the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), Special Operations Command, Advanced Research Projects Agency (ARPA), Defense General Supply Command (DGSC), the Federal Aviation Administration (FAA), Coast Guard, Foreign Military Sales (FMA), and Private Industry. R

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
C4I Systems/ Airborne C4I	Bldg 34	Technical	33.6	33.6	0
C4I Systems/ Airborne C4I	Bldg 38	Technical	18.1	18.1	0
C4I Systems/ Airborne C4I	Bldg 3235	Technical	27.4	27.4	0
C4I Systems/ Airborne C4I	Bldg 369	Storage	5.4	5.4	0
C4I Systems/ Airborne C4I	Bldg 2919	Technical	3.8	3.8	0
C4I Systems/ Airborne C4I	Bldg 2949	Technical	5.1	5.1	0
C4I Systems/ Airborne C4I	Bldg 355	Storage	.7	.7	0

C4I Systems/ Airborne C4I	Bldg 355	Storage	.7	.7	0
C4I Systems/ Airborne C4I	Bldg 650	Storage	.6	.6	0
C4I Systems/ Airborne C4I	Bldg 652	Storage	.6	.6	.6
C4I Systems/ Airborne C4I	Bldg 916	Storage	1.1	1.1	0
C4I Systems/ Airborne C4I	Bldg 917	Storage	1.1	1.1	1.1
C4I Systems/ Airborne C4I	Bldg 157	Storage	2.1	2.1	0
C4I Systems/ Airborne C4I	Bldg 181	Technical	1.7	1.7	1.7
C4I Systems/ Airborne C4I	Bldg 301	Storage	5.4	5.4	0

* Administrative, Technical, Storage, Utility

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C4I Systems/ Airborne C4I	Bldg 650	Storage	.6	.6	0
C4I Systems/ Airborne C4I	Bldg 652	Storage	.6	.6	.6
C4I Systems/ Airborne C4I	Bldg 916	Storage	1.1	1.1	0
C4I Systems/ Airborne C4I	Bldg 917	Storage	1.1	1.1	1.1
C4I Systems/ Airborne C4I	Bldg 157	Storage	2.1	2.1	0
C4I Systems/ Airborne C4I	Bldg 181	Technical	1.7	1.7	1.7
C4I Systems/ Airborne C4I	Bldg 301	Storage	5.4	5.4	0

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Electrochemical Power Sources - The Electrochemical Power Sources facility has a flexible facility to allow for considerable workload expansion. These include state-of-the-art equipments designed with the foresight to accommodate a wide variety of batteries, capable of multiple use, and easily upgradable. Also available are environmental equipments capable of simulating field conditions and material analysis capabilities required by each of the three services.

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

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Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Electrochemical Power Sources - Electrochemical Power Sources can easily accomodate 40 additional workyears in any combination across the four common support functions.

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

ELECTRONIC DEVICES
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC at the Crane Site.

* The mission of the Microelectronics Technical Capability is:

- Provides capability for the design, selection and application of electronic/photonic components to assure that Navy systems meet reliability, maintainability and supportability requirements.

- Performs research, development, test, and evaluation of weapons system electronics designed to be tolerant to nuclear radiation effects.

- Perform radiation effects work which focuses on the development of total dose, dose rate, neutron, and single event upset hardening techniques for electronics.

- Performs failure analysis and modeling of nuclear effects on electronic devices and have been active in this field since 1972 beginning with US Navy Fleet Ballistic Missile hardened electronics development work.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered requirements for the accomplishment of the mission.

High Level Radiation Testing - This remote geographic location, with its low population density, has reduced FCC requirements and regulations for radiation of energy. Our "Blue Sky" facility, located in a valley and directed straight into space (thus the facility name "Blue Sky") has a restricted fly zone that provides the free space that high power microwave radiation testing requires. The valley location, surrounded by large indeciduous trees, minimizes outside interference and blocks horizontal radiation. In addition, large available acreage allows adaptability for all DoD antenna range requirements.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

<u>PERSONNEL ADVANTAGES</u> - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

There are currently two licenses which this activity holds which are required for the Radiation Effects testing to be done at the Crane site:

a. Navy Radioactive Materials Permit for two (2) Cobalt 60 Irradiators used to perform total dose gamma testing of electronic devices. (13-00164-Q1NP)

b. Navy Radioactive Materials Permit for Irradiated Electronic Components which is required to perform the radiation test on electronic devices. (13-00164-WINP)

3.1.3 Environmental Constraints:

None

3.1.4 Special Support Infrastructure:

The Linear Accelerator Facility requires 208 volt/3 phase power, 700 gallons/hour of chilled water with a 705 gallon reservoir for cooling of system electronics, and 100 psi dry, oil free compressed air for control valves. It also requires about 100 tons of special shielding and occupies about 12,000 square feet in a custom building located at a remote location at the Crane site. Cobalt 60 sources require isolation by special shielding. Cryogenic testing of electronic devices being developed for use in infrared sensor space applications requires liquid nitrogen (1500 gallon tank) to achieve the extremely low temperatures.

Much of the equipment in use in the Electronic/Photonic Component Engineering and Test Facility requires special utility support; especially those equipments used in environmental test and evaluation. In these areas, the utilities supply must include 3 phase 240V power, along with provisions for compressed air, CO_2, and both distilled and deionized water. Equipment used in photonic component evaluation requires 3 phase 240V power and must be furnished with special non-laser reflecting wall coverings. In addition, 8" concrete floors are required to support the optical tables. One or more rooms must be rated safe for class IV laser testing to include entrance door safety power disconnects.

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

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3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical to accomplishing the mission of NSWC Crane Division. R

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs.

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

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3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- Electronic Devices

Types of personnel	Number of Personnel				
	Government		On-Site FFRDC	On-Site SETA	
	Civilian	Military			
Technical	25R	0	0	0	R
Management (Supv)	3	0	0	0	
Other	1R	0	0	0	R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- Electronic Devices

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	9	0	0	0
Management (Supv)	3	0	0	0
Other	17	0	0	0

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3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position			
	Technical	Management (Supv)	Other	
High School or Less	8R	0	1R	R
Associates	1	0	0	
Bachelor	13R	1	0R	R
Masters	3R	1	0R	R
Doctorate (include Med/Vet/etc.)	0	1	0	

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service					
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years	
Technical	0	8R	5R	3R	9R	R
Management	0	0	1	0	2	
Other	0	0R	0R	1R	OR	R
Total	0	8	6	4	11	

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	7	0	2
Associates	1	0	0
Bachelor	1	1	12
Masters	0	1	3
Doctorate (include Med/Vet/etc.)	0	1	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	1	0	0	8
Management	0	0	1	0	2
Other	0	7	5	4	1
Total	0	8	6	4	11

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
Total	0	0	

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3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Electronic Devices	12 R	Long Term Ionization Response of Several BICMOS VLSIC Technologies[1] Trends in the Total-Dose Response of Modern Bipolar Transistors[2] Single Event Burnout of Power Bipolar Junction Transistors[3] Response of Advanced Bipolar Processes to Ionizing Radiation[4] Effects of Ionizing Radiation on the Noise Properties of DMOS Power Transistors[5] Total Dose and Transient Radiation Effects on a Tuneable Bandpass Filter Operating at Liquid Nitrogen Temperatures[6] Process Effects on the Ionizing Radiation Hardness of Trench Isolation[7] Radiation-Hardened Electronics Thermomechanical Shock Testing on the DISKO ELM UGT (Classified)[8] Radiation-Hardened Electronics Thermomechancial Shock Testing on the Mission CYBER Underground Test (Classified)[9] Total Dose Hardening of Cryogenic Analog CMOS[10] Radiation hardening of a High Voltage IC Technology[11] Understanding Single Event Phenomena in Complex Analog and Digital Integrated Circuits[12]

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3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Electronic Devices	19	Long Term Ionization Response of Several BICMOS VLSIC Technologies Trends in the Total-Dose Response of Modern Bipolar Transistors Single Event Burnout of Power Bipolar Junction Transistors Response of Advanced Bipolar Processes to Ionizing Radiation Effects of Ionizing Radiation on the Noise Properties of DMOS Power Transistors Total Dose and Transient Radiation Effects on a Tuneable Bandpass Filter Operating at Liquid Nitrogen Temperatures Development of a Test Chip for Radiation-Hardened FPA Readout Electronics Process Effects on the Ionizing Radiation Hardness of Trench Isolation Radiation-Hardened Electronics Thermomechanical Shock Testing on the DISKO ELM UGT (Classified) Radiation Hardened Electronics Thermomechanical Shock Testing on the Mission CYBER Underground Test (Classified) Total Dose Hardening of Cryogenic Analog CMOS

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[1]IEEE Transactions on Nuclear Science, June 1992
[2]IEEE Transactions on Nuclear Science, December 1992
[3,4,5]IEEE Transactions on Nuclear Science, December 1991
[6,7,8]Journal of Radiation Effects, Research and Engineering, December 1991
[9,10]Journal of Radiation Effects, Research and Engineering, December 1990
[11,12]IEEE Transactions on Nuclear Science, December 1990

CSF	Number Published	Paper Titles (List)
Electronic Devices	Cont	Radiation hardening of a High Voltage IC Technology Understanding Single Event Phenomena in Complex Analog and Digital Integrated Circuits Accelerated Testing of Plastic IC's HAST-It's Use in Accelerated Stress Testing Reliability Technology to Achieve Insertion of Advanced Packaging (RELTECH)Program Overview of U.S. Government Advanced Packaging Programs Plastic Encapsulated Microcircuits in Military Applications

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

ELECTRONIC DEVICES

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	25.1	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	0	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Electronic Devices	None			

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Electronic Devices	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Electronic Devices	8,200K	8,000K	7,000K	5,900K

R

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Electronic Devices	Electronic/Photonic Component Engr & Test Facility				$7,800K
Electronic Devices	Radiation Effects Facility			X	$12,200K

These facilities are described in the next two pages. R

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Electronic Devices	Electronic/Photonic Component Engr & Test Facility				$7,800K
Electronic Devices	Radiation Effects Facility			X	$12,200K

R

The **Electronic/Photonic Component Engineering & Test Facility** is a national asset providing a full spectrum of support for microelectronic devices including RDT&E, engineering, acquisition support, fleet support and obsolescence management. The equipment consists of Automated and Bench Electrical Test Systems, environmental test chambers and special photonic test equipment. The facility is used 10% for S&T work and 90% for major surface and undersea acquisition programs.

This facility provides support for digital, analog, and photonic components used in a wide variety of equipments of the Department of the Navy (NAVSEA, NAVAIR, SSPO), Department of the Air Force, Department of the Army Strategic Defense Command and NASA. In addition, the facility provides component test & evaluation support to other agencies such as the Defense Electronic Supply Center (DESC) and the DoD Inspector General's office. Finally, the facility is used in collaborative efforts with the Naval Research Lab, Army Research Lab, Air Force Rome Labs, Air Force Wright Labs and Department of Energy Sandia Labs.

USAGE OF ELECTRONIC/PHOTONIC COMPONENT ENGINEERING & TEST FACILITY

PERVASIVE FUNCTION	PERCENT UTILIZATION
ELECTRONIC DEVICES	10 %
OTHER FUNCTIONS (*)	90 %

* Other related functions for which this facility is utilized include electronic device evaluation for shipboard and underwater combat systems, gun weapons systems, strategic fire control and navigation systems, satellites and other space systems.

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The **Radiation Effects Facility** is a uniquely capable engineering facility providing support for measurement and analysis of the effects of nuclear and space radiation of microelectronic devices.

The equipment consists of Linear Accelerator, Cobalt 60 Gamma Sources (2), 10 KeV X-ray Sources (2), Electrical Automatic Test Equipment, Data Acquisition Systems, and Computer Aided Design/Modeling Equipment. Facility is shared (this CSF uses 30%) with private customers (15%) and U.S. Navy Strategic Systems Acquisition surveillance of electronic parts (55%). The Linear Accelerator Equipment included in this facility is unique because the radiation dose rates achievable on it are not available elsewhere in the United States.

This facility provides support of digital, analog, microwave and photonic components used in a wide variety of equipments of the Department of the Navy (NAVSEA and SSPO), Department of the Air Force, Department of the Army Strategic Defense Command and NASA. The facility provides support to other agencies such as the Defense Nuclear Agency (DNA), the Department of Energy (DOE) and to private parties performing on government contracts. The facility is used in collaborative efforts with the Naval Research Lab, Air Force Rome Labs, and Department of Energy Sandia Labs.

USAGE OF RADIATION EFFECTS FACILITY

PERVASIVE FUNCTION	PERCENT UTILIZED
ELECTRONIC DEVICES	30%
OTHER FUNCTIONS (*)	70%

*Other related functions for which this facility is used include strategic missile guidance and flight control systems, satellites and other space systems. Strategic missile guidance and flight control systems work is production support and does not fit in S&T, Engineering Development or ISE life cycle phases. Satellite work is in support of the Global Positioning System and is reported in Section III. R

ADDED PAGE

R

The **Radiation Effects Facility** is a uniquely capable engineering facility providing support for measurement and analysis of the effects of nuclear and space radiation on microelectronic devices.

The equipment consists of Linear Accelerator, Cobalt 60 Gamma Sources (2), 10 KeV X-ray Sources (2), Electrical Automatic Test Equipment, Data Acquisition Systems, and Computer Aided Design/Modeling Equipment. Facility is shared (this CSF uses 30%) with private customers (15%) and U.S. Navy Strategic Systems Acquisition surveillance of electronic parts (55%). The Linear Accelerator Equipment included in this facility is unique because the radiation dose rates achievable on it are not available elsewhere in the United States.

This facility provides support for digital, analog, microwave and photonic components used in a wide variety of equipments of the Department of the Navy (NAVSEA and SSPO), Department of the Air Force, Department of the Army Strategic Defense Command and NASA. The facility provides support to other agencies such as the Defense Nuclear Agency (DNA), the Department of Energy (DOE) and to private parties performing on government contracts. The facility is used in collaborative efforts with the Naval Research Lab, Air Force Rome Labs, and Department of Energy Sandia Labs.

USAGE OF RADIATION EFFECTS FACILITY

PERVASIVE FUNCTION	PERCENT UTILIZATION
ELECTRONIC DEVICES	30 %
OTHER FUNCTIONS (*)	70 %

* Other related functions for which this facility is used include strategic missile guidance and flight control systems, satellites and other space systems.

Electronic/Photonic Component Engineering & Test Facility

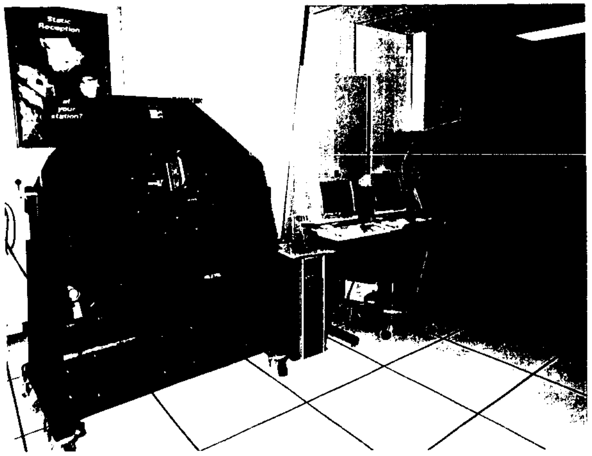
Consists of Automated and Bench Electrical Test Systems, environmental test chambers and special photonic test equipment. Facility is used 10% for S&T work. 90% of work supports major surface and undersea acquisition programs.

