



DEPARTMENT OF THE AIR FORCE
WASHINGTON DC



OFFICE OF THE ASSISTANT SECRETARY

11 6 NOV 1994

MEMORANDUM FOR THE CHAIRMAN, JOINT CROSS-SERVICE GROUP FOR
LABORATORIES

SUBJECT: Air Force Data Input to the Joint Cross-Service Group (JCSG) for Laboratories

Provided at attachment 2 is an Air Force validated data submission to the JCSG for Laboratories. This submission is an addition to the data submitted on 24 Oct 1994 (Atch 3). The data has been collected and certified in accordance with the Air Force Internal Control Plan. Attachment 1 is a list of the data we are providing. Data provided at attachment 2 in the form of Air Staff worksheets, Audit-related, and/or Request For Clarification responses should be incorporated as "pen and ink" or "remove and replace" changes, as appropriate. Questions can be referred to Lt Col Mark Bruggemeyer or Maj Michael Wallace, HQ USAF/RTR, 54578.

JAMES F. BOATRIGHT
Deputy Assistant Secretary of the Air Force
(Installations)

Attachments:

1. List of Air Force Laboratories Data Provided
2. Joint Laboratory Data
3. Air Force Input to Laboratories JCSG (w/o Atchs), 24 Oct 94

94-11-16 15:10 RCVD

List of Air Force Laboratories Data Provided

- | | |
|---|---|
| 1. Laboratories Supplemental Data Call - C4I | ESC - Hanscom |
| 2. Hanscom - ESC Audit-related | Q 3.2.1 & 3.3.1.1 |
| 3. ASC (SPO) - WPAFB Audit-related | Q 3.4.1, 3.5.1 (13 Aug 94), 3.5.1.1, 3.5.1.2, & 3.5.1.3 |
| 4. OC ALC - Tinker Audit-related | Q 3.1.5, 3.2.1, 3.2.4, 3.3.1.1, 3.3.2, & 3.5.1.3 |
| 5. ASC (SPO) - WPAFB Audit-related | Q 3.5.1 (18 Oct 94) |
| 6. Two SAF/AQX Correction Worksheets | SAF/AQX - 065 & 066 |
| 7. Laboratories Supplemental Data Call - Energetics | WL - Eglin, ASC - Eglin, PL - Edwards,
Ogden ALC - Hill, & AEDC - Arnold |

PLACE HOLDER

FOR

JOINT DATA SUBMISSION



DEPARTMENT OF THE AIR FORCE
WASHINGTON DC



24 OCT 1994

OFFICE OF THE ASSISTANT SECRETARY

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JAMES F. BOATRIGHT
Deputy Assistant Secretary of the Air Force
(Installations)

Attachments:

1. List of Air Force Laboratories Data Provided
2. Joint Laboratory Data
3. Air Force Input to Laboratories JCSG (w/o Atchs), 26 Sep 94
4. List of Outstanding Air Force Laboratories Data

94-11-16 15:10 RCVD

INSTALLATION WORKSHEET
C4I CROSS SERVICE ANALYSIS-DATA REQUIREMENTS
HANSCOM AFB, MA

PURPOSE: To document answer to Question 1.

SOURCE: Robert Lee, GS-14, ESC/CSB, DSN 478-4338, ESC Organization Chart, dtd 1 May 94

METHOD: The organizational chart reflects which organizational elements report to the activity commander and which ones to a PEO. Relationships with PEO were provided telephonically by SPOs which report to PEOs.

CONCLUSION: Organizational elements are provided in attached ESC organizational chart. (Atch 1). Relationships with PEOs is described in Atch 2.

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

Preparer:

[Signature]

Date: 27 Oct 94

Robert Lee, GS-14, ESC/CSB, DSN 478-4338
Typed Name, Rank, Office Symbol, DSN Number

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

MAJCOM Reviewer:

[Signature: Joe Bradford]

Date: 31 Oct 94

Joe Bradford, GS-14, DRMP, 787-5591
Typed Name, Rank, Office Symbol, DSN Number

94-11-16 15:15 RCVD

Item 1

PSS 1-74



ELECTRONIC SYSTEMS CENTER
1 MAY 1994

COMMANDER
Lt Gen C.E. Franklin
VOICE: 5102 FAX: 4610
CC

EXECUTIVE DIRECTOR
Mr P.P. Panzarella
VOICE: 5104 FAX: 4610
CD

STAFF DIRECTOR
Col T.J. Mackey
VOICE: 5108 FAX: 4610
CS

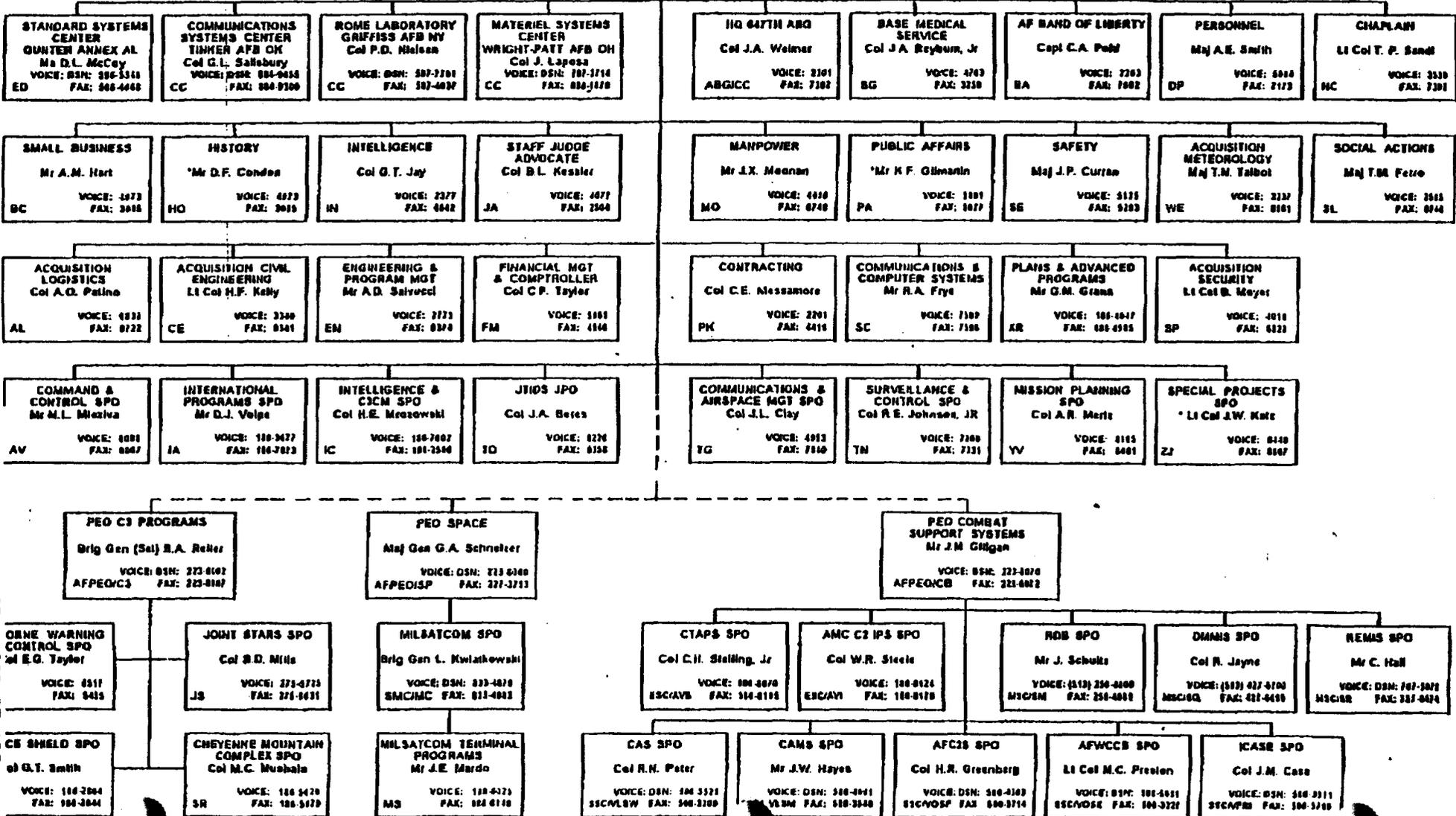
SENIOR ENLISTED ADVISOR
CM8gl R. Jacques
VOICE: 6115 FAX: 2713
CAIS

* ACTING

HANSCOM AFB MA 01731-1810
DSN - 478-XXXX
COMMERCIAL - (817) 377-XXXX
GRIFFISS AFB NY 13441-6708
DSN - 887-XXXX
COMMERCIAL - (518) 330-7XXXX
ANTRE - WEDFORD MA 017-9
DSN - 478-5880-XXXX
COMMERCIAL - (817) 271-XXXX
ESC VA 23-4, MAY 84
SUPERSEDES ESC VA 23-4, FEB 84
DISTRIBUTION: X

PREPARED BY ESCIMO

ATCH 1
QUESTION-1A



- Staff is Limited to Approx 6 People
- Has Execution Responsibility for Assigned Programs
- Owns Only His Immediate Staff & The Assigned Program Directors
- Owns Funds for Assigned Programs

PEO

ATTCH 2
QUESTION 1B (1 of 2 pgs)

Center Commanders

- Owns All Manpower Resources Except Program Directors of PEO Programs
- Dual Hatted as the DAC for All NON PEO Programs
- Responsible for
 - Training
 - Acquisition Processes & Their Quality
 - Support to All (PEO & DAC) Program Offices

ATTN J
QUESTIONIB (02/2/04)

INSTALLATION WORKSHEET
C4I CROSS SERVICE ANALYSIS-DATA REQUIREMENTS
HANSKOM AFB, MA

PURPOSE: To document answer to Question 2.

SOURCE: Mr. John Moonan, GS-14, ESC/MO, DSN 478-4418; Mr. Bob Lee, GS-14, ESC/CSB, DSN 478-4338; Mr. Lee Munson, GS-12, 647 ABG/CECS, DSN 478-4332; ESC Acquisition Manpower Resource Document, dtd 7 Oct 94; Space utilization Reports; Installation worksheets from the following ESC mission directorates reflecting their programs, FY93 actual workyears and FY94 Funds (AV, JS, AW, YV, TD, MS, IA, IC, IS, TG, TN, XR, ZJ, SR and EN).

METHOD: Workyears (on-site and off-site) were extracted from manpower source documents. Space allocation was provided by Base Space Manager. A formal tasking was made to all ESC directorates for their inputs on FY93 actual workyears, FY93 funds received and programs supported.

CONCLUSION: Summary charts of ESC and RL acquisition workforce, square feet of space occupied, program funds and main programs and individual organizational breakouts are provided in attached charts.

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

Preparer: Robert Lee Date: 31 Oct 94

Robert Lee, GS-14, ESC/CSB, DSN 478-4338
Typed Name, Rank, Office Symbol, DSN Number

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

MAJCOM Reviewer: Joe Brattford Date: 1 Nov 94

Joe Brattford, GS-14, AFMC/RMP, 787-5591
Typed Name, Rank, Office Symbol, DSN Number

MAJCOM Reviewer: Frank C. Cales Date: 3 Nov 94

Frank C. Cales, GM 14, AFMC/ENSS, DSN787-7712
Typed Name, Rank, Office Symbol, DSN Number

ESC - Hanscom AFB

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA/TEMS	OFF-SITE SETA/TEMS
Engineering	336	379	1088	329	325
Logistics	150			56	32
Contracting	269				
Financial	264			96	38
Legal	36				
Program Management	434				
Admin & Other	505			71	53
Totals	1994	379	1088	552	448

Summary -
QUESTIONS
2A

ESC DATA SHEET

Type Space	Owned	Leased (MITRE)	MITRE
General Office Space (SF)	401,538	36,756	187,000
Laboratory Specific (SF)	5,029	10,348	29,656
Other(SF)	53,204		17,970
Total:	459,771	47,104	234,626

Program Funds	3,779 M
----------------------	----------------

Main Programs:

JOINT STARS
AWACS
MILSATCOM Terminals
Joint Tactical Info.Distribution Sys. (JTIDS)
Cheyenne Mountain Upgrade (CMU)
National Airspace System (NAS)
PEACE SHIELD (Saudi Arabia)
Joint Service Imagry Processing System (JSIPS)

SUMMARY
 DB AND JC

Rome Labs East

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	106			3	
Logistics					
Contracting					
Financial	1				
Legal					
Program Management	20				
Admin & Other	22			1	
Totals	149			4	

AR

Rome Labs (East)

Type Space	Owned	Leased	MITRE
General Office Space (SF)	14,400	600	
Laboratory Specific (SF)	106,500	6,900	
Other(SF)	12,500	2,800	
Total:	133,400	10,300	

Program Funds	19 M
---------------	------

Main Programs:
 Electromagnetic Materials and Devices
 Millimeterwave Monolithic Components
 and Arrays
 Superconducting Electronics
 Infrared Focal Plane Arrays
 Electro-Optic Devices and Components

2B AND 2C

ESC Staff

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /ITEMS	OFF-SITE SETA/ITEMS
Engineering	43	9	70	2	25
Logistics	31				
Contracting	115				
Financial	80			45	
Legal	36				
Program	34				
Management					
Admin &	221				
Other					
Totals	560	9	70	47	25

**INSTALLATION WORKSHEET
C4I CROSS SERVICE ANALYSIS-DATA REQUIREMENTS
HANSCOM APB, MA**

PURPOSE: To document answer to Question 3a, 3b and 3d.

SOURCE: Mr. Bob Lee, GS-14, ESC/CSB, DSN 478-4338; Mr. Chris Perkins, GS-14, ABG/CEC; Base Comprehensive Plan; Mr. George Auclair, MITRE Corp, (617) 271-3622

METHOD: Locations of organizational elements by building were provided by ABG space manager; available space in FY97 was provided by ABG/CEC. MITRE Corporation has identified potential available space at the MITRE Complex. The state of Massachusetts has identified buildings at Ft. Devens for future use.

CONCLUSION: Attached are maps reflecting locations of organizational elements (Atch 1) available space in FY97 (Atch 2) and potential space in close proximity (Atch 3).

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

Preparer: *Robert Lee* Date: 28 Oct 94

Robert Lee, GS-14, ESC/CSB, DSN 478-4338
Typed Name, Rank, Office Symbol, DSN Number

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

MAJCOM Reviewer: *Joe Bradford* Date: 31 Oct 94

Joe Bradford, GS-14, DRMP 787-5591
Typed Name, Rank, Office Symbol, DSN Number

ZJ

Type Space	Owned	Leased	MITRE
General Office Space (SF)			
Laboratory Specific (SF)			
Other (SF)	33,873		
Total:	33,873		

Program Funds	Classified
Main Programs:	Classified Programs

JB AND JC

43

26

Joint STARS (JS)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	25	103		45	
Logistics	7			7	
Contracting	13				
Financial	13			8	
Legal					
Program Management	21				
Admin & Other	13				
Totals	92	103		60	

42

27

JS

Type Space	Owned	Leased	MITRE
General Office Space (SF)	51,729		
Laboratory Specific (SF)			
Other(SF)			
Total:	51,729		

Program Funds	947.5 M
---------------	---------

Main Programs: Joint Surveillance Target Attack Radar System

JB AND JC

MILSATCOM Terminal Programs (MC)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	16		117		52
Logistics	6				6
Contracting	11				
Financial	10				7
Legal					
Program Management	21				
Admin & Other	14				4
Totals	78		117		69

28

2A

MC

Type Space	Owned	Leased (MITRE)	MITRE
General Office Space (SF)		36,756	
Laboratory Specific (SF)		10,348	
Other(SF)			
Total:		47,104	

Program Funds 269.3 M

Main Programs: MILSATCOM Terminal Programs

Cheyenne Mountain Complex Systems (SR)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	37		191		105
Logistics	11				5
Contracting	14				
Financial	14				13
Legal					
Program	33				
Management					
Admin & Other	27				10
Totals	136		191		133

31

SR

Type Space	Owned	Leased	MITRE
General Office Space (SF)			36,764
Laboratory Specific (SF)			1,322
Other(SF)			
Total:			38,086

Program Funds	213.1 M
---------------	---------

Main Programs:

- Space Defense Operations Center Phase 4
- Integrated Tactical Warning and Attack Assessment System
- Granite Sentry Program
- Survivable Communications Integration System
- Command Center Processing and Display Replacement

2B AND 2C

32

Joint Tactical Information Distribution Systems (TD)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	11	79		45	
Logistics	9			13	
Contracting	7				
Financial	12			3	
Legal					
Program Management	28				
Admin & Other	9			10	
Totals	76	79		71	

TD

Type Space	Owned	Leased	MITRE
General Office Space (SF)	41,339		
Laboratory Specific (SF)			
Other(SF)			
Total:	41,339		

Program Funds | 98.7 M

Main Programs: Joint Tactical Information Distribution System

34

Communications & Airspace Management Systems (TG)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	22		105	58	
Logistics	11			10	
Contracting	15				
Financial	11			9	
Legal					
Program Management	26				
Admin & Other	17			14	
Totals	102		105	91	

2A

35

TG

Type Space	Owned	Leased	MITRE
General Office Space (SF)	40,976		17,352
Laboratory Specific (SF)			8,688
Other(SF)			790
Total:	40,976		26,830

Program Funds 181.3 M

- Main Programs:
- National Airspace Systems
 - Microwave Landing System
 - Deployable Communications
 - Rapid Execution and Combat Targeting
 - Security Police Communications System II

2B AND 2C

Surveillance and Control Systems (TN)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	19		90	37	
Logistics	9			10	
Contracting	14				
Financial	11			12	
Legal					
Program Management	22				
Admin & Other	17			18	
Totals	92		90	77	

37

TN

Type Space	Owned	Leased	MITRE
General Office Space (SF)	85,364		9,156
Laboratory Specific (SF)			284
Other(SF)			
Total:	85,364		9,440

Program Funds	154.2 M
---------------	---------

Main Programs:

- Ballistic Missile Early Warning System
- Caribbean Basin Radar Network
- COBRA DANE System Modification
- North Atlantic Defence System
- North Warning System

2B AND DC

38

Plans & Advanced Programs (XR)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	19		148		6
Logistics	3				
Contracting	1				
Financial	6				
Legal					
Program Management	20				
Admin & Other	1				
Totals	64		148		6

24

Mission Planning Systems (YV)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	8		69	35	
Logistics	5			4	
Contracting	9				
Financial	8			4	
Legal					
Program Management	26				
Admin & Other	17				
Totals	73		69	43	

XR

Type Space	Owned	Leased	MITRE
General Office Space (SF)			19,101
Laboratory Specific (SF)			5,866
Other(SF)	15,000		13,885
Total:	15,000		38,852

Program Funds	42.1 M
---------------	--------

Main Programs:

- AMC C4I Development Planning
- Ballistic Missile Defense Battle Management/C3
- Combat Identification
- Modeling, Analysis and Simulation
- Mission Area Planning for Surveillance
and Reconnaissance

2B AND AC

41

YV

Type Space	Owned	Leased	MITRE
General Office Space (SF)	21,127		
Laboratory Specific (SF)	2,829		
Other(SF)			
Total:	23,956		

Program Funds	117.0M
---------------	--------

Main Programs:

- Air Force Mission Support System
- Common Mapping Production System
- Special Operations Forces Planning and Rehearsal System
- Computer Aided Mission Planning at Airbase Level
- Mission Support Systems II

2B AND 2C

Special Projects (ZJ)

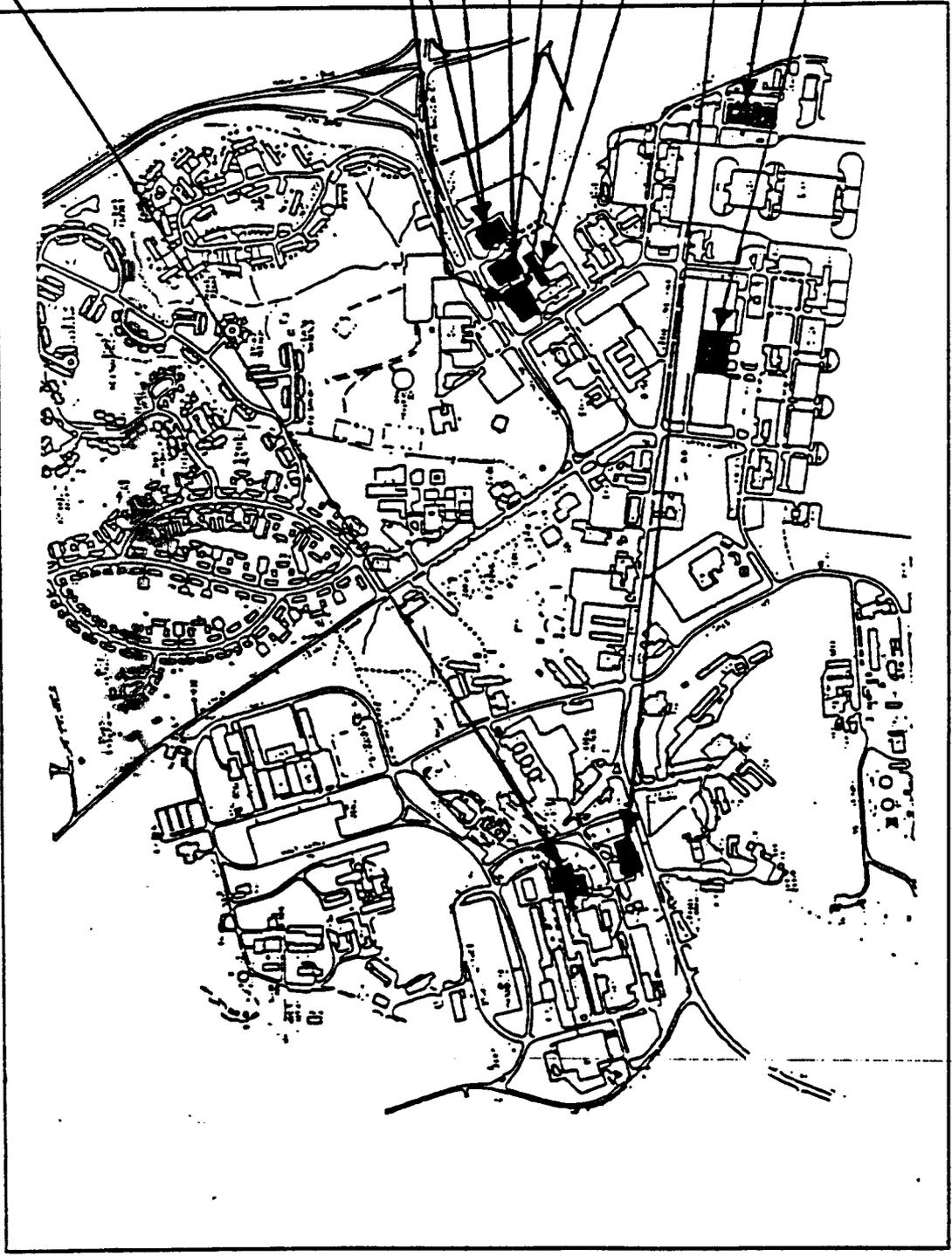
	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	11	29			
Logistics	7				
Contracting					
Financial	4				
Legal					
Program	26				
Management					
Admin & Other	13				
Totals	61	29			

24

Hq ESC Property Utilization

Directorates

- ZI
- EN
- AV
- TG
- JS
- TN
- YV
- TD
- AW
- IA (MITRE)
- IC (MITRE)
- IS (MITRE)
- MC (MITRE)
- SR (MITRE)
- XR (MITRE)
- XR



Atch 1

(QUESTION 3a)

Space for Consolidation

	Sq Ft
• Hanscom	
— Commissary	84,000
— ARCOM Building	84,000
— Security Police	7,000
— 1302H	28,000
• MITREB	98,200
• RT Devens	426,000 (Min)
Total	727,200

31-100000 (Active)

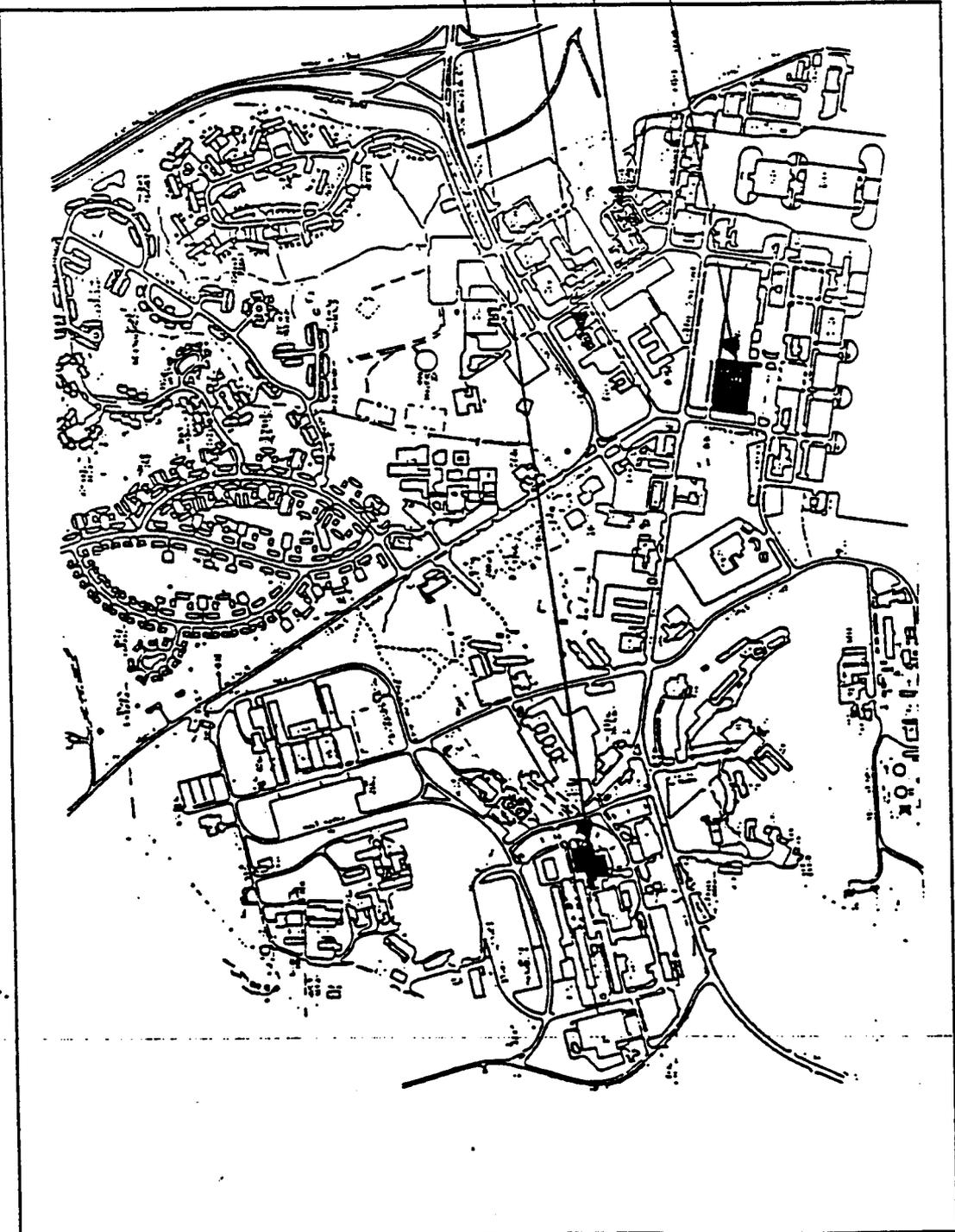
Attach 2
(QUESTION 3B)

Arch
01.21.24

Space Available on Hanscom AFB

Buildings

- 1614
- 1607
- 1605
- 1302F



ATCH 2
(QUESTION 3b)
PAGE 20 F 2

Potential Space for Consolidation within Close Proximity

ATLH 3 PAGE 1 of 3
(QUESTION 3D)

Ft. Devens - Distance 22 Miles

- Obtain Buildings 2602, P-11, P-12, P-13
- Provides 426,000 SF accommodating 2,500 personnel
- Additional Buildings Available
- No Extenuating Circumstances
- 1991 BRAC Commission Stated:

“Fort Devens has newly constructed facilities and that DOD should make maximum use of these facilities in future stationing decisions.”

- Massachusetts established a Land Bank to finance development
 - Governor Weld offered \$30M + to renovate office space and dorms to accommodate any additional personnel
 - Family housing would be obtained free

Potential Space for Consolidation within Close Proximity

MITRE - Distance 5 Miles

- Building D being renovated
 - Provides 98,200 SF accommodating 600 personnel
- No Extenuating Circumstances

Space Available on Ft. Devens

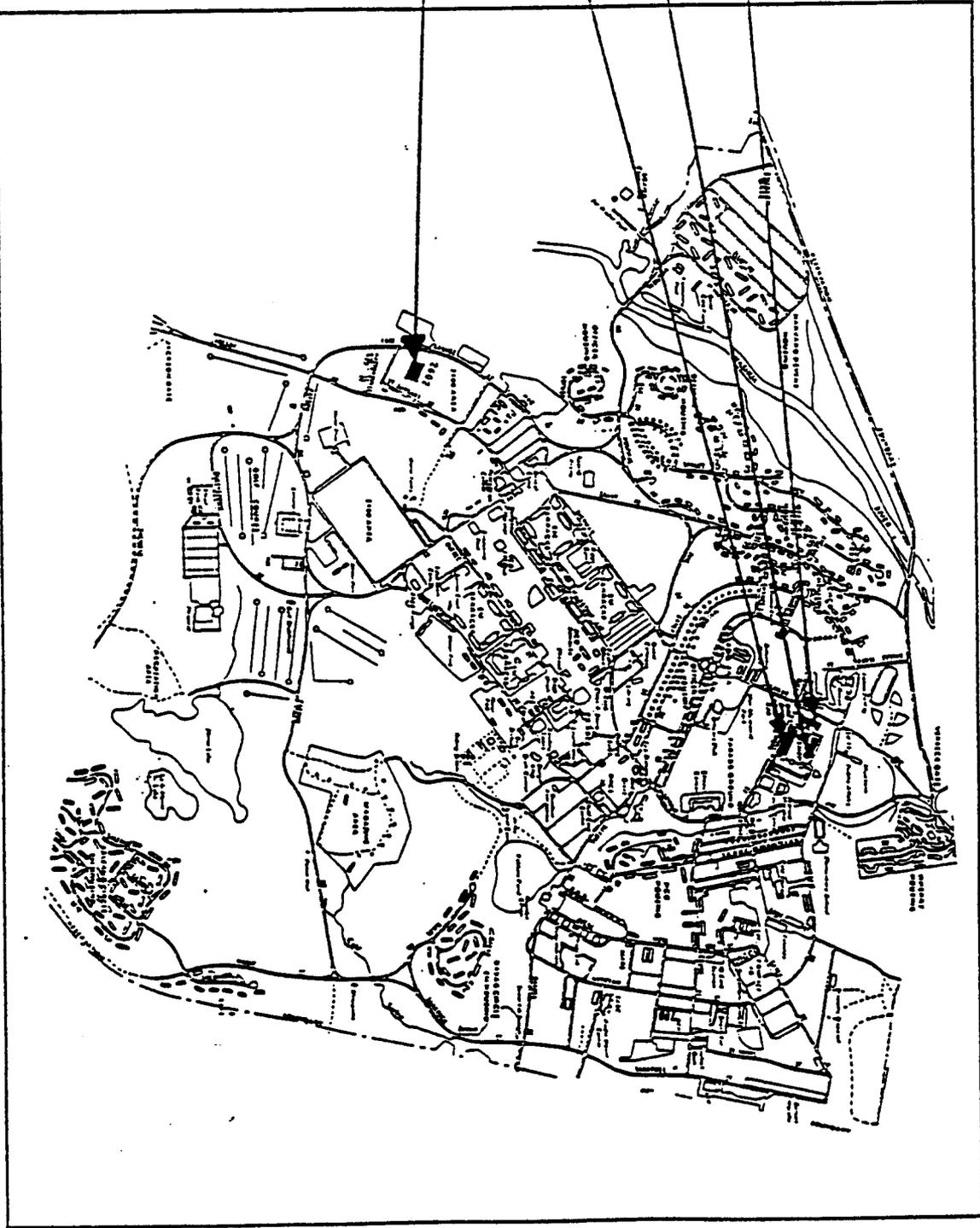
Buildings

P-11

P-12

P-13

2602



INSTALLATION WORKSHEET
C4I CROSS SERVICE ANALYSIS - DATA REQUIREMENTS
HANSCOM AIR FORCE BASE

Purpose: To document the Hanscom AFB answer to question number 3.c.

Source: Mr. Chris L. Perkins, 66 SPTG/CEC, DSN 478-4352.

The source of the Phillips Laboratory equipment/facilities which are difficult to move or replicate is based on the following:

- a. Geophysics Directorate - Phillips Laboratory Consolidation Analysis Team (PCAT) Briefing Notebook of 19 July 1991.
- b. Phillips Laboratory Hanscom AFB Brochure, "Facilities Available for Use".

The Phillips Laboratory replacement cost data was based on the following:

- a. Geophysics Directorate - Phillips Laboratory Consolidation Analysis Team (PCAT) Briefing Notebook of 19 July 1991.
- b. Earth Sciences (GPE) Division input received from Dr. John J. Cipar, Geophysicist, DSN 478-3767.
- c. Rad Hard Electronics Technology (VTER) Division input received from Dr. Walter M. Shedd, Director, DSN 478-4051.
- d. Real Property Replacement Cost Data received from 647ABG/CE on 19 April 1994.

The source of the Rome Laboratory Hanscom AFB equipment/facilities which is difficult to move or replicate and their replacement cost is based on the following:

- a. Richard T. Momberg, Contractor Rome Laboratory/ER DSN 478-3932 and his discussions with the division and branch chiefs at Rome Laboratory, Hanscom AFB, from the June 1993 copies of the Rome Laboratory Hanscom equipment monitors' listings, and from the 4 Feb 94 edition of the Hanscom AFB real property records.

The source of the MITRE information was Mr George Auclair, (617) 271-3622.

Method: Evaluation of the listed facilities/equipment referenced in the above sources to sort out only those which were deemed "difficult" to replicate or move because they represent unique capabilities or infrastructure requirements. Only those meeting this criteria were carried forward from these sources.

Conclusion: The equipment/facilities are as follows:

(SEE ATCH 1)

Rome Lab (Hanscom AFB):

- a. INFOSEC Research Facility (B-1124) \$1.6 M.
- b. Semiconductor High Pressure Crystal Growth Facility (B-1142) \$1.1 M
- c. Hydrothermal High Pressure Crystal Growth Facility (B-1142) \$0.9M
- d. Semiconductor Epitaxy Thin Film Growth Facility (B-1128) \$2.5 M.
- e. Clean Rooms (5) (Bldgs 1123, 1128, 1138, 1141, 1142) \$1.6 M.

Phillips Laboratory:

- f. Spacecraft Interactions (WSSI) Laboratory (B-1102C) \$1.5 M.
- g. Space Environmental Effects (B-1102C) \$0.9 M.
- h. Satellite Communications Facility (B-11-2F) \$4.2 M.
- i. Air Force Interactive Meteorological System (B-1102C) \$2.3 M.
- j. Visible & Infrared Backgrounds Lab (B-1105B) \$10.7 M.
- k. Haskell Observatory (B-1109) \$1.4M.
- l. Technical Research Library (B-1103) \$32.5 M.
- m. Aerospace Payload Integration Facility (B-1102D) \$2.3 M.
- n. Secure Compartmentalized Information Facilities (59,873 SF, B1103, 1105B, 1302FA, 1305, 1521, 1614) \$9.4 M.

Off Site Hanscom:

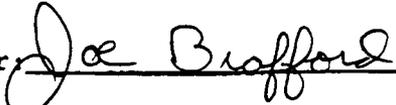
- o. MITRE Lab and SCIF Facilities \$30.8 M.
- p. Ipswich Electromagnetic Test Site \$6.7 M.
- q. Prospect Hill \$4.8 M
- r. Sudbury Research Facility \$2.4 M.

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

Preparer: Date: 28 Oct 94

Robert Lee, GS-14, ESC/CSE, DSN 478-4338
Typed Name, Rank, Office Symbol, DSN Number

MAJCOM

Reviewer: Date: 31 Oct 94

Joe Brafford, GS-14, DRMP, 787-5591

DIFFICULT TO MOVE/REPLICATE EQUIPMENT/FACILITIES

ATCH 1 PAGE 1 of
QUESTION 3C

ON-SITE HANSCOM AFB

	COST
INFOSEC Research Facility (Bldg. 1124)	1.6M
Semiconductor High Pressure Crystal Growth Facility (Bldg. 1142)	1.1M
Hydrothermal High Pressure Crystal Growth Facility (Bldg. 1142)	.9M
Semiconductor Epitaxy Thin Film Growth Facility (Bldg. 1128)	2.5M
Clean Rooms (5) (Bldgs. 1123, 1128, 1138, 1141, 1142)	1.6M
Spacecraft Interactions (WSSI) Laboratory (Bldg. 1102C)	1.5M
Space Environmental Effects (Bldg. 1102C)	.9M
Satellite Communications Facility (Bldg. 1102F)	4.2M
Air Force Interactive Meteorological System (Bldg. 1102C)	2.3M
Visible & Infrared Backgrounds Lab (Bldg. 1105B)	10.7M

"LAB" Fixed Ground	FFRDC/SETA Fiscal Year 1993 Actual Off-Site			
	Civillian	Military	FFRDC	SETA
Science & Technology				
Engineering Development			24	7
In-Service Engineering				

Note: Workyears include only ESC support located within MITRE-Bedford facility; i.e., excludes support at field operating locations.

"LAB" Mobile Systems	Fiscal Year 1993 Actual On-Site			
	Civillian	Military	FFRDC	SETA
Science & Technology				
Engineering Development	4	3	0	16
In-Service Engineering				

"LAB" Mobile Systems	FFRDC/SETA Fiscal Year 1993 Actual Off-Site			
	Civillian	Military	FFRDC	SETA
Science & Technology				
Engineering Development			9	0
In-Service Engineering				

Note: Workyears include only ESC support located within MITRE-Bedford facility; i.e., excludes support at field operating locations.

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

Preparer: Janet M Polaneczkv Date: 29 Sep 94

JANET POLANECZKY, CAPT, USAF, ESC/CSE, DSN 47R-7859
 Typed Name, Rank, Office Symbol, DSN Number

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

MAJCOM Reviewer: Peggy S. Rutter Date: 3 Oct 94

Peggy S. Rutter, HR AFMCD/DPCE, GS-13, DSN 787-4131
 Typed Name, Rank, Office Symbol, DSN Number

DIFFICULT TO MOVE/REPLICATE EQUIPMENT/FACILITIES

ATTCH 1 PAGED 3
QUESTION 3C

ON-SITE HANSCOM AFB (continued)

COST

Haskell Observatory (Bldg. 1109)	1.4M
Technical Research Library (Bldg. 1103)	32.5M
Aerospace Payload Integration Facility (Bldg. 1102D)	2.3M
Secure Compartmentalized Information Facilities (SCIF) (59,873 sq.ft.) (Bldgs. 1103,1105B,1302FA,1305,1521,1614)	9.6M

OFF-SITE HANSCOM AFB

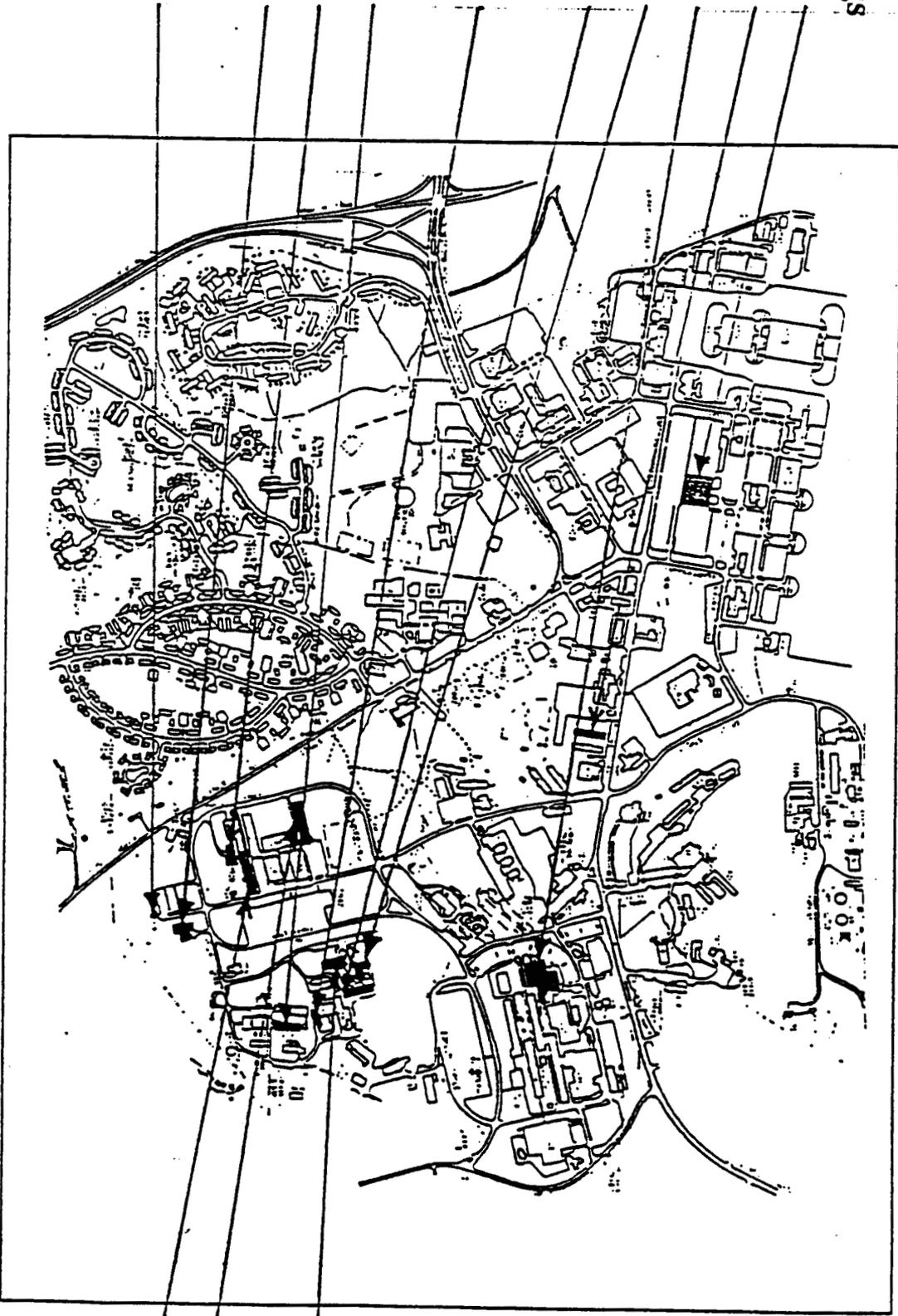
COST

MITRE Lab and SCIF Facilities	30.8 M
Ipswich Electromagnetic Test Site	6.7M
Prospect Hill	4.8M
Sudbury Research Facility	2.4M

Difficult to Move/Replicate Equipment/Facilities

Buildings

- 1614
- 1521
- 1302FA
- 1142
- 1141
- 1128
- 1124
- 1102D
- 1103
- 1109



- 1138
- 11051
- 1102

ATCH 1 PAGE 3
QUESTION 3C

INSTALLATION WORKSHEET
C41 CROSS SERVICE ANALYSIS - DATA REQUIREMENTS
HANSCOM AIR FORCE BASE

Purpose: To document the Hanscom AFB answer to question number 4.

Source: Mr. Chris L. Perkins, 66 SPTG/CEC, DSN 478-4352. The peak workyear excess capacity figures were extracted from JCSWG Data Call Question 2.2. The Minor Facility Modifications numbers were based on professional knowledge of base buildings and the condition of each building; DD Form 1391 for the ARCOM B-1607 project; the real property records; Rehab Project HA 85-0054 as-built drawings, and the floor plan of the existing Commissary. The B-1302F square foot figures were derived from Mr. Lee Munson, space manager, 66 SPTG/CECS, DSN 478-4332.

Method: B-1607 could be considered in "move-in" condition for use with only minor facility modifications such as wall paint and carpets using conventional furniture. A total of 47,250 GSF of general office space plus 8,029 SF of Drill Hall space could house 334 people using 165 SF/person. If \$5.1 M is invested to demolish interior walls, narrow hallways, repair utilities, and improve the exterior, and additional 123 people could be accommodated since systems furniture is more efficient and only requires 135 SF/person ($55,279 \text{ SF} / 135 = 409 \text{ people} - 334 = 75 \text{ people} + 48 (6,480 \text{ SF of hallway} / 135)$) for a total of 123 people.

B-1614 could be considered "move in" condition for the open floor space of the old Commissary building with only carpeting and a suspended ceiling added. This 30,100 SF at 135 SF/person could hold 223 people. With additional major modification, 32,650 SF of the remaining facility could be converted to office space. This work would include conversion of the frozen foods area, meat preparation, cold storage, etc which would yield an additional 242 people or workyear capacity.

B-1302F has 27,587 SF of space and could house 204 people (135 SF/person) with only the minor cost of systems furniture required.

B-1302FA has 13,312 SF of available space which could house 98 people or workyears (135 SF/person).

B-1605 will be available in FY 97. The 7,008 SF facility will house 51 people at 135 SF/person with minor renovation of the law enforcement desk and prisoner holding area.

Conclusion: The Peak Workyear (FY 97) Excess capacity is 756 workyears on-site, and 862 workyears off-site. With minor facility modifications to B-1607, 1614, 1605, 1302F and 1302FA there is 910 workyear excess capacity. With Major facility modifications to B-1607 at \$5.1 M, an additional excess capacity of 123 workyears exists. With Major Facility Modification to B-1614 at \$2.0 M, an additional 242 excess capacity workyears exist for a total excess capacity of 2893 workyears. (SEE ATTCH 1)

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

Preparer:  Date: 28 Oct 94
Robert Lee, GS-14, ESC/CSB, DSN 478-4338

MAJCOM
Reviewer: Joe Bratford Date: 31 Oct 94

Joe Bratford, GS-14, AFMC/DRMP, 787-5591

EXCESS CAPACITY (in Workyears)

Activity	Cost	Excess Capacity
----------	------	-----------------

Peak Workyear - FY 97 Workyear		
On-site		756
Off-site		862

Minor Facility Modifications		
Bldgs. 1607, 1614, 1605, 1302, 1302FA		910

Major Facility Modifications		
Bldg. 1607 (Demo of Interior walls, elect/HVAC, exterior)*	5.1 M	123
Bldg 1614 (Demo, elect./HVAC)*	2.0 M	242
Total Excess Capacity		2,893

*Additional capacity over Minor Facility Modification

BACKUP.PPT ODRIVE

Atch 1
(QUESTION 4)

**INSTALLATION WORKSHEET
C4I CROSS SERVICE ANALYSIS-DATA REQUIREMENTS
HANSCOM AFB, MA**

PURPOSE: To document answer to Question 5.

SOURCE: Roger L. Goudreau, Colonel, USAF, ESC/CSB, DSN 478-4339, ESC/JAM letter, dtd 7 Oct 94; 66 SPTG document, Hanscom AFB Properties, no date; Hanscom Clinic letter, dtd 7 Oct 94; ESC/DPM letter, dtd 10 Oct 94; Mr. John Noonan, GS-15, ESC/MO, DSN 478-4416; Claude Messamore, Colonel, USAF, ESC/PK, DSN 478-2201; Craig Taylor, Colonel, USAF, ESC/FM, DSN 478-5161.

METHOD: A telephone tasking to the above organizations was made. Information was received and reviewed from the above letters. ESC/MO, ESC/PK and ESC/FM provided verbal responses.

CONCLUSION: From written and verbal responses, it was determined that there were no realignment of activities to/from Hanscom AFB due to any BRAC 91 and BRAC 93 decisions.

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

Preparer:

[Handwritten Signature]

Date: 14 Nov 94

Robert Lee, GS-14, ESC/CSB, DSN 478-4338
Typed Name, Rank, Office Symbol, DSN Number

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

MAJCOM Reviewer:

[Handwritten Signature]

Date:

14 Nov 94

THOMAS L. KREPENICK GM-14 HQ AFMC/XXK 787-2644
Typed Name, Rank, Office Symbol, DSN Number

C1-rs1
58-64A

Itaz 1-C1
pss 1-2

NOV.14 '94 16:28 HQ AFMC/XRJ WRIGHT-PATTERSON OH
NOV-14-1994 16:22 FROM COMMAND SECTION

8-7871246 P.03-03

P.03

TO

BACKUP.PPT ODRIVE

BRAC 91 & 93 Impacts

~~There were no impacts to Hanscom AFB~~
based on any BRAC 91 or BRAC 93 Decisions

21-PS2
58-64B

NOV-14-1994 16:32

TOTAL P.03

P.003

**INSTALLATION WORKSHEET
CAI CROSS SERVICE ANALYSIS-DATA REQUIREMENTS
HANSCOM AFB, MA**

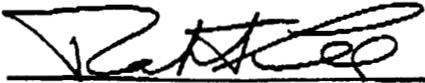
PURPOSE: To document answer to Question 6.

SOURCE: Chris L. Perkins, GS-14, 66SPTC/CEC, DSN 478-4352. Ft. Devens Dispatch article dtd 24 Aug 94 and phone call to Mr. Mickey McCartney, HQ DCAA, DSN 473-3305. E-Mail dtd 25 Oct 94 from Mary Krance, ESC/FMBO, DSN 478-3217.

METHOD: Extracted from above documentation.

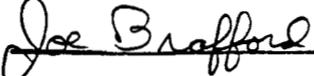
CONCLUSION: Provided at attachment 1 are the military department approved and programmed plans that impact the activity and installations.

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

Preparer:  Date: 28 Oct 94

Robert Lee, GS-14, ESC/CSB, DSN 478-4338
Typed Name, Rank, Office Symbol, DSN Number

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

MAJCOM Reviewer:  Date: 31 OCT 94

Joe Brafford, GS-14, AFMC/DRMP, 787-5591
Typed Name, Rank, Office Symbol, DSN Number

APPROVED AND PROGRAMMED PLANS

QUESTION 6

PLAN

IMPACT

Commissary
Construction
(FY 94 Funding)

Allows use of old commissary building (83,926 Sq. Ft.) space for potential office use in FY 97. On hold pending BRAC 95.

Scott Circle Housing
(Phase I)
(FY 94 Funding)

Improves quality of life by providing 48 new homes, garages, and central air.

