

**UNITED STATES  
SPECIAL OPERATIONS COMMAND**

**AD-A276 822**



**R&D SUMMARIES**

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**FISCAL YEAR 1995  
BUDGET ESTIMATES**

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**RDT&E, DEFENSEWIDE**

**FEBRUARY 1994**

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# UNCLASSIFIED

February 1994

## UNITED STATES SPECIAL OPERATIONS COMMAND RESEARCH, DEVELOPMENT, TEST AND EVALUATION, DEFENSEWIDE

### OVERVIEW

1. INTRODUCTION. USSOCOM is a unified command with worldwide responsibilities to train, maintain, and provide Special Operations Forces in support of contingency plans developed by the five regionally oriented unified commands. When directed by the President, USCINCSOC will assume command of a special operation anywhere in the world. USSOCOM's Army forces include Special Forces (Green Berets), Rangers, short to medium range infiltration/exfiltration aircraft, civil affairs specialists, and psychological operations specialists. Navy forces consist of SEALs (Sea, Air, Land Forces), SEAL Delivery Vehicle Teams and Special Boat Units. The Air Force special operation units provide medium to long range air infiltration/exfiltration aircraft, specially equipped gunships, and aerial refuel capability. USSOCOM is the only operational command within DoD directly responsible for determining its own force structure requirement, determining the related materiel requirements, developing and procuring SOF unique equipment, and training and deploying its own units.
2. CONTENTS. This document provides information on the United States Special Operations Command Research, Development, Test and Evaluation Program to Office of the Secretary of Defense, Comptroller, and subsequently to Congress in the FY 1995 President's Budget. It contains:
  - a. RDT&E Project Listing by Program Element and Budget Activity.
  - b. Exhibit R-1, Special Operations Command RDT&E Program.
  - c. Program Element Descriptive Summaries for each USSOCOM RDT&E Program Element.
  - d. RDT&E Descriptive Summaries, PB-33Bs, for each RDT&E project. Format 1 is used for all projects except Tactical Program projects that exceed \$10 Million in either FY 1994 or FY 1995. In these cases, Format 2 is used.
3. COMPARISON OF FY 1993 AND FY 1994 DATA. A direct comparison of FY 1993 and FY 1994 data in the Program Element Descriptive Summaries dated April 1993, will reveal only minor differences most of which are congressional plus ups or

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**OVERVIEW (Continued)**

decrements to project funding. Congressional changes to FY 1994 funding include: \$15M plus up to project SF100 (CV-22) in PE 1160404BB; \$16.5M plus up to project S200 (Special Operations Special Technology) in PE 1160402BB; \$6M plus up to project S650 (Quiet Knight) in PE 1160404BB; \$11M decrement to project S100 (Special Operations Tech Base) in PE 1160401BB; and, \$50.6M decrement to project S500A (SOF Operational Enhancements) in PE 1160408BB. Congress also terminated PE 0901600BB (Contract Audit Administration Cost) and PE 1160279BB (Small Business Innovative Research). The Joint Advanced Special Operations Radio System (JASORS) program has been restructured to accelerate procurement of non-developmental items. This restructuring reduced FY 1994 R&D in project DE14 (JASORS) PE 1160404BB by \$26M.

4. RELATIONSHIP OF FY 1995 BUDGET STRUCTURE TO THE FY 1994 BUDGET APPROVED BY CONGRESS. Congressional action required realignment of all budget activities into Budget Activity 7, Operational Systems Development. Funding in PE 1160279BB (Small Business Innovative Research) was realigned into specific acquisition programs.

5. CLASSIFICATION. This supplement is unclassified. Information on classified programs is provided under separate cover.

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(LT COL JOHN MOL/697-3167)  
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**RDT&E DOCUMENTATION FOR FY 1995 BUDGET ESTIMATES**

**Table of Contents**

Overview . . . . . i

Table of Contents . . . . . iii

Project Listing by Program Element and Budget Activity . . . . . 1

FY 1995 RDT&E Program, Exhibit R-1 . . . . . 5

RDT&E Descriptive Summaries, Exhibits PB-33B:

PE 1160401BB (Special Operations Technology Development) . . . . . 7

S100, Special Operations Technology Base Development . . . . . 9

PE 1160402BB (Special Operations Advanced Technology Development) . . . . . 17

P204, Explosive Ordnance Disposal-Low Intensity Conflict . . . . . 19

P205, Special Operations / Low Intensity Conflict Studies . . . . . 29

S200, Special Operations Special Technology Development . . . . . 33

PE 1160404BB (Special Operations Tactical Systems Development) . . . . . 43

DE14, Joint Special Operations Radio System . . . . . 45

D476, PSYOPS Advanced Development . . . . . 49

D615, SOF Aviation . . . . . 53

SF100, Aviation Systems Advanced Development . . . . . 57

**UNCLASSIFIED**

**RDT&E DOCUMENTATION FOR FY 1995 BUDGET ESTIMATES**

**Table of Contents (Continued)**

PE 1160404BB (Continued)	
SF200, CV-22 SOF Osprey	61
S0417, SEAL Support Systems Advanced Development	65
S1684, Special Warfare Combatant Craft	73
3284, SOF Aircraft Defensive Systems	81
3326, AC-130U Acquisition	89
3642, SOF Aircrew Training System	97
S350, Special Operations Forces Planning and Rehearsal System	103
S375, Weapons Systems Advanced Development	109
S650, Quiet Knight	113
S675, Sustainment Engineering Support	115
S700, Communications Advanced development	121
S800, Munitions Advanced Development	129
S900, Miscellaneous Equipment Advanced Development	139
PE 1160405BB (Special Operations Intelligence Systems Development)	143
S400, SOF Intelligence R&D	145
PE 1160407BB (SOF Medical Technology Development)	157
S275, Special Operations Forces Medical Technology Development	159

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**PROJECT LISTING BY PROGRAM ELEMENT AND BUDGET ACTIVITY**  
(Resources in \$K)

Program Element (Title) and Budget Activity Project No. & Name	FY 1993 Actual	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Estimate	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	February 1994	
								Thousands of Dollars	
								To Complete	Total Program
(U) PE 1160279BB (Small Business Innovative Research), Budget Activity 7									
S050 Small Business Innovative Research	0	0	0	0	0	0	0	0	1,749
	1,749								
(U) PE 1160401BB (Special Operations Technology Development), Budget Activity 7									
S100 Special Operations Technology Base Development			7,560	6,944	8,071	8,550	8,856	Cont.	Cont.
		6,744							
(U) PE 1160402BB (Special Operations Advanced Technology Development), Budget Activity 7									
P204 Explosive Ordnance Disposal - Low Intensity Conflict		3,418	4,321	4,353	4,389	4,378	4,367	Cont.	Cont.
	4,633								
P205 Special Operations / Low-Intensity Conflict Studies		1,451	1,440	1,450	1,463	1,459	1,456	Cont.	Cont.
	0								
S200 Special Operations Special Technology		22,229	9,788	9,176	10,204	11,185	12,264	Cont.	Cont.
	8,653								
(U) PE 1160404BB (Special Operations Tactical Systems Development), Budget Activity 7									
DE14 Joint Special Operations Radio System		18,459	7,790	4,308	1,078	0	0	0	79,876
		6,916							
D476 PSYOPS Advanced Development		240	3,653	0	0	0	0	0	12,723
	3,905								
D615 SOF Aviation		19,181	0	0	0	0	7,788	Cont.	Cont.
	4,816								

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**PROJECT LISTING BY PROGRAM ELEMENT AND BUDGET ACTIVITY (Continued)**

<u>Program Element (Title) and Budget Activity</u>	<u>FY 1993</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>To</u>	<u>Total</u>
<u>No. &amp; Name</u>	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	<u>Program</u>
<u>PE 1160404BB (Continued)</u>									
SF100 Aviation Systems Advanced Development	1,961	0	8,213	5,788	3,706	7,584	9,443	Cont.	Cont.
SF200 V-22 SOF Osprey	0	15,000	0	0	0	0	0	0	74,100
S0417 SEAL Support Systems	8,217	38,845	30,454	22,284	10,059	723	230	Cont.	Cont.
S1684 Special Warfare Combatant Craft	2,673	10,897	11,783	6,221	1,940	0	0	0	108,451
3284 SOF Aircraft Defensive Systems	6,691	20,943	31,035	11,437	6,811	8,231	4,199	Cont.	Cont.
3326 AC-130U	23,856	32,821	5,200	18,905	12,375	42,877	36,664	Cont.	Cont.
3642 Aircrew Training System	19,307	24,697	38,615	17,512	4,474	257	246	0	208,590
S350 Special Operations Planning and Rehearsal System	9,736	5,813	2,201	6,488	3,691	2,871	2,067	Cont.	Cont.
S375 Weapons Systems Advanced Development	1,272	2,226	0	0	0	0	0	0	37,778
S600 Future SOF Aircraft	0	0	0	1,954	6,968	12,581	21,174	Cont.	Cont.
S650 Quiet Knight	0	6,969	0	0	0	0	0	0	6,969

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PROJECT LISTING BY PROGRAM ELEMENT AND BUDGET ACTIVITY (Continued)

<u>Program Element (Title) and Budget Activity</u>	<u>FY 1993</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>To</u>	<u>Total</u>
<u>No. &amp; Name</u>	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	<u>Program</u>
<u>PE 1160404BB (Continued)</u>									
S675 <u>Sustainment Engineering</u>	0	9,615	14,405	15,239	14,234	14,201	14,169	Cont.	Cont.
S700 <u>Communications Advanced Development</u>	3,880	7,714	4,467	687	705	750	743	Cont.	Cont.
S800 <u>Special Operations Munitions Advanced Development</u>	14,939	14,648	9,540	8,844	4,007	5,139	2,002	Cont.	Cont.
S900 <u>Miscellaneous Equipment Advanced Development</u>	1,313	1,451	0	466	1,486	1,869	0	0	12,235
<u>(U) PE 1160405BB (Special Operations Intelligence Systems Development), Budget Activity 7</u>									
S400 <u>SOF Intelligence R&amp;D</u>	27,984	6,686	2,958	3,388	3,057	2,468	3,122	Cont.	Cont.
<u>(U) PE 1160407BB (SOF Medical Technology Development), Budget Activity 7</u>									
S275 <u>SOF Medical Technology R&amp;D</u>	541	1,310	1,798	1,785	2,141	2,352	2,539	Cont.	Cont.
<u>(U) PE 1160408BB (SOF Operational Enhancements), Budget Activity 7 (Descriptions are classified).</u>									
S500A <u>Operational Enhancements</u>	67,257	21,513	20,316	19,126	16,171	16,417	21,113	Cont.	Cont.
<b>Total:</b>	235,497	281,327	215,537	166,355	117,030	143,892	152,442		

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**SPECIAL OPERATIONS COMMAND**

**FY 1995 RDT&E PROGRAM**

Appropriation: Program Element	Act	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	February 1994	
								Thousands of Dollars	
1160279BB	7	1,749	0	0	0	0	0	0	0
1160401BB	7	3,655	6,744	7,560	6,944	8,071	8,550	8,550	8,856
1160402BB	7	13,286	27,098	15,549	14,979	16,056	17,022	17,022	18,087
1160404BB	7	121,025	217,976	167,356	120,133	71,534	97,083	97,083	98,725
1160405BB	7	27,984	6,686	2,958	3,388	3,057	2,468	2,468	3,122
1160407BB	7	541	1,310	1,798	1,785	2,141	2,352	2,352	2,539
1160408BB	7	67,257	21,513	20,316	19,126	16,171	16,417	16,417	21,113
Operational Systems Development		235,497	281,327	215,537	166,355	117,030	143,892	143,892	152,442
Total Special Operations Command		235,497	281,327	215,537	166,355	117,030	143,892	143,892	152,442

EXHIBIT R-1

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Budget Activity: 7  
Date: February 1994

Program Element: 1160401BB  
PE Title: Special Operations Technology Development

**A. (U) RESOURCES: (\$ in Thousands)**

Project Number & Title	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	To	Total
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete	Program
S100 SPECIAL OPERATIONS TECHNOLOGY BASE DEVELOPMENT									
	3,655	6,744	7,560	6,944	8,071	8,550	8,856	Cont.	Cont.
Total	3,655	6,744	7,560	6,944	8,071	8,550	8,856	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF ELEMENT:** Projects in PE 1160401BB are in BA 7, Operational Systems Development. Projects in this BA and PE provide studies and laboratory prototypes for USSOCOM to link non-system basic and exploratory research and development to SOF specific system full-scale development and procurement. This project supports special operations forces, psychological and civil affairs forces involvement in foreign internal defense, and counterterrorism worldwide. It also supports special operations forces conduct of special reconnaissance and direct action operations in low, mid, and high intensity conflict.

(U) The objective of the SOF tech base program is to provide a balanced effort of studies and tech base funding across the 6.2 and 6.3A categories in order to exploit technological developments of other organizations through aggressive resource leveraging. This resource leveraging (applying small incremental amounts of USSOCOM funding on top of significantly larger research investments by other DoD, government, and commercial organizations) will allow USCINCSOC to influence the direction of technology development or the schedule against which it is being pursued to acquire emerging technology for SOF.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160401BB      Project Number: S100      Date: February 1994  
 PE Title: Special Operations Technology Development      Budget Activity: 7

**A. (U) RESOURCES:** (\$ in Thousands)

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SPECIAL OPERATIONS TECHNOLOGY BASE DEVELOPMENT	3,655	6,744	7,560	6,944	8,071	8,550	8,856	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project provides studies and laboratory prototypes for USSOCOM to link non-system basic research and development to future SOF specific system full scale development and procurement. This program supports special operations, psychological and civil affairs forces involvement in foreign internal defense, counter-terrorism, and other special operations activities worldwide. It also supports special operations forces conduct of special reconnaissance and direct action operations in low, mid, and high intensity conflict. The objective of the SOF tech base program is to provide a balanced effort of studies and tech base funding across the Exploratory and Advanced Development spectrum in order to exploit technological developments of other organizations through aggressive resource leveraging. This resource leveraging (applying small incremental amounts of USSOCOM funding on top of significantly larger research investments by other DoD, government, and commercial organizations) will allow USCINCSOC to influence the direction of technology development or the schedule against which it is being pursued to acquire emerging technology for SOF. This project provides an investment strategy for USSOCOM to link non-system basic and exploratory research and development to future SOF specific systems acquisition development and procurement. Sub-projects include:

- (U) Individual Operational Ration. A computer data base to structure rations to meet mission requirements.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160401BB  
PE Title: Special Operations Technology Development  
Project Number: S100  
Budget Activity: 7  
Date: February 1994

- (U) Manportable Non-Line-of-Sight Weapon System. A lightweight, low observable, extremely accurate weapon designed for covert interdiction at ranges up to 5 Km.
- (U) Concepts for New SOF Power Sources. Study of existing and emerging high power density battery concepts and related power source technologies.
- (U) Advanced Sniper Weapon Fire Control System. Full ballistic solution at extended range (1200 meters).
- (U) SOF Enhanced Moldable Explosive Charge. An improved formulation, higher energy density, for C-4.
- (U) Battle Dress System. Full integration of various functional modules with the battle uniform.
- (U) Lower Extremity Assistance for Parachutists. Exoskeletal support for parachutists.
- (U) AC-130U Munitions/Weapons Enhancements. Comprehensive study of various gun systems/munitions technologies for mid-term and long range gunship applications. Identifies platform constraints, performs systems analysis and trade-off studies; conducts technology risks assessments and influences/leverages Service efforts.
- (U) Anti-Microbial Dressing. More effective combat wound dressing.
- (U) Diver Integral Magnetic Mine Detector. A magnetometer array to reduce the false alarm rate and increase the effectiveness of a swimmer using a hand held sonar for mine countermine in very shallow water.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160401BB

PE Title: Special Operations Technology Development

Project Number: S100

Budget Activity: 7

Date: February 1994

(U) Underwater Electromagnetic Designator. A low probability of intercept underwater magnetic beacon which can be adapted for communications or path marker.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

(U) Supported concept exploration and technology demonstration of component priority projects as follows:

- (U) Individual Operational Rations. Studied the link between nutrition and performance using stress data base to optimize rations in terms of mission profile and specific mission requirements. Office of the Surgeon General is interested in this sub project because of what it may reveal about the link between nutrition and occupational medicine (JUL/\$292K).
- (U) Manportable Non-line-of-sight Weapon System. Development has progressed to proof-of-principle. One prototype and two surrogate vehicles were built and tested to fly system sensor and electronic components. Completed studies and began tests of airframe, propulsion, controller, power source and sensor (SEP/\$300K).
- (U) Concepts for New SOF Power Sources. Study was completed and delivered in June 93. Currently in use at components and related R&D agencies (JUN/\$60K).