Radiation Effects Facility

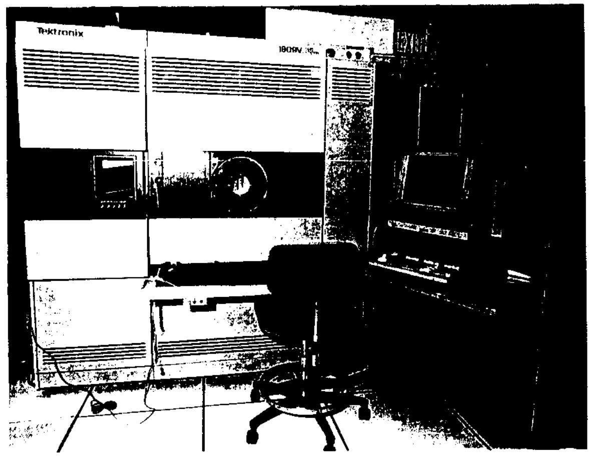
Consists of Linear Accelerator, Cobalt 60 Gamma Sources (2), 10 KeV X-ray Sources (2), Electrical Automatic Test Equipment, Data Acquisition Systems, and Computer Aided Design/Modeling Equipment. Facility is shared (this CSF uses 30%) with private customers (15%) and U.S. Navy Strategic Systems Acquisition surveillance of electronic parts (55%).

Note: The Linear Accelerator Equipment included in this facility is unique because the radiation dose rates achievable on it are not available elsewhere in the United States.

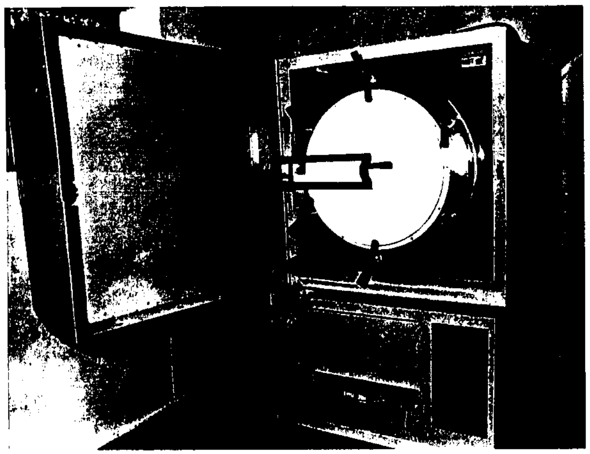
ELECTRONIC/PHOTONIC ENGINEERING & TEST FACILITY



AUTOMATIC TEST SYSTEM
CUSTOM MICROCIRCUITS

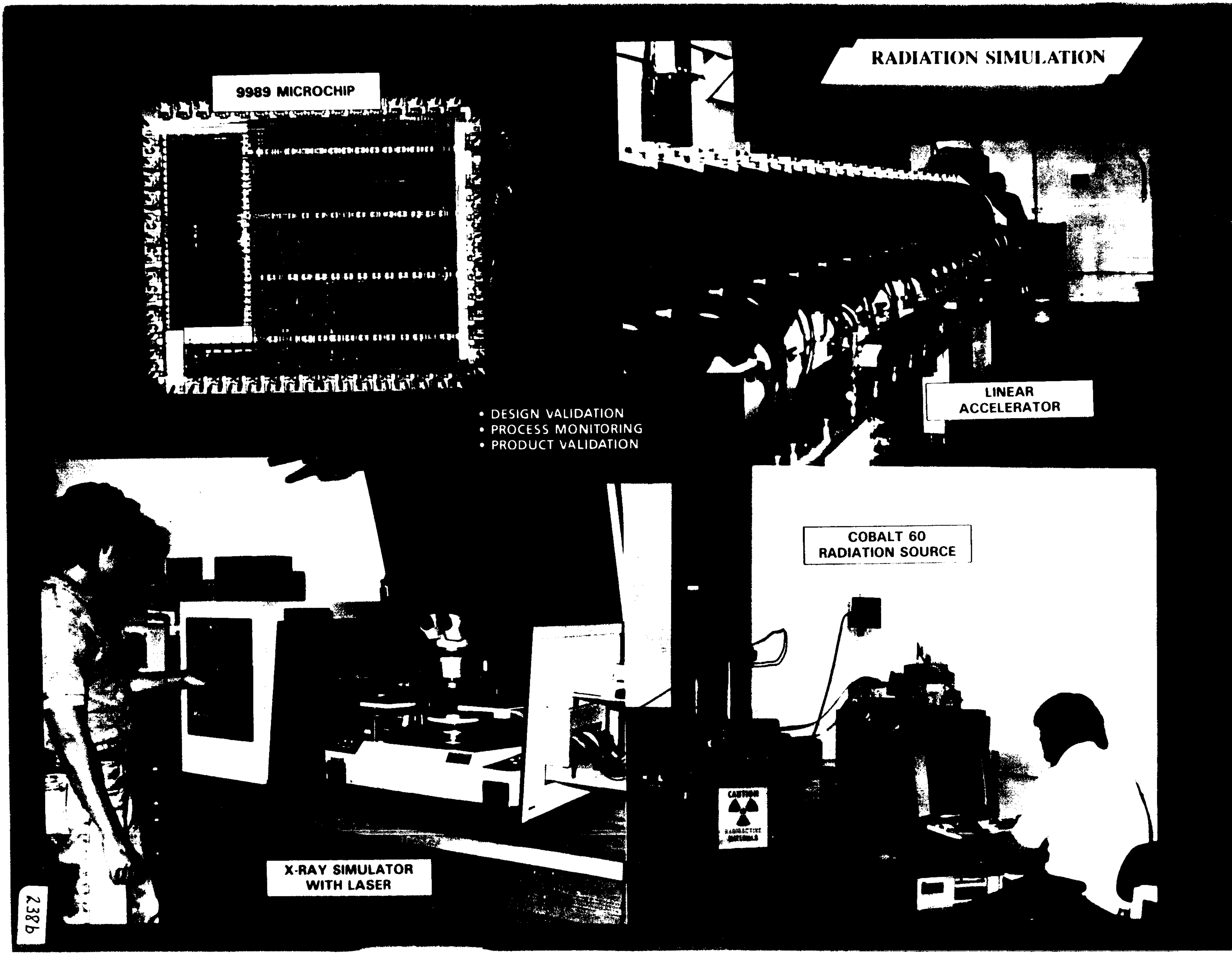


AUTOMATIC TEST SYSTEM
MEMORY MICROCIRCUITS



HIGHLY ACCELERATED STRESS CHAMBER
COMMERCIAL COMPONENTS

OPTICS TABLE
FIBER OPTIC COMPONENTS


RADIATION SIMULATION
9989 MICROCHIP
LINEAR ACCELERATOR
• DESIGN VALIDATION
• PROCESS MONITORING
• PRODUCT VALIDATION
COBALT 60 RADIATION SOURCE
X-RAY SIMULATOR WITH LASER

238b

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Electronic Devices	Bldg 2044	Technical	2.7	2.7	0
Electronic Devices	Bldg 2917	Technical	2.5	2.5	0
Electronic Devices	Bldg 2931	Technical	8.5	8.5	0
Electronic Devices	Bldg 2940W	Technical	3.5	3.5	0
Electronic Devices	Bldg 2035	Technical	1.7	1.7	0
Electronic Devices	Bldg 3059	Technical	11.9	11.9	0
Electronic Devices	Bldge 2088	Technical	2.5	2.5	0

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

R

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

ADVANCED MATERIALS
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC at the Crane Site.

* The mission of the Microelectronics Technical Capability is:

- Designs and develops electronic packaging for systems and equipment.

- Performs analysis of advanced materials and electronic cooling techniques for electronic packaging systems.

3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered
requirements for the accomplishment of the mission.

High Level Radiation Testing - This remote geographic location, with its low population density, has reduced FCC requirements and regulations for radiation of energy. Our "Blue Sky" facility, located in a valley and directed straight into space (thus the facility name "Blue Sky") has a restricted fly zone that provides the free space that high power microwave radiation testing requires. The valley location, surrounded by large indeciduous trees, minimizes outside interference and blocks horizontal radiation. In addition, large available acreage allows adaptability for all DoD antenna range requirements.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

<u>PERSONNEL ADVANTAGES</u> - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

R

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs. There are no other supporting organizations/activities nearby which are critical to accomplishing the mission of NSWC Crane Division. R

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical support	Co-located	Various	Various

This relationship is described in the following paragraphs.

<u>ADVANTAGE OF SYNERGIES IN CO-LOCATION</u>

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered <u>vital</u> and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- Advanced Materials

Types of personnel	Number of Personnel				
	Government		On-Site FFRDC	On-Site SETA	
	Civilian	Military			
Technical	3R	0	0	0	R
Management (Supv)	0	0	0	0	
Other	0R	0	0	0	R

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- Advanced Materials

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	0	0	0	0
Management (Supv)	0	0	0	0
Other	3	0	0	0

R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0	0	0
Associates	0	0	0
Bachelor	2R	0	0R
Masters	1R	0	0R
Doctorate (include Med/Vet/etc.)	0	0	0

R
R

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	0	2R	1R	0
Management	0	0	0	0	0
Other	0	0	0R	0R	0
Total	0	0	2	1	0

R
R

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0	0	0
Associates	0	0	0
Bachelor	0	0	2
Masters	0	0	1
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	0	0	0	0
Management	0	0	0	0	0
Other	0	0	2	1	0
Total	0	0	2	1	0

R

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Advanced Materials	1	An Overview of Navy Composite Developments for Thermal Management[1]

[1]Naval Engineers Journal, May 1992

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3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
None	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Advanced Materials	1	An Overview of Navy Composite Developments for Thermal Management

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

ADVANCED MATERIALS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	2.5	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	0	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Advanced Materials	None			

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Advanced Materials	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Advanced Materials	0	220K	250K	180K

ELECTRONIC PACKAGING & THERMAL ANALYSIS LAB
Performs component- to cabinet-level structural & thermal evaluation for electronics packaging designs.

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3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Advanced Materials	Electronic Packaging & Thermal Analysis Facility				1,700K

This facility is described on the following page. R

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The **Electronic Packaging & Thermal Analysis Facility** provides full spectrum support for microelectronic components, circuit cards and cabinets including RDT&E, engineering, acquisition and fleet support.

The equipment consists of computer data acquisition and analysis equipment, thermal shock exposure chambers and special equipment for performing cabinet level cooling assessments. The facility is used 15% for S&T work and 85% for major surface and undersea acquisition programs.

This facility provides support for components, circuit cards and cabinets used in a wide variety of equipments of the Department of the Navy (NAVSEA, NAVAIR, SSPO). The facility is used in collaborative efforts with the Naval Research Lab, Army Research Lab, Air Force Wright Labs and Department of Energy Sandia Labs.

USAGE OF ELECTRONIC PACKAGING & THERMAL ANALYSIS FACILITY

PERVASIVE FUNCTION	PERCENT UTILIZATION
ADVANCED MATERIALS	15 %
OTHER FUNCTIONS (*)	85 %

* Other related functions for which this facility is utilized include advanced material evaluation of shipboard and underwater combat systems, and strategic fire control and navigation systems.

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Advanced Materials	Electronic Packaging & Thermal Analysis Facility				1,700K

Electronic Packaging & Thermal Analysis Facility

Consists of computer data acquisition and analysis equipment, thermal shock exposure chambers and special equipment for performing cabinet level cooling assessments. Facility is used 15% for S&T work. 85% of work supports major surface and undersea acquisition program.

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Advanced Materials	Electronic Packaging & Thermal Analysis	Technical	2.7	1.9	.5

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Electronic Packaging and Thermal Analysis - Additional structural and thermal modeling workload could be absorbed along with additional structural and thermal test/evaluation workload with minor facility modification.

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'4"R	250 R
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Electronic Packaging and Thermal Analysis - Four workyears could be absorbed.

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

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WEAPONS/CRUISE MISSILES
COMMON SUPPORT FUNCTION

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

As reported in BRAC95 Data Call #1, the technical program at the Crane Division is managed and described in terms of seventeen Technical Capabilities (TC's) recognized by the Naval Surface Warfare Center. The ones at Crane Site are:

1. Electronic Warfare
2. Microelectronic Technology
3. Electronic Module Test & Repair
4. Microwave Components
5. Electrochemical Power Systems
6. Acoustic Sensors
7. Small Arms
8. Conventional Ammunition
9. Pyrotechnics
10. Night Vision/Electro-Optics
11. Mine Countermeasures
12. Radar Engineering & Industrial Support

The following mission is presented for the applicable TC at the Crane Site.

*The mission of the **Conventional Ammunition** Technical Capability is:

-Perform surveillance and failure analysis testing of missile ordnance components (TOMAHAWK).

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3.1 Location:

3.1.1 Geographic/Climatological Features: Describe any Geographic features in and around your activity that are relevant to each CSF.

TECHNICAL ADVANTAGES - The following technical advantages exist at the Crane Division and are applicable to the Common Support Functions of this data call. They are considered requirements for the accomplishment of the mission.

Environmental Compliance - From an environmental standpoint, the geographic location of this facility is a key to its successful operation and the continuation of missions which other facilities are being forced to close. Crane Division is remote, with little encroachment from residential or private industry. **The facility occupies land which, due to the topography and soil types, is of little value for farming, residential development, or private industry.**

EPA Region V and the Indiana Department of Environmental Management work well with the people and operations at Crane. Furthermore, the communities surrounding the Division are extremely supportive of the facility and its programs. **In other words, there is almost no antagonistic opposition from the public or regulators to environmental permits and related activities.** This favorable relationship is extraordinary among Department of Defense facilities.

PERSONNEL ADVANTAGES - The following advantages exist at the Crane Division, are applicable to the Common Support Functions, and are considered enhancements for the accomplishment of the mission.

Educational Support and Recruitment - Although Indiana is noted as a major producer and exporter of consumer and industrial electronic goods, **Crane Division has little local competition for people with technological skills.** The Division is centrally located with respect to some of the world's largest and most highly regarded schools of engineering. In addition, a number of nearby schools and universities offer two year Associate degrees in engineering technology.

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Quality of Life - Crane Division is the largest employer of engineers in Southern Indiana. The quality of life, low cost of living (including cost of housing), and ease in getting to work lead to extremely low attrition rates. **Thus far there has been no need to offer recruitment or retention bonuses to either acquire or retain technical personnel.** The low cost of living is supported by the fact that we are covered under RUS (Rest of United States) insofar as locality pay is concerned.

Recruitment - There are a number of reputable engineering schools within a 100-150 mile radius of Crane, for example: Purdue University, the University of Evansville, Rose-Hulman Institute of Technology, the University of Cincinnati, IUPUI, and the University of Louisville. **We have had approximately 1,000 engineering applications in our files within the past two-three years.** In addition, there are a number of technical schools in the local areas which furnish a substantial supply of electronic, electrical, and mechanical engineering technicians. These technical programs include both two-year and four-year curricula.

3.1.2 Licenses & Permits:

None

3.1.3 Environmental Constraints:

None

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3.1.4 Special Support Infrastructure:

Utilities - The Crane site has excess capacity of all utilities available for the expansion of operations at the facility. Water and sewer capacities are at 50% utilization and are totally controlled by the facility. Electric and gas are supplied by utility companies to the base infrastructure and supplies may be expanded by more than 50% from the present usage.