**INSTALLATION WORKSHEET
C4I CROSS SERVICE ANALYSIS-DATA REQUIREMENTS
HANSCOM AFB, MA**

PURPOSE: To document answer to Question 7.

SOURCE: Roger L. Goudreau, Colonel, USAF, ESC/CSB, DSN 478-4339, 1995 Hanscom AFB, DoD Joint Cross Service Working Group data call response dated 20 May 94 and the Rome Laboratory at Hanscom AFB, DoD Joint Cross Service Working Group data call response dated 20 May 94.

METHOD: Data was extracted from question 3.1.5, proximity to Mission Related organization, in both the above documents.

CONCLUSION: Provided are the collocated C4I organizations at attachment 1.

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

Preparer: *Robert Lee* Date: 28 Oct 94

Robert Lee, GS-14, ESC/CSR, DSN 478-4338
Typed Name, Rank, Office Symbol, DSN Number

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

MAJCOM Reviewer: *Joe Brafford* Date: 31 Oct 94

Joe Brafford, GS-14, AFMC/DRMP, 787-5591
Typed Name, Rank, Office Symbol, DSN Number

**COLLOCATED C4I ORGANIZATIONS
ELECTRONIC SYSTEMS CENTER
HANSCOM AFB**

PAGE 1 of 2
ATCH 1
(QUESTION 7)

ORGANIZATION

Phillips Laboratory (PL) Geophysics Directorate

MISSION

To understand and mitigate or exploit the interactions between the aerospace environment and DOD systems

RELATIONSHIP

Provides geophysics for space operations and communications, air and combat operations, and corporate applications such as synthetic environments and environmental quality. Supplies Rome Lab, Hanscom with a variety of support, including logistics material control activity, photo lab, computer resources, and technical library. PL and Rome Lab share knowledge and resources on projects that bridge their mutual areas of expertise.

COLLOCATED C4I ORGANIZATIONS ELECTRONIC SYSTEMS CENTER HANSCOM AFB

PAGE 2 of 2
ATCH 1
(QUESTION 7)

ORGANIZATION

MITRE Corporation DOD FFRDC

MISSION

To enhance the security of the United States of America or otherwise to further the public interest, by engaging in, assisting and contributing to the support of scientific activities and projects, and by performing, engaging in and procuring research, development, engineering and advisory services.

RELATIONSHIP

Provides unique technical capabilities and expertise relevant to C4I planning, acquisition, and sustainment; and specialized knowledge of commercial and government off-the-shelf legacy and migration systems, weapon systems interfaces, and the military environment to which the systems will be applied.

**COLLOCATED C4I ORGANIZATIONS
ELECTRONIC SYSTEMS CENTER
HANSCOM AFB**

PAGE 3 of 3
ATCH 1
(QUESTION 7)

ORGANIZATION

Lincoln Laboratory FFRDC

MISSION

To apply science, by means of advanced technology, to critical problems of national security. Includes air defense, space surveillance, ballistic missile defense, tactical battlefield systems, satellite communications, and air traffic control.

RELATIONSHIP

Provides extensive support to Missile Warning and Space Surveillance network programs as well as a primary source of technological innovation for military electronic systems.

**INSTALLATION WORKSHEET
C4I CROSS SERVICE ANALYSIS-DATA REQUIREMENTS
HANSCOM AFB, MA**

PURPOSE: To document answer to Question 8.

SOURCE: Roger L. Goudreau, Colonel, USAF, ESC/CSB, DSN 478-4339, 1995 Air Force Base Questionnaire, Section I.1. Force Structure (I.1.A). The Military Personnel Officer, Capt. Bill Hampton, ESC/DPM, DSN 478-3099 and DMATS Boston, Hanscom AFB Directory were used to determine Air Force tenant agencies that were not covered by the above questionnaire.

METHOD: Information was extracted from the 1995 Questionnaire. Additionally, ESC/DPM provided information on Air Force tenant units. These units were contacted by telephone and in most cases the information on mission and total workyears was confirmed.

CONCLUSION: Tenant organizations, mission and total workyears are on attachment 1. (3 PAGES)

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

Preparer:  Date: 27 Oct 94

Robert Lee, GS-14, ESC/CSB, DSN 478-4338
Typed Name, Rank, Office Symbol, DSN Number

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

MAJCOM Reviewer: Joe Bratford Date: 31 Oct 94

Joe Bratford, GS-14, AFMC/DRMP, 787-5591
Typed Name, Rank, Office Symbol, DSN Number

HANSCOM AFB TENANTS

PAGE 1053
 ATCH 1
 (QUESTION 2)

ORGANIZATION	MISSION	TOTAL WORK YEARS
Army, Air Force Exchange Service	Retail Sales	122
AAFES Concessionaires	Retail Sales	22
Brighton Marine Clinic	Health Care	11
Defense Commissary Agency	Food Sales	54
Defense Financial Accounting Services	Accounting & Finance	63
Defense Contract Audit Agency	Audits	1
Defense Printing Services	Printing	8
Defense Systems Management College	Education	2
Defense Metropolitan Area Telephone System	Telephone Services	16
Hanscom Federal Credit Union	Banking	56
Joint Personal Property Shipping Office	Shipping	2
Lincoln Laboratory	Research	2,872
Lincoln Schools	Education	123

BACKUP:PPT.ODRIVE

11

72

HANSCOM AFB TENANTS

PAGE 2 OF 3
 ATCH 1
 (QUESTION 2)

ORGANIZATION	MISSION	TOTAL WORK YEARS
Thomas Cook Travel	Travel	18
U.S. Army Corps of Engineers	Construction Engineering Postal Services	2
U.S. Post Office	Postal Services	1
Western New England College	Education	1
Air Combat Command System Office	Liaison	13
Air Force Audit Agency	Audits	15
Air Force Cryptologic Support Center	Cryptology	4
Air Force Office of Special Investigations	Investigations	16
Air Force Reserve Recruiting Office	Recruiting	2
Air Mobility Command Liaison Office	Liaison	unavailable
Pacific Air Forces Liaison Office	Liaison	unavailable
Air Education Training Command Liaison Ofc.	Liaison	unavailable

BACKUP.PPT ODRIVE

HANSCOM AFB TENNANTS

ORGANIZATION	MISSION	TOTAL WORKYEARS
Civil Air Patrol Liaison Office	Liaison	2
Defense Technical Information Center	Technical Information	2
57th Aerial Port Squadron	Logistics	246
360th USAF Recruiting Group	Recruiting	20

PAGE 3 of 3
 ATCH 1
 (QUESTION 8)

ESC Update
"Lab" Joint Cross Service Working Group
INSTALLATION WORKSHEET
HANSCOM AFB, MA

PURPOSE: To document answer to question 3.2.1

SOURCE: Installation Worksheets from: 1. Civilian Personnel - Ms Alicyn Cerulli, ESC/DPC, DSN 478-2685, from Civilian PDS-C, 30 Sep 93. 2. Military Personnel - Capt William Hampton, ESC/DPM, DSN 478-3099, used Unit OPR/EPR Rosters, 12 May 94. 3. SETA/TEMS - Ms. Janis Patterson using information obtained directly from Contractors to TEMS IV Contract as of May 94. 4. MITRE - Mr. Richard K. Rodgers, MITRE D010, DSN 478-5890, MITRE Extension 2536, using MITRE personnel database as of 30 Sep 93, located in MITRE department D010. All four sources used the ESC/CSB provided, Lt Gen Franklin decided upon, ESC CSF Definitions and Program Breakout. Unless specified otherwise above, data is attached to the source's organizational worksheet in ESC/CSB files, Bldg. 1606, Command Suite.

METHOD: Each source provided an installation worksheet with their respective information. On-site and off-site information was tallied to reach totals. The source dates of military personnel, SETA/TEMS and MITRE information is May 94 versus 30 Sep 93. The best data available was used.

CONCLUSION:

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
CSF: Airborne				
Technical	179	268	221	302
Management (Supv)	186	203	55	0
Other	673	318	92	163

Note: Includes only ESC support located within Bedford facility; i.e., excludes support at field operating locations.

Types of personnel	Off-Site Number of Personnel			
	Government		Off-Site FFRDC	Off-Site SETA
	Civilian	Military		
CSF: Airborne				
Technical			697	279
Management (Supv)			171	0
Other			288	150

Note: Includes only ESC support located within Bedford facility; i.e., excludes support at field operating locations.

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
CSF: Fixed Ground Based				
Technical	7	6		75
Management (Supv)	3	6		0
Other	17	17		41

Note: Includes only ESC support located within Bedford facility; i.e., excludes support at field operating locations.

Item 2
ISS 1-4

Types of personnel	Off-Site Number of Personnel			
	Government		Off-Site FFRDC	Off-Site SETA
CSF: Fixed Ground Based	Civilian	Military		
Technical			14	(5)
Management (Supv)			4	0
Other			6	(2)

Note: Includes only ESC support located within Bedford facility; i.e., excludes support at field operating locations.

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
CSF: Mobile Systems	Civilian	Military		
Technical	1	1		(10)
Management (Supv)	0	0		0
Other	3	2		(6)

Note: Includes only ESC support located within Bedford facility; i.e., excludes support at field operating locations.

Types of personnel	Off-Site Number of Personnel			
	Government		Off-Site FFRDC	Off-Site SETA
CSF: Mobile Systems	Civilian	Military		
Technical			5	(0)
Management (Supv)			1	0
Other			3	0

Note: Includes only ESC support located within Bedford facility; i.e. excludes support at field operating locations.

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

Preparer: Janet M Polaneczk Date: 29 Sep 94

JANET POLANECZKY, CAPT, USAF, ESC/CSB, DSN 478-7859
 Typed Name, Rank, Office Symbol, DSN Number

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

MAJCOM Reviewer: Peggy S Rutter Date: 3 Oct 94

Peggy S. Rutter, GS-13, HQ AFMC/DPCF, DSN 787-4136
 Typed Name, Rank, Office Symbol, DSN Number

**"Lab" Joint Cross Service Working Group
INSTALLATION WORKSHEET
HANSCOM AFB, MA**

PURPOSE: To document answer to question 3.3.1.1

SOURCE: Installation Worksheets from: 1. Civilian Personnel - Ms Alicyn Cerulli, ESC/DPC, DSN 478-2685, from Civilian Personnel Data System (PDS-C), 30 Sep 93, disc in file for question 3.2.1. 2. Military Personnel - Capt William Hampton, ESC/DPM, DSN 478-3099, used Military Personnel System Printout, 5 May 94 and Unit OPR/EPR Rosters, 12 May 94, in file for question 3.2.1. 3. SETA/TEMS - Ms. Janis Patterson using information obtained directly from Contractors to TEMS IV Contract as of May 94, attached. 4. MITRE - Mr. Richard K. Rodgers, MITRE D010, DSN 478-5890, MITRE Extension 2536, using MITRE Corporate Human Resources database as of 30 Sep 93, located in MITRE department D010. All four sources used the ESC/CSB provided, Lt Gen Franklin decided upon, ESC CSF Definitions and Program Breakout.

METHOD: Each source provided an installation worksheet with their respective information. Information was distinguished by on/off-site, and CSF. Technical, Management and other category personnel were lumped together by CSF. Civilian, Military, SETA/TEMS and MITRE personnel data are presented separately. ESC accomplishes Engineering Development.

CONCLUSION:

"LAB" Airborne	Fiscal Year 1993 Actual On-Site			
	Civilian	Military	FFRDC	SETA
Science & Technology				
Engineering Development	1038	789	368	465
In-Service Engineering				

"LAB" Airborne	FFRDC/SETA Fiscal Year 1993 Actual Off-Site			
	Civilian	Military	FFRDC	SETA
Science & Technology				
Engineering Development			1156	429
In-Service Engineering				

Note: Workyears include only ESC support located within MITRE-Bedford facility; i.e., excludes support at field operating locations.

"LAB" Fixed Ground	Fiscal Year 1993 Actual On-Site			
	Civilian	Military	FFRDC	SETA
Science & Technology				
Engineering Development	27	29	0	116
In-Service Engineering				

ESC STAFF
 (FUNCTIONALS)

Type Space	Owned	Leased	MITRE
General Office Space (SF)	104,934		
Laboratory Specific (SF)			
Other(SF)			
Total:	104,934		

Program Funds | Not Applicable

Main Program: Support Two-Letter Program Offices
 FUNCTIONALS: Logistics (AL)
 Acquisition Civil Engineering (CE)
 Engineering (EN)
 Intelligence (IN)
 Acquisition Judge Advocate (JA)

647 ABG - CLINIC - BOS -
PHILLIPS LAB
(Support)

<u>ORGANIZATION</u>	<u>GOV</u>
647 Air Base Group	682
Hanscom Clinic	141
Base Operations Support (BOS)	228
Phillips Lab *	445

NOTE: This chart provides number of personnel assigned for support of Hanscom AFB. There are no MITRE or SETA/TEMS assigned to these support organizations.

* Phillips Lab is a tenant unit on base, however, they do provide support in some areas.

~~ESC STAFF & 647 ABG-~~
 - CLINIC - BOS - PHILLIPS LAB
 (Support Organizations)

Type Space	Owned	Leased	MITRE
General Office Space (SF)	206,860		
Laboratory Specific (SF)			
Other(SF)	1,096,295		
Total:	1,303,155		

Program Funds: Not Applicable

Main Programs: Support of two letter organizations in all aspects of base support.

Command and Control (AV)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	31		51	70	16
Logistics	16			7	
Contracting	23				
Financial	33			6	
Legal					
Program	60				
Management					
Admin & Other	60			16	
Totals	223		51	99	16

15

AV

Type Space	Owned	Leased	MITRE
General Office Space (SF)	74,661		31,397
Laboratory Specific (SF)			4,614
Other(SF)			
Total:	74,661		36,011

Program Funds	348.56 M
----------------------	-----------------

Main Programs:

- Contingency Theater Automatic Planning System
- AMC C2 Information Processing System
- Base & Installations Security Systems
- Simulator Wargaming & Modeling Program
- Super Minicomputer
- Combat Weather Systems

2B and 2C

Airborne Warning and Control Systems (AW)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA/ITEMS	OFF-SITE SETA/ITEMS
Engineering	25	159		37	
Logistics	9			5	
Contracting	18				
Financial	20			8	
Legal					
Program	37				
Management					
Admin & Other	22			13	
Totals	131	159		64	

AW

Type Space	Owned	Leased	MITRE
General Office Space (SF)	78,842		
Laboratory Specific (SF)			
Other(SF)			
Total:	78,842		

Program Funds	724.0 M
---------------	---------

- Main Programs:
- E-3 Block 30/35
 - E-3 Radar Systems Improvement
 - E-3 HAVE QUICK A-NETS
 - E-3 Special Projects
 - E-3 Theater Missile Defense
 - E-3 Communication Improvements
 - Japanese 767 AWACS

2B and 2C

ENGINEERING (EN)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA/TEMS	OFF-SITE SETA/TEMS
Engineering	6			6	
Logistics					
Contracting					
Financial	3				
Legal					
Program Management	5				
Admin & Other	10				
Totals	24			6	

Note: Within EN there are three small programs. This chart and the following break them out. These numbers have been included in the ESC Staff total numbers.

AL

EN

Type Space	Owned	Leased	MITRE
General Office Space (SF)	7,500		
Laboratory Specific (SF)	2,200		
Other(SF)			
Total:	9,700		

Program Funds	82.45 M
---------------	---------

Main Programs:

- PRISM: Portable, Reusable, Integrated Software Module
- CARDS: Central Archive for Reusable Defense Software
- SEI: Software Engineering Institute

20

International Program Systems (IA)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	13		35		11
Logistics	4				
Contracting	8				
Financial	12				
Legal					
Program Management	10				
Admin & Other	14				
Totals	61		35		11

HA

IA

Type Space	Owned	Leased	MITRE
General Office Space (SF)			14,124
Laboratory Specific (SF)			1,460
Other(SF)			
Total:			15,584

Program Funds | 6.5 M

Main Programs:

- Japanese Base Air Defense Ground Environment
- Canadian Frigate Software Analysis
- Colombian Air Surveillance System
- Egyptian High Frequency Scramblers
- Hungarian IFF/SIF System

2B AND 2C

Intelligence and C³CM Systems

(IC)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	30		139		74
Logistics	15				10
Contracting	15				
Financial	16				14
Legal					
Program	57				
Management					
Admin & Other	23				9
Totals	156		139		107

23

IC

Type Space	Owned	Leased	MITRE
General Office Space (SF)			38,007
Laboratory Specific (SF)			7,246
Other(SF)			3,295
Total:			48,548

Program Funds | 168.2 M

Main Programs:

- Sentinel Byte
- Combat Intelligence System
- Automated Message Handling System
- Joint Service Imagry Processing System
- Multi Mission Advanced Tactical Terminal (MATT)

2BAND2C

Peace Shield Systems (IS)

	GOV	ON-SITE FFRDC	OFF-SITE FFRDC	ON-SITE SETA /TEMS	OFF-SITE SETA/TEMS
Engineering	26		73		36
Logistics	7				11
Contracting	6				
Financial	14				4
Legal					
Program	13				
Management					
Admin &	23				30
Other					
Totals	89		73		81

IS

Type Space	Owned	Leased	MITRE
General Office Space (SF)			21,099
Laboratory Specific (SF)			176
Other(SF)			
Total:			21,275

Program Funds	426.4 M
---------------	---------

Main Programs: Royal Saudi Air Force C3 System
AWACS Interface System (AIS)

FOR OFFICIAL USE ONLY - BRAC Data
ASC/WPAFB (Acquisition & SPOs) Input -- Revised 9 Sep 94

PURPOSE: To document answer to Lab Questionnaire Question 3.4.1 --
Major Equipment and Facilities.

SOURCE: Don Beam, 645 ABW/CECX, 787-4804, WIMS (Work Information Management System) Replacement Cost Menu Item: MPY 1994, USAF Real Property Inventory Change Report HAAF-LEE (AR) 7115, 6 Jun 94
Maria Zimmer 645 CCSG/SCSA, 785-4832, Document S-Ss-21014A, 7 June 1994

METHOD: Building/Facilities used by ASC programs were defined (Attachment 3.4.1 B). Building areas were mapped to CSFs (see Question 3.5.1), and civil engineering provided calculations for replacement costs per building. Replacement Cost = (Initial Cost + Capital Investment) times (x) Inflation Factor for Original Year of Construction [(IC + CI) x IF_{OYC}]. ASC/CY then calculated the building replacement costs for each CSF by determining what percentage of the each building is used by each program and then by each program CSF and distributing the replacement cost accordingly.

Since this is all administrative space, there are no special facilities requiring photographs for inclusion/attachment to this document.

The computer replacement costs were provided by the Computer Center. Since ASC uses approximately 25% of these resources, we used 25% of the replacement cost.

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CONCLUSION: See Table and Notes.

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost (\$K)****
		DOD	Federal Gov't	U. S.	
Air Vehicles -Fixed	Total Air Vehicles -Fixed				(898,032.2)
-Structures	Acq Mgmt Offices				620,984.0
	Acq Mgmt Offices*				* 1,035.0
	Special Computer Support				** 10,250.0
	Total Structures				632,269.0
- Avionics	Acq Mgmt Offices				141,929.4
	Acq Mgmt Offices*				* 1,104.0
	Total Avionics				143,033.4
- Propulsion	Acq Mgmt Offices				13,855.2
	Acq Mgmt Offices*				* 207.0
	Total Propulsion				14,062.2
- Flight Subsystems	Acq Mgmt Offices				104,113.6
	Acq Mgmt Offices*				* 4,554.0
	Total Flight Subsystems				108,667.6
Weapons -Cruise Missile	Acq Mgmt Offices				34,560.0
Total					***932,612.2

* Not Government-owned Space

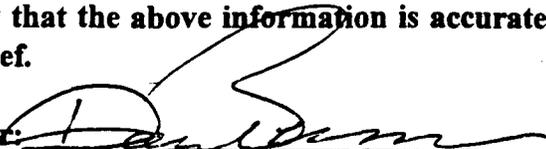
** Special Computer Replacement Cost. The ASC Computer Center supports ASC and has some unique capabilities. These systems include INTEL IPSC-860 Model 8, CRAY XMP/216, ADI Real Time Station System, Paragon XP/S-15, and Convex System. These systems are located in Building 676, Area B. Although this is not an ASC SPO building nor are the computer systems owned by the SPOs, these computer systems support ASC SPOs approximately 25% of their operating time. The exact amount of support to individual CSFs cannot be tracked. They are used for system performance assessment, system analysis, survivability analysis, etc. The full replacement cost for these computer systems was allocated to the Structures CSF and is shown in the table.

*** These replacement costs do not cover Acquisition Management Complex (AMC) I and IIb which are currently under construction, but do include non-government-owned space.

**** ASC/CY used 645ABW/CECX replacement cost data for each building. The table shows resultant 100% building replacement costs by CSF. Attachment 3.4.1 B shows the percentage of ASC acquisition space allocated by buildings to each CSF. It also indicates the percentage allocated for non-ASC acquisition space. Non-ASC space is that occupied by various tenant organizations. Space allocated to ASC acquisition activities represents 65% of the total square footage for the buildings. (See Attachment 3.4.1 B.)

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ASC/WPAFB (Acquisition & SPOs) Input -- Revised 9 Sep 94

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

Prepared: 
Don Beam, GS-12, Real Estate Management Officer

Date: 16 SEPT 94

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

MAJCOM Reviewer: 

Date: 11 Oct 94

Joe Bratford, 65-14, AFMC/DRMP, 787-5591

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Acquisition Building	ASC Gross Square Footage	Total Square Footage	Total Replacement Cost	% Avionics of ASC space	% Propulsion of ASC Space	% Structures of ASC Space	% Subsystems of ASC Space	% Weapons of ASC Space	% Non-ASC Space
8	30008	37791	8559	0.0%	0.0%	79.4%	0.0%	0.0%	20.6%
11	46657	95217	32659	0.0%	0.0%	22.1%	27.0%	0.0%	51.0%
11A	67788	93975	37111	0.0%	0.0%	72.1%	0.0%	0.0%	27.9%
12	75636	76355	39049	8.9%	1.0%	86.2%	3.0%	0.0%	0.9%
14	85649	107269	26858	0.0%	0.0%	16.0%	0.0%	63.9%	20.2%
15	18731	107500	22711	0.0%	0.0%	17.4%	0.0%	0.0%	82.6%
16	256677	293527	277740	30.6%	1.7%	37.6%	17.5%	0.0%	12.6%
17	38067	39285	15652	24.2%	24.2%	24.2%	24.2%	0.0%	3.1%
18A/D	5080	63972	1175	0.0%	0.0%	7.9%	0.0%	0.0%	92.1%
20	43691	132433	105809	0.0%	0.0%	33.0%	0.0%	0.0%	67.0%
22	37817	155190	43543	0.0%	0.0%	24.4%	0.0%	0.0%	75.6%
28	125269	127197	32047	19.7%	0.0%	64.0%	14.8%	0.0%	1.5%
28A	4617	4617	1814	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
32	73213	75254	37940	43.8%	4.9%	34.1%	14.6%	0.0%	2.7%
39	18319	18319	11540	3.0%	1.0%	95.0%	1.0%	0.0%	0.0%
46	63011	63574	4418	75.3%	0.0%	23.8%	0.0%	0.0%	0.9%
50	50234	52298	7272	47.1%	9.6%	30.7%	8.6%	0.0%	3.9%
50A	7027	7027	5058	49.0%	10.0%	32.0%	9.0%	0.0%	0.0%
52	63678	64878	12525	19.6%	5.9%	68.3%	4.3%	0.0%	1.8%
56	67999	79137	25138	0.0%	0.0%	85.9%	0.0%	0.0%	14.1%
57	72389	73803	27939	0.0%	0.0%	39.2%	58.9%	0.0%	1.9%
89	6000	178990	44205	0.0%	0.0%	3.4%	0.0%	0.0%	96.6%
125	106912	282201	55707	0.0%	0.0%	37.9%	0.0%	0.0%	62.1%
126	34967	34967	5892	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
156	25535	25535	7452	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
192	12594	12594	8426	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
193	12261	12261	2986	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
195	15461	15461	3363	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%
458	512	512	126	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
485	61794	61794	7628	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
2041	19500	19500	1560	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
2042	19500	19500	1560	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
off base	61000	61000	6900	16.0%	3.0%	66.0%			0.0%

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ASC/WPAFB (Acquisition & SPOs) Input -- Revised 13 Aug 94

PURPOSE: To document answer to Lab Questionnaire Question 3.5.1 -- **Laboratory Facilities.**

SOURCE: Don Beam, 645 ABW/CECX, 787-4804, WIMS Replacement Cost Menu Item: MPY 1994 (Attachment 3.4.1).

METHOD: Building/Facilities used by ASC programs were defined. The square feet per building was proportioned to the number of people in the program offices in each building. Functionals and staff offices were included in Structures. Excess space was determined by using 135 square feet per workstation based on available workstations as defined in Question 3.5.1.1. Square footage for Acquisition Management Complex (AMC) I and IIb are included in excess broken out with the same proportions as occupied space. It is included separately because AMC I and IIb are under construction and not yet occupiable.

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CONCLUSION: All space for acquisition programs is considered administrative. There are 17 KSF SCIF space. See table with notes.

Common Support Function	Facility or Equipment Description	Type of Space	Space Capacity (KSF)		
			Current	Used	Excess****
AIR VEHICLES - Avionics Govt. New Construction Off Base (C-17)	Acq Mgmt Offices	Administrative	498.7 8.5*	498.7 8.5*	29.1** 33.0***
AIR VEHICLES - Propulsion Govt. New Construction Off Base (C-17)	Acq Mgmt Offices	Administrative	45.2 1.8*	45.2 1.8*	7.5** 8.4***
AIR VEHICLES - Structures Govt. New Construction Off Base (C-17)	Acq Mgmt Offices	Administrative	1243.3 8.0*	1243.3 8.0*	135.4** 153.2***
AIR VEHICLES -Flight Subsystems Govt. New Construction Off Base (C-17)	Acq Mgmt Offices	Administrative	108.4 35.7*	108.4 35.7*	8.3** 9.4***
WEAPONS - Cruise Missile New Construction	Acq Mgmt Offices	Administrative	62.6	62.6	9.7** 11.0***

* Not government-owned Space

** Space is not contiguous and cannot be captured without movement of personnel. This excess space is based on 3.5.1.1 using 135 Sq Ft/workstation.

*** This excess space is under construction. When the space is occupiable, it will be capable of accommodating any CSF.

**** This total ASC excess capacity is 405,000 square feet (190,000 built and 215,000 under construction for AMC I and IIb) which can be apportioned to any of the above CSFs with personnel moves and associated reconstruction funding.

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

Robert Marcischak for
Preparer: _____ Date: 13 Aug 94
ROBERT MARCISCHAK, Proc Mgr, GS-13
DON BEAM, REAL ESTATE MGR, GS-12

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

MAJCOM Reviewer: *Joe Brafford* Date: 17 Aug 94
Joe Brafford, GS-14, AFMC/XRMP, 787-5591

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ASC/WPAFB (Acquisition & SPOs) Input -- Revised 13 Aug 94

PURPOSE: To document answer to Lab Questionnaire Question 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.

SOURCE: Don Beam, 645 ABW/CECX, 787-4804, WIMS Replacement Cost Menu Item: MPY 1994 (Attachment 3.4.1).

METHOD: Building/Facilities used by ASC programs were defined (Attachment 3.4.1 and Attachment 3.4.1A). These building were mapped to CSFs (Attachment 3.0), and civil engineering provided calculations for replacement cost (i.e., the differential between the number of people occupying a given facility and the number of workstations available via a "snapshot" of said facility's configuration provides the number of "uncapturable" excess workstations.) These calculations were performed for an AFMC-21 exercise, and the ASC (Acquisition) portion was extracted that shows an ASC "excess" of 1400 (non-contiguous) workstations. Replacement Cost = (Initial Cost + Capital Investment) times (x) Inflation Factor for Original Year of Construction [(IC + CI) x IF_{OYCL}].

ASC has current construction programs underway for 2 new administrative buildings -- AMC I and AMC IIb. With construction completion of AMC I in 1994 with 107,000 square feet additional space and AMC IIb in 1997 with 108,000 square feet, a total of 215,000 square feet "excess" is associated with these new building coming on line. ASC/CY broke out this additional space into CSFs using the same overall average as current ASC building usage. This excess space was divided by 135 square feet per workstation (as provided by 645th ABW/CECX).

CONCLUSION: See Table. Major facility modification, i.e., MILCON renovation, is required to capture available facility space for 1400 workstations, since this is non-contiguous space. The excess workstation was calculated as part of AFMC-21. All these workstations are available to support any of the CSFs at ASC. ASC's program offices occupy space (building) that include all CSFs associated with the program. Excess workstations are based on current personnel occupancy in AFMC-21 data. The breakout into CSFs is done by spreading the additional space equally according to manpower. AMC I and IIb are included in excess broken

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out with the same proportions as occupied space. It is included separately because AMC I and IIb are under construction and not yet occupiable. When this space is occupiable, it will be capable of accommodating any CSF.

Common Support Function	Facility or Equipment Description	Type of Space	Excess workstations
AIR VEHICLES - Fixed - Avionics	Acq Mgmt Offices	Administrative	Current: 215 AMC I and IIb: 244*
AIR VEHICLES - Fixed - Propulsion	Acq Mgmt Offices	Administrative	Current: 55 AMC I and IIb: 62*
AIR VEHICLES - Fixed - Structures	Acq Mgmt Offices	Administrative	Current: 997 AMC I and IIb: 1135*
AIR VEHICLES - Fixed - Flight Subsystems	Acq Mgmt Offices	Administrative	Current: 61 AMC I and IIb: 70*
AIR VEHICLES - Fixed Total	Acq Mgmt Offices	Administrative	Current: 1328 AMC I and IIb: 1511* Total: 2839
WEAPONS -Cruise Missiles	Acq Mgmt Offices	Administrative	Current: 72 AMC I and IIb: 82* Total: 154
Total	Acq Mgmt Offices	Administrative	Current: 1400 AMC I and IIb: 1593* Total: 2993

* AMC I and AMC IIb under construction will provide additional 1593 excess workstations when completed. Their projected usage was apportioned using current overall ASC CSF usage.

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

Preparer: Robert Marcischak
ROBERT J. MARCISCHAK, Prog Mgr, GS-13

Date: 13 Aug 94

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

MAJCOM Reviewer: Joe Brattford
Joe Brattford, GS-14,

Date: 17 Aug 94

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ASC/WPAFB (Acquisition & SPOs) Input - Revised 13 Aug 94

PURPOSE: To document answer to Lab Questionnaire Question 3.5.1.2 -- **If there is capacity to absorb additional workyears, how many additional workyears can be supported?**

SOURCE: Don Beam, 645 ABW/CECX, 787-4804, WIMS Replacement Cost Menu Item: MPY 1994 (Attachment 3.4.1).

METHOD: Using the method described in 3.5.1.1, we calculated capacity to absorb additional workyears. We used 1 workstation = 1 workyear.

CONCLUSION: See Question 3.5.1.1 and Table.

There may be 1400 workstations available to support any of the CSFs at ASC. Assuming one workstation per person, that means 1400 workyears could be supported currently. However, this is currently non-contiguous space. With the addition of AMC I and IIb, we will have an additional 1593 workstations which could be used for any CSF. See Table.

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Common Support Function	Facility or Equipment Description	Type of Space	Excess workyears
AIR VEHICLES - Fixed - Avionics	Acq Mgmt Offices	Administrative	Current: 215 AMC I and IIb: 244*
AIR VEHICLES - Fixed - Propulsion	Acq Mgmt Offices	Administrative	Current: 55 AMC I and IIb: 62*
AIR VEHICLES - Fixed - Structures	Acq Mgmt Offices	Administrative	Current: 997 AMC I and IIb: 1135*
AIR VEHICLES - Fixed - Flight Subsystems	Acq Mgmt Offices	Administrative	Current: 61 AMC I and IIb: 70*
AIR VEHICLES - Fixed Total	Acq Mgmt Offices	Administrative	Current: 1328 AMC I and IIb: 1511* Total: 2839
WEAPONS -Cruise Missiles	Acq Mgmt Offices	Administrative	Current: 72 AMC I and IIb: 82* Total: 154
Total	Acq Mgmt Offices	Administrative	Current: 1400 AMC I and IIb: 1593* Total: 2993

* AMC I and AMC IIb under construction will provide additional 1593 excess workyears when completed. Their projected usage was apportioned using current overall ASC CSF usage.

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

Preparer: Robert J. Marcischak Date: 13 Aug 94
 ROBERT J. MARCISCHAK, Prog Mgr, GS-13

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

MAJCOM Reviewer: Joe Brattford Date: 17 Aug 94
 Joe Brattford, GS-14, AFMC/XRMP, 787-5591

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PURPOSE: To document answer to Lab Questionnaire Question 3.5.1.3 -- For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alteration projects programmed in the FY95 PBS.

SOURCE: Don Beam, 645 ABW/CECX, 787-4804, WIMS Replacement Cost Menu Item: MPY 1994 (Attachment 3.4.1) and WPAFB MILCON Program Listing, 24 Mar 94.

METHOD: Examination of WPAFB MILCON Program (XXXX) operated by 645 ABW/CE.

CONCLUSION: There are no current MILCON projects for existing acquisition office space in FY95. There is the Acquisition Management Complex (AMC) programmed to develop new office space in Area B in a 10 phase approach. Phases 1 and 2 are already under way. Future updates include:

- *FY96: Bld 11A, 60,000 Sq Ft renovation \$6.0M
- *FY97: Bld 11A, 34,500 Sq Ft renovation \$3.5M
- **FY97: AMC III, 108,000 Sq Ft (new) \$18.5M

*The 94,500 square feet \$9.3M renovation will be done entirely in the Air Vehicles -- Fixed Structures CSF. Personnel will be temporarily relocated during renovation.

** AMC Phase 3 can support any CSF. Apportioning AMC III into CSFs would result in the following "new" space:

CSF	Square Feet	\$M
Air Vehicles -- Fixed Total	(102,469)	(17.553)
Avionics	16,565	2.838
Propulsion	4,237	0.726
Structures	76,944	13.180
Flight Subsystems	4,723	0.809
Weapons -- Cruise Missile	5,531	0.947
ASC Total	108,000	18.500

Table only includes AMC phase 3, not renovations.

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

Preparer: Robert Marcischak
ROBERT J. MARCISCHAK, Prog Mgr, GS-13

Date: 13 Aug 94

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

MAJCOM Reviewer: Joe Brafford

Date: 17 Aug 94

Joe Brafford, AFMC/XRMP, GS-14, 7875591

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MEMO TO: HQ AFMC/XPX
Sam Rizzotte/Tom Koepnick

4 Oct 94

FROM: OC-ALC/FMPPM, Carol Cloe/Marilyn Baggett

SUBJECT: Results of Local AFAA Audit of OC-ALC Input to BRAC 95
Lab Data Call

1. The local auditor for the AFAA, Jim Pearl, DSN 339-5669, completed an audit of the OC-ALC input to the BRAC 95 Lab Data Call on 30 Sep 94. The auditor advised that in many cases HQ USAF did not have copies of the worksheets OC-ALC had previously corrected and faxed to HQ AFMC/XPX. Therefore, copies of all worksheets in question are attached for resubmission to HQ AFMC/XPX and subsequent transmittal to HQ USAF to allow for correction of data at both locations. The auditor noted the following discrepancies:

a. 3.1.5: Minor word change - HQ USAF/RT does not have the Conclusion broken out into two separate answers (i.e., Common Support Functions for the Weapon System - Cruise Missile and Common Support Functions for the Air Vehicles - Fixed Wing: Structures, Propulsion, Avionics, and Flight Subsystems).

b. 3.2.1: Minor word change - The following date should be included for the Extended Unit Manpower Document under "Source": 3 May 94.

c. 3.2.4.1: Minor word change - HQ USAF/RT does not have the latest worded Conclusion (i.e., RT has a previous input which states "None". The latest Conclusion states "OC-ALC has no patents awarded or patent disclosures.").

d. 3.2.4.2: Minor word change - HQ USAF/RT does not have the Conclusion broken out by Common Support Function (CSF).

e. 3.3.1.1: Minor word change - The following date should be included for the Extended Unit Manpower Document under "Source": 3 May 94.

f. 3.3.2.1: Minor word change - FY95 was estimated based on current funding and FY96 - FY97 were straightlined based on FY95.

g. 3.3.2.2: Minor word change - FY95 was estimated based on current funding and FY96 - FY97 were straightlined based on FY95.

h. 3.5.1.3: Minor word change - Reference to the branch organization "TIET" should be removed from the Conclusion. The Conclusion should read: "OC-ALC has no Laboratory Facilities."

2. Please forward a copy of these changes to HQ USAF to preclude any further auditing problems. Any questions/comments should be addressed to OC-ALC/FMPPM, Carol Cloe/Marilyn Baggett, DSN 339-5195, Fax DSN 339-2887.

94-11-16 15:16 RCVD

Item 4
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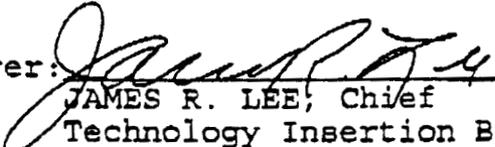
JOINT CROSS SERVICE GROUP (JCSG) LABS

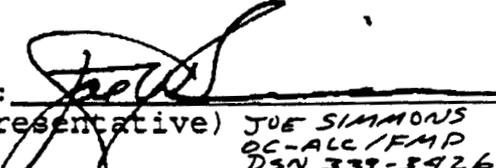
DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.1.5
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040
METHOD: Review with OC-ALC Product Directorates
CONCLUSION: There are no distinctive Proximity to Mission-Related Organizations for the Common Support Functions for the Weapon System - Cruise Missile. Work accomplished in support of these Common Support Functions can be accomplished at any location.

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

Preparer:  Date: 26 July 1994
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI DSN 336 3040

Reviewer:  Date: 28 JUL 1994
(FMP Representative) JOE SIMMONS
OC-ALC/FMP
DSN 339-3426

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

MAJCOM Reviewer:  Date: 5 AUG 1994
DONALD L. LUCHT GM-19
HQ AFMC/L612E
DSN 787-5610

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DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma

PURPOSE: To document answer to Question Number 3.1.5

SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040

METHOD: Review with OC-ALC Product Directorates

CONCLUSION: There are no distinctive Proximity to Mission-Related Organizations for the Common Support Functions for the Air Vehicles--Fixed Wing: Structures, Propulsion, Avionics, and Flight Subsystems. Work accomplished in support of these Common Support Functions can be accomplished at any location.

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

Preparer: *James R. Lee* Date: *24 July 94*
 JAMES R. LEE, Chief
 Technology Insertion Branch
 Scientific & Technical Div/TIET
 DSN 336-3040

Reviewer: *Joe Simmons* Date: 28 JUL 1994
 (FMP Representative) JOE SIMMONS
 OC-ALC/FMP
 DSN 334-3426

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

MAJCOM Reviewer: *Donald L. Lumbert* Date: 13 OCT 94
 DONALD L. LUMBERT, GM-14, HRAFM/ILGAE
 DSN 787-5600

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DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.1
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/4, dated 3 May 94.
METHOD: Review with OC-ALC/MO (Manpower Office) FLK 401744
CONCLUSION: Common Support Functions: Air Vehicles - Structures

TYPES OF PERSONNEL	NUMBER OF PERSONNEL		ON-SITE PFRDC	ON-SITE SETA
	GOVERNMENT			
	CIV	MIL		
Technical	7	1	0	0
Management (Supv)	1	0	0	0
Other	0	0	0	0

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

Preparer: James R. Lee Date: 26 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: Tom L. Kagan Date: 14 Aug 94

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JOINT CROSS SERVICE GROUP (JCSG) LABS
DATA CALL
CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.1
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/4; *dated 3 May 94*
METHOD: Review with OC-ALC/MO (Manpower Office) *TLC 40144*
CONCLUSION: Common Support Functions: Air Vehicles - Propulsion

TYPES OF PERSONNEL	NUMBER OF PERSONNEL		ON-SITE PFRDC	ON-SITE SETA
	GOVERNMENT			
	CIV	MIL		
Technical	N	Y	0	0
Management (Supv)	1	0	0	0
Other	0	0	0	0

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

Preparer: *James R. Lee* Date: *24 July 94*
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: *[Signature]* Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: *Thomas L. Kogin* Date: *14 Aug 94*

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DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma

PURPOSE: To document answer to Question Number 3.2.1

SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/4, dated 3 May 94

METHOD: Review with OC-ALC/MO (Manpower Office)

CONCLUSION: Common Support Functions: Air Vehicles - Flight Subsystems

TLK 40d44

TYPES OF PERSONNEL	NUMBER OF PERSONNEL		ON-SITE FFRDC	ON-SITE SETA
	GOVERNMENT			
	CIV	MIL		
Technical	2	1	0	0
Management (Supv)	1	0	0	0
Other	0	0	0	0

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

Preparer: JAMES R. LEE Date: 24 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: Thomas L. Koepnick Date: 14 Aug 94
THOMAS L. KOERNICK AFMC/XPX 787-2622

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DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.1
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/4, dated 3 May 94
METHOD: Review with OC-ALC/MO (Manpower Office) TLX 40.144
CONCLUSION: Common Support Functions: Air Vehicles - Fixed Wing Avionics

TYPES OF PERSONNEL	NUMBER OF PERSONNEL			
	GOVERNMENT		ON-SITE FFRDC	ON-SITE SETA
	CIV	MIL		
Technical	2	1	0	0
Management (Supv)	1	0	0	0
Other	0	0	0	0

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

Preparer: James R. Lee Date: 26 July 94
JAMES R. LEE, Chief / TIET
Technology Insertion Branch
Scientific & Technical Div/TI
DSN 336-3040

Reviewer: Joe Simmons Date: 28 JUL 1994
(FMP Representative) JOE SIMMONS
OC-ALC/FMP
DSN 336-3426

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

MAJCOM Reviewer: Don Lucht Date: 29 AUG 94
DON LUCHT
HQ AFMC /L6PLT
DSN 787-5610
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DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.1
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/4, dated 3 May 94
METHOD: Review with OC-ALC/MO (Manpower Office) TLK 400144
CONCLUSION: Common Support Functions: Weapons System - Cruise Missile

TYPES OF PERSONNEL	NUMBER OF PERSONNEL		ON-SITE FFRDC	ON-SITE SETA
	GOVERNMENT			
	CIV	MIL		
	N	Y		
Technical	1	0	0	0
Management (Supv)	0	0	0	0
Other	0	0	0	0

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

Preparer: James R. Lee Date: 26 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: Thomas L. Koenig Date: 14 Aug 94
THOMAS L. KOENIG AFMC/XPX 787-2622

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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.4.1
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040
METHOD: Review with TAFB Public Affairs Office and JAG Office
CONCLUSION: OC-ALC has no patents awarded or patent disclosures.

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

Preparer: James R. Lee Date: 2 Aug 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: Russell H Blasing Date: 8/2/94
(FMP Representative) RUSSELL H BLASING
OC-ALC/FMP
DSN 337-3426
I certify that the above information is accurate and complete to the best of my knowledge and belief.

MAJCOM Reviewer: Donald L Lucht Date: 5 AUG 94
DONALD L LUCHT, GM-14,
HQ AFMC/LGPE
DSN 787-5610

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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.4.2
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040
METHOD: Review with TAFB Public Affairs Office and JAG Office
CONCLUSION: Common Support Function: Air Vehicle - Structures

CSF	NUMBER PUBLISHED	PAPER TITLES (LIST)
as listed in 3.0	1	The DRAIR Advisor: A Knowledge-Based System for Materiel Deficiency Analysis by Jerry Ferguson
	1	An Introduction to the S Spin Hash Function: Making More Out of the Multidimensional Array by Ty Coburn
TOTAL	2 <i>no 94</i>	

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

Preparer: *James R. Lee* Date: *24 July 94*
JAMES R. LEE, Chief/TIET
Technology Insertion Branch
Scientific & Technical Div/TI DSN 336-3040

Reviewer: *[Signature]* Date: 28 JUL 1994
(FMP Representative) *JUE SIMMONS*
OC-ALC/FMP
DSN 336-3426

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

MAJCOM Reviewer: *[Signature]* Date: *5 AUG 94*
DONALD L LUCHT, C/M-11, HQ AFMC/16PE, DSN 787-5610
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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.4.2
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040
METHOD: Review with TAFB Public Affairs and JAG Offices
CONCLUSION: Common Support Function: Air Vehicle -
Propulsion - None

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

Preparer: [Signature] Date: 24 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TIET
DSN 336-3040

Reviewer: [Signature] Date: 25 JUL 1994
(FMP Representative) JOE SIMMONS
CC-411/FMP
DSN 329-3426

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

MAJCOM Reviewer: [Signature] Date: 13 OCT 94
DONALD L. LUCHT, 6M-14,
HQ AF, MILGRAE, DSN 787-5610

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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.4.2
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040
METHOD: Review with OC-ALC Public Affairs and JAG Offices
CONCLUSION: Common Support Function: Weapon System - Cruise Missile - None

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

Preparer: [Signature] Date: 24 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TIET
DSN 336-3040

Reviewer: [Signature] Date: 29 JUL 1994
(FMP Representative) JOE SIMMONS
OC-ALC/FMP
DSN: 336-3436

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

MAJCOM Reviewer: [Signature] Date: 13 OCT 94
DONALD L LUEFT, GMM-14
HQ 4FAL/LOPE, 1767540

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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.4.2
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040
METHOD: Review with OC-ALC Public Affairs and JAG Offices
CONCLUSION: Common Support Function: Air Vehicle - Flight Subsystems - None

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

Preparer: James R. Lee Date: 26 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TIET
DSN 336-3040

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative) JOC Simmons
OC-ALC/FMP
DSN: 334-3436

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

MAJCOM Reviewer: [Signature] Date: 13 OCT 94
DONALD L. LUMPT, GM-14
HQA/MFM/LGPE, OAN 787-5210

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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.2.4.2
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040
METHOD: Review with OC-ALC Public Affairs and JAG Offices
CONCLUSION: Common Support Function: Air Vehicle - Avionics
- None

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

Preparer: James R. Lee Date: 26 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TIET
DSN-~~787~~ 336-3040

Reviewer: JDS Date: 28 JUL 1994
(FMP Representative) JDSIMMONS
OC-424FMP
DSN 339-3426

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

MAJCOM Reviewer: Donald Lucht Date: 13 OCT 94
DONALD LUCHT, GM-14,
#RAFM/LGPE
DSN 787-5610

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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.3.1.1
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/4, dated 3 May 94
METHOD: Review with OC-ALC/MO (Manpower Office) RL-40 Oct 94
CONCLUSION: Common Support Function: Air Vehicle - Structures

"LAB"	FISCAL YEAR 1993 ACTUAL			
	CIV	MIL	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	8	1	0	0

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

Preparer: James R. Lee Date: 26 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: Thomas L. Koppick Date: 14 Aug 94
THOMAS L. KOPEWICK AFMC/XPX 787-2622
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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma

PURPOSE: To document answer to Question Number 3.3.1.1

SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/H, dated 3 May 94,

TLK 40194

METHOD: Review with OC-ALC/MO (Manpower Office)

CONCLUSION: Common Support Function: Air Vehicle - Avionics

"LAB"	FISCAL YEAR 1993 ACTUAL			
	CIV	MIL	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	3	1	0	0

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

Preparer: James R. Lee Date: 26 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: Thomas L. Koepcke Date: 14 Aug 94
THOMAS L. KOEPCKE AFMC/XPX 787-2621

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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma

PURPOSE: To document answer to Question Number 3.3.1.1

SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/4, dated 3 May 94

METHOD: Review with OC-ALC/MO (Manpower Office) TLR 40344

CONCLUSION: Common Support Function: Air Vehicle - Propulsion

"LAB"	FISCAL YEAR 1993 ACTUAL			
	CIV	MIL	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	1	0	0	0

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

Preparer: James R. Lee Date: 24 July 94
 JAMES R. LEE, Chief
 Technology Insertion Branch
 Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
 (FMP Representative)

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

MAJCOM Reviewer: Thomas L. Koepnick Date: 14 Aug 94
 THOMAS L. KOEPNICK AFMC/XPX 781-2122
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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.3.1.1
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/4, dated 3 May 94
METHOD: Review with OC-ALC/MO (Manpower Office) TNK 40144
CONCLUSION: Common Support Function: Air Vehicle - Subsystems

"LAB"	FISCAL YEAR 1993 ACTUAL			
	CIV	MIL	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	3	1	0	0

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

Preparer: JAMES R. LEE Date: 26 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: Thomas L. Kopp Date: 14 Aug 94
THOMAS L. KOEPMER AFMC/XPX 781-2622

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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.3.1.1
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Extended Unit Manpower Document (UMD) 1993/4, dated 3 May 94, TLK 40 of 94
METHOD: Review with OC-ALC/MO (Manpower Office)
CONCLUSION: Common Support Function: Weapon Systems - Cruise Missile

"LAB"	FISCAL YEAR 1993 ACTUAL			
	CIV	MIL	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	1	0	0	0

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

Preparer: James R. Lee Date: 26 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: Thomas L. Koepnick Date: 14 Aug 94
THOMAS L. KOEPNICK AFMC/XFX 787-2622
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DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma

PURPOSE: To document answer to Question Number 3.3.2.1

SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040,
Represents MIPRs from U.S. Coast Guard for OC-
ALC/TIET Engineering Services

METHOD: Review with Directorate Financial Officers - FY95
was estimated based on current funding and FY96-97 ~~was~~

CONCLUSION: Direct Funding *straightlined based on FY95* TLK 40744

CSF	FY94	FY95	FY96	FY97
Air Vehicle				
-Structures	0	0	0	0
-Propulsion	0	0	0	0
-Avionics	250,000	1,700,000	1,700,000	1,700,000
-Subsystems	0	0	0	0

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

Preparer: *James R. Lee* Date: *26 July 94*
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: *[Signature]* Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: *Thomas L. Koepnick* Date: *14 Aug 94*
THOMAS KOEPMICK AFMC/XX 7872622

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DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma

PURPOSE: To document answer to Question Number 3.3.2.1

SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040,
Represents MIPRs from U.S. Coast Guard for OC-ALC/TIET Engineering Services

METHOD: Review with Directorate Financial Officers - FY95 was
estimated based on current funding and FY96-97 were straight-lined

CONCLUSION: Direct Funding based on FY 95. TLK 40094

CSF	FY94	FY95	FY96	FY97
Weapon System				
-Cruise Missile	0	0	0	0

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

Preparer: *James R. Lee* Date: *24 July 94*
 JAMES R. LEE, Chief
 Technology Insertion Branch
 Scientific & Technical Div/TI

Reviewer: *[Signature]* Date: 28 JUL 1994
 (FMP Representative)

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

MAJCOM Reviewer: *Thomas L. Koepnick* Date: *14 Aug 94*
 THOMAS KOEPNICK AFMC/XPY 787-2622

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DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.3.2.2
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040, Represents MIPRs from U.S. Coast Guard for OC-ALC/TIET Engineering Services
METHOD: Review with Directorate Financial Officers -FY 95 was estimated based on current funding and FY 96-97 were straightlined based on FY 95. TUR 4000
CONCLUSION: Other Obligation Authority

CSF	FY94	FY95	FY96	FY97
Air Vehicle				
-Structures	0	0	0	0
-Propulsion	0	0	0	0
-Avionics	275,000	2,000,000	2,000,000	2,000,000
-Subsystems	0	0	0	0

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

Preparer: James R. Lee Date: 24 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: Thomas L. Koepnick Date: 14 Aug 94
THOMAS L. KOEPNICK, AFMC/XPX 787-162
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DATA CALL

CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma

PURPOSE: To document answer to Question Number 3.3.2.2

SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040,
Represents MIPRs from U.S. Coast Guard for OC-
ALC/TIET Engineering Services

METHOD: Review with Directorate Financial Officers - FY 95 was
estimated based on current funding and FY96-97 were

CONCLUSION: Other Obligation Authority *straightlined Dascelon FY 95*

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CSF	FY94	FY95	FY96	FY97
Weapon System				
-Cruise Missile	0	0	0	0

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

Preparer: James R. Lee Date: 26 July 94
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: [Signature] Date: 28 JUL 1994
(FMP Representative)

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

MAJCOM Reviewer: Thomas L. Koepnick Date: 14 Aug 94
THOMAS L. KOEPNICK AFMC/XX 787-26-2

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CERTIFICATION WORKSHEET

INSTALLATION: Tinker Air Force Base Oklahoma
PURPOSE: To document answer to Question Number 3.5.1.3
SOURCE: James R. Lee, OC-ALC/TIET, DSN 336-3040
METHOD: Review with TAFB Civil Engineering
CONCLUSION: There are no known military construction programs
for ~~OC-ALC/TIET~~ in the FY95 PBS.
(TLK 402544)

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

Preparer: *James R. Lee* Date: *26 July 94*
JAMES R. LEE, Chief
Technology Insertion Branch
Scientific & Technical Div/TI

Reviewer: *Joe Simmons* Date: 28 JUL 1994
(FMP Representative) Joe Simmons, OC-ALC/FMP 339-7375 *@ 704*

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

MAJCOM Reviewer: *CR Platt* Date: *9 Aug 94*
CR Platt, AFMC/CEPL, 287-2410

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ASC/WPAFB (Acquisition & SPOs) Input - Revised 18 Oct 94

PURPOSE: To document answer to Lab Questionnaire Question 3.5.1 -- **Laboratory Facilities.**

SOURCE: Don Beam, 88 ABW/CECX, 787-4804, WIMS Replacement Cost Menu Item: MPY 1994 (Attachment 3.4.1).