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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160401BB                      Project Number: S100                      Date: February 1994  
PE Title: Special Operations Technology Development                      Budget Activity: 7

- (U) Advanced Sniper Weapon Fire Control System. Developed and demonstrated inertial reticle system. Work is ongoing to apply Laser Interval Distance and Ranging Technology to provide the crosswind input and develop a long range test bed to evaluate the system (AUG/\$380K).
- (U) Leveraged Service laboratory efforts to meet SOF technology objectives in the following projects:
  - (U) SOF Enhanced Moldable Explosive Charge. Trinitroazetidine combined with an energetic binder to provide at least 15% more power, by weight and volume, while maintaining low sensitivity (JUL/\$292K).
  - (U) Battle Dress System. Designed and fabricated uniform subsystem; integrated with rucksack design; fabricated prototype load bearing equipment and camouflage subsystem (SEP/\$146K).
  - (U) Lower Extremity Assistance for Parachutist. Developed a prototype lower extremity exoskeletal support for parachutists carrying heavy loads or landing on rough terrain. Completed analysis of data from the parachute landing fall study (AUG/\$146K).
  - (U) Platform Weapons Fire Control. Analyzed Beam Sight Technology to improve night/day gunnery for integration into SOF systems (MAY 94/\$200K).
  - (U) Anti-Microbial Dressing. Developed prototype adhesive for testing (MAY/\$15K).
  - (U) Improved SOF Power Source Demonstrations. Initiated prototype development for new power source technologies for SOF applications(SEP 94/\$838K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160401BB      Project Number: S100      Date: February 1994  
PE Title: Special Operations Technology Development      Budget Activity: 7

- (U) Initiated Research and Development on the following projects:
  - (U) Diver Integral Magnetic Mine Detector. Awarded contract to develop detection algorithms for very shallow water magnetic mine detection (SEP/\$450K).
  - (U) AC 130-U Munitions/Weapons Enhancement. Began detailed assessments of various munition technologies for future use on an advanced gunship (SEP/\$97K).
  - (U) Underwater Electromagnetic Designator. Awarded Phase I development contract (SEP/\$439K).

(U) **FY 1994 Plans:**

- (U) Continue development of the Individual Operational Ration, Speech Processor, Manportable Non-Line of Sight weapon system, Advanced Sniper Fire Control System, SOF Enhanced Moldable Explosive, Pursuit Deterrent Munition, Diver Integral Magnetic Mine Detector, Underwater Electromagnetic Designator, Medium Caliber SOF Gun Studies, Battle Dress System Adaptive Individual Camouflage (1-4QTR/\$5,445K).
- (U) Commence development for the following new sub projects:
  - (U) Methods of marking targets for the purpose of passive Identification Friend or Foe and for tracking specific targets in an SOF environment (APR/\$450K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160401BB** Project Number: **S100** Date: **February 1994**  
PE Title: **Special Operations Technology Development** Budget Activity: **7**

(U) Advanced power source technologies to reduce weight and extend duration for SOF missions involving energy intensive equipment (JUN/\$849K).

**(U) FY 1995 Plans:**

(U) Continue work on FY 94 projects to completion (1-4QTR/\$1,360K).

(U) Initiate projects from appropriate candidates in the following areas: Enhance operational capabilities in target acquisition and fire control for SOF small arms and munitions; Develop advanced technologies for use by SOF in the detection and identification of threat weapons systems, and to improve reconnaissance and intelligence gathering capabilities in all environmental, visibility, and terrain conditions; Demonstrate use of emerging low-observable, stealth and anti-detection technologies for application to SOF; Evaluate emerging technologies to improve mobility of SOF over water, land, and air. Technology will be evaluated for ability to increase speed, and lower probability of detection, enhance load carrying and operability across a wide spectrum of environmental, visibility, and terrain conditions; Push innovations in technology to improve SOF weapons and weapons platforms -- increased range, controllable lethality, and enhanced performance against hardened targets; Demonstrate advanced low probability of detection and low probability of intercept communications concepts; Advance new technologies in navigation, survey and direction finding that can be used in all conditions of visibility, both overt and clandestine, and in all terrain conditions; Push technology to improve training and mission rehearsal capability for SOF forces. These training systems include language training, virtual reality and rehearsal/simulation of military operations; Demonstrate applicability of emerging technology to Psychological Operations and Civil Affairs. Specific areas of interest include language translation, water-

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160401BB

PE Title: Special Operations Technology Development

Project Number: S100

Budget Activity: 7

Date: February 1994

purification, and medical services; Develop new battery technology and advanced power generation and power sources for application to SOF missions (1-4QTR/\$5,400K).

(U) **TECHNOLOGY EXPLOITATION.** Exploit emerging technology to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas. Needs in these areas have been advertised to industry and government R&D agencies via Broad Agency Announcement (BAA) and R&D conference (1-4QTR/\$800K).

(U) **Project to Completion:** This is a continuing project.

(U) **Work Performed By:** U.S. Army Research Laboratory, U.S. Army Belvoir RD&E Center, Naval Sea Systems Command, U.S. Army Natick RD&E Center, U.S. Army Missile Command, U.S. Army Armament RD&E Center, Warner Robins Air Logistics Center, U.S. Army Ballistics Research Laboratory, U.S. Air Force Wright Laboratories, Los Alamos National Laboratory (LANL), Idaho National Engineering Laboratory, and the Naval Surface Warfare Center, Coastal Systems Station.

(U) **Related Activities:** There is no unnecessary duplication of effort within the Department of Defense. Numerous projects capitalize on the technological developments of other organizations through resource leveraging so that Special Operations unique requirements are addressed. LANL Laser Interval Distance and Ranging projects, and similar basic research efforts have been critical to the success of this project.

(U) **Other Appropriation Funds:** Not Applicable.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Program Element: 1160401BB**

**PE Title: Special Operations Technology Development**

**Project Number: S100**

**Budget Activity: 7**

**Date: February 1994**

**(U) International Cooperative Agreements: None.**

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**16**

**EXHIBIT PB-33B**

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Budget Activity: 7  
Date: February 1994

Program Element: 1160402BB  
PE Title: Special Operations Advanced Technology Development

**A. (U) RESOURCES: (\$ in Thousands)**

Project Number & Title	FY 1993 Actual	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Estimate	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	To Complete	Total Program
P204 EXPLOSIVE ORDNANCE DISPOSAL FOR LOW-INTENSITY CONFLICT	4,633	3,418	4,321	4,353	4,389	4,378	4,367	Cont.	Cont.
P205 STUDIES SUPPORT FOR SPECIAL OPERATIONS/LOW-INTENSITY CONFLICT	0	1,451	1,440	1,450	1,463	1,459	1,456	Cont.	Cont.
S200 SPECIAL OPERATIONS SPECIAL TECHNOLOGY	8,653	22,229	2,788	2,176	10,204	11,185	12,264	Cont.	Cont.
Total	13,286	27,098	15,549	14,979	16,056	17,022	18,087	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF ELEMENT:** Projects in PE 1160402BB are in BA 7, Operational Systems Development. Projects in this BA and PE provide rapid prototyping efforts to provide technology and equipment to military operators who are confronted with explosive and hazardous material threats and to accelerate the acquisition of SOP-peculiar equipment. It also provides specialized research and analytical support for OASD(SO/LIC). Technology goals are generated annually by ASD(SO/LIC) and USSOCOM with input from components and regional Commanders-in-Chief.

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FY 1995 RDT&E DESCRIPTIVE SUMMARY

Project Number: P204 Date: February 1994  
Budget Activity: 7

Program Element: 1160402BB  
PE Title: SO Advanced Technology Development

A. (U) RESOURCES: (\$ in Thousands)

Project Title Popular Name	FY 1993 Actual	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Estimate	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	To Complete	Total Program
EXPLOSIVE ORDNANCE DISPOSAL FOR LOW INTENSITY CONFLICT	4,633	3,418	4,321	4,353	4,389	4,378	4,367	Cont.	Cont.

B. (U) **BRIEF DESCRIPTION OF PROJECT:** This project is a rapid prototyping effort to provide technology and equipment to military operators who are confronted with explosive and hazardous material threats. The project objective is to provide the military user effective prototype equipment, with real operational utility, within 12-24 months after requirement definition. The project supports foreign internal defense, counter-terrorism activities worldwide, military assistance and training activities in the Middle East, Pacific, South America, and other LIC situations as they develop. Tasks focus on detection, countermeasures, and neutralization of explosive and hazardous material threats. Requirements submitted by the Joint Service EOD community, Special Operations, Marine Corps, and other LIC-oriented military users are prioritized by the EOD/LIC Coordination Group at OSD. Sub-projects include:

- (U) Mini-flail. A small, 36-inch wide remotely-controlled self-propelled flail capable of neutralizing anti-personnel land mines and improvised explosive devices without sustaining significant equipment damage.
- (U) Improvised Explosive Device Sterilizer. A portable radio frequency transmitter capable of actuating hot wire initiators.



**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date: February 1994**

**Project Number: P204**

**Budget Activity: 7**

**Program Element: 1160402BB**

**PE Title: SO Advanced Technology Development**

- (U) **High Frequency Transit Case.** 125-watt transceivers and 20-watt portable radios capable of providing flexible, secure communications among EOD in low intensity conflict scenarios.
- (U) **Chemical Detector.** Portable electronic chemical agent detectors for use in a low intensity conflict environment.
- (U) **Acoustic Underwater Firing Device.** A swimmer-emplaced underwater firing device which is remotely actuated using a coded acoustic signal, eliminating the need to run detonation cord.
- (U) **Remote Firing Device.** A small, compact remote detonating system which allows rapid command detonation of explosive material over long distances by EOD personnel.
- (U) **Microwave Mine Locator.** A small, lightweight man-portable pulsed microwave mine location system which provides a visual image that can be readily used to identify man-made mine-like objects.
- (U) **Forward Looking Sonar.** A small boat obstacle avoidance sonar which can be readily installed on a 30-40 foot craft of opportunity for mine detection and classification as well as general obstacle avoidance.
- (U) **F:OD-Mid-East Training.** A portable tabletop PC-based CD-ROM interactive video training system, switchable between english and arabic, for training EOD personnel to identify and render safe munitions.
- (U) **Underwater Navigation System.** A non-magnetic, SEAL inshore navigation system capable of navigating up to five Navy Special Warfare dive teams simultaneously.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160402BB**      Project Number: **P204**      Date: **February 1994**  
PE Title: **SO Advanced Technology Development**      Budget Activity: **7**

- (U) **Standoff Detection.** A lightweight improvised explosive device detector capable of sensing emissions from electronic timers at distances of 6-10 feet.
- (U) **Underwater Laser Imaging.** A small underwater laser imaging system which will increase diver viewing range from several feet to ten times that distance, and greatly improve near shore mine hunting capability.
- (U) **Fiber-optic Communications.** An integrated fiber-optic communications system for use by EOD teams in the performance of ordnance render safe procedures and including voice, video and explosive firing circuits.
- (U) **Laser C-4 Initiation System.** A laser fiber-optic cable system to directly initiate C-4 explosives in order to eliminate the need for blasting caps.
- (U) **Autonomous Search Vehicle** A small autonomous vehicle capable of remotely surveying a beach or harbor for mine-like targets on the sea floor.
- (U) **Advanced Radiographic System.** A compact, lightweight, man-portable, high resolution radiography system, including computer image processing, that provides real time internal views of conventional munition fuzing and improvised devices.
- (U) **Millimeter Wave Radar Probe.** A portable device to determine the nature of the explosive electronic circuitry by analyzing the modulation imparted on radar return by the circuitry.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Program Element: 1160402BB**

**PE Title: SO Advanced Technology Development**

**Project Number: P204**

**Date: February 1994**

**Budget Activity: 7**

- (U) **Automated Ferrous Locator.** A small, man-portable ferrous ordnance locator that combines three technologies: detection of ferrous magnetic signatures in soil; computer data storage; and, positional coordinate locator.
- (U) **Low Watt Wireless Communications.** A hero safe wireless communication system to support EOD operational units performing on-scene render safe procedures.
- (U) **EOD Boat Signature Reduction.** A boat/motor configuration for minimal acoustic and magnetic signatures for use during EOD-mine/countermine operations.
- (U) **Circuit Analysis/Verification.** A hand-held diagnostic tool to assist EOD personnel in detecting electronic circuitry used in various fuzing and improvised explosive devices.
- (U) **Diver Head-up Display.** A miniaturized liquid crystal display and associated electronics for the head-up display of multiple input information displayed either sequentially or on command by Navy divers.
- (U) **Infrared Goggles.** Demonstration of a new generation night vision goggle, for use by EOD teams during operations involving booby-trap clearance/avoidance and explosive device entry, to make visible slight temperature differences emitted from a wide variety of sources.
- (U) **Mine/Countermine Database.** A comprehensive database of land mines for Army SOF which is fully compatible with the EOD/LIC interactive video training system.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160402BB  
Project Number: P204  
Date: February 1994  
PE Title: SO Advanced Technology Development  
Budget Activity: 7

- (U) V2 Computer Enhancement. An enhanced version of the V2 computer which will be capable of electronically transmitting digital imagery, accurately mapping impacts on firing ranges, and supporting the CD-ROM version of the 60-series publications.
- (U) Mini Golden X-Ray. Demonstration of a portable, low power X-ray system with a compact source and standard 5x7 inch photographic film packages for penetrating thin cased, non-metallic objects.
- (U) Universal Remote Measuring Device. A remotely controlled vehicle mounted measuring system for determining the dimensions of unidentified ordnance items using a laser or ultrasonic range finder with a video link/camera on a robotic arm.
- (U) Acoustic Underwater Firing Transmitter. A transmitter for use in commanding underwater firing devices, lift systems and marker buoys from a rubber boat at distances up to 2000 meters.
- (U) SOF Vehicle Ballistic Protection. An auxiliary system for use on SOF land vehicles to protect against explosive fragmentation and projectiles.
- (U) Mine Reconnaissance Underwater Vehicle. A lightweight, remotely-controlled underwater vehicle with sensors and navigation systems suitable for shallow water mine hunting.
- (U) Hands-Free Video and Light System. Head-mounted video and lighting systems for use by EOD Teams on land and underwater during ordnance inspections and render safe procedures, and provide real-time transmission of the video signal uprange.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160402BB  
PE Title: SO Advanced Technology Development  
Project Number: P204  
Budget Activity: 7  
Date: February 1994

- (U) High Resolution Diver Sonar. A high resolution, multi-beam diver sonar with a visual display for mine detection and classification in low visibility water.
- (U) Imaging Ordnance Locator. An improved ground penetrating radar to increase detection depth and resolution, provide discrimination between ordnance and other buried objects, and make the system man-portable.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

- (U) FY 1993 Accomplishments:
  - (U) Completed and transitioned the following tasks: Mini-flail, Improved Explosive Device Sterilizer, High Frequency Transit Case, Chemical Detector, Acoustic Underwater Firing Device, and Remote Firing Device(4QTR/\$435K).
  - (U) Continued development of: Microwave Mine Locator, Forward Looking Sonar, EOD Mid-East Training, Underwater Navigation System, Standoff Detection, Underwater Laser Imaging, Fiber-optic Communications, Laser C-4 Initiation System, Autonomous Search Vehicle, Advanced Radiographic System, Millimeter Wave Radar Probe, Automated Ferrous Locator, Low Watt Wireless Communications, EOD Boat Signature Reduction, Circuit Analysis/Verification, Diver Head-up Display, Infrared Goggles, and Mine/Countermine Database (1-4QTR/\$4,198K).