Roads and Railroads - The Crane site has an extensive network of well maintained roads and railroads. This network allows for the safe and efficient transportation of all materials on the facility and the opportunity to transport materials by whatever means is most cost effective to the government.

Warehouse Storage - The Crane site has 980,000 sf of warehouse space directly controlled by the navy with another 1.3 million sf controlled by the Crane Army Ammunition Activity. This storage capacity has allowed the Center to support many of the Navy's inert material storage requirements.

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3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
All CSF's	Crane TC's	Technical Support	Co-located	Various	Various
Weapons/ Cruise Missiles	Crane Army Ammo Activity	Ammunition Production	1 mile		0
Weapons/ Cruise Missiles	Comarco	Engineering Support	8 miles		0

This relationship is described in the following paragraphs.

ADVANTAGE OF SYNERGIES IN CO-LOCATION

Many of the functions performed at the Crane Division, Naval Surface Warfare Center **require access to other facilities and capabilities co-located on the base** in order to accomplish their missions. These facilities/capabilities are considered vital and include:

- *Environmental simulation facilities such as humidity, temperature cycling, vibration, shock, altitude, sun/rain, sand/dust, salt spray, jolt, and jumble;*
- *X-ray facilities including real-time capability;*
- *Ordnance materials analysis lab;*
- *Battery engineering and test support;*
- *Failure Analysis of components;*
- *Firing Ranges and Range Support for Lasers and/or Weapon Sights/Fire Control Testing;*
- *Circuit card engineering and repair support;*
- *System interface testing;*

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As an example of the benefits of co-location, the Electronic Warfare (EW) Technical Capability at Crane is collocated at the Crane Division with seven other complimentary TCs (Microwave Components, Radar, Electrochemical Power Systems,Naval Gun Weapon System, Electronic Module Test and Repair, Microelectronics Technology and Pyrotechnics). The skills, knowledge, equipment and facilities of these seven TCs are utilized extensively in EW TC support. Examples of this support is the Radar TC's antenna personnel and equipment; Microwave Component TC's traveling wave tube expertise; Electrochemical Power Systems TC's chemical battery knowledge and test capability support for expendable EW devices; etc. The EW TC's also supports the other TC's indicated by performing system analysis on products being developed in those TCs.

These facilities are unique from the standpoint they are Navy owned and operated. This gives complete control over physical security. Another advantage is that test and evaluation activities can be controlled and executed with **no interference from civil marine traffic** unlike test facilities in densely populated coastal areas. The result is effective execution of test processes with minimal cost due to the avoidance of down time and **freedom from excessive public relations complications.**

Co-location of engineering functions supporting surface ship, air launched and Marine Corps ammunition (e.g. acquisition, ammunition, logistics management, surveillance, modification, maintenance, testing, demilitarization and disposal) provides a synergism and efficiency that would be unavailable if these efforts were dispersed among several activities. Co-location of the Program Management and engineering functions with a major DOD ammunition production, storage, maintenance, and disposal activity, the Crane Army Ammunition Activity (CAAA), provides rapid response capability throughout the life cycle to major regional conflicts such as Operation Desert Shield/Desert Storm. Fifty-eight percent of CAAA's magazine storage (1.9 million sq ft) contain Navy/Marine Corps Ammunition assets. Co-location of Navy acquisition, maintenance, and demilitarization and disposal engineering functions with SMCA production operations at Crane offers excellent opportunities to incorporate modifications and improvements to Navy production commodities.

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3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

CSF- Weapons/Cruise Missiles

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	1	0	0	0
Management (Supv)	0	0	0	0
Other	0	0	0	0

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3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0	0	0
Associates	0	0	0
Bachelor	1	0	0
Masters	0	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	1	0	0	0
Management	0	0	0	0	0
Other	0		0	0	0
Total	0	1	0	0	0

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3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
Weapons/Cruise Missiles	0	0	
Total	0	0	

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Weapons/Cruise Missiles	0	

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3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

WEAPONS/CRUISE MISSILES

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	0.7	0	0	0

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3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	None	None	None
ACAT ID	None	None	None	None
ACAT II	None	None	None	None
ACAT III/IV	None	None	None	None

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3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Weapons/ Cruise Missiles	Engr Support	38K	0.7	Missile Component Evaluation (Surveillance)

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Weapons/ Cruise Missiles	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Weapons/ Cruise Missiles	49K	70K	55K	58K

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3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Weapons/ Cruise Missiles	Missile Fuze Test Facility				$11,800K

Missile Fuze Test Facility

Provides for testing a wide variety of missile fuzing components (warhead section components). Equipment used includes centrifuge, burn rate/velocity tester, active optical test ranges, leak detectors and many specialized pieces of equipment. This test equipment supports production acceptance, surveillance, and maintenance of these fuzing components. Approximately 25 missiles are supported including STANDARD, TOMAHAWK and SIDEWINDER. This effort supports the Navy as well as joint programs with the Air Force, Army, Foreign Military Sales and private parties.

Major Facility or Equipment Description	Weapons Conven-tional Missiles & Rkts	Cruise Missiles	Other Related Functions
Missile Fuze Test Facility	97.3%	1.0%	1.7%

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3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Weapons/ Cruise Missiles	Missile Fuze Test Facility				$11,800K

Missile Fuze Test Facility

Provides for testing a wide variety of missile fuzing components (warhead section components). Equipment used includes centrifuge, burn rate/velocity tester, active optical test ranges, leak detectors and many specialized pieces of equipment. This test equipment supports production acceptance, surveillance, and maintenance of these fuzing components. Approximately 25 missiles are supported including STANDARD, TOMAHAWK and SIDEWINDER. This effort supports the Navy as well as joint programs with the Air Force, Army, Foreign Military Sales and private parties.

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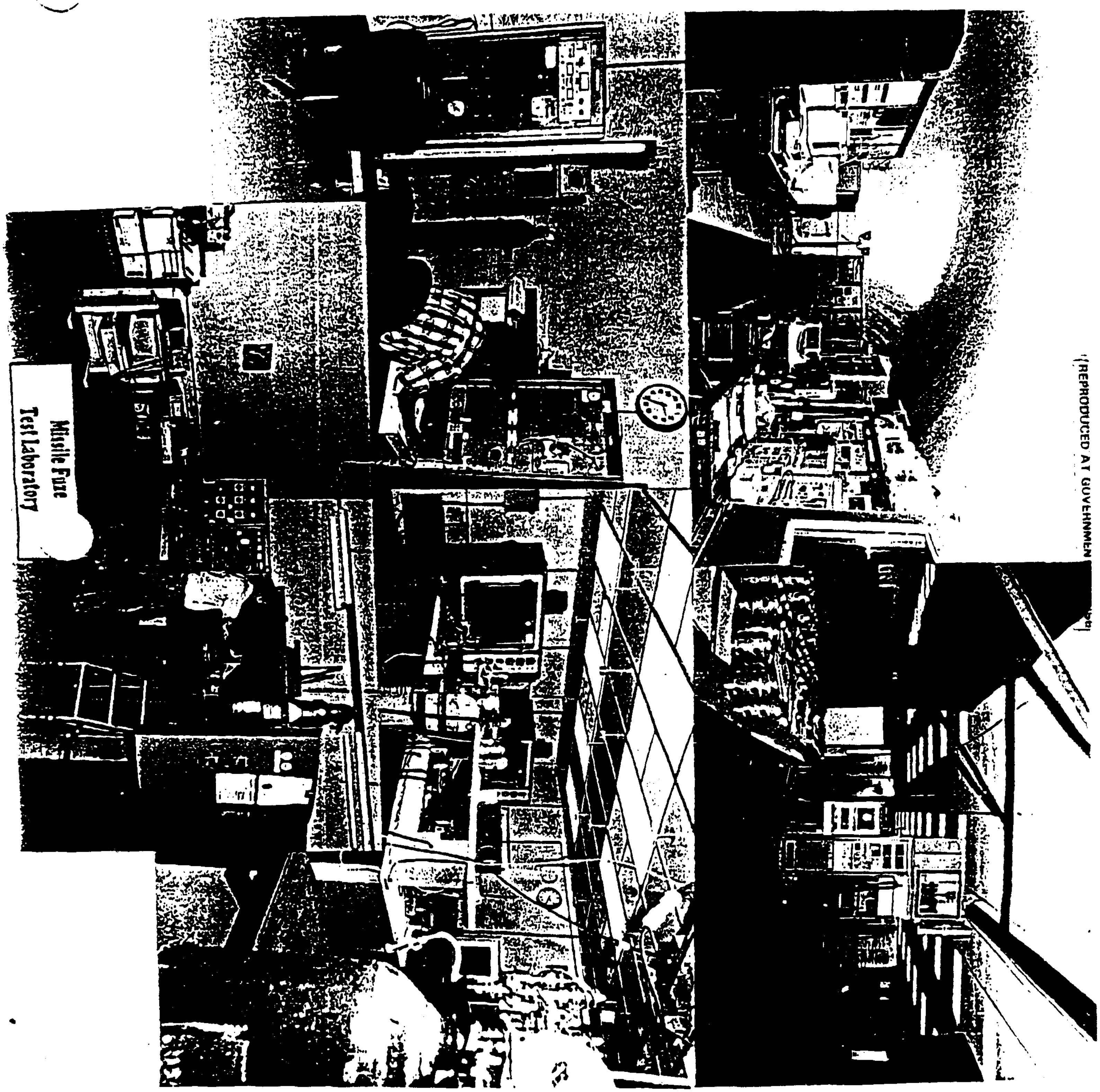

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3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Weapons/ Cruise Missiles	None				

* Administrative, Technical, Storage, Utility

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3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

Facility Master Plan - The Crane Division has a Master Facility Plan for mothballing facilities as the DOD downsizing affects our workload. The following table indicates the planned availability of space in the buildings utilized for work associated with these CSF's.

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
2/217	22	22	143	13' 9"	200
2/441	4	4	23	13' 9"	50
36/217	3			9'	
37/217	35			9'	
41/217	28			26'	
54/219	17	17	110	19'	350
64/441	53	53	355	19'	1,000
64/217	21			19'	
64/610	28			8'	
121/217	23			8'	
180/216	3			11'	
180/217	5			11'	
190/216	2			9'	
353/217	3	3	21	15' 4"	200
353/441	8	8	50	15' 4'	300
354/441	10	10	67	15' 4"	500

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
355/217	4	4	33	15'44"	250
355/441	5	5	33	15'4"	250
472/441	10	10	67	15'4"	250
2069/441	10	10	67	15' 4"	500
2070/441	10	10	67	15' 4"	500
2071/441	10	10	67	15' 4"	500
2072/441	10	10	67	15' 4"	500
2073/441	10	10	67	15' 4	500
2521/217	4			10'	
2540/216	13			8'	
2921/216	6			12' 8"	
2932/216	4			10'	
2935/216	4			12'	
2947/216	2			7'	
2951/216	2			13' 4"	
2964/216	8			15'	

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Constrained Class 2 Space Available for Expansion at NAVSURFWARCENDIV CRANE (UIC N00164) (Cont)

Building # / Category Code (3 digit)	Current GFA (KSF)	Additional Capacity Provided By Expansion		Height of High Bay (FT)	Estimated Cost of Rehab ($K's)
		* GFA (KSF)	# of Personnel		
Totals	377	186	1,237		5,350

* Space requiring modification

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Crane Division Master Facility Plan - As indicated in the previous table, 186,000 square feet of space applicable to these CFS's will become available as the DOD downsizing occurs.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alternation projects programmed in the FY95 PBS. (BRAC Criteria II)

None

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3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

Land Use	Total Acres	Developed Acreage	Available for Development	
			Restricted	Unrestricted
Maintenance	78.7	78.7	0	0
Operational Non-Ordnance	722.5	305.0	10.6	406.9
Operational Ordnance	1266.7	768.2	0	* 498.5
Training	13.4	6.2	0	* 7.2
R & D	0	0	0	0
Supply & Storage Ordnance	23734.0	17485.6	0	6248.4
Supply & storage Non-Ordnance	1055.9	863.2	0	192.7
Admin	84.1	76.2	0	* 7.9
Housing	170.7	45.1	0	125.6
Recreational	675	257	0	418
Navy Forestry Program	** 48,563	0	** 44,723	** 3,840
Navy Agricultural Outlease Program	0	0	0	0
Hunting/Fishing Programs	** 56,290	0	**52,450	**3,840
Other (Submerged)	900	0	900	0
TOTAL	*** 62467			

* Recommended "Best Use" but could support all uses marked with an asterisk.

** Overlapping concurrent land use

*** Total actual acres. Sum of column greater due to overlapping land use.

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3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

	On Base Capacity	Off Base Long Term Contract	Normal Steady State Load	Peak Demand
Electrical Supply (KWH)	66600KVA Transmission capability	unlimited supply	16127.7KVA	19149.5KVA
Natural Gas (CFH)	3000M Transmission capability	Unlimited supply	55585	101864
Sewage (GPD)	1.2M Process Capability	None	475000	673000
Potable Water (GPD)	2.1M Production Capability	50000 Contract Supply	572000	789000
Steam (PSI & lbm/Hr)	487340 lb/Hr @ 110 PSI Production Capability	None	25000 lb/hr @ 110 PSI	365000 lb/hr @ 110 PSI
Long Term Parking	0	0	0	0
Short Term Parking (Square Yard)	188,303	0	19,224	60,000

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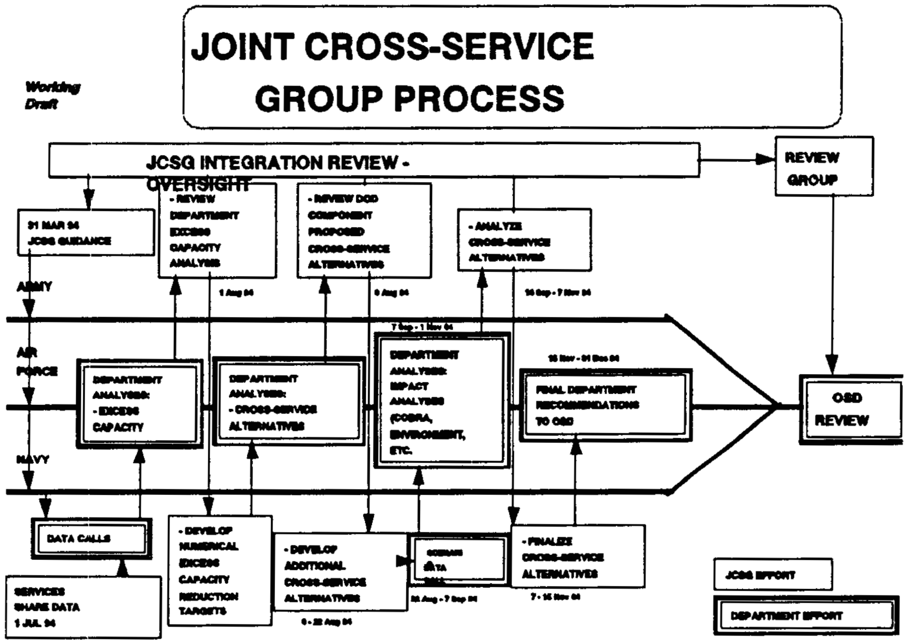
SECTION IV: APPENDICES