METHOD: Building/Facilities used by ASC programs were defined. The square feet per building was proportioned to the number of people in the program offices in each building. Functionals and staff offices were included in Structures. Excess space was determined by using 135 square feet per workstation based on available workstations as defined in Question 3.5.1.1. Square footage for Acquisition Management Complex (AMC) I and IIb are included in excess broken out with the same proportions as occupied space. It is included separately because AMC I and IIb are under construction and not yet occupiable.

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CONCLUSION: All space for acquisition programs is considered administrative. There are 17 KSF SCIF space. See table with notes.

Common Support Function	Facility or Equipment Description	Type of Space	Space Capacity (KSF)		
			Current	Used	Excess****
AIR VEHICLES – Avionics Govt. New Construction Off Base (C-17)	Acq Mgmt Offices	Administrative	272.9 9.8*	272.9 9.8*	29.1** 33.0***
AIR VEHICLES – Propulsion Govt. New Construction Off Base (C-17)	Acq Mgmt Offices	Administrative	28.8 1.8*	28.8 1.8*	7.5** 8.4***
AIR VEHICLES – Structures Govt. New Construction Off Base (C-17)	Acq Mgmt Offices	Administrative	993.7 40.3*	993.7 40.3*	135.4** 153.2***
AIR VEHICLES – Flight Subsystems Govt. New Construction Off Base (C-17)	Acq Mgmt Offices	Administrative	107.1 9.2*	107.1 9.2*	8.3** 9.4***
WEAPONS – Cruise Missile New Construction	Acq Mgmt Offices	Administrative	101.1	101.1	9.7** 11.0***

* Not government-owned Space

** Space is not contiguous and cannot be captured without movement of personnel. This excess space is based on 3.5.1.1 using 135 Sq Ft/workstation.

*** This excess space is under construction. When the space is occupiable, it will be capable of accommodating any CSF.

**** This total ASC excess capacity is 405,000 square feet (190,000 built and 215,000 under construction for AMC I and Iib) which can be apportioned to any of the above CSFs with personnel moves and associated reconstruction funding.

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ASC/WPAFB (Acquisition & SPOs) Input - Revised 18 Oct 94

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

Preparer: Robert Marcischak
ROBERT J. MARCISCHAK, Prog Mgr, GS-13

Date: 18 Oct 94

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

MAJCOM Reviewer: Joe Bratford

Date: 25 Oct 94

Joe Bratford, GM-14, AFMC/XRMP, 787-5591

NOV.08 '94 14:31 HQ AFLC/XRJ WRIGHT-PATTERSON OH
NOV-08-1994 14:13 FROM COMMAND SECTION

TO
E-7871246 P.03
P.04/05

SAF/AQX CORRECTION WORKSHEET

CONTROL NUMBER: SAF/AQXM 065

PURPOSE: To provide SAF/AQX staff corrected answer to Question 2, CAI of ESC Hanscom AFB Base Joint Lab Supplemental Data Questionnaire.

SOURCE: Lt Col Hanson, SAF/AQXM, DSN 227-8850

METHOD: Comparison of numbers in the chart.

CONCLUSION: Fixed page 35. Title: Plans and Advanced Programs (XR). The number of people under the government column adds up to "50" instead of "64". Please resolve the discrepancy.

RATIONALE: Data must match.

MAJCOM: **MAJCOM:** Concurs Does not concur (explain):

MAJCOM REVIEWER: E A Skip Threlen HQ AFM/XRJ, 787-6370
(sign/print name, organization, DSN)
E. A. "SKIP" THRELEN

BASE: **BASE:** Concurs Does not concur (explain):

Typographical Error on "ADMIN OTHER" should be 15 vs 1. TOTAL IS CORRECT

BASE REVIEWER: Robert Lee, ESC/CSB, DSN 478-433E
(sign/print name, organization, DSN)

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

CHARLES R. HANSON, Lt Col, USAF
Manufacturing & Quality Assurance Division
Dep Asst Sec (Mgt Policy and Prog Integ)
Assistant Secretary (Acquisition)
Base Closure Working Group

Date: 8 Nov 94

Item 6
DSS 1-2

SAF/AQX CORRECTION WORKSHEET

CONTROL NUMBER: SAF/AQXM 066

PURPOSE: To provide SAF/AQX staff corrected answer to Question 2, CAI of ESC Hanscom AFB Base Joint Lab Supplemental Data Questionnaire.

SOURCE: Lt Col Hanson, SAF/AQXM, DSN 227-8850

METHOD: Comparison of numbers in the chart

CONCLUSION: Faxed page 13. Title: Airborne Warning and Control Systems (AW). The number of people under the On-Site SETA/TEMS column adds up to "63" instead of "64". Please resolve the discrepancy.

RATIONALE: Data must match.

MAJCOM: Concur Does not concur (explain):

MAJCOM REVIEWER: E. A. Skip Thelen HQ AFMC/XPX / 787-6370
(sign/print name, organization, DSN)
E. A. "SKIP" THOLEN

BASE: Concur Does not concur (explain):

Number of FINANCIAL people should be 9 vs 8.
Total is correct

BASE REVIEWER: Robert Lee, ESC/CSB, 478-4335
(sign/print name, organization, DSN)

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

CHARLES R. HANSON, Lt Col, USAF
Manufacturing & Quality Assurance Division
Dep Asst Sec (Mgt Policy and Prog Integ)
Assistant Secretary (Acquisition)
Base Closure Working Group

Date: 8 Nov 94

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Cross Service Analysis

Supplemental Data Call

for

ENERGETICS

Activity

**Wright Laboratory Armament Directorate (WL/MN)
Eglin AFB FL**

for

1995 Base Realignment and Closure (BRAC)

Laboratories Joint Cross-Service Group

20 Oct 1994

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94-11-16 15:18 RCVD

Item 70
PSS 1-63

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Introduction: The purpose of these supplemental data is to respond to the HQ USAF/RT memorandum, 1995 Base Realignment and Closure (BRAC) Laboratories (LAB) Joint Cross-Service Group (JCSG) Supplemental Data Call, dated 11 Oct 94, requesting information on Energetics RDT&E functions.

The following data describe efforts conducted by, or in support of, the Armament Directorate Energetic Materials Branch (WL/MNME). This branch is the sole AF organization tasked to develop and evaluate explosive materials for Air Force munitions. The branch resides in and operates the High Explosive Research and Development (HERD) Facility. The HERD is located in a remote area of the main base at Eglin AFB FL.

HERD Facility development programs are integrated with the services and DOE through Project Reliance. A portion of exploratory development funds are committed to advanced explosives, a joint service program. The HERD Facility also serves as the source for new explosive formulations for hard target warheads, an Air Force unique (3F) development responsibility. The facility also provides custom warhead loading for a variety of users and because of its analysis and x-ray capacity, performs many different analytical functions for the Air Force. The facility is new, exceptionally well equipped, and safety approved for future explosive construction. Explosive Class 1.1 storage of up to 45,800 lbs on-site allows the facility to stockpile many types of military explosives so that the HERD can respond rapidly to virtually any request or national emergency.

The following pages restate and answer the Energetics Supplemental BRAC Data Call.

NOTE: For purposes of this submission the word "installation" is interpreted to be Eglin AFB, FL; the word "activity" is the Armament Directorate (WL/MN) located at Eglin AFB, FL; the phrase "organizational element" is interpreted to be the Energetic Materials Branch (WL/MNME), and the word "energetics" is interpreted to be the work performed at the HERD by the Energetic Materials Branch as explained above.

NOTE: The data contained in this submission is as of 30 Sep 93 unless otherwise stated in the response or directed by the data call so that these data are directly comparable to previous data calls and responses.

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Energetics Cross-Service Analysis - Data Requirements (Repeated here for reference)

1. Organization Chart (as of 30 Sep 94):
 - a. Show organizational elements (those which report directly to the activity commander).
 - b. Describe organizational relationships especially between support organizations and any other organizations located on the Installation/Base.
2. For each organizational element:
 - a. Breakout five types of FY93 workyears (government, FFRDC on-site, FFRDC off-site, contract support on-site and contract support off-site) by the following seven (sic) job categories: S&T, Engineering Development, Production, In-Service Engineering & Other (describe).
 - b. Number of square feet of space occupied broken out by: laboratory specific space, general office space, and other space (describe). Note if government owned or leased.
 - c. List total FY93 funds and list main programs, and customers.
3. Describe by major functional and product lines, the capabilities of your activity to perform energetic functions in terms of manpower, intellectual/skill capability and capacity, and major facilities and equipment.
4. Map of the installation to include elements listed in 2 and 3:
 - a. Annotate buildings to show location of each organizational element.
 - b. Show buildings with equipment/facilities which would be difficult to move or replicate. List such equipment with initial cost. Provide an estimate of the replacement cost of the facilities.
5. Estimate the capacity of the activity and installation (separately) to absorb similar workyears with little or no modification of facilities. Estimate the capacity of the activity and installation (separately) to absorb similar workyears with major modification and describe the nature of those modifications and estimated cost. Use FY97 as the baseline for such estimates.
6. Describe the impact of BRAC 91 and BRAC 93 decisions on the activity and installation.
7. Describe military department approved and programmed plans which will impact or have impacted the activity and installation.
8. Remaining tenants and other activities on the installation: name of organization, mission, total workyears.
9. Summarize your overall mission.

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1. Organization Chart (as of 30 Sep 94):

a. Show organizational elements (those which report directly to the activity commander).

Response:

See next pages for the WL/MN organizational charts which highlight the location of WL/MNME within the Armament Directorate.

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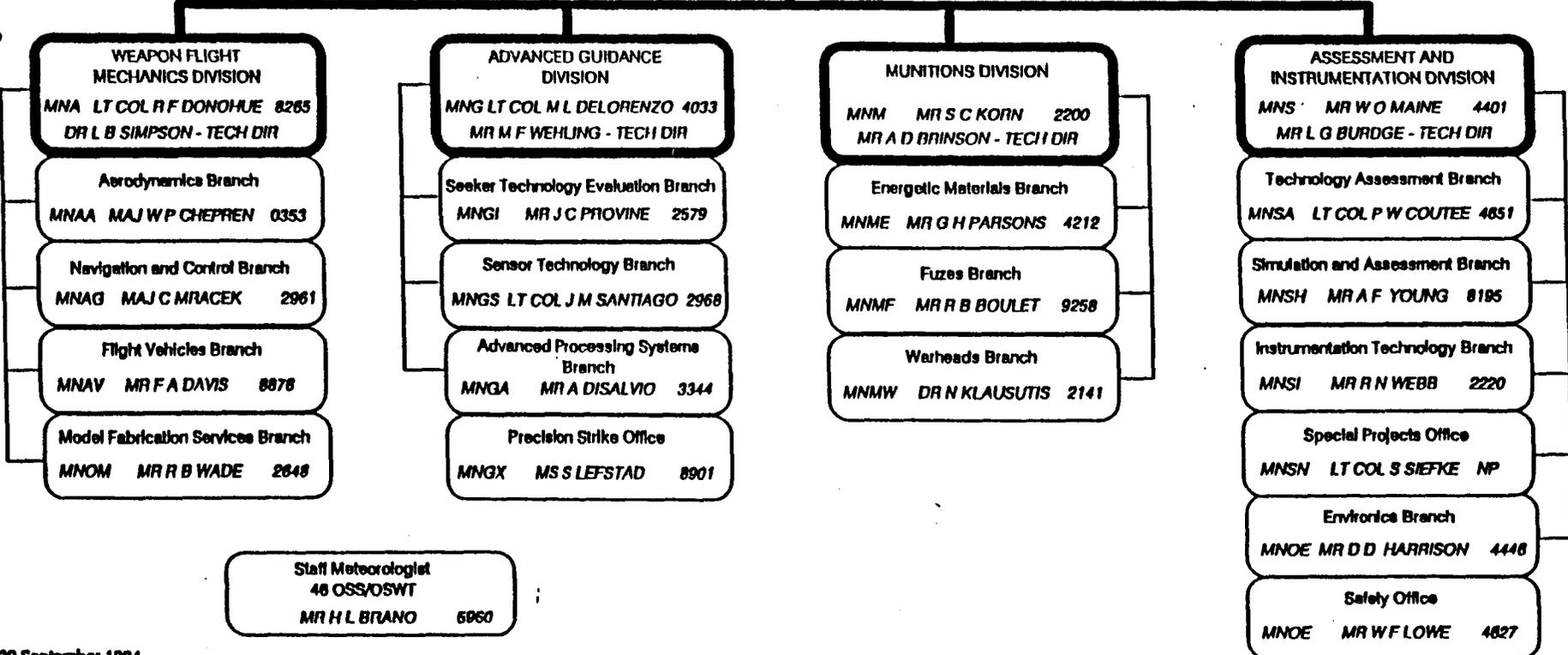
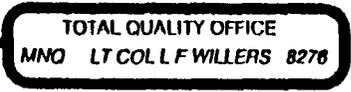
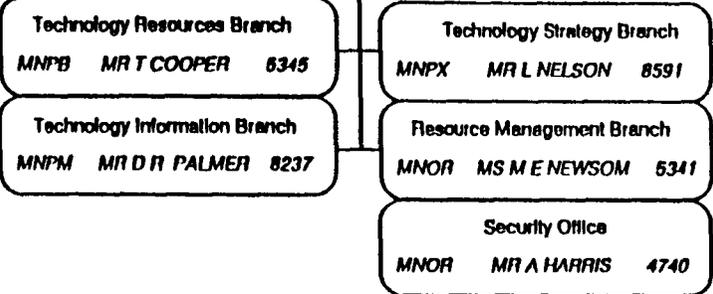
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4

Wright Laboratory
Armament Directorate
KEY PERSONNEL

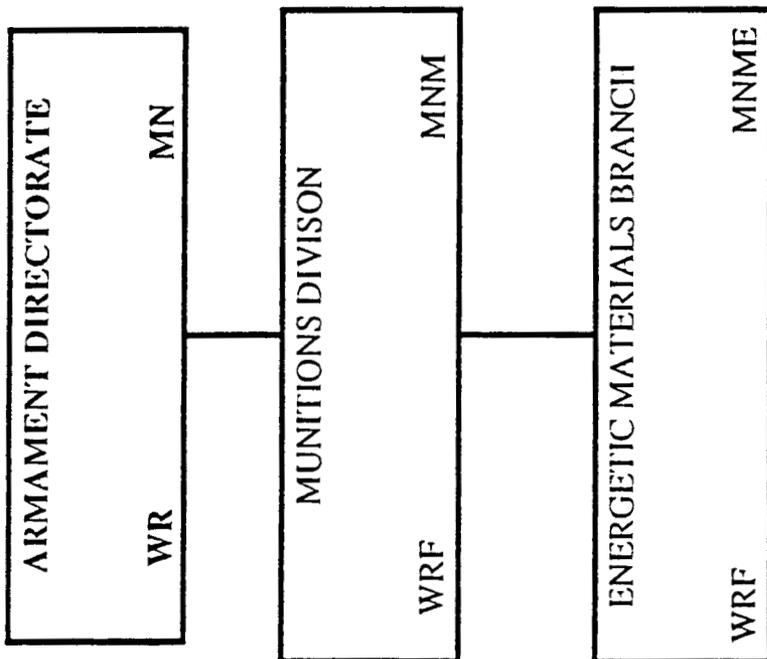
Eglin AFB FL
 32542-5434

Commercial (904) 882-XXXX
 DSN 872-XXXX
 FAX 877-7689



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WRF MNME Plans and conducts in-house and contractual research, exploratory, and advanced development of explosives for conventional munitions. Operates high explosive research and development facilities in support of directorate munitions programs. Provides technical support and consultation to system application programs concerning explosives for conventional munitions. Maintains liaison with other government agencies and industry to ensure complementary programs.

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1b. Describe organizational relationships especially between support organizations and any other organizations located on the Installation/Base.

Response:

ASC/System Program Offices (YA - Air-To-Air Joint System Program Office, YH - Conventional Munitions Product Support Office, YO - Range and Air Base Systems), Eglin AFB FL: WL/MN is located in the centralized armament development community on Eglin AFB FL. This community consists of our laboratory directorate, system program offices, a test center, and complete flight test and supporting resources. The first part of the armament development community with which WL/MN has organizational relationships is the group of system program offices including the Air-to-Air Joint System Program Office (ASC/YA), the Conventional Munitions Systems Program Office (ASC/YH), and the Range and Air Base Systems Program Office (ASC/YO). Each has an armament development mission as follows:

Air-to-Air Joint System Program Office (ASC/YA): ASC/YA is a selectively manned wing-level unit system program office (SPO) which develops, produces, tests, and supports air-superiority weapons, including AMRAAM and Sidewinder for joint Air Force/Navy, foreign military sales, and classified SECDEF programs. ASC/YA procurs combat air forces' highest priority air-to-air weapons for USAF, USN, and allied aircrews.

Conventional Munitions Systems Program Office (ASC/YH): ASC/YH is responsible for demonstration, validation, engineering and manufacturing development, and initial production phase activities related to all facets of air-to-surface weapon acquisition including associated system support elements. ASC/YH develops acquisition strategy and structures, new air-to-surface weapon programs that meet program management direction, and user statements of operational need. They manage each program to meet approved cost, schedule, and performance baselines. Teams within the SPO provide 1) all management, technical, and support functions associated with research, development, and acquisition of sensitive projects/programs in support of air combat command; 2) all management, technical, and support functions (center of excellence) associated with research, development, and prototyping of air delivered technical weapons containers for the Air Force. Management of the DOD container design retrieval system and certification of equivalency for munitions transportability and transportation support functions are also accomplished; and 3) all management, technical, and support functionals associated with the research, development, and acquisition of the Joint Air Force/Navy High Speed Anti-Radiation Missile (HARM) and associated product improvements.

Range and Air Base Systems Program Office (ASC/YO): The mission of ASC/YO is to enhance global operations by providing superior systems for air combat training, air base operability and survivability, and test ranges to aerospace forces worldwide. Teams within ASC/YO are responsible for: 1) total system development, acquisition, deployment, and sustainment of joint air combat training systems for the USAF, Navy, Army, and associated

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foreign military sales countries. Develop integrated and composite joint air combat training range capabilities incorporating emerging technologies; and 2) Responsible for total system development, acquisition, and deployment of joint air combat training systems for USAF, Navy, Army, and associated foreign military sales countries. Develop integrated and composite joint air combat training range capabilities incorporating emerging technologies.

IMPORTANCE TO MN: The benefits of having engineering development organizations (SPOs) collocated at the exploratory and advanced development site cannot be overstated. Even though these SPO offices are considered "labs" for BRAC purposes, it is only a convenient ad hoc definition of "lab". It was done because the Navy and Army often are organized so that all the development phases are organizationally integrated but that is not necessarily true for the Air Force. The Air Force ties its early development phases together in a "lab" and ties its later phases together in a "SPO". It is important, therefore, that the relevance be stated of having 6.4 developmental and later activities physically near the 6.1, 6.2, and 6.3 development site (WL/MN in this instance) and vice versa.

In the Integrated Product Development processes associated with Total Quality Management, it is vital to have cooperating teams working on development projects. A synergism is manifested if the members of these teams are within walking distance of each other as is the case at Eglin Air Force Base, FL. In addition, the munitions test agency, AFDTC, is also located at Eglin resulting in the best possible research, development, test, and evaluation environment.

The responsiveness of such a collocated organization was clearly demonstrated in Eglin's quick response to develop the GBU-28 that helped bring about the end of Desert Storm. For the GBU-28, the HERD provided expert explosives consultation, selected the explosive, poured the explosives into the test and operational munitions and was, therefore, vital to the success of this rapid development activity. HERD personnel were interviewed on national television in recognition of their great contributions to national defense in this time of war. Other examples of this synergism occur on a daily basis at Eglin.

The reasons why collocation are important to WL/MN are easily identified. There is a continuous input of development ideas into the SPO development planning and it continues throughout the munition life cycle including development support and product improvement activity. The lab provides a source of technical expertise easily called upon for SPO technical problems. There is a quick response capability that only proximity can provide. There is a reverse feed into the exploratory development programs by virtue of real time access to SPO and operational capability deficiencies and joint study teams can easily be assembled to develop solutions to problems and work long-term plans. Some examples of this synergism include the initial development and follow-on modifications of the Advanced Medium Range Air-to-Air Missile (AMRAAM) with ASC/YA and the development of instrumentation in the Directorate provided to the Test Center to support evaluation and testing of the SPO systems. An immeasurable synergism occurs when the researchers are located with the developers and testers to conceive of high speed videography,

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munition blast instrumentation, and miniaturized instrumentation. These products not only benefit the munitions community but have application in private industry in the commercial segments. Other examples would be found in the quick reaction modifications for developmental/production systems and components.

Another benefit of collocation of all phases of development involve the availability of highly skilled people. Collocation allows inexpensive movement of personnel freely between the various organizations, on exchange or rotational programs, to broaden their experience and make them far more valuable to the total developmental activity. Such synergism is only theoretically possible when organizations are not collocated.

IMPACT TO MN: If Air Force munitions SPOs and WL/MN are not collocated, the Air Force loses in many ways. The most obvious is the "out-of-sight, out-of-mind" result. Separated organizations lose sight of each other and lose the synergism and common sense of direction they once had. To try to maintain close contact would require extensive travel not practical in today's budgetary environment. The knowledge flow gained by proximity is lost when organizations are split geographically. The ability to provide a uniform umbrella of planning activity from component technology to integrate weapon systems is lost and the combined expertise to solve user problems in real-time is lost.

The very existence of the BRAC concept is to be sure that consolidation of activity occurs in recognition of the fact that synergism and efficiency can be gained. Such synergism and efficiency already exist at Eglin AFB for the munitions development community of the Air Force. The fact that Eglin is the free-world's largest air base ensures that continuing growth to meet future challenges can be realized without encroachment on populated areas, and that expansion to encompass other services' activities can also be realized as directed. The extraordinarily large land and water test ranges ensure that testing of developmental and inventory munitions can continue unabated.

AFDTC/46th Test Wing, Land and Water Test Ranges/Facilities: WL/MN, as part of the Eglin AFB complex, has a wide expanse of land and water ranges to support armament testing and experimentation. Eglin AFB test ranges encompass a wide variety of environments including jungle conditions, rolling hills, heavily forested areas, and cleared flat areas of 724 sq. miles (463,325 acres) of land which are fully instrumented for data collection. Eglin AFB FL experiences 364 days of temperatures between 32 and 95 degrees F, 358 days of visibility greater than 3 miles, and 355 flying days per year. This allows flight and ground tests and experiments to be conducted practically year round without delays because of weather. In addition, Eglin has approximately 86,500 sq. miles of water range which can be instrumented with sonar data relays. The test areas can be integrated as required for multi-site instrumentation support through a central range control. Land range test sites and test areas are provided communications via cable and microwave, and radio frequencies are used extensively to support test missions. Time-Space-Position-Information (TSPI) systems provide a means of observing and precisely recording

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the behavior of advanced weapon concepts and test vehicles over the water and land test areas by collecting information from radio frequency (RF) multilateration, optical/laser, and radar sources. The reference/control radar systems associated with Eglin ranges produce electronic tracking data for generating TSPI. These radars control the test support aircraft over the prescribed flightpath and collect and deliver TSPI data for real-time tracking and control throughout the entire range. In addition to precision TSPI, the optical systems at Eglin AFB also include engineering sequential photography, photogrammetric configurations, base-line data for calibration of other TSPI systems and operational aids. Available telemetry allows tracking with high pointing accuracies and provides excellent dynamic capabilities. Another benefit is that Eglin has the capability to modify the instrumentation on test vehicles for specific test requirements.

The nature and extent of the weapons developed necessitate considerable safety zones which Eglin can provide due to its immense size. For example, WL/MN has four R&D ranges comprising the majority of its 1000 acres. Most of this acreage is safety footprints required for munitions research and storage of explosives. Due to the proximity of the AFDTC test ranges, the safety footprints overlap, requiring much less acreage than would be required if the two organizations were to operate separately. WL/MN has access to the AFDTC test ranges which are often required because of the larger footprints necessary for some experimental weapons. For example, a 2000 pound experimental weapon detonated on the ground would require a 10,000 ft radius safety footprint.

Eglin AFB has 86,500 sq. miles of water range used for testing. The land test ranges combined make Eglin the largest air base in the free world. On the Gulf Coast, a major advantage of using water test ranges is the lower amount of electronic interference as a result of the area being less populated. Additionally, a big advantage to testing over water is that it can be done without disturbing the local community and with no potential damage to personal property. Testing over water also provides additional privacy during the test. WL/MN requires the Gulf of Mexico water ranges to conduct over-water research of newly developed weapons and to support SPO and Test Wing requests for munitions support. Additionally, if land safety footprints exceed that of the Eglin AFB Reservation, the Gulf of Mexico water ranges are available to provide expanded safety footprints.

1) **Gulf Test Range.** The Eglin Gulf Test Range consists of eleven contiguous water test areas encompassing 86,500 square miles of the Gulf of Mexico. These test areas are used for long-range, all altitude, air-to-air/drone target engagements, electronic combat, and long-range or anti-ship air-to-surface weapons evaluation. These test areas provide adequate surface area for evaluation of large safety footprint (hazard zone) weapons systems and provides for an adequate debris impact area. Large portions of the water range provide shallow depths to enhance successful recovery of selected weapons. The Eglin Gulf Test Range also provides adequate area for sea-launched surface-to-air missile tests. Nineteen miles of Air Force-owned beachfront property provide a unique land-sea interface with contrasting background/clutter environments which are especially useful for munition seeker testing. The land-sea interface also provides a

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unique ingress scenario for electronic combat tests. The Gulf Test Range supports a variety of tests including air-to-air weapons/drone target engagements, air-to-surface weapons evaluation, electronic combat tests and surface-to-air tests.

The water test ranges are supported by land-based radar, electro-optical and GPS TSPI with telemetry and airborne systems (Tyndall AFB E-9A aircraft) providing the primary data or relay link with ground stations. Multiple air-to-air weapons tests over the water ranges are supported by the Gulf Range Drone Control Upgrade System (GRDCUS) where the main ground portions of the system are located at Tyndall AFB with a communication/data link to the Central Control Facility (CCF) at Eglin AFB.

IMPORTANCE TO WL/MN: WL/MN requires the use of Eglin's water ranges to accomplish its mission. Some of the benefits include safety zones for explosive research, clearance for transportation of explosive materials and year round outdoors test capabilities supported by excellent weather conditions. In addition, there is a synergism that results from having all elements of the conventional munition development community located at Eglin AFB where the Air Force can go from concept through complete munition development, fabrication, ground test and flight test at one location.

IMPACT TO WL/MN: Removal of the water test ranges would severely hamper WL/MN's ability to conduct explosive ordnance experiments and flight testing of research hardware and would severely hamper the analysis developmental flight vehicles. Safety zones and all the synergism which comes from the collocation of developmental and test and evaluation resources would be non-existent.

2) **Armament Systems Test Environment (ASTE).** The mission of the ASTE is to provide all the resources needed for conducting open air test and evaluation of munitions and weapon systems. The ASTE includes 724 square miles of land ranges including B-70,71,75,C-72,52A/C/N and all the support infrastructure required to fully support the entire spectrum of armament testing. There are 45 permanent weapons test areas, 34 fully operational test facilities, and 26 support/ instrumentation facilities. Nineteen miles of AF-owned beach front property provide a unique land-sea interface with contrasting background/clutter environments which is especially useful for munition seeker testing. Military controlled airspace exists over the entire range complex. In addition, there are adjacent military operating areas (MOAs), bringing the total to 135,313 square miles, should a larger controlled area be needed for specific tests. Numerous simultaneous air-to-air, air-to-ground, and ground missions are controlled from a state-of-the-art Central Control Facility which also houses a real-time and post mission data reduction facility including the only DoD super computer in the Southeastern United States. The capability to accomplish extensive integration testing, at both the component and systems levels, is available. An AFDTIC Operations Security (OPSEC) program provides tools needed to achieve a secure test environment. Test/Programming Engineering provides a skilled cadre of personnel that plans, manages, and conducts Development, Test, and Evaluation of weapon and

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electronic combat systems, and is responsible for data collection, analysis, and technical reports for program documentation. The ASTE provides a vast diversity in capabilities and terrain characteristics ranging from multi-canopied tropical forests to simulated desert areas with large exposed surfaces. Test Area (TA) B-70, established for high altitude and high speed (including supersonic) bombing and rocketry, is approximately 18 miles long, averages 1 1/4 miles wide, and is located approximately 15 miles northwest of Eglin Main. The B-70 complex provides the capability for air-to-ground testing of bombs, napalm, guided munitions, rockets, missiles and submunitions, for laser testing, for static testing of bombs and rockets in cleared arenas, water-filled and mud-filled arenas, and for shallow water mine countermeasure testing. TA B-71 is a submunition and incendiary weapons test area near TA B-70. TA B-71 includes a 2,000' x 4,000' asphalt-covered grid used for submunition testing and a 300' x 1,000' area containing fixed targets used for incendiary weapons testing. TA B-75, a cleared, rectangular area 3 1/2 by 1 1/2 miles located approximately 16 miles northwest of Eglin Main, is primarily used for close air support and high speed (including supersonic) test missions for air-to-ground bombing, rocketry, and napalm delivery against runways/airfields. A 300' x 1200' runway target is the primary target for air drops and concrete, asphalt and clay pads are used for static firings and detonations. Also, a tank gun range and target complex superimposed on TA B-75 is used and supported by the Alabama Army National Guard for annual training. TA C-72 is a cleared, major test area approximately 6 miles long extending from the northwest to southeast with varying widths, averaging approximately 1 mile. The C-72 complex is primarily used for air-to-ground and ground-to-ground missions involving the development or production testing of conventional munitions. Target arrays include semi-permanent fortified defensive targets, hard structure targets, a 200' x 1500' runway target, and simulated high value targets such as power lines, bridge pilings, and bunkers. TA C-52A is the southernmost 10 square mile portion of the TA C-52 range complex and is located approximately 18 miles east-northeast of Eglin Main. TA C-52A is primarily used for supporting air and ground testing of EO, IR, laser, and MMW seekers.

A 300' tower is located in the center of TA C-52 and provides an elevated position to mount seeker systems or instrumentation to simulate an air-to-ground scenario. A track-mounted turntable capable of rotating targets up to 75 tons for target signature measurements is located adjacent to the tower. TA C-52C is a large cleared area about 2 1/4 by 1 1/2 miles contiguous with TAs C-52A, E, N, W. TA C-52C serves as the central control site for overall control of the C-52 Complex. As a test site, it is used for evaluating the performance of air-to-surface munitions including dispensers with live bomblets, incendiary and flame weapons, resolution testing of airborne cameras, and ground functional testing of munitions. TA C-52N is a large cleared area about 2 by 2 miles and is the Eglin test site designed for large scale drops of fully live high explosive ordnance, such as B-52 carpet bombing. The ASTE can be linked to Tyndall AFB to provide multiple full- scale and subscale drone targets (using the Gulf Range Drone Control Upgrade System (GRDCUS), multilateration TSPI, scalar and vector scoring, additional TM receivers, and two E-9A aircraft for TM and UHF relay and surface clearance for complex Air-to-Air and Air-to-Surface tests. The ASTE also includes special targets ranging from simulated Warsaw Pact A/C shelters and runways to remote controlled tanks; and test facilities that are one-of-a-kind in the world; e.g., the shallow

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water mine countermeasure testing facility and the HELLFIRE Integration Facility and Test Range. A wide range of current threat emitters are available to provide a realistic electromagnetic radiation environment or act as "targets" for armament testing. Access is available to a full range of Defense Mapping Agency products including TERCOM and DSMAC terrain maps.

Types of tests supported include high altitude and high speed (including supersonic) bombing and rocketry; air-to-ground testing of bombs, napalm, guided munitions, rockets, missiles, and submunitions; laser testing; static testing of bombs and rockets in cleared, water-filled, and mud-filled arenas; shallow water mine countermeasures testing; ground-to-ground munitions testing; air and ground testing of EO, IR, laser, and MMW seekers; air-to-air missile testing; and target signature measurement testing.

IMPORTANCE TO WL/MN: WL/MN requires the use of Eglin's land ranges and test infrastructure to accomplish its mission. Some of the benefits include safety zones for explosive research, clearance for transportation of explosive materials, access to base safety and environmental expertise for munitions, dedicated CRAY supercomputer support, space to expand operations/facilities, year round outdoors test capabilities supported by excellent weather conditions, and access by land, air and sea. WL/MN is cited to store, research and experiment with up to 45,800 lb. of explosives (2-3 year process) at Eglin AFB and holds the Air Force's second and third largest radioisotopes licenses (3-5 year process) which are only valid for these facilities in Florida. In addition, there is a synergism that results from having all elements of the conventional munition development community located at Eglin AFB where the Air Force can go from concept through complete munition development, fabrication, ground test and flight test at one location.

IMPACT TO WL/MN: Removal of the land test ranges would severely hamper WL/MN's ability to conduct explosive ordnance experiments and flight testing of research hardware and would severely hamper the analysis of software in developmental flight vehicles. Safety zones, dedicated computer support, and all the synergism which comes from the collocation of developmental and test and evaluation resources would be non-existent.

3) **Sled Track Facility.** The Test Area (TA) C-74 Sled Test Track is designed as a damage potential test facility and is used to measure the terminal ballistics and damage capability of inert and live munitions. The track is a 2,000-foot continuous welded dual-rail facility that can also be used as a monorail facility. It is capable of launches in either direction by using primary and secondary control buildings. A capability to conduct full scale hardened structures testing is provided by on-site fabrication, lift and transport of up to 180-ton reinforced concrete targets. This controlled environment is used to evaluate warhead and target interactions. The sled track also supports ground test of airborne scoring systems and experimental explosives. Targets are specifically tailored to the item under test and have included reinforced concrete, composite soil-concrete, simulated ship hulls, armored vehicles, and fragment collection arenas. Instrumentation provided includes high-speed cameras, programmable control systems, velocity measuring

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systems and closed-circuit television. Additionally, sled preparation, storage/office buildings and munitions analysis facilities are located on the range to support the munitions sled test mission. Achievable test velocities are: 3,000 fps for gross weight up to 1,000 lbs; greater than 2,000 fps for gross weight of up to 2,000 lbs; and up to 1,420 fps for gross weight up to 5,000 lbs. Net explosive weight in excess of 3,000 lbs can be tested. 200 shots/year have been demonstrated.

Unique capabilities of the Eglin Sled Track include on-site fabrication of reinforced concrete targets (weighing up to 180 tons); 200-ton capacity crane to position these large concrete targets; a fixed 80-foot instrumentation tower for close-in data collection and observation; a mobile Thermatron unit for environmentally conditioning test items to temperatures ranging from -65 degrees F to 165 degrees F; mobile instrumentation can be linked to existing instrumentation.

Type of tests supported include dynamic testing of live and inert munitions against a large variety of targets: tests of experimental and insensitive explosives; test and recovery of live test items; dynamic fragmentation arenas; moving target intercept; spin launch and sensor research development; dispenser submunition tests; environmentally conditioned munition tests; chemical simulant dispersion tests; and reverse ballistic tests.

The TA C-74 Track is managed and technically supported by government personnel. It has provided test and test support for all branches of the military services, industry, and foreign countries. The TA C-74 sled track facility has the capability to construct highly sophisticated targets to meet the requirements of existing and developmental munitions and their systems. The instrumentation/assets include: programmable control system, magnetic pick-up velocity measuring system, CCTV system for monitoring test launch and impact arenas, sled performance analysis, data processing system, magnetic tape recorders, oscillographs, hydraulic system, 230-ton capacity crane, 230-ton transport trailer, and a D-7 bulldozer.

IMPORTANCE TO WL/MN: The sled track facility located on Range C-74, Eglin AFB FL has been and is continuing to be essential for full scale testing of hard target munition fuzes, warheads and explosives being developed by WL/MN. The determination of weapon and fuze response during realistic hard target encounters is critical, particularly in defining the fuzing environment and warhead specific deceleration signals required by fuzes. The need for improved hard target munitions including hard target fuzes has been one of the most highly emphasized areas within the Armament Directorate. The emphasis on hard target fuzing has resulted in still increasing numbers of sled track experiments. With continuing focus on hard target defeat, plans are calling for continued utilization of the Eglin sled track facility for hard target fuze and warhead development and experimentation. The close proximity of the facility to the weapon developer and test community has resulted in synergism providing for expedient yet "first try successes". The test turn around time and target capability for penetrating weapons is at a world class level and unrivaled by any other facility.

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IMPACT TO WL/MN: Removal of WL/MN from this facility would severely damage the Department of Defense's ability to develop and field penetrating weapons for countering weapons of mass destruction (nuclear, chemical, and biological). Development time lines would require 3 to 4 years extension and development costs would increase by tens of millions of dollars.

4) **Fuze Test Facility.** This facility is used for extensive environmental T&E (including specification compliance) of prototype and production models of fuzes and associated ordnance as well as ammunition. The capability to accomplish extensive integration testing, at both the component and system levels, is also available. The available facilities and instrumentation cover simulated, induced and natural environments, separately or in combinations, to determine that fuzes and associated ordnance devices are safe and will function as intended. This facility provides both climatic and operational environments. The Fuze Test Facility also conducts integration testing of fuzes, munitions and aircraft and bomb racks.

This facility is the only facility in the AF equipped for extensive environmental and safety testing, ground functional performance testing, and engineering evaluation of developmental models of fuzes for conventional munitions and associated ordnance devices. The proximity of this resource to the hot-gun line and flight test areas facilitates sequential testing of an ordnance article from development to production. Although used primarily for fuze testing, this facility is also used in environmental tests of electronic boxes, circuit boards, other small assemblies, and also it is used for environmental testing of ammunition.

Climatic environments simulate exposure to extreme conditions and can be accelerated to duplicate actual conditions to which a fuze may be exposed over prolonged periods. Test articles can be exposed to several environments simultaneously providing realistic operational environments. Functional test capabilities include vibration, jolt, jumble, leak, salt fog, fungus, ejection, drop, centrifugal acceleration, explosive atmosphere, altitude, temperature, radiographic inspection, acceleration, shock, impact, humidity, sand/dust, physical fit.

The facility consists of fourteen environmental chambers (heat, cool, humidity, high/low temperature, thermal shock, salt fog, sand and dust, immersion, explosive atmosphere, fungus, temperature vibration), two electrodynamic vibration machines, 80 foot drop tower, vacuum acceleration table, two static ejection systems, the high "g" impact shock machines, jolt/jumble machine, 100g centrifuge, munitions disassembly areas, instrumented hydraulic press, and remotely operated machine shop for munition disassembly. The facility has two industrial X-ray systems for fuze and munition examination. One is an on site 350 kV fluoroscopy system and the other is a remotely located 320 kV film system. A mobile 8-channel 150 kV flash X-ray system is provided for super high speed stop motion shadowgraphy.

WL/MN operates a major portion of the 46th Test Wing's Fuze Test Facility. Several highly instrumented facilities are used to conduct in-house experiments in connection with advanced fuze development. An electronics facility containing state-of-the-art instrumentation and circuit

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design, fabrication and environmental testing, and diagnostic devices and equipment used in the development of hard target fuzing, exploding foil (SLAPPER) development, target detection and recognition for fuzing. Pulsed laser obscuration algorithm development verification, infrared laser gun (aircraft cannon) director evaluation, and supporting technologies such as high energy density capacitors, very high speed and high voltage recyclable switches, and high frequency/high shock on-board recorders are built and tested in the facility. Major equipment items include vertical high shock tester, pendulum shock tester, Hopkinson pressure bar, eight inch vacuum gun, exploding foil firing bay with timing electronics, circuit board fabrication facility, 105mm Howitzer with high-gravitational instrumentation recorders, and a centrifuge.

IMPORTANCE TO WL/MN: The Fuze Test Facility provides invaluable support in the development and experimental testing of munition fuzes and supporting subsystems. This support starts at the early stages of research. A complete line of environmental experimentation capabilities includes: High Temperature, Low Temperature, Temperature and Humidity, 40 Foot Drop, Sand and Dust, Jolt, Jumble, Electrostatic Discharge, and Acceleration. These environmental experiment apparatuses are configured to allow remote, round the clock testing of explosive items. These environmental experiment capabilities are also utilized by the Armament Directorate in early stages of fuze research. In addition, the Fuze Test Facility has several unique high shock testers including an accelerated drop tester, and a vacuum gun with a 150 foot long barrel uniquely configured to provide impact shock with low launch acceleration as experienced by impact of free fall bombs and penetrators. Stores activation experiments are accomplished at the static ejection building. Real time fluoroscope equipment is utilized to observe the internal details (e.g. armed or safe) of research fuzes. This capability greatly reduces the hazard of disassembly of live explosive experimental items. These extensive capabilities are routinely utilized by the Armament Directorate in all phases of fuze research for fuze and fuze component analysis.

IMPACT TO WL/MN: Removal of WL/MN from this facility would delete the Air Force's ability to perform research and experimentation on new conceptual fuzes. Development of advanced fuzing systems would be severely degraded and result in development delays for future fuzes.

5) **Warhead Arenas.** The Warhead Arenas have the infrastructure, real estate, communications, and specialized data collection and reduction instrumentation needed to safely conduct a wide variety of static arena tests of munitions with up to 3,000 pounds net explosive weight. Resources are available to conduct three simultaneous arena experiments. Types of experiments conducted include conventional munitions and submunitions, warheads, lethality and vulnerability, heating, bullet impacts, fragment velocity and dispersion, airblast and pressure profile, sympathetic detonation, booster efficiency, fuel air explosives, and insensitive explosives. This resource provides the capability to perform fragment and blast pressure characterization tests, collect the data, automatically sort and catalog fragment and pressure data with computer systems, incorporate reduced data into effectiveness models, and publish detailed technical

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reports. Another resource that performs warhead test and evaluation is the Smart Weapon Test and Analysis facility located at TA C-64. This facility is equipped to support actual and simulated static firings of shaped charge warheads against combinations of targets, armor, and ballistic countermeasures. An 800-ft dynamic test area supports direct and top-attack dynamic testing of missile and projectile warheads. A tower facility is used for static top-attack warhead tests against vehicles. The facility is also capable of performing controlled vulnerability testing in support of LIVE FIRE testing. This LIVE FIRE test and analysis capability includes the management and analysis capability to perform predictive studies, conduct necessary testing, evaluate the results and report in an iterative process to meet all requirements of the LIVE FIRE legislation. Other resources include a unique network of unequaled computer platforms, running different operating systems and applications software capable of a full spectrum lethality/vulnerability evaluation and effectiveness analysis. Using aimpoint and hit point data from seeker/sensor analysis and target geometry models, either developed in-house or through the Joint Technical Commanders Group (JTTCG), supports full systems analysis to include one-on-one effectiveness analyses and many-on-many analyses.

This facility is a unique, dedicated resource containing permanently installed control systems and embedded state-of-the-art instrumentation. It is the only facility of its type that has for over twenty years used an electronic screen/data system for collecting fragment velocity data. Two mobile data vans are used to support off-site tests where the net explosive weight exceeds 3,000 pounds. Warhead tests up to 5,000 lbs Net Explosive Weight (NEW) have been conducted on B-71 and B-75. Complementary facilities include the High Explosive Research and Development Facility (HERD), the Advanced Warhead Experimentation Facility (AWEF), the Fuze Test Facility (FTF), and the Smart Weapon Test and Analysis Facility which can operate as a stand-alone facility or can be used as one of several resources simultaneously supporting a test. Types of tests supported include lethality and vulnerability, heat soak, booster efficiency, sympathetic detonation, air blast and pressure profile, fragment velocity and dispersion, warhead characterization.

Technical capabilities include fragment velocity and dispersion systems including high-speed photography and electronic screen systems, air blast pressure profile, strain, acceleration, and temperature measurement instrumentation using analog and digital systems, programmable sequencer, fragment recovery and mass distribution, partial recovery using fiberboard, total recovery using water tank, automatic fragment weight classifier, temperature measurement and control to support heat soak tests, radio remote control firing systems, flame spray facility to fabricate velocity screens, laboratory type transducer calibration and evaluation facility, and two 20-ft diameter water tanks for total recovery tests. At the Smart Weapon and Analysis Facility the assets include a dynamic warhead test facility, shaped charge jet characterization test area, and a LIVE FIRE test area. Instrumentation includes 150 KeV, 450 KeV and 1 MeV x-ray systems, pressure recorders, high speed cameras, an automated fragment weighing system for behind-the-armor debris, and a unique Spall Panel Evaluation with Digital Imagery (SPEDI) computer based spall panel scoring system. SPEDI provides the capability to automatically score and analyze the

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spall panels, cutting the manual scoring process ten-fold. Computer assets include Silicon Graphics personal IRIS, INDIGO, and GTX multi-processing workstations, Macintosh systems, Digital VAX computers, DOS personal computers, and SUN workstations, all with interconnectivity to the Eglin computer network.

IMPORTANCE TO WL/MN: AFDTC-instrumented test areas for static munitions experiments are required in support of a wide range of Armament Directorate programs. These ranges provide support such as iterative experiments of developmental warheads; warhead characterization experiments needed for effectiveness comparisons to justify further development or production of new Air Force munitions; evaluation of product improvement warhead concepts for existing programs such as AMRAAM and Sensor Fuzed Weapon (SFW); and fragmentation characterization of new munitions required to establish safe separation criteria for aircraft delivery. AFDTC has the facilities, instrumentation and trained personnel to conduct these experiments in a timely, efficient and professional manner.

IMPACT TO WL/MN: The impact of not having WL/MN near these facilities would be the added time and cost of locating or configuring an alternate facility to conduct the required experiments, and the probability that experienced personnel would not be available to effectively record, analyze, and utilize the resulting data. Delays in warhead development from exploratory development to full scale production would exceed 4 years with associated costs impacts in the tens of millions of dollars per warhead.

6) Shallow Water Mine Countermeasures Explosive Test Pond: The Shallow Water Mine Countermeasures (SWMCM) test pond is an explosive test pond located on Test Area B-70, which is an approved explosive test range with its own support infrastructure. This facility permits underwater experimentation of explosive charges to measure performance and response of explosive sensitivity to countermeasures.

The SWMCM test pond is actually two ponds that provide a capability underwater for testing of mines and mine-clearing systems. One pond is a fill pond for water supply and holding. It is approximately 210 feet by 615 feet by 28 feet deep and holds eleven million gallons of water. It has an uncovered liner bottom and is used for containment only. The second pond, the demolition testing pond, is approximately 185 feet by 490 feet by 12 feet deep and holds eight million gallons of water. The bottom is an earth-covered liner for protection and containment. Water depth of the demolition pond is variable up to 12 feet and is completely drainable for transferring water back and forth between the fill pond and the demolition pond. It takes approximately six hours to fill the demolition pond with eight million gallons of water. The explosive limit in the demolition pond is 3700 pounds.

IMPORTANCE TO WL/MN: This facility provides MN the capacity to support future development of underwater explosives and countermeasures.

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IMPACT TO WL/MN: This facility provides an important growth capability for MN to explore technologies for air-droppable underwater explosives and/or countermeasures.

AFDTC/96 CCSG, Scientific Computing Center:

1) **General Scientific and Business Computing:** AFDTC/96 CSSG provides a wide range of general scientific and business computing services to WL/MN. Among the services provided are: system operation/maintenance of mainframe and mini-computer systems, the Eglin Computer Network (ECONET), customer assistance, management of computer support contracts, management of the computer/software/peripheral acquisition process for both scientific and business computing, establishment of base-wide computing/development standards, requirements analyses, and strategic planning assistance.