**(U) FY 1994 Plans:**

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160402BB

PE Title: SO Advanced Technology Development

Project Number: F204

Date: February 1994

Budget Activity: 7

- (U) Complete and transition the following tasks: Microwave Mine Locator, Forward Looking Sonar, EOD-Mid-East Training, Underwater Navigation System, Standoff Detection, Underwater Laser Imaging, Fiber-optic Communications, Laser C-4 Initiation System, Autonomous Search Vehicle, Advanced Radiographic, Millimeter Wave Radar Probe, Automated Ferrous Locator, Low Watt Wireless Communications, EOD Boat Signature Reduction, Circuit Analysis/Verification, Diver Head-up Display, Infrared Goggles, and Mine/Countermine Database (4QTR/\$818K).
- (U) Initiate new tasks: V2 Computer Enhancement, Improved EOD X-ray, Mini Golden X-Ray, Universal Remote Measuring Device, Acoustic Underwater Firing Device Transmitter, SOF Vehicle Ballistic Protection Mine Reconnaissance Underwater Vehicle, Hands-Free Video and Light System, High Resolution Diver Sonar, and Imaging Ordnance Locator (1-2QTR/\$2,600K).
- (U) FY 1995 Plans:
  - (U) Continue development of: SOF Vehicle Ballistic Protection, Mine Reconnaissance Underwater Vehicle, Imaging Ordnance Locator, High Resolution Diver Sonar, Hands-Free Video and Light System, Acoustic Underwater Firing Device Transmitter, Improved EOD X-ray, V2 Computer Enhancement, and Universal Remote Measuring Device (1-4QTR/\$2,574K).
  - (U) Initiate new task to develop: This is a rapid prototyping program which supports world-wide contingencies to meet the requirements of Joint Service EOD and Special Operations Communities. Projects are nominated by the various communities in response to specific criteria established by the OSD Coordination Group. Currently, sub-projects planned for FY 1995 are:

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Project Number: P204      Date: February 1994  
Budget Activity: 7

Program Element: 1160402BB  
PE Title: CV Advanced Technology Development

- (U) Composite Outboard Engine. Develop an outboard engine with composite materials replacing metal components to the extent possible, in order to reduce magnetic and acoustic signature of EOD and Special Warfare boats (1QTR/\$552K).
- (U) Integrated Helmet Communications. Develop a rugged, waterproof microphone and earphone system integrated into a combat helmet to replace boom microphones currently used (1QTR/\$385K).
- (U) MK36 Non-metallic Tool Replacement. Develop non-magnetic EOD tools which do not utilize hazardous materials; do not require special packaging, storage and inspections; and have lower life-cycle costs than the MK36 EOD Tools (1QTR/\$200K).
- (U) Improved SOF Pyronol Torch. Develop a Pyronol Torch for use in a variety of missions for Special Forces, such as rapidly cutting through large steel reinforcing bars (1QTR/\$300K).
- (U) HMMWV Submunition Clearing System. Develop a detachable submunition and mine clearing device for use on an armored HMMWV for use by Special Forces teams (1QTR/\$215K).
- (U) Infrared Remote Firing Device. Develop a remote firing device with a four mile range using infrared light for the command signal, to eliminate RF emissions from conventional firing devices which require frequency allocations and are subject to interference from other transmitters (1QTR/\$95K).

(U) **Project to Completion:** This is a continuing project.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160402BB

PE Title: SO Advanced Technology Development

Project Number: P204      Date: February 1994  
Budget Activity: 7

(U) Work Performed By: Projects are performed by a variety of organizations, including academic, commercial analytical organizations, and DOD and other R&D activities (These organizations include the U.S. Army Belvoir RD&E Center, Fort Belvoir, VA; Columbia Research Corporation, Panama City, FL; Harris Corporation, Rochester, NY; Naval EOD Technology Center, Indian Head, MD; EG&G Special Technologies Laboratory, Santa Barbara, CA; and EG&G/INEL, Idaho Falls, ID; Essex Corporation, McLean, VA; Marconi Underwater Systems Limited, Somerset, England; Indian Head Division, Naval Surface Warfare Center, Indian Head, MD; Honeywell ELAC, Kiel, Germany; Coastal Systems Station, Panama City, FL; SPARTA Laser Systems Laboratory, San Diego, CA; Electronic Warfare Associates, Inc., Vienna, VA; and Sandia National Laboratories, Albuquerque, NM).

(U) Related Activities: Program provides a coordinated response to DOD component requirements for rapid prototyping of EOD-LIC equipment. Individual DOD Components establish follow-on programs for full-scale development (if required), procurement, and fielding. OSD EOD/LIC Coordination Group maintains oversight of the tasks which are executed through the Office of Special Technology (OST). There is no unnecessary duplication of effort in the Department of Defense.

(U) Other Appropriation Funds: Not Applicable.

(U) International Cooperation Agreements: Not Applicable.



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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Project Number: P205      Date: February 1994  
 Budget Activity: 7

Program Element: 1160402BB  
 PE Title: SO Advanced Technology Development

**A. (U) RESOURCES: (\$ in Thousands)**

Project Title Popula- Name	FY '993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	To	Total
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete	Program
STUDIES SUPPORT FOR SPECIAL OPERATIONS/LOW-INTENSITY CONFLICT	0	1,451	1,440	1,450	1,463	1,459	1,456	Cont.	Cont.

\* FY93 (\$1,500) project funded in PE 0605104D "Technical Support to USD(P)"

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project provides specialized research and analytical support for the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict, ASD(SO/LIC). Projects address a broad spectrum of technical, acquisition, and policy issues relating to SO, LIC, counter- and anti- terrorism, peacekeeping, psychological operations, counterinsurgency, unconventional warfare, and contingency operations. The project supports and is integrated into overall DoD efforts to develop options for dealing effectively with a wide range of military responsibilities in the military environment other than war. This project provides a vehicle to initiate studies required to support acquisition documentation and philosophical policy issues regarding roles and missions of SOF in the changing world environment. Studies include: Terrorism Futures, Military Effectiveness in Low-Intensity Conflict, SOF Resources Blueprint, Contingency and Wartime Manning for Theater Special Operations Commands, Special Weapons Proliferation, Terrorism Strategy Validation, Staff Augmentation and Readiness Training for Theater Special Operations Commands, Low-Intensity Conflict Issues in Europe, Implications of Operation RESTORE HOPE, and Special Operations Electro-optical Weapons.

**(U) PROJECT ACCOMPLISHMENTS AND PLANS:**

NOT RELEASABLE TO NON-DOD PERSONNEL  
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EXHIBIT PB-33B

**UNCLASSIFIED**

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: P205

Budget Activity: 7

Program Element: 1160402BB

PE Title: SO Advanced Technology Development

**(U) FY 1993 Accomplishments:**

- (U) Studies included: terrorism futures; military effectiveness in low-intensity conflict; SOF resources blueprint; contingency and wartime manning for theater special operations commands; special weapons proliferation; and other projects designed to increase the utility of SOF and the military tools for coping with LIC in a rapidly changing security environment (3-4QTR/\$1,500K).

**(U) FY 1994 Plans:**

- (U) Projects under consideration include: terrorism strategy validation; staff augmentation and readiness training for theater special operations commands; continued investigation of issues regarding the use of SOF in controlling the proliferation of weapons of mass destruction; low-intensity conflict issues in Europe; implications of Operation RESTORE HOPE; special operations electro-optical weapons; and other projects designed to increase the utility of SOF and the military tools for coping with LIC in a rapidly changing security environment (3QTR/\$1,451K).

**(U) FY 1995 Plans:**

- (U) Continue to develop policy and planning alternatives, analyze force structure and resource allocations, and refine countermeasures options with regard to low-intensity conflict and the role of SOF in the new global environment. Projects will be geared to efforts to develop a coherent, cost-effective approach to integrate policy, strategy, and force structure to support the national military strategy during a period of declining resources and changing threats. Examples include: terrorism strategy validation; staff augmentation and

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160402BB  
PE Title: SO Advanced Technology Development  
Project Number: P205  
Budget Activity: 7  
Date: February 1994

: readiness training for theater special operations commands; issues regarding the use of SOF in countering the proliferation of weapons of mass destruction (1-4QTR/\$1,440K).

(U) Project to Completion: This is a continuing project.

(U) Work Performed By: Projects will be performed by a variety of organizations, including academe, commercial analytical organizations, and Federally Funded Research and Development Centers.

(U) Related Activities: Program is coordinated with other DoD organizations, especially USSOCOM and OUSD(P) to eliminate potential duplications with past, ongoing, or proposed studies. There is no unnecessary duplication of effort in the Department of Defense.

(U) Other Appropriation Funds: Not Applicable.

(U) International Cooperative Agreements: Not Applicable.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: S200

Budget Activity: 7

Program Element: 1160402BB  
 PE Title: SO Advanced Technology Development

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SPECIAL OPERATIONS SPECIAL TECHNOLOGY	8,653	22,229	9,788	9,176	10,204	11,185	12,264	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** Special Operations Special Technology (SOST) is an advanced development type rapid prototyping project which mates emerging advanced technologies with SOF-peculiar mission requirements. Successful SOST projects are prepared for transition into the normal acquisition process, if further development is desired. SOST participation ends once the prototypes are evaluated and a transition package is prepared. A typical SOST transition package includes the prototype(s), evaluation results, draft Operational Requirements Document (ORD), and a proposed acquisition plan. It focuses on meeting technology goals that:

- (U) Are a result of unique joint service, special mission, or area specific needs for which a few of a kind prototypes must be developed on a rapid response basis.
- (U) Are of sufficient time sensitivity to accelerate the prototyping effort of a normal acquisition program in any phase. This prototype acceleration typically reduces the acquisition cycle by three years.
- (U) Are SOF-peculiar advanced technology demonstrations.

Sub-projects include:

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## UNCLASSIFIED

### FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160402BB  
PE Title: SO Advanced Technology Development  
Project Number: S200  
Budget Activity: 7  
Date: February 1994

- (U) Rapid Medical Diagnostic Tool. Computerized reference, diagnostic, and administrative records tool for SOF Corpsmen.
- (U) Passive Infrared Suppression System. Suit to reduce signature of SOF personnel in visible, near and far infrared spectrum.
- (U) Weapons Control System. Prototype mount providing improved accuracy for small arms mounted on SOF watercraft.
- (U) Multi-Frequency Antenna. Reduce the number of antenna on SOF small craft.
- (U) Assault Zone Survey Equipment. Provide capability to rapidly survey landing zones prior to airborne assault.
- (U) Mobile Broadcast Extender Radio System. Increase range of PSYOP broadcasts in AM, FM and Shortwave bands.
- (U) Deployable Media Production Center. Decrease size and enhance transportability of PSYOPs print production equipment.
- (U) Waterproof Radio. Modify MX300 radio to be waterproof to depths of 66 ft in salt water and operate immediately upon surfacing.
- (U) Thermal Imaging Device. Eliminate bore sight problems in ground laser target designation missions.
- (U) Handheld Radar Detector. Provide bearing and identification information to ground based radars.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160402BB  
PE Title: SO Advanced Technology Development  
Project Number: S200  
Budget Activity: 7  
Date: February 1994

- (U) Swimmer Navigation Board. Increase accuracy of dead reckoning navigation for combat swimmers.
- (U) Ship Systems. Provide enhanced capability to Naval Special Warfare units.
- (U) Airborne Communications Computer. Provide remote programming capability for navigation and electronic surveillance measures gear in SOF aircraft.
- (U) Transport Cradles. Equipment to transport watercraft in military aircraft.
- (U) Drop-in Communications Package Tactical Communications Management. Wireless radio management system and intercom for use in SOF craft.
- (U) SOF Demolition Kit. Equipment to attach, initiate, and control military explosives for SOF applications.
- (U) Craft Identification Friend or Foe. Low cost system for incorporating situational awareness and IFF on SOF craft.
- (U) SEAL Delivery Vehicle Sound Signalling Device. Device to communicate with submerged swimmers during training exercises.
- (U) Image Receiver and Intelligence System. Disseminate and display imagery.
- (U) Language Identification Voice Identification System. Identify speaker or language of speaker.



**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160402BB

PE Title: SO Advanced Technology Development

Project Number: S200

Budget Activity: 7

Date: February 1994

- (U) Intraformation Positioning System. All-weather, terrain following, position-keeping and obstacle avoidance capability for both fixed and rotary wing SOF aircraft in formation flight with low probability of detection/intercept.
- (U) Improved SOF Signal Intelligence Manpack System. Improved man transportable, lightweight communications collection and direction finding system.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) Completed development of Miniature Waterproof Global Positioning System Receiver, Rapid Medical Diagnostic Tool, Deployable Media Production Center, Swimmer Navigation Board, Passive Infrared Suppression System, Ship Systems, SEAL Delivery vehicle Sound Signalling Device, and Waterproof Radio (4QTR/\$1,670K).
- (U) Continued Assault Zone Survey, Thermal Imager, and Hand-held Radar Detector (4QTR/\$636K)
- (U) Drop-in Communications Package (DICP) Tactical Communications Management (TCM). Awarded contract to design and fabricate a suite of equipment that allows individual operators to operate or monitor DICP radios and communicate over wireless intercom. System is primarily designed for use on Naval Special Warfare small craft (APR/\$337K).

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160402BB

PE Title: SO Advanced Technology Development

Project Number: S200  
Budget Activity: 7

Date: February 1994

- (U) Special Operations Forces Demolition Kit. Designed Kit, procured components and initiated evaluation of a suite of demolitions support equipment to be used with existing explosives. Equipment will combine, initiate, attach, and control military explosives for SOF applications (APR/\$562K).
- (U) Transport Cradle. Awarded contract and completed preliminary design of transport cradles for NSW craft (APR/\$228K).
- (U) Improved Craft Identification Friend or Foe (IFF). Awarded contract and completed preliminary design of an integrated navigation and IFF system for use in Naval Special Warfare craft and SOF vehicles. Transitioned Passive Navigation System into this project (AUG/\$562K).
- (U) Image Receiver and Intelligence System. Completed development of two Advanced Development Model (ADM) prototype systems. Successfully tested ADM in two SOF exercises. Awarded contracts for development of Engineering Development Model prototype systems (1-4QTR/\$877K).
- (U) Language Identification Voice Identification System. Completed preliminary design (SEP/\$300K).
- (U) Improved SOF Signal Intelligence Manpack System. Initiated prototype development (OCT/\$800K).
- (U) Technology Exploitation . Exploited emerging technology to meet critical SOF requirements and encourage industry and Government lab participation in identifying enhancements to SOF in critical areas. Needs in these areas were advertised to industry and Government R&D agencies via Broad Agency Announcements and R&D conferences(1QTR94/\$619K).

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160402BB**      Project Number: **S200**      Date: **February 1994**  
PE Title: **SO Advanced Technology Development**      Budget Activity: **7**

- (U) **Weapon Control System.** Awarded contract and will award modification to develop an Advanced Technology Demonstration of the three-axis stabilized weapon mount and target acquisition system to remotely sight and fire small automatic weapons (MAR93, AUG94/\$1,362K).
- (U) **Begin demonstration efforts for advanced weapons and munitions concepts for SOF (4QTR94/\$700K).**
- (U) **Began pre-prototype requirements review, prepare statements of work, and preliminary designs for new systems (4QTR).**
- (U) **FY 1994 Plans:**
  - (U) **Transition Waterproof GPS, Personnel Evacuation Device, Active Aiming Module, Passive Navigation System, SEAL Delivery Vehicle Sound Signalling Device, Ranger Anti-Armor Anti-Personnel Weapon System Fire Control, Assault Zone Survey data gathering equipment, Deployable Media Production Center, Swimmer Navigation Board, Passive Infrared Suppression System, Ship System, Thermal Imaging Device, SOF Demolition Kit, Handheld Radar Detector, and Waterproof radio (1QTR/\$500K).**
  - (U) **Complete Assault Zone Survey analysis equipment, Mobile Broadcast Extender Radio System, and Craft Identification Friend or Foe (2QTR/\$135K).**
  - (U) **Continue Drop-in Communications Package Tactical Communications Management, and Transport Cradles (1QTR/\$885K).**

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Project Number: S200      Date: February 1994  
Budget Activity: 7

Program Element: 1160402BB  
PE Title: SO Advanced Technology Development

- (U) Develop advanced technologies for use by SOF in the detection and identification of threat weapons systems, and to improve reconnaissance and intelligence gathering capabilities in all environmental, visibility, and terrain conditions (2QTR/\$1,084K).
- (U) Conduct Advanced Technology Demonstrations to demonstrate use of emerging stealth and anti-detection technologies for application to SOF (3QTR/\$1,035K).
- (U) Technology Exploitation Initiative. Exploit emerging technologies to meet critical SOF requirements and encourage industry and Government lab participation in identifying enhancements to SOF in critical areas. Needs in these areas were advertized to industry and Government R&D agencies via Broad Area Announcements and R&D conferences (3QTR/\$500K).
- (U) Conduct Advanced Technology Demonstrations (ATDs) to evaluate advanced decompression monitoring techniques for SOF divers (3QTR/\$535K).
- (U) Demonstrate advanced low probability of detection and low power communications concepts (2QTR/\$635K).
- (U) Develop Advanced Technology Demonstrators (ATDs) to demonstrate techniques to protect NSW small craft and SOF vehicles from laser guided weapons (2QTR/\$385K).
- (U) Communications Helmet. Develop very lightweight protective headgear with integrated wireless communications capability for use by SOF operators during small boat, repelling, and parachute operations (2QTR/\$535K).

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date: February 1994**

**Project Number: S200**

**Budget Activity: 7**

**Program Element: 1160402BB**

**PE Title: SO Advanced Technology Development**

(U) Develop and demonstrate advanced concepts for PSYOPS and Civil Affairs (3QTR/\$1,000K).