A. Macro Process/Schedule
B. List of Activities
C. Common Support Functions

APPENDIX A



PAGE ~~265~~ 285
14 June 1994

APPENDIX B

LIST OF ACTIVITIES

AIR FORCE

1. Armstrong Lab, Brooks AFB
2. Armstrong Lab, Tyndall AFB
3. Armstrong Lab, Wright-Patterson AFB
4. Armstrong Lab, Williams AFB
5. Human Systems Center, Brooks AFB
6. Wright Lab, Wright-Patterson AFB
7. Wright Lab, Eglin AFB
8. Aeronautical Systems Center, Wright-Patterson AFB
9. Aeronautical Systems Center, Eglin AFB
10. Oklahoma City Air Logistics Center, Tinker AFB (In-service engineering)
11. Ogden Air Logistics Center, Hill AFB (In-service engineering)
12. San Antonio Air Logistics Center, Kelly AFB (In-service engineering)
13. Sacramento Air Logistics Center, McClellan AFB (In-service engineering)
14. Warner-Robins Air Logistics Center, Robins AFB (In-service engineering)
15. Phillips Lab, Kirtland AFB
16. Phillips Lab, Hanscom AFB
17. Phillips Lab, Edwards AFB
18. Space & Missile Center, Los Angeles AFB
19. Space & Missile Center, Norton AFB
20. Sacramento Air Logistics Center, Peterson AFB
21. Rome Lab, Griffiss AFB
22. Rome Lab, Hanscom AFB
23. Electronic Systems Center, Hanscom AFB
24. Sacramento Air Logistics Center, Peterson AFB (In-service engineering)

ARMY

1. Army Research Lab (ARL), Adelphi, MD
2. ARL, Aberdeen Proving Grounds (APG), MD
3. ARL, White Sands Missile Range, NM
4. ARL, NASA Langley, VA
5. ARL, NASA Lewis, OH
6. Natick Research, Development and Engineering Center, Natick, MA
7. Aviation Research, Development and Engineering Center, St Louis, MO
8. Aviation Troop Command, Aeroflight Dynamics Directorate, Moffitt Field, CA
9. Aviation Troop Command, Aviation Applied Technology Directorate, Fort Eustis, VA
10. Edgewood Research, Development and Engineering Center, Aberdeen Proving Ground, MD
11. Communications Electronics Command Research, Development and Engineering Center, Ft Mammoth, NJ
12. Communication Electronics Command Research, Development and Engineering Center - Night Vision EO Directorate, Ft Belvoir, VA
13. Missile Research, Development and Engineering Center, Redstone Arsenal, AL
14. Armaments Research, Development and Engineering Center, Picatinny Arsenal, NJ
15. Armaments Research, Development and Engineering Center, Benet Labs, Watervliet Arsenal, NY
16. Tank-Automotive Command Research, Development and Engineering Center, Warren, MI
17. USA Research Institute of Infectious Diseases, Ft Detrick, MD

18. Walter Reed Army Institute of Research, Washington D.C.
19. USA Institute of Surgical Research, Ft Sam Houston, TX
20. USA Aeromedical Research Lab, Ft Rucker, AL
21. Medical Research Institute of Chemical Defense Aberdeen Proving Grounds, MD
22. USA Research Institute of Environmental Medicine, Natick, MA
23. Construction Engineering Research Laboratory, Champaign, IL
24. Cold Regions Research and Engineering Lab, Hanover, NH
25. Topographic Engineering Center, Alexandria, VA
26. Waterways Experiment Station, Vicksburg, MS
27. USA Research Institute for Behavioral & Social Sciences, Alexandria, VA
28. Simulation, Training and Instrumentation Command (STRICOM), Orlando, FL

NAVY

1. Naval Air Warfare Center, Weapons Division, China Lake
2. Naval Air Warfare Center, Weapons Division, Point Mugu
3. Naval Air Warfare Center, Aircraft Division, Patuxent River
4. Naval Air Warfare Center, Aircraft Division, Indianapolis
5. Naval Air Warfare Center, Aircraft Division, Lakehurst
6. Naval Research Lab, Washington D.C.
7. Naval Research Lab Detachment, Bay St Louis
8. Naval Surface Warfare Center, Carderock Division, Bethesda
9. Naval Surface Warfare Center, Carderock Detachment, Annapolis
10. Naval Surface Warfare Center, Crane Division
11. Naval Surface Warfare Center, Crane Detachment, Louisville
12. Naval Surface Warfare Center, Dahlgren Division
13. Naval Surface Warfare Center, Dahlgren Detachment, Panama City
14. Naval Surface Warfare Center, Indian Head Division
15. Naval Surface Warfare Center, Port Hueneme Division
16. Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, San Diego
17. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering, West Coast Division, San Diego
18. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering Division, Charleston
19. Naval Aerospace Medical Research Center, Pensacola
20. Naval Biodynamics Lab, New Orleans
21. Naval Dental Research Lab, Great Lakes
22. Naval Health Research Center, San Diego
23. Naval Medical Research Institute, Bethesda
24. Naval Undersea Warfare Center, Keyport Division, WA
25. Naval Surface Warfare Center, Carderock, Philadelphia Detachment
26. Naval Undersea Warfare Center, Newport, RI
27. Naval Undersea Warfare Center (Newport), New London, CT
28. Naval Personnel Research and Development Center, San Diego, CA

DEPARTMENT OF DEFENSE

1. Armed Forces Radiobiology Research Institute (AFRRI), Bethesda, MD

APPENDIX C

COMMON SUPPORT FUNCTIONS (DEFINITIONS LISTED FOLLOWING PAGES)

Product Functions

1. Air Vehicles
   - Fixed
     -- Structure
     -- Propulsion
     -- Avionics
     -- Flight Subsystems
   - Rotary
     -- Structure
     -- Propulsion
     -- Avionics
       -- Flight Subsystems

2. Weapons
   - ICBMs/SLBMs
   - Conventional Missiles/Rockets
   - Cruise Missiles
   - Guided Projectiles
   - Bombs
   - Guns and Ammunition
   - Directed Energy
   - Chemical/Biological

3. Space Systems
   - Launch Vehicles
   - Satellites
   - Ground Control Systems

4. C4I Systems
   - Airborne C4I
   - Fixed Ground-Based C4I
   - Ground Mobile C4I

Pervasive Functions

1. Electronic Devices

2. Environmental Sciences

3. Infectious Diseases

4. Human Systems

5. Manpower and Personnel

6. Training Systems

7. Environmental Quality

8. Advanced Materials

DEFINITIONS

COMMON SUPPORT FUNCTIONS

Product Functions

1. **Air Vehicles.** Air vehicles are broken out into common support functions for fixed wing and rotary wing. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of air vehicles. Included are all air vehicles including their application as UAV's and targets.

- Structures. Includes but not limited to all air vehicles structure technology, engineering and production efforts. Include technology and engineering practices which advance structural design and analysis; advanced structural concepts and fabrication techniques; and structural integrity.

- Propulsion. Includes but not limited to all technology, engineering and production efforts associated with air vehicle propulsion such as turbine engine, rotorcraft power drive, and hypersonic propulsion components. Such components include compressors, inlets and nozzles, turbines, mechanical systems and control, gears, bearings, shafts, and clutches. In addition, include associated subsystems activities such as turborocket, turboramjet and rotorcraft transmissions; and supporting technical and engineering disciplines.

- Avionics. Includes but not limited to all technology, engineering and production efforts associated with the air platform's integrated avionics system. The avionics suite includes but is not limited to weapon delivery systems, electronic warfare, navigation, communications, radar, electro-optic sensors, signal/data processing and associated software system and support. Includes efforts associated with developing the integrated avionics system (i.e. optimizing functional partitioning, distribution and integration of avionics/related functions).

- Flight Subsystems. Includes but not limited to all technology, engineering and production efforts for air vehicle support systems such as landing gear; transparent crew enclosures; egress systems; mechanical equipment integrity; electrical component integrity;

subsystem integration; and aircraft power, pressurization, and temperature control systems.

2. Weapons. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of ICBMs/SLBMs, conventional missiles and rockets, cruise missiles, guided projectiles, bombs, guns and ammunition, directed energy and chemical/biological munitions. Include with each weapon as appropriate, all related technology, engineering and production activities such as fusing/safe and arm, missile propulsion, warheads and explosives, and guidance and control.

3. Space. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of launch vehicles, satellites and associated ground control systems (satellite control only; ground systems for telemetry of data included in C4I). Include under satellites, all technology, engineering and production activities associated with space communications and space-based surveillance (and associated sensors) and space-based C4I.

4. C4I. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of airborne, fixed ground-based and mobile ground based C4I systems. Include all technology, engineering and production activities associated with communications networks, radios and links, distributed information systems, data fusion, decision aids, and associated computer architectures.

<u>Pervasive Functions (6.1, 6.2, and 6.3)</u>

1. Electronic Devices. Includes but not limited to all science and technology activities supporting development of semiconductor and superconductor materials for optoelectronic, acoustic and microwave devices. Include all associated electronic materials/device fabrication and processing.

2. Environmental Sciences. Includes but not limited to all science and technology activities to improve measurement, characterization and modeling of the earth atmosphere and space environment. Examples include global prediction systems, space effects, and celestial backgrounds/astronomical reference sources.

3. Infectious Diseases. Includes but not limited to all science and technology activities which preserve manpower and performance by the prevention and treatment of militarily important infectious diseases that occur naturally worldwide.

4. Human Systems. Includes but not limited to all science and technology activities to enable, protect, sustain and enhance human effectiveness in DOD operations. The focus of this pervasive, multi-disciplinary area is the human and therefore impacts all DOD systems and operations. This area includes: (1) human performance definition, assessment, and aiding; (2) physiologic bioeffects of toxic hazards, ionizing and non-ionizing radiation, biodynamic (bio-mechanical) stress, and extreme environments; (3) military operational medicine; and (4) generic, human-centered design standards/methodologies for crew station subsystems, information management and display, and life support.

5. Manpower and Personnel. Includes but not limited to all science and technology activities which support four broad areas: (1) selection and classification of DOD personnel (including pilots); (2) identification of operational tasks performed and requirements for skills, knowledge, and aptitudes; (3) matching the right people with the jobs they are best suited for according to the needs of DOD, (4) and developing techniques for measuring and enhancing the productivity of the operational force.

6. Training Systems. Includes but not limited to all science and technology which support training of personnel, including training strategies, devices and simulators, and computer aided intelligent tutoring systems.

7. Environmental Quality. Includes but not limited to all science and technology activities which support the development of technologies to reduce the environmental costs of DOD operations while ensuring mission accomplishment is not jeopardized by adverse environmental impacts. Specifically, this area encompasses technologies to: (1) identify and cleanup sites contaminated with hazardous materials as a result of DOD operations (cleanup); (2) ensure DOD compliance with current and anticipated local, national, and international environmental laws and treaties (compliance); (3) minimize DOD use of hazardous materials and reduce DOD hazardous waste generation (pollution prevention); and (4) provide for protection of natural resources under DOD stewardship (conservation).

8. Advanced Materials. Includes but not limited to all science and technology activities related to structural, high temperature, electromagnetic protection, electronic, magnetic, optical, and biomolecular materials. Note: excludes materials areas which were included in DDR&E decision of 18 Mar 94 related to the Army's Materials Research Facility at Aberdeen Proving Ground and the Navy's Materials Facility at Carderock.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

S. Howard
NAME (Please type or print

Signature

6/24/94
Date

Commander
Title

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type of print

D P Sargent
Signature

7/1/94
Date

Commander
Title

Naval Surface Warfare Center
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STERNER
NAME (Please type or print

G R Sterner
Signature

7-1-94
Date

Title

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

J. B. GREENE, JR.
NAME (Please type of print

J B Greene Jr.
Signature

ACTING
Title

06 JUL 1994
Date

DATA CALL #12
CRANE SITE

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

S. HOWARD
NAME (Please type of print)

Signature

COMMANDER
Title

6/24/94
Date

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
Activity

DATA CALL #12
CRANE SITE

7-21-94 Revisions

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
DATA CALL #12

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

S.T. HOWARD
NAME (Please type or print)

Signature

COMMANDER
Title

7/22/94
Date

CRANE DIVISION, NSWC
Activity

In evaluating this data call, if there are no "R's" in the right hand column, then the whole page is new.

7-21-94 Revisions

DATA CALL #12
CRANE SITE

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~~Signature~~

~~Title~~

~~Date~~

~~Activity~~

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type of print

D P Sargent
Signature

Commander
Title

7/8/94
Date

Naval Surface Warfare Center
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STERNER
NAME (Please type or print

G. R. Sterner
Signature

Title

8/5/94
Date

Commander
Naval Sea Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type of print

W Earner
Signature

Title

8/8/94
Date

Revisions 8-20-94

202

Pages 108R through 112R. Major Facility or Equipment listing, percentages and descriptions revised.

Pages 152R, 153R, 156R, 160R, and 161R. Revisions to personnel, education, experience, workload and funding in the Weapons/Guns & Ammunition CSF because of the addition of Weapons/Cruise Missiles CSF.

Pages 164R through 168aR. Major Facility or Equipment listing, percentages and descriptions revised.

Pages 179R, 181R, 182R, 188R, 188aR, 189R, 192aR through 195R, and 198R. Includes Radiation Effects Facility in the Space Systems/Satellites CSF.

Page 238aR. Clarifies the Other Functions of the Radiation Effects Facility.

Pages 265R through 284R. Adds the Weapons/Cruise Missiles CSF. This entire section is new, therefore, individual pages were not annotated with an "R". (Pages numbers have an "R".)

8-20-94 REVISION

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
DATA CALL #12

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Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

J. M. CARNEY
NAME (Please type or print)

JM Carney
Signature

COMMANDER
Title

8/21/94
Date

CRANE DIVISION, NSWC
Activity

Pages 12R and 14R. In-Service Engineering numbers revised.

Pages 16R and 16aR. Replacement Cost provided for Equipment/Facilities listed.

Page 36R. In-Service Engineering Efforts revised.

Pages 59R and 80R. In-Service Engineering Efforts revised.

(Continued)

8-20-94 REVISION

DATA CALL #12
CRANE SITE

~~I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.~~

~~NEXT ECHELON LEVEL (if applicable)~~

~~NAME (Please type or print~~ ~~Signature~~

~~Title~~ ~~Date~~

~~Activity~~

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type of print

Signature

Commander
Title

8/23/94
Date

Naval Surface Warfare Center
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print

Signature

8/27/94
Date

~~G. R. STERNER~~
Commander
Title

Naval Sea Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type of print

Signature

Title

7/1/94
Date

REVISION 9-12-94

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
DATA CALL #12

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

J. M. CARNEY
NAME (Please type or print)

JM Carney
Signature

COMMANDER
Title

9/12/94
Date

CRANE DIVISION, NSWC
Activity

Pages 22R, 44R, 66R, 88R, 117R, 139R, 174R, 197R, 218R, 242R, and 261R. The Height of High Bay (FT) for Building 355/217 corrected.

REVISION 9-12-94

202

DATA CALL #12
CRANE SITE

~~I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.~~

~~NEXT ECHELON LEVEL (if applicable)~~

~~NAME (Please type or print~~ ~~Signature~~

~~Title~~ ~~Date~~

~~Activity~~

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type of print

Signature

Commander
Title

9/14/94
Date

Naval Surface Warfare Center
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print

Signature

G. R. STERNER
~~Commander~~
Title
Naval Sea Systems Command

9-23-94
Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

NAME (Please type of print

Signature

Title

10/1/94
Date

REVISIONS 9-13-94

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
DATA CALL #12
BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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ACTIVITY COMMANDER

J. M. CARNEY
NAME (Please type or print)

Signature

COMMANDER
Title

9/14/94
Date

CRANE DIVISION, NSWC
Activity

These revised pages are provided for clarification as requested by the Base Structure Analysis Team on 12 September 1994.