IMPORTANCE TO WL/MN: As both a scientific/engineering and a business organization, WL/MN requires significant amounts of computing power and infrastructure support to accomplish its mission. Every employee uses at least one computer system as an integral part of their work. AFDTC/96 CCSG provides in-house government support, and manages a variety of computer services contracts for WL/MN including hardware and software maintenance, and management information system (MIS) development. AFDTC/96 CCSG also provides an Eglin-wide corporate approach to computing. All organizations, including WL/MN, benefit from this leadership role.

IMPACT TO WL/MN: Without the general scientific and business computing services and support provided by AFDTC/96 CCSG, WL/MN would be forced to use less sophisticated, less efficient techniques for task and services contract accomplishment and/or establish its own in-house centralized computing capability. Neither scenario is desirable, because they do not take advantage of the economy of scale resulting from a centralized computing infrastructure.

2) **Supercomputer Facility:** WL/MN develops technologies in several different areas which require the use of supercomputers. AFDTC/96 CCSG owns and operates a supercomputer system consisting of a Cray YMP 2/128, mass storage silos, 128 million word solid state memory device, and a computer visualization laboratory. WL/MN scientists account for 89 percent of all usage on this system.

IMPORTANCE TO WL/MN: A major technical area for which WL/MN requires supercomputers is Hydrocodes. This area is a high fidelity numerical modeling of basic conservation laws of physics. Hydrocodes solve the Euler Equations with appropriate material state equations in order to model a weapon penetration and/or explosion event. This technique requires massive computer resources, usually 100+ hours of Cray YMP time per analysis and tens of millions of words of computer memory.

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IMPACT TO WL/MN: The displacement of the WL/MN scientist from the AFDTC/96 CCSG computer systems would be very impractical. Currently an ultra-high speed network exist for connectivity to the supercomputer and the mass storage devices. This network allows the scientist to perform his computations and visualize the results, otherwise the scientist would be required to travel to the supercomputer site. Visualization is an extremely important aspect of high fidelity modeling. For example, the computer allows the scientist to observe an explosion event at ground zero. This is obviously not possible during an actual event.

In addition to the obvious inefficiencies, the displacement of the WL/MN scientist from the AFDTC/96 CCSG computer systems would eliminate the capability for WL/MN scientists to respond to quick reaction problems. The AFDTC/SC computer was specifically purchased and configured to meet WL/MN needs. This provides the scientist with a capability not available elsewhere. For example, the GBU-28, a new guided bomb unit weighing almost 5000 lbs, was developed for use in Desert Storm. Hardened enemy targets deeply buried under the ground were unreachable by any current weapon system in the Air Force. This new system was designed, fabricated, tested and delivered in less than one month. Thirty- two Hydrocode analyses were provided in 4 days to support this development effort.

OTHER SUPPORT ORGANIZATIONS:

Gulf Coast Alliance For Technology Transfer (GCATT): The Gulf Coast Alliance for Technology Transfer (GCATT) is an unprecedented innovative partnership of eleven laboratories/centers, four state universities, and a consortium of five community colleges in the Northwest Florida - South Alabama region. The partnership was formed, recently, to leverage individual resources into a comprehensive, "user-friendly" technology access center responsive to the technology needs of small and medium-sized manufacturers, especially those that are defense-dependent. The goal of GCATT, of which the Armament Directorate is a founding member and avid supporter, is to leverage the transfer of technologies developed at the member laboratories to enhance the competitiveness of the state, region, and nation. The diverse group of federal laboratories and state colleges and universities offers unique opportunities for global outreach and synergism in a regional approach for technology transfer. The GCATT member organizations are:

- Navy Education and Training (NETPMSA)
- Okaloosa-Walton Community College (OWCC)
- Wright Laboratory, Air Base Systems Branch (WL/FIVC), Tyndall AFB, FL
- University of West Florida
- University of Florida, College of Engineering

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- Wright Laboratory, Armament Directorate (WL/MN)
- Air Force Development Test Center (AFDTC)
- Air Force Civil Engineering Support Agency (AFCESA)
- Army Aeromedical Research Laboratory (AARL)
- Armstrong Laboratory, Environmental Quality (AL/EQ)
- Environmental Protection Agency, Environmental Research Laboratory (EPA/ERL)
- Florida State University
- Florida A&M University
- National High Magnetics Field Laboratory
- Navy Aerospace Medical Research Laboratory (NAMRL)
- Navy Coastal Systems Station (NSWC/CSS)

Seven major benefits are expected from the GCATT's regional approach:

1. Sharing of assets and knowledge to enhance technology transfer capabilities.
2. Exploitation of regional coverage and contacts.
3. Enhanced ability to conduct outreach to regional, national, and international organizations.
4. Serving as a catalyst for focusing/identifying technology transfer opportunities.
5. Central coordination and brokering of technology transfer activities.
6. Data base development and information sharing.
7. Providing a forum to address related issues.

GCATT is governed by a Board of Directors, which is supported by member representatives (working group) and an agent (the University of Florida), who is delegated the daily operational

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responsibilities. The agent is responsible for preparation of technology transfer agreements, brokering of patent licenses, test facility broker, commercial potential evaluation, marketing/promoting technologies, conducting special projects, conducting training seminars/workshops, and providing technology counseling. Resources to support the GCATT are provided by contributions from individual organizations which may be financial or non-monetary in nature.

The GCATT will benefit from the construction of the University of Florida Graduate Engineering and Research Center (GERC) on USAF property in Ft Walton Beach FL (adjacent to Eglin AFB proper). The facility is currently under construction. The GERC will provide a source for graduate engineering degrees, continuing college level education, research and technology transfer. The position of permanent director of the GCATT is funded by a line item in the State of Florida budget - through the GERC.

The Armament Directorate, as a driving force in the inauguration of GCATT, will have a direct impact on regional and national economic development. As such, the GCATT was awarded a two year, \$355,154 Technology Reinvestment Project (TRP) program in conjunction with the Southern Technology Applications Center (STAC), one of the six NASA regional technology transfer centers. This project will significantly enhance the deployment of Armament Directorate technologies, particularly to defense dependent firms and have a significant influence on the regional economy.

University of Florida Graduate Engineering & Research Center: The University of Florida Graduate Engineering & Research Center (UFGERC) is a corporate venture between the Air Force Development Test Center and the University of Florida (UF) to offer local graduate-level (Masters and PhDs) engineering education to the professional community at Eglin Air Force Base. As part of this cooperative venture, the state of Florida is constructing a \$4.5-million, 45,000 square foot facility on Air Force land which will house both the research facilities and classrooms for the UFGERC. This facility is scheduled to be operational in mid-1995. The UF has committed to provide five full-time professors to the UFGERC initially, and will add to this number as requirements warrant. This initial staff provides experienced education and research capability in the areas of: Aerodynamics/Computational Fluid Dynamics; Computer Science/Software Engineering, Electromagnetics/Optics; Engineering Mechanics; Guidance and Control technology, and Signal Processing. The Air Force part of this cooperative venture includes providing funded research projects, via an established task order contract, for both resident and visiting (interim) professors; providing a joint-use of unique Air Force owned facilities.

AFDTC/96th MDG - Bioenvironmental Engineering: Bioenvironmental Engineering supports WL/MN programs in the following areas: (1) Performs ionizing and non-ionizing surveys for X-rays, lasers, microwaves, and electromagnetic radiation for several WL/MN facilities, (2) Supports the High Explosives Research and Development (HERD) facility's State Groundwater

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Operating Permit by sampling monitoring wells for trichloroethylene, (3) Provides guidance for disposal of chemicals used in WL/MN in-house facilities, (4) Performs annual inspections of radioactive material permits and provides Radiation Safety Officer for WL/MN permits, (5) Performs annual occupational health hazard evaluations to assess Directorate personnel exposures to physical and chemical hazards.

ASC/PK - Contracting: Supports the Armament Directorate with acquisition assistance, planning and strategy in the areas of research and development contracts as well as scientific engineering and technical assistance (SETA) and task ordering contracts (TOCs). Support provided covers the entire acquisition cycle from initial planning through contract award, administration support, and closeout.

ASC/FM - Comptroller: Supports WL/MN through matrixed personnel who provide budgetary, financial, cost estimating, and cost analysis support. Responsibilities include but are not limited to: Preparing budget requests (Directorate Operations Report, Program Objective Memorandum (POM), and Budget Estimate Submission (BES) documentation) and justification documentation (RD-5s, Descriptive Summaries, etc) submitted to HQ AFMC for inclusion into the Presidents Budget Submission. Annually preparing revisions of Program Management Directives (PMDs) for PEO603601F as well as Directorate Program Directives (DPD) for PE0602602F. Develops and tracks progress against financial forecasts for commitment, obligation, and expenditure of funds. Ensures the proper usage of funds and compliance with congressional laws. Assists program managers in the development of work unit cost estimates. Performs analysis of contractor submitted Cost/Schedule Status Reports and conducting in-plant implementation and surveillance reviews of contractor's cost/schedule management systems. Responsible for accounting, disbursing, collecting, and reporting all financial resources used by WL/MN to support its mission.

ASC/AL - Advanced Development Logistics: The Advanced Development Logistics Office (MNL) is matrixed from the Director for Acquisition Logistics (ASC/AL). MNL is responsible to the Director of the Armament Directorate for supportability integration into all programs as required by WL/MN Program Management Directives, Directorate Program Directives and BMDO Supportability Policy. Acquisition logisticians are collocated in each product division to insure that supportability is maximized in the earliest stages of design and development. This is accomplished through close coordination with the using and support commands, design and program engineers, and contractors. Logisticians transition the users supportability requirements into Statements of Work, Acquisition Plans, and Source Selection Evaluation Plans and follow program development through Source Selection, Program Reviews, and Hardware Experiments.

AFDTC/96th Civil Engineering Group - Civil Engineering: Provides Civil Engineering support in the form of designs and budget estimates of the Military Construction Program. Provides the same support on facilities modifications to also include 100% design, and either ir

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house construction or contracting of the work. Provides for facilities maintenance of all WL/MN facilities.

AFDTC/96th Security Police Squadron - Security: The matrixed WL/MN Staff Agency Security Manager provides the following support. Provides advice and assistance to the unit commander, and to personnel assigned to WL/MN. Develops required internal security operating instructions and ensures compliance. Ensures assigned personnel receive security education and develops annual security education training plan. Monitors internal semiannual security inspections. Requests and accounts for controlled and restricted area badges. Reviews challenges to classification decisions. Ensures security classification guides are kept current and reviewed biannually. Ensures proper reporting of all security violations, and ensures required inquiries and investigations are conducted. Monitors personnel security program actions. Manages the COMPUSEC, COMSEC, TEMPEST, and foreign disclosure programs. The Systems Security Engineering Manager provides security management on classified programs of a sensitive nature.

AFDTC/96MSSQ - Personnel: Provides the Directorate with the personnel placement of all civilians in Civil Service. A staffing division provides the appropriate certificate for merit promotions, lateral and new hire employees. The classification division assures the position description is correct and meets the classification standard guidelines. The employee relations division adjudicates any Directorate complaints, employee relation problems, union grievances in addition to handling all of the civilian appraisal program. The training division monitors all training programs administered by the Directorate including the accelerated engineer program, on-site training for Directorate employees, the OJT program, and professional development training programs. Executes the final hiring process of new employees into Civil Service and is responsible for completing the final paperwork covering the hiring of personnel.

SUPPORTING INFRASTRUCTURE:

Airfields/Airways: Eglin AFB has eleven (11) air fields of which three (3) are active with the following characteristics:

Air Field Pavements:	5.7 million square yards
Eglin Main:	12,000 and 10,000 foot runways 44,500 IFR sorties per year
Auxiliary Field 3 (Duke Field):	Single 8,000 foot runway 2,400 IFR sorties per year
Auxiliary Field 9 (Hurlburt Field):	Single 9,600 foot runway 6,700 IFR and VFR sorties per year

Eglin Main not only performs in support of the development test mission for the Air Force but also allows airline access through agreements with commercial air carriers. Jet Airway J58-86

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and Gulf Route 26 are routes used on a daily basis by commercial air carriers. These air routes may be closed for up to four hours for conduct of test activities.

Intracoastal Waterways And Sea Lanes: Sitting on Choctawhatchee Bay and the Gulf of Mexico, Eglin AFB has direct accessibility to Florida's intracoastal waterway system which connects a chain of rivers, lakes, and lagoons into a continuous waterway and provides access to Florida's deep water ports. Barges on the intracoastal waterway system transport enormous volumes of high tonnage items. Hence, products too tall, long, or deep for trucks or railroads can be carried by barge.

Florida is at the intersection of a number of maritime trade routes. Because of the state's mild climate, Eglin AFB's waterways are accessible year-round. The state has ten major ports and seventeen smaller ports. The main complex of Eglin AFB is located a short distance from two major ports - Pensacola, FL (40 miles) and Panama City, FL (60 miles). Sea areas are used on a daily basis by commercial and recreational fishermen and commercial ship traffic to ports in the northern Gulf of Mexico. The sea area is sufficiently large to permit positioning of the test activity to avoid surface traffic.

Interstate/State Highway System: Eglin AFB is directly accessible by Interstate 10 (I-10) virtually intersecting the highway at two interchanges. The main complex of Eglin AFB is approximately twenty miles south of these interchanges and is easily accessed through use of a four lane spur (State Highway 85) and a two lane spur (State Highway 285). State Highway 85 and 285 are used on a daily basis but can be closed during the conduct of any test activities. I-10 passes through both Pensacola, Florida (1:00 hr/40 miles from Eglin AFB) and Tallahassee, Florida (2:45 hr/175 miles from Eglin AFB) and intersecting I-75 for connections with points north and south. This extensive highway system has been a boon to Florida's economy, allowing for the rapid transit of goods and people. The limited access interstate system and the relatively unpopulated rural area of northwest Florida has special advantages - direct routes to distant out-of-state locations, savings of time, and increased safety for the transportation of munitions related hardware, equipment supplies, or explosives.

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2. For each organizational element:

a. Breakout five types of FY93 workyears (government, FFRDC on-site, FFRDC off-site, contract support on-site and contract support off-site) by the following seven (sic) job categories: S&T, Engineering Development, Production, In-Service Engineering & Other (describe).

Response:

	Fiscal Year 1993				
	Gov't	FFRDC (On-Site)	FFRDC (Off-Site)	Contract (On-Site)	Contract (Off-Site)
Science & Technology	28	0	0	4	10*
Engineering Development	0	0	0	0	0
Production	0	0	0	0	0
In-Service Engineering	0	0	0	0	0
Other	0	0	0	0	0

* Estimate based on small business research, equipment, construction and R&D contracts

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b. Number of square feet of space occupied broken out by: laboratory specific space, general office space, and other space (describe). Note if government owned or leased.

Response:

Facility Description	Type of Space	Space Capacity (KSF)
High Explosive Research and Development (HERD) Facility	Laboratory	24.5
	Office	3.0
	Other:	
	-- Storage	16.4
	-- Utility	11.8
Total Capacity:		55.7

NOTE: All of the HERD Facility is government owned.

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c. List total FY93 funds and list main programs, and customers.

Main FY93 Programs	Funding (\$K)	Customers
Exploratory Development	1,990	Army/Navy/AF Reliance
Advanced Development	510	ASC, Army/Navy/AF Reliance
Reimbursable	205	NSWC, ASC, AFDTC
Total FY93 Funding:	2,705	

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3. Describe by major functional and product lines, the capabilities of your activity to perform energetic functions in terms of manpower, intellectual/skill capability and capacity, and major facilities and equipment.

Response:

Functions of the Energetic Materials Branch High Explosive Research and Development Facility: Approximately half of the HERD Facility staff is involved in the development of new explosives in support of joint service and Air Force-unique requirements. These explosives are being developed for advanced missiles, bombs and hard target penetrators. Four personnel design and conduct experiments to evaluate explosive performance and sensitivity. The processing staff provide precision explosives for a variety of customers using all the available processing technologies.

Energetics Functions of the HERD Facility

Activity	Manyears	
	Government	Contractor
Explosives Development	10	2
Explosive Evaluation	4	0
Explosive Processing and Quality Control	12	1
Administration	2	1
Total:	28	4

Products of the Energetic Materials Branch High Explosives Research and Development Facility: Several of the Air Force's most important weapon systems contain explosives developed by the High Explosives Research and Development (HERD) Facility. AMRAAM, MAVERICK, and the Air Launched Cruise Missile are three such examples. As shown in the attached table, explosives are being evaluated to meet new levels of performance and insensitivity in bombs and the sensor fused weapon.

Explosives Products and Target Systems

Explosive	System	Status
AFX-108	Shrike	Production
AFX-108	Bullpup	Production
AFX-108	AMRAAM	Production
AFX-708	Maverick	Production
AFX .50	ALCM	Production
AFX-1160	GBU-28	Pre-Production

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AFX-770	GP Bombs	Developmental
AFX-644	Hard Target Warheads	Developmental
AFX-235	Sensor Fuzed Weapon	Developmental

Explosive Processing Operations: In 1993, the facility conducted over 100 explosive processing operations involving over 18,000 pounds of explosives. One of these efforts involved synthesizing 1200 pounds of urea nitrate in support of an FBI investigation of the World Trade Center bombing. Most of the explosive processing operations involved loading of experimental warheads and test items for performance and safety evaluation. These operations are described in the table shown below.

Explosive Processing Operations

Number of Processing Operations	Pounds of Explosives	Customers
46	8318	MN/Energetic Materials
3	433	MN/Fuzes Branch
45	7323	MN/Warheads Branch
3	527	MN/Instrumentation Branch
3	520	Aeronautical Systems Center
1	1200	FBI

X-Ray Support: The six MeV X-ray located at the HERD was originally intended to be used to inspect explosive charges fabricated by the processing section. It serves that purpose well and was in fact used to x-ray GBU-28 hard target warheads developed in a highly accelerated effort for Desert Storm. However, the facility has found other important applications and the list of FY93 customers is shown below. Uses range from inspection of foreign warheads and weapons to investigating structural integrity of B-2 tie downs.

**X-Ray Support
(Not Including Standard Load Quality Inspection)**

Items X-Rayed (FY93)	Customers
SAM Missiles	Foreign Weapon Exploitation
EM Gun Barrel	Ballistic Missile Defense Organization
105mm WP Shells	Air Force Special Operations Command
Sensor Fuzed Weapon	Aeronautical Systems Center
B-2 Bomber Tie-down welds	SPO
TMDs (Enhanced Blast Warhead)	SPO
.50 Cal Gun Barrels	Air Force Special Operations Command

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Technical Support Analysis: The extensive analytical capability located at the properties laboratory permits quantitative analysis of energetic materials. This capability was used in FY93 to support the customers listed in the table below. For AMRAAM, the HERD was able to develop a more readily measured explosive specification for the AMRAAM warhead that significantly reduced the rejection rate of contractor filled AMRAAMs. Foreign warheads, evaluated by AFDTC, were disassembled and analyzed to establish the types of energetic materials used and to judge the state-of-the-art in explosive development achieved by our potential adversaries.

Technical Support Analysis

Project	Customer
AMRAAM Product Improvement	SPO
Sensor Fuzed Weapon	SPO
Characteristics of Urea Nitrate	FBI
Large Scale Shock Sensitivity Testing	NSWC
Analysis of Foreign Explosives	AFDTC

Manpower supporting the HERD Facility is provided in the following table.

Manpower

Types of personnel	Number of Personnel		
	Government		On-Site SETA
	Civilian	Military	
Technical	14	7	3*
Management (Supv)	4	0	0
Other	3	0	1*

* Includes on-site Technical Support (Technical Engineering Acquisition Support (TEAS) & Technical Evaluation and Acquisition Management Support (TEAMS))

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Intellectual/skill capability and capacity is presented in the following categories:

- Education
- Scholastic Degrees
- Experience
- Awards
- Professional Societies
- Patents
- Papers Published by Government Personnel
- Papers Published by Contractor Personnel
- Permits and Licenses

Intellectual/Skill Capability And Capacity

Education

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	6	0	1
Associates	3	0	1
Bachelor	11	1	1
Masters	0	2	0
Doctorate (include Med/Vet/etc.)	1	1	0

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Intellectual/Skill Capability And Capacity (cont'd)

Scholastic Degrees

Types of Degrees	Number of Gov't Personnel
Chemistry	5
Aerospace Engineering	2
Biological	1
Chemical Engineering	1
Mechanical Engineering	4
Physics	1
Political Science	1
Education	2
Business Administration	1
Technical/Electronics	1

Experience

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	3	8	1	6	3
Management (Supv)	0	0	0	0	4
Other	1	1	0	0	1
Total	4	9	1	6	8

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Intellectual/Skill Capability And Capacity (cont'd)

Awards (FY91 - present)

NAME OF AWARD	PURPOSE	AWARD DATE
Air Force Organizational Award (AFOEA)	Exceptional meritorious service in Research and Development for 1 May 1991 to 30 April 1993	8 August 1994
Air Force Organizational Award (AFOEA)	Exceptional meritorious service in Research and Development for 1 May 1989 to 30 April 1991	8 August 1992
10th Annual ADPA Ammunition Technology Division Load Assembly and Pack	Munitions GBU-28	January 1991
Science and Engineering Technical Achievement Wright Laboratory	Munitions GBU-28	1990-1991
Civilian Air Force Notable Achievement Award	Repair Explosive Processing Labs Band Saw	June 1991
Civilian Air Force Notable Achievement Award	Desert Storm Contributions	March 1991
Civilian Air Force Notable Achievement Award	BLU-109 Penetrator Bomb for Desert Storm	January 1991
Civilian Air Force Notable Achievement Award	High Gear SAC Delay Fuze Program	January 1991
*Nature Conservancy Presidential Conservation Award	Adopting ecosystem-based principles for managing natural resources.	October 1993
*Secretary of Defense Natural Resources Conservation Award	Excellence in natural resource planning and operation.	April 1994

* Installation awards for Eglin AFB FL

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Intellectual/Skill Capability And Capacity (cont'd)

Professional Societies

PROFESSIONAL CHAIRMANSHIPS
Joint Army, Navy, NASA, Air Force (JANNAF) Propulsion Systems Hazards Subcommittee (PSHS), 1993-1995
Air Senior National Representatives Long-Term Technology Project on Insensitive High Explosives, 1994
Joint Ordnance Commanders Group (JOCG), Explosives and Propellants Subgroup, 1993-1994
Project Reliance Technology Subpanel for Warheads/Explosives, 1994-1995

Patents

Patent Titles (List)	Disclosures	Awarded
Bomb and Bomb Liner		1
Desensitized Explosive Composition		1
Automated Spall Panel Analyzer		1
Intermolecular Complex Explosives		1
Melt-Castable Explosive Composition		1
Multi-Stage Hard Target Penetrator	1*	

*This system has been designated an Air Force invention.

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Intellectual/Skill Capability And Capacity (cont'd)

Papers Published by Government Personnel (FY91-94)

Paper Titles	Year Published
Refereed Papers:	
Small-scale Testing of High Bulk Cubical and Spherical Nitroguanidine for Comparative Evaluation	FY91
Simulating Sympathetic Detonation Effects	FY93
Safeguarding Against Sympathetic Detonations	FY94
Published Papers/Technical Reports:	
AFX-644 (NTO-based, melt-castable explosive bomb fill)	FY91
Development of AFX-644 (An Insensitive, Melt Castable Explosive)	FY91
Estimation of the Gurney Energy for Several Insensitive Explosives Using 8-inch Steel (200mm) Cylinders	FY91
Development of the GBU-28 Penetrator	FY91
Development of TNTO Composite Explosives	FY92
Simulating Sympathetic Detonation Effects	FY93
Sympathetic Detonation Predictive Methods	FY93
Small-Scale Testing of High Bulk Cubical Spherical Nitroguanidine for Comparative Evaluation	FY93
A Study of Explosive Fills for Penetrators	FY94
Comparative Air blast Characteristics of AFX-931M, an Ammonium Perchlorate Based Explosive in 1000 lb Class Munitions	FY94
Characterization of the Sensitivity and Performance Properties of 1,3,3-Trinitroazetidine (TNAZ)	FY94
Characterization of the Hydrodynamic Performance Properties of NTO and TNT Composite Explosives	FY94
Preliminary Study on the Development of Modified AFX-931 Explosives	FY94
Presented Papers:	
Presentation at 10th Annual ADPA Ammunition Technology Division LAP Section Meeting	FY91
AFX-644 (NTO-based, melt-castable explosive bomb fill) - 2 Presentations	FY91
Development of AFX-644 (An Insensitive, Melt Castable Explosive)	FY91
Development of the GBU-28 Penetrator	FY91
Sympathetic Detonation Predictive Methods	FY91
Determination of Casewall Velocities & Gurney Constant From Large Diameter Heavily Confined Steel Containers	FY91
The Development of AFX-453 - 3 Presentations	FY92

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Sympathetic Detonation Predictive Methods for MK-82 General Purpose Bombs - 2 Presentations	FY92
Super Large Scale Gap Test	FY92
Fuzed Insensitive General Purpose Bomb Containing AFX-644 - 3 Presentations	FY92
Explosively Driven Flyer Plate Test - 2 Presentations	FY92
Small-scale Testing of High Bulk Cubical and Spherical Nitroguanidine for Comparative Evaluation	FY91
Simulating Sympathetic Detonation Effects	FY93
Sensitivity & Performance Evaluation of a 1.6 Hazard Classification Candidate Explosive - AFX 770 - 3 Presentations	FY93
Plastic Bonded Explosives for Warhead Applications - 2 Presentations	FY93
Thermal Characterization of Energetic Materials: Modified Chemical Reactivity, Vacuum Thermal Stability & Aging Tests - 3 Presentations	FY94
Modification of AFX-931 Explosives	FY94
Insensitive Explosives and Fuzes for GP Bombs: The Latest Success Story	FY94
Total:	46

Papers Published by Contractor Personnel (FY91-95)

Paper Titles	Year Published
Refereed Papers	
Interpretation of Time-to-Explosion Tests	FY93
Thermal Stability Studies on Nitroarenes	FY93
Additions of X-Y Across the C(3)-No-Bond in 1-Aza-3-ethylbicyclo[1.1.0]butane. Novel Routes to 3-substituted Azetidines	FY94
Reactions of 1-aza-3-ethylbicyclo [1.1.0]butane with Electrophiles; A Facile Entry into New, N-Substituted 3-ethylidenezetidines and 2-Azetines	FY94
Published Papers/Technical Reports:	
Thermoplastic Binders for Explosive Applications	FY91
Improved Synthesis of 3, 5-Diamino-2, 4, 6-Trinitrotuleune	FY92
New Explosives Concepts Technology	FY92
Progress on Tasks Under the Sympathetic Detonation Program	FY91
Exploratory Development of a New Nitroguanidine Recrystallization Process: Gas Anti-Solvent Recrystallization	FY93
Effect of Solid-Mechanic Properties of Energetic Materials on Munition Sensitivity	FY93

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On the Viability of Nitronic Acids in the Decomposition of Nitroaromatics: A Theoretical Study of Nitronic Acids	FY93
Surfactants for Plastic-Bonded Explosives (PBX) and TNT-Based Systems	FY92
Plastic Bonded Insensitive High Explosives	FY92
Thermoplastic binders for Explosive Applications	FY94
Kinetics and Mechanisms of Thermal Decomposition of Nitroaromatic Explosives	FY94
Surfactants and Desensitizing Wax Substitutes for TNT Based Systems	FY95
Presentations:	
Extremely Insensitive Detonating Substance Tests	FY92
Characterization of Plastic-Bonded Explosive Formulations for Bomb Applications	FY92
Plastic-Bonded Explosive Formulations for Warhead Applications - 2 Presentations	FY92
Extremely Insensitive Detonating Substance Tests	FY92
Insensitive Explosives for High-Performance Applications	FY93
Insensitive High Explosives, AFX-931 and AFX-770	FY93
Reducing the Sensitivity of High-Performance Warhead Fills	FY94
Thermal Decomposition Studies on NTO and NTO/TNT	FY94
Interpretation of Time-to-Explosion Tests	FY93
Thermal Stability Studies on Nitroarenes	FY93
Total:	27

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Intellectual/Skill Capability And Capacity (cont'd)

Permits and Licenses

Explosive Facility Licenses: The following Explosive Facility Licenses are issued to the HERD Facility to work with explosives as mandated by Air Force Regulation 127-100:

<u>PERMIT NO.</u>	<u>EXPIRATION DATE</u>	<u>LOCATION</u>
AFATL- 1	NONE	BLDG 984, HERD
AFATL- 2	NONE	BLDG 1217, HERD
AFATL -3	NONE	BLDG 1224, HERD
AFATL-13	NONE	BLDG 1200, HERD
AFATL-14	NONE	BLDG 1206, HERD
AFATL-21	NONE	BLDG 1281, HERD
AFATL-22	NONE	BLDG 991, HERD
AFATL-23	NONE	BLDG 993, HERD
AFATL-24	NONE	BLDG 994, HERD
AFATL-33	NONE	BLDG 1202, HERD
AFATL-41	NONE	BLDG 1295, HERD
AFATL-42	NONE	BLDG 1296, HERD
AFATL-43	NONE	BLDG 1297, HERD
AFATL-44	NONE	BLDG 1298, HERD
AFATL-45	NONE	BLDG 1299, HERD
AFATL-47	NONE	BLDG 1198, HERD
AFATL-48	NONE	BLDG 1199, HERD
AFATL-49	NONE	BLDG 1239, HERD
AFATL-51	NONE	BLDG 1221, HERD
AFATL-52	NONE	BLDG 1227, HERD

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Chemical Reactor System (10 gal.)	\$300	65
Build-up and Assembly Building	**	66
Test Fixture Fabrication Building	**	67
Solvent Storage Building	**	68
Chemical Storage Building	**	69
Explosive Test Building	**	70
Explosive Storage Building	**	71
Processing Laboratory	**	72-88
Total Replacement Cost (\$K):	\$24,837	

* Includes roads, grounds and security for the HERD Facility.

** This line item is a Bldg/Lab/Bay/Shop/Area/Van that is a part of the HERD Facility (bold print) and its cost is included in the HERD Facility cost.

NOTE: A photograph is provided in this submission for each line item in the Major Facilities and Equipment table. The page number in far right column refers to photo album page number.

Also provided with this submission is the video tape, Armament Directorate Overview, dtd 17 Aug 94 describing WL/MN facilities including the HERD Facility.

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Chiller Units (Qty 2 @ \$160K ea.)	\$320	33
Asphalt Melt Kettle	\$42	34
Medium Pressure Boiler	\$146	35
100 Gallon Melt Kettle Building	**	36
500 Ton Press Building	**	37
X-Ray Building	**	38
Explosive Materials Preparation Building	**	39
30-Gallon Melt/Cast and Mixing Building	**	40
Explosive Storage Igloos	**	41
Inert Storage and Assembly Building	**	42
Flammable Solids Storage Building	**	43
Explosive Processing and Centralized Control Bldg	**	44
Central Utilities Building	**	45
Thermal Degradation Apparatus	\$50	46
Cynus 25 Fourier Transform Infrared Spectrometer	\$300	47
Gas Chromatography/Mass Spectrometer Data Sys.	\$200	48
Electron Microscope with X-Ray Element Analyzer	\$150	49
Dupont Thermal Analysis System	\$125	50
Accelerating Rate Calorimeter	\$100	51
One Dimensional Time to Explosion	\$50	52
Mettler RC-1 Reaction Calorimeter	\$400	53
Inert Atmosphere Chamber	\$115	54
Baker-Perkins High Shear Mixers	\$45	55
Haake Rotary Viscometer	\$25	56
Environmental Chamber	\$81	57
Cryogenic Storage Tank (900 gal.)	\$216	58
Optical Comparator	\$270	59
Scientific Data Collection and Processing System	\$325	60
Streak Camera M75	\$270	61
Streak Camera M132	\$300	62
Framing Camera M114	\$400	63
Superconducting Fourier Transform Nuc Mag Res Spectrometer (300 Hz)	\$274	64

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4. Map of the installation to include elements listed in 2 and 3:

a. Annotate buildings to show location of each organizational element.

Response:

See attached maps.

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Major Facilities and Equipment

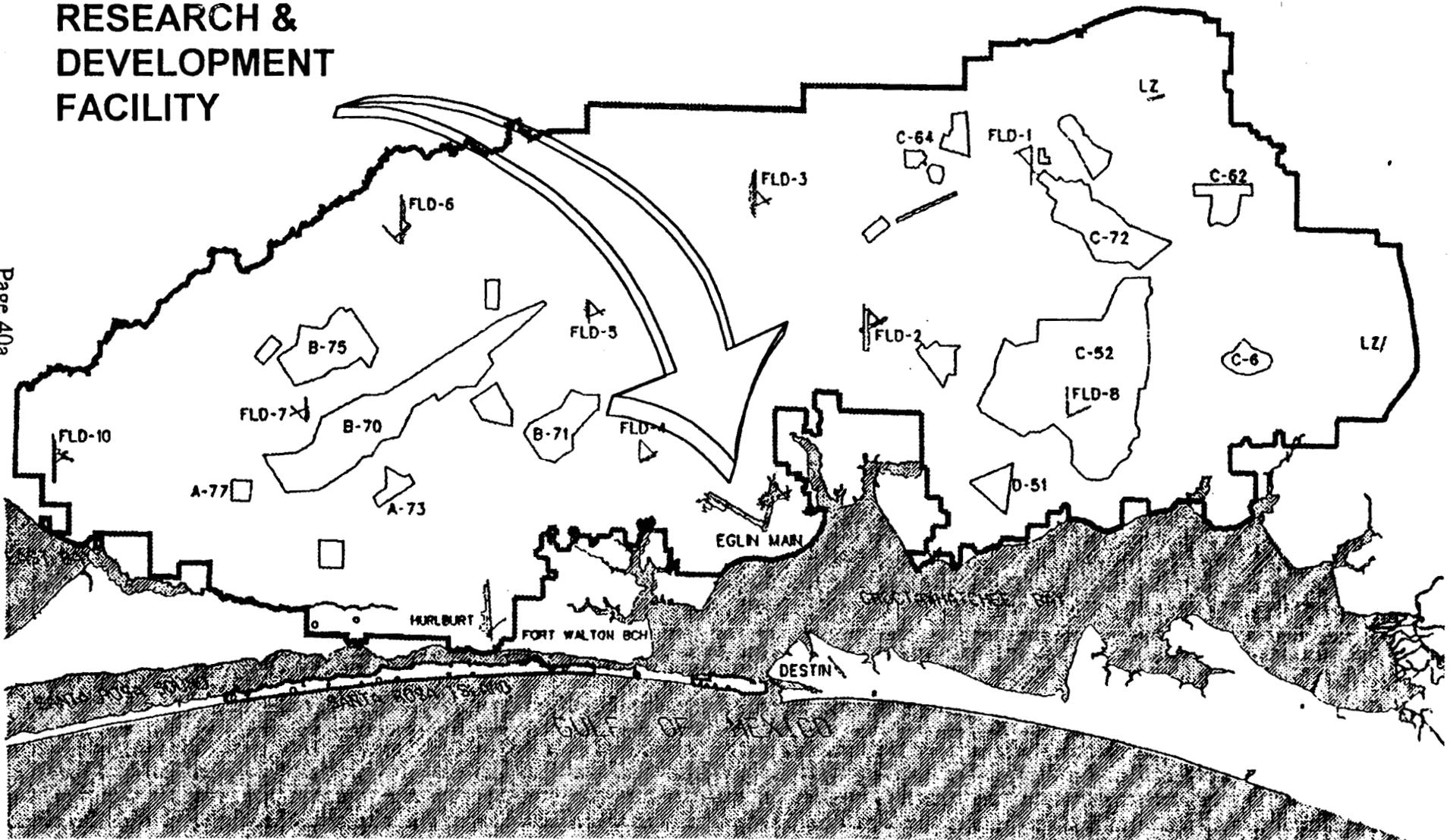
Facility and Equipment Description	Replacement Cost (\$K) FY94 Dollars	Photo Album Page Number
High Explosives Research & Development Facility	\$14,901*	1
Properties Laboratory	**	2
Dynamics Laboratory	**	3
100 gal. Steam-Heated Melt Kettle	\$127	4
30 gal. Steam-Heated Melt Kettle	\$83	5,6
30 gal. High-Shear, Vertical Mixer	\$319	7,8
500-ton Double-Acting, Hydraulic Press	\$942	9
100-ton Hydraulic Press	\$323	10
10 Cubic Foot Vacuum Tumble Dryer	\$280	11,12
Instron Mechanical Properties Tester	\$54	13
Steam-Heated Oven (Qty 10 @ \$69K ea.)	\$690	14
Remote Control Band Saw	\$60	15
Remotely-Controlled Milling Machine	\$66	16
Remotely-Controlled Lathe	\$54	17
Closed Circuit Television Monitoring System (Qty 5 @ \$38K ea.)	\$190	18
Linatron 1000A MeV X-Ray System	\$863	19,20
Astrophysics 450 KeV X-Ray System	\$115	21
Picker 320 KeV Fluoroscope	\$360	22
48-in. Explosive Particle Size Separator	\$26	23
Explosive-Proof Electronic Scale	\$264	24
Isostatic Press Pump System	\$42	25
High Pressure Water Pump	\$54	26
Hot Water/Oil Circulator Units (Qty 10 @ \$18K ea.)	\$180	27
High Volume Pump (Qty 7 @ \$7K ea.)	\$49	28
Walk-In Curing Oven	\$210	29
Explosive-Proof Wet Scrubber Unit	\$24	30
Radiograph Film Processor and Film Reader	\$12	31
High-Volume Air Compressor	\$45	32

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EGLIN AIR FORCE BASE

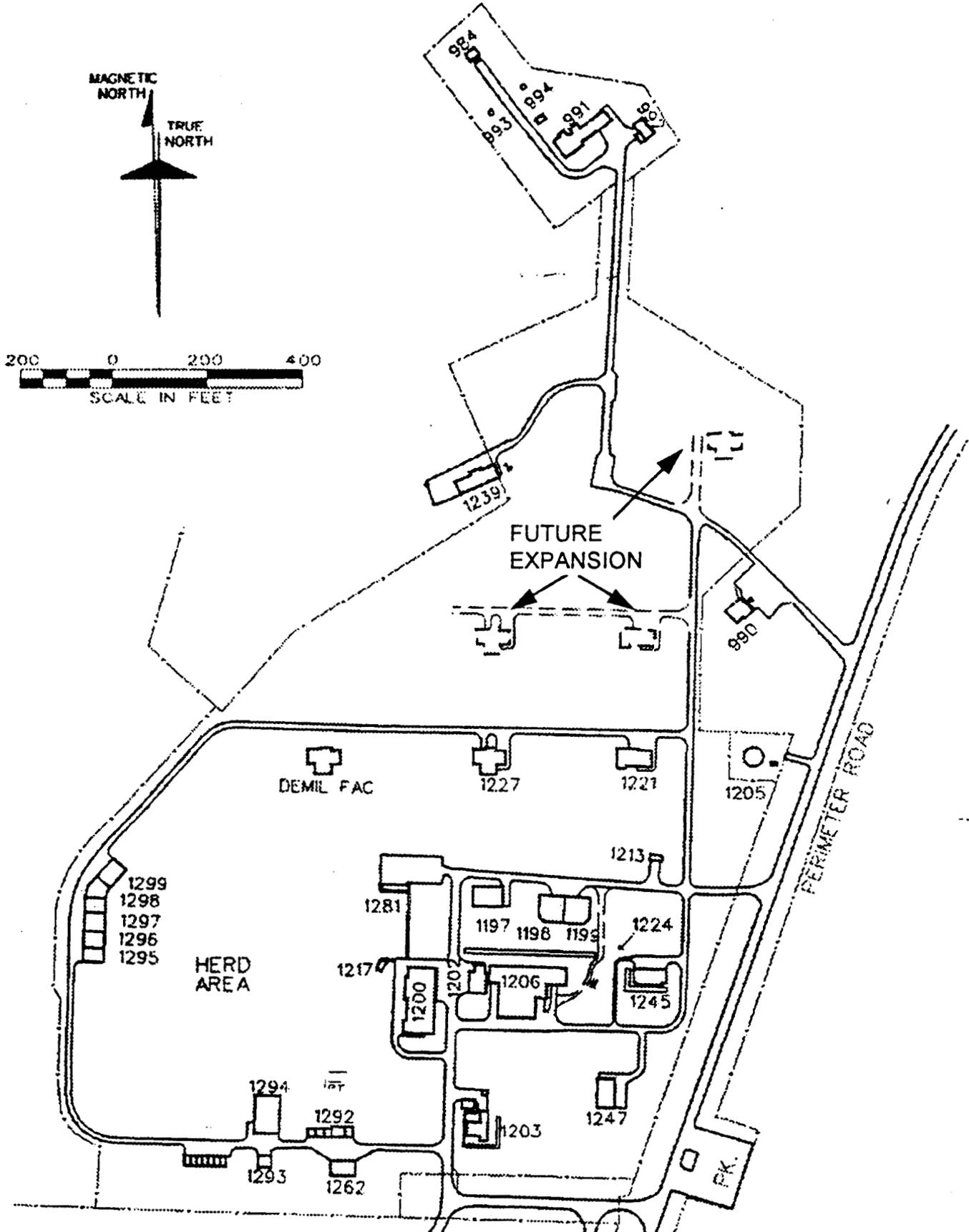
HIGH EXPLOSIVE RESEARCH & DEVELOPMENT FACILITY



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HIGH EXPLOSIVE RESEARCH & DEVELOPMENT FACILITY



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b. Show buildings with equipment/facilities which would be difficult to move or replicate. List such equipment with initial cost. Provide an estimate of the replacement cost of the facilities.

Response:

Initial costs are not available, but estimated replacement costs as of FY94 are included.

Facility and Equipment Description	Replacement Cost (\$K) FY94 Dollars	Photo Album Page Number
High Explosives Research & Development Facility	\$14,901*	1
Properties Laboratory	**	2
Dynamics Laboratory	**	3
100 gal. Steam-Heated Melt Kettle	\$127	4
30 gal. Steam-Heated Melt Kettle	\$83	5,6
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500-ton Double-Acting, Hydraulic Press	\$942	9
100-ton Hydraulic Press	\$323	10
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Instron Mechanical Properties Tester	\$54	13
Steam-Heated Oven (Qty 10 @ \$69K ea.)	\$690	14
Remote Control Band Saw	\$60	15
Remotely-Controlled Milling Machine	\$66	16
Remotely-Controlled Lathe	\$54	17
Closed Circuit Television Monitoring System (Qty 5 @ \$38K ea.)	\$190	18
Linatron 1000A MeV X-Ray System	\$863	19,20
Astrophysics 450 KeV X-Ray System	\$115	21
Picker 320 KeV Fluoroscope	\$360	22
48-in. Explosive Particle Size Separator	\$26	23
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Explosive-Proof Wet Scrubber Unit	\$24	30
Radiograph Film Processor and Film Rea...	\$12	31

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High-Volume Air Compressor	\$45	32
Chiller Units (Qty 2 @ \$160K ea.)	\$320	33
Asphalt Melt Kettle	\$42	34
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100 Gallon Melt Kettle Building	**	36
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Flammable Solids Storage Building	**	43
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Central Utilities Building	**	45
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Cynus 25 Fourier Transform Infrared Spectrometer	\$300	47
Gas Chromatography/Mass Spectrometer Data Sys.	\$200	48
Electron Microscope with X-Ray Element Analyzer	\$150	49
Dupont Thermal Analysis System	\$125	50
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Mettler RC-1 Reaction Calorimeter	\$400	53
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Haake Rotary Viscometer	\$25	56
Environmental Chamber	\$81	57
Cryogenic Storage Tank (900 gal.)	\$216	58
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Framing Camera M114	\$400	63
Superconducting Fourier Transform Nuc Mag Res Spectrometer (300 Hz)	\$274	64
Chemical Reactor System (10 gal.)	\$300	65
Build-up and Assembly Building	**	66
Test Fixture Fabrication Building	**	67

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Solvent Storage Building	**	68
Chemical Storage Building	**	69
Explosive Test Building	**	70
Explosive Storage Building	**	71
Processing Laboratory	**	72-88
Total Replacement Cost (\$K):	\$24,837	

* Includes roads, grounds and security for the HERD Facility.

** This line item is a Bldg/Lab/Bay/Shop/Area/Van that is a part of the HERD Facility (bold print) and its cost is included in the HERD Facility cost.

NOTE: A photograph is provided in this data submission for each line item in the Major Facilities and Equipment table. Page number in far right column refers to photo album page number.

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5. Estimate the capacity of the activity and installation (separately) to absorb similar workyears with little or no modification of facilities. Estimate the capacity of the activity and installation (separately) to absorb similar workyears with major modification and describe the nature of those modifications and estimated cost. Use FY97 as the baseline for such estimates.

Response:

Organizational Element (Energetic Materials Branch, WL/MNME)

Using actual staff level as of 1 Aug 1994 (consisting of 36 government and on-site contractor personnel), the HERD Facility can absorb 18 additional similar workyears with no modification of facilities thus increasing the staff to 54.

With minor construction to add office space, WL/MNME could absorb 17 additional workyears. This estimate is based on existing laboratory and explosive processing capacity, and on a statute of limitations of \$300K for minor construction projects. This expansion would increase the staff to 71.

After the minor construction is accomplished for an initial capacity increase, a follow-on major modification (construction) on the 10 buildable acres, within the WL/MNME compound, would absorb 71 additional similar workyears bringing the total staffing level to 142. The construction would include increased office space, and a synthesis laboratory and two pre-production explosive processing buildings on existing safety approved sites (each with a 1,000 lb explosive limit). Also, a 50 pound enclosed test chamber would be constructed adjacent to the existing 20 pound chamber giving simultaneous thermal and detonation properties testing capability. Estimated cost of modifications is \$6.2M (FY97). Five additional 10,000 pound explosive storage igloos could be constructed on existing safety approved sites within the WL/MNME compound to support further expansion of the installation if required. This analysis is based on construction at sites already approved by the DOD Explosives Safety Board (DDESB). Larger scale activity can be accomplished within existing land area; however, DDESB approved site surveys would be required.

Activity (Wright Laboratory Armament Directorate, Eglin AFB FL)

Excess capacity for the activity is 160 workyears. This response was derived using a formula provided in the data call for the 1995 Base Realignment and Closure (BRAC), Laboratories Joint Cross-Service Group, 30 Mar 1994 as follows:

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- 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

The response (160 workyears) is calculated by taking the difference of WL/MN Peak Workyears (620 in FY89) and WL/MN Projected Workyears in FY97 (460). The WL/MN workyears table is repeated below for clarity.

WL/MN Workyears

	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Programmed Workyears*	513	563	589	617	599	573	521	498	514	506	501	460
Actual Workyears*	503	566	592	620	579	537	533	507				

* Includes on-site SETA.

WL/MN has sustained personnel cuts over the last few years and can therefore absorb several additional similar workyears with little or no modification of facilities. WL/MN has office space and technical facilities to support an additional workforce of approximately 160 workyears (calculated above).

WL/MN occupies approximately 1,000 acres of the 724 square miles which comprises Eglin AFB's land mass. The majority of this 1,000 acres is experimental ranges with safety footprints for munitions research. WL/MN is spread over eight sites on the Eglin complex. Within close proximity of these sites, approximately 85 acres is considered as buildable acres. However, with additional construction or with revitalization of other Eglin facilities which may be available due to other Eglin organization impacts, our capacity to expand to accommodate others is practically unlimited.

Installation (Eglin Air Force Base FL)

Eglin AFB, with its 724 square miles of developed and undeveloped property, would have no problem absorbing additional workyears of energetic functions. The Eglin property ranges from the developed main base of single and multi-level buildings to fully instrumented test ranges to wilderness areas. It includes flight lines, hangers, land ranges and water ranges and is the free-world's largest air force base. Because of its vastness and its remote location, the capability of Eglin AFB to absorb energetic functions related to explosives development and testing is almost

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"unlimited" depending on the specific nature of the work to be absorbed and its requirement for buildings or other support structure.

Some areas of Eglin AFB have utilities in place and can absorb additional capacity with no modification. The base electrical distribution system has a total capacity of 117 MW with a current usage of 49.2%. The base gas distribution system has a total capacity of 68.4 MCF/day with a current usage of 7.71%. The base water distribution system has a total capacity of 22.35 MG/day with a current usage of 34.5%.

In addition to absorbing additional capacity with no modification, there is potential within the Eglin AFB complex to absorb substantial growth with 3,533 buildable acres suitable for new development. This acreage includes only areas where sufficient infrastructure is in place to support expansion. Test ranges are mainly open areas which could be developed, depending on the mission. This fact is critical because WL/MN can be expanded to encompass substantial portion of Eglin AFB. Eglin AFB is located in a remote region of Northwest Florida and is fully supported by land, air, and sea accesses which enable construction and addition of virtually any type of conventional weapons facility.

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6. Describe the impact of BRAC 91 and BRAC 93 decisions on the activity and installation.

Response:

To the best of our knowledge, BRAC 91 and BRAC 93 did not impact this activity or installation.

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7. Describe military department approved and programmed plans which will impact or have impacted the activity and installation.

Response:

Activity (Wright Laboratory Armament Directorate, Eglin AFB FL)

Personnel: The Defense Management Review (DMR) resulted in the loss of 103 manpower/personnel authorizations within the Armament Directorate. In addition, losses due to the FY96 POM and Secretary of Defense (Dorn Cut) manpower reduction exercises, there will be 75 additional cuts through Sept 1995. Effective July 95, all 75 authorizations are scheduled to be deleted from the Unit Manpower Document (UMD).

HERD Demilitarization Facility. As part of its research project entitled "Reclamation and Recycling of Waste/Inventory Explosives," WL/MNME is constructing a Research & Development facility capable of demonstrating demilitarization, recovery and treatment technologies for energetic materials and associated waste streams. The environmental impact assessment and architectural/engineering design for the facility were completed during FY94 and a construction contract for \$280,000.00 was awarded. This 2500 ft² facility will house modular/mobile equipment for high pressure water washout, particle size reduction, recrystallization and treatment and disposal of energetic materials. As a pilot-scale operation, the facility will be available to research organizations worldwide as a site for proving technology concepts which have been demonstrated in laboratory scale environments. The facility will provide a means of disposing of energetic materials wastes. It will also allow program offices to recover valuable hardware and explosives as they refine their developing technologies. The high pressure water pump for washout and particle size reduction has already been acquired and resides at WL/MNME. A Cooperative R&D Agreement (CRDA) is in preparation to accomplish the demonstration washout/recovery process for demilitarizing M-117 bombs containing tritonal. A separate CRDA will address the installation of an induction coupled plasma reactor at WL/MNME for destruction of energetic materials.