(U) Intraformation Positioning System. Develop prototype to demonstrate capability of ensuring safe formation flying of multiple SOF aircraft at night and in severe weather (2QTR/\$15,000K).

**(U) FY 1995 Plans:**

(U) Transition Mobile Broadcast Extender Radio System, and Craft Identification Friend or Foe (1QTR/\$309K).

(U) Complete Weapon Control System, Drop-in Communications Package Tactical Communications Management, and Transport Cradles. (4QTR/\$1,184K).

(U) Continue development of Sensor, Low Observables, Low Power Communications and SOF Protection ATDs (1-4QTR/\$3,708K).

(U) Advanced Weather Station. Begin development (2QTR/\$412K).

(U) Conduct ATDs for emerging technology applicable to Psychological Operations. Specific areas of interest include production of PSYOPS products, and dissemination of PSYOPS products (2QTR/\$463K).

(U) Conduct Advanced Technology Demonstrations for emerging technology applicable to Civil Affairs. Specific areas of interest include language translation, and speech processing (2QTR/\$618K).

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160402BB

PE Title: SO Advanced Technology Development

Project Number: S200  
Budget Activity: 7

Date: February 1994

- (U) Develop new battery technology and advanced power generation and power sources for application to SOF missions (3QTR/\$1,030K).
- (U) Push innovations in technology to improve SOF weapons, munitions, explosives and weapons platforms. Weapons shall have increased range, improved accuracy, reduced probability of detection, controllable lethality, and enhanced performance against hardened targets (1-4QTR/\$1,545K).
- (U) Technology Exploitation. Exploit emerging technology to meet critical SOF requirements and encourage industry and Government lab participation in identifying enhancements to SOF in critical areas. Needs in these areas have been advertised to industry and Government R&D agencies via Broad Agency Announcements and R&D conferences (1-4QTR/\$519K).

(U) Project to Completion: This is a continuing project.

(U) Work Performed By: Service and National Laboratories, Defense and other Government Agencies including Army Armaments, Chemical, Human Engineering, Natick and Night Vision R&D Center, Air Force Electronic Systems, Rome and Wright R&D Centers, Naval Coastal Ocean and Weapons System Centers, and the Joint Electronic Warfare Center. Contractors include: Battelle, Columbus, OH and Northwest Lab, Richland WA; IBM; McDonnell Douglas; Harris, Melbourne, FL; Hilton Systems, Crystal City, VA; Lockheed, Marietta, GA; MITRE, Bedford, MA; Motorola; Noise Cancellation Technologies, Columbia, MD; RACAL Communications, Rockville, MD; Scaled Composites, Mojave, CA; Special Technologies Laboratories, Goleta Valley, CA; Keiger, Hilton Head, SC; S-Tron, Foster City, CA; Kodak, Rochester, NY; TRW, Los Angeles, CA; General Dynamics, Pomona, CA; and Electronic Warfare Associates, Vienna, VA.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date: February 1994**

**Program Element: 1160402BB**

**Project Number: S200**

**PE Title: SO Advanced Technology Development**

**Budget Activity: 7**

**(U) Related Activities: None.**

**(U) Other Appropriation Funds: Not Applicable.**

**(U) International Cooperative Agreements: Not Applicable.**

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Budget Activity: 7  
Date: February 1994

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development

**A. (U) RESOURCES: (\$ in Thousands)**

Project Number & Title	FY 1993 Actual	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Estimate	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	To Complete	Total Program
DE14 JOINT SPECIAL OPERATIONS RADIO SYSTEM	18,459	6,916	7,790	4,308	1,078	0	0	0	79,876
D476 PSYOPS ADVANCED DEVELOPMENT	3,905	240	3,653	0	0	0	0	0	12,723
D615 SOF AVIATION	4,816	19,181	0	0	0	0	7,788	Cont.	Cont.
SF100 AVIATION SYSTEMS ADVANCED DEVELOPMENT	1,961	0	8,213	5,788	3,706	7,584	9,443	Cont.	Cont.
SF200 CV-22 SOF OSPREY	0	15,000	0	0	0	0	0	0	74,100
S0417 SEAL SUPPORT SYSTEMS	8,217	38,845	30,454	22,284	10,059	723	230	Cont.	Cont.
S1684 SPECIAL WARFARE COMBATANT CRAFT	2,673	10,897	11,783	6,221	1,940	0	0	0	108,451
3284 SOF AIRCRAFT DEFENSIVE SYSTEMS	6,691	20,943	31,035	11,437	6,811	8,231	4,199	Cont.	Cont.
3326 AC-130U	23,856	32,821	5,200	18,905	12,375	42,877	36,664	Cont.	Cont.
3642 AIRCREW TRAINING SYSTEM	19,307	24,697	38,615	17,512	4,474	257	246	0	208,590
S350 SPECIAL OPERATIONS PLANNING AND REHEARSAL SYSTEM	9,736	5,813	2,201	6,488	3,691	2,871	2,067	Cont.	Cont.
S375 WEAPONS SYSTEMS ADVANCED DEVELOPMENT	1,272	2,226	0	0	0	0	0	0	37,778

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Budget Activity: 7  
Date: February 1994

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development

Project Number & Title	FY 1993 Actual	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Estimate	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	To Complete	Total Program
S600 FUTURE SOF AIRCRAFT	0	0	0	1,954	6,968	12,581	21,174	Cont.	Cont.
S650 QUIET KNIGHT	0	6,969	0	0	0	0	0	0	6,969
S675 SUSTAINMENT ENGINEERING	0	9,615	14,405	15,239	14,234	14,201	14,169	Cont.	Cont.
S700 COMMUNICATIONS ADVANCED DEVELOPMENT	3,880	7,714	4,467	687	705	750	743	Cont.	Cont.
S800 SPECIAL OPERATIONS MUNITIONS ADVANCED DEVELOPMENT	14,939	14,648	9,540	8,844	4,007	5,139	2,002	Cont.	Cont.
S900 MISCELLANEOUS EQUIPMENT ADVANCED DEVELOPMENT	1,312	1,451	0	466	1,486	1,869	0	0	5,978
Total	121,025	217,976	167,356	120,133	71,534	97,083	98,725	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF ELEMENT:** Projects in PE 1160404BB are in BA 7, Operational Systems Development. Projects in this BA and PE provide for development, testing, and rapid procurement of specialized equipment to meet the unique requirements of SOF. Specialized equipment will permit small, highly trained forces to conduct required operations across the entire spectrum of conflict. These operations are generally conducted in harsh environments, for unspecified periods, in locations requiring small unit autonomy. SOF must infiltrate by land, sea, and air to conduct unconventional warfare, direct action, or deep reconnaissance operations in denied areas against insurgent units, terrorists, or highly sophisticated threat forces. The requirement to operate in denied areas controlled by a sophisticated threat mandates that SOF systems remain technologically superior to threat forces to ensure mission success.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: DE14      Date: February 1994  
 PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
JOINT ADVANCED SPECIAL OPERATIONS RADIO SYSTEM (JASORS)	18,459	6,916	7,790	4,308	1,078	0	0	0	79,876

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project provides funds for the development of a Low Probability of Interception/Detection (LPI/D) communications system for use by Joint Special Operations Forces deployed in hostile and clandestine environments. JASORS consists of several subsystems; a Manpack Radio (MPR), Digital Message Entry Device (DMED), Integrable Base Station (IBS) components, Transit Base Station (TBS), and Ancillary Items Group (AIG). Communications are required to support both strategic and tactical commanders at all levels. Program is designed to provide communications from the team level to its next higher command. Program is a joint requirement validated by USSOCOM with the Army as Executive Agent. JASORS has been restructured to downsize the effort.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

- (U) FY 1993 Accomplishments:
  - (U) Completed Concept Evaluation & Demonstration (SEP/\$18,459K), composed of the following tasks:
    - (U) Software design, code, and test of subsystems (SEP/\$6,959K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: DE14      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

- (U) Conceptual Hardware/Software Integration and Test (SEP/\$9,000K).
  - (U) System integration and test (SEP/\$1,500K).
  - (U) Concept Evaluation and Demonstration Electrical Parameter/Performance Tests (SEP/\$1,000K).
- (U) FY 1994 Plans:
- (U) Conduct Phase I Development/Validation activities (4QTR/\$6,916K), composed of the following tasks:
    - (U) Government LPI/D assessment of waveforms (2QTR/\$3,500K).
    - (U) Complete JASORS Information Security chip and security module development (4QTR/\$3,416K).

- (U) FY 1995 Plans:
- (U) Complete Phase I Demonstration/Validation (3QTR/\$7,790K), composed of the following tasks:
    - (U) Complete Team Digital Message Entry Device (T-DMED) development and transition to production (1QTR/\$5,000K).
    - (U) Harvest Intra-team radio chip technologies (1QTR/\$2,790).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: DE14      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

- (U) Project to Completion:
  - (U) Continue harvest near term technologies.
  - (U) Complete Manufacturing Engineering Change Proposals.
- (U) Work Performed by: U.S. Army Communications Electronics Command as Army Executive Agent for USSOCOM. Contractors are Harris Corporation (Prime), Motorola, RF Comm, and SAIC (Subs).
- (U) Related Activities: There is no unnecessary duplication of effort within the Department of Defense.
- (U) Other Appropriation Funds: Not Applicable.
- (U) International Cooperative Agreements: Not Applicable.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160404BB**      Project Number: **D476**      Date: **February 1994**  
 PE Title: **Operations Tactical Systems Development**      Budget Activity: **7**

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
PSYCHOLOGICAL OPERATIONS (PSYOP)	3,905	240	3,653	0	0	0	0	0	12,723

**B. (U) BRIEF DESCRIPTION OF PROJECT:** The intent of Psychological Operations is to perform surveillance, broadcast deceptive sounds, persuade selected target audiences to support U.S. national interests and to counter misinformation directed at U.S. forces. New equipment is required to replace 1950's/1960's era systems which are difficult to deploy by air, obsolete, unreliable, and non-supportable. New equipment will have more capability while being smaller in size and easier to deploy to meet mission requirements. This project provides for the development and testing of several items of non-lethal Psychological Operations Equipment. Sub-projects include:

- (U) Special Operations Media System B (SOMS B). SOMS B is an effort currently underway to develop/integrate a configuration of radio and television equipment for tactical deployment. SOMS B consists of a Mobile Radio Broadcasting System and a Mobile Television Broadcast System (MTBS) to include the Electronic News Gathering (ENG) System. These subsystems will be configured in two separate/interoperable S-788-type shelters mounted on HHV's; each subsystem will be C-130 transportable. SOMS B MTBS/ENG will broadcast, record, and transmit/receive programming material via satellite communications with the fixed-site Media Production Center at Ft. Bragg, North Carolina and the Air Force's COMMANDO SOLO. Satellite communications will be used to obtain rapid approval of PSYOP products for dissemination in response to quickly changing mission scenarios, to forward

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: D476

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

products produced and approved in the continental United States to Special Operations Media System B for dissemination, and to provide real-time command and control capability.

- (U) Family of Loudspeakers (FOL). The FOL will be deployed by PSYOP Loudspeaker Teams and Mobile Audio/Visual Teams to target areas in support of SOF and conventional forces. FOL will permit the conduct of loudspeaker missions over larger areas than present equipment capability and will provide a greater stand-off distance for U.S. forces/assets resulting in a reduction of loss to U.S. forces/assets. The FOL will consist of modular amplifiers and speakers that can be interconnected to form sets of loudspeakers that will provide high quality recorded audio, live dissemination, and acoustic deception capability. Amplifiers and speakers will be transported, operated, and mounted in ground vehicles, watercraft, rotary wing aircraft, and dismounted for ground operations (tripod/manpack). The basic system, or manpack, is comprised of a modular amplifier and modular speaker(s) weighing less than 30 lbs.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) Special Operations Media System B (SOMS B). Performed Phase 0 Concept Exploration and Definition activities to develop concepts and evaluate feasibility of alternative concepts; prepared documentation for MS I/II Decision(4QTR/\$3,075K).
- (U) Family of Loudspeakers (FOL). Initiate Phase 0 (Concept Exploration and Definition) activities and documentation to include draft specification, integrated logistics plan, test and evaluation master plan, to support

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: D476      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

a MS I/II Decision. Request for Proposal for prototype systems published to initiate source selection (4QTR/\$830K).

**(U) FY 1994 Plans:**

- (U) SOMS B. Phases I/II: finalize system design; finalize documentation for Low Rate Initial Production unit, deliverable as first system. Initiate documentation for Milestone III decision scheduled for 3QTR FY95 (3QTR).
- (U) FOL. Continue Phase 0 Concept Exploration and Definition activities to develop concepts and evaluate feasibility of alternatives. Complete documentation for Milestone I/II (3QTR/\$240K).

**(U) FY 1995 Plans:**

- (U) Special Operations Media System B (SOMS B). Perform Operational Test and Evaluation. Complete Phase II; Obtain Milestone III approval for production; Award production contract (1-4QTR).
- (U) Family of Loudspeakers (FOL). Demonstrate/Validate critical technologies; finalize system design; perform Operational Test & Evaluation. Finalize documentation for prototype systems. Complete documentation for Milestone III decision. (3QTR/\$3,653K).

**(U) Project to Completion:**



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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development  
Project Number: D476  
Budget Activity: 7  
Date: February 1994

- (U) SOMS B. Complete production scheduled for FY96.
- (U) FOL. Award production contract; production scheduled for FY96-99.
- (U) Work Performed By: In-house development organizations are U.S. Army Communications and Electronics Command, Ft. Monmouth NJ; U.S. Army Armament Research, Development, and Engineering Center, Dover, NJ; and U.S. Department of Energy, Idaho National Engineering Laboratory, Idaho Falls, ID.

- (U) Related Activities: There is no unnecessary duplication of effort within the Department of Defense.
- (U) Other Appropriation Funds: Not Applicable.
- (U) International Cooperative Agreements: Not Applicable.

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FY 1995 RDT&E DESCRIPTIVE SUMMARY

Project Number: D615 Date: February 1994  
Budget Activity: 7

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development

A. (U) RESOURCES: (\$ in Thousands)

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SOF AVIATION	4,816	19,181	0	0	0	0	7,788	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** A requirement exists to provide aviation support to Special Operations Forces in world-wide contingency operations and low-intensity conflicts. The specialized aircraft for these missions must be capable of rapid deployment and undetected penetration of hostile areas. These aircraft must be capable of operating at extended ranges under adverse weather conditions to infiltrate, provide logistics for, reinforce, and extract Special Operations Forces. The threat is characterized by an extensive and sophisticated ground based air defense and an upgraded air-to-air capability targeted against helicopters. Third World operations are apt to involve greater distances and more challenging geographical environmental conditions than the European theater. This project will develop the Special Operations Aircraft (modified UH-60L and medium lift CH-47D helicopters) that will be capable of successful operations in these increasingly hostile environments. Both the MH-60K and MH-47E will have extended range fuel systems including aerial refueling capability, an integrated cockpit/mission management system (which considerably reduces pilot workload), forward looking infrared sensor (allowing safe night operations), terrain following/terrain avoidance radar (allowing low level flight through adverse weather), upgraded engines, world-wide communications and other equipment which will increase mission success probability.

C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:

(U) FY 1993 Accomplishments:

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: D615

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

- (U) Applied Production Upgrades for the Integrated Avionics System (JAN).
- (U) Applied Multi-Mode Radar subsystem upgrades to the prototype MH-47E and MH-60K aircraft (AUG).
- (U) Commenced Aircraft Survivability Equipment (ASE) minimum fixes to problems identified in prototype testing and began Electromagnetic Environmental Effects (EEE) testing at Patuxent River, Maryland (SEP/\$4,816). This event was delayed due to non-availability of Prime Item Development specification compliant software. Effort completes in 3QTR94.

**(U) FY 1994 Plans:**

- (U) Begin effort to verify software development of Multi-Mode Radar (MMR) (formerly called TFF/TA) capability at Fort Campbell, KY (2QTR/\$16,181K).
- (U) Initiate Edwards Air Force Base Flight Tests (4QTR/\$3,000K).

**(U) FY 1995 Plans:**

- (U) Complete MMR flight tests qualification at Edwards Air Force Base (1-2QTR).
- (U) Achieve aircraft fielding/material release.

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FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development  
Project Number: D615  
Budget Activity: 7  
Date: February 1994

D. (U) WORK PERFORMED BY: Major contractors are Boeing Helicopter Company, Philadelphia, PA; Texas Instruments, McKinney, TX; Sikorsky Aircraft Division, Stratford, CT; Bendix Guidance Systems Division, Teterboro, NJ; and Link Division, Binghamton, NY. Government developmental organizations are: Product Manager, Special Operations Aircraft, St. Louis, MO; U.S. Army Aviation and Troop Command, St. Louis, MO; U.S. Army Communications and Electronics Command, Fort Monmouth, NJ; Simulation, Training and Instrumentation Command, Orlando, FL; Program Executive Office, Aviation, St. Louis, MO; and U.S. Army Aviation Technical Test Center, Fort Rucker, AL.