Page 16 (13 June 1994)/Page 17cR (7/21/94). Page 16 (13 June 1994) was revised with pages 16R and 16a (submitted 20 August 1994). These revised pages list facilities that match the facilities on page 17cR (7/21/94). Copies of pages 16R (8/20/94) and 16aR (8/20/94) are attached.

Question 3.2.4.2--Pages 11R, 33R, 56R, 77R, 103R, 155R, 188R, 209R, 232R, 233R, 254R, .
Revised as all papers previously submitted were not published in peer reviewed journals.

REVISIONS 9-13-94

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
DATA CALL #12

Question 3.3.1.2–Pages 13R, 35R, 35aR, 58R, 79R, 79aR, 132R, 132aR, 132bR, 158R, 158aR. Program descriptions provided for each entry in the "Other" category for Engineering Development.

Question 3.2.1–Pages 9R, 10R, 31R, 32R, 54R, 55R, 75R, 76R, 100R, 101R, 152R, 153R, 229R, 230R, 252R, and 253R. Revised the "Other" category to move personnel who should have been classified as technical into the "Technical" category.

REVISIONS 9-13-94

DATA CALL #12
CRANE SITE

~~I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.~~

~~NEXT ECHELON LEVEL (if applicable)~~

~~NAME (Please type or print~~ ~~Signature~~

~~Title~~ ~~Date~~

~~Activity~~

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type of print

Signature

9/15/94
Date

Commander
Title

Naval Surface Warfare Center
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print
G. R. STERNER

Signature

9/19/94
Date

Commander
Title Naval Sea Systems Command

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type of print

Signature

9/19/94
Date

Title

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
Air Vehicles/ Fixed/ Avionics	Electrochemical Power Systems Facility			X	35,000K
Air Vehicles/ Fixed/ Avionics	Bldg 41 Airborne EW Depot				920.4K
Air Vehicles/ Fixed/ Avionics	Bldg 40 Airborne EW Depot				374.8K
Air Vehicles/ Fixed/ Avionics	Microwave Tube Test Facility				111.8K

R R R

9-13-94

Air Vehicles/ Fixed/ Avionics	Corrosion Control Facility				394.2K
Air Vehicles/ Fixed/ Avionics	RF Test Range, RF Anechoic Test Chamber				79.2K
Air Vehicles/ Fixed/ Avionics	Failure Analysis Laboratory				21.3K
Air Vehicles/ Fixed/ Avionics	Materials Analysis Laboratory				21.3K
Air Vehicles/ Fixed/ Avionics	Wind Tunnel Test Facility				86.2K
Air Vehicles/ Fixed/ Avionics	Metal Parts Fabrication				24.9K
Air Vehicles/ Fixed/ Avionics	Cable Fabrication				5.9K
Air Vehicles/ Fixed/ Avionics	Printed Circuit Card Fabrication				27.2K

9-20-94 REVISIONS

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
DATA CALL #12
BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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ACTIVITY COMMANDER

J. M. CARNEY	JM Carney
NAME (Please type or print)	Signature
COMMANDER	9/20/94
Title	Date

CRANE DIVISION, NSWC
Activity

On 19 September 1994, received phone call from NSWC BRAC Coordinator relaying a BSAT (Scott Evans) request for clarification on page 277R of Data Call #12 - The clarification requested was, "Is the Missile Fuze Test Facility used in Conventional Missile CSF, also?" This resulted in the revision of the following pages:

Page 109R. Added Missile Fuze Test Facility to 3.4.1-Replacement Cost (Conventional Missile CSF).

Page 110R. Added Missile Fuze Test Facility to percentage utilized by CSF (Conventional Missiles CSF).

9-20-94 REVISIONS

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
DATA CALL #12

Page 112R. Added Missile Fuze Test Facility to narrative (Conventional Missile CSF).

Page 277R. Added table on percentage utilized by CSF (Cruise Missiles CSF).

REVISIONS 9-20-94

202

DATA CALL #12
CRANE SITE

~~I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.~~

~~NEXT ECHELON LEVEL (if applicable)~~

~~NAME (Please type or print)~~ ~~Signature~~

~~Title~~ ~~Date~~

~~Activity~~

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

Dr. Ira M. Blatstein
NAME (Please type or print)

Signature

Technical Director
Title

9/21/94
Date

Naval Surface Warfare Center
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print)
G. R. STERNER

Signature

~~Commander~~
Title Naval Sea Systems Command

9/21/94
Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

Title

9/22/94
Date

Document Separator

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
PRESENTATION MATERIAL
DATA CALL #12 AMENDMENT ONE - ENERGETIC

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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ACTIVITY COMMANDER

J. M. CARNEY
NAME (Please type or print)

JM Carney
Signature

COMMANDER
Title

10/25/94
Date

CRANE DIVISION, NSWC
Activity

1. During a presentation to the Laboratory Cross Service Analysis Team on 20 October 1994, a question was raised as to capability of Picatinny Arsenal to perform the Crane Division energetics workload. The following is the certified response to that question.

208

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print) Signature

Title Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

Dr. Ira M. Blatstein
NAME (Please type or print) Signature

Technical Director 10/26/94
Title Date

Naval Surface Warfare Center
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print) Signature
G. R. STERNER
Commander 10-29-94
Title Naval Sea Systems Command Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print) Signature

11/1/94
Title Date

DATA CALL #12, AMEND 1
LJCSG QUESTIONS
CRANE

QUESTION: WHY CAN'T PICATINNY ARSENAL DO THE CRANE ENERGETICS WORK?

There are specific reasons why Picatinny is limited in the performance of the Navy pyro work as well as reasons that consolidation should be toward the Navy as opposed to the Army. In comparison:

OUTDOOR WINDSTREAM MEASUREMENTS - Crane operates a windstream test facility with a blowdown capability from 0.1 to 0.9 Mach, 10 - 300 degree azimuthal measurement sites, and distances up to 500 meters. The Picatinny windstream is located in a valley which limits measurement distances and the azimuthal coverage of flare measurements.

INDOOR TUNNEL - The windstream in the tunnel at Crane can simulate decoy flare launch at speeds up to 0.6 Mach. The tunnel is the Navy standard for infrared decoy flare testing. The Crane tunnels can burn decoy flares up to 1000 grams and illuminating devices up to 20 pounds. The Picatinny indoor tunnel is limited on the sample size, perhaps 150 grams.

LOADING - The experimental loading facilities at Crane handle 50 pounds of flare composition. The experimental loading facilities at Picatinny are limited to small quantities of materials. This capability was vital in satisfying an urgent Fleet requirement for 10,000 IR decoy flares during Desert Storm.

PERSONNEL - The personnel at Crane are the most experienced and active in pyrotechnics research, design, development and production of the three Services. There are currently over 120 scientists, engineers and technicians working in the pyro area compared to 20-25 at Picatinny.

NEW DEVELOPMENT - Crane leads in all new flare developments while the newest Picatinny (Army) devices use slight variations of compositions developed by Crane. Even the Army contractors are using variations of compositions and techniques developed at Crane.

UNIQUE DEVICE APPLICATION - Most Army devices are similar in composition and hardware to Navy devices making them relatively easy for Navy scientists to understand. On the other hand, the Navy has numerous special requirements and applications (e.g. submarine signals) whose design and development would be unfamiliar to Army scientists.

EXPANSION - Crane currently has the capability to take on 61 workyears of pyrotechnics development, prototype manufacture and testing and 150 workyears of engineering work with little or no facilities modifications. This capacity could be used to do all the on-going Army and Air Force in-house pyrotechnics work and probably most of the work that is now done on Army and Air Force contracts.

CO-LOCATION - The co-location with the Crane Army Ammunition Activity provides us with the opportunity to produce large quantities of new pyrotechnic munitions with a rapid response capability to meet immediate Fleet needs. The Crane Army facility is also used for low rate initial productions to verify processing techniques and validate technical data packages in-house.

~~I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.~~

~~NEXT ECHELON LEVEL (if applicable)~~

~~NAME (Please type or print)~~ ~~Signature~~

~~Title~~ ~~Date~~

~~Activity~~

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

Dr. Ira M. Blatstein

NAME (Please type or print)

Signature

Technical Director

Title

10/24/94

Date

Naval Surface Warfare Center

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print)

Signature

10/28/94

Title G. R. STERNER
Commander
Naval Sea Systems Command

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER

NAME (Please type or print)

Signature

11/7/94

Title

Date

DATA CALL #12, AMEND 1
LJCSG PRESENTATION
CRANE
"ENERGETICS"

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION
PRESENTATION MATERIAL
DATA CALL #12 AMENDMENT ONE - ENERGETIC

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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ACTIVITY COMMANDER

J. M. CARNEY
NAME (Please type or print)

JMCarney
Signature

COMMANDER
Title

10/19/94
Date

CRANE DIVISION, NSWC
Activity

1. This information will be presented to the Energetics Cross Service Analysis Team on 20 October 1994. It is a summation of the Crane response to the Base Structure Evaluation Committee Memorandum of 7 October 94.

NAVAL SEA SYSTEMS COMMAND

NSWC

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NAVAL SURFACE WARFARE CENTER

CRANE DIVISION

Presented to:

ENERGETICS CROSS SERVICE ANALYSIS TEAM

20 October 1994

NAVAL SEA SYSTEMS COMMAND

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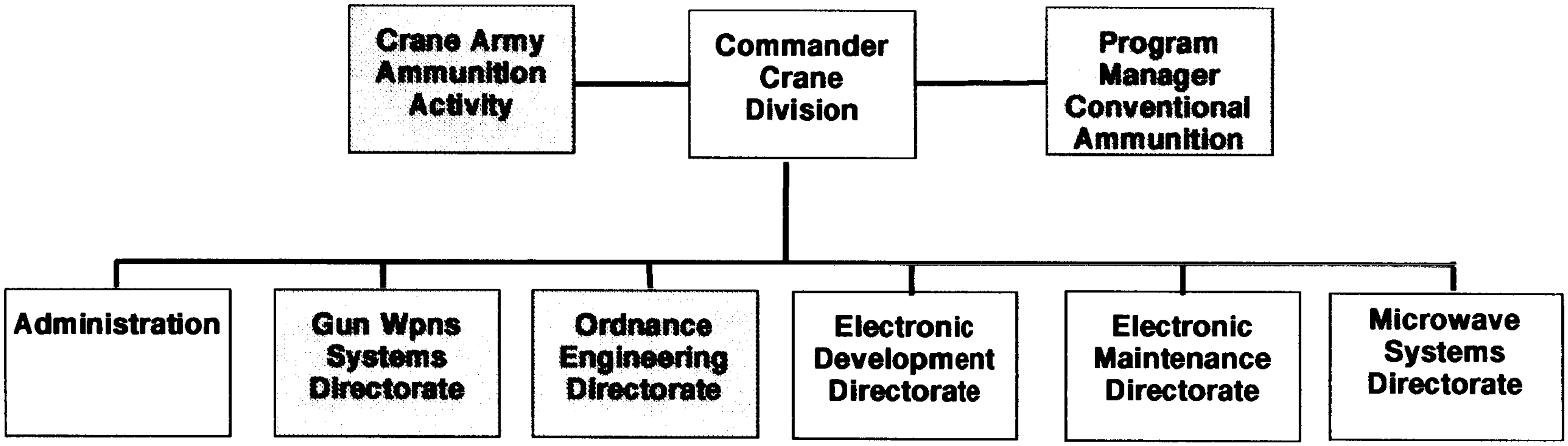
NAVAL SURFACE WARFARE CENTER
CRANE DIVISION

THE MESSAGE

- Crane Currently has World Class Capability In:
  - Pyro Countermeasures
  - Pyro Signals
  - Pyrotechnics
  - Obscurants
- This Capability Critical for Naval Aircraft & Ships
- Complements Co-located Army Production
- Complements Expertise of the Indian Head and Dahlgren Divisions of NSWC
- Crane Available for Expansion of Pyrotechnics Efforts

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION

INSTALLATION ORGANIZATION
ENERGETICS HIGHLIGHTED



Highlighted Boxes = Directorates with Energetic Workload

NAVAL SEA SYSTEMS COMMAND

NSWC

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CRANE DIVISION

CRANE ARMY AMMUNITION ACTIVITY

Mission - DOD Munitions and Energetics Engineering, Production, Storage and Demil

Workyears = 740

Explosive Storage = 4.7 M Sq Ft

Ordnance Production = .7 M Sq Ft

Burning Grounds Demil = 40 Acres

Detonation Demil = 80 Acres

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CRANE DIVISION

CONVENTIONAL AMMUNITION MAJOR PRODUCTS

PRODUCT LINE	NAVY	AIR FORCE	ARMY	SOCOM	OTHER **
Major Caliber Gun Ammunition	PM, TE, AE,IS	No Rqmt	No Rqmt	No Rqmt	TE, AE, IS
Demolition Devices	PM,ED,TE, AE,IS	TE	TE	ED, TE, AE,IS	TE, AE, IS
Other Ammunition	PM,ED,TE, AE,IS	TE	TE	ED,TE, AE,IS	TE, AE, IS

* = Capability Exists but No Current Work

** = Coast Guard/FMS

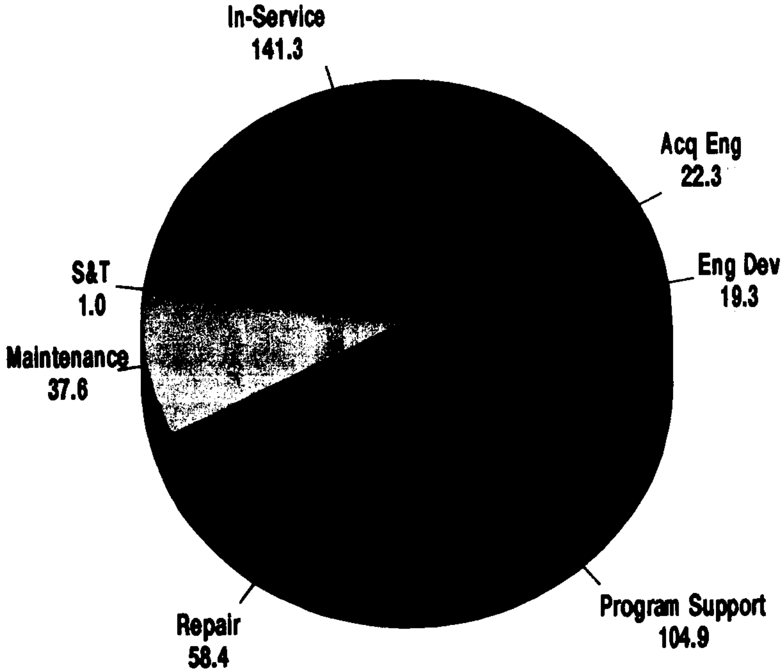
ST = Science & Technology
ED = Engineering Development
AE = Acquisition Engineering
IS = In Service Engineering (includes demil/disposal)
TE = Test & Evaluation