Advanced Warheads Experimentation Facility. The Armament Directorate's Advanced Warheads Experimentation Facility (AWEF) was recently constructed as a specialized facility for the development of advanced generation warheads and kinetic energy penetrators. The facility is over 10,000 sq ft including machine shop, and test chambers which provide an integrated capability for the design, fabrication and evaluation of warheads for smart munition concepts. Among the unique capabilities in the facility are a series of explosive test chambers licensed for testing depleted uranium warhead materials that are environmentally contained to provide explosive/metal testing with high density metals. These chambers are integrated with advanced state-of-the-art instrumentation and computerized data acquisition systems to provide detailed analysis of design and terminal effects. This facility provides the Air Force, and other DOD agencies, the capability to study warhead and penetrator performance.

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The AWEF is the only facility within the U.S. that is licensed to conduct heavy metal, terminal ballistic experiments with gun launched or explosively formed penetrators (EFP) in an environmentally secure safe chamber. The AWEF is designed for enclosed detonation tests of up to 40 pounds of explosive with complete product recovery. The blast chamber has been validated to 25 pounds of explosive in free air with required instrumentation. Characterization of larger volumes of explosives will be test configuration dependent. Also, the AWEF is adjacent to two outdoor test ranges. The data generated in these experiments will be assessed by engineers and designers responsible for the development of advanced warheads. Typically, terminal effects experiments are parametric studies to measure weapon effectiveness. The AWEF provides the capability to study warhead performance against various target configurations. It will provide a capability for studying adaptable warhead design consistent with smart sensor fuzed weapons concepts. The experiments can be used to support concept formulation and evaluation studies for evolving threats.

Installation (Eglin Air Force Base FL)

AFDTC/96 CCSG, Scientific Computing Center/DOD Shared Resource Center for High Performance Computing: Eglin AFB has been designated by the Department of Defense as one of ten national DOD Shared Resource Centers for High Performance Computing. Funding to enhance and support the Eglin High Performance Computing capability will be provided by this modernization program. The Cray Y-MP supercomputer housed in the Freeman Computer Sciences Center will be upgraded by adding a state-of-the-art scalable parallel processing system which will increase the power of the supercomputer from 2 billion operations per second to 20 billion operations per second. This new capability will allow Eglin's scientists and engineers to efficiently distribute a computer program or portions of a computer program among 128 processors in the new system for very fast solutions to complex weapon system simulations. DOD scientists and engineers nationwide will be able to take advantage of Eglin's High Performance Computing capability, including the Cray supercomputer, integrated workstations, graphics capabilities, a trillion byte file storage system and superior customer service.

The FY95 upgrade will provide a 128 processor scalable parallel supercomputer that will increase the computational capability from 1 GIGAFLOP to 20 GIGAFLOPS of computational power. This will be a special one-of-a-kind facility within DOD. The upgrade of the Cray supercomputer with the Cray T3D scalable parallel supercomputer will provide a 20 GIGAFLOP computational capability that will be one the larger supercomputers and the ONLY Cray T3D supercomputer in DOD's inventory. The DOD High Performance Computing Program will provide \$11.26 million dollars (FY94 funding) for the upgrade to a scalable parallel processing system to establish Eglin as a Distributed Shared Resource Center for DOD High Performance Computing. The current computational capability is used to support the research, development test and evaluation mission of the Air Force. Scientists and engineers use the high performance computer to simulate

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advanced weapon systems or weapon system effects. The new system will support the high performance computing requirements of all defense laboratories and research, development, test and engineering centers. This will include companies and universities under contract or participating in technology transfer initiatives with these DOD agencies.

The Freeman Computer Sciences Center at Eglin is a facility built especially to support state of the art computing. Users of the system at Eglin include scientists and engineers from the Armament Directorate of Wright Laboratory, the Air Force SEEK EAGLE Office, the 46 Test Wing and the Aeronautical Systems Center. Designation as a DOD Shared Resource Center is a direct result of a team effort by these organizations.

Naval Explosive Ordnance Disposal (EOD) School Consolidation: The Naval EOD School is a jointly-staffed (Army, Navy, Air Force, Marine Corps) school providing specialized Explosive Ordnance Disposal training to officer and enlisted personnel of all services, both U. S. and foreign, and to selected civilian officials, in the best methods and procedures for the detection, identification, render safe, recovery, evaluation, and disposal of explosive ordnance, surface and underwater, conventional and nuclear, employed by the U. S. and other nations. The EOD School supports test activities by rendering safe or removing unexploded ordnance from various land and water test ranges.

The Naval EOD School is one of Eglin AFB's newest associate units. The EOD School at Indian Head, Md consolidated its training at Eglin Air Force Base and Panama City, FL. The consolidation results in a \$4.38 million annual recurring savings for the DOD. Prior to 1967, portions of EOD training were conducted at Eglin. From that time until the school's recent return, training was conducted at Naval School, Explosive Ordnance Disposal, Indian Head, Md. Upon its return, the EOD school brings state-of-the-art facilities and teaching, and includes a three-building 252-room bachelor quarters complex; a second training facility, extensive practical training facilities on Ranges 51, 52 West, and 52 North; a training aid and facilities maintenance compound, and six high explosive magazines. The school is staff by 23 officers and 160 enlisted personnel from all four branches of service and trains approximately 1,200 students annually.

The relocation of Phase I of EOD training allows restructuring of the curriculum, additions of new content, and a greater than two-fold increase in student capacity. The opening of the school also brought EOD training in line with NATO standards. Phase I training at Eglin consists of four segments: Core Division, Demolition Division, Tools and Methods Divisions, and Biological and Chemical Division. The Core Division provides basic explosive and ordnance background knowledge, training on EOD specific publications, and practical application of ordnance identification. The Demolition Division provides training in basic demolition procedures, operations and safety, as well as use, application, and preparation of EOD specialized explosive tools and disposal techniques. The Tools and Methods division provides additional training in EC peculiar explosive and non-explosive tools and ordnance location tools and techniques. The Biological and Chemical Division provides training for operations within the BC theater; for

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example, hazards identification, personnel protection, packaging, handling, decontamination, monitoring, and disposal.

AFDTC McKinley Climatic Laboratory: The McKinley Climatic Laboratory Main Chamber (200 x 250 x 70 ft) is the world's largest environmental test chamber. It can accommodate any aircraft in the DoD inventory and provide a full range of climatic test conditions while permitting jet engine operation. In addition to the main chamber, the McKinley Climatic Laboratory also has an equipment test chamber (30 x 130 x 25 ft), again with full climatic ranges and jet engine operation; an all-weather room (22 x 42 x 14 ft), a sun, wind, rain, and dust chamber (50 x 50 x 30 ft), a salt fog chamber (16 x 54 x 16 ft), and a temperature altitude chamber (13.5 x 9 x 7 ft). Responsible for simulation of extreme environmental conditions for full scale testing of DoD weapons systems. The six chambers in the facility are able to simulate a wide variety of climatic extremes including low temperature, high temperature, rain, snow, icing, fog, solar radiation, wind, humidity, salt fog, sand, and dust. Testing capabilities Climatic environmental testing - high temperature, low temperature, high humidity, snow, rain, sand, dust, salt fog, icing, altitude, solar radiation. The CLimatic Laboratory supports a wide range of environments including a temperature range from -65 to +165 degrees Fahrenheit and simulated rainfall from mist to 15 inches per hour. Simulation equipment includes solar radiation frames (5,300 sq ft), icing frames (5,300 sq ft), wind machines (60 mph), and snow machines. Instrumentation includes multiple remote control cameras, A to D conversion utilizing either POM commutation or current loop transmitters, multiple POM stream decommutation, data reduction equipment, real-time displays, analog, digital, and video tape recording.

The McKinley Climatic Laboratory is currently undergoing a complete \$62M renovation of the main test chamber and the equipment test chamber, including the supply and return air plenums. The renovation also includes a complete replacement and upgrade of the facilities' electrical and fire protection systems. An additional 500lbm/sec air makeup system and new facility monitoring and control systems are being installed. The engineering work areas are being renovated and handicapped accessibility is being improved. The renovation project is scheduled for completion in January 1996, with the Laboratory operational by July 1996.

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8. Remaining tenants and other activities on the installation: name of organization, mission, total workyears.

Response:

Installation/Tenant Manpower*

Name of Organization	Manpower
AFDTC	6,726
33rd FW	2,148
9th SOS	463
919 SOW	355
AFOTEC, Det 2	58
USAF Air Warfare Center	742
20 Space Surveillance Squadron	144
6th Ranger Training Battalion	156

* As of 4th quarter, FY94.

Air Force Development Test Center (AFDTC). The Air Force Development Test Center of the Air Force Materiel Command, is located at Eglin AFB, FL. Its mission includes the full spectrum of planning, directing, and conducting the test and evaluation of non-nuclear munitions, electronic combat, and navigation/guidance systems. AFDTC is also responsible for all host and base support functions for Eglin AFB. The Test Center accomplishes its mission through its two component wings - the 46th Test Wing and the 96th Air Base Wing.

46th Test Wing. The Air Force Development Test Center's 46th Test Wing manages the overall test and evaluation program for AFDTC. To perform this task, it is equipped with approximately 28 aircraft of various types, and highly instrumented ground facilities. To accomplish its mission, the Test Wing manages all the large land test ranges located throughout the 724 square mile Eglin complex, as well as the 86,500 square miles of water ranges in the adjacent Gulf of Mexico. Major tests on or above AFDTC's ranges involve all types of equipment, including aircraft systems, subsystems, missiles, guns, bombs, rockets, targets and drones, high-powered radars, and airborne electronic countermeasures equipment. These systems are tested in a variety of environments, and combat conditions are realistically simulated. One of the Test Wing's unique assets is the McKinley Climatic Laboratory, capable of testing military hardware as large as bombers in environments ranging from minus 65 to plus 165 degrees Fahrenheit with 100 mph winds, icing, clouds, rain, and snow. Under the 46th Test Wing is the 46th Test Group at Holloman AFB, NM. Among its unique facilities are a 10-mile high speed test track, two radar signature measurement facilities, and the Department of Defense Central Inertial Guidance Test Facility.

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96th Air Base Wing. The 96th Air Base Wing provides major medical, civil engineering, personnel, logistics, communications, computer, security, and all other host services to AFDTTC units and approximately 45 associate units, such as the USAF Air Warfare Center and the 33rd Fighter Wing, that make Eglin AFB their home. These support services are provided to more than 70,000 active duty, civilian, retired personnel, and dependents that reside in the area. In addition to its normal host base support function, the Air Base Wing also runs one of the largest mobility functions in the Air Force. In support of wartime taskings it is responsible for mobilizing more than 54,000 people and 22,000 tons of cargo.

Air Force Special Operations Command (AFSOC), Hurlburt Field FL. As a major player in every low intensity conflict in the past decade, AFSOC responds to provide special operations personnel and direct fire support to accomplish its assigned objectives. The close proximity of WL/MN has proven to be extremely beneficial to AFSOC in terms of direct weapon support and weapons requirement planning in support of that mission.

WL/MN provides requested direct support by investigating and solving malfunctions and failures of helicopter and gunship weapons and ammunition. The quick response, sometimes on an emergency basis, is greatly enhanced by the cross-town location. Engineers, armorers, and aircrew can meet quickly on-site as needed to discuss and evaluate problems, and take the appropriate corrective action. WL/MN also provides support to AFSOC through the R&D of enhanced weapons and ammunition. Programs designed to develop improved munitions have been formulated through the close interaction with engineers and the user. On one specific occasion, an improved fuze housing was designed, fabricated, and tested in-house on a reduced schedule to meet specific mission requirements.

WL/MN works directly with AFSOC's requirements and acquisition personnel to provide support for the Special Operations Forces (SOF) Technical Planning Integrated Product Team (TPIPT). Recently held and future Directorate sponsored meetings of the AFSOC Weapon Requirements Workshop clarify near and far-term requirements and facilitate inputs to the AFSOC Weapon System Roadmap and Mission Area Plans. In addition, Directorate engineers and AFSOC planners serve together on Project Reliance subpanels to guide the development of future weapons for AFSOC as well other Air Force MAJCOMs.

The geographical closeness of AFSOC and the Directorate has paid big dividends. The advantages are manifest not only in the obvious time savings of immediate response, but in the invaluable communications link of face-to-face contact with colleagues from the same community. The impact of losing this direct coordination would adversely affect the timeliness of the support provided to the AFSOC mission, and perhaps influence the reaction time of AFSOC to meet its objectives.

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33rd Fighter Wing, Eglin AFB FL. The 33rd Fighter Wing, a flying combat unit of Air Combat Command's 9th Air Force, is a major tenant unit at Eglin AFB, FL. The mission of the 33rd FW is to deploy and then gain and maintain air superiority by engaging and destroying enemy air forces. The 33rd FW flies the F-15 Eagle air superiority fighter. The wing has three flying units - the 58th, 59th, and 60th Fighter Squadrons. The 33rd Aircraft Generation Squadron, 33rd Component Repair Squadron, and the 33rd Equipment Maintenance Squadron are responsible for the maintenance of the Eagles. The 33rd's other unit is the 33rd Headquarters Squadron Section. The wing currently has more than 1900 active-duty military and 28 civilian members assigned. The fiscal year 1990 military payroll was nearly \$52 million. The civilian payroll for the same period was more than \$919,000.

The 33rd FW has a long history as a combat unit. It fought in campaigns during World War II in North Africa, the Mediterranean, China, Burma and India flying P-40 and P-47 aircraft. The unit earned the Distinguished Unit Citation in 1943. The 33rd was involved in the occupation of Germany after the war and was later reassigned to New Mexico flying the P-51, and in 1947 converted to the F-84 jet. In 1948 the unit moved to Otis AFB, Mass., and flew the F-86 until deactivated in 1952. In 1956 it was reactivated, assigned F-89's and F-94's and became part of the Eastern Air Defense Force. It was deactivated in 1957. The 33rd FW was reactivated at Eglin AFB, Fla., on April 1, 1965 and equipped with the F-4 Phantom. During the conflict in Southeast Asia, the wing trained, equipped and deployed eight combat squadrons to that area. In 1978 the wing converted to the F-15 Eagle at Eglin AFB. The wing has more than 70 Eagles assigned.

Recent real-world situations have seen Nomad participation in Operation Urgent Fury - Grenada in 1984, Operation Just Cause - Panama, in 1990 and Operation Desert Storm in 1991. While participating in Desert Storm the 33rd Fighter Wing had 16 aerial kills including the first three kills of the war. The 33rd's combat achievement accounted for nearly 50% of the total coalition air forces kills. As a leader in the air-to-air combat arena the 33rd Fighter Wing is also the first unit to carry the Aim 120 Advanced Medium Range Air to Air Missile (AMRAAM). The wing declared Initial Operating Capability in September 1991.

9th Special Operations Squadron (SOS). Provides specialized crews and aircraft for covert air refueling of special operations helicopters, "any time any place."

919th Special Operations Wing (AFSOC), Eglin AFB Fld 3 FL. The mission during peacetime is to train reservists in AC-130A gunship operations to include armed reconnaissance, armed interdiction, close air support, armed escort, forward air control, and search and rescue. The mission during wartime is to conduct air operations in support of conventional/unconventional warfare operations. Provides offensive and defensive firepower in support of friendly combat forces. Primary missions are close air support of troops in contact, interdiction of lines of communication and armed reconnaissance. Ancillary missions include

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armed escort, search and rescue, strike control, and limited airborne command and control. Has limited defensive ECM capability. Can be deployed to main base, stand-by, and limited base.

Air Force Operational Test & Evaluation Center (AFOTEC), Det 2. AFOTEC is a Direct Reporting Unit, independent of acquisition and operation commands, which plans and conducts realistic, objective, and impartial operation test and evaluation (OT&E) to determine the operational effectiveness and suitability of Air Force systems and their capability to meet mission needs. Results are reported directly to CSAF.

USAF Air Warfare Center (USAFAWC) Eglin AFB FL. The mission of the USAF Air Warfare Center (USAFAWC) is to test and evaluate new or improved weapon systems and air defense radar systems and to support the Combat Air Forces (CAF) in assigned areas of technical expertise. Specific duties include operational testing of the following CAF weapon systems and equipment; electronic combat (EC) systems and support equipment; reconnaissance systems; aircrew training devices (ATDs); life support; command, control, communications, and intelligence (C3I); armament and avionics systems; combat support; chemical warfare defense (CWD); air base and installation security systems (BISSs) and subsystems; and air defense radar systems and equipment. USAFAWC provides technical and operational expertise to assist HQ Air Combat Command in providing operation forces required in support of testing managed by the Air Force Operational Test and Evaluation Center (AFOTEC). USAFAWC also manages and conducts Follow-on Operational Test and Evaluations of hardware and software for which AFOTEC serves as the Air Force focal point. USAFAWC develops and evaluates tactics for EC, avionics and armament, reconnaissance systems, ATDs, life support, C3I, drones, combat support, CWD, BISS, and air defense radar systems and equipment. The Center reprograms designated EC systems to meet mission needs of CAF aircraft. (The peacetime implementation of this mission is through USAFAWC Emergency Reprogramming Center (ERC). The Center also maintains the software that supports the reprogramming of EC systems. USAFAWC creates various mission data configurations in EC systems and manages these configurations according to AFR 800-14. USAFAWC assists the HQ ACC operations staff and CAF units in determining the use of and making improvement to technical equipment and software used by the CAF. USAFAWC assists the HQ ACC staff in the Air Force requirements and acquisition process, including concept exploration, demonstrations, and evaluations. USAFAWC improves the effectiveness of CAF systems through such evaluation programs as the Air-to-Ground Weapon Systems Evaluation Program, the Electronic Warfare Evaluation Program, the Air-to-Air Weapon Systems Evaluation Program, the Periodic Radar Evaluation Program, the Air Force Radar Evaluation Program, and the Precision Guided Munitions Analysis Program. USAFAWC improves the combat capability of CAF personnel through specialized training; Blue Flag exercises (for battle staff), Green Flag exercises (for EC), EC and battle management courses, and USAF Air Ground Operations School. USAFAWC operates specific Air Force complexes used for training and testing of Air Force systems and procedures: the C3I complex, Air Force subscale and full-scale aerial target assets, and the USAFAGOS. USAF. .7C manages William Tell (the biennial worldwide Air Force air-to-air weapons meet). The Center conducts day-to-day

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management and execution of ACC war gaming responsibilities, with policy and commitment of ACC resources approval authority remaining with HQ ACC/DO.

20th Space Surveillance Squadron (20 SSS). Operates and maintains the only USAF phased array space surveillance system dedicated to tracking over 7,000 near-earth and deep space objects. Executes a space control mission by performing all weather, day-night location and tracking of manmade objects and supports USCINCSpace and theater warfighter's requirements through continuous surveillance of on-orbit satellites.

6th Ranger Training Battalion. Eglin's Auxiliary Field Six is the site of Camp James E. Rudder and the home of the Army's 6th Ranger Training Battalion. The mission of the 6th Ranger Training Battalion is to conduct the last, or jungle, phase of the U.S. Army Ranger Course. The Course is 63 days in length and divided into four phases. Each phase is conducted at different geographical and environmental locations. Camp James E. Rudder is a sub-installation with operating and quality of life facilities to provide basic needs. These facilities include 25 family housing units, a small exchange annex, an all-ranks lounge, a gymnasium, a youth center, a swimming pool, a tennis court, a chapel, a reptile facility, and a billeting complex. It also includes a troop dining facility, a troop medical clinic, civil engineering shop, sub-motor pool, a boathouse, a rappel tower and an airborne staging area, as well as an air strip capable of accommodating C-130 aircraft. The mission is to expose Ranger students to a fast-paced, 14 day field training exercise that make these future combat leaders aware of their capabilities and limitations. Included in the field training exercise are airborne and helicopter assaults, small boat operations, river crossings, swamp crossings, and amphibious operations in the Gulf of Mexico.

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9. Summarize your overall mission.

Response:

Wright Laboratory Armament Directorate (WL/MN)

- Single Air Force organization providing technology base for future Air Force conventional armament.
- Basic research, exploratory and advanced development of guided and unguided armament and associated equipment.
- Specific technologies being developed include
 - Advanced seekers
 - Guidance and control components and software
 - Warheads
 - Explosives
 - Fuzes
 - Weapon airframes
 - Carriage and release equipment
 - Aircraft guns and ammunition
 - Weapons instrumentation
 - Target vulnerability and technology effectiveness
- Maintains experimental facilities for technology evaluations in
 - Explosives
 - Fuzes
 - Warheads
 - Aeroballistics
 - Signal processing
 - Hardware-in-the-loop simulations
- Lead AF Laboratory organization for integrating and demonstrating advanced tactical munition technologies.

MUNITIONS DIVISION (WL/MNM): Plans and directs research, exploratory, and advanced development of fuzes, aerial guns/ammunition, warheads and explosives for conventional munitions. Directs the operation of fuze test facilities, high explosive research and development facilities, and advanced warhead experimentation facilities in support of munition programs. Provides technical analyses and consulting to system application programs, AFMC, other government agencies, and industry concerning munitions technology.

ENERGETIC MATERIALS BRANCH (WL/MNME): Plans and conducts in-house and contractual research, exploratory, and advanced development of explosives for conventional

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munitions. Operates high explosive research and development facilities in support of directorate munitions programs. Provides technical support and consultation to system application programs concerning explosives for conventional munitions. Maintains liason with other government agencies and industry to ensure complementary programs.

WL/MNME is the office of the High Explosive Research and Development (HERD) Facility. The HERD Facility was established to provide a modern in-house explosive research, development, and experimentation capability and to provide the Air Force with an in-house quick reactive explosives loading capability. The HERD Facility consists of three sections: Properties, Processing, and Dynamics. The HERD Facility is the only DOD facility where the these sections, each with its own capabilities, are collocated. Experimental formulations meeting necessary chemical and physical criteria are developed in the Properties Section. The formulations are mixed, machined, and loaded in the Processing Section and the detonation properties determined in the Dynamics Section. Experimental formulations can be analyzed through the stages of scale up from small scale chemical and physical testing to pilot plan scale mixing and loading through performance testing in an all-up munition. These sections function as an integral unit capable of a complete spectrum of explosive research, development, and experimentation. The mission of the facility is (1) to provide explosives research and development support to organizations within the Air Force, especially to those within the Aeronautical Systems Center, (2) to tailor explosives to meet specific Air Force needs and develop explosive mixing and loading techniques in support of Air Force armament development programs, (3) to characterize and evaluate explosive systems, (4) to provide necessary background data in explosives chemistry and detonation physics, and (5) to support explosives research and development programs of other Government Agencies, when special and unique expertise is required.

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Phillips Lab - Edwards

Energetics Cross-Service Analysis - Data Requirements

1. Organization Chart (as of ~~30 Sep~~^{Oct} 94):
 - A. Show organizational elements (those which report directly to the activity commander.)

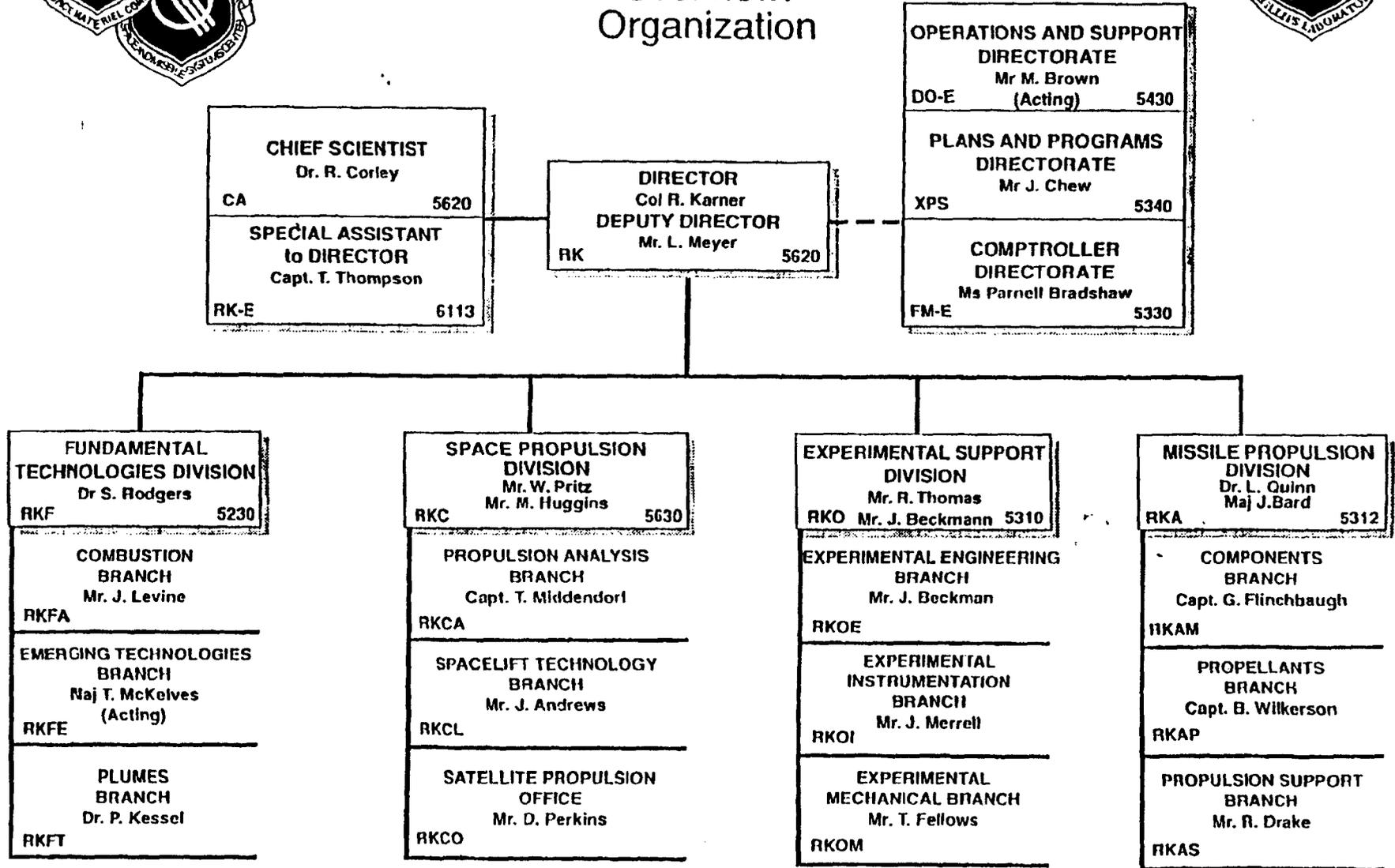
94-11-16 15:20 RCVD

Items 7-B
PSS 1-58



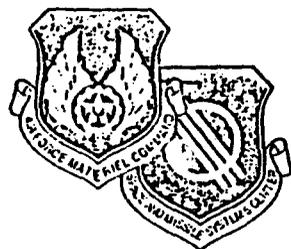
Propulsion Directorate (RK)

Overview: Organization

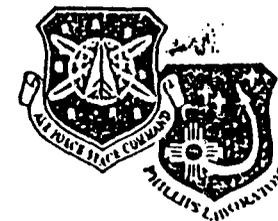


1. Organization Charts

B. Describe organizational relationships especially between support organizations and any other organizations located on the Installation/Base.



ROLE OF PROPULSION DIRECTORATE



CENTER OF EXCELLENCE FOR ROCKET PROPULSION

HONEST BROKER

CONSULTANT FOR DOD PROPULSION SYSTEM ACQUISITIONS

QUICK REACTION RESPONSE

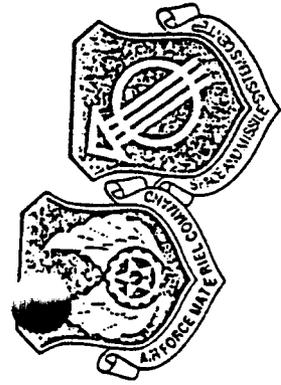
- Accident Investigation
- Problem Resolution

TECHNOLOGY DEVELOPER/DEMONSTRATOR

- Industry Limited by Near Term Profit Goals/Drawdown
- DOD-Lead for Space & Missile Propulsion
- PL/RK Developing Propulsion for the 21st Century (HEDM, etc.)

UNIQUE NATIONAL CAPABILITY FOR R&D TESTING

- Industry Capability Declining/Environmental Constraints
- 50% of Western Worlds Rocket Propulsion Facilities (\$1B) at PL/RK
 - Industry Unable to Support Own Testing Infrastructure
 - Trend: Industry Using PL/RK Test Capabilities and Infrastructure
- National Referee for Solid Propellant Performance Measurement



Organizational Relationships

A2064.



- Phillips Laboratory, Operating Location-AC Includes:
 - Propulsion Directorate, - RK
 - Directorate of Operations, Edwards - DOE
 - Space Experiments Directorate, LEAP/MSTI Division - SXX
 - Space & Missiles Directorate, Structures and Controls - VTS
 - Plans and Program Directorate, Edwards - XPS
 - Comptroller Office, Edwards - FM-E
- Tenant Organization on Edwards AFB, CA
- Edwards AFB Support Includes:
 - Contracting
 - Civil Engineering
 - Civilian / Military Personal
 - Travel
- PL Support to Edwards AFB Includes Analytical Chemistry Support for:
 - Flightline (AFFTC) - B1, B2, F15, F16, F22, C17
 - Bio-Environmental
 - NASA / Dryden - Shuttle, X31, SR71

2. For each organization elements:

A. Breakout five types of FY93 workyears (government, FFRDC on-site, FFRDC off-site, contract support on-site and contract support off-site) by the following seven jobs categories: S&T Engineering Development, Production, In-service Engineering & other (describe).



PROPULSION DIRECTORATE

(PL/RK OL-AC)

FY 93 LABOR PROFILE



CIVILIAN PERSONNEL

ORGANIZATION	S & T	ENG DEV	PROD	IN-SERV	OTHER	TOTAL
CA	2	0	0	0	0	2
DO-E	49	0	0	0	0	49
FM-E	5	0	0	0	0	5
RK	4	0	0	0	0	4
RK-E	0	0	0	0	0	0
RKA	39	0	0	0	0	39
RKC	37	0	0	0	0	37
RKF	39	0	0	0	0	39
RKO	33	0	0	0	0	33
XPS	6	0	0	0	0	6
TOTAL	214	0	0	0	0	214

A



PROPULSION DIRECTORATE

(PL/RK OL-AC)

FY 93 LABOR PROFILE



MILITARY PERSONNEL

ORGANIZATION	S & T	ENG DEV	PROD	IN-SERV	OTHER	TOTAL
CA	0	0	0	0	0	0
DO-E	39	0	0	0	0	39
FM-E	2	0	0	0	0	2
RK	1	0	0	0	0	1
RK-E	3	0	0	0	0	3
RKA	8	0	0	0	0	8
RKC	8	0	0	0	0	8
RKF	10	0	0	0	0	10
RKO	21	0	0	0	0	21
XPS	1	0	0	0	0	1
TOTAL	93	0	0	0	0	93

PROPULSION DIRECTORATE (PL/RK OL-AC) FY 93 LABOR PROFILE



OTHER SOURCES

SOURCE	S & T	ENG DEV	PROD	IN-SERV	OTHER	TOTAL
FFRDC						
- on-site	0	0	0	0	0	0
- off-site	0	0	0	0	0	0
Contractors						
- on-site	292	0	0	0	0	292
- off-site	383	0	0	0	0	383
TOTAL	675	0	0	0	0	675

2. For each organizational elements:

B. number of square feet of space occupied broken out by: laboratory specific space, general office space, and other space (describe). Note if government owned or leased.

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1995 BRAC ENERGETICS DATA CALL

Question #2b: Space Occupied by Organizational Elements (000 SF)
(Government Owned)

ORGANIZATION ELEM	LABORATORY SPECIFIC SPACE	GENERAL OFFICE SPACE	STORAGE SPACE
RK	507.4	48.8	45.5
DO	184.6	22.6	3.9
XP	0	3.6	0
FM	0	1.2	0
TOTALS	692	76.2	49.3

2. For each organizational element:

C. List total FY93 funds and list main programs,
and customers.

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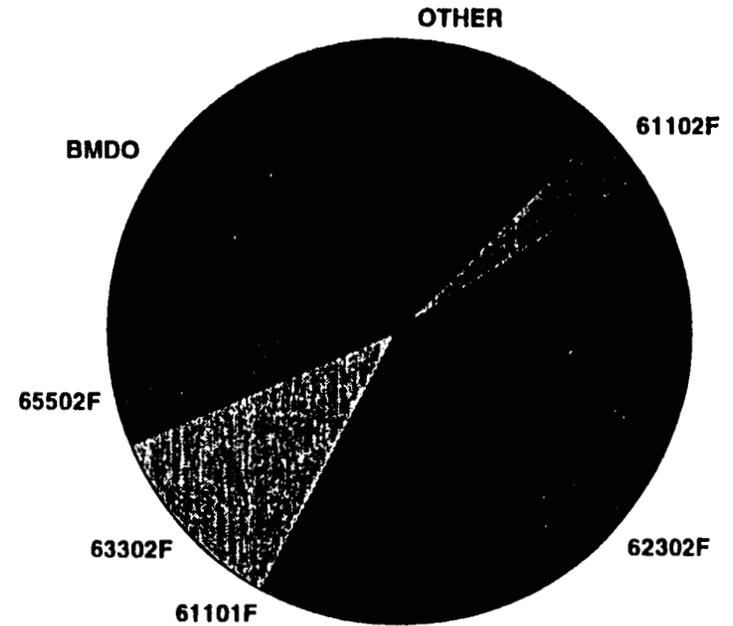


PROPULSION DIRECTORATE (PL/RK OL-AC) FY93 FUNDING

WR001 01



PROGRAM ELEMENT	FUNDING
61101F	\$149,651
61102F	2,846,500
62302F	30,299,305
63302F	7,995,000
65502F	4,003,000
BMDO	15,194,541
OTHER	13,101,662
GRAND TOTAL	73,589,659





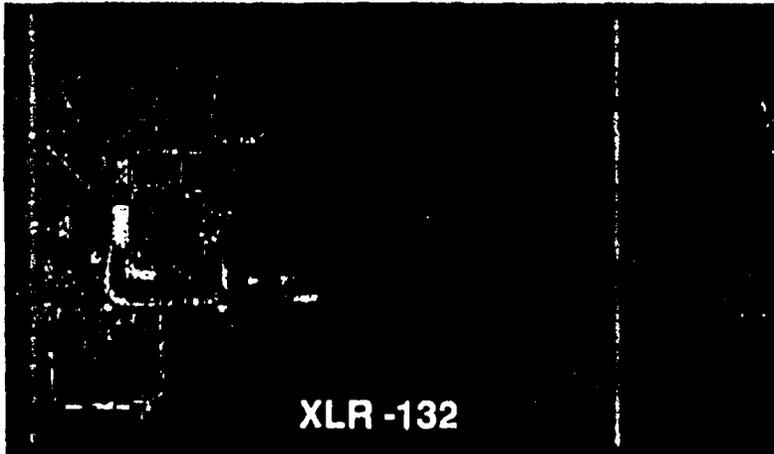
Rocket Propulsion PE63302....

A0393.01

Approp: 3600

PE: 63302F

Date: 16 Feb 93



PE SUMMARY:

Advanced Rocket Propulsion Development

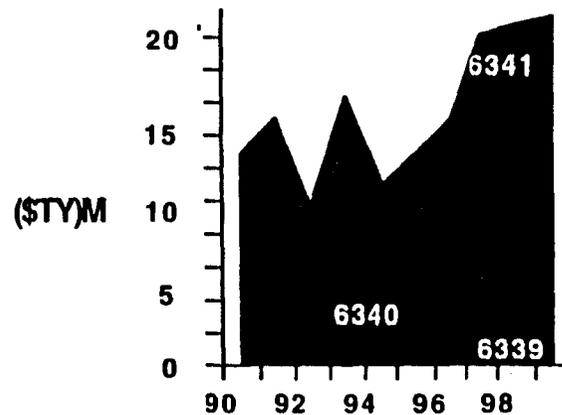
- Proj 6339 Air-Launched Missile Propulsion Technology
- Proj 6340 Space Systems Propulsion Technology
- Proj 6341 Ballistic Missile Propulsion Technology

MAJOR USERS: ACC, AFSPACECOM, AFMC

MAJOR PROGRAMS / ATTDs :

- ELITE
- 30 kw Arcjet
- Integrated Powerhead Demonstration
- Missile Propulsion Components Evaluation
- Solid Propellant Environmental Issues

AF FUNDING SUMMARY:



THRUST SUMMARY:

Financial Status
(\$TY)M

PROJ	FISCAL YEAR				LEGEND	PRIMARY DIRECTOR
	92	93	94	95		
6339	0	0	0	0		RK
6340	1.6	9.3	5.6	6.5		RK SX
6341	1.9	2.7	2.6	2.7		RK

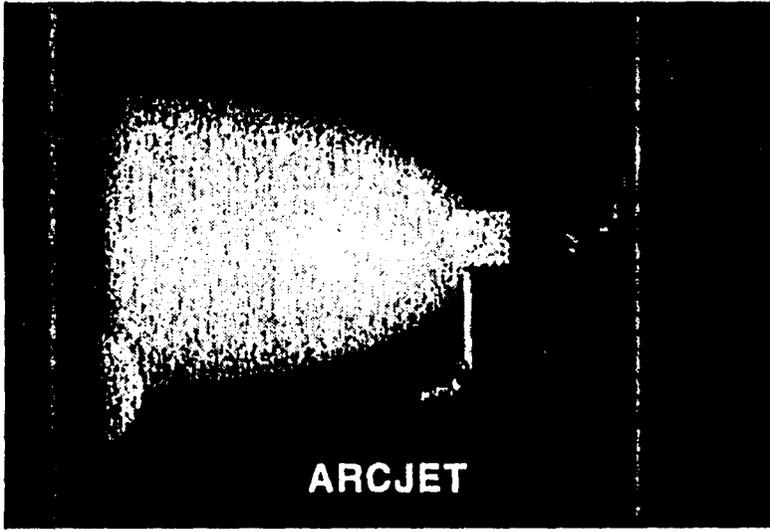
15



Rocket Propulsion PE62302....

A0393.02

Approp: 3600
PE: 62302F
Date: 16 Feb 93



PE SUMMARY:

AF Rocket Propulsion & Technology Base

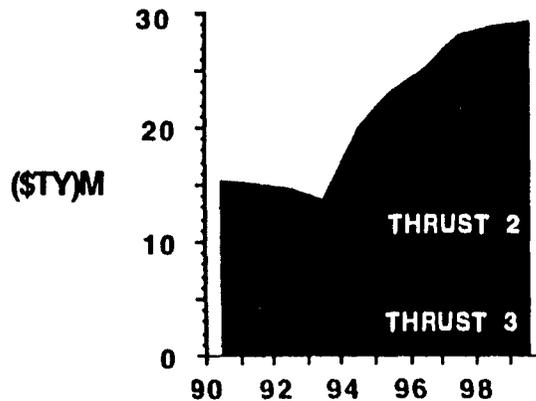
- Proj 2864 Space Vehicles Technology
- Proj 3058 Space Systems Propulsion
- Proj 3059 Missile Systems Propulsion

MAJOR USERS: ACC, AFSPACECOM, AFMC

MAJOR PROGRAMS / ATTDs :

- PE 62203F Aerospace Propulsion
- PE 63302F Space & Missile Rocket Propulsion
- PE 63311F Ballistic Missile Technology
- PE 63401F Advanced Spacecraft Technology
- PE 63428F Space Subsystems Technology

AF FUNDING SUMMARY:



THRUST SUMMARY:

Financial Status
(\$TYM)

	FISCAL YEAR				LEGEND	PRIMARY DIRECTOR
	92	93	94	95		
Thrust 1 Missile Propulsion	3330	7284	7200	6945		RK
Thrust 2 Space Systems	6511	2900	7770	9257		RK
Thrust 3 Space Vehicles	4706	3255	4842	6734		ST
		100	149	207		SX

97

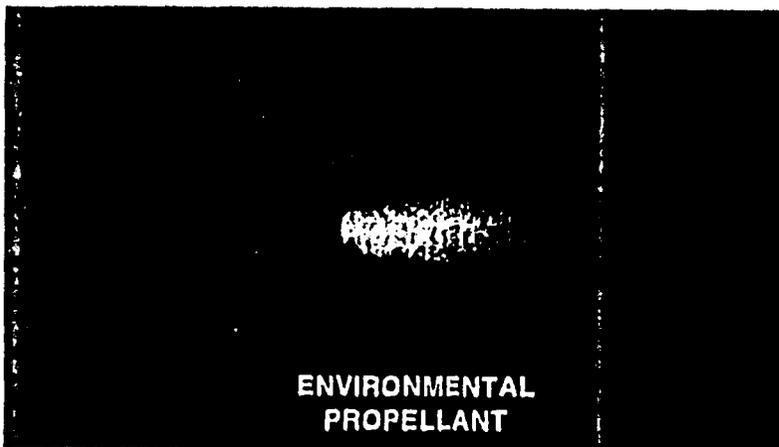


Missile Propulsion (RK)....

A0393.03

Approp: 3600
PE: 62302F
63311F

Thrust 1
Date: 16 Feb 93



THRUST SUMMARY

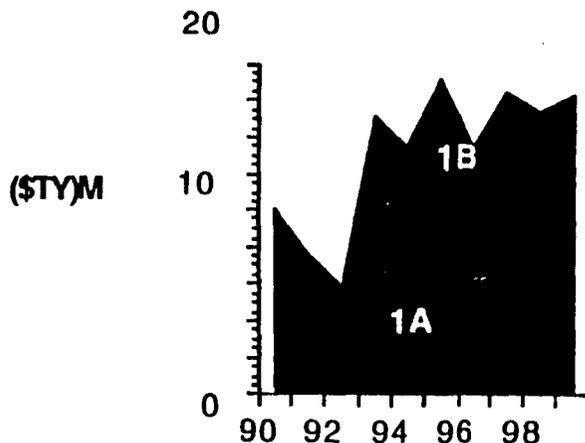
- Develop Affordable ICBM Technologies
- Support Minuteman
- Advance Technology Base for SRMs

MAJOR USERS: ACC, AFMC, BMO

MAJOR RELATED PROGRAMS / ATTD :

- Solid Propellant Environment Issues-CE
- Missile Propulsion Components Evaluation-CE

SUMMARY:



SUB THRUST SUMMARY: (\$TY)M

PB	FISCAL YEAR				
	92	93	94	95	98
Propellant Technology 1A					
62302F	.560	4.029	3.007	2.665	2.816
63302F	.700	2.125	3.100	3.200	2.500
OTHER	.905	4.174	1.100	1.100	1.000
TOTAL	2.165	10.328	7.207	6.965	6.316
Component Applications 1B					
62302F	2.300	4.303	4.930	8.763	5.632
63302F	.688	.107	1.000	1.130	1.150
OTHER	.350	.450	.450	.450	.450
TOTAL	3.688	4.860	6.380	10.343	7.232

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Space Propulsion (RK)....

A0393.04

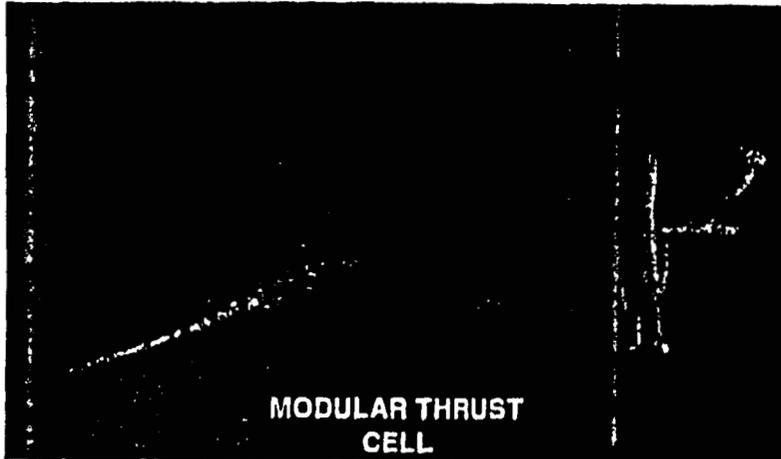
Approp: 3600

PE: 62302F

63302F

Thrust 2

Date: 16 Feb 93



THRUST SUMMARY:

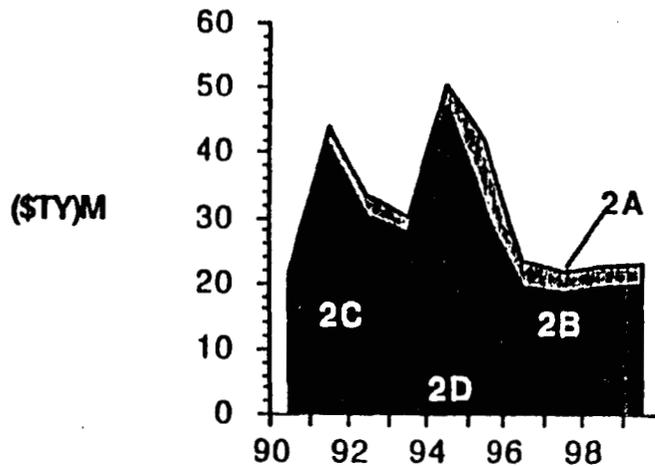
- Increase Operability, Life, Performance
- Enhance Orbit Maneuvering
- Reduce Weight, Cost

MAJOR USERS: AFSPACECOM, SMC, SDIO

MAJOR RELATED PROGRAMS / ATTD :

- 30 KWe Arcjet
- Integrated Powerhead Demonstration-CE

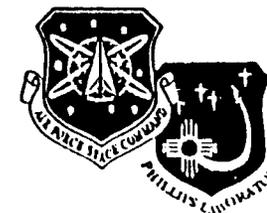
SUMMARY:



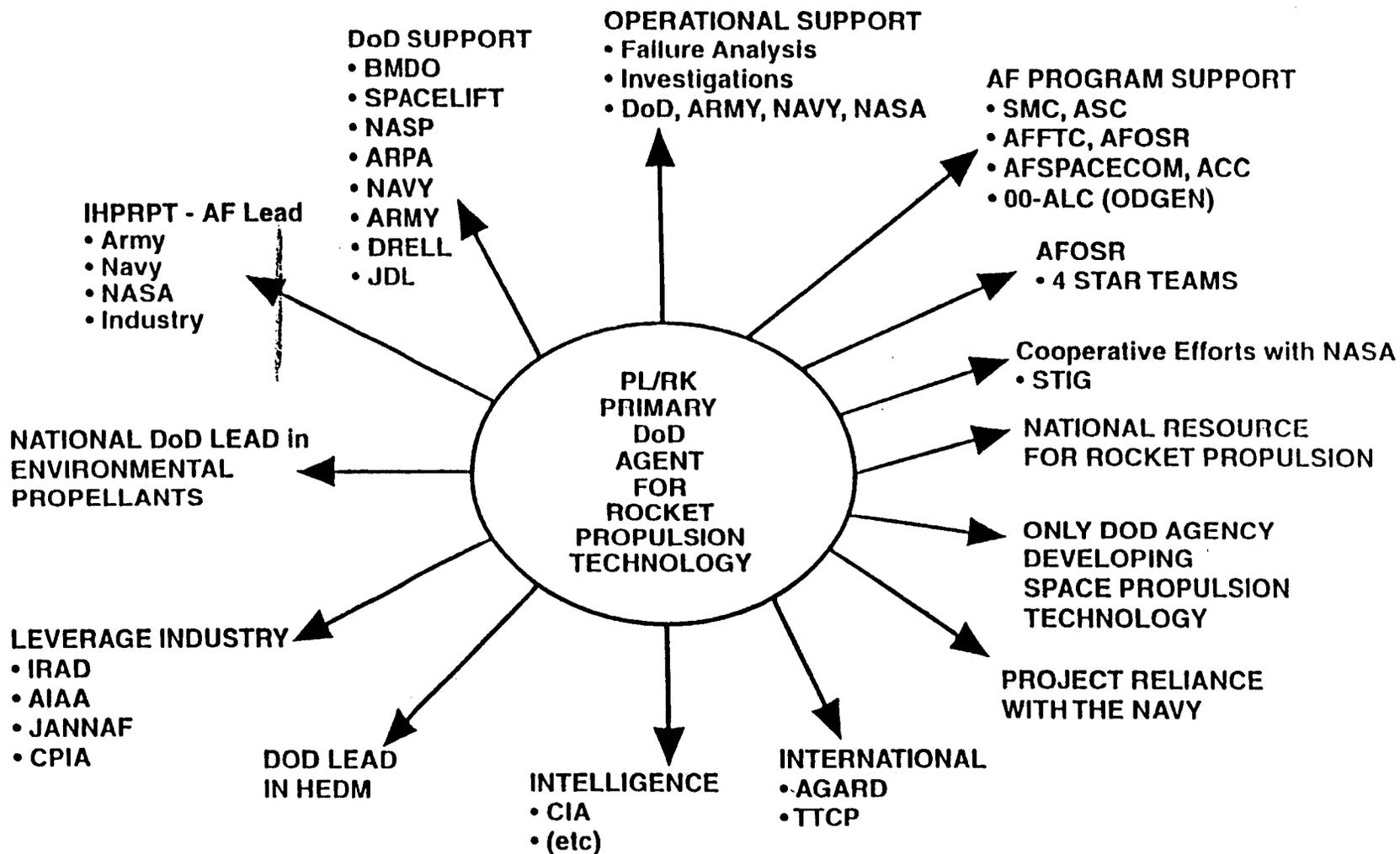
SUB THRUST SUMMARY:

(\$TY)M

	FISCAL YEAR				
	92	93	94	95	96
Space Propulsion					
62302F	1,460	229	500	650	157
6302F	0	0	100	2,000	2,000
OTHER	5,503	350	1,815	1,065	0
TOTAL	6,963	579	2,415	3,715	2,157
Orbit Transfer					
62302F	883	611	417	973	788
6302F	968	900	1,918	1,200	0
OTHER	2,113	1,158	1,681	1,253	1,003
TOTAL	3,964	2,669	3,016	3,426	2,791
Thermophysics					
62302F	434	1,020	333	335	350
63215C	000	7250	1000	1020	1000
OTHER	948	182	320	322	322
TOTAL	1,382	2,852	1,653	1,657	1,672
HEDM					
62302F	530	385	203	1013	1010
OTHER	519	258	248	1,048	1,048
TOTAL	1,049	643	451	2,061	2,058



PROPULSION DIRECTORATE SUPPORTS AF/DOD/NATIONAL NEEDS



3. Describe by major functional and product lines, the capabilities of your activity to perform energetic functions in terms of manpower, intellectual/skill capability and capacity, and major facilities and equipment.