E. (U) COMPARISON WITH FY 1994 DESCRIPTIVE SUMMARY:

Narrative Description of Changes

1. Technical Changes: None.
  2. Schedule Changes: The development of the Multi-Mode Radar-Terrain Following capability, Aircraft Survivability Equipment (ASE) minimum fixes, and Electromagnetic Environmental Effects (EEE) testing were delayed due to the unavailability of Prime Item Development Specification (PIDS) compliant software from the production aircraft program. PIDS compliant software was available in Sep 93. The MMR-TF development will begin in Feb 94. The ASE minimum fixes and EEE testing begin in SEP 93 and complete in FY94.
  3. Cost Changes: None.
- F. (U) ACQUISITION PROGRAM DOCUMENTATION: Special Operations Aviation (SOA) Acquisition Plan, Update 2 which covers the Life Cycle Contractor Support Plan, dated 23 Jul 93; SOA Acquisition Plan, Update 3 which covers MMR-TF, dated 6 Aug 93.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: D615

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

**G. (U) RELATED ACTIVITIES:** Related modification efforts are managed by the Technology Applications Program Office, St. Louis, MO. Duplication is avoided through direct coordination between the two organizations as well as through coordination oversight by the Army Component organizations.

**H. (U) OTHER APPROPRIATION FUNDS:** Not Applicable

**I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS:** Not Applicable.

**J. (U) MILESTONE SCHEDULE:** Milestone III achieved in SEP 1991.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB  
 PE Title: Special Operations Tactical Systems Development  
 Project Number: SF100  
 Budget Activity: 7  
 Date: February 1994

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
AVIATION ADVANCED SYSTEMS DEVELOPMENT	1,961	0	8,213	5,788	3,706	7,584	9,443	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project investigates already developed and maturing technologies that have direct application for the development and procurement of specialized equipment to meet unique SOF aviation requirements. Timely application of SOF unique technology is critical and necessary to meet requirements in such areas as low probability of intercept/low probability of detection (LPI/LPD), digital terrain elevation data and electronic order of battle, digital maps, LPI Radar altimeter display technology, situational awareness, constant source to include data fusion, laser radar/millimeter wave radar, imagery, threat detection and avoidance, electronic support measures, navigation, target detection and identification technologies, and studies for future SOF aircraft requirements.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

- (U) FY 1993 Accomplishments:
- (U) Conducted evaluation of defense technology with the purpose of providing the most effective electronic warfare systems. Evaluation included emerging technologies in the infrared countermeasures and suppression, radio frequency countermeasures, and expendable decoy arenas (SEP/\$1,790K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date:** February 1994

**Project Number:** SF100

**Budget Activity:** 7

**Program Element:** 1160404BB

**PE Title:** Special Operations Tactical Systems Development

- (U) Completed Multi-Mission Advanced Vertical Lift Aircraft Cost and Operational Effectiveness Analysis (SEP/\$171K).

(U) **FY 1994 Plans:** None.

(U) **FY 1995 Plans:**

- (U) Conduct avionics architecture evaluation, study and analysis for off/on board sensors, displays, and systems (1QTR/\$1,144K).
- (U) Award non-recurring engineering contract for design of the enhanced AAQ-17 (3QTR/\$5,198K).
- (U) Develop proposed acquisition strategy and initial program objectives for cost, schedule, and performance for navigation and radar enhancements (1QTR/\$1,871K).
- (U) **Program to Completion:** This is a continuing project.
- (U) **Work Performed By:** HQ USSOCOM, MacDill AFB, FL. the following may provide support to this effort; ASC/RW Electronic Warfare Program Office, Wright-Patterson, AFB, OH; ASC/REB Special Projects Division, Wright-Patterson AFB, OH; and WR-ALC/LN E Management Directorate and WR-ALC/LU SOF Management Directorate, Robins AFB, GA; HQ US Army, CECOM/AMSEL-RD-CZ-PA-AI, Ft Monmouth, NJ; WL/AAAS-3, Wright Patterson AFB, OH; ASC/SMA, Wright Patterson AFB, OH.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: SF100      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

(U) Related Activities: There is no unnecessary duplication of effort within the Department of Defense. The requirement for this program is utilization of Service developed technology and its modification to provide specialized equipment to meet SOF aviation requirements.

(U) Other Appropriation Funds: Not Applicable.

(U) International Cooperative Agreements: Not Applicable.



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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Project Number: SF200      Date: February 1994  
 Budget Activity: 7

Program Element: 1160404BB  
 PE Title: Special Operations Tactical Systems Development

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
CV-22 SOF OSPREY	0	15,000	0	0	0	0	0	0	74,100

**B. (U) BRIEF DESCRIPTION OF PROJECT:** The CV-22 promises to fill the present void in USSOCOM's capability to extract special operations forces (SOF) at long ranges. The Commander-in-Chief of U.S. Special Operations Command has described this void as a "severe" hindrance to execution of USSOCOM's mission. The CV-22 Program will deliver a specially configured variant of the tilt-rotor aircraft capable of penetrating enemy territory using low-level terrain-following flight at night and in adverse weather. It will also complement the MC-130 Combat Talon aircraft in its infiltration and resupply roles. The relatively modest investment by USSOCOM in the joint service development of the multi-mission capable V-22 provides tremendous return for the Command. USD(A) directed U.S. Navy to fund V-22 RDT&E requirements from FY95 and out.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

(U) FY 1993 Accomplishments: Not Applicable. No MFP-11 funding.

(U) FY 1994 Plans:

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: SF200

Budget Activity: 7

Date: February 1994

- (U) Continue design and development effort to expand capabilities of the terrain following radar programmed for the CV-22. Integrated ground beacon detection, weather avoidance, low speed terrain following and other capabilities (1-4QTR/\$4,100K).
- (U) Continue participation with the Navy in the Engineering and Manufacturing Development Phase of the V-22 to include purchasing long lead and government furnished equipment items needed for development test (1-4QTR/\$6,800K).
- (U) Continue support for Air Force Component of the V-22 multi-service test team at Patuxent Naval Air Test Center (1-4QTR/\$200K).
- (U) Continue logistics planning activities for the SOF variant through Navy Field Activities (1-4QTR/\$3,900K).
- (U) FY 1995 Plans: Not Applicable. No MFP-11 funding.
- (U) Project to Completion: To be determined.
- D. (U) WORK PERFORMED BY: SOF directorate of the Aircraft Systems Program Office, Wright-Patterson AFB, OH; Naval Air Systems Command, Washington, DC; Bell Helicopter Textron, Fort Worth, TX; Boeing Helicopters, Ridley Township, PA; Texas Instruments, McKinney, TX; IBM Federal Systems Division, Owego, NY.
- E. (U) COMPARISON WITH FY 1994 DESCRIPTIVE SUMMARY:

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: SF200

Budget Activity: 7

Date: February 1994

Narrative Description of Changes

1. Technical Changes: None.
2. Schedule Changes: None.
3. Cost Changes: The Navy will fund the SOF variant research, development, and acquisition costs up to \$550M for FY95-99.

**F. (U) ACQUISITION PROGRAM DOCUMENTATION**: The USSOCOM requirements are contained in the Operational Requirements Document, Multi-Mission Advanced Vertical Lift Aircraft (MVX). The critical performance parameters have been validated with CINCSOC signature expected shortly. The Navy is coordinating program documents required for the Defense Acquisition Board review scheduled for 9 Sep 94.

**G. (U) RELATED ACTIVITIES**: V-22 is a joint service program led by the Navy. The Navy funds airframe and engine development, while USSOCOM funds development, integration, and testing of systems unique to the SOF missions. Since the terrain following radar will be common to the CV-22, MH-47E, and MH-60K aircraft, close program and engineering coordination between the respective program offices is necessary to integrate the various efforts. There is no unnecessary duplication of effort within the Department of Defense.

**H. (U) OTHER APPROPRIATION FUNDS**: Not Applicable.

**I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS**: Not Applicable.

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EXHIBIT P-33B

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: SF200

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

**J. (U) MILESTONE SCHEDULE:**

- (U) Acquisition Program Baseline - Feb 94
- (U) Memorandum of Agreement - Feb 94
- (U) Defense Acquisition Board (Milestone II+) - Sep 94
- (U) EMD CDR - Sep 94
- (U) CV-22 Systems Requirements Review - Sep 94
- (U) CV-22 Preliminary Design Review - Dec 94
- (U) CV-22 Critical Design Review - Mar 95
- (U) First Flight EMD Variant - Jun 97
- (U) V-22 Milestone III - FQ3/99

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160404BB**      Project Number: **S0417**      Date: **February 1994**  
 PE Title: **Special Operations Tactical Systems Development**      Budget Activity: **7**

**A. (U) RESOURCES:** (\$ in Thousands)

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SEAL SUPPORT SYSTEMS	8,217*	38,845	30,454	22,284	10,059	723	230	Cont.	Cont.

\* Available FY 93 funds are \$6,946K. Above includes \$645K for medical R&D that is reported under project S275 and \$626K for communications reported under project S700.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project funds the development of SEAL support items used during the conduct of hydrographic/inland reconnaissance, beach obstacle clearance, underwater ship attack, and other direct action missions. Sub-projects include:

- (U) Advanced SEAL Delivery System (ASDS). The ASDS is a manned combatant submersible capable of delivering SEAL personnel and weapons in a high threat environment. The ASDS will provide the requisite range, endurance, payload, and other capabilities for operation in the full range of threat environments.
- (U) MK 8 Mod 1 SEAL Delivery Vehicle (SDV). This program upgrades and extends the service life of aging MK 8 SDVs; the MK 8s were built with 1960's technology. The new MK 8 Mod 1 SDV will incorporate more modern equipment to improve supportability/maintainability and will include upgrade of selected subsystems. The program was renamed MK 8 Mod 1 to more accurately reflect its nature as a Service Life Extension Program (SLEP) rather than a full blown Research, Development, and Acquisition (RD&A) program.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160404BB**

PE Title: **Special Operations Tactical Systems Development**

Project Number: **S0417**

Date: **February 1994**

Budget Activity: **7**

- (U) Undersea Systems. Undersea systems to be developed to provide SOF combat swimmers with the necessary diving and diving related equipment to fulfill assigned underwater combat missions include the following:
- (U) Underwater Breathing Apparatus (UBA). Development of the Conventional Dive System (CDS) consisting of the EX-19 UBA and a full face mask for increased combat swimmer endurance and mobility regardless of water temperature.
- (U) Diver Active Thermal Protection System (DATPS). Development of self-contained active thermal protection system which allows combat swimmers to conduct missions in extreme cold water environments.
- (U) Very Shallow Water Mine Countermeasures (VSW MCM). Phased development/improvement of low magnetic and acoustic signature equipment to support the combat swimmer in the VSW MCM operational environment.
- (U) Global Positioning System (GPS). Development of a waterproof, miniaturized GPS unit for combat swimmers. This program is transitioning from a Special Operations Special Technology effort.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) Awarded Advanced SEAL Delivery System preliminary design contract, prepared Request for Proposal (RFP) for detail design and manufacturing development contract, initiated Cost and Operational Effectiveness Analysis (COEA) and completed Phase 0 portion of COEA, completed preliminary design efforts, and prepared programmatic documentation to achieve Milestone II (SEP/\$1,676K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S0417

Date: February 1994

Budget Activity: 7

- (U) Complete Phase I Cost and Operational Effectiveness Analysis (COEA) for Advanced SEAL Delivery System (ASDS), release Request for Proposal and begin proposal evaluation of competing designs, obtain Milestone II approval, and award Detailed Design/Manufacturing Development contract to one of the competing preliminary designers (3QTR94/\$3,000K).
- (U) Continued design and integration of sustainment and selected subsystem upgrade Engineering Change Proposals (ECPs) for MK 8 Mod 1 SEAL Delivery Vehicle (SDV) in conjunction with the Service Life Extension Program (SLEP) (SEP).
- (U) Continued engineering development of Conventional Dive System (CDS) (SEP/\$681K).
- (U) Began Technical Evaluation of Diver Active Thermal Protection System (DATPS) (SEP/\$1,053K).
- (U) Continued Phase 0 studies for Very Shallow Water Mine Countermeasures (SEP/\$536K).
- (U) FY 1994 Plans:
  - (U) Complete Phase I COEA for ASDS, release Request for Proposal and begin proposal evaluation of the competing designs, obtain Milestone II approval, and award Detailed Design/Manufacturing Development contract to one of the competing preliminary designers (3QTR/\$24,631K).
  - (U) Complete design, integration, and testing of subsystem sustainment and selected upgrade ECPs for the MK 8 Mod 1 SDV SLEP. Complete all ECP design and integration packages in preparation for procurement and start of conversions in FY95 (3QTR/\$9,811K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Project Number: S0417**      **Date: February 1994**

**Program Element: 1160404BB**

**PE Title: Special Operations Tactical Systems Development**

**Budget Activity: 7**

(U) Complete Technical Evaluation and Operational Evaluation of Conventional Dive System (CDS)(3QTR/\$195K).

(U) Complete Operational Evaluation and Milestone III of Diver Active Thermal Protection System (3QTR/\$1,317K).

(U) Complete Milestone I and commence Phase I demonstration and validation for Very Shallow Water Mine Countermeasures (VSW MCM) programs efforts identified during Phase 0 (3QTR/\$2,500K).

(U) Complete Milestone I/II and continue prototype engineering development, integrated logistics support documentation, and technical testing for incorporation of a waterproof, miniaturized Global Positioning System (GPS) unit (3QTR/\$391K).

**(U) FY 1995 Plans:**

(U) Complete Critical Design Review of Advanced SEAL Delivery System and begin fabrication and integration of first vehicle (3QTR/\$25,790K).

(U) Complete MK 8 Mod 1 SEAL Delivery Vehicle (SDV) system level testing. Procure initial conversion kits and begin conversion/overhaul of MK 8 Mod 0 SDVs. Begin development of trainer modifications to support MK 8 Mod 1 SDV training (4QTR/\$2,282K).

(U) Complete Milestone III of CDS (1QTR).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: S0417      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

- (U) Complete Diver Active Thermal Protection System interface with MK 8 Mod 1 SEAL Delivery Vehicle Service Life Extension Program, program documentation, and production contract award preparation (1QTR/\$584K).
- (U) Continue Phase I demonstration and validation and complete Milestone II for Very Shallow Water Mine Countermeasures (4QTR/\$1,798K).
- (U) Complete Milestone III of Global Positioning System (1QTR).

(U) Project to Completion: This is a continuing project.

**D. (U) WORK PERFORMED BY:**

- (U) **IN-HOUSE**: Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station, Panama City, FL; Naval Research Lab, Washington; and Naval Electronics Systems Engineering Activity, St Indigo, MD.
- (U) **CONTRACTORS**: Motion Control Systems, Newburn, VA; SONATECH, Santa Barbara, CA; Global Associates, Arlington, VA; Westinghouse Electronics Corp., Annapolis, MD, GD/EB Div., Groton, CT; Newport News Shipbuilding, Newport News, VA.

**E. (U) COMPARISON WITH FY 1994 DESCRIPTIVE SUMMARY:**

Narrative Description of Changes

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FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S0417

Date: February 1994

Budget Activity: 7

1. Technical Changes: None.

2. Schedule Changes: Advanced SEAL Delivery System schedule slippage result of delay in award of Preliminary Design contract due to a protest of the solicitation. Ruling was in favor of the Navy and contract was awarded in November 1992. Program schedule readjusted accordingly. Diver Active Thermal Protection System (DATPS) schedule has slipped due to tasking/scheduling priority conflicts with the organization performing the Technical Evaluation.

3. Cost Changes: None.

F. (U) ACQUISITION PROGRAM DOCUMENTATION: The following projects are being developed as part of SEAL Support Systems under the Naval Special Warfare Systems R&D Master Plan: Advanced SEAL Delivery System, SO417-12, OR 243-03-89, 12/01/88; Diver Active Thermal Protection System, SO417-08, NDCP, DATPS Operational Requirements Document (ORD), 12/20/93, SO417-SW, Test and Evaluation Master Plan (TEMP) 098-10 (Rev 2) 01/10/94; Conventional Dive System (CDS), SO394-09, OR 102-02-87, 5/29/86, TEMP 856-2, 08/13/90; Very Shallow Water Mine Countermeasures, USSOCOM Mission Needs Statement (MNS), 03/26/92; MK 8 Mod 1 SEAL Delivery Vehicle Service Life Extension Program, ORD, 12/93; Miniaturized GPS, MNS, 08/16/91.