NAVAL SEA SYSTEMS COMMAND

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION

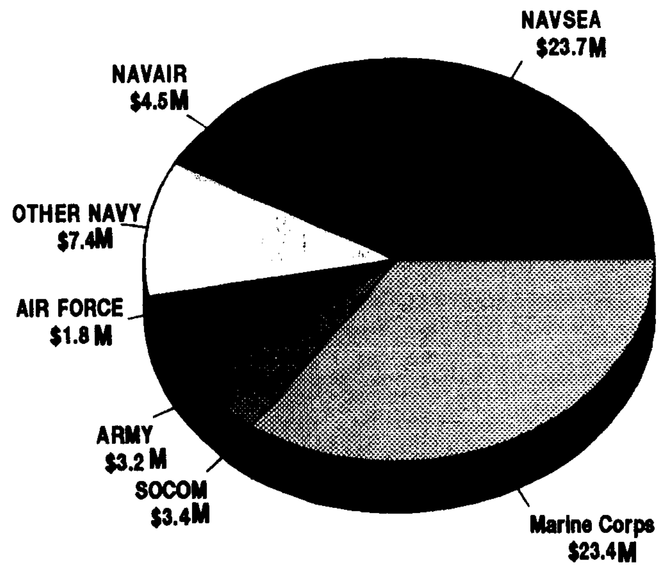
CONVENTIONAL AMMUNITION - BUSINESS BASE

Workyears by Job Category



Total = 585.5 WY
(Includes 141.1 Contractor WY)

Dollars by Customer



Total = $69.7M

NAVAL SEA SYSTEMS COMMAND

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NAVAL SURFACE WARFARE CENTER
CRANE DIVISION

NAVAL SURFACE WARFARE CENTER CRANE DIVISION

PYROTECHNICS MAJOR PRODUCTS

PRODUCT LINE	NAVY	AIR FORCE	ARMY	SOCOM
Countermeasures	ST, ED, TE, AE, IS	ST, ED, TE	ED, TE	TE,AE
Colored Smoke/Flares	ED, TE, AE, IS	*	TE	TE, AE, IS
Illuminating Flares	ED, TE,AE, IS	*	TE	TE, AE,IS
Obscurants/Markers	ED, TE, AE, IS	*	ED,TE	*
Submarine Signals	ED,TE,AE,IS	No Rqmt	No Rqmt	No Rqmt
Target Flares	ED,TE, AE,IS	*	ED,TE, AE	*

* = Capability Exists but no Current Work

ST = Science & Technology

ED = Engineering Development

AE = Acquisition Engineering

IS = In Service Engineering (includes demil/disposal)

TE = Test & Evaluation

NAVAL SEA SYSTEMS COMMAND

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CRANE DIVISION

PYROTECHNICS - FACILITIES

Facility	Sq Ft	CPV Bldg $ M	ACE Eqpt $ M
Automated Infrared Test Facility *	10,167	0.6	2.4
Transient Velocity Windstream	900	0.4	0.4
Ordnance Prototype Manufacture *	27,966	6.3	3.8
Ordnance Test Area * (88 Acres)	7796	4.2	1.2
Ordnance Enviro & Radiographic *	28,782	12.7	7.6
Ord Material Characterization *	8,666	3.9	3.5
Demil Evaluation Facility *	4,480	3.0	3.0
TOTAL	88,757	31.1	21.9

* Dual Use with CAAA or Conventional Ammunition

NAVAL SEA SYSTEMS COMMAND

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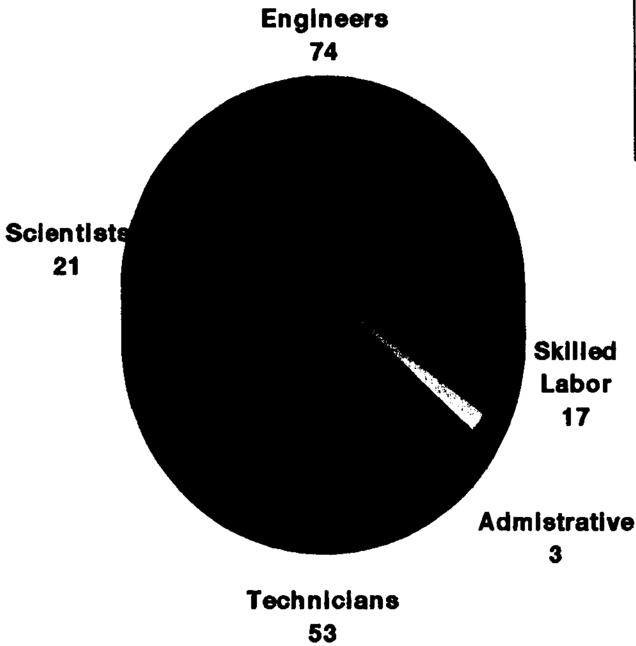
CRANE DIVISION

Pyrotechnics - Available Personnel Skills

of People



Total = 168

Degree Level	
AS	10
BS	75
MS	20
PhD	7

Years of Experience	1-5	5-10	10-20	20+	Tot. Yrs
Engineers	2	21	17	34	1307
Scientists	2	4	4	11	427
Logistics Specialists	0	0	1	2	73
Technicians	0	9	13	31	1094
Explosive Workers	0	2	5	10	378
TOTAL	4	36	40	88	3279

NAVAL SEA SYSTEMS COMMAND

NSWC

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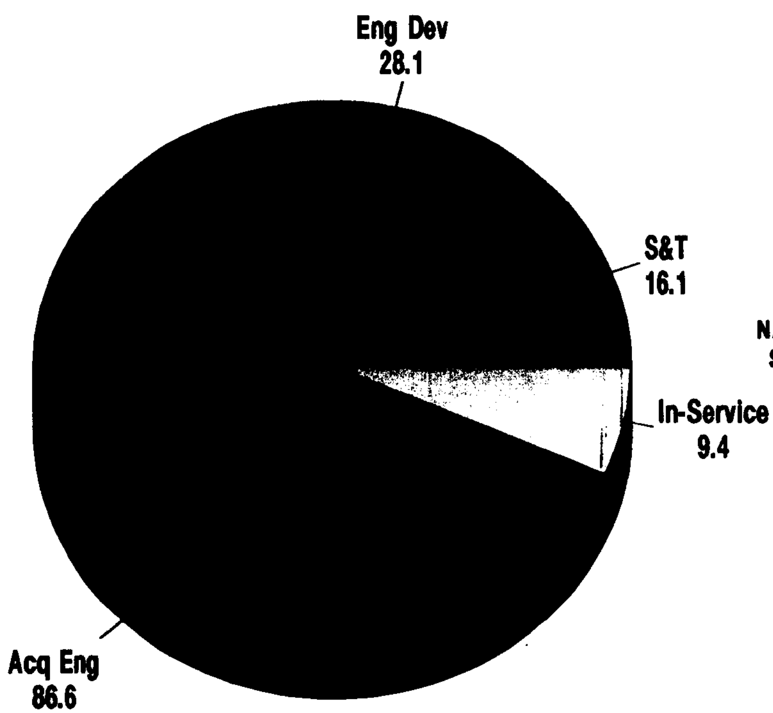
NAVAL SURFACE WARFARE CENTER
CRANE DIVISION

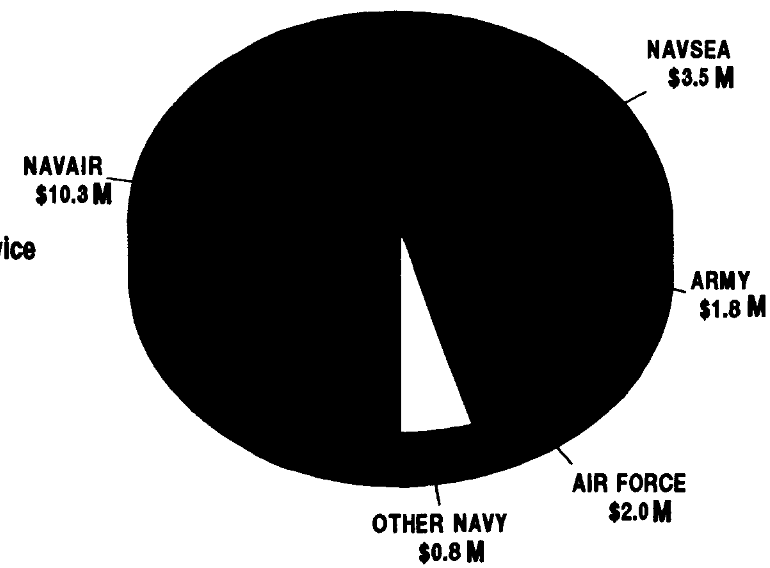
PYROTECHNICS - BUSINESS BASE

Workyears by Job Category



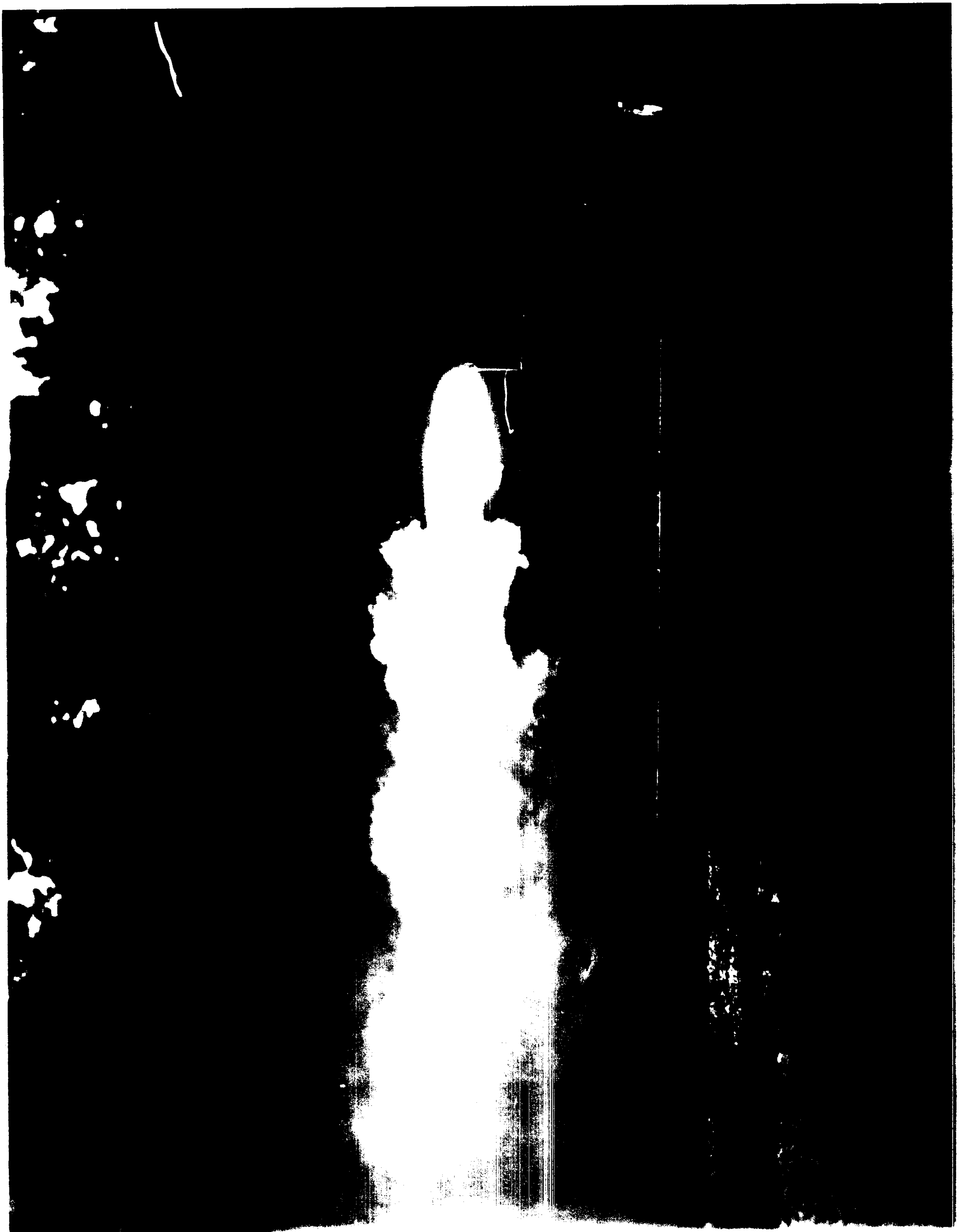
Total = 140.2 WY
(Includes 28 Contractor WY)

Dollars by Customer



Total = $18.4M


CINCINNATI MILACRON
Automated Infrared Test Facility




Ordnance Prototype Manufacture


Ordnance Test Area

NAVAL SEA SYSTEMS COMMAND

NSWC

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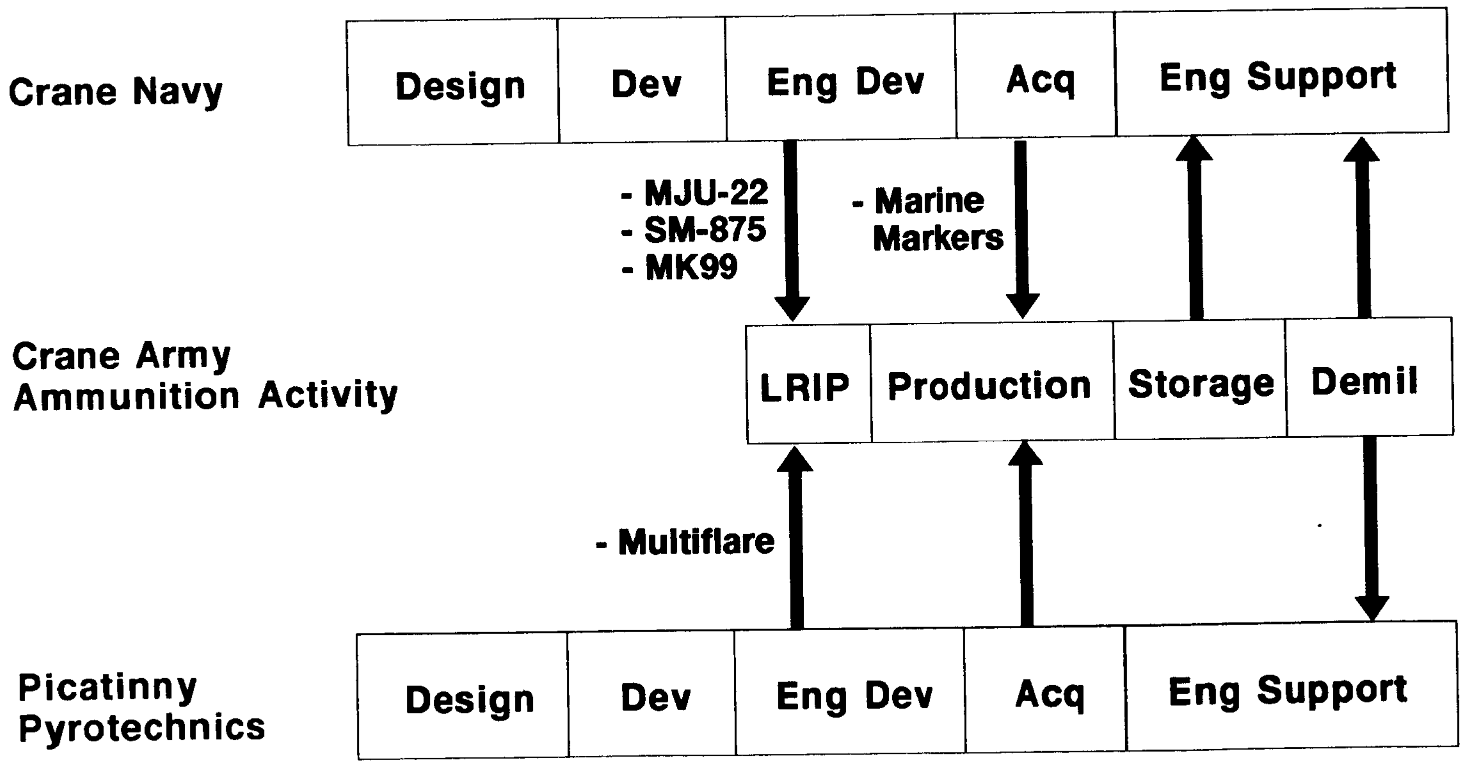
CRANE DIVISION

NAVY/ARMY ACTIVITY LINK



NAVAL SEA SYSTEMS COMMAND

NSWC

A tradition of excellence

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION

PYROTECHNICS - EXPANSION POTENTIAL

		Expansion Work Years	
Type of Work	Current	No Modification	Major Modification
Composition Development (Laboratory)	14	27	47
Prototype Manufacture	21	13	25
Pyro Test & Evaluation	65	21	30
Engineering	40	150	370
Ordnance Expl. Op.	0	68	-
Ordnance Pyro. Op.	0	15	148
TOTAL	140	294	620

Additionally 10 Sites Identified for 8 Million Square Feet Expansion

NAVAL SEA SYSTEMS COMMAND

NSWC

Naval Surface Warfare Center

A tradition of excellence!