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Propulsion Directorate Overview Resources: People

D0974. S/R



GOVERNMENT:	TOTAL	MS	PhD
SCIENTISTS AND ENGINEERS	120	37	25
TECHNICIANS	55		
OTHER	20		
TOTAL GOVERNMENT	195	37	25
PERCENT OF S&E WORKFORCE (Govt)	62%		21%
OTHER:			
NRC POST DOCTORATE FELLOWS	5		5
AFOSR RESEARCH PROGRAMS	7		7
INTERGOVERNMENTAL PERSONAL ACT (IPA)			
ON-SITE CONTRACTOR PROFESSIONAL S&E	125	24	29
ON-SITE CONTRACTOR SUPPORT/TECHNICIAN	160		
ON-SITE CONTRACTOR MANPOWER EQUIVALENTS (CME)	19	5	2
COLLEGE STUDENT SUPPORT (Stay -in-School, Coop)	8		
PALACE KNIGHTS	12	6	
TOTAL OTHER	336	35	43
PERCENT OF S&E WORKFORCE (Non-Govt)	50%		26%

AS OF APR 11 2011

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Solid Propellant Technology

A2864.



DESCRIPTION

- DEVELOP A NEW CLASS OF ENVIRONMENTALLY ACCEPTABLE , LOW COST, ENERGETIC , SOLID PROPELLANTS
- DEVELOP A METHODOLOGY TO ASSESS THE RELIABILITY OF SOLID ROCKET MOTORS

FACILITIES

- 1-30 11 PROPELLANT MIX CELLS
- 10 INGREDIENT STORAGE BLDGS
- 12 ENVIRONMENTAL AGING CHAMBERS
- PROPELLANT EVALUATION LAB
- 1-21 SOLID PROPELLANT CUTTING
- 1-32 4 SEA LEVEL TEST PADS

MANPOWER

	<u>Govt</u>	<u>Cont</u>
• S and E	18	0
• Ph D	3	0
• MS	0	0
• Technicians	13	7
• Administration	3	0

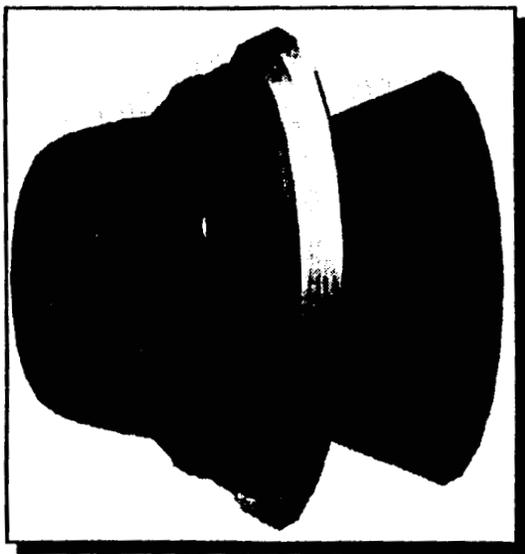
22



A2864.



Solid Propellant Component Technology



DESCRIPTION

- DEVELOP LOW COST SOLID ROCKET COMPONENTS (INSULATION, NOZZLES, ETC)
- DEVELOP LOW COST, ENVIRONMENTALLY ACCEPTABLE WAYS OF PRODUCING SOLID ROCKET MOTORS

MANPOWER

	<u>Govt</u>	<u>Cont</u>
• S and E	13	6
• Ph D	3	0
• MS	4	0
• Technicians	16	3
• Administration	2	15

FACILITIES

- 1-36 3 HIGH RISK TEST STANDS
- 1-42 2 ALTITUDE CHAMBERS
- 1-52 4 SEA LEVEL TEST STANDS
- 1-56 1 HIGH THRUST TEST STAND

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Space Launch Propulsion



DESCRIPTION

- **Develop Low-Cost, More Reliable Rocket Booster Propulsion**
 - Emphasis on Improved Operability
 - Extends Operational Life of Turbomachinery
 - Reduces Development and Manufacturing Costs of Thrust Chambers
- **Develop Light-Weight Rocket Rocket Engine Components**
 - Applies Lower weight Non-Metallic Materials to Components
 - Simplifies Component Designs to Reduce Size and Number of Engine Parts

FACILITIES

- **Large Liquid Rocket Engine Facility (1-120-1A)**
 - 1,500,000 lbs of Thrust Capability
 - Liquid Oxygen, Liquid Hydrogen, Kerosine (RP-1)
- **Advanced Turbomachinery Powerhead Facility (1-120-2A)**
 - Two Position Horizontal Thrust Chamber & Turbopump Stand
 - Liquid Oxygen, Liquid Hydrogen, Inert Gas Systems
 - 1,500,000 lbs of Thrust Capability
- **Small Liquid Rocket Engine Facility**
 - 4 Low Thrust Engine Test Cells
 - 20,000 lbs Thrust Capability
 - Liquid Oxygen, Kerosene , Storable Propellants

<u>MANPOWER</u>	<u>Govt</u>	<u>Cont</u>
• S and E	50	4
• Ph D	0	1
• MS	15	3
• Technicians	16	0
• Administration	4	0

h2



A2864.



Orbital Transfer And Maneuvering Propulsion



DESCRIPTION

- **Develop Rapid / Efficient On-Orbit Propulsion**
 - Emphasis on Electric Propulsion
 - Improves Satellite Repositioning Capability
 - Extends On-Orbit Satellite Life
 - Propellants Include Ammonia and Hydrogen
- **Develop Solar Thermal Propulsion**
 - High Performance Orbit Transfer
 - Large Inflatable Collectors
 - High Temp Absorber / Thrusters Using Hydrogen

FACILITIES

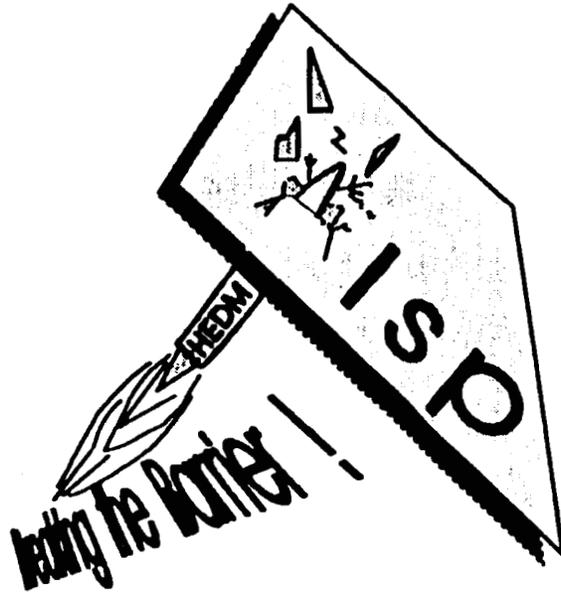
- **Electric Propulsion Laboratory**
 - Three Large Vacuum Chambers
 - Full Plasma Diagnostic Capabilities
 - Ammonia, Hydrogen and Inert Gas Systems
- **Solar Propulsion Laboratory**
 - Large Heliostat and 10,000:1 Solar Concentrator
 - Vacuum Chamber and Test Equipment
- **Space Environment Simulation Facility**
 - 30Ft Diameter Spherical Altitude Facility
 - Supports Testing of Large Space Components at 650,000 Ft Altitude

MANPOWER

	<u>Govt</u>	<u>Cont</u>
• S and E	11	2
• Ph D	4	0
• MS	3	2
• Technicians	3	0
• Administration	1	0



Space Launch Propulsion High Energy Density Matter (HEDM)



Description

- Develop revolutionary high energy molecular systems for rocket propulsion
 - Theoretical
 - Synthesis
 - Scale-Up
 - Demonstration

Facilities

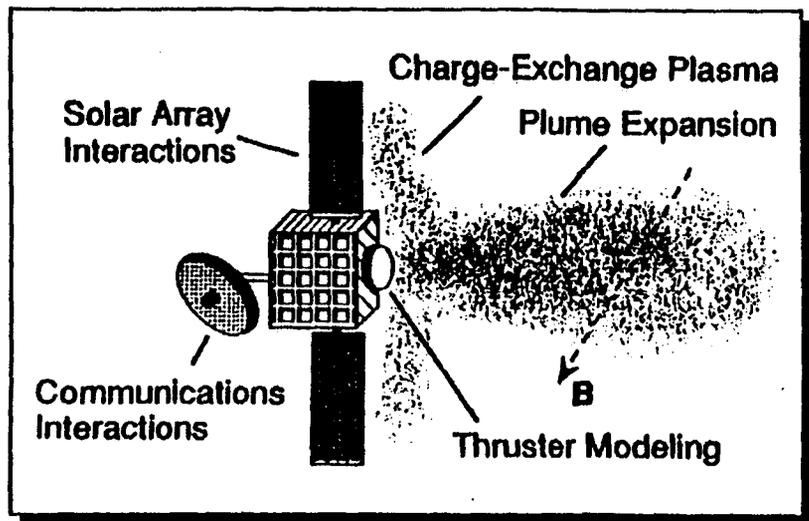
- Low Temp / Spectroscopy Labs
- Unique Cryo-Solid Combustion Device
- Parallel Computing and Modeling Lab
- Synthesis Laboratories
- Scale-Up Laboratory (Kg level)
- Liquid Rocket Engine Thrust Stand

MANPOWER

	<u>Govt</u>	<u>Cont</u>
• S and E	6.5MY	10.0MY
• Ph D	4.5	10.0
• MS	2.0	0.0
• Technicians	4.5	3.0
• Administration	1.5	-



Space Launch Propulsion Aerophysics



Description

- Apply Gas Dynamics and Combustion Analysis to:
 - Reduce Rocket Engine Development Time and Cost
 - Increase Durability and Reliability
 - Accurately Predict Rocket Engine Performance and Stability

MANPOWER

	<u>Govt</u>	<u>Cont</u>
• S and E	5.0MY	5.0MY
• Ph D	3.0	5.0
• MS	2.0	1.0
• Technicians	2.0	-
• Administration	1.0	-

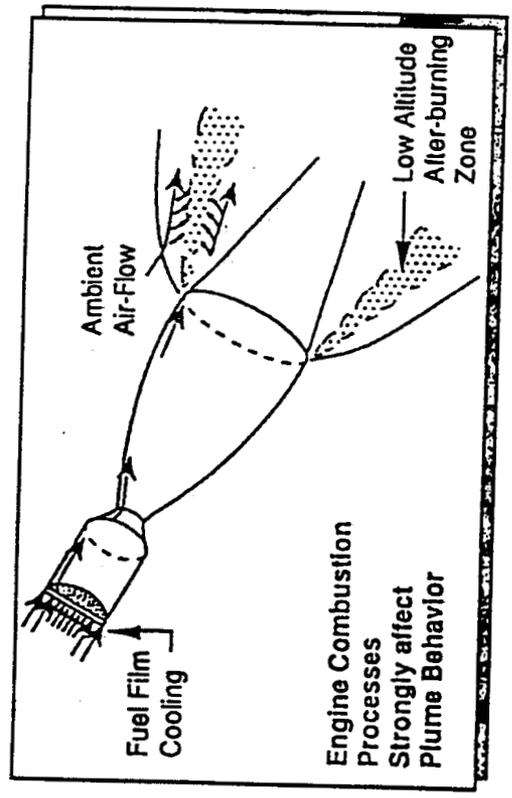
Facilities

- High-Pressure Injector Characterization Facility
- Single Element Rocket Combustion Facility
- High-Altitude Vacuum Test Chamber
- Laser Photolysis and Diagnostic Facilities



Space Launch Propulsion Plume Phenomenology

A2864.



Description

- Predict Rocket Plume Effects for Use in Surveillance System and Weapon System Design
- Electromagnetic Signatures
- Rocket-Powered Vehicle Base Heating and Drag

MANPOWER

- S and E
- Ph D
- MS
- Technicians
- Administration

Govt Cont

5.0MY	5.0MY
2.0	1.0
3.0	4.0
-	-
1.0	-

Facilities

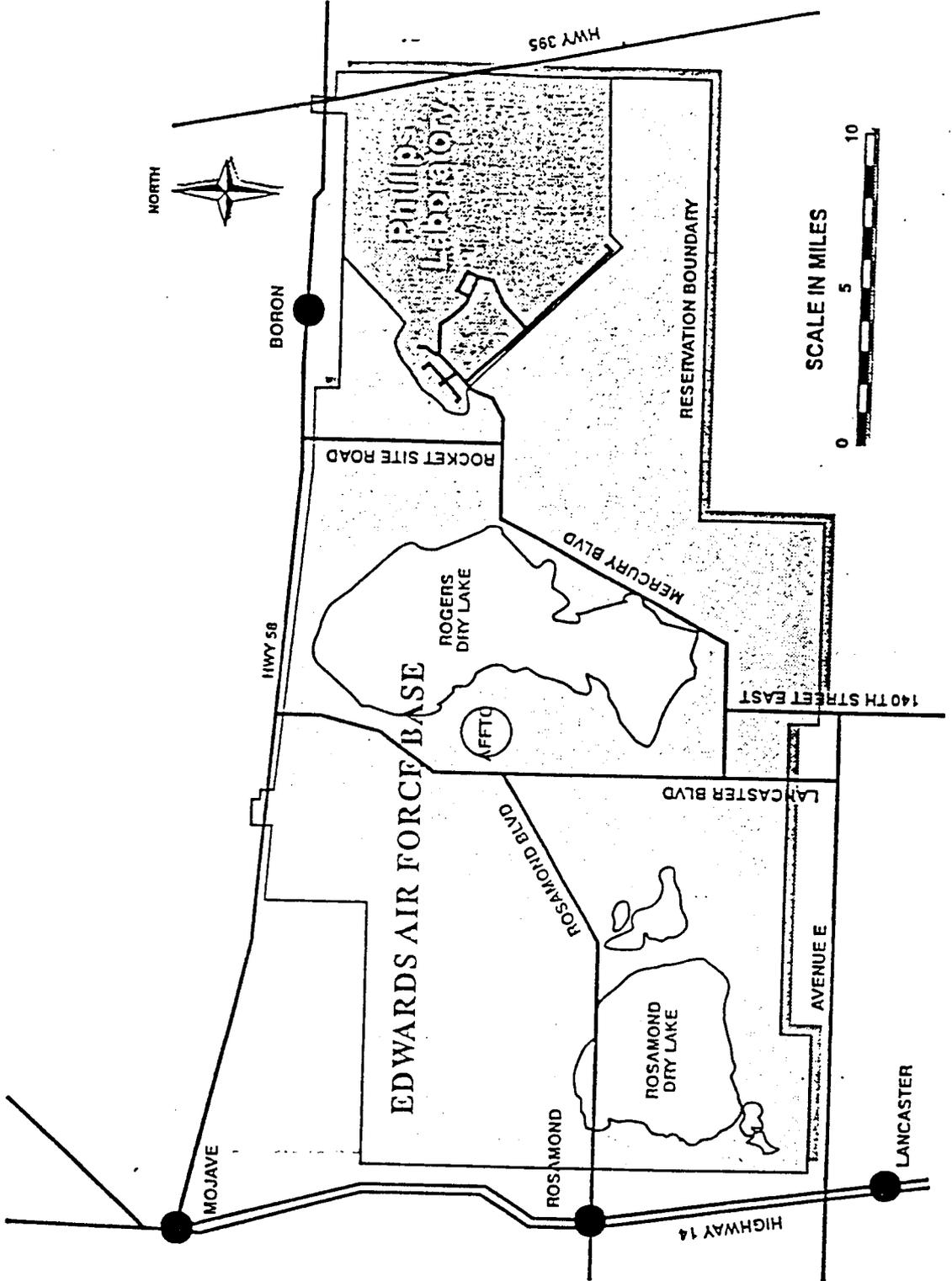
- Computational Plume Modeling Laboratory (codes, workstations, and networks)

4. Map of the installation to include elements listed in 2 and 3:

A. Annotate buildings to show location of each organizational element.



Phillips Laboratory Location....

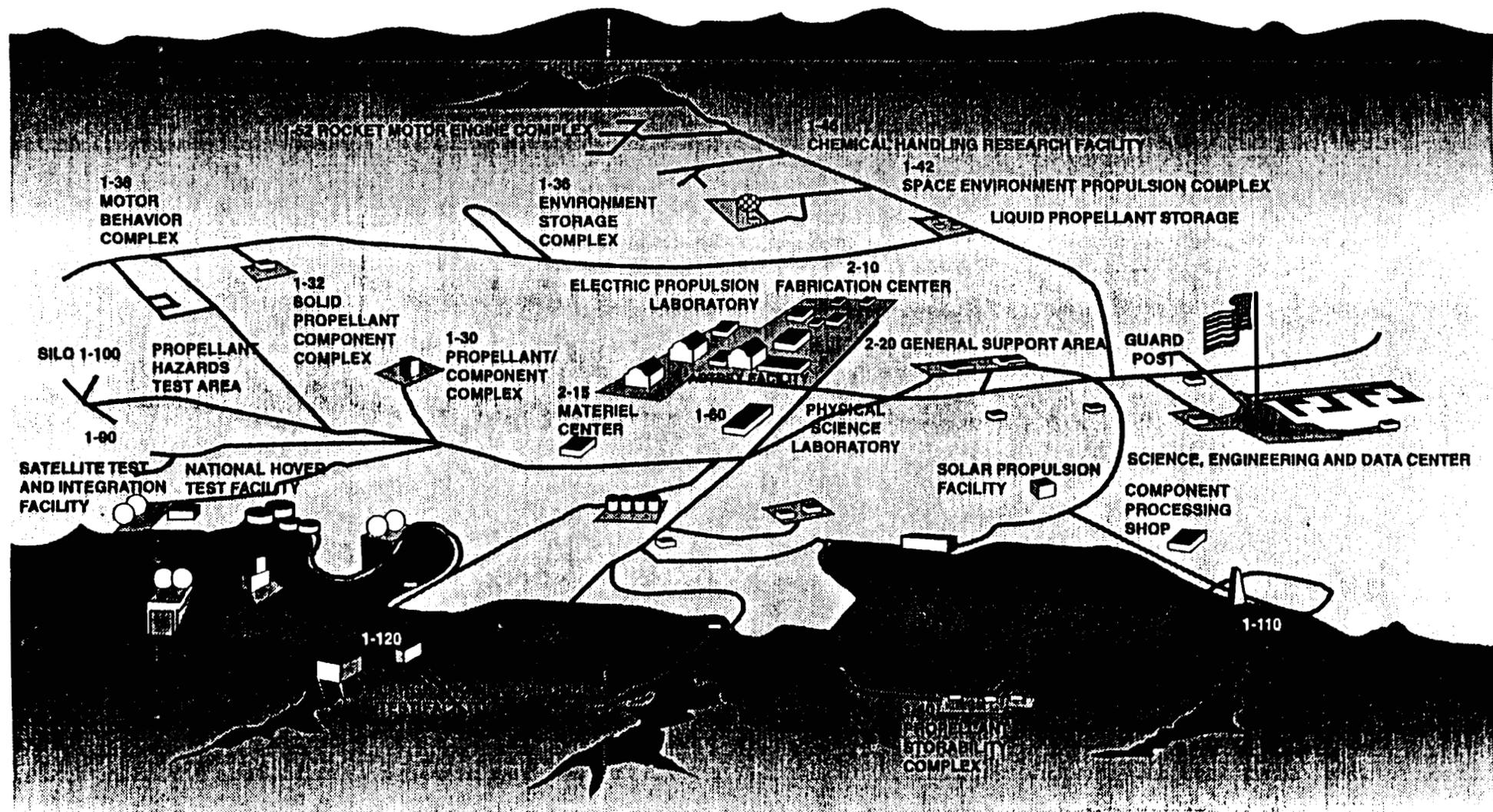


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PL MAP AREA



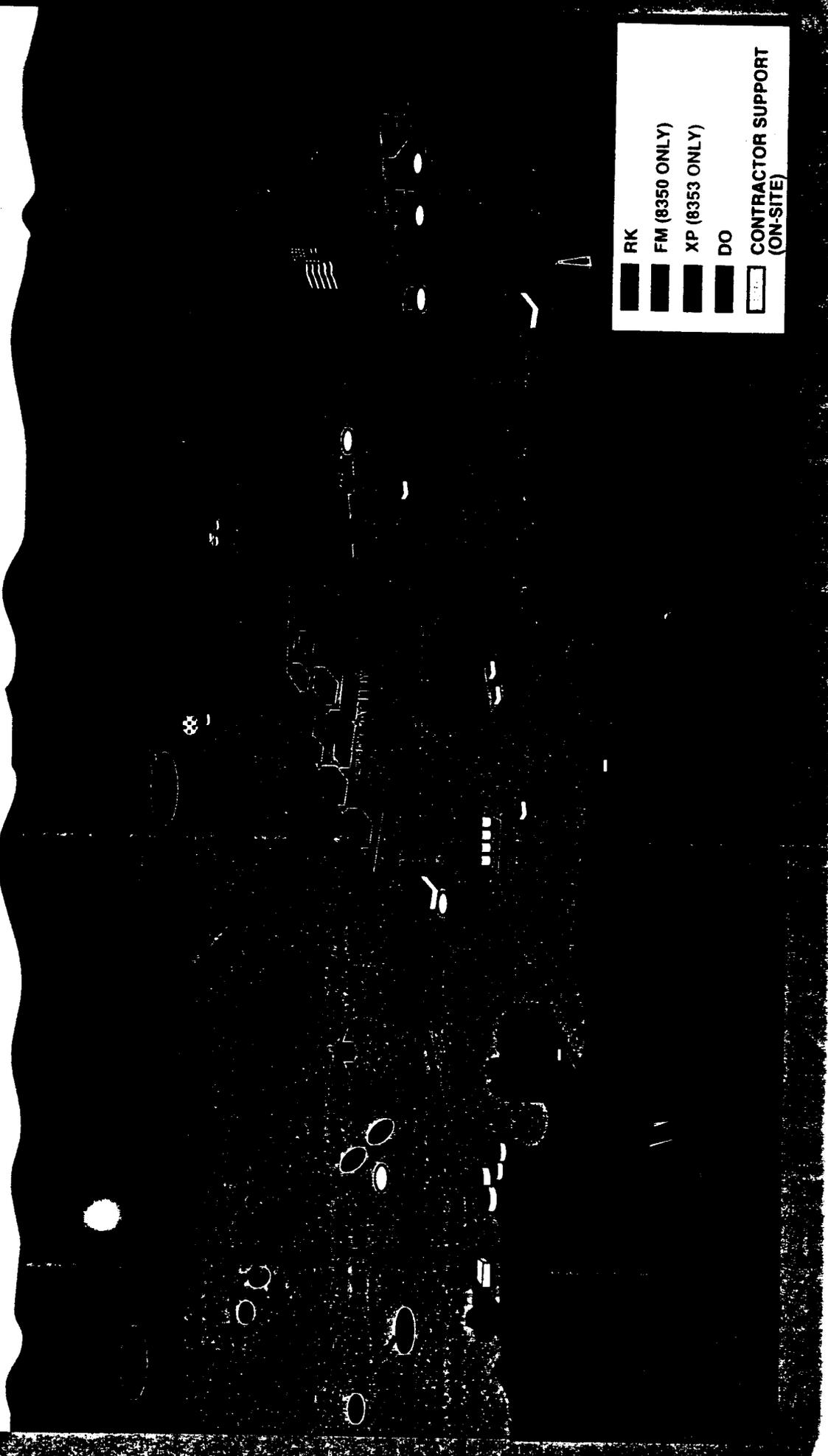
PHILLIPS LABORATORY... PROPULSION DIRECTORATE FACILITIES



B2904.AA



PHILLIPS LABORATORY ENERGETICS FACILITIES 18 OCT 94



■	RK
■	FM (8350 ONLY)
■	XP (8353 ONLY)
■	DO
□	CONTRACTOR SUPPORT (ON-SITE)

4. Map of the installation to include elements listed in 2 and 3:

B. Show buildings with equipment/facilities which would be difficult to move or replicate. List such equipment with initial cost. Provide and estimate of the replacement cost of the facilities.

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Buildings With Equipment/Facilities
Difficult to Move/Replicate
DESCRIPTION OF DIFFICULTY FACTORS

18 Oct 94

- HIGH COST TO MOVE - Equipment/facilities to be moved are large, heavy, bulky, fragile, or require special handling equipment and therefore increase transportation costs
- COMPLEX ENVIRONMENTAL SYSTEM - Includes exhaust vent systems which are difficult to "tune" and extensive personnel protective systems which can become locality specific and require extensive forethought and exhaustive installation techniques
- NEED LARGE CLEAR ZONE - Combustion/detonation products need lengthy downwind clear zone to ensure dilution into atmosphere
- LONG TIME TO RE-ESTABLISH DATA VALIDITY - Certain research facilities require extensive recalibration and statistical verification when established/moved. In the case of an industry-standard facility, this process can take five years or more
- HIGH RISK - Research and development facilities are intended for higher risk components and rocket motors/engines. Such facilities need to be sited far enough apart to preclude damage to other facilities in case of an incident
- NEED PERMITS - Rocket propulsion experiments have an inherent effect on air/ground/water due to toxic components and combustion/detonation products. Therefore, facilities in which these experiments are conducted need environmental permits
- NOT A DESIRABLE NEIGHBOR - Rocket propulsion facilities try to be "good" neighbors, but the noise, combustion products, and risk of accidents preclude siting in urban encroachment areas
- HIGH COST TO DISASSEMBLE/ REASSEMBLE - Many facilities, especially those for liquid rocket propellants, are characterized by extensive tubing, piping, vacuum jacketed lines, valves, tankage, etc. These facilities require thousands of manhours to assemble and nearly as much to disassemble. The disassembled facility may be easily transported, but may not be easy to prepare for transport

Buildings With Equipment/Facilities
Difficult to Move/Replicate
DIFFICULTY FACTORS

18 Oct 94

Building/Area

Factors

Satellite Propulsion
Complex; Bldgs 8620,
8622,8623,8624,8626,
8627,8628,8632,8633,
8634,8635
(Areas 1-14/1-40)

- Cost of disassembly/reassembly of numerous complex systems
- Difficult to find/costly to build another facility with such an extensive variety of capabilities (steam plant, ejectors, vacuum cells, plumbing, centrifuge, flow lab, solar lab)
- High risk facilities - not a desirable neighbor

Propellant Laboratory
Complex/Prep Lab;
39 buildings
(Areas 1-30/1-21)

- High risk facilities - not a desirable neighbor
- Cost of disassembly/reassembly of numerous complex systems
- Need clear zone
- High cost to move numerous non-DOT approved experimental propellants

*Solid Propellant/
Component Complex;
Bldgs 8910,8911,8912,
8914,8915,8916,8917,
8918,8919
(Area 1-32)

- High risk facilities - not a desirable neighbor
- Solid rocket exhaust products need 1-5 mile clear zone for dissipation
- Facility renowned for 99.90% accuracy of rocket motor ballistics measurements; estimated 5-8 years to re-establish similar confidence in results at another location

*Motor Behavior Complex;
Bldgs 9002,9005,9006,
9014,9018,9020,9025,
9100,9250,9260
(Area 1-36)

- High risk facilities; sited for up to 1 million pounds TNT equivalent detonations (approximately 50 times the TNT equivalent of Hiroshima A-bomb in World War II)

*Environment Storage
Complex; Bldgs 9405,
9406,9408,9410,9412,
9414,9416,9418,9420,
9422
(Area 1-38)

- High risk facilities; storage for hundreds of thousands of pounds of solid rocket propellant; need 2 mile clear zone for safety

Buildings With Equipment/Facilities
Difficult to Move/Replicate
DIFFICULTY FACTORS

18 Oct 94

Building/Area	Factors
<p>*Space Environment Propulsion Complex; Bldgs 9620,9621,9622, 9623,9624,9625,9626, 9628,9629,9630,9631, 9632,9633,9634,9637, 9638,9639 (Area 1-42)</p>	<ul style="list-style-type: none">- High cost of disassembly/reassembly of numerous complex, bulky, and heavy systems- Some items so large that they are difficult to move by either highway or rail- High risk facility; rocket motors have detonated in past
<p>*Rocket Motor/Engine Complex; Bldgs 9659, 9660,9661,9662,9663, 9664,9665,9667,9700, 9705 (Area 1-52)</p>	<ul style="list-style-type: none">- High risk facilities; not a desirable neighbor- Solid rocket exhaust products need 1-5 mile clear zone for dissipation- Liquid component test facility would have very high cost of disassembly/reassembly; may be difficult to replicate results in near term
<p>*High Thrust Complex; Bldgs 9800,9804,9820, 9826,9828,9840,9845, 9850 (Area 1-56)</p>	<ul style="list-style-type: none">- High risk facilities; not a desirable neighbor- Solid/liquid rocket exhaust/purge products need 1-5 mile clear zone for dissipation
<p>Physical Sciences/Chem Lab; Bldgs 8451,8454, 8455 (Area 1-60)</p>	<ul style="list-style-type: none">- Cost of disassembly/reassembly of numerous complex systems- Difficulty of re-establishing exhaust system (must be finely tuned)- Chemistry labs need clear zone due to hazardous chemicals/exhausts/operations
<p>Electric Propulsion Lab; Bldg 8417 (Within Area 2-10 confines)</p>	<ul style="list-style-type: none">- Cost of disassembly/reassembly of numerous complex systems (liquid/gas flows/mechanical/electronic/vacuum systems)- Cost of moving heavy, yet fragile tankage- 2-5 years to re-establish validity of experimental results

Buildings With Equipment/Facilities
 Difficult to Move/Replicate
 DIFFICULTY FACTORS

18 Oct 94

Building/Area	Factors
*Large Engine/Component Test Facility; Bldgs 8750, 8752, 8753, 8755, 8756, 8759, 8761, 8762, 8763, 8764, 8765, 8770, 8771, 8775, 8778, 8779, 8780, 8781 (Area 1-120)	<ul style="list-style-type: none"> - High risk facilities; not a desirable neighbor - Very expensive, massive, complex facilities; high cost to disassemble/rebuild at another location - Current location extremely desirable for dissipation of exhaust products from large hydrocarbon/oxidizer tests
*Large Systems Complex; Bldgs 8783, 8785, 8786, 8787, 8788, 8789, 8791, 8792, 8793, 8794, 8799, 8800, 8802, 8804, 8810, 8812, 8814, 8816, 8818, 8820, 8822, 8824, 8826, 8832, 8834, 8836, 8838, 8839, 8840, 8842, 8844, 8850, 8851 (Area 1-125)	<ul style="list-style-type: none"> - High risk facilities; not a desirable neighbor - Very expensive, massive, complex facilities; high cost to disassemble/rebuild at another location - Current location extremely desirable for dissipation of exhaust products - Test Stand 1-C combustion products need 1-5 mile clear zone for dissipation
Fabrication Center; Bldgs 8414, 8415, 8416, 8419, 8420, 8421, 8425 (Area 2-10)	<ul style="list-style-type: none"> - High cost to move massive, bulky, heavy equipment
Material Center; Bldg 8460 (Area 2-15)	<ul style="list-style-type: none"> - No significant difficulty factors
General Support Area; Bldgs 8252, 8255, 8360, 8370, 8372, 8374, 8380, 8407, 8411, 8412, 8431, 8463, 8464, 8595 (Area 2-20)	<ul style="list-style-type: none"> - No significant difficulty factors

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Buildings with Equipment /Facilities Difficult to Move/Replicate

18 Oct 94

COST DATA / EQUIPMENT TYPES

Building/Area	Facility (Real Property) Replacement Cost (\$M)	Equipment * Initial Cost (\$M)
1-14/1-40 Satellite Propulsion	23.4	3.3
1-30/1-21 Solid Propellant Lab/ Cutting	11.7 (1-30) 6.1 (1-21)	3.3 (1-30) 0.2 (1-21)
1-32 Solid Rocket Firing	3.0	1.6
1-36 Hazards Tests	12.3	<0.1
1-38 Solids Storage	3.7	0.1
1-42 Space Propulsion	21.3	6.0
1-52 Rocket Motor/Engine Components	5.6	5.6
1-56 High Thrust	20.4	Difficult to Est.
1-60 Phys Sci/Chem Lab	41.0	6.5
Electric Propulsion Lab	2.5	4.0 (est.)
1-20 Large Engine/Component	84.5	1.9
1-125 Large Systems	54.0	Difficult to Est.
2-10 Fab Center	12.8	3.7
2-15 Material Center	2.0	0.4
2-20 General Support	54.1	19.9

* NOTE: Equipment initial costs are frequently based on items well over 20 years old. Some of these items have inflated in replacement cost several times over. Therefore, the initial cost column is far below what it would cost to replace like items.

Buildings With Equipment/Facilities
Difficult to Move/Replicate
FACILITY REPLACEMENT COST/EQUIPMENT INITIAL COST

18 Oct 94

Building/Area	Facility Replacement Cost (\$M)	Equipment Initial Cost (\$M)	Types of Equipment
Satellite Propulsion Complex; Bldgs 8620, 8622, 8623, 8624, 8626, 8627, 8628, 8632, 8633, 8634, 8635 (Areas 1-14/1-40)	\$41.0	\$6.5	Cryogenic and ambient tankage, vacuum jacketed lines, valves, vacuum pumps, data acquisition systems, cryogenic transfer systems, steam plant, ejectors, large water storage/capture system, centrifuge, spectrometers, high pressure gas vessels, large water pumps, heliostat, solar concentration mirror, thrust stands
Propellant Laboratory Complex/Prep Lab; 39 buildings (Areas 1-30/1-21)	6.1 (1-21) 11.7 (1-30)	0.2 (1-21) 3.3 (1-30)	Solid propellant mixers, curing ovens, cutting facilities, numerous devices for measuring chemical/physical properties of solid propellants, data acquisition systems, test cells, remote operation stations, robotic systems, water transport systems, propellant storage
Solid Propellant/Component Complex; Bldgs 8910, 8911, 8912, 8914, 8915, 8916, 8917, 8918, 8919 (Area 1-32)	3.0	1.6	Thrust stands, data acquisition systems, control center, lasers, spectrometers, propellant storage, facilities, propellant grains, motor hardware, small machine shop, overhead cranes, high volume water transfer systems, test stand adapters, high pressure gas vessels, environmental control systems

Buildings With Equipment/Facilities
Difficult to Move/Replicate
FACILITY REPLACEMENT COST/EQUIPMENT INITIAL COST

18 Oct 94

Building/Area	Facility Replacement Cost (\$M)	Equipment Initial Cost (\$M)	Types of Equipment
Motor Behavior Complex; Bldgs 9002,9005,9006, 9014,9018,9020,9025, 9100,9250,9260 (Area 1-36)	\$12.3	\$0.04	Shop equipment, overhead cranes, data acquisition equipment, motor hardware, machine shops, pressure vessels, environmental control systems
Environment Storage Complex; Bldgs 9405, 9406,9408,9410,9412, 9414,9416,9418,9420, 9422 (Area 1-38)	3.7	0.1	Overhead cranes, environmental control systems, motor hardware
Space Environment Propulsion Complex; Bldgs 9620,9621,9622, 9623,9624,9625,9626, 9628,9629,9630,9631, 9632,9633,9634,9637, 9638,9639 (Area 1-42)	21.3	6.0	Cryogenic/ambient tankage, vacuum jacketed lines, valves, vacuum pumps, data acquisition and control systems, propellant transfer systems, steam plant, ejectors, condensers, water tower, water capture and storage system, electronic and mechanical test equipment, gas vessels, water pumps, thrust stands, motor hardware, shop equipment
Rocket Motor/Engine Complex; Bldgs 9659, 9660,9661,9662,9663, 9664,9665,9667,9700, 9705 (Area 1-52)	5.6	5.6	Cryogenic/ambient tankage, vacuum jacketed lines, valves, vacuum pumps, data acquisition and control systems, high pressure gas vessels, water pumps, electronic and mechanical test systems, thrust stands, motor hardware, shop equipment, overhead cranes

Buildings With Equipment/Facilities
 Difficult to Move/Replicate
 FACILITY REPLACEMENT COST/EQUIPMENT INITIAL COST

18 Oct 94

Building/Area	Facility Replacement Cost (\$M)	Equipment Initial Cost (\$M)	Types of Equipment
High Thrust Complex; Bldgs 9800, 9804, 9820, 9826, 9828, 9840, 9845, 9850 (Area 1-56)	\$20.4	difficult to estimate	(Similar to 1-52, except no data data acquisition and control systems)
Physical Sciences/Chem Lab; Bldgs 8451, 8454, 8455 (Area 1-60)	41.0	6.5	Lab hoods, blast cells, spectrometers, cryogenic systems, combustion bombs, thermal analysis equipment, lasers, chemical analysis/synthesis equipment and labware
Electric Propulsion Lab; Bldg 8417 (Within Area 2-10 confines)	2.5	estd 4.0	Vacuum chambers, data acquisition systems, cryogenic systems, pumps, water transport systems, valves, high energy capacitors, spectrometers
Large Engine/Component Test Facility; Bldgs 8750, 8752, 8753, 8755, 8756, 8759, 8761, 8762, 8763, 8764, 8765, 8770, 8771, 8775, 8778, 8779, 8780, 8781 (Area 1-120)	84.5	1.9	(Similar to Area 1-52)

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Buildings With Equipment/Facilities
Difficult to Move/Replicate
FACILITY REPLACEMENT COST/EQUIPMENT INITIAL COST

18 Oct 94

Building/Area	Facility Replacement Cost (\$M)	Equipment Initial Cost (\$M)	Types of Equipment
Large Systems Complex; Bldgs 8783,8785,8786, 8787,8788,8789,8791, 8792,8793,8794,8799, 8800,8802,8804,8810, 8812,8814,8816,8818, 8820,8822,8824,8826, 8832,8834,8836,8838,8839, 8840,8842,8844,8850,8851 (Area 1-125)	\$54.0	difficult to estimate	(Similar to Area 1-52)
Fabrication Center; Bldgs 8414,8415,8416, 8419,8420,8421,8425 (Area 2-10)	12.8	3.7	Lathes, presses, shearing machines, rolling machines, bending machines, welding equipment, heavy overhead cranes, electrical work areas, drafting equipment
Material Center; Bldg 8460 (Area 2-15)	2.0	0.4	Office equipment, inventory equipment and control systems, lift trucks, shelving
General Support Area; Bldgs 8252,8255,8360, 8370,8372,8374,8380, 8407,8411,8412,8431, 8463,8464,8595 (Area 2-20)	54.1	19.9	Office equipment, personal protective equipment, electrical sub-station, fire trucks, liquid nitrogen vaporizer and 6000 psi pumping system, liquid oxygen generating plant, civil engineering shop equipment, vehicle maintenance equipment, fitness equipment, industrial maintenance equipment, environmental monitoring equipment

5. Estimate the capacity of the activity and installation (separately) to absorb similar workyears with little or no modification of facilities. Estimate the capacity of the activity and installation (separately) to absorb similar workyears with major modifications and describe the nature of those modifications and estimated cost. Use FY97 as the baseline for such estimates.

hM



Ability to Absorb Workyears Energetics Facilities

(Government Plus Contractor)



18 Oct 94

Building/Area	Current Workyears	Little / No Modification (One Shift / 3 Shifts)	With Modification (Cost in \$M)
1-14/1-40 Satellite Propulsion	15	40/110	
1-30/1-21 Solid Propellant Lab/ Cutting	15	40/100	
1-32 Solid Rocket Firing	7	20/50	
1-36 Hazards Tests	5	50/100	
1-38 Solids Storage	0	0 (Storage Only)	
1-42 Space Propulsion	5	45/75	
1-52 Rocket Motor/Engine Components	12	30/70	
1-56 High Thrust	6	25/65	
1-60 Phys Sci/Chem Lab	60	60/100	
Electric Propulsion Lab	6	12/20	Add Vacuum Chambers #3; \$1.0M; 15/26
1-20 Large Engine/Component	10	15/35	Refurbish T.S. 2-A, \$3M; 1-A, \$5M; 1-B \$10M 45/115
1-125 Large Systems	0	40/100	Refurbish T.S. 1-D, \$7.5M; 1-E, \$7.5M 80/180
2-10 Fab Center	30	90/230	
2-15 Material Center	7	15/35	
2-20 General Support	100	150/240	
TOTALS	278	632/1330	Delta Workyears 73/166; \$34M in Mods

45

NOTE:

Modification costs are very rough estimates to modify existing experimental areas, test stands (T.S.) and laboratories.

Test Stand 1-A is the large engine test stand used for the MA-5A, 5B, 5C; RD-170/180; NK-33; RD-120; D-57; and RD-0120 engine programs and the low cost booster.

Test Stand 2-A is the rocket component test stand for testing the LH2 and LO2 turbopumps, the integrated powerhead, the D-57 engine, and the LH2/LO2 low cost thrust chamber.

Test Stand 1-B is the vehicle/stage testing stand for testing vehicle/engine integration and launch operations/processing.

Test Stand 1-D is currently inactive but plans are to perform large vehicle integration and launch operations/processing.

Test Stand 1-E is currently inactive but plans are to perform large vehicle integration and launch operations/processing.

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Algorithms for Constructing Energetics
Workyears Capacity Chart

18 Oct 94

Building/Area	(a) Current Workyears	(b) Capacity, One Shift (Historical)	(c) Baseline, Daytime Admin/Prof	(d) Shift Capability	(c + d) Total Potential Workyears
1-14/1-40 Sat Prop	15	40	5	35 x 3	110
1-30/1-21 Propell Lab	15	40	10	30 x 3	100
1-32 Solid Rkt Firings	7	20	5	15 x 3	50
1-36 (1) Hazards	5	50	0	50 x 2	100
1-38 Solid Propell Storage	0	0	0	0	0
1-42 Space Environ	5	45	30	15 x 3	75
1-52 Large Motor	12	30	10	20 x 3	70
1-56 High Thrust	6	25	5	20 x 3	65
1-60 Phys Sci/Chem Lab	60	60	40	20 x 3	100
EP Lab	6	12	8	4 x 3	20
1-120 Large Eng/Component	10	15	5	10 x 3	35
1-125 Large Systems	0	40	40	20 x 3	100
2-10 Fab Center	30	90	20	70 x 3	230
2-15 Material Center	7	15	5	10 x 3	35
2-20 General Support Area	100	150	15	45 x 3	240

(1) Not well suited to nighttime operations

6. Describe the impact of BRAC 91 and BRAC 93 decision on the activity and installation.

NO IMPACT

7. Describe military department approved and programmed plans which will impact or have impacted the activity and installation.

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DoD Plans Space Launch Propulsion

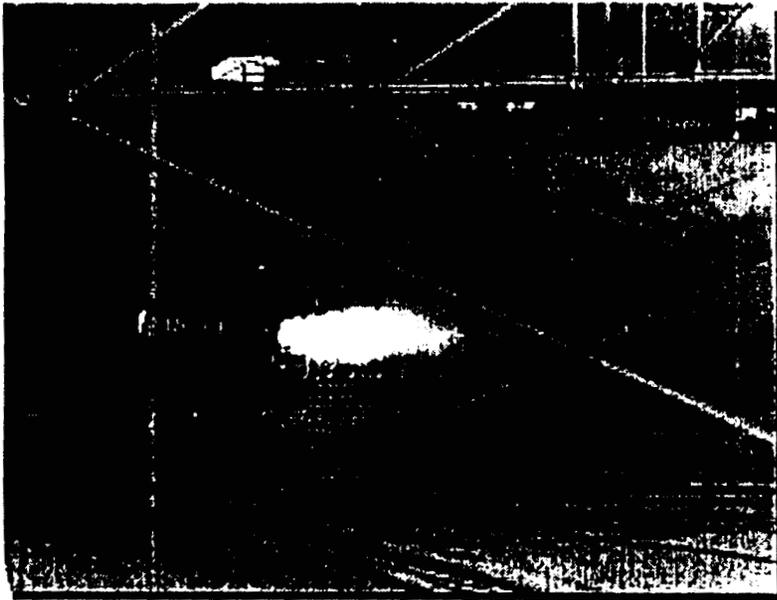


- **Evolved Expendable Launch Vehicle**
 - \$40M FY95 Funds, Funding Grows to \$120M / Yr by 01
 - Major Needs is Low Cost Propulsion
 - Testing of Russian / U.S. Engines Anticipated at Edwards AF
 - » Testing of Russian Engines Recommended by General Moorman Panel
 - » Edwards Has Unique Facilities to Conduct Tests at Low Cost
- **Coordinated Program With NASA for Reusable Launch Vehicle**
 - \$65M Congressionally Directed to Phillips Lab in FY95
 - Cooperative DoD/NASA Technology Maturation Recommended by General Moorman Panel
 - Edwards Has Unique Facilities / Capability to Develop and Test RLV Propulsion Technology
- **Office of Science and Technology Policy**
 - Defines Role of DoD and NASA in Development of Launch Vehicles
 - Signed by President Clinton Aug 94
 - Calls for Maintaining a Strong Space Transportation Technology Base
- **Spacecast 2020 Study Completed by Air University**
 - Orbit Transfer and Rocket Powered Aerospace Vehicle are Among Top Four Priorities for Development
 - Strongly Recommends Government Development of Low Cost Responsive Spacelift
- **Air Force Space Command Lists Space Launch as High Priority Mission Deficiency (Number 4 out of 12)**

50



Environmentally Acceptable Solid Propulsion



- THE AIR FORCE SUPPORTS ALL ENVIRONMENTAL RULES AND REGULATIONS
- THIS CAUSES SIGNIFICANT CHANGES IN SOLID ROCKET MOTOR MANUFACTURING PROCESSES AND CONTENT
- THE PHILLIPS LABORATORY PROPULSION DIRECTORATE
 - HAS BEEN DESIGNATED THE AIR FORCE LEAD LABORATORY IN SOLID ROCKET MOTOR POLLUTION PREVENTION
 - IS CURRENTLY DEVELOPING ENVIRONMENTALLY ACCEPTABLE SOLID ROCKET MOTORS / PROPELLANTS AND MANUFACTURING PROCESSES



FY 96 BES Inputs (\$M)



	FY94	95	96	97	98	99	00	01
62601 F / 1011:	31,487	31,500	32,955	29,492	33,554	35,263	35,008	37,038
63302 F /								
Space & Missile:	11,727	11,800	14,675	13,909	14,111	15,308	17,647	18,996

RK Programs are Supported by the the FY96 POM/BES Inputs

8. Remaining tenants and other activities on the installation name of organization, mission, total workyears.

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RETAIN UNTIL THE YEAR 2005
OFFICIAL USE ONLY

1995 BRAC ENERGETICS DATA CALL

Question #8: Remaining Tenants/Other Activities

TENANT/ACTIVITY	MISSION	TOTAL WORK YEARS
<ul style="list-style-type: none">• PL/SX (Space Experiments Division)	Kinetic Energy Weapons/Satellite Integration	28 Government/10 Contractor
<ul style="list-style-type: none">• National Hover Test Facility	Kinetic Energy Weapons	4 Government/5 Contractor
<ul style="list-style-type: none">• PL/VT	Large Space Structure Dynamics; Composite Space Vehicle Structures	20 Government/5 Contractor
<ul style="list-style-type: none">• American Rocket Company	Hybrid Rocket Development	6 Contractor
<ul style="list-style-type: none">• Telemetry Sites	Monitor Flight Test Missions	3 Government
<ul style="list-style-type: none">• Civil Engineering	Support Real Property Operations and Maintenance	50 Government
<ul style="list-style-type: none">• 650 Supply Squadron	Rocket Propellants, including Storing World's Supply of Pentaborane	8 Government

9. Summarize your overall mission.

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Propulsion Directorate Overview Mission



“Plans and executes research and development in space and missile propulsion to include combustion, high energy density materials, propellants, plume phenomenology, rocket materials/structures, liquid/solid/advanced propulsion, and test techniques. Conducts experiments and manages programs to demonstrate critical propulsion technologies”

Organization and Mission Chartbook January 1992



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS ARNOLD ENGINEERING DEVELOPMENT CENTER (AFMC)
ARNOLD AIR FORCE BASE, TENNESSEE

MEMORANDUM FOR HQ AFMC/XPX

3 Nov 94

FROM: AEDC/XP
100 Kindel Drive, Suite A214
Arnold AS TN 37389-1214

SUBJECT: 1995 Base Realignment and Closure (BRAC) Laboratories Cross Service Working Group (JCSG) Supplemental Data Call on Energetics - INFORMATION MEMORANDUM

1. In response to the subject data call, transmitted by HQ AFMC/XPX letter dated 14 Oct 1994, I contacted the Lab JCSG to determine AEDC's roll in the energetics area. Their input was that AEDC had been added because of the rocket test cells located here, and the application to demilitarization of rocket motors. There was some doubt as to if AEDC should be involved in this data call, but they asked that we attend the 20 Oct 1994 meeting prepared to brief AEDC rocket testing/demilitarization capabilities.

2. Dr Don Daniel, AEDC Chief Scientist, Mr Randy Quinn and I attended the 20 Oct meeting. AEDC was discussed at the end of the meeting. Dr Craig Dorman, Deputy Chair, Laboratory JCSG, had visited AEDC earlier in the summer and was aware of our rocket testing capability. The JCSG determined that because AEDC was a test center and did not perform demilitarization work currently, and probably would not do demilitarization without modification to test cells, the supplemental data call did not apply to AEDC. It is our understanding that AEDC has been released from responding to this data call. Questions may be directed to me at DSN 340-4352.


VINCENT L. ALBERT, Lt Col, USAF
Deputy Chief, Plans and Requirements Division

INSTALLATION WORKSHEET

PURPOSE: To document answer to supplemental question on Energetics.

SOURCE: Mr James E. Burda, ASC/VX, DSN 872-4242 and Dr Mario Caluda, WL/MN, DSN: 872-3005.

METHOD: Extractions and review/summary of documentation.

CONCLUSION: The ASC Eglin activities which consist of the Weapons Systems Program Offices (SPO) do not have any energetics infrastructure, i.e., facilities, equipment. They do rely heavily on the expertise and infrastructure of both the Wright Laboratory and Air Force Development Test Center (AFDTC) capabilities collocated at Eglin. This provides an Air Force unique weapons development capability especially for quick reaction requirements. Example, GBU-28 penetrating bomb was developed within two weeks using Eglin Lab. SPO, AFDTC and contractor facilities to satisfy a wartime quick-reaction requirement.