G. (U) RELATED ACTIVITIES:

(U) PE 0603712N (Ocean Engineering Systems Development), Project SO394-09, Conventional Dive System (CDS). USSOCOM and Navy are joint sponsors of CDS. The Navy effort is reported in this PE in FY93 and prior. The PE changes to 0603713N in FY94.

(U) There is no unnecessary duplication of effort within the Department of Defense.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S0417

Date: February 1994

Budget Activity: 7

**H. (U) OTHER APPROPRIATION FUNDS:** Not Applicable.

**I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS:** Information Exchange Project (IEP) B-80 between the United States and the United Kingdom.

**J. (U) MILESTONE SCHEDULE:**

Milestone (ASDS):

Milestone II

TECHEVAL

OPEVAL

Milestone III

Milestone Date

3rd QTR FY 94

2nd QTR FY 98

3rd QTR FY 98

4th QTR FY 98

Milestone (MK 8 Mod 1 SDV):

Commence SDV SLEP

Commence Procurement of Conversion Kits

Commence Overhaul/Conversion

4th QTR FY 92

1st QTR FY 95

4th QTR FY 95

Milestone (VSW MCM):

Milestone 0

Milestone I

Milestone II

Milestone III

4th QTR FY 92

3rd QTR FY 94

1st QTR FY 96

1st QTR FY 98

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date: February 1994**

**Project Number: S0417**

**Budget Activity: 7**

**Program Element: 1160404BB**

**PE Title: Special Operations Tactical Systems Development**

**Milestone (DATPS):**

**Milestone II  
TECHEVAL  
OPEVAL  
Milestone III**

**3rd QTR FY 91  
1st QTR FY 94  
2nd QTR FY 94  
3rd QTR FY 94**

**Milestone (CDS):**

**Milestone II  
TECHEVAL  
OPEVAL  
Milestone III**

**2nd QTR FY 90  
1st QTR FY 94  
3rd QTR FY 94  
1st QTR FY 95**

**Milestone (GPS):**

**Milestone I/II  
Milestone III**

**1st QTR FY 94  
1st QTR FY 95**

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: S1684      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u>	<u>FY 1994</u>	<u>FY 1995</u>	<u>FY 1996</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>To</u>	<u>Total</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	<u>Program</u>
SPECIAL WARFARE COMBATANT CRAFT	2,673	10,897	11,783	6,221	1,940	0	0	0	108,451

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project provides for development and testing of surface combatant craft and selected items of specialized equipment to meet the unique requirements of Special Operations Forces (SOF). These craft and equipment will permit small, highly trained forces to conduct required operations across the entire spectrum of conflict. Sub-projects include:

- (U) Navy Boat Program. This program provides engineering support for design and specification development for combatant craft. This will result in improved operability and safety, reduced detectability, and increased survivability for inflatable boats, rigid inflatable boats (RIBs), and other combatant craft.
- (U) Patrol Coastal (PC). The need for a coastal patrol and interdiction combatant craft capability was validated during operation "Earnest Will" in the Persian Gulf and increased commitments supporting missions both in CONUS and the SOUTHCOM area of responsibility. The 170 foot PC design incorporates space, weight and power margins to accommodate improvements such as advanced lightweight weapon systems, navigational, and countermeasure systems to keep pace with state-of-the-art technology. Initial improvements include a Stabilized Weapons Platform System (SWPS), precision military Global Positioning System (GPS), and Electronic Plotter (EP) for navigation.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: SI684      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

(U) MARK V Special Operations Craft (MK V SOC). The MK V SOC will answer the SOF need for a fast, rapidly deployable, air-transportable, and reliable combatant craft to be used primarily for medium range SEAL insertion/extraction (MRI) tasks and limited coastal patrol and interdiction (CPI) missions.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

- (U) FY 1993 Accomplishments:
  - (U) Initiated signature reduction studies and testing on combat rubber raiding craft (FEB/\$260K).
  - (U) Completed initial testing of vacuum bag laminate technology as applied to Rigid Inflatable Boat (SEP/\$50K).
  - (U) Completed non-gasoline burning outboard engine multi-fuel testing (JUL/\$200K).
  - (U) Completed qualification testing of Cummins 6CTA engine for Patrol Boat Riverine engine upgrade effort (AUG/\$50K).
  - (U) Initiated weight reduction and riverine studies (APR/\$199K).
  - (U) Initiated software studies and continued development and testing of command and control software for Patrol Coastal pre-planned product improvement (NOV/\$169K).
  - (U) Completed stabilized weapon studies and engineering support (SEP/\$105K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S1684

Date: February 1994

Budget Activity: 7

- (U) Completed developmental test plan and initiated developmental testing of Rigid Inflatable Boat (AUG/\$100K).
- (U) Initiated Patrol Coastal motions data test for Stabilized Weapons Platform System (SWPS), released draft SWPS specification to industry for comment, and continued to finalize Milestone 0/I/II documentation (SEP/\$115K).
- (U) Achieved Milestone I for the MK V Special Operations Craft (SOC) program on 01 Dec 92. Request for Proposal (RFP) released for test articles (craft and transporters) 14 Dec 92. Three contracts for test articles awarded. These events occurred in FY93 using primarily FY92 funds (due to their late release)(SEP/\$425K).
- (U) Began Congressionally directed Interactive Electronic Technical Manual (IETM) technology applications with Naval Electronic Systems Engineering Activity (SEP/\$1,000K).

**(U) FY 1994 Plans:**

- (U) Continue Patrol Coastal pre-planned product improvements, command and control studies, and software development (2QTR/\$203K).
- (U) Continue Patrol Coastal propeller design development and noise reduction efforts (3QTR/\$350K).
- (U) Continue SWPS program and technical support, release RFP, award contract and monitor performance (3QTR/\$8,753K).

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75

EXHIBIT PB-33B



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FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development  
Project Number: S1684  
Budget Activity: 7  
Date: February 1994

(U) Continue MK V Special Operations Craft program, receive test articles and conduct development Test and Evaluation (T&E) and early operational assessment, reach Milestone II and award low rate initial production contract for initial operational detachment (two craft, transporters, and support equipment), and continue Interactive Electronic Technical Manual technology applications (1-4QTR/\$1,591K).

(U) FY 1995 Plans:

- (U) Continue Patrol Coastal (PC) pre-planned product improvement effort to include version 2 software development for command and control (3QTR/\$45K).
- (U) Continue PC propeller redesign effort and prototype testing (3QTR/\$543K).
- (U) Continue Stabilized Weapons Platform System (SWPS) program and technical support and contractor development of SWPS Engineering Development Models, monitor contract, and initiate developmental tests (1-4QTR/\$9,598K).
- (U) Continue MK V Special Operations Craft program, receive first production detachment (2 craft/transporters and support components), conduct technical/operational evaluations, reach Milestone III and award options for additional operational detachment craft/transporters and support components (1-4QTR/\$1,597K).

(U) Project to Completion: This is a continuing project. It is anticipated that sub-projects will be added in the next POM.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: S1684      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

**D. (U) WORK PERFORMED BY:**

(U) **IN-HOUSE:** NSWC Carderock Division; NSWC Pt. Hueneme Division; NSWC Dahlgren; NSWC Louisville Division; NSWC Coastal Systems Station; Naval Electronics Systems Engineering Activity; NSWC Crane Division; NSWC White Oak; Naval Ship Systems Engineering Station; USSOCOM/SOSD; Norfolk Detachment, NSWC Carderock Division; Material Readiness Support Activity (MRSA); Aeronautical Systems Center (AFMC); Military Traffic Management Command (MTMC) Transportation Engineering Agency (TEA).

(U) **CONTRACTORS:** Columbia Research Corporation (CRC), Research Consultants, Incorporated (RCI), Booz, Allen, and Hamilton, Applied Physics Lab, Peterson Builders, Inc (PBI), Halter Marine, Inc. (HMI), Freightliner, Sperry Marine, Inc..

**E. (U) COMPARISON WITH FY 1994 DESCRIPTIVE SUMMARY:**

**Narrative Description of Changes**

1. **Technical Changes:** Reduction in level of effort for Navy boat sub-projects to accommodate emerging requirement to redesign propellers for Patrol Coastal.
2. **Schedule Changes:** Release of Request for Proposal, Milestone Decision, and contract award for Stabilized Weapons Platform System (SWPS) delayed until FY94 pending the results of the Advanced Minor Caliber Gun System/SWPS Cost and Operational Effectiveness Analysis and SWPS Combat Systems Assessment.

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FY 1995 RDT&E DESCRIPTIVE SUMMARY

Date: February 1994

Project Number: S1684

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

3. Cost Changes: None.

F. (U) ACQUISITION PROGRAM DOCUMENTATION: MK V Special Operations Craft: Mission Need Statement, dated 24 Feb 92; Milestone 0 Acquisition Decision Memorandum, dated 02 Mar 92; Approved Operational Requirements Document, dated 03 Mar 93; Milestone I Acquisition Decision Memorandum, dated 03 Dec 92; Intelligence Report, dated 13 Nov 92; Threat Assessment, dated Aug 92; Program Baseline Agreement, dated 03 Dec 92; Integrated Program Summary, dated 03 Dec 92; Life Cycle Cost Estimate, dated 03 Sep 92; Phase 0 Cost and Operational Effectiveness Analysis, dated 24 Feb 93; Draft Test and Evaluation Master Plan; Draft Integrated Logistics Support Plan; Draft System Training Plan; Stabilized Weapons Platform System: Operational Requirements Document approved 06 Aug 93.

G. (U) RELATED ACTIVITIES: There is no unnecessary duplication of effort within the Department of Defense.

H. (U) OTHER APPROPRIATION FUNDS: Not Applicable.

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: None.

J. (U) MILESTONE SCHEDULE:

Milestone (MK V SOC)

Milestone 0

Milestone I

Milestone II

Milestone III

Date

02 MAR 92

01 DEC 92

3rd QTR FY94

3rd QTR FY95

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S1684

Date: February 1994

Budget Activity: 7

Milestone (SWPS)

Milestone 0/1/11

Milestone III

3rd QTR FY94

3rd QTR FY97

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: 3284      Date: February 1994  
 PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SPECIAL OPERATIONS FORCES/AIRCRAFT DEFENSE SYSTEMS (SOF/ADS)	6,691	20,943	31,035	11,437	6,811	8,231	4,199	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** Project 3284 provides funds for requirements definition, development, prototype and test for defensive avionics systems. The project will identify hardware and software enhancements for each Special Operations Forces (SOF) aircraft that will reduce detection, vulnerability, and threat engagement thereby increasing the overall survivability of SOF assets. This project will identify and develop enhancements to each platform to meet the projected threat. Recommendations for equipment modification or replacement will be developed by each System Program Manager (SPM) based upon the results of on-going engineering assessments and user operational requirements. This project is funding: dispenser upgrade and improvement of an infrared (IR) jamming system. SOF/ADS also provides systems for SOF unique portions of the WR-ALC Electronic Warfare Avionics Integrated Systems Facility (EWAISF). The EWAISF directly supports software development and testing. Part of the EWAISF effort is the Systems Integration Laboratory (SIL) designed to support the incorporation of SOF/ADS modifications into specific SOF platforms. Sub-projects include:

- (U) A modification of the ALE-40 chaff and flare dispenser system that will enhance the aircraft's self protection capability against infrared threats.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development  
Project Number: 3284  
Budget Activity: 7  
Date: February 1994

- (U) An upgrade to the ALE-47 expendable dispenser system.
- (U) An improvement program that enhances and provides a direction finding capability to the APR-46 threat warning receiver.
- (U) An upgrade to the AAR-44 missile warning receiver that will provide 360 degree hemispherical coverage (FY98 new start).
- (U) A modification of the ALQ-172 RF jammer that improves capability and frequency coverage for 9 AC-130H gunships.
- (U) A program to develop a directional jammer capable of countering missile threats in the infrared frequency spectrum.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) Began the directional infrared countermeasure (IRCM) development program. Provided funding to contractors to develop specifications, interface control documents, and technology demonstrations that would support a common USSOCOM and United Kingdom (UK) system based on an ongoing UK development effort (SEP/\$4,000K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: 3284      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

- (U) Continued with the Electronic Warfare Avionics Integrated Systems Facility development and upgrade efforts. Contracted for an AAR-44 missile warning tactical scene generator that will simulate threat missiles and IR backgrounds (SEP/\$191K).
- (U) Completed developmental flight testing of an improved IR flare in support of the Advanced Strategic and Tactical Expendable program office (AUC/\$500K).
- (U) Awarded APR-46 Phase I development contract (SEP/\$800K).
- (U) Continued development of upgrades to the DET 1 SOCOS software reprogramming facility (DEC/\$1,200K).

**(U) FY 1994 Plans:**

- (U) Continue with a directional infrared countermeasure (IRCM) development program. Complete documentation, solicit proposals, complete a competitive source selection (down-select), and award a joint USSOCOM/UK directional IRCM full scale development contract (solicit proposals in APR 94 and award contract in 3QTR/\$11,915K).
- (U) Support upgrade of the ALQ-172 RF countermeasures jammer (1-4QTR/\$4,648K).
- (U) Continue with the EWASIF development and upgrade efforts. Contract for a MH-53J Pave Low integration processor workstation (2QTR/\$2,099K).



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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: 3284      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

- (U) Continue APR-46 Phase I Reliability and Maintainability Improvements Development (1-4QTR/\$293K).
- (U) Support installation of Lifeline upgrade modification to the AC-130U Gunship (1-4QTR/\$1,500K).
- (U) Begin ALE-47 development and upgrade efforts (3QTR/\$488K).
- (U) FY 1995 Plans:
  - (U) Complete flight testing of APR-46 Phase I Reliability and Maintainability Improvements Development (2QTR/\$1,980K).
  - (U) Continue with a directional infrared countermeasure (IRCM) development program. Complete manufacture of test article and begin qualification testing of prime mission equipment hardware (1-4QTR/\$23,564K).
  - (U) Continue to support upgrade of the ALQ-172 RF countermeasures jammer for 9 AC-130H aircraft (1-4QTR/\$2,465K).
  - (U) Begin phase two of the APR-46 improvements effort. This effort will bring all the APR-46 threat warning systems onboard SOF C-130's into a single configuration (APR-46a(V)1) with a direction finding capability (1QTR/\$2,040K).
  - (U) Continue ALE-47 development and upgrade efforts (3QTR/\$986K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: 3284      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

(U) Project to Completion: This is a continuing project.

D. (U) WORK PERFORMED BY: USSOCOM/SOAE(FWE) Electronic Warfare Program Management Support Office, MacDill AFB, FL; Northrop Defense Systems Division, Rolling Meadows IL; Lockheed, Sanders Corporation, Nashua, NH; ITT Defense, Avionics Division, Nutley NJ; Watkins-Johnson Company, San Jose, CA; Warner Robins Air Logistics Center (WR-ALC) WR-ALC/LN Electronic Warfare Management Directorate, Robins AFB, GA; WR/ASC/LU Special Operations Forces Management Directorate, Robins AFB, GA.

E. (U) COMPARISON WITH FY 1994 DESCRIPTIVE SUMMARY:

Narrative Description of Changes

1. Technical Changes: None.
2. Schedule Changes: Five month delay in Directional Infrared Countermeasures contract award as a result of additional programmatic information required for program justification to Congress.
3. Cost Changes: None.

F. (U) ACQUISITION PROGRAM DOCUMENTATION:

- (U) Program Management Directive 0903(4) for Advanced Strategic and Tactical Infrared Expendables, 25 Mar 92.
- (U) Operational Requirements Document for Infrared Jamming System Improvements, AFSOC 001-91-1-B, 24 Mar 92.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Program Element: 1160404BB

Project Number: 3284

PE Title: Special Operations Tactical Systems Development

Budget Activity: 7

- (U) Program Management Directive 8213(6) for SOP Defensive Systems, 18 Mar 92.
- (U) Mission Need Statement for Infrared Countermeasures, 001-91, 16 Sep 91
- (U) System Operational Requirements Document for AC-130U Gunship, MAC 06-87-1-III, 14 May 91.
- (U) System Operational Requirements Document for MC-130H Combat Talon II, MAC 005-83-IVA, 13 May 91.

G. (U) RELATED ACTIVITIES: None.

H. (U) OTHER APPROPRIATION FUNDS: Not Applicable.

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: USSOCOM under the sponsorship of OUSD(A) is taking steps to establish a memorandum of understanding (MOU) between the United Kingdom (UK), Ministry of Defence and USSOCOM for a Cooperative effort to develop a directional infrared jamming system. The United Kingdom presently has Northrop Corporation and Lockheed, Sanders Corporation under a demonstration /validation contract to design a directional infrared countermeasures system. The UK intend to competitively select one of the two contractors to build and test an engineering development model with production options. OUSD(A) and USSOCOM are working to have an MOU in place by Spring 1994.