NAVAL SURFACE WARFARE CENTER
CRANE DIVISION

PYROTECHNICS SUMMARY

PERSONNEL

- 2500 Work Years Experience
- Recognized Nationally & Internationally as Experts

FACILITIES

- State-of-the-Art
- Unique in DOD

EXPANSION

- 300 Work Years with Minimal Investment
- Unlimited Potential (8 Million Sq Ft)

LOCATION

- No Encroachment Threats
- Environmentally Compliant
- Navy/Army Functions Co-located

202

DATA CALL 63
FAMILY HOUSING DATA

Information on Family Housing is required for use in BRAC-95 return on investment calculations.

Installation Name:	NSWC - Crane
Unit Identification Code (UIC):	N00164
Major Claimant:	NAVSEA

Percentage Of Military Families Living on-Base:	34.1
Number of Vacant Officer Housing Units:	0
Number of Vacant Enlisted Housing Units:	0
Fy 1996 Family Housing Budget ($000):	$83
Total Number of Officer Housing Units:	4
Total Number of Enlisted Housing Units:	3

NOTE: Closure of this UIC may not result in closure of all housing units.

Note: All data should reflect figures as of the beginning of FY 1996. If major DON installations share a family housing complex, figures should reflect an estimate of the installation's prorated share of the family housing complex.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

J. E. BUFFINGTON, RADM, CEC, USN
NAME (Please type or print)

Jack Buffington
Signature

COMMANDER
Title

7/20/94
Date

NAVAL FACILITIES ENGINEERING COMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

W Earner
Signature

Title

7/25/94
Date

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

J. R. REVER
NAME (Please type of print)
CAPT. CEC, USN
COMMANDING OFFICER
Title

SOUTHNAVFACENGCOM
Activity

Signature

27 June 1994
Date

Enclosure (1)

BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

YVONNE O. SPRING
NAME (Please type or print)

Housing Management Specialist
Title

Housing Division
Division

Facilities Management Dept.
Department

SOUTHNAVFACENCON
Activity

Yvonne O Spring
Signature

27 June 1994
Date

Enclosure (1)

Document Separator

DATA CALL 1: GENERAL INSTALLATION INFORMATION

1. ACTIVITY: Follow example as provided in the table below (*delete the examples when providing your input*). If any of the questions have multiple responses, please provide all. If any of the information requested is subject to change between now and the end of Fiscal Year (FY) 1995 due to known redesignations, realignments/closures or other action, provide current and projected data and so annotate.

- Name

Official name	*Crane Division, Naval Surface Warfare Center*
Acronym(s) used in correspondence	*NAVSURFWARCENDIV Crane* *Crane Division, NSWC* *NSWC Crane* *NSWCCD*
Commonly accepted short title(s)	*NSWC Crane*

- Complete Mailing Address

Commander
Building 1
NAVSURFWARCENDIV
300 Highway 361
Crane, IN 47522-5001

- PLAD: NAVSURFWARCENDIV CRANE IN

- PRIMARY UIC: N00164 (Plant Account UIC for Plant Account Holders)

  Enter this number as the Activity identifier at the top of each Data Call response page.

- ALL OTHER UIC(s): 47611

  PURPOSE: Provide Medical Department and Bachelor Quarters Services

2. PLANT ACCOUNT HOLDER:

- Yes X No ______ (check one)

3. ACTIVITY TYPE: Choose most appropriate type that describes your activity and completely answer all questions.

• HOST COMMAND: A host command is an activity that provides facilities for its own functions and the functions of other (tenant) activities. A host has accountability for Class 1 (land), and/or Class 2 (buildings, structures, and utilities) property, regardless of occupancy. It can also be a tenant at other host activities.

• Yes __X__ No ____ (check one)

• TENANT COMMAND: A tenant command is an activity or unit that occupies facilities for which another activity (i.e., the host) has accountability. A tenant may have several hosts, although one is usually designated its primary host. If answer is "Yes," provide best known information for your primary host only.

• Yes ____ No __X__ (check one)

• Primary Host (current) UIC: _______

• Primary Host (as of 01 Oct 1995) UIC: _______

• Primary Host (as of 01 Oct 2001) UIC: _______

• INDEPENDENT ACTIVITY: For the purposes of this Data Call, this is the "catch-all" designator, and is defined as any activity not previously identified as a host or a tenant. The activity may occupy owned or leased space. Government Owned/Contractor Operated facilities should be included in this designation if not covered elsewhere.

• Yes ____ No __X__ (check one)

4. SPECIAL AREAS: List all Special Areas. Special Areas are defined as Class 1/Class 2 property for which your command has responsibility that is not located on or contiguous to main complex.

Name	Location	UIC
Hydroacoustic Test Area	Sullivan, IN	N00164

5. DETACHMENTS: If your activity has detachments at other locations, please list them in the table below.

Name	UIC	Location	Host name	Host UIC
NA	NA	NA	NA	NA

6. BRAC IMPACT: Were you affected by previous Base Closure and Realignment decisions (BRAC-88, -91, and/or -93)? If so, please provide a brief narrative.

This activity was impacted directly by BRAC 91 and indirectly by BRAC 93.

BRAC 91 - The BRAC 91 decision consolidated this command with the Naval Ordnance Station, Louisville, Kentucky and established the Crane Division as an element of the Naval Surface Warfare Center. Mechanical workload was consolidated at the Louisville site and electronics workload was consolidated at the Crane site. In addition, underwater acoustic In-service Engineering responsibility was realigned from Crane to the Naval Undersea Warfare Center, Newport Division.

As a result of the BRAC 91 actions, the general and administrative support services for the Crane Division were consolidated at the Crane site with a savings of 203 indirect G&A workyears. This savings was 73 workyears beyond the 130 figure required by the BRAC 91 decision. In addition, many of the management information systems supporting the two sites have been consolidated into Crane Division or Naval Surface Warfare Center wide systems. Finally, this activity also received the printed wiring production fabrication function which transferred to Crane Division from the Dalghren Division of the Naval Surface Warfare Center.

BRAC 93 - The BRAC 93 decision to close Mare Island Naval Shipyard resulted in the Crane site receiving additional workload associated with its technical capability in electrochemical power systems. This work includes pre-installation testing of batteries for submarines and the installation of those batteries into submarines.

EFFECT UPON OPERATIONS - The outcome of the combined BRAC decisions has been to establish for the Navy a unique "one stop" defense technology industrial base activity. Electronic, mechanical, and electrochemical functions have been consolidated to better utilize special skills and knowledge of product area experts gained through years of education and experience in support of numerous Navy, other DoD, and private sponsors. The Crane Division is capable of design, prototype, production validation, in-service support and maintenance of electronics, mechanical and ordnance systems.

Another outcome of the combined BRAC decisions has been to increase the role this activity performs in assuring that DoD is a "smart buyer" of the components of combat weapons systems through validation of technical requirements; establishment of Navy safety standards for electrochemical power systems; and increased productivity through reduction of indirect expenses. Finally, with the transfer of electrochemical power systems work from Mare Island Naval Shipyard to Crane, unique state-of-the-art battery test facilities are being developed to support experienced personnel at the Crane site in the testing of submarine batteries to enhance Fleet readiness.

7. MISSION: Do not simply report the standard mission statement. Instead, describe important functions in a bulletized format. Include anticipated mission changes and brief narrative explanation of change; also indicate if any current/projected mission changes are a result of previous BRAC-88, -91,-93 action(s).

Current Missions

Our mission is to provide **responsive engineering and industrial base support for weapons systems, subsystems and components**. In terms of skilled people, facilities, product knowledge, and the ability to integrate engineering with "hands on" industrial processes, Crane provides the **broadest, deepest and most advanced industrial base capability that the Navy has to**:

- Ensure technological performance and superiority of Fleet weapons systems

- Provide sustainability and readiness of the Fleet's technological warfighting capabilities

- Work in partnership with industry to maintain sources, improve products, solve technical problems, and advance the participation of commercial suppliers in the defense industrial base

- Provide "last chance" source for products and support of a wide variety of mechanical and electronic components

- Challenge costs of private sector sole source suppliers

- Provide "smart buyer" source for a wide variety of electronic and mechanical components and systems

Our principal areas of expertise are described in the following Technical Capabilities.

ELECTRONIC WARFARE (EW) SYSTEMS ENGINEERING & INDUSTRIAL SUPPORT (CRANE SITE)

- Evaluate design concepts and prototype hardware for application to EW systems

- Provide the engineering guidance for product improvements from design concept through production

- Ensure mission readiness and operational effectiveness of EW Products

- Analyze performance in the Fleet to improve products, investigate problems and implement corrective action

NAVAL GUN WEAPONS SYSTEMS ENGINEERING & INDUSTRIAL SUPPORT (LOUISVILLE SITE)

- Provide engineering leadership for the Navy in the acquisition, production and operational life cycle support of emerging and inservice naval gun systems/equipment

- Preserve and maintain organic technical capability (corporate memory) of sufficient breadth, depth and continuity to assure that the Navy continues as a smart buyer of naval gun weapons systems/equipment

- Preserve and maintain capability to manufacture naval gun weapons systems/equipment, if the private sector base is lost

- Establish and maintain technological partnerships with the private sector through defense conversion and technology transfer

MICROELECTRONIC TECHNOLOGY TEST & EVALUATION/ENGINEERING/PROTOTYPING (CRANE SITE)

- Evaluate and select developmental technologies and introduce those technologies into Fleet weapons systems

- Perform component and material failure analysis using state of the art facilities

- Provide the engineering talent to transform a prototype model into an operational product

- Evaluate and select commercial and dual-use products and insert them into Fleet weapons systems

- Reduce life cycle costs by standardization, failure analysis of Fleet problems and assessment of product supportability

- Support extended equipment life through component obsolescence management and long term controlled storage

ELECTRONIC MODULE TEST AND REPAIR (CRANE SITE)

- Optimize weapons system performance through assessment, verification and certification

- Increase readiness and availability of Fleet equipment by providing the Fleet enlisted personnel with test/repair equipment and training

- Sustain industrial base capability for electronic and electromechanical hardware

MICROWAVE COMPONENTS ENGINEERING/TEST & EVALUATION/INDUSTRIAL SUPPORT (CRANE SITE)

- Provide the engineering guidance for product improvements from design concept through production

- Ensure adherence to approved manufacturing processes, procedures and baselines

- Perform qualification, surveillance and failure analysis testing

- Analyze performance in the Fleet to improve products, investigate problems and implement corrective action

- Sustain a competitive core industrial base for microwave components

ELECTROCHEMICAL POWER SYSTEMS ENGINEERING/TEST & EVALUATION (CRANE SITE)

- Assure the availability of affordable, safe and reliable batteries to meet Fleet performance requirements in operational environments

- Increase commonality and use of commercial batteries in Navy and other systems

- Provide engineering analysis of batteries and related equipments from the time of research and development, during acquisition, and on through final system retirement

- Operate and provide comprehensive, state of the art test facilities

- Provide engineering services for batteries used by Navy, Marine Corps, Army, Air Force, and other government agencies

- Help sustain a fragile industrial base of suppliers for militarily unique electrochemical power systems

ACOUSTIC SENSORS ENGINEERING/TEST & EVALUATION (CRANE SITE)

- Provide engineering analysis and testing of acoustic sensors and related equipments from time of research and development, during acquisition, and on through final system retirement

- Be a smart buyer by evaluating designs, appraising performance, ensuring producibility, monitoring production and solving production problems

- Maintain capability to respond to emergency Fleet operational demands including engineering, production, logistics, and shipboard repairs

- Provide comprehensive and all encompassing test facilities for airborne and shipboard acoustic devices

SURFACE MISSILE SYSTEMS LAUNCHERS ENGINEERING/INDUSTRIAL SUPPORT (LOUISVILLE SITE)

- Provide capabilities and certified facilities, equipment and procedures for overhaul of surface missile systems launchers, weapons systems and subsystems

SMALL ARMS (CRANE SITE)

- Perform development, acquisition, engineering and maintenance on small arms and other weapons to meet Navy needs for security, anti-terrorist activity, and training

- Provide a consolidated management information system to perform small arms serial number tracking, inventory management, status reporting, and requirements determination

- Provide advanced state-of-the-art weaponry to meet the unique requirements of Naval Special Warfare Forces

CONVENTIONAL AMMUNITION ENGINEERING (IN-SERVICE ENGINEERING, ENGINEERING, TEST & EVALUATION) (CRANE SITE)

- Perform as Program Management to develop and defend program requirements, the budget, and execution of program for Navy Conventional Ammunition program

- Assure all Fleet requirements are incorporated into conventional ammunition and safe, reliable effective products are available for Fleet use

- Perform qualification, acceptance, surveillance and failure analysis testing

- Research and develop environmentally-sound technology for the demilitarization of Navy peculiar ordnance and pyrotechnics

PYROTECHNICS (CRANE SITE)

- Perform research and development, design, test and evaluation, and engineering support for Navy pyrotechnics

- Assure that manufacturers deliver safe, reliable and effective pyrotechnics for Fleet use

- Provide Program Management services for pyrotechnics as directed by headquarters

MECHANICAL MANUFACTURING/REPAIR/OVERHAUL (LOUISVILLE SITE)

- Provide engineering analysis of mechanical devices and related equipments from research and development through acquisition and final system retirement

- Execute the responsibilities as Department of Defense designated test activity for developing, verifying and applying new/emerging technology to all phases of product engineering

- Preserve and maintain last source repair and fabrication capabilities for mechanical devices

- Provide mechanical engineering/manufacturing support for other Crane Division Technical Capabilities

MANAGEMENT & DISTRIBUTION OF NAVAL DRAWINGS (LOUISVILLE SITE)

- Provide a repository for Naval Ordnance and Strategic Systems Programs technical data

- Maintain secure storage facility (27,000 square foot Class "A" security vault) for large amounts of classified data

- Provide the central engineering drawings locator index and ordering function for Navy engineering drawings

- Perform research, analysis and testing of equipment/systems that convert engineering data to digital format for the Joint Engineering Data Management Information and Control System (JEDMICS) Program Management Office

SHIPBOARD PHYSICAL SECURITY (LOUISVILLE SITE)

- Execute the Program Manager responsibilities for the shipboard physical and nuclear weapons security program

- Analyze technology to select and procure advanced shipboard physical security equipments/systems for the Chief of Naval Operations platform sponsors

- Perform research and development, test, and evaluation of physical security equipment

- Provide life cycle logistics support and upgrades for fielded shipboard physical security equipment

NIGHT VISION/ELECTRO-OPTICS ENGINEERING/INDUSTRIAL SUPPORT (CRANE SITE)

- Utilize technical expertise, hands-on experience, and sophisticated test facilities to support the acquisition manager during development or full production

- Perform test and evaluation of commercial electro-optic products for product acceptance, source selection, and failure analysis

- Perform the functions of integrated logistics support, configuration management, hardware installation and on-site field support, maintenance, repair, engineering, and technical services

- Develop and perform (or manage) product improvements and system upgrades to achieve cost efficiencies, improve safety, performance and reliability, and insert new technology into existing equipment

MINE COUNTERMEASURES IN-SERVICE ENGINEERING/SOFTWARE SUPPORT AGREEMENT/DEPOT (CRANE SITE)

- Provide life cycle support for deployed systems

- Develop, maintain and distribute combat systems software

- Provide emergency and last source production capability for combat systems and equipment

- Analyze performance in the Fleet to improve products, investigate problems and implement corrective action

RADAR ENGINEERING & INDUSTRIAL SUPPORT (CRANE SITE)

- Develop technical procurement documentation where none exists and evaluate the adequacy of existing information for procurement

- Execute the Deputy Program Manager responsibilities and provide engineering support to all Radar Restoration Depots

- Perform qualification, surveillance and failure analysis testing

- Provide engineering and industrial capability for the post-production support of radar systems

Projected Missions for FY 2001

UNCHANGED

8. UNIQUE MISSIONS: Describe any missions which are unique or relatively unique to the activity. Include information on projected changes. Indicate if your command has any National Command Authority or classified mission responsibilities.