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

PREPARER: Mary D. Lee Date: 18 Oct 94
 MARY D. LEE ASD/VX(YHO) DSN 872-9300
 DSN: 872-9300 ext 274 EXT. 274

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

MAJCOM REVIEWER: Joe Bratford DATE: 2 Nov 94
 Joe Bratford, GS-14, AFMC/DRMP, 787-5591



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

17 OCT 1994

MEMORANDUM FOR HQ AFMC/XPX
4375 Chidlaw Rd, Ste 6
Wright Patterson AFB OH 45433-5006

FROM: OO-ALC/FMP
7981 Georgia Street
Hill AFB UT 84056-5824

SUBJECT: Cross Service Lab Data Call, Supplemental Data Call for Energetics

1. The OO-ALC Laboratory Questionnaire dealt with the Air Vehicle workload support by our Technology and Industrial Support Directorate. OO-ALC organizations do not perform energetic functions. Our explosive and propellant workloads deal only with maintenance and related testing of all-up-round missiles and munitions. Information relating to explosive and propellant workloads have been reported in the Depot Maintenance Questionnaire.
2. POC is Dick Walter, OO-ALC/FMPC, DSN 458-1127.


THOMAS H. BROWNING
Ch, Business Enhancement Div
Financial Management Dir

Document Separator



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DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

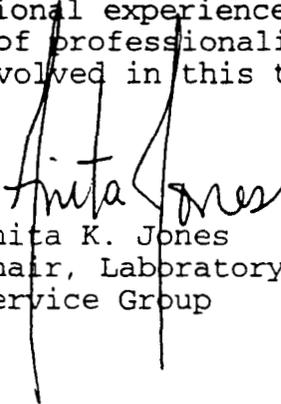
WASHINGTON, DC 20301-3010

MEMORANDUM FOR ASSISTANT SECRETARY OF DEFENSE (ECONOMIC SECURITY)

SUBJECT: Laboratory Joint Cross Service Group Summary Report

I have attached documentation of the process and results of the Laboratory Joint Cross Service Group (LJCSG) as requested in your December 3, 1994 meeting. This report contains the significant products of our work throughout the BRAC 95 process.

This process was truly an educational experience. I am thoroughly impressed with the level of professionalism and dedication exhibited by all those involved in this task.


Anita K. Jones
Chair, Laboratory Joint Cross
Service Group

Attachment

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DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
3030 DEFENSE PENTAGON
WASHINGTON, D C. 20301-3030



13 FEB 1995

MEMORANDUM FOR THE ASSISTANT SECRETARY OF DEFENSE FOR ECONOMIC
SECURITY (ECONOMIC REINVESTMENT AND BRAC)

SUBJECT: Laboratory Joint Cross Service Group Process and Results

The purpose of the OSD led Laboratory Joint Cross Service Group (LJCSG) was to facilitate consolidation, collocation and cross-servicing where it makes sense. The LJCSG process assisted the Services in understanding and analyzing Common Support Functions - those laboratory functions that are performed by two or more Services - where interdependence ought to be considered.

The DDR&E and the Service Acquisition Executives held several meetings to identify opportunities for cooperative consolidation of areas where cross-servicing could be of significant benefit. Three priority areas emerged: Biomedical Research and Development (based on earlier recommendations from the Armed Services Biomedical Research and Evaluation Committee), C4I, and energetics (propellants, explosives, pyrotechnics). The LJCSG Chair directed the group to focus their data collection and analysis in these three areas.

The LJCSG identified the following alternatives for Service consideration:

- Consolidate most C4I acquisition and R&D at Fort Monmouth, New Jersey.
- Consolidate air launched weapons RDT&E at Naval Air Warfare Center (NAWC), China Lake, California.
- Consolidate explosives at Armament Research Development Engineering Center Picatinny Arsenal, New Jersey and at NAWC, China Lake, California.
- Consolidate propellants at NAWC, China Lake, California.

The final results are disappointing and unbalanced. Cross-servicing is minor at best. The Navy eliminated a significant number of laboratory installations. They opted to move SPAWAR (C4I) to San Diego instead of Fort Monmouth, and maintained their explosives facility at Indian Head. The Air Force elected to realign the C4I function within its own infrastructure, with a small contingent moving to Fort Monmouth. They did not consolidate air-launched weapons or propellants. Additionally, they reversed a previous BRAC decision to close Williams Air Force Base, and move their aircrew training lab functions to Orlando, Florida. The Army closed one laboratory, realigning its functions internally, and chose not to move its propellant work to NAWC, China Lake.


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BRAC 95 Laboratory Joint Cross-Service Group

Functional Analysis Process Summary

Executive Summary

Section 1. Introduction/Background

The Department recognized that significant reductions in infrastructure and overhead costs can only be achieved after careful studies address not only structural changes to the base structure, but also operational and organizational changes, with a strong emphasis on cross-service utilization of common support assets. To this end the Secretary of Defense established Joint Cross Service Groups in areas with significant potential for cross-service impact in BRAC 95.

The purpose of the OSD led Laboratory Joint Cross Service Group (LJCSG) was to facilitate consolidation, collocation and cross-servicing of laboratory functions where it makes sense. The LJCSG process assisted the Services in understanding and analyzing Common Support Functions - those laboratory functions that are performed by two or more Services - where interdependence ought to be considered.

The LJCSG process was structured in two phases: planning, and analysis. Integration with the Services' processes was an inherent theme throughout the LJCSG process. During the planning phase the LJCSG defined the goal, scope, and analytical process - the road map that the group would follow to meet its objectives. During the analysis phase the LJCSG developed cross-service alternatives, facilitated service to service interactions, and reviewed service cost analyses of cross-servicing alternatives.

Section 2: Process Summary

This was the first round of the BRAC process to explicitly focus on cross-servicing opportunities. There was no precedence or process established for developing cross-service alternatives capable of withstanding the high level of scrutiny rightfully expected of the Base Closure process. The Joint Cross Service Groups first challenge was to develop and implement such a process within the required time line. Another significant hurdle that faced the Joint Cross-Service Groups was to integrate the Joint Group process with the processes, data, and objectives of the three Services. Together the factors of process development and process integration complicated the task of developing BRAC cross-servicing alternatives.

In the planning phase the LJCSG first bounded their task by defining activities that would be considered as "laboratories", and by determining specific categories of work or functions

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performed by more than one Service - Common Support Functions (CSFs). A total of 29 CSFs were identified. The LJCSG asked the Services to collect specific data from laboratories working in these CSFs (see appendices A&B).

While the Services were collecting data, the LJCSG developed an analysis plan that defined how the data would be used to determine: Functional Capacity - the maximum workload capacity of an activity, Functional Requirement - the projected workload requirement for a given CSF, and Functional Value - a measure of the value of a CSF performed at an activity. The analysis plan also addressed how other analytical tools, D-PADS and a linear programming model (Joint Cross-Service Analysis Tool) would be used to help develop alternatives. (see appendix C)

The Joint Cross-Service Analysis Tool or Model is a computer program which seeks an optimal solution to a set of mathematical equations. Equations were designed to quantify tradeoffs between sets of parameters. Parameter sets included combinations of: Military Value, Functional Value, Functional Capacity, and the number of sites performing work in a business area. For example; one equation was designed to measure the tradeoff between Functional Value and Functional Capacity. The model then searches all possible workload distributions to find a solution resulting in maximum Functional Value with minimum excess Functional Capacity (excess Functional Capacity was defined as the difference between Functional Capacity and Functional Requirement). This computer model was used to generate a baseline set of alternatives which required LJCSG review and judgment to determine alternatives that were technically feasible, recognizing that the model input parameters were estimates rather than absolutes.

LJCSG's guidance from the 30 November 1993 BRAC Review Group meeting was to provide alternatives to the Military Departments to assist them in their analyses of Common Support Functions, CSFs. Laboratories typically are parts of larger installations; and CSFs represent only a portion of most labs' responsibilities (approximately 55K workyears out of 105K total in the 81 activities considered; representing some 90+% of Air Force work, about 70% of Army and 40% of Navy). Therefore the LJCSG recommendations had to be considered by the Services in light of total installation activity.

As LJCSG conducted its analyses, the results of this approach became clear: The characterization of workload into 29 Common Support Functions resulted in a piecemeal approach to the laboratories and usually considered workload packages that fell below BRAC threshold. While this analysis provided the Services with a useful perspective on where work from a laboratory might be distributed, it did little to identify candidates for closure (see appendix D, section 1).

The LJCSG recognized that only a more macro approach would identify opportunities to eliminate infrastructure through cross-

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servicing and thus focused efforts on those areas where cross-servicing could be of most benefit. Three priorities emerged: biomedical R&D (based on earlier recommendations from ASBREM), C4I, and energetics (propellants, explosives, pyrotechnics). LJCSG issued a supplemental data call to installations responsible for RDT&E activity in the latter two of these functional areas (medical was adequately covered in the original data call).

By the time this data was received working group members had returned to assist their Services, so DDR&E staff from the LJCSG performed the analysis and briefed the results to LJCSG. The set of alternatives described in this macro view represented significant opportunities to reduce infrastructure through cross-servicing. The LJCSG suggested realignment or closure alternatives for each of these areas. It also suggested that the Services should examine variations of these alternatives tailored to optimize implementation feasibility and savings (see appendix D, section 2).

The LJCSG held meetings with the Services beginning early in December 1994 and continuing through February 1995 to facilitate service to service interactions necessary to complete the Service analysis of cross-servicing alternatives. The Services accepted or rejected these alternatives based on their individual departmental goals and objectives. A Cost of Base Realignment Actions, COBRA, analysis for each of these alternatives was conducted by the Service that would realize savings through closing or realigning a laboratory and this cost analysis was also considered by that Service in its decision to accept or reject LJCSG alternatives.

In review of each Service's response to LJCSG alternatives, generally the Service suggested as receiving workload found the alternatives feasible and was supportive. The Service suggested to realign a function through cross-servicing elected to either realign the function within its own infrastructure or reject the alternative based on operational and/or economic (cost) justifications.

Section 3. Results Summary

The LJCSG identified the following priority alternatives for service consideration:

- Consolidate most C4I acquisition and R&D at Fort Monmouth, New Jersey.
- Consolidate air launched weapons RDT&E at Naval Air Warfare Center (NAWC), China Lake, California.
- Consolidate explosives at Armament Research Development Engineering Center Picatinny Arsenal, New Jersey and at NAWC, China Lake, California.
- Consolidate propellants at NAWC, China Lake California.

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The final results are disappointing and unbalanced. Cross-servicing is minor at best. The Navy eliminated a significant number of laboratory installations. They opted to move SPAWAR (C4I) to San Diego instead of Fort Monmouth, and maintained their explosives facility at Indian Head. The Air Force elected to realign the C4I function within its own infrastructure, with a small contingent moving to Fort Monmouth. They did not consolidate air-launched weapons or propellants. Additionally, they reversed a previous BRAC decision to close Williams Air Force Base, and move aircrew training lab functions to Orlando, Florida. The Army closed one laboratory, realigning its functions internally, and chose not to move its propellant work to NAWC, China Lake based on economic considerations. (see appendix E)

Section 4. Significant Cross-Service Alternatives

1. Air Vehicles: Both Laboratory and T&E JCSG alternatives retained considerable excess capacity for RDT&E of Air Vehicles. The Military Departments should analyze the consolidation of those laboratory activities and support functions that they are otherwise considering for realignment or closure, on core T&E installations at Edwards Air Force Base (AFB), CA or Naval Air Warfare Center (NAWC), Patuxent River, MD (Fixed Wing Avionics, Flight Subsystems, and Structures); Arnold Engineering Development Center, TN (Propulsion); and Yuma Proving Ground, AZ (Rotary Wing support functions).

2. Air to Air and Air to Ground Weapons: Both Laboratory and T&E alternatives retained considerable excess capacity for development and test of air-launched weapons. The Military Departments should consider consolidating all fixed wing air to air and air to ground weapons RDT&E at NAWC, Weapons Division, China Lake, CA (NAWC/CL). This includes all the laboratory work in the Common Support Function (CSF) Weapons-Bombs, and relevant portions of laboratory work in the Weapons CSFs Conventional Missiles and Rockets, Cruise Missiles, and Guided Projectiles. It also includes associated work in energetics and in T&E. Principal candidates for realignment or closure of work in this area are Naval Surface Warfare Center (NSWC), Indian Head Division, MD; NAWC, Aircraft Division, Indianapolis, IN; NAWC, Weapons Division, Pt Mugu CA; NAWC Aircraft Division, Patuxent River MD; Wright Laboratory, Eglin AFB, FL; Aeronautical Systems Center, Eglin AFB, FL; and Development Test Center, Eglin AFB, FL.

3. Energetics - Propellants: There is considerable excess capacity in this function. The Military Departments should consider consolidating all missile and rocket propulsion RDT&E at NAWC/CL. Principal candidates for closure or realignment of this function are Phillips Laboratory, Edwards AFB, CA and Missile Research, Development, and Engineering Center (RDEC), Redstone Arsenal, AL.

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4. Energetics - Explosives: There is considerable excess capacity in this function. The Military Departments should consider cross-servicing and consolidating this function to the degree possible at NAWC/CL and Armaments RDEC, Picatinny Arsenal, NJ, taking advantage of the pre-production and production capacity of the facilities owned by the U.S. Army as the Single Product Manager for Conventional Ammunition. Principal candidates for closure or realignment of this function are Wright Laboratory, Eglin AFB, FL and NSWC, Indian Head Division, MD.

5. Energetics - Pyrotechnics: The military Departments should consider consolidating all pyrotechnics functions at Crane IN.

6. C4I: There is considerable excess capacity in this function. As noted in BRAC 95 Laboratory Guidance issued by the Director, Defense Research and Engineering on 28 September 1994, cross-service collocation of common C4I activities (e.g., acquisition, R&D, logistics) could not only reduce infrastructure costs, but contribute significantly to jointness and quality. The Military Departments should consider the following cross-service alternatives:

a. Realign C4I functions of the Space and Naval Warfare Systems Command (SPAWAR; appropriate portions of Codes 00, 05 and staff, 01, 02, and 10; the PEO for Space, Communications and Sensors; and PDs 50 and 60 [to be PD 70]) to Fort Monmouth, NJ (collocate with U.S. Army Communications and Electronics Command [CECOM]), or to Hanscom AFB, MA (collocate with U.S. Air Force Electronic Systems Command [ESC]).

b. Realign ESC, Hanscom AFB, MA to Ft. Monmouth, NJ (collocate with CECOM and potentially SPAWAR at Ft. Monmouth).

c. Realign Rome Laboratory, Griffiss AFB, NY to a combination of Naval Command, Control, and Ocean Systems Center RDT&E Division (NRaD), San Diego, CA; Communications RDEC, Ft. Monmouth, NJ; Topographic Engineering Center, Ft Belvoir, VA; and Wright Laboratory, Wright-Patterson AFB, OH.

d. Realign Rome Laboratory, Hanscom AFB, MA to NRaD, San Diego, CA; or to CECOM Communications RDEC, Ft Monmouth, NJ (or to Rome Laboratory, Griffiss AFB, NY, if it remains in place).

Appendices:

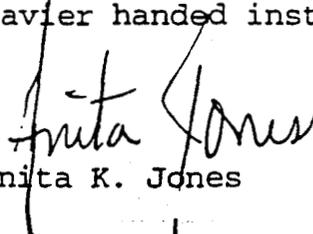
- A Initial Plan of Action and Milestones
- B Data requirements and initial guidance to the Services
- C The LJCSG Analysis Plan: the data scoring and analysis process
- D Alternatives for Service consideration
- E LJCSG Process and Results Assessment

CLOSE HOLD

There were two high points to the exercise. First, the Defense Science Board Task Force on Laboratory Management recommended outsourcing functions where industry and academia are clearly leading technology development. Out of that grew the Army's Federated Laboratory concept whereby the Army essentially creates satellite laboratories to the Army Research Laboratory. These satellite laboratories are placed within one of the leading organizations in the private sector to conduct research in support of defense requirements while encouraging commercialization of the research. Second, Service medical operations will be consolidated in the new Armed Forces Medical Research and Development Agency. The Army will be Executive Agent. Individual Army, Navy and OSD medical organizations will be disestablished.

Beyond the two positive results cited, little cross-servicing and quality improvement resulted. The laboratories retain significant duplication and excess capacity in my view. Even in those areas where there was policy agreement, the Military Departments, by and large, have been unwilling to collocate, let alone rely on each other. They continue to defend fiercely their independent pursuit of similar product lines, even when - as in C4I - jointness is essential. In fairness to the Services, the Navy and Army performed the independent cost analyses and did not find the alternatives to be cost effective. The Air Force provided some requested analyses, but their assumptions and process are in debate. Again, the Navy has eliminated a significant number of laboratory installations, some of which result in cross-servicing.

If we are to achieve desired results it appears that we have a system in which only a heavier handed instrument will suffice.


Anita K. Jones

CLOSE HOLD



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DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
3030 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3030



NOV 29 1994

MEMORANDUM FOR SECRETARY OF THE ARMY
SECRETARY OF THE NAVY
SECRETARY OF THE AIR FORCE

Subject: Additional BRAC 95 Laboratory Alternatives for
Military Department Consideration (#4)

The following alternatives for Military Department BRAC 95 consideration were derived by analysis of responses to the C4I and energetics data calls (both issued 6 October 1994), and by comparative analysis of the previously forwarded alternatives of the Laboratory and Test and Evaluation (T&E) Joint Cross Service Groups (JCSGs). The analyses were performed by LJCSG members from the Office of the Secretary of Defense. The analysis procedures, C4I and Lab/T&E candidates, and a subset of energetics candidates were discussed at the 21 November 1994 LJCSG meeting; several candidates were rejected or modified at that meeting, and those described below are forwarded for your consideration and analysis. As before, all LJCSG data remains accessible to all service BRAC teams.

The Military Departments are requested to be prepared to discuss these alternatives, as well as their response to alternatives derived from constrained and unconstrained (by Military Value) model runs (forwarded by my memoranda of 1, 4, and 21 November 1994, subject: Laboratory JCSG Alternatives for MILDEP Consideration) with LJCSG during the December-January iteration period.

1. Air Vehicles: Both Laboratory and T&E JCSG alternatives retained considerable excess capacity for RDT&E of Air Vehicles. The Military Departments should analyze the consolidation of those laboratory activities and support functions that they are otherwise considering for realignment or closure, on core T&E installations at Edwards Air Force Base (AFB), CA or Naval Air Warfare Center (NAWC), Patuxent River, MD (Fixed Wing Avionics, Flight Subsystems, and Structures); Arnold Engineering Development Center, TN (Propulsion); and Yuma Proving Ground, AZ (Rotary Wing support functions).

2. Air to Air and Air to Ground Weapons: Both Laboratory and T&E alternatives retained considerable excess capacity for development and test of air-launched weapons. The Military Departments should consider consolidating all fixed wing air to air and air to ground weapons RDT&E at NAWC, Weapons Division, China Lake, CA (NAWC/CL). This includes all the laboratory work in the Common Support Function (CSF) Weapons-Bombs, and relevant portions of laboratory work in

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the Weapons CSFs Conventional Missiles and Rockets, Cruise Missiles, and Guided Projectiles. It also includes associated work in energetics and in T&E. Principal candidates for realignment or closure of work in this area are Naval Surface Warfare Center (NSWC), Indian Head Division, MD; NAWC, Aircraft Division, Indianapolis, IN; NAWC, Weapons Division, Pt Mugu, CA; NAWC, Aircraft Division, Patuxent River, MD; Wright Laboratory, Eglin AFB, FL; Aeronautical Systems Center, Eglin AFB, FL; and Development Test Center, Eglin AFB, FL.

3. Energetics - Propellants. There is considerable excess capacity in this function. The Military Departments should consider consolidating all missile and rocket propulsion RDT&E at NAWC/CL. Principal candidates for closure or realignment of this function are Phillips Laboratory, Edwards AFB, CA and Missile Research, Development, and Engineering Center (RDEC), Redstone Arsenal, AL.

4. Energetics - Explosives. There is considerable excess capacity in this function. The Military Departments should consider cross-servicing and consolidating this function to the degree possible at NAWC/CL and Armaments RDEC, Picatinny Arsenal, NJ, taking advantage of the pre-production and production capacity of the facilities owned by the U.S. Army as the Single Product Manager for Conventional Ammunition. Principal candidates for closure or realignment of this function are Wright Laboratory, Eglin AFB, FL and NSWC, Indian Head Division, MD.

5. Energetics - Pyrotechnics. The Military Departments should consider consolidating pyrotechnics functions at Crane, IN.

6. C4I. There is considerable excess capacity in this function. As noted in BRAC 95 Laboratory Guidance issued by the Director, Defense Research and Engineering on 28 September 1994, cross-service collocation of common C4I activities (e.g., acquisition, R&D, logistics) could not only reduce infrastructure costs, but contribute significantly to jointness and quality. The Military Departments should consider the following cross-service alternatives:

a. Realign C4I functions of the Space and Naval Warfare Systems Command (SPAWAR; appropriate portions of Codes 00, 05 and staff, 01, 02, and 10; the PEO for Space, Communications and Sensors; and PDs 50 and 60 [to be PD 70]) to Fort Monmouth, NJ (collocate with U.S. Army Communications and Electronics Command [CECOM]), or to Hanscom AFB, MA (collocate with U.S. Air Force Electronic Systems Command [ESC]).

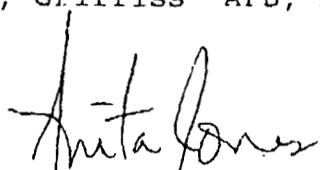
b. Realign ESC, Hanscom AFB, MA to Ft. Monmouth, NJ (collocate with CECOM and potentially SPAWAR at Ft. Monmouth).

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c. Realign Rome Laboratory, Griffiss AFB, NY to a combination of Naval Command, Control, and Ocean Systems Center RDT&E Division (NRaD), San Diego, CA; Communications RDEC, Ft. Monmouth, NJ; Topographic Engineering Center, Ft Belvoir, VA; and Wright Laboratory, Wright-Patterson AFB, OH.

d. Realign Rome Laboratory, Hanscom AFB, MA to NRaD, San Diego, CA; or to CECOM Communications RDEC, Ft Monmouth, NJ (or to Rome Laboratory, Griffiss AFB, NY, if it remains in place).



Anita K. Jones
Chair, Laboratory Joint
Cross Service Group

Document Separator

Attachment 2

Output Reports

Many of the COBRA output reports are in need of revisions, corrections, enhancements or a general review to determine if they are still useful (see item #13 et al.). The following pages display sample COBRA output reports along with suggested changes, enhancements, etc. A few general notes apply:

- When dealing with large scenarios, printing COBRA output reports can become quite a cumbersome process. Simply sorting through pages to find germane information can be a chore. Each output report should be reviewed to ensure that it still is useful, is properly organized and doesn't contain extraneous information, pages, etc.
- Along these lines, if output report programs could exclude pages, sections, etc., that did not apply, it would go a long way toward making reports more manageable. For example, why print pages of the 1TIMCOST, MILCONAS or PERSMOVE reports for which no data applies. If no MILCON takes place at an activity, don't print a page for that activity.
- Identification of both a filename and a path should be included on each report.
- In addition to eliminating unnecessary existing reports, we should consider the addition, if necessary, of new reports, that more concisely address the types of data requests experienced during BRAC-93. A few preliminary suggestions include:
 - A one page "Manpower Summary" that outlines the disposition of personnel at an affected activity (see next page).
 - A "Migration Summary" report that outlines all personnel relocating into a receiving site (for all identified COBRA scenarios).
 - An improved "Migration Diagram" output report.
 - Summary versions (for all or some set of COBRA files) of such reports as COBSUM, APPDET, etc., as well as summary statistics, by year, on eliminated and relocating positions.

NADEP Pensacola						1	
				OFF	ENL	CIV	STUD.
FY 1994:				16	24	3,070	257
Force Structure Changes:				0	0	(581)	0
FY 1999:				16	24	2,489	257
Migrations:							
x	NADEP Cherry Point	NC		5	11	977	192
x	NADEP Jacksonville	FL		0	0	268	10
x	NADEP North Island	CA		0	0	268	55
Total Migrations:				5	11	1,513	257
Eliminated:				11	13	976	0
Remain:				0	0	0	0
Note: 618 contract workyears also identified as eliminated.							

1TIMCOST.RPT - Page 1

BASE ONE-TIME COST REPORT (COBRA v4.04)
Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Base: Base A, VA
(All values in Dollars)

MilCon w/o Avoidances	0
+ Moving	18,477,514
+ Eliminated Military PCS	6,346
+ Administrative/Support	1,028,100
+ Mothball/Shutdown	169,260
+ Civilian RIF	0
+ Civilian Early Retirement	125,974
+ Civilian New Hires	0
+ Civilian PPS	0
+ Land Purchases	0
+ Environmental Mitigation	0
+ One-Time Unique Costs	10,894,000
+ HAP / RSE	0
+ Unemployment	0
+ Info Management Account	0

= Total One-Time Costs	30,701,195
Milcon Cost Avoidances	0
+ Procurement Cost Avoidances	0
+ Land Sales	0

= Total One-Time Savings	0
Total One-Time Costs	30,701,195
- Total One-Time Savings	0

= Total Net One-Time Costs	30,701,195

At a minimum this report should be revised to not print pages for which all cost elements are "0". Further, some thought should be given as to whether this report could be replaced in its entirety by a revised version of the "One-Time" (Fixed Cost) version of the Appropriation Detail report, which could identify all component elements of One-Time costs as well as portraying these costs by year.

1TIMCOST.RPT - Page 2

TOTAL ONE-TIME COST REPORT (COBRA v4.04)
Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

(All values in Dollars)

MilCon w/o Avoidances	2,080,000
+ Moving	18,477,514
+ Eliminated Military PCS	6,346
+ Administrative/Support	1,028,100
+ Mothball/Shutdown	169,260
+ Civilian RIF	0
+ Civilian Early Retirement	125,974
+ Civilian New Hires	0
+ Civilian PPS	0
+ Land Purchases	0
+ Environmental Mitigation	0
+ One-Time Unique Costs	10,894,000
+ HAP / RSE	0
+ Unemployment	0
+ Info Management Account	0

= Total One-Time Costs	32,781,195
Milcon Cost Avoidances	0
+ Procurement Cost Avoidances	0
+ Land Sales	0

= Total One-Time Savings	0
Total One-Time Costs	32,781,195
- Total One-Time Savings	0

= Total Net One-Time Costs	32,781,195

APPDET.RPT - Page 1

APPROPRIATIONS DETAIL (COBRA v4.04)
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Group :
 Service : NAVY
 Option Package : Base A

COSTS(\$K)	1994	1995	1996	1997	1998	1999	Total	Beyond
-----	----	----	----	----	----	----	-----	-----
MilCon	2,080	0	0	0	0	0	2,080	0
FAM HOUSING								
Construct	0	0	0	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0
O&M								
RPMA	0	0	0	0	0	0	0	0
BOS	4,327	4,326	4,326	4,326	4,326	4,326	25,957	4,326
UniqOperat	0	0	0	0	0	0	0	0
CIV SALARY								
Civ RIF	0	0	0	0	0	0	0	0
Civ Retir	126	0	0	0	0	0	126	0
CIV MOVING								
Per Diem	1,866	0	0	0	0	0	1,866	0
POV Miles	42	0	0	0	0	0	42	0
Home Purc	5,027	0	0	0	0	0	5,027	0
HHG	2,991	0	0	0	0	0	2,991	0
Misc	314	0	0	0	0	0	314	0
Hous Hunt	1,177	0	0	0	0	0	1,177	0
PPS	0	0	0	0	0	0	0	0
RITA	2,359	0	0	0	0	0	2,359	0
FREIGHT								
Packing	105	0	0	0	0	0	105	0
Freight	3,746	0	0	0	0	0	3,746	0
Vehicles	0	0	0	0	0	0	0	0
Driving	0	0	0	0	0	0	0	0
Loss Rate	75	0	0	0	0	0	75	0
CHAMPUS	0	0	0	0	0	0	0	0
Unemploymt	0	0	0	0	0	0	0	0
OTHER								
Caretaker	0	0	0	0	0	0	0	0
AdminPlan	1,028	0	0	0	0	0	1,028	0
Shutdown	169	0	0	0	0	0	169	0
Maintain	0	0	0	0	0	0	0	0
New Hire	0	0	0	0	0	0	0	0
lTimeMove	764	0	0	0	0	0	764	0
Unique	0	0	0	0	0	0	0	0
MIL PERSONNEL								
MIL MOVING								
Elim PCS	6	0	0	0	0	0	6	0
Per Diem	0	0	0	0	0	0	0	0
POV Miles	0	0	0	0	0	0	0	0
HHG	9	0	0	0	0	0	9	0
Misc	1	0	0	0	0	0	1	0

Revisions:

- Add a Total Column after Year 6 (before "Beyond"), that totals all costs and savings elements over the six year period.
- Cosmetic changes/improvements (see annotations).
- Report values must reflect consistent algorithms.
- Can this report be improved to better reflect Appropriation-level breakouts?

APPDET.RPT - Page 2

APPROPRIATIONS DETAIL (COBRA v4.04) - Page 2
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

	1994	1995	1996	1997	1998	1999	Total	Beyond
Hous Allow	8	8	8	8	8	8	48	8
Procurement	0	0	0	0	0	0	0	0
HAP / RSE	0	0	0	0	0	0	0	0
Envir Mitig	0	0	0	0	0	0	0	0
Info Manage	0	0	0	0	0	0	0	0
OTHER								
Mission	0	0	0	0	0	0	0	0
One-Time	5,228	5,666	0	0	0	0	10,894	0
Land Purch	0	0	0	0	0	0	0	0
Misc Recur	0	1,064	1,966	1,966	1,966	1,966	8,928	1,966
TOT COSTS	31,452	11,064	6,300	6,300	6,300	6,300	67,716	6,300
SAVINGS (\$K)	1994	1995	1996	1997	1998	1999	Total	Beyond
MILCON								
Cost Avoid	0	0	0	0	0	0	0	0
FAM HOUSING								
Construct	0	0	0	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0
O&M								
RPMA	20	52	52	52	52	52	280	52
BOS	673	5,079	5,079	5,079	5,079	5,079	26,068	5,079
UniqOperat	0	0	0	0	0	0	0	0
Civ Salary	2,345	4,689	4,689	4,689	4,689	4,689	25,790	4,689
Civ Moving	0	0	0	0	0	0	0	0
Freight	0	0	0	0	0	0	0	0
CHAMPUS	0	0	0	0	0	0	0	0
UniqOther	0	0	0	0	0	0	0	0
MIL PERSONNEL								
SALARY								
Officer	64	128	128	128	128	128	704	128
Enlisted	0	0	0	0	0	0	0	0
Mil Moving	1	0	0	0	0	0	1	0
Hous Allow	0	0	0	0	0	0	0	0
Procurement	0	0	0	0	0	0	0	0
HAP / RSE	0	0	0	0	0	0	0	0
Envir Mitig	0	0	0	0	0	0	0	0
Info Manage	0	0	0	0	0	0	0	0
OTHER								
Mission	0	0	0	0	0	0	0	0
LandRevenue	0	0	0	0	0	0	0	0
Misc Recur	0	0	0	0	0	0	0	0
TOT SAVINGS	3,103	9,949	9,949	9,949	9,949	9,949	52,848	9,949

APPDET.RPT - Page 3

APPROPRIATIONS DETAIL (COBRA v4.04) - Page 3
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

NETCOST(\$K)	1994	1995	1996	1997	1998	1999	Total	Beyond
MilCon	2,080	0	0	0	0	0	2,080	0
FAM HOUSING								
Construct	0	0	0	0	0	0	0	0
Operations	0	0	0	0	0	0	0	0
O&M								
RPMA	-20	-52	-52	-52	-52	-52	-280	-52
BOS	3,654	-753	-753	-753	-753	-753	-111	-753
UniqOperat	0	0	0	0	0	0	0	0
Civ Salary	-2,219	-4,689	-4,689	-4,689	-4,689	-4,689	-25,664	-4,689
Civ Moving	13,778	0	0	0	0	0	13,778	0
Other	5,887	0	0	0	0	0	5,887	0
MIL PERSONNEL								
Mil Salary	-64	-128	-128	-128	-128	-128	-704	-128
Mil Moving	16	0	0	0	0	0	16	0
Other	8	8	8	8	8	8	8	8
Procurement	0	0	0	0	0	0	0	0
HAP / RSE	0	0	0	0	0	0	0	0
Envir Mitig	0	0	0	0	0	0	0	0
Info Manage	0	0	0	0	0	0	0	0
Mission	X	X	X	X	X	X	X	X
Other	5,228	5,666	0	0	0	0	10,894	0
Land	0	0	0	0	0	0	0	0
CHAMPUS	0	0	0	0	0	0	0	0
Misc Recur	0	1,064	1,966	1,966	1,966	1,966	8,928	1,966
TOT NETCOST	28,348	1,115	-3,649	-3,649	-3,649	-3,649	14,867	-3,649

APPDETFX.RPT

APPROPRIATIONS DETAIL, FIXED COSTS (COBRA v4.04)
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Group :
 Service : NAVY
 Option Package : Base A

COSTS(\$K)	1994	1995	1996	1997	1998	1999
MilCon	2,080	0	0	0	0	0
FAM HOUSING						
Construct	0	0	0	0	0	0
O&M						
CIV SALARY						
RIF	0	0	0	0	0	0
Retire	126	0	0	0	0	0
CIV MOVING						
Per Diem	1,866	0	0	0	0	0
POV Miles	42	0	0	0	0	0
Home Purc	5,027	0	0	0	0	0
HHG	2,991	0	0	0	0	0
Misc	314	0	0	0	0	0
Hous Hunt	1,177	0	0	0	0	0
PPS	0	0	0	0	0	0
RITA	2,359	0	0	0	0	0
FREIGHT						
Packing	105	0	0	0	0	0
Freight	3,746	0	0	0	0	0
Vehicles	0	0	0	0	0	0
Driving	0	0	0	0	0	0
Loss Rate	75	0	0	0	0	0
Unemployt	0	0	0	0	0	0
OTHER						
AdminPlan	1,028	0	0	0	0	0
Shutdown	169	0	0	0	0	0
Maintain	0	0	0	0	0	0
New Hire	0	0	0	0	0	0
lTimeMove	764	0	0	0	0	0
MIL PERSONNEL						
MOVING						
Elim PCS	6	0	0	0	0	0
Per Diem	0	0	0	0	0	0
POV Miles	0	0	0	0	0	0
HHG	9	0	0	0	0	0
Misc	1	0	0	0	0	0
Hous Allow	8	8	8	8	8	8
Procurement*	0	0	0	0	0	0
HAP / RSE	0	0	0	0	0	0
Envir Mitig	0	0	0	0	0	0
Info Manage	0	0	0	0	0	0
OTHER						
One-Time	5,228	5,666	0	0	0	0
Land Purch	0	0	0	0	0	0
TOT COSTS	27,125	5,674	8	8	8	8

APPRO. DETAIL FIXED COSTS (COBRA v4.04) - Page 2
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

SAVINGS(\$K)	1994	1995	1996	1997	1998	1999
MILCON						
Cost Avoid	0	0	0	0	0	0
FAM HOUSING						
Construct	0	0	0	0	0	0
O&M						
Civ Moving	0	0	0	0	0	0
Freight	0	0	0	0	0	0
MIL PERSONNEL						
Moving	1	0	0	0	0	0
Procurement*	0	0	0	0	0	0
HAP / RSE	0	0	0	0	0	0
Envir Mitig	0	0	0	0	0	0
Info Manage	0	0	0	0	0	0
LandRevenue	0	0	0	0	0	0
TOT SAVINGS	1	0	0	0	0	0
NETCOST(\$K)	1994	1995	1996	1997	1998	1999
MilCon	2,080	0	0	0	0	0
FAM HOUSING						
Constructn	0	0	0	0	0	0
O&M						
Civ Salary	126	0	0	0	0	0
Civ Moving	13,778	0	0	0	0	0
Freight	3,926	0	0	0	0	0
Unemployt	0	0	0	0	0	0
Other	1,197	0	0	0	0	0
MIL PERSONNEL						
Moving	16	0	0	0	0	0
Other	8	8	8	8	8	8
Procurement*	0	0	0	0	0	0
HAP / RSE	0	0	0	0	0	0
Envir Mitig	0	0	0	0	0	0
Info Manage	0	0	0	0	0	0
OTHER						
One-Time	5,228	5,666	0	0	0	0
Land	0	0	0	0	0	0
TOT NETCOST	27,123	5,674	8	8	8	8

* Procurement values continue into Beyond years.

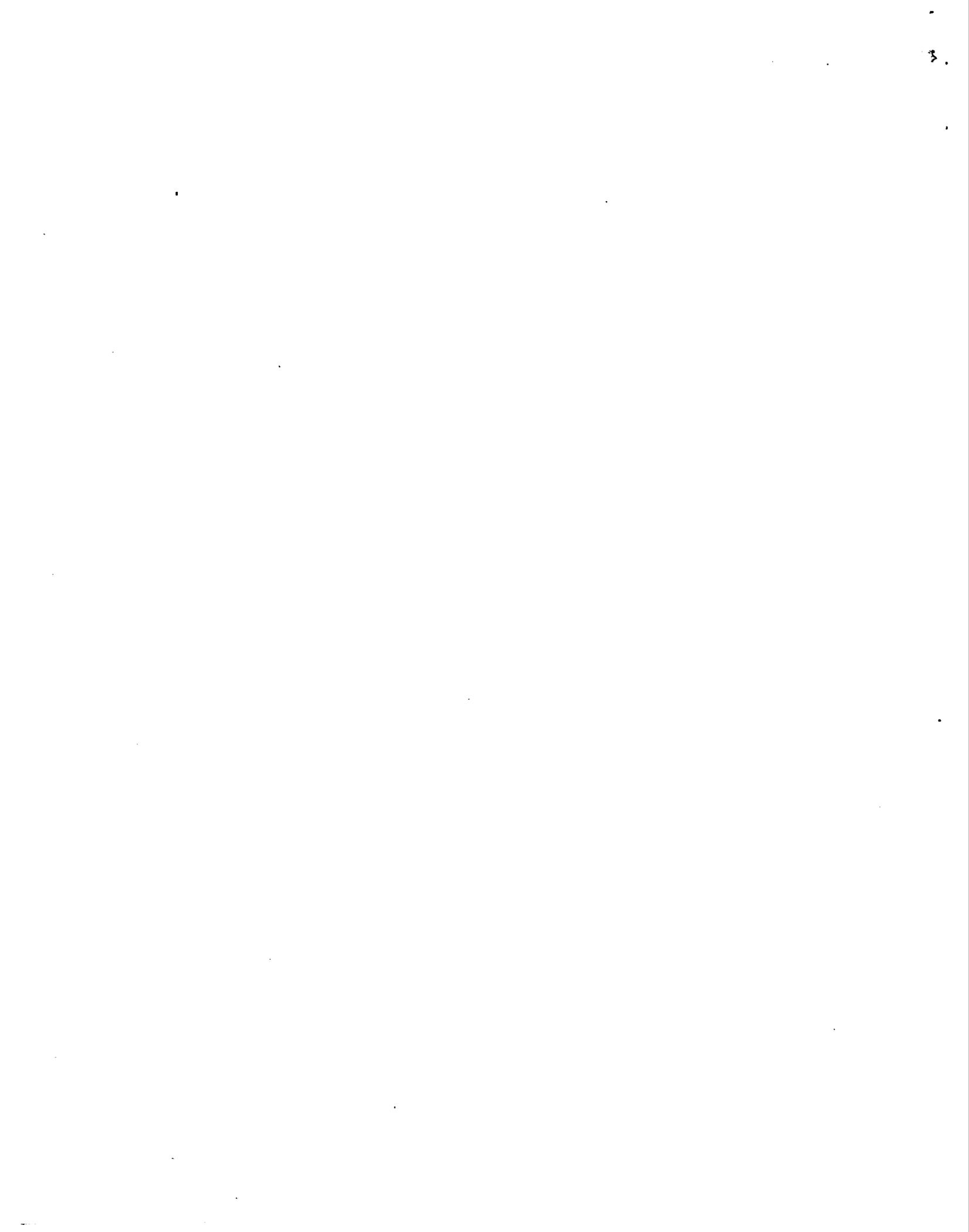
Joint Process Action Team

(JPAT)

Suggested Improvements to COBRA

16 November 1993

As a result of the incorporation of improvements/enhancements recommended by the COBRA JPAT, the COBRA model provided a reasonable estimate of costs and savings associated with BRAC-93 closure and realignment recommendations. The attached pages are a preliminary list of further suggested improvements and refinements to the model. This list is presented as a starting point for discussions by the COBRA JPAT and does not represent a complete or final list of suggested improvements. This list also does not reflect approval or concurrence by the COBRA JPAT to any of the identified suggestions.



JPAT - COBRA Improvements

1. Family Housing Shutdown

Problem: If an activity is "closed", then family housing operations algorithm ignores the percentage entered in *Family Housing Shutdown* and the entire *Family Housing Costs* value is counted as a savings. In some cases, this may not be the correct calculation, since some Family Housing assets may be transferred to other remaining activities in the area, and therefore not be shut down.

Solution: Family Housing Shutdown algorithm should use the value entered in *Family Housing Shutdown*. (Navy)

2. Mothball/Shutdown Costs 1

Problem: Calculation of these costs is not consistently displayed on the Realignment Summary (COBSUM), One Time Cost (1TIMCOST) and Appropriations Detail (APPDET) reports. On the 1TIMCOST report and the total *One Time Cost* figure on the COBSUM reports, full Mothball/Shutdown costs are calculated for a "closed" activity regardless of the number of square feet entered in *Facil Shutdown*. However, the APPDET report and the Net Costs section of the COBSUM report do calculate shutdown costs based on the number of square feet entered in *Facil Shutdown*.

Solution: Shutdown costs should be consistently calculated, and should use the value entered in *Facil Shutdown*. (Navy)

3. Mothball/Shutdown Costs 2

Problem: In realignment scenarios, the model does not calculate shutdown costs for facilities identified as being shutdown.

Solution: Shutdown costs should be calculated for all facility square feet identified as being shut down regardless of whether the activity is being closed or realigned. (Navy)

4. Mothball/Shutdown Costs 3

Problem: Mothball costs can be understated in some scenarios since the model apparently "caps" the total Mothball cost (see Overhead Cost Report).

Solution: Correct algorithm to calculate accurate and complete mothball costs, where appropriate. (AF)

JPAT - COBRA Improvements

5. Administrative Planning and Support 1

Problem: If no one moves, then no Administrative Planning and Support costs are calculated.

Solution: Administrative Planning and Support Cost algorithm should be triggered if any of the following occur: movement of personnel or equipment, elimination of personnel, or shutdown of facilities. (*Navy*)

6. Administrative Planning and Support 2

Problem: In realignment scenarios, Administrative Planning and Support costs are calculated for the entire "six year window", regardless of when the realignment is actually completed..

Solution: Administrative Planning and Support Costs in realignment scenarios should only be calculated through the last year in which actions take place (i.e., movement or elimination of personnel; facility shutdown, etc.). (*Navy*)

7. Administrative Planning and Support 3

Problem: Model calculates the same Administrative Planning and Support costs regardless of the scope of the action. For example, at an installation with a base loading of 5,000 personnel, the same costs are calculated whether 50 or 5,000 of these positions are relocated/eliminated.

Solution: JPAT should review this algorithm to determine if any changes should be made to the model's methodology for calculating these costs. (*Army, Navy*)

8. Administrative Planning and Support 4

Problem: Administrative Planning and Support cost calculation is not affected by the year in which a closure/realignment action starts, i.e., even if no positions are eliminated/relocated until Year 2, Administrative Planning and Support Costs are calculated beginning in Year 1.

Solution: Joint Service Group should review this algorithm to determine if any changes should be made to the model's methodology for calculating these costs. (*Army*)

JPAT - COBRA Improvements

16. Categorization of Eliminated Positions/Calculation of BOS Savings

Problem: The model does not allow for the identification of personnel eliminations which result because of the closure action (as opposed to force structure reductions) but for which no salary savings are expected.

Example 1: At a Shipyard (or other DBOF activity), workload associated with some of the civilian positions identified as eliminated at the closing shipyard, may still be required to be performed and consequently will be transferred to remaining shipyards. The personnel are not transferred, but since their workload is still being performed in the industrial system, it is inappropriate to count their salaries as savings resulting from the base closure action.

Example 2: If both an operational activity(s) and a regional Public Works Center are closed, then salary savings for the direct labor work force of the Public Works Center should not be counted as savings since these costs are already being counted as non-payroll base operating support savings at the operational activity(s) being served by the Public Works Center.

In addition to problems associated with calculating salary savings, the model does not provide the capability to remove personnel and yet still capture BOS savings. For example, the removal of non-appropriated fund personnel from an activity will neither incur moving costs nor result in salary savings, however, this removal would result in reductions in BOS costs.

Solution: Add an additional set of eliminated position fields (Officer, Enlisted & Civilian), by year, titled, "Eliminated Positions (No Salary Savings)". No salary savings would be calculated for these positions. Overhead savings associated with these positions would, however, be calculated. (*Army, Navy*)

17. Recurring "Maintain" Costs

Problem: In realignment scenarios, the model calculates a recurring maintenance cost for all facility square feet identified as being shutdown. This calculation is based on the assumption that shut down facilities will have to be maintained in a mothballed status. However, in many cases, shutdown facilities could be demolished or excessed, and thus not incur this recurring cost.

Solution: Recurring maintenance costs should not be calculated by the model in realignment scenarios. If appropriate, the user can enter these costs as a *Miscellaneous Recurring Cost*. (*Navy*)

JPAT - COBRA Improvements

18. Background Spreadsheets/Note Pads

Problem: Current model does not provide an adequate mechanism to display or store components of cost and manpower fields.

Solution: *One-Time Unique, One-Time Moving, Miscellaneous Recurring* and *Mission Costs and Savings* fields should have background spreadsheets/notepads which are accessible by "clicking" on the appropriate data field. These subordinate spreadsheets could then be used to list elements comprising a cost field and then total these costs for entry into the appropriate COBRA data field (similar to feature found in tax preparation software). This feature would eliminate need to constantly refer back to source data to find out the components of a cost/savings field. Model should also include a base loading table that identifies the subordinate components/organizations/tenants, etc., that comprise the installation being closed. For each tenant, the model should display manpower numbers which are then aggregated to provide manpower numbers on Screen 4. This spreadsheet would also be used to identify movement and elimination of personnel, again aggregating these numbers to provide input for COBRA movement and elimination data fields. (*Navy*)

19. Algorithm Manual

Problem: Current Algorithm Manual is not "user friendly" and is very time consuming to use.

Solution: Once model has been revised to incorporate a single set of algorithms, then Algorithm Manual should be rewritten to provide a single, complete set of algorithms, that displays the complete formula for each of the model's calculations in a single place. (*Navy*)

20. Base Operating Support (BOS) Algorithms 1

Problem: BOS algorithms do not currently distinguish between fixed and variable overhead costs (e.g., costs to operate a central heating plant or secure the base perimeter may not be proportionate to the number of personnel or to square footage). BOS algorithms also do not distinguish between differences in overhead rates at different types of installations (e.g., transferring administrative functions (low overhead rate) to an industrial activity (high overhead rate) should increase overhead at the industrial activity at a lower rate than if other industrial functions were being relocated).

Solution: Recommend that JPAT evaluate this situation to see if current algorithms warrant revisions to better address fixed/variable costs or to address the rate at which

JPAT - COBRA Improvements

9. Calculation, Display and Aggregation of Costs and Savings 1

Problem: Currently, different output reports are based on separate, and sometimes inconsistent, sets of algorithms. Consequently, different output reports display inconsistent costs and savings data. For example, family housing construction cost avoidances and "Beyond Year" salary savings are not consistently shown on the APPDET and COBSUM reports).

Solution: COBRA should incorporate a single set of algorithms which produce a single set of costs and savings figures which are then drawn upon for all of the model's output reports. (*Army, Navy, AF, DLA*)

10. Calculation, Display and Aggregation of Costs and Savings 2

Problem: COBRA model does not provide summary cost/savings data on a collection of scenarios, e.g., all Military Department recommendations.

Solution: As noted above, COBRA should calculate a single set of costs, savings and manpower numbers (perhaps the cost elements in the APPDET report and the ROI and manpower numbers from the COBSUM report). These "output" data elements should then be stored along with the input data elements for a given COBRA file. If costs/savings data is stored in the COBRA data base, a series of output reports could be developed to aggregate cost and manpower data for a given set of COBRA files. The user would be given options for identifying some or all files in a directory for inclusion in summary output reports. (*Navy*)

11. Display of Cost/Savings Data

Problem: COBRA output reports do not correctly distinguish between costs and savings (e.g., see page 2 of COBSUM report where many savings are shown as negative costs). This problem is complicated by the fact that some data elements only accept one entry (i.e., the user must summarize costs/savings into one "net" entry).

Solution: As noted above, a single set of algorithms (rather than separate sets of algorithms for different output reports) would go a long way towards correcting this problem. Additionally, report programming should be revised to correctly show costs and savings. Finally, the following data elements, *One-Time Unique, One-Time Moving, Miscellaneous Recurring and Mission Costs/Savings*, should be expanded to allow separate entries for costs and savings, thus allowing output reports to correctly aggregate costs and savings. (*Navy*)

JPAT - COBRA Improvements

12. Integration with Economic Impact Model

Problem: OEA Spreadsheet requires manual entry of data elements found in COBRA files. Duplicate data entry work increases chances of error.

Solution: OEA spreadsheet should become part of COBRA "data base" and be automatically "loaded" from COBRA data elements. See **Attachment 1** for more on Economic Impact. (*Navy*)

13. Output Reports

Problem: Some output reports are inconsistent; others are no longer useful. For example, Migration reports do not adequately distinguish movements, eliminations and force structure changes. Finance report is incomplete and is not consistent with COBSUM report, etc.

Solution: Recommend that JPAT review and redesign COBRA output reports. See **Attachment 2** as a starting point for this discussion. (*Army, Navy, AF, DLA*)

14. Calculation of Return on Investment (ROI) Year 1

Problem: ROI Year is incorrectly calculated in Realignment scenarios. The model assumes that investment takes place over the entire "six year window", and consequently, does not begin counting for ROI year until Year 7.

Solution: Calculation of ROI Year in realignment scenarios should be calculated from the end of the actual investment period, i.e., once all movement, elimination of personnel, facility shutdown, etc., has been completed. (*Navy*)

15. Calculation of Return on Investment (ROI) Year 2

Problem: ROI Year is understated by one year on the Realignment Summary report.

Solution: Correct calculation of ROI Year so that it accurately reflects "the number of years, after completion of the closure/realignment action, to the break-even point," as defined in the User's Manual. (*Army*)

JPAT - COBRA Improvements

overhead should change as the result of the transfer of like or unlike functions. (*Navy, AF, DLA*)

21. Base Operating Support (BOS) Algorithms 2 (RPMA)

Problem: RPMA costs at receiving sites are only increased if new square footage is built. This assumption may not accurately reflect cost changes in situations where currently unoccupied space is rehabilitated and occupied (consequently increasing RPMA costs). In addition, the model does not take into consideration the type of space being maintained; the model assumes that a warehouse has the same RPMA cost per square foot as administrative space.