J. (U) MILESTONE SCHEDULE: (Refer to I above).

(U) DIRCM Contract Award SEP 94

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Program Element: 1160404BB**

**Project Number: 3284**

**Date: February 1994**

**PE Title: Special Operations Tactical Systems Development**

**Budget Activity: 7**

- (U) DIRCM Preliminary Design Review DEC 94
- (U) DIRCM Critical Design Review MAR 95
- (U) DIRCM Flight Test Complete MAR 96

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1995

Project Number: 3326

Budget Activity: 7

Program Element: 1160404BB  
 PE Title: Special Operations Tactical Systems Development

**A. (U) RESOURCES: (\$ in Thousands)**

Project Title Popular Name	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	To	Total
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Complete	Program
AC-130U GUNSHIP	23,856	32,821	5,200	18,905	12,375	42,877	36,664	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** The AC-130U aircraft will be more capable and survivable than the existing AC-130A/H aircraft. The new aircraft subsystems will include precision navigation, target acquisition radar, fire control computers integrated on redundant 1553B data buses, electronic countermeasures, infrared countermeasures, aerial refueling, covert lighting, trainable weapons, all light level TV (ALLTV), infrared sensor, and secure communications systems. These subsystems will enable the gunship to strike targets with surgical accuracy, to loiter safely in the target area for extended time periods, and to perform these tasks in night or adverse weather conditions. Where practical, every effort will be made to adapt off-the-shelf equipment. To the maximum extent possible, the subsystems in the AC-130U will be common with systems on Air Force SOF aircraft. Sub-projects include:

- (U) AC-130U Weapon System. Development and test of a side-firing Gunship configuration C-130 and procurement of one prototype aircraft.
- (U) Gunship Avionics Integration Trainer. Development of a maintenance avionics integration trainer that will duplicate avionics functions on the ground as well as emulate failure modes for maintenance crew training.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: 3326      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

- (U) Armament System Maintenance Trainer. Development of a maintenance trainer that emulates, in hardware and software, the full Gunship armament complement for maintenance training on the ground.
- (U) Extendable Integrated Support Environment Integration (EISE). Develop AC-130U unique software interface to the Air Force EISE software maintenance facility.
- (U) Multi-function Intercom System. A deficiency identified in flight tests, this project develops an advanced intercom system to fully integrate avionics and electronic countermeasure aural tones throughout all crew positions, and adds instructor tie-in capability for student training..
- (U) Gunship Operations Training Device. Develop a ground-based cockpit emulator to allow simulation of flight operations, battle management and fire control operations in a realistic threat environment for flight crew members.

**(U) PROJECT ACCOMPLISHMENTS AND PLANS:**

- (U) FY 1993 Accomplishments:
  - (U) Continued flight test and evaluation to include electronic countermeasure suite, 25mm gun, the dual target attack mode, and the strike radar (OCT/\$13,600K).
  - (U) Continued identifying and initiating mission critical engineering change orders resulting from flight test (OCT/\$1,000K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: 3326      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

- (U) Continued All Light Level Television development(OCT/\$6,400K).
- (U) Program Management Office support (1-4QTR/\$2,856K).
- (U) FY 1994 Plans:
- (U) Start Type I crew training (2QTR/\$100K).
- (U) Complete flight test and evaluation program and certify the AC-130U for operational training use(3QTR/\$18,400K).
- (U) Continue identifying mission critical engineering change orders resulting from flight tests (1QTR/\$1,100K).
- (U) Continue Tech Order validation and verification (1QTR/\$278K).
- (U) I-Level Development and Delivery of one set peculiar support equipment (3QTR/\$5,600K).
- (U) Develop Multi-function Intercom System (3QTR/\$1,200K).
- (U) Perform technical studies and analyses (1QTR/\$2,437K).
- (U) Begin development of ammo container (3QTR/\$1,400K).



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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Program Element: 1160404BB

Project Number: 3326

PE Title: Special Operations Tactical Systems Development

Budget Activity: 7

(U) Program Management Office support (1-4QTR/\$2,306K).

**(U) FY 1995 Plans:**

(U) Initiate development of Gunship Avionics Integration Trainer (3QTR/\$2,500K).

(U) Continue effort on Technical Order Verification and Validation (1QTR/\$254K).

(U) Initiate change orders originated by the operational units (2QTR/\$10K).

(U) Perform technical studies and analyses (1QTR/\$1,000K).

(U) Program Management Office support (1-4QTR/\$1,436K).

**(U) Project to Completion:**

(U) Develop Armament System Maintenance Trainer (FY98-99)

(U) Develop Gunship Avionics Integration Trainer (FY96).

(U) Develop interface to Extendable Integrated Support Environment Facility (FY97-99).

(U) Develop a Gunship Operations Training device (FY98-99).

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FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development  
Project Number: 3326  
Budget Activity: 7  
Date: February 1994

- (U) D-Level Support Equipment development (FY97)
- (U) This is a continuing project.

D. (U) WORK PERFORMED BY: Aircraft Systems Program Office, Directorate of Special Operations Forces, Wright-Patterson AFB, OH; Rockwell International (Systems Integration), El Segundo, CA; and Lockheed Aeronautical Systems Company (Airframe), Marietta, GA.

E. (U) COMPARISON WITH FY 1994 DESCRIPTIVE SUMMARY:

Narrative Description of Changes

1. Technical Changes: Technical content additions include Gunship Avionics Integration Trainer, an Armament System Maintenance Trainer, interface to the Extendable Integrated Support Environment to support software maintenance, and development of a Gunship Operations Training Device.
2. Schedule Changes: Qualification Test and Evaluation schedule slipped six months to accommodate completion of software development prior to flight testing. Required Assets Available, Initial Operational Capability, and Full Operational Capability delayed because of late aircraft deliveries and ability to provide operational sustainment.
3. Cost Changes: Funding is adjusted to support aircraft due to late Qualification Test and Evaluation completion and development of added technical content.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: 3326      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

**F. (U) ACQUISITION PROGRAM DOCUMENTATION:**

- (U) Program Management Directive 6235(8), 27 Oct 1993.
- (U) Headquarters Military Airlift Command (MAC) System Operational Requirements Document (ORD) 06-87-1-III, 14 May 1991 (S, N/F, WINTEL).

**G. (U) RELATED ACTIVITIES:** There is no unnecessary duplication of effort within the Department of Defense. PE 1160404BB, (SO Tactical Systems Development), Project S800, "SOP Munitions Advanced Development", develops Gunship munitions.

**H. (U) OTHER APPROPRIATION FUNDS:** Not Applicable.

**I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS:** Not Applicable.

**J. (U) MILESTONE SCHEDULE:**

- (U) AC-130U:
  - (U) Complete Combined QT&E/QOT&E      Jun 94
  - (U) Required Assets Available (RAA)      Sep 94
  - (U) Initial Operational Capability      Mar 95
  - (U) Full Operational Capability      FY 00
  - (U) Gunship Avionics Integration Trainer Operational      FY 99

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

(U) Armament System Maintenance Trainer Operational

Project Number: 3326

Budget Activity: 7

FY 00

Date: February 1994

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95

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: 3642

Date: February 1994

Budget Activity: 7

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
AIRCREW TRAINING SYSTEM (ATS)	19,307	24,697	38,615	17,512	4,474	257	246	0	208,590

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project will develop an integrated, state-of-the-art SOF aircraft, ground-based Aircrew Training System (ATS) to support initial aircraft, mission, and special qualification, continuation training, upgrade training, and combat mission rehearsal requirements for MC-130E, MC-130H, AC-130U, AC-130H, MH-53J, HC-130, and MH-60G. This project funds only the MC-130s. Other aircraft will be considered as funds become available. The ATS requirement was driven by the lack of formal schools for the majority of SOF crew members represented in the seven AFSOF aircraft and the absence of multi-aircraft, integrated, real-time combat mission rehearsal capability for SOF aircrews. Existing training rehearsal restrictions caused by airspace/weather, critical mission safety, and security consideration require a capability to rehearse extremely sensitive missions of the highest national priority in other than actual aircraft. Increasing operational tasking, joint maneuver training, and also the extensive crew member training workload for initial, continuation, mission, special mission and upgrade training for the 50 crew positions in the seven AFSOF aircraft have all contributed to the need for this comprehensive, ground training capability. Decreasing crew member experience levels in all crew positions also exacerbates the need for this capability. SOF ATS is the cost effective approach for providing training and fixed site aircrew integrated mission rehearsal capability. The solution to this multi-faceted problem is a contractor operated and maintained SOF aircrew training system composed of weapon system trainers (WSTs), mission rehearsal devices (MRDs), part task trainers, computer based training equipment, logistics support packages, courseware, and contractor provided instruction for all crew members of each aircraft. The system will provide a mix of academics, simulator training, and aircraft flight training to produce combat qualified

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development  
Project Number: 3642  
Budget Activity: 7  
Date: February 1994

crew members that are guaranteed by the contractor. This system will also provide combat mission rehearsal capability allowing SOF aircrews to rehearse highly classified, real-world SOF missions of the highest national priority within 48 hours of tasking by National Command Authority. With the CINCSOC validation of USSOCOM JSORD 001-91 in Aug 91, the SOF ATS became a joint Air Force/Army requirement for joint Air Force/Army mission rehearsal.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) Early delivery of Load Master Part Task Trainer (OCT/\$700K).
- (U) Delivered early portion of data base generation system (MAR/\$1,500K).
- (U) Continued SOF ATS development to include contract restructuring, software critical design reviews, software coding, hardware fabrication, testing of software, hardware, flight stations courseware development, data base generation system, and mission rehearsal imagery support system (OCT/\$16,600K).
- (U) Program Management Office support (1-4QTR/\$507K).

**(U) FY 1994 Plans:**

- (U) Continue Combat Talon II simulator development (1-2QTR/\$19,500K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: 3642

Date: February 1994

Budget Activity: 7

- (U) Deliver data base generation system (3QTR/\$1,000K).
- (U) Complete Combat Talon I/II courseware (4QTR/\$2,000K).
- (U) Program Management Office support (1-4QTR/\$2,197K).
- (U) FY 1995 Plans:
- (U) Combat Talon II full course small group tryouts (3QTR/\$1,000K).
- (U) Combat Talon II Weapon System Trainer (WST) delivery (2QTR/\$5,000K).
- (U) Continue Combat Talon I WST and Mission Rehearsal Device development (1QTR/\$29,000K).
- (U) Program Management Office support (1-4QTR/\$3,615K).

(U) Program to Completion:

- (U) Combat Talon II Mission Rehearsal Device (MRD) delivery.
- (U) Combat Talon I MRD delivery.
- (U) Combat Talon I WST delivery.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160404BB**      Project Number: **3642**      Date: **February 1994**  
PE Title: **Special Operations Tactical Systems Development**      Budget Activity: **7**

- (U) Conduct Training System Readiness Review, Mission Rehearsal System Demonstrations, and System Supportability Demonstration. Contractor assumes "Guaranteed Student" provisions of contract.
- (U) Complete SOF ATS development for Combat Talon II.

**D. (U) WORK PERFORMED BY:** Aeronautical Systems Center, Training System Program Office (ASC/YTS), Wright-Patterson AFB, OH. and Loral Defense Systems, Akron, OH.

**E. (U) COMPARISON WITH FY 1994 DESCRIPTIVE SUMMARY:**

**Narrative Description of Changes**

1. **Technical Changes:** None.
2. **Schedule Changes:** No significant schedule changes have occurred.
3. **Cost Changes:** Funding increased in specific year but decreased in total to align program requirements with approved program restructure to accommodate funding only MC-130s.

**F. (U) ACQUISITION PROGRAM DOCUMENTATION:** Military Airlift Command (MAC) Statement of Need (SON) 05-83, Special Operations COMBAT TALON II/COMBAT TALON I Improvements, 21 Jan 1983; USSOCOM JSORD 001-91,

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: 3642      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

SOF Aircrew Training System, 23 Aug 91; SOF ATS Program Memorandum Directive (PMD) 7268(6) B1011F, 17 Mar 92, (as amended); SOF-ATS Concept of Operations Document; SOF-ATS Interface Control Document.

**G. (U) RELATED ACTIVITIES:** There is no unnecessary duplication of effort within the Department of Defense, because SOF ATS has utilized existing, surplus training devices, excess aircraft parts and existing courseware wherever possible to significantly reduce program cost. SOF ATS is being designed in close coordination with the SOP Planning And Rehearsal System (SOPARS) program office. To the maximum extent possible ATS technology and databases will be utilized in FY94 and 95 when SOPARS begins its major development work.

**H. (U) OTHER APPROPRIATION FUNDS:** Not Applicable.

**I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS:** Not Applicable.

**J. (U) MILESTONE SCHEDULE:**

(U)	Production Authorization Milestone	May 1991
(U)	Senate Appropriations Committee and OASD(SO/LIC) Restructure Review/Guidance	Mar 1993
(U)	MC-130H Weapon System Trainer Delivery	Q2 FY 1995
(U)	MC-130E Weapon System Trainer Delivery	Q2 FY 1996
(U)	MC-130E and MC-130H Msn Rehearsal Dev Delivery	Q2 FY 1997
(U)	System Supportability Demonstration	Q2 FY 1997

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101

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102

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160404BB**      Project Number: **S350**      Date: **February 1954**  
 PE Title: **Special Operations Tactical Systems Development**      Budget Activity: **7**

**A. (U) RESOURCES:** (\$ in Thousands)

<u>Project's Popular Name</u>	<u>FY 1993 Actual</u>	<u>FY 1994 Estimate</u>	<u>FY 1995 Estimate</u>	<u>FY 1996 Estimate</u>	<u>FY 1997 Estimate</u>	<u>FY 1998 Estimate</u>	<u>FY 1999 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
	SPECIAL OPERATIONS FORCES PLANNING AND REHEARSAL SYSTEM (SOPPARS)	9,736	5,813	2,201	6,488	3,691	2,871	2,067	Cont.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** SOPPARS is a joint acquisition program for the United States Special Operations Command (USSOCOM). This program will develop an automated image/knowledge based mission planning capability to support Special Operations Forces (SOF). SOPPARS will be the SOF version of the Air Force Mission Support System (AFMSS). The SOPPARS will be provided to the Air Force Special Operations Command (AFSOC) and the aviation component of the United States Army Special Operations Command (USASOC) - the 160th Special Operations Air Regiment (SOAR). SOPPARS will automate mission planning thus allowing SOF commanders and crews/teams to plan and respond quickly to missions of national importance as well as day-to-day taskings. To accomplish this task, SOPPARS will provide a multi-command level planning capability at major SOF headquarters, theater headquarters, SOF Forward Operating Bases and Forward Operating Locations. SOPPARS will also provide portable subsystems and mission execution support products for use by crews/teams deployed to operational locations. Present aviation mission planning capabilities cannot adequately support the stated mission element need. Existing systems lack sufficient scope and detail for planning SOF operations. Specifically, existing systems lack sufficient processing speed and flexibility, storage capacity, growth potential, graphics (both on-screen and hard copy output), image processing and storage, and processing of combat planning folder data in a timely manner. They also lack near-real-time access to national/tactical level data bases and the capability to update data in a timely fashion, along with the means to effectively process the data during mission planning. The mobility, complexity, quantity, and lethality of enemy threats dictate automated data input and systems that can be interfaced via electronic communication systems throughout the SOF

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Project Number: S350      Date: February 1994  
Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

community. The SOPARS effort meets the joint requirement to ensure interoperability and standardization of the SOP mission planning process.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) Awarded SOPARS Phase I contract (DEC/\$2,500K).
- (U) Continued SOPARS Phase II contract (DEC/\$2,500).
- (U) Delivered initial version of ground/maritime system for government baseline field testing (MAR).
- (U) Awarded contract for common Aircraft/Weapons/Electronics Interface (MAR/\$1,200K).
- (U) Conducted preliminary operational suitability assessment (APR/\$542K).
- (U) Continued Argonne National Laboratory prototype development (APR/\$500K).
- (U) Completed source selection for Ground/Maritime System. Contract award was not executed. Ground/Maritime portion of SOPARS program canceled.
- (U) Awarded Common Mapping Standard development contract (2QTR94/\$703K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Program Element: 1160404BB

Project Number: S350

PE Title: Special Operations Tactical Systems Development

Budget Activity: 7

(U) Program Management Office support (1-4QTR/\$1,791K).

**(U) FY 1994 Plans:**

(U) SOFPARS Phase I deliveries start (1QTR).