Current Unique Missions

The Naval Surface Warfare Center has a unique mission in 14 Leadership Areas. They are: 1) Surface Warfare Modeling and Analysis; 2) Surface Ship Combat and Combat Control Systems; 3) Surface Ship Electronic Warfare; 4) Surface Ship Electromagnetic and Electro-optic Reconnaissance, Search and Track Systems; 5) Surface Ship Weapon Systems; 6) Ship Vulnerability and Survivability; 7) Ship Active and Passive Signatures; 8) Surface and Undersea Vehicle Hull, Machinery, Propulsors and Equipment; 9) Platform Systems Integration; 10) Strategic Targeting Support; 11) Amphibious Warfare Systems; 12) Special Warfare Systems; 13) Warheads; and 14) Mines, Mine countermeasures and Mine Clearance Systems.

The Crane Division performs engineering assignments in the Leadership Areas of: 1) Surface Warfare Modeling and Analysis; 2) Surface Ship Combat and Combat Control Systems; 3) Surface Ship Electronic Warfare; 4) Surface Ship Electromagnetic and Electro-optic Reconnaissance, Search and Track Systems; 5) Surface Ship Weapon Systems; 6) Ship Vulnerability and Survivability; 9) Platform Systems Integration; 10) Strategic Targeting Support; 11) Amphibious Warfare Systems; 12) Special Warfare Systems; 13) Warheads; and 14) Mines, Mine countermeasures and Mine Clearance Systems.

More specifically, the uniqueness of the Crane Division mission is the **breadth and depth of our complementary Technical Capabilities** that form an all encompassing engineering/industrial base capability. Combining engineering and industrial process skills, Crane is able to provide:

- Complete life cycle support for all assigned Navy combat systems

- Organic industrial base capability for both electronic and mechanical system manufacturing, repair and engineering analysis

- "Smart buyer" services for virtually all electronic and mechanical systems and components

- In-service engineering and maintenance expertise for Navy electronic warfare and gun weapons systems

- Last source manufacturing and repair for mechanical and electronic systems and products

- Challenges to private sector costs by offering an alternative source

Finally, the Crane Division has the following highly classified missions:

- Classified mission as per NAVSEA Continuity of Operations Plan dated 26 August 1992
- Sensitive Compartmented Information Facilities, personnel cleared by Special Background Investigation, compartmented billets, and secure communications to perform mission for the following activities: National Security Agency; Naval Special Warfare Special Purpose Munition; Naval Surface Fire Support; Naval Special Warfare Development Group; and Marine Air-Ground Task Force
- Software Support Agent and Technical Software Support Center for AN/WLR-1H electronic warfare system

Projected Unique Missions for FY 2001

NA

9. IMMEDIATE SUPERIOR IN COMMAND (ISIC): Identify your ISIC. If your ISIC is not your funding source, please identify that source in addition to the operational ISIC.

Operational name	UIC
Commander, Naval Surface Warfare Center	68933
Funding Source	UIC
Defense Base Operating Funds	Multiple

10. PERSONNEL NUMBERS: Host activities are responsible for totalling the personnel numbers for all of their tenant commands, even if the tenant command has been asked to separately report the data. The tenant totals here should match the total tally for the tenant listing provided subsequently in this Data Call (see Tenant Activity list). (Civilian count shall include Appropriated Fund personnel only.)

On Board Count as of 01 January 1994

	Officers	Enlisted	Civilian (Appropriated)
Reporting Command	7	12	3812
Tenants (total)	9	70	723
SELRES Units	19	162	0

Authorized Positions as of 30 September 1994

	Officers	Enlisted	Civilian (Appropriated)
Reporting Command	7	15	3575
Tenants (total)	9	67	698
SELRES Units	22	177	0

11. KEY POINTS OF CONTACT (POC): Provide the work, FAX, and home telephone numbers for the Commanding Officer or OIC, and the Duty Officer. Include area code(s). You may provide other key POCs if so desired in addition to those above.

Title/Name	Office	Fax	Home
• CO/OIC Commander CAPT Stephen Howard	812-854-1210	812-854-3313	812-854-1310
• Duty Officer			
Executive Officer CDR B. R. Bafford	812-854-1411	812-854-3313	812-854-1423
• BRAC Coordinator Robert Matthews	812-854-1534	812-854-2649	812-295-2798

12. TENANT ACTIVITY LIST: This list must be all-inclusive. Tenant activities are to ensure that their host is aware of their existence and any "subleasing" of space. This list should include the name and UIC(s) of all organizations, shore commands and homeported units, active or reserve, DOD or non-DOD (include commercial entities). The tenant listing should be reported in the format provide below, listed in numerical order by UIC, separated into the categories listed below. Host activities are responsible for including authorized personnel numbers, on board as of **30 September 1994**, for all tenants, even if those tenants have also been asked to provide this information on a separate Data Call. (Civilian count shall include Appropriated Fund personnel only.)

- Tenants residing on main complex (shore commands)

Tenant Command Name	UIC	Officer	Enlisted	Civilian
Defense Finance & Accounting Service Cleveland	HQ0103	0	0	28
Defense Reutilization & Marketing Office	SX1395	0	0	20
Crane Army Ammunition Activity	39ZAA	3	1	630
Explosive Ordnance Disposal Group 2 Detachment	30702	1	4	0
Customer Service Branch, Personnel Support Activity Detachment Indianapolis	43050	0	0	2
Engineering Field Activity Contracts Office Crane, IN	44204	2	0	16
Defense Commissary Agency	49109	0	6	0
Navy Exchange Detachment	60660	0	1	0
Naval Criminal Investigative Service Resident Unit	63285	0	0	1
Naval Security Group Detachment Crane IN	63904	2	52	0
U. S. Coast Guard Small Arms Repair Facility	70098	1	3	0

- Tenants residing on main complex (homeported units.)

Tenant Command Name	UIC	Officer	Enlisted	Civilian
NA	NA	NA	NA	NA

- Tenants residing in Special Areas (Special Areas are defined as real estate owned by host command not contiguous with main complex; e.g. outlying fields).

Tenant Command Name	UIC	Location	Officer	Enlisted	Civilian
NA	NA	NA	NA	NA	NA

- Tenants (Other than those identified previously)

Tenant Command Name	UIC	Location	Officer	Enlisted	Civilian
NA	NA	NA	NA	NA	NA

13. REGIONAL SUPPORT: Identify your relationship with other activities, not reported as a host/tenant, for which you provide support. Again, this list should be all-inclusive. The intent of this question is capture the full breadth of the mission of your command and your customer/supplier relationships. Include in your answer any Government Owned/Contractor Operated facilities for which you provide administrative oversight and control.

Activity name	Location	Support function (include mechanism such as ISSA, MOU, etc.)
Madison Township Volunteer Fire Department	*Odon, IN*	*Perform fire fighting, hazardous materials mitigation, rescue and emergency medical support duties - Mutual Aid Agreements*
Bloomfield Volunteer Fire Department	*Bloomfield, IN*	
Richland-Taylor Township Volunteer Fire Department	*Bloomfield, IN*	
Perry Township Volunteer Fire Department	*Springville, IN*	
Loogootee Volunteer Fire Department	*Loogootee, IN*	
Martin County Civil Defense Fire and Rescue	*Loogootee, IN*	
Owensburg Firefighter, Inc.	*Owensburg, IN*	
Indian Creek Volunteer Fire Department	*Bedford, IN*	
City of Linton Indiana	*Linton, IN*	

Activity name	Location	Support function (include mechanism such as ISSA, MOU, etc.)
Indiana Department of Corrections: *Branchville Prison &* *Wabash Valley Correctional Institute* *Washington Police Department* *New Albany Policy Department*	 *Branchville, IN* *Carlisle, IN* *Washington, IN* *New Albany, IN*	*Provide K-9 Dog training - written request approved by Commander*
U. S. District Court Magistrate Court	*Southern Jurisdiction of Indiana*	*Conduct court session at Crane Division to try misdemeanor crimes alleged to have happened on site versus travelling to Indianapolis or Evansville - Memorandum of Agreement*
Indiana State Police *Greene County Sheriff's Department* *Daviess County Sheriff's Department* *Lawrence County Police Department* *Martin County Sheriff's Department*	*Indianapolis, IN* *Bloomfield, IN* *Washington, IN* *Bedford, IN* *Shoals, IN*	*Provide assistance and equipment as needed. For example, aerial surveillance, night vision and thermal imaging equipment - Memorandum of Agreement*
Medical Department	*NSWC Crane, IN*	*Provide medical services to active duty and retired military and civilian employees - UIC 47611*
Bachelor Quarters	*NSWC Crane, IN*	*Provide support for military quarters for military personnel and civilians on TAD orders - UIC 47611*

Activity name	Location	Support function (include mechanism such as ISSA, MOU, etc.)
1st Battalion 152 Inf. Army National Guard	*Military Dept. of Indiana*	*Training Site for various functions such as communications and transportation - Memorandum of Understanding*
ARMY		
757 Transportation Battalion	*Milwaukee, WI*	
1152nd Transportation Company	*Fort Sheridan, IL*	
1150th Transportation Company	*Milwaukee, WI*	
226th Transportation Company	*St. Louis, MO*	
1438th Transportation Company	*Camp Atterbury, IN*	
425th Transportation Brigade	*Jacksonville, FL*	

Activity name	Location	Support function (include mechanism such as ISSA, MOU, etc.)
128th Supply Company	*Camp Atterbury, IN*	*Training Site for various functions such as communications and transportation - Memorandum of Understanding*
1238th Transportation Company	*Muskegan, MI*	
<u>AIR FORCE</u>		
218th Engineering Installation Squadron	*Jefferson Barracks, MO*	
217th Engineering Installation Squadron	*Chicago, IL*	
271st Engineering Installation Squadron	*Memphis, TN*	
181st Tactical Fighter Group	*Terre Haute, IN*	
<u>MARINE CORP</u>		
1st Battalion K Company	*Evansville, IN*	
<u>NAVY</u>		
0326 Detachment	*Evansville, IN*	
1826 Detachment	*Indianapolis, IN*	
26th Battalion	*Detroit, MI*	
Amphibious Detachment	*Evansville, IN*	
Naval Weapons Station Concord Detachment	*Evansville, IN*	

Activity name	Location	Support function (include mechanism such as ISSA, MOU, etc.)
NAVAL RESERVE		*Training Site for various functions such as communications and transportation - Memorandum of Understanding*
Headquarters 113	*Indianapolis, IN*	
Naval Reserve Center	*Akron, OH*	
Naval Reserve Center	*Dayton, OH*	
Naval Reserve Center	*Philadelphia, PA*	
Naval Reserve Personnel Center	*New Orleans, LA*	

14. FACILITY MAPS: This is a primary responsibility of the plant account holders/host commands. Tenant activities are not required to comply with submission if it is known that your host activity has complied with the request. Maps and photos should not be dated earlier than 01 January 1991, unless annotated that no changes have taken place. Any recent changes should be annotated on the appropriate map or photo. Date and label all copies.

- Local Area Map. This map should encompass, at a minimum, a 50 mile radius of your activity. Indicate the name and location of all DoD activities within this area, whether or not you support that activity. Map should also provide the geographical relationship to the major civilian communities within this radius. (Provide 12 copies.)

- Installation Map / Activity Map / Base Map / General Development Map / Site Map. Provide the most current map of your activity, clearly showing all the land under ownership/control of your activity, whether owned or leased. Include all outlying areas, special areas, and housing. Indicate date of last update. Map should show all structures (numbered with a legend, if available) and all significant restrictive use areas/zones that encumber further development such as HERO, HERP, HERF, ESQD arcs, agricultural/forestry programs, environmental restrictions (e.g., endangered species). (Provide in two sizes: 36"x 42" (2 copies, if available); and 11"x 17" (12 copies).)

- Aerial photo(s). Aerial shots should show all base use areas (both land and water) as well as any local encroachment sites/issues. You should ensure that these photos provide a good look at the areas identified on your Base Map as areas of concern/interest - remember, a picture tells a thousand words. Again, date and label all copies. (Provide 12 copies of each, 8½"x 11".)

- Air Installations Compatible Use Zones (AICUZ) Map. (Provide 12 copies.)

UIC 00164, 00197

JL
SEA 06X
2/16/94

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Capt. S. Howard
NAME (Please type or print)

Signature

Commander
Title

2/5/94
Date

Crane Div, NSWC
Activity

BRAC-95
DATA CALL #1
CRANE DIV.
JL
SEADFIX
2/16/94

UIC 00164; 00197

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

E.S. McGINLEY II	[signature]
NAME (Please type or print)	Signature
COMMANDER	2/9/94
Title	Date
NAVAL SURFACE WARFARE CENTER	
Activity	

~~I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.~~

~~NEXT ECHELON LEVEL (if applicable)~~

~~NAME (Please type or print)~~	~~Signature~~
~~Title~~	~~Date~~
~~Activity~~	

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

K. P. Malley	[signature]
NAME (Please type or print)	Signature
Commander	2/11/94
Title	Date
Naval Sea Systems Command	
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

S. F. Loftus Vice Admiral, U.S. Navy	[signature]
NAME (Please type or print)	Signature
Deputy Chief of Naval Operations (Logistics)	23 FEB 1994
Title	Date