Solution: Recommend that JPAT evaluate this situation to see if current algorithms warrant revisions to better address changes in RPMA costs. (*DLA*)

22. Base Operating Support (BOS) Algorithms 3 (Communication Costs)

Problem: Communication costs at receiving sites are currently calculated using the BOS curve. The assumption that the model makes with regards to communications costs is that the same types of economies of scale savings can be realized as can be for BOS. Consequently, if an ADP intensive activity moves to an installation with a low ADP cost, savings appear to be large. In actuality, communication costs can not be expected to decrease appreciably unless positions are eliminated.

Solution: Recommend that JPAT evaluate this situation to see if current algorithms warrant revisions to better address changes in Communications costs. (*DLA*)

23. Variable Housing Allowance (VHA)

Problem: Rates are entered as a monthly figure, yet algorithm does not convert monthly savings into a yearly figure.

Solution: Correct algorithm. (*Navy, AF*)

24. Standard Factor Screen 4

Problem: Unit of Measure for *Bachelor Quarters* and *Family Housing* is "case sensitive," and, consequently, does not recognize lower case letters.

Solution: Fix programming to accept either upper or lower case letters. (*Navy*)

JPAT - COBRA Improvements

25. Error Display 1

Problem: Currently, a program crash throws the user out of COBRA and results in the loss of all data entered into the model but not yet saved. The system also does not provide adequate explanation of the reason for the crash.

Solution: System should display message that explains reason for crash. Error trapping should not crash the system. The system must also allow an opportunity to save data. (Navy)

26. Error Display 2

Problem: Current Error Report does not provide adequate explanations, e.g., rather than saying, "*The following base(s), at some point, have a negative number of Officers, Enlisted, Civilians, and/or Students: Base A, VA,*" the report should specifically state in which year and in which data field the error exists.

Solution: JPAT review existing Error Messages/Programming and revise to more precisely identify problems. (Navy)

27. COBSUM Report - Other Costs

Problem: Some costs identified as Other Costs on the Realignment Summary Report may be more correctly identified elsewhere on the report, e.g., Priority Placement System Costs are Moving Costs, RIF Costs are Personnel Costs, etc.

Solution: Revise categorization of Other Costs. (Navy)

28. Interface with Other Software

Problem: COBRA could be improved to more readily accept electronic input of data - as opposed to user data entry. This would aid in the use of automated data entry forms, reduce the possibility for typographical errors, etc.

Solution: Review and enhance ability of model to import/export from standardized software packages, e.g., Lotus, Quattro, FoxPro, etc., so that data can be electronically entered into the model. (Navy)

29. Finite "Recurring" Costs/Savings

Problem: Model does not currently allow for the entry of costs or savings which extend over a finite period of time which exceeds six years, e.g., a 15 year lease, etc.

JPAT - COBRA Improvements

Solution: Revise *Miscellaneous Recurring Costs/Savings* and *Mission Costs/Savings* fields to allow this kind of entry. (*Navy*)

30. Base Information (Static) Data Entry Screen

Problem: Model does not currently allow for discrete identification of lease costs or costs associated with tenant organizations.

Solution: Recommend that JPAT review the possibility of revising Screen 4 and associated algorithms for use with leased space or tenant organizations, thus avoiding problems associated with calculating savings, etc. - when dealing with tenants. (*Army*)

31. Base Operating Support (BOS) Personnel Increases at Gaining Bases

Problem: In some scenarios, additional BOS personnel (beyond the number relocating from a losing base) are required at a receiving site. Model does not currently allow for the identification of additional BOS personnel at receiving sites.

Solution: Model should be corrected to allow the identification, and associated costing, of additional BOS personnel at receiving sites. (*Army, DLA*)

32. Civilian Salary Rates

Problem: Model does not currently allow the identification of civilian salary rates specific to an installation.

Solution: Model should be corrected to allow the identification of civilian salary rates as a "site specific" data element as opposed to a standard factor. (*Army*)

33. Military Student Force Structure Changes

Problem: Model does not currently allow the identification of force structure changes for military students.

Solution: "Force Structure Changes" fields on Screen 6 should be revised to include a line for Military Students. (*Army*)

34. Joint Service Coordination 1

Problem: Increased emphasis on joint analysis during BRAC-95 will require more coordination on use of COBRA.,

JPAT - COBRA Improvements

Solution: JPAT should review opportunities for standardizing and sharing COBRA data elements (standard factors and others)." (*Army*)

35. Joint Service Coordination 2

Problem: Model does not conveniently allow incorporation of standard factors, etc., for more than one military department.

Solution: JPAT should review possibility of revising model to allow two or more military departments to be incorporated into a single scenario (with each military department able to use its own set of standard factors). (*Army*)

36. Calculation of Recurring Costs/Savings

Problem: Model does not consistently calculate the starting point for recurring costs and savings. Housing Allowance costs are full year for closures and realignments. Housing Operations savings are full year for closures and half year for realignments (plus \$45.5K per \$1M of Housing Operations in the closure and preceding years).

Solution: All recurring costs and savings should be half year in the year of change, except as previously determined for base operating support costs. (*AF*)

37. Environmental Compliance Costs

Problem: Model currently does not include an automated algorithm to calculate environmental compliance costs.

Solution: An automated algorithm for calculating environmental compliance costs would be a valuable enhancement. JPAT should review this situation to determine if an algorithm should be added to the model. In doing this, it will be necessary to separate O&S from projects, and evaluate projects one at a time to decide if they must be completed regardless of closure. Also need to review appropriateness of this type of algorithm for DBOF activities. (*AF*)

38. Disposal Costs/Savings

Problem: Each military department manages disposal of excess equipment differently.

Solution: JPAT should review disposal procedures and historical costs/savings data to determine if disposal costs/savings should be treated differently in the model. (*AF*)

JPAT - COBRA Improvements

39. Unemployment Costs

Problem: In some states, retirees are eligible for unemployment benefits

Solution: Retiree unemployment should be added as a separate calculation, with an "on/off" switch, since it does not apply in all states (Screen 4). Standard Factors will require an additional field for unemployment compensation amount and weeks of receipt. *(AF)*

40. Inflation Rates for Finance Report

Problem: Current model only allows a single inflation rate per year for use in the Finance Report.

Solution: Revise model to allow entry of a complete inflation table (by appropriation, etc.). *(AF)*

41. "Start-Up" Inefficiencies

Problem: Current model does not automatically calculate additional costs or reduced savings associated with potential "start-up" inefficiencies resulting from the transfer of a mission/workload from one activity to another. While the model does calculate administrative planning and support costs, it does not automatically model a situation where a mission is moved and operations are expected to begin with a predominately new work force. If a receiving site had a lower cost structure than the closing site, the model projects immediate savings as if the move will increase the efficiency of operations. This may not be realistic, especially in the first years following a move.

Solution: JPAT review this situation to determine whether any changes to algorithms are warranted. *(DLA)*

42. Rehabilitation Projects - Mark Up Rate

Problem: Current model fully loads site prep, SIOH, contingency and design costs on rehabilitations. When facilities are renovated, there are management-related costs incurred, but nowhere near the extent of those expected of a new building. The model applies a reduced construction cost for rehabilitation, and should also allow for reduced management costs.

Solution: JPAT review this situation to determine how to revise use of mark up rates in the calculation of rehabilitation costs. *(DLA)*

Attachment 1

Economic Impact Analysis Issues

- As discussed previously (see item #12), it is both time consuming and inefficient to separately enter manpower data into both COBRA and the OEA spreadsheet. These two programs should be merged together, so that COBRA data can be automatically exported into a Department's OEA Spreadsheet.
- Each Military Department should have the capability to show personnel moving to other DoD activities, e.g., from a Naval Air Station to an Air Force Base, etc.
- Output capabilities of the Spreadsheet should be expanded to include output reports by economic region, state, region of the country or national totals. Results should be able to be displayed either in narrative tables or charts, graphs, maps, etc. These capabilities would eliminate redundant efforts to display economic impact data and would help to distinguish between jobs actually lost to the national economy versus jobs transferred from one region to another.
- Contract Work Years - This is the only information input into the OEA Spreadsheet which is currently not in COBRA. In order to integrate these two systems, contract work years would have to somehow be identified in COBRA. In addition, it is difficult to determine how many contractor personnel would actually relocate out of a geographic area. Since for some DBOF activities associated contract workload can be substantial, relative gains and losses of contract personnel can significantly affect the calculation of changes in employment at gaining and losing sites. Issues regarding contract work years need to be discussed prior to BRAC-95, including ways of estimating whether contract work years would relocate along with transferring functions or remain in the area of the closing installation.

If this report is retained, then it needs the same types of revisions identified in the APPDET report. It also needs to be revised and relabeled to only identify "One-Time" costs/savings.

APPDETSS.RPT

APP. DETAIL, STEADY-STATE COSTS (COBRA v4.04)
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Group :
 Service : NAVY
 Option Package : Base A

COSTS(\$K)	1994	1995	1996	1997	1998	1999	Beyond
FAM HOUSING							
Operations	0	0	0	0	0	0	0
O&M							
RPMA	0	0	0	0	0	0	0
BOS	4,327	4,326	4,326	4,326	4,326	4,326	4,326
UniqOperat	0	0	0	0	0	0	0
CHAMPUS	0	0	0	0	0	0	0
OTHER							
Caretaker	0	0	0	0	0	0	0
Unique	0	0	0	0	0	0	0
OTHER							
Mission	0	0	0	0	0	0	0
Misc Recur	0	1,064	1,966	1,966	1,966	1,966	1,966
TOT COSTS	4,327	5,390	6,292	6,292	6,292	6,292	6,292

SAVINGS(\$K)	1994	1995	1996	1997	1998	1999	Beyond
FAM HOUSING							
Operations	0	0	0	0	0	0	0
O&M							
RPMA	20	52	52	52	52	52	52
BOS	673	5,079	5,079	5,079	5,079	5,079	5,079
UniqOperat	0	0	0	0	0	0	0
Civ Salary	2,345	4,689	4,689	4,689	4,689	4,689	4,689
CHAMPUS	0	0	0	0	0	0	0
UniqOther	0	0	0	0	0	0	0
MIL PERSONNEL							
SALARY							
Officer	64	128	128	128	128	128	128
Enlisted	0	0	0	0	0	0	0
Hous Allow	0	0	0	0	0	0	0
OTHER							
Mission	0	0	0	0	0	0	0
Misc Recur	0	0	0	0	0	0	0
TOT SAVINGS	3,101	9,949	9,949	9,949	9,949	9,949	9,949

APP DET, STEADY-STATE COSTS (COBRA v4.04) - Page 2
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

NETCOST(\$K)	1994	1995	1996	1997	1998	1999	Beyond
FAM HOUSING							
Operations	0	0	0	0	0	0	0
O&M							
RPMA	-20	-52	-52	-52	-52	-52	-52
BOS	3,654	-753	-753	-753	-753	-753	-753
UniqOperat	0	0	0	0	0	0	0
Civ Salary	-2,345	-4,689	-4,689	-4,689	-4,689	-4,689	-4,689
CHAMPUS	0	0	0	0	0	0	0
OTHER							
Caretaker	0	0	0	0	0	0	0
Unique	0	0	0	0	0	0	0
MIL PERSONNEL							
SALARY							
Officer	-64	-128	-128	-128	-128	-128	-128
Enlisted	0	0	0	0	0	0	0
Hous Allow	0	0	0	0	0	0	0
OTHER							
Mission	0	0	0	0	0	0	0
Misc Recur	0	1,064	1,966	1,966	1,966	1,966	1,966
TOT NETCOST	1,225	-4,559	-3,657	-3,657	-3,657	-3,657	-3,657

If this report is retained, then it needs the same types of revisions identified in the APPDET report. It also needs to be revised and relabeled to only address "Recurring" costs/savings.

APPSUM.RPT

APPROPRIATIONS SUMMARY (COBRA v4.04)
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Group :
 Service : NAVY
 Option Package : Base A

	1994	1995	1996	1997	1998	1999	Beyond
	----	----	----	----	----	----	-----
COSTS (\$K)							
MilCon	2,080	0	0	0	0	0	0
FAM HOUSING							
Construct	0	0	0	0	0	0	0
Operation	0	0	0	0	0	0	0
O&M	24,118	4,326	4,326	4,326	4,326	4,326	4,326
Mil Pers	26	8	8	8	8	8	8
Envir Mit	0	0	0	0	0	0	0
HAP / RSE	0	0	0	0	0	0	0
Land Purch	0	0	0	0	0	0	0
Procuremts	0	0	0	0	0	0	0
Other	5,228	5,666	0	0	0	0	0
Misc Recur	0	1,064	1,966	1,966	1,966	1,966	1,966
TOTAL	31,452	11,064	6,300	6,300	6,300	6,300	6,300
SAVINGS (\$K)							
MilCon	0	0	0	0	0	0	0
FAM HOUSING							
Construct	0	0	0	0	0	0	0
Operation	0	0	0	0	0	0	0
O&M	3,037	9,821	9,821	9,821	9,821	9,821	9,821
Mil Pers	66	128	128	128	128	128	128
Envir Mit	0	0	0	0	0	0	0
HAP / RSE	0	0	0	0	0	0	0
Land Reven	0	0	0	0	0	0	0
Procuremts	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Misc Recur	0	0	0	0	0	0	0
TOTAL	3,103	9,949	9,949	9,949	9,949	9,949	9,949
NET COSTS (\$K)							
MilCon	2,080	0	0	0	0	0	0
FAM HOUSING							
Construct	0	0	0	0	0	0	0
Operation	0	0	0	0	0	0	0
O&M	21,080	-5,494	-5,494	-5,494	-5,494	-5,494	-5,494
Mil Pers	-40	-120	-120	-120	-120	-120	-120
Envir Mit	0	0	0	0	0	0	0
HAP / RSE	0	0	0	0	0	0	0
Land	0	0	0	0	0	0	0
Procuremts	0	0	0	0	0	0	0
Other	5,228	5,666	0	0	0	0	0
Misc Recur	0	1,064	1,966	1,966	1,966	1,966	1,966
TOTAL	28,348	1,115	-3,649	-3,649	-3,649	-3,649	-3,649

Recommend deletion of this report - it adds no value to information displayed on the APPDET Report.

COBSUM.RPT - Page 1

COBRA REALIGNMENT SUMMARY (COBRA v4.04)
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Group :
 Service : NAVY
 Option Package : Base A

Starting Year : 1994
 Break Even Year: 2009 (Year 16)
 ROI Year : 2009 (14 Years)

Option NPV in 2013 (\$K) : -4,746
 Total One-Time Cost (\$K) : 32,781

	Net Costs (\$K) Constant Dollars						
	1994	1995	1996	1997	1998	1999	Beyond
Misn	0	0	0	0	0	0	0
Pers	-2,394	-4,810	-4,810	-4,810	-4,810	-4,810	-4,810
Ovhd	4,831	259	1,161	1,161	1,161	1,161	1,161
Cons	2,080	0	0	0	0	0	0
Movg	18,477	0	0	0	0	0	0
Othr	5,354	5,666	0	0	0	0	0
TOT	28,348	1,115	-3,649	-3,649	-3,649	-3,649	-3,649

	1994	1995	1996	1997	1998	1999	TOTAL
FORCE STRUCTURE REDUCTIONS							
Officers	0	0	0	0	0	0	0
Enlisted	0	0	0	0	0	0	0
Civilian	23	21	0	0	0	0	44
POSITIONS ELIMINATED							
Officers	2	0	0	0	0	0	2
Enlisted	0	0	0	0	0	0	0
Civilian	95	0	0	0	0	0	95
PERSONNEL REALIGNMENTS							
Officers	2	0	0	0	0	0	2
Enlisted	0	0	0	0	0	0	0
Students	0	0	0	0	0	0	0
TOT MIL	2	0	0	0	0	0	2
Civilian	504	0	0	0	0	0	504
TOTAL	506	0	0	0	0	0	506

Summary:

 basea.cbr

- **Do we really want to still display both an ROI and Break Even Year? - Since the actual "Year" is the same, these two displays add unnecessary confusion. Recommend dropping "Break Even Year".**
- **Page 2 of this report attempts to provide information available from the APPDET Report. In its current form, it does not accurately reflect costs vs. savings. It either needs to be fixed, or scrapped.**

COBSUM.RPT - Page 2

COBRA REALIGNMENT SUMMARY (COBRA v4.04) - Page 2
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Costs (\$K)	Constant Dollars						
	1994	1995	1996	1997	1998	1999	Beyond
Misn	0	0	0	0	0	0	0
Pers	8	8	8	8	8	8	8
Ovhd	4,831	259	1,161	1,161	1,161	1,161	1,161
Cons	2,080	0	0	0	0	0	0
Movg	18,479	0	0	0	0	0	0
Othr	5,354	5,666	0	0	0	0	0
TOT	30,753	5,933	1,169	1,169	1,169	1,169	1,169

Savings (\$K)	Constant Dollars						
	1994	1995	1996	1997	1998	1999	Beyond
Misn	0	0	0	0	0	0	0
Pers	2,403	4,818	4,818	4,818	4,818	4,818	4,818
Ovhd	0	0	0	0	0	0	0
Cons	0	0	0	0	0	0	0
Movg	1	0	0	0	0	0	0
Othr	0	0	0	0	0	0	0
TOT	2,404	4,818	4,818	4,818	4,818	4,818	4,818

DELTAS.RPT

BOS, PERSONNEL, LAND, SF, AND RPMA DELTAS (COBRA v4.04)
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Group :
 Service : NAVY
 Option Package : Base A

Base	Personnel	
	Change	%Chng
Base A	-603	-100.00%
Receiving Base	506	13.77%

Base	BOS(\$)		BOS/Pers
	Change	%Chng	
Base A	-5,079,263	-100.00%	8,423.33
Receiving Base	4,326,323	11.01%	8,550.05

DELTA CHART REPORT (COBRA v4.04) - Page 2
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Base	RPMA(\$)		RPMA/Pers
	Change	%Chng	
Base A	-52,000	-100.00%	86.24
Receiving Base	0	0.00%	0.00

Base	RPMABOS(\$)		RPMABOS/Pers
	Change	%Chng	
Base A	-5,131,263	-100.00%	8,509.56
Receiving Base	4,326,323	9.59%	8,550.05

DELTA CHART REPORT (COBRA v4.04) - Page 3
 Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Base	Land		Land/Pers
	Change	%Chng	
Base A	0	0.00%	0.00
Receiving Base	0	0.00%	0.00

Base	SF		SF/Pers
	Change	%Chng	
Base A	-136,500	-100.00%	226.37
Receiving Base	0	0.00%	0.00

Does anyone use this report? If yes, doesn't it need to be revised since the BOS algorithms no longer use "Acres of Land"?

FINANCE.RPT - Page 1

DEPARTMENT OF THE NAVY
 BASE REALIGNMENT, CLOSURE, OR CONSOLIDATION
 FINANCIAL SUMMARY (COBRA v4.04)
 Data As Of 09:03 10/13/1993
 Report Created 09:29 10/13/1993
 (In Thousands of Dollars)

Closure/Realignment Summary: Base A

	FY 1994	FY 1995	FY 1996
ONE-TIME IMPLEMENTATION COSTS:			

Military Construction	2,080	0	0
Family Housing: Construction	0	0	0
Operations	0	0	0
Operation and Maintenance	19,027	0	0
Military Personnel (PCS)	26	8	9
Homeowner Assistance Program	0	0	0
Revenues from Land Sales	0	0	0
Environmental: Planning & Cleanup/Compliance	0	0	0
TOTAL COSTS	21,133	8	9
(BASE CLOSURE 1993 ACCOUNT)			
RECURRING COSTS:			

Family Housing: Operations	0	0	0
Operation and Maintenance	4,327	4,469	4,612
Other: APN	5,228	6,952	2,096
TOTAL COSTS	9,555	11,421	6,708
SAVINGS:			

Military Construction	0	0	0
Family Housing: Construction	0	0	0
Operations	0	0	0
Operation and Maintenance	3,037	10,145	10,469
Military Personnel (PCS)	66	133	137
Other: APN	0	0	0
Civilian ES	(95)	0	0
Military ES	(2)	0	0
TOTAL SAVINGS	3,103	10,277	10,606
GRAND TOTAL (BASE CLOSURE NET)	28,348	1,152	-3,890

This report would seem to be useful as a tool in the assessment review during development of implementation budgets. However, it currently still needs format revisions, correction to inconsistent calculations of salary savings, construction cost avoidances, etc. In addition, One-Time Implementation costs appear to include both one-time and recurring elements.

FINANCE.RPT - Page 2

DEPARTMENT OF THE NAVY
 BASE REALIGNMENT, CLOSURE, OR CONSOLIDATION
 FINANCIAL SUMMARY (COBRA v4.04)
 Data As Of 09:03 10/13/1993
 Report Created 09:29 10/13/1993
 (In Thousands of Dollars)

Closure/Realignment Summary: Base A

	FY 1997	FY 1998	FY 1999
ONE-TIME IMPLEMENTATION COSTS:			
Military Construction	0	0	0
Family Housing: Construction	0	0	0
Operations	0	0	0
Operation and Maintenance	0	0	0
Military Personnel (PCS)	9	9	10
Homeowner Assistance Program	0	0	0
Revenues from Land Sales	0	0	0
Environmental: Planning & Cleanup/Compliance	0	0	0
TOTAL COSTS	9	9	10
(BASE CLOSURE 1993 ACCOUNT)			
RECURRING COSTS:			
Family Housing: Operations	0	0	0
Operation and Maintenance	4,760	4,912	5,069
Other: APN	2,163	2,232	2,303
TOTAL COSTS	6,923	7,144	7,373
SAVINGS:			
Military Construction	0	0	0
Family Housing: Construction	0	0	0
Operations	0	0	0
Operation and Maintenance	10,804	11,150	11,507
Military Personnel (PCS)	141	146	150
Other: APN	0	0	0
Civilian ES	0	0	0
Military ES	0	0	0
TOTAL SAVINGS	10,946	11,296	11,657
GRAND TOTAL (BASE CLOSURE NET)	-4,014	-4,142	-4,275

INPUTDAT.RPT - Page 1

INPUT SCREEN ONE - GENERAL SCENARIO (COBRA v4.04)
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Group :
Service : NAVY
Option Package : Base A

Model Year One : FY 1994

Model does Time-Phasing of Construction/Shutdown: Yes

Base Name	Strategy:
-----	-----
Base A, VA	Closes in 1994
Receiving Base, VA	Realignment

Summary:
basea.cbr

Current report format is too cumbersome. Sections/Screens with no data entered should not be printed (e.g., if people and equipment only move from Base A to Base B, then don't print that portion of screen 3 which shows movement from Base B to Base A; if no construction requirements are identified for Base C, then don't print Screen 7 for Base C; etc.). In addition, format should be condensed so that you don't end up only using less than half of each page.

INPUTDAT.RPT - Page 2

INPUT SCREEN TWO - DISTANCE TABLE (COBRA v4.04) - Page 2
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

From Base:	To Base:	Distance:
-----	-----	-----
Base A, VA	Receiving Base, VA	520.0 mi

INPUTDAT.RPT - Page 3

INPUT SCREEN THREE - MOVEMENT TABLE (COBRA v4.04) - Page 3
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Transfers from Base A, VA to Receiving Base, VA

	1994	1995	1996	1997	1998	1999
	----	----	----	----	----	----
Officers:	2	0	0	0	0	0
Enlisted:	0	0	0	0	0	0
Civilians:	504	0	0	0	0	0
Students:	0	0	0	0	0	0
Missn Eqpt (tons):	4,000	0	0	0	0	0
Suppt Eqpt (tons):	0	0	0	0	0	0
Mil Light Vehic:	0	0	0	0	0	0
Heavy/Spec Vehic:	0	0	0	0	0	0

Transfers from Receiving Base, VA to Base A, VA

	1994	1995	1996	1997	1998	1999
	----	----	----	----	----	----
Officers:	0	0	0	0	0	0
Enlisted:	0	0	0	0	0	0
Civilians:	0	0	0	0	0	0
Students:	0	0	0	0	0	0
Missn Eqpt (tons):	0	0	0	0	0	0
Suppt Eqpt (tons):	0	0	0	0	0	0
Mil Light Vehic:	0	0	0	0	0	0
Heavy/Spec Vehic:	0	0	0	0	0	0

INPUTDAT.RPT - Page 4

INPUT SCREEN FOUR - STATIC BASE INFO (COBRA v4.04) - Page 4
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Name: Base A, VA

Homeowner Assistance Program: No
Unique Activity Information: No

Total Officer Employees:	4
Total Enlisted Employees:	0
Total Student Employees:	0
Percent of Military Families Living On Base:	0.0%
Total Civilian Employees:	622
Percent of Civilians Not Willing To Move:	0.0%
Officer Housing Units Available:	0
Enlisted Housing Units Available:	0
Total Base Facilities (Square Feet):	136,500
Total Acreage on Base (Acres):	0
Officer Variable Housing Allowance (\$/Month):	0
Enlisted Variable Housing Allowance (\$/Month):	0
Per Diem Rate (\$/Day):	0
Freight Cost (\$/Ton/Mile):	0.00
Area Cost Factor:	1.04
RPMA Non-Payroll Costs (\$K/Year):	52
RPMA Payroll Costs (\$K/Year):	48
Communications Costs (\$K/Year):	0
Base Ops Non-Payroll Costs (\$K/Year):	5,273
Base Ops Payroll Costs (\$K/Year):	5,008
Family Housing Costs (\$K/Year):	0
CHAMPUS On-Base In-Patient Cost/Visit (\$):	0
CHAMPUS On-Base Out-Patient Cost/Visit (\$):	0
CHAMPUS Shift To Medicare	39.8%

INPUTDAT.RPT - Page 5

INPUT SCREEN FOUR - STATIC BASE INFO (COBRA v4.04) - Page 5
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Name: Receiving Base, VA

Homeowner Assistance Program: No

Unique Activity Information: No

Total Officer Employees:	32
Total Enlisted Employees:	56
Total Student Employees:	0
Percent of Military Families Living On Base:	56.0%
Total Civilian Employees:	3,608
Percent of Civilians Not Willing To Move:	6.5%
Officer Housing Units Available:	0
Enlisted Housing Units Available:	0
Total Base Facilities (Square Feet):	2,059,047
Total Acreage on Base (Acres):	0
Officer Variable Housing Allowance (\$/Month):	343
Enlisted Variable Housing Allowance (\$/Month):	274
Per Diem Rate (\$/Day):	132
Freight Cost (\$/Ton/Mile):	0.16
Area Cost Factor:	1.12
RPMA Non-Payroll Costs (\$K/Year):	5,814
RPMA Payroll Costs (\$K/Year):	2,825
Communications Costs (\$K/Year):	0
Base Ops Non-Payroll Costs (\$K/Year):	39,504
Base Ops Payroll Costs (\$K/Year):	22,560
Family Housing Costs (\$K/Year):	101
CHAMPUS On-Base In-Patient Cost/Visit (\$):	0
CHAMPUS On-Base Out-Patient Cost/Visit (\$):	0
CHAMPUS Shift To Medicare	0.0%

INPUTDAT.RPT - Page 6

INPUT SCREEN FIVE - DYNAMIC BASE INFO (COBRA v4.04) - Page 6
 Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Name: Base A, VA

	1994	1995	1996	1997	1998	1999
1-Time Unique(\$K):	5,228	5,666	0	0	0	0
1-Time Moving(\$K):	764	0	0	0	0	0
Env Mitig Req(\$K):	0	0	0	0	0	0
Act Mism Cost(\$K):	0	0	0	0	0	0
Misc Rec Cost(\$K):	0	1,064	1,064	1,064	1,064	1,064
Property (Acres):	0	0	0	0	0	0
Property (\$K):	0	0	0	0	0	0
(Positive indicates buys, negative indicates sales)						
Construc Sched(%):	0%	0%	0%	0%	0%	0%
Shutdown Sched(%):	0%	0%	0%	0%	0%	0%
Constr Avoid (\$K):	0	0	0	0	0	0
FamHousAvoid (\$K):	0	0	0	0	0	0
Procur Avoid (\$K):	0	0	0	0	0	0
Facility Shut Down (SqFt):						136,500
Percent of Family Housing ShutDown:						0.0%

Name: Receiving Base, VA

	1994	1995	1996	1997	1998	1999
1-Time Unique(\$K):	0	0	0	0	0	0
1-Time Moving(\$K):	0	0	0	0	0	0
Env Mitig Req(\$K):	0	0	0	0	0	0
Act Mism Cost(\$K):	0	0	0	0	0	0
Misc Rec Cost(\$K):	0	0	902	902	902	902
Property (Acres):	0	0	0	0	0	0
Property (\$K):	0	0	0	0	0	0
(Positive indicates buys, negative indicates sales)						
Construc Sched(%):	0%	0%	0%	0%	0%	0%
Shutdown Sched(%):	0%	0%	0%	0%	0%	0%
Constr Avoid (\$K):	0	0	0	0	0	0
FamHousAvoid (\$K):	0	0	0	0	0	0
Procur Avoid (\$K):	0	0	0	0	0	0
Facility Shut Down (SqFt):						0
Percent of Family Housing ShutDown:						0.0%

(See final page for Explanatory Notes)

INPUTDAT.RPT - Page 11

STANDARD FACILITY FACTORS (COBRA v4.04) - Page 11
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

RPMA Building SF Cost Index	0.70
BOS Index (RPMA vs population) (Indices are used as exponents)	0.81
Support for Move Factor	10.00%
Caretaker Costs:	

Administrative Space Needs (SF/Caretaker)	195.00
Percentage of Original RPMA Cost	10.00%
Mothball Cost (\$/SqFt)	1.24
Discount Rate for NPV.RPT/ROI:	7.0%
Inflation Rate for NPV.RPT/ROI:	0.0%
Inflation Rate	1994 1995 1996 1997 1998 1999
for FINANCE.RPT:	0.0% 3.3% 3.2% 3.2% 3.2% 3.2%
Average Bachelor Quarters Size (SF):	220.00
Average Family Quarters Size (SF):	1.00
Rehabilitation Cost vs. New Construction Cost	75.00%
Information Management Account	0.00%
Design Rate	9.00%
Supervision, Inspection, OverHead Rate	6.00%
Contingency Planning Rate	5.00%
Site Preparation Rate	39.00%

INPUTDAT.RPT - Page 12

STANDARD TRANSPORTATION FACTORS (COBRA v4.04) - Page 12
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Material per Assigned Person (Lbs)	710
HHG Weight Per Officer Family (Lb)	15,146.00
HHG Weight Per Enlisted Family (Lb)	8,197.00
HHG Weight Per Military Single (Lb)	6,921.00
HHG Weight Per Civilian (Lb)	18,000.00
Household Goods Cost (\$/100Lb) (Includes Packing, Unpacking, Storage, and Misc. Costs)	32.85
Shipping Loss Rate	2.0%
Equipment Packing & Crating Cost (\$/Ton)	850.00
Military Light Vehicle Cost (\$/Mile)	0.30
Heavy or Special Vehicle Cost (\$/Mile)	3.68
Pers Owned Vehic Reimburse (\$/Mile)	0.18
Air Transport Per Passenger Mile (\$)	0.15
Misc Expenses Per Direct Employee (\$)	700.00
Avg Military Service Tour Length (Years)	4.17
Routine PCS Costs/Person/Tour (\$)	3,263.00
One-Time Officer PCS Cost (\$)	3,173.00
One-Time Enlisted PCS Cost (\$)	1,022.00

INPUTDAT.RPT - Page 13

STANDARD CONSTRUCTION FACTORS (COBRA v4.04) - Page 13
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Category:	Units:	Cost/UM(\$):
Horizontal	(SY)	42
Waterfront	(LF)	10,170
Air Operations	(SF)	112
Operational	(SF)	103
Administrative	(SF)	110
School Buildings	(SF)	116
Maintenance Shops	(SF)	94
Bachelor Quarters	(SF)	86
Family Quarters	(EA)	68,750
Covered Storage	(SF)	81
Dining Facilities	(SF)	160
Recreation Facilities	(SF)	107
Communications Facilities	(SF)	165
Shipyards Maintenance	(SF)	86
RDT & E Facilities	(SF)	122
POL Storage	(BL)	11
Ammunition Storage	(SF)	148
Medical Facilities	(SF)	145
Environmental	()	0
Optional Category A	()	0
Optional Category B	()	0
Optional Category C	()	0
Optional Category D	()	0
Optional Category E	()	0
Optional Category F	()	0
Optional Category G	()	0
Optional Category H	()	0
Optional Category I	()	0
Optional Category J	()	0
Optional Category K	()	0
Optional Category L	()	0
Optional Category M	()	0
Optional Category N	()	0
Optional Category O	()	0
Optional Category P	()	0

INPUTDAT.RPT - Page 14

EXPLANATORY NOTES (COBRA v4.04) - Page 14
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

MILCONAS.RPT - Page 1

MILITARY CONSTRUCTION ASSETS (COBRA v4.04)
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Group :
Service : NAVY
Option Package : Base A

MilCon for Base: Base A, VA

All Costs in \$K

Description:	MilCon Categ	Using Rehab Rehab Cost*	New MilCon Cost*	New Cost*	Total Cost*

		Total Construction Cost:			0
		+ Cost for Land Purchases:			0
		- Construction Cost Avoid:			0

		TOTAL:			0

* MilCon Costs include Site Preparation Costs, Design Costs,
Contingency Planning Costs and SIOH Costs where applicable

If no MILCON is identified for an activity, why print a page for that activity? In addition, the format could be improved so that columns don't "run into" one another.

MILCONAS.RPT - Page 2

MILITARY CONSTRUCTION ASSETS (COBRA v4.04) - Page 2
 Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Group :
 Service : NAVY
 Option Package : Base A

MilCon for Base: Receiving Base, VA

All Costs in \$K

Description:	MilCon Categ	Using Rehab	Rehab Cost*	New MilCon	New Cost*	Total Cost*
Admin Space Rehab	Other	0	n/a	0	n/a	2,080

Total Construction Cost:						2,080
+ Cost for Land Purchases:						0
- Construction Cost Avoid:						0

TOTAL:						2,080

* MilCon Costs include Site Preparation Costs, Design Costs, Contingency Planning Costs and SIOH Costs where applicable

MILCONAS.RPT - Page 3

MILITARY CONSTRUCTION ASSETS (COBRA v4.04) - Page 3
 Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

All Costs in \$K

Base Name	Total MilCon	Land Purchase	Cost Avoid	Total Cost
Base A	0	0	0	0
Receiving Base	2,080	0	0	2,080

Totals:	2,080	0	0	2,080

MISSION.RPT - Page 1

MISSION COSTS (COBRA v4.04)

Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Group :
Service : NAVY
Option Package : Base A

Yearly Cost Breakout (\$K)

	1994	1995	1996	1997	1998	1999*
	----	----	----	----	----	----
Mission Costs	0	0	0	0	0	0
Mission Savings	0	0	0	0	0	0
Net Mission Costs	0	0	0	0	0	0

* These values also apply to Beyond Year calculations.

This report does not appear to be of any added value - it simply repeats information available in other reports.

MOVING.RPT - Page 1

MOVING COSTS (COBRA v4.04)

Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Group :
 Service : NAVY
 Option Package : Base A

Yearly Cost Breakout (\$K)

	1994	1995	1996	1997	1998	1999
PCS COSTS						
Mil Per Diem	0	0	0	0	0	0
Civ Per Diem	1,866	0	0	0	0	0
Mil POV mi	0	0	0	0	0	0
Civ POV mi	42	0	0	0	0	0
House Purch	5,027	0	0	0	0	0
Mil HHG Cost	9	0	0	0	0	0
Civ HHG Cost	2,991	0	0	0	0	0
Mil Misc	1	0	0	0	0	0
Civ Misc	314	0	0	0	0	0
House Hunt	1,177	0	0	0	0	0
RITA Costs	2,359	0	0	0	0	0
Mil Moves	-1	0	0	0	0	0
Subtotal	13,787	0	0	0	0	0
FREIGHT COSTS						
Packing	105	0	0	0	0	0
Freight	3,746	0	0	0	0	0
Vehicle	0	0	0	0	0	0
Driving	0	0	0	0	0	0
Loss Rate	75	0	0	0	0	0
Subtotal	3,926	0	0	0	0	0
OTHER COSTS						
1Time Moving	764	0	0	0	0	0
TOTAL	18,477	0	0	0	0	0

Since information is not broken out by installation within a scenario, this report is basically a reiteration of information contained in the APPDET report. Is it necessary?

NPV.RPT - Page 1

NET PRESENT VALUES REPORT (COBRA v4.04)
Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Year	Cost(\$)	Inflated Cost(\$)	NPV(\$)
1994	28,348,453	28,348,453	27,405,484
1995	1,115,378	1,115,378	28,413,220
1996	-3,648,621	-3,648,621	25,332,378
1997	-3,648,621	-3,648,621	22,453,087
1998	-3,648,621	-3,648,621	19,762,161
1999	-3,648,621	-3,648,621	17,247,276
2000	-3,648,621	-3,648,621	14,896,917
2001	-3,648,621	-3,648,621	12,700,319
2002	-3,648,621	-3,648,621	10,647,425
2003	-3,648,621	-3,648,621	8,728,831
2004	-3,648,621	-3,648,621	6,935,753
2005	-3,648,621	-3,648,621	5,259,980
2006	-3,648,621	-3,648,621	3,693,836
2007	-3,648,621	-3,648,621	2,230,150
2008	-3,648,621	-3,648,621	862,220
2009	-3,648,621	-3,648,621	-416,220
2010	-3,648,621	-3,648,621	-1,611,023
2011	-3,648,621	-3,648,621	-2,727,662
2012	-3,648,621	-3,648,621	-3,771,249
2013	-3,648,621	-3,648,621	-4,746,565

This report is really only useful for illustrative purposes when discussing 20 Year Net Present values, Return on Investment, etc. The report would be more easily understood if it had a column that actually showed the discounted value of the cashflow in each year, rather than having to calculate this figure by subtracting the yearly entries in the "NPV (\$)" column.

OTHER.RPT - Page 1

OTHER COSTS (COBRA v4.04)
Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

Group :
Service : NAVY
Option Package : Base A

Yearly Cost Breakout (\$K)

	1994	1995	1996	1997	1998	1999
CHAMPUS*	0	0	0	0	0	0
New Hires	0	0	0	0	0	0
RIF Pay	0	0	0	0	0	0
Early Retire	126	0	0	0	0	0
Land Sales	0	0	0	0	0	0
Land Buys	0	0	0	0	0	0
Environmentl	5,228	5,666	0	0	0	0
HAP / RSE	0	0	0	0	0	0
Unemployment	0	0	0	0	0	0
PPS	0	0	0	0	0	0
IMA	0	0	0	0	0	0
Proc Avoid*	0	0	0	0	0	0
TOTAL	5,354	5,666	0	0	0	0

* Procurement Cost Avoidances and CHAMPUS costs continue into the Beyond years.

We might want to reconsider whether all of these costs are "Other" costs, as opposed to "Moving" Costs, "Personnel" Costs, etc.

One-Time Unique costs are erroneously included under the "Environmental" category.

In addition, this report only seems to answer the question, "What is included in the "Other" cost line on the COBSUM Report?". This question could be answered in the Algorithm Manual, without the need for another output report.

OVERHEAD.RPT - Page 1

OVERHEAD COSTS REPORT (COBRA v4.04)
Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

(All values in Dollars)

1994	Admin/Supp Cost	1,028,100
	+ Uniq Operating Cost	0
	+ RPMABOS Change	3,633,983
	+ Mothball Cost	169,260
	+ Caretaker Cost	0
	+ Maintain Space	0
	+ Misc Recur Cost	0
	+ Uniq Other Cost	0
	- Uniq Operating Savings	0
	- Uniq Other Savings	0

	Total Overhead Cost	4,831,343
1995	Admin/Supp Cost	0
	+ Uniq Operating Cost	0
	+ RPMABOS Change	-804,940
	+ Mothball Cost	0
	+ Caretaker Cost	0
	+ Maintain Space	0
	+ Misc Recur Cost	1,064,000
	+ Uniq Other Cost	0
	- Uniq Operating Savings	0
	- Uniq Other Savings	0

	Total Overhead Cost	259,059
1996	Admin/Supp Cost	0
	+ Uniq Operating Cost	0
	+ RPMABOS Change	-804,940
	+ Mothball Cost	0
	+ Caretaker Cost	0
	+ Maintain Space	0
	+ Misc Recur Cost	1,966,000
	+ Uniq Other Cost	0
	- Uniq Operating Savings	0
	- Uniq Other Savings	0

	Total Overhead Cost	1,161,059

Does anyone use this report?

OVERHEAD.RPT - Page 2

OVERHEAD COSTS REPORT (COBRA v4.04) - Page 2
Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

(All values in Dollars)

1997	Admin/Supp Cost	0
	+ Uniq Operating Cost	0
	+ RPMABOS Change	-804,940
	+ Mothball Cost	0
	+ Caretaker Cost	0
	+ Maintain Space	0
	+ Misc Recur Cost	1,966,000
	+ Uniq Other Cost	0
	- Uniq Operating Savings	0
	- Uniq Other Savings	0

	Total Overhead Cost	1,161,059
1998	Admin/Supp Cost	0
	+ Uniq Operating Cost	0
	+ RPMABOS Change	-804,940
	+ Mothball Cost	0
	+ Caretaker Cost	0
	+ Maintain Space	0
	+ Misc Recur Cost	1,966,000
	+ Uniq Other Cost	0
	- Uniq Operating Savings	0
	- Uniq Other Savings	0

	Total Overhead Cost	1,161,059
1999	Admin/Supp Cost	0
	+ Uniq Operating Cost	0
	+ RPMABOS Change	-804,940
	+ Mothball Cost	0
	+ Caretaker Cost	0
	+ Maintain Space	0
	+ Misc Recur Cost	1,966,000
	+ Uniq Other Cost	0
	- Uniq Operating Savings	0
	- Uniq Other Savings	0

	Total Overhead Cost	1,161,059

OVERHEAD.RPT - Page 3

OVERHEAD COSTS REPORT (COBRA v4.04) - Page 3
Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

(All values in Dollars)

Beyond Years	Uniq Operating Cost	0
	+ RPMABOS Change	-804,940
	+ Caretaker Cost	0
	+ Maintain Space	0
	+ Misc Recur Cost	1,966,000
	+ Uniq Other Cost	0
	- Uniq Operating Savings	0
	- Uniq Other Savings	0

	Total Overhead Cost	1,161,059

PERSMOVE.RPT - Page 1

PERSONNEL MOVEMENT REPORT (COBRA v4.04)
 Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Base A, VA		Gains	Losses	Net Gains
		-----	-----	-----
1994:	Civilians	0	504	-504
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	2	-2

	Total	0	506	-506
1995:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0

	Total	0	0	0
1996:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0

	Total	0	0	0
1997:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0

	Total	0	0	0
1998:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0

	Total	0	0	0
1999:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0

	Total	0	0	0
TOTAL:	Civilians	0	504	-504
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	2	-2

	Total	0	506	-506

This report is cumbersome. It does not distinguish between Force Structure Reductions and BRAC-related actions. It prints a page for each activity, even if no one relocates or is eliminated. The summary "Box" page would be much more useful if it actually were presented as a one page "Migration Table" diagram with arrows, numbers, etc., showing where personnel are relocated, etc.

PERSMOVE.RPT - Page 2

PERSONNEL MOVEMENT REPORT (COBRA v4.04) - Page 2
 Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Receiving Base, VA		Gains	Losses	Net Gains
		-----	-----	-----
1994:	Civilians	504	0	504
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	2	0	2
	Total	506	0	506
1995:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0
	Total	0	0	0
1996:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0
	Total	0	0	0
1997:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0
	Total	0	0	0
1998:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0
	Total	0	0	0
1999:	Civilians	0	0	0
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	0	0	0
	Total	0	0	0
TOTAL:	Civilians	504	0	504
	+ Students	0	0	0
	+ Enlisted	0	0	0
	+ Officers	2	0	2
	Total	506	0	506

PERSMOVE.RPT - Page 3

PERSONNEL MOVEMENT REPORT (COBRA v4.04) - Page 3
 Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Base A, VA			
	START	END	CHANGE
Officers	4	0	-4
Enlisted	0	0	0
Students	0	0	0
TOTAL MIL	4	0	-4
Civilians	622	0	-622
TOTAL	626	0	-626

Receiving Base, VA			
	START	END	CHANGE
Officers	32	34	+2
Enlisted	56	56	0
Students	0	0	0

TOTAL MIL	88	90	+2
Civilians	3,608	4,091	+483
TOTAL	3,696	4,181	+485

PERSONEL.RPT - Page 1

PERSONNEL REALIGNMENTS [PERSONEL.RPT] (COBRA v4.04)
 Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Group :
 Service : NAVY
 Option Package : Base A .

	Rate	1994	1995	1996	1997	1998	1999
	----	----	----	----	----	----	----
Civs Eliminated		599	0	0	0	0	0
Civs Early Retir*	4.80%	29	0	0	0	0	0
Civ Turnover*	7.76%	46	0	0	0	0	0
Civs Quitting*	12.60%	75	0	0	0	0	0
Civs Not Moving*+		0	0	0	0	0	0
Civs Avail to Move		449	0	0	0	0	0
Civs Required		504	0	0	0	0	0
Shortfall(-)/Overage(+)		-55	0	0	0	0	0
New Civs Hired		55	0	0	0	0	0
Prio Placement#	30.00%	0	0	0	0	0	0
Civs Invol RIFed		0	0	0	0	0	0
Civs Moved		449	0	0	0	0	0
Total Retired		29	0	0	0	0	0
Total RIFed		0	0	0	0	0	0
Total PPS#		0	0	0	0	0	0
Total Hired		504	0	0	0	0	0

* In moves of less than 50 miles Early Retirements, Civilian Turnover, Civilians Quitting, and Civilians Not Willing to Move are not calculated.

+ The rate of Civilians Not Willing to Move varies from base to base.

Not all Priority Placements involve a PCS. The rate of PPS placements involving PCS is 41.00%

PERSONNE.RPT - Page 1

PERSONNEL COSTS REPORT [PERSONNE.RPT] (COBRA v4.04)
Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

(All values in Dollars)

1994	Housing Allowance	8,232
	- Officer Salary Saved	64,214
	- Enlisted Salary Saved	0
	- Civilian Salary Saved	2,344,742
	- Eliminated Military	-6,346

	Total Personnel Cost	-2,394,378
1995	Housing Allowance	8,232
	- Officer Salary Saved	128,428
	- Enlisted Salary Saved	0
	- Civilian Salary Saved	4,689,485
	- Eliminated Military	0

	Total Personnel Cost	-4,809,681
1996	Housing Allowance	8,232
	- Officer Salary Saved	128,428
	- Enlisted Salary Saved	0
	- Civilian Salary Saved	4,689,485
	- Eliminated Military	0

	Total Personnel Cost	-4,809,681
1997	Housing Allowance	8,232
	- Officer Salary Saved	128,428
	- Enlisted Salary Saved	0
	- Civilian Salary Saved	4,689,485
	- Eliminated Military	0

	Total Personnel Cost	-4,809,681

PERSONEL.RPT - Page 2

PERSONNEL COSTS REPORT [PERSONNE.RPT] (COBRA v4.04) - Page 2
Data As Of 09:03 10/13/1993, Report Created 09:29 10/13/1993

(All values in Dollars)

1998	Housing Allowance	8,232
	- Officer Salary Saved	128,428
	- Enlisted Salary Saved	0
	- Civilian Salary Saved	4,689,485
	- Eliminated Military	0

	Total Personnel Cost	-4,809,681
1999	Housing Allowance	8,232
	- Officer Salary Saved	128,428
	- Enlisted Salary Saved	0
	- Civilian Salary Saved	4,689,485
	- Eliminated Military	0

	Total Personnel Cost	-4,809,681
Beyond	Housing Allowance	8,232
	- Officer Salary Saved	128,428
	- Enlisted Salary Saved	0
	- Civilian Salary Saved	4,689,485

	Total Personnel Cost	-4,809,681

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PERSPERC.RPT - Page 1

PERSONNEL YEARLY PERCENTAGES (COBRA v4.04)
 Data As Of 09:03 10/13/1993, Report Created 09:28 10/13/1993

Base: Base A, VA

Year	Moving In		MilCon TimPhas	Move Out/Elim		ShutDn TimPhas
	Total	Percent		Total	Percent	
1994	0	0.00%	100.00%	603	100.00%	100.00%
1995	0	0.00%	0.00%	0	0.00%	0.00%
1996	0	0.00%	0.00%	0	0.00%	0.00%
1997	0	0.00%	0.00%	0	0.00%	0.00%
1998	0	0.00%	0.00%	0	0.00%	0.00%
1999	0	0.00%	0.00%	0	0.00%	0.00%
TOTALS	0	0.00%	100.00%	603	100.00%	100.00%

Base: Receiving Base, VA

Year	Moving In		MilCon TimPhas	Move Out/Elim		ShutDn TimPhas
	Total	Percent		Total	Percent	
1994	506	100.00%	100.00%	0	0.00%	100.00%
1995	0	0.00%	0.00%	0	0.00%	0.00%
1996	0	0.00%	0.00%	0	0.00%	0.00%
1997	0	0.00%	0.00%	0	0.00%	0.00%
1998	0	0.00%	0.00%	0	0.00%	0.00%
1999	0	0.00%	0.00%	0	0.00%	0.00%
TOTALS	506	100.00%	100.00%	0	0.00%	100.00%

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RPMABOS.RPT - Page 1

RPMA/BOS CHANGE REPORT (COBRA v4.04)
Data As of 09:03 10/13/1993, Report Created 09:29 10/13/1993

(All values in Dollars)

1994	RPMA Changes	-19,990
	+ BOS Changes	3,653,974
	+ Housing Changes	0

	Total Changes	3,633,983
1995	RPMA Changes	-52,000
	+ BOS Changes	-752,940
	+ Housing Changes	0

	Total Changes	-804,940
1996	RPMA Changes	-52,000
	+ BOS Changes	-752,940
	+ Housing Changes	0

	Total Changes	-804,940
1997	RPMA Changes	-52,000
	+ BOS Changes	-752,940
	+ Housing Changes	0

	Total Changes	-804,940
1998	RPMA Changes	-52,000
	+ BOS Changes	-752,940
	+ Housing Changes	0

	Total Changes	-804,940
1999	RPMA Changes	-52,000
	+ BOS Changes	-752,940
	+ Housing Changes	0

	Total Changes	-804,940
Beyond	RPMA Changes	-52,000
	+ BOS Changes	-752,940
	+ Housing Changes	0

	Total Changes	-804,940

Does anyone use this report?