(U) Enhance the Air Force Mission Support System (AFMSS) Core functions to support all Air Force airlift, bomber, electronic combat, fighter, reconnaissance, rescue, tanker aircraft and USSOCOM aviation assets; continue development of software, and integrate additional aircraft/weapons/electronic (A/W/E) systems mission planner modules (2QTR/\$2,100K).

(U) Release Phase I Block C1.0 software (3QTR).

(U) Continue development of Block C2.0 software (1-4QTR/\$1,300K).

(U) Begin development of Block C3.0 software (4QTR/\$1,113K).

(U) Begin integration of MH-60G/K/L and MH-47D/E mission planning modules (2QTR/\$1,300K).

**(U) FY 1995 Plans:**

(U) Develop one-man portable mission planning hardware (2QTR/\$201K).

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: S350

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

- (U) Continue development of Block C3.0 software (1QTR/\$1,000K).
- (U) Continue A/W/E and Data Transfer Device development and aircraft integration (1QTR/\$1,000K).
- (U) Program to Completion:
- (U) Continue development and enhancement of portable mission planner (FY96-97).
- (U) Integrate and incorporate all SOP aircraft with aviation planner and annual software upgrade releases (FY96-99).

- (U) Complete AFMSS Block enhancement to satisfy SOF, Air Combat Command (ACC), and Air Mobility Command (AMC) requirements (FY96-FY99).

- (U) Complete AFMSS Block B/C hardware deliveries (FY96-FY99).

- (U) Complete Aircraft/Weapons/Electronic Systems mission planner and Data Transfer Device module development and aircraft integration (FY96-97).

- (U) Work Performed By: The SOPPARS Program is being managed by the Directorate for Mission Planning Systems (ESC/YV), Electronics Systems Center, Hanscom AFB, MA.

- (U) Related Activities: PE 28006F, (Air Force Mission Support Systems, AFMSS). SOPPARS will initially piggyback on the AFMSS contract in order to meet those aviation requirements that are common to the Air Combat

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S350

Budget Activity: 7

Date: February 1994

Command (ACC) and Air Mobility Command (AMC) as well as requirements unique to SOP. The Request for Proposal (RFP) was released in Sep 90. The contract was awarded in Apr 91. Associate contract agreements are in place with the AFMSS contractor and the SOP Aircrew Training System (SOFATS) prime contractor to ensure compatibility/ interoperability. There is no unnecessary duplication of effort within the Department of Defense.

(U) Other Appropriation Funds: Not Applicable.

(U) International Cooperative Agreements: Not Applicable.

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108

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: S375

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

**A. (U) RESOURCES: (\$ in Thousands)**

Project Title Popular Name	FY 1993 Actual	FY 1994 Estimate	FY 1995 Estimate	FY 1996 Estimate	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	To Complete	Total Program
SPECIAL OPERATIONS WEAPONS SYSTEMS ADVANCED DEVELOPMENT	1,272	0	0	0	0	0	0	0	37,778
		2,226	0	0	0	0	0	0	

• FY93 projects S300 (\$500K) and the weapons sub-projects of SO416 (\$772K) have been combined to form this project.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** Special Operations Forces (SOF) often deploy as small, independent, quick reaction, foot-mobile teams independent of primary logistics support. Existing weapons and fire control are frequently too heavy to use under these conditions. This project provides for developing and testing of specialized, lightweight individual weapons, fire control and tactical surveillance equipment to meet the unique requirements of SOF. Sub-projects include:

- (U) Sniper Rifle Night Vision Image Intensification System. Night vision capability for sniper rifle systems.
- (U) M4 Carbine SOF Modifications Kit. SOF variant (Picatinny Rail and fully automatic) of standard Army M4 Carbine. Allows mounting of optional accessories (up to 30 different functions/capabilities) such as laser pointer, active aiming module, and night vision/thermal imaging devices and provides fully automatic capabilities.
- (U) Offensive Handgun. Standardizes Navy SOF handgun requirements. Provides a handgun that is more reliable and better suited for offensive actions (close quarter battle and sentry incapacitation) than the current DoD personnel defensive weapon.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: S375

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) Sniper Rifle Night Vision Image Intensification System: Initiated operational testing (AUG/\$500K).
- (U) SOF Offensive Handgun: Continued developmental testing and prepared for Milestone II (SEP/\$772K).

**(U) FY 1994 Plans:**

- (U) M4 Carbine SOF Modification Kit: Using Government agencies, integrate and modify as necessary the following capabilities to the M4 Carbine Picatinny rail to allow for mounting as optional accessories (up to 30 different functions/capabilities) laser pointer, active aiming module, or night vision/thermal imaging devices and also fully automatic capabilities (1QTR/\$529K).
- (U) Complete Sniper Rifle Night Vision Image Intensification system operational testing (2QTR).
- (U) SOF Offensive Handgun: Enter engineering and manufacturing development, contractor delivers 30 refined prototype systems and technical data package, perform technical evaluation and operational evaluation, and conduct Milestone III review (1-4QTR/\$1,697K).

- (U) FY 1995 Plans: None.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date: February 1994**

**Project Number: S375**

**Budget Activity: 7**

**Program Element: 1160404BB**

**PE Title: Special Operations Tactical Systems Development**

(U) Project to Completion: Not Applicable.

(U) Work Performed By: Naval Surface Warfare Center, Crane, IN; Armament Munitions and Chemical Command, Rock Island, IL; Armament Research and Engineering Center, Picatinny Arsenal, NJ; Colt Manufacturing Company, Hartford, CT; Hechler and Koch, Sterling, VA.

(U) Related Activities: There is no unnecessary duplication of effort within the Department of Defense.

(U) Other Appropriation Funds: Not Applicable.

(U) International Cooperative Agreements: Not Applicable.

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112

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S650  
Budget Activity: 7

Date: February 1994

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
QUIET KNIGHT	0	6,969	0	0	0	0	0	0	6,969

**B. (U) BRIEF DESCRIPTION OF PROJECT:** QUIET KNIGHT is funded only in FY94. The redefined project scope now mirrors efforts under Aviation Advanced Systems Development, project number SF100. The SF100 investigates developed and maturing technologies that have direct application for development and procurement of specialized equipment to meet unique SOF aviation requirements.

**C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:**

- (U) FY 1993 Accomplishments: Not Applicable.
- (U) FY 1994 Plans: Conduct avionics architecture evaluations, studies, and analyses for on/off board sensors, displays, and systems being developed by the Services and other Agencies (1-4QTR/\$6,969K).
- (U) FY 1995 Plans: None.
- (U) Program to Completion: Not Applicable.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date: February 1994**

**Project Number: S650**

**Budget Activity: 7**

**Program Element: 1160404BB**

**PE Title: Special Operations Tactical Systems Development**

**(U) Work Performed By: USSOCOM Special Operations Research, Development, and Acquisition Center, MacDill AFB, FL. Contractor(s) to be determined.**

**(U) Related Activities: The BTI QUIET KNIGHT Program. There is no unnecessary duplication of effort.**

**(U) Other Appropriation Funds: Not Applicable.**

**(U) International Cooperative Agreements: None.**

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Project Number: S675      Date: February 1994  
 Budget Activity: 7

Program Element: 1160404BB  
 PE Title: Special Operations Tactical Systems Development

**A. (U) RESOURCES:** (\$ in Thousands)

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SUSTAINMENT ENGINEERING SUPPORT	0	9,615	14,405	15,239	14,234	14,201	14,169	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project provides for a rapid response capability to support the Air Force SOF fixed and rotary wing aircraft. The purpose is to correct system deficiencies, improve asset life, and enhance mission capability through the means of feasibility studies and engineering analysis. The project provides for the engineering required to maintain and improve the design and performance integrity of the aircraft to include aircraft support systems, subsystems, equipment, and embedded computer systems software as they relate to the maintenance, overhaul, repair, quality assurance, modifications, material improvements and service life extensions. Scarce organic engineering resources and SOF rapid response requirements are the basis for sustainment engineering. Prior to FY 1994 sustainment engineering was funded in the O&M appropriation. Sub-projects include:

- (U) Aircraft Structural Integrity Program. Directed by AFR 80-13, this continuation program is intended to improve aircraft design; diagnose possible structural failures; establish a basis for corrective action, and predict operational life expectancy of the aircraft.
- (U) Flight Test Support. This continuation program determines the acceptability of the integration, installation, and operation of new or upgraded systems and/or equipment. To date, this program has resulted in the documentation of over two hundred service reports on deficiencies related to the installation of new equipment.



**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date:** February 1994

**Project Number:** S675

**Budget Activity:** 7

**Program Element:** 1160404BB

**PE Title:** Special Operations Tactical Systems Development

- (U) Electromagnetic Environmental Effects. This continuation program ensures Electromagnetic Compatibility between the aircraft, its on-board systems, and the external Electromagnetic Environment the aircraft will be exposed to during SOF missions.
- (U) Reliability & Maintainability (R&M) Program. Using Mercer Engineering Research Center, this continuation program is responsible for a major portion of the data required by the SOF Directorate for weapon system R&M analysis and planning. R&M analysis is used to identify out of cycle maintenance updates and poor performance items requiring technical investigations.
- (U) Aircraft Vibration Monitoring System. This program provides an on-board vibration monitoring system to enable continuous tracking of selected dynamic components inside the airframe structure.
- (U) Contractor Technical Support Program. This program provides for continuing contractual engineering support from the aircraft manufacturer to insure effective and timely responses to deficiencies identified during aircraft operations.
- (U) Mishap Investigation Program. During mishap investigations, this program funds for Tear Down Reports on aircraft components. These reports are used to evaluate the pre and post crash condition of the components to determine root cause of the mishap.
- (U) Correction Program for Service Revealed Deficiencies. This program provides for engineering services required to analyze parts and systems that failed during aircraft operations; design of a "fix" for the problem, and then implement a plan of correction.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB  
PE Title: **Special Operations Tactical Systems Development**  
Project Number: S675  
Budget Activity: 7  
Date: February 1994

- (U) System Upgrade Program. This program provides for engineering activity required to assure complete integration of systems/capabilities to eliminate mechanical/electrical interferences and engineering studies to determine the feasibility and life cycle cost of replacing aging electronic systems with state of the art systems.
- (U) Embedded Computer Software. Project provides engineering assistance for analyzing and providing recommendations for enhancements; correction of deficiencies; and/or general upgrade of the Operational Flight Programs embedded in Special Operations Forces Aircraft as well as avionics subsystems located on the aircraft.

**C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:**

- (U) FY 1993 Accomplishments: Not Applicable.
- (U) FY 1994 Plans:
  - (U) Provide system engineering support for SOF fixed and rotary wing aircraft (1QTR/\$3,550K).
  - (U) Provide software support for aircraft and aircraft support systems and subsystems (2QTR/\$3,950K).
  - (U) Provide engineering support for the integrated support facility (3QTR/\$2,115K).
- (U) FY 1995 Plans:
  - (U) Continue aircraft structural integrity program efforts (1QTR/\$4,500K).

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: S675

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

- (U) Continue flight test support for the MH-60G and MH-53J aircraft (1QTR/\$3,250K).
- (U) Continue Electromagnetic Environmental Effects testing on the MH-60G and MH-53J aircraft (1QTR/\$1,361K).
- (U) Continue the Mercer Engineering Research Center's Reliability and Maintainability Program (1QTR/\$2,344K).
- (U) Begin vibration analysis, testing, and evaluation on SOF aircraft (1QTR/\$350K).
- (U) Continue contractor and depot technical support at Pensacola Naval Air Station for the MH-53J and MH-60G Mod lines (1QTR/\$1,550K).
- (U) Begin qualification testing on the MH-60G fuel pumps (2QTR/\$500K).
- (U) Begin system upgrade reviews on the ARC-210 radio and MH-60G caution advisory panel (2QTR/\$550K).

(U) Project to Completion: This is a continuing project.

(U) Work Performed By: WR-ALC/LU SOF Management Directorate, Robins AFB, GA; E-Systems, Ft. Worth, TX; Lockheed Aircraft Corporation, Aircraft Systems Division, Ontario, CA; Georgia Tech Research Institute, Atlanta, GA; TCS Design and Management Services, Warner Robins, GA; Mercer Engineering Research Center, Macon, GA; ARINC, Annapolis, MD; Systems Research Laboratory, Dayton, OH; Sikorsky Aircraft, Stratford, CT; Pensacola NAS, Pensacola, FL; Naval Surface Warfare Center, Dahlgren, VA.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S675

Budget Activity: 7

Date: February 1994

- (U) Related Activities: There is no unnecessary duplication of effort within the Department of Defense.
- (U) Other Appropriation Funds: Not Applicable.
- (U) International Cooperative Agreements: Not Applicable.

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120

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: S700      Date: February 1994  
 PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SPECIAL OPERATIONS FORCES COMMUNICATIONS ADVANCED DEVELOPMENT	3,880*	7,714	4,467	687	705	750	743	Cont.	Cont.

\* Available funds are \$4,506K. To better portray joint Special Operations Communications efforts, Projects D474 and SF300 have transitioned to this project. FY93 funds were previously detailed as follows: D474 \$3,896, SF300 \$5. Also, \$626K SEAL communications funded in project SO417 is reported in this summary.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project provides for development and testing of selected items of specialized equipment to meet the unique requirements of Special Operations Forces. Specialized equipment will permit small, highly trained forces to conduct operations across the entire spectrum of conflict. These operations are generally conducted in harsh environments, for unspecified periods, in locations requiring small unit autonomy. Special Operations Forces must infiltrate by land, sea, and air to conduct unconventional warfare, direct actions, or deep reconnaissance operations in denied areas against insurgent units, terrorists, or highly sophisticated threat forces. The requirement to operate in denied areas controlled by a sophisticated threat mandates that Special Operations Forces systems remain technologically superior to threat forces to ensure mission success. Sub-projects include:

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S700

Date: February 1994

Budget Activity: 7

- (U) Army Special Operations Command Network (ASOCNET). ASOCNET is a series of command, control, and communications (C3) enhancements to the existing Army SOf C3 infrastructure that will provide secure data networking in garrison or remote field locations.
- (U) AN/PRC-117, B to C Upgrade. Provides SINGGARS electronics communications countermeasures capability to this Naval Special Warfare radio system.
- (U) Lightweight Thermal Imager. Provides night vision thermal imager equipment for SEAL Teams.
- (U) Waterproof Night Vision Goggles. Provides waterproofing for SEAL night vision goggles.
- (U) Improved Special Operations Forces HF Manpack (formerly called HF Radio). A lightweight manpack radio system which contains automatic link establishment and embedded communications security.
- (U) KN-200 Optics. Provides a night vision weapons scope.
- (U) Special Operations Power Sources. A family of three electrical power sources and interconnecting appliques used to recharge SOf rechargeable batteries.
- (U) Improved Lightweight Satellite Antenna. Lightweight UHF satellite antenna which is ruggedized, high gain, low profile state-of-the-art, and is transportable in a battle dress uniform cargo pocket.

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### FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S700

Date: February 1994

Budget Activity: 7

- (U) Naval Special Warfare Task Unit Communications System. Naval Special Warfare Task Unit Van that provides the capability to receive and relay tactical command and control information. This permits the Task Unit Van to establish and maintain mobile and fixed communications.
- (U) Miniature Multiband Beacon. Self-contained, lightweight, manportable, navigation beacon used for radar navigation, offset beacon bombing, and all-weather, drop-zone marking. Weighs less than 12 pounds and is less than 400 cubic inches.
- (U) Special Forces Base Station (SFBS). SFBS is a small, transportable, low profile, high-burst rate, base station with the capability of being deployed in C-130 and C-141 aircraft.
- (U) Naval Special Warfare Tactical Radio System (NSWTRS), formerly called Drop in Communications Package Rigid Hull Inflatable Boat Communications Box. Consists of a helmet with ballistics protection and waterproof drop-in communications pack capable of housing up to five radios and associated cryptographic equipment, and intercom system to crew.
- (U) SOF Tactical Assured Connectivity (formerly called Tactical C4I Mod). Is an integrated and balanced suite of comm systems designed to support the high-capacity, digital, secure, interoperable, transmission and switching requirements of emerging C4 and intelligence systems.
- (U) Mobile Communications. A portable shelter containing an integrated communications suite capable of mounting on a 463L aircraft pallet or a High Mobility Motor Vehicle.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S700

Date: February 1994

Budget Activity: 7

(U) SOF Development Efforts. Provides for the direct support of documentation for development of products, development testing and operational evaluation of systems.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) Army Special Operations Command Network (ASOCNET): Completed source selection evaluation. Awarded RDT&E contract and conducted analysis of existing systems, requirements, and system design. Demonstrated/validated concept exploration and definition critical technologies (3QTR/\$975K).
- (U) AN/PRC-117 B to C Upgrade: Conducted Critical Design Review for MS III decision, and transition to procurement of low-rate initial production units (4QTR/\$311K).
- (U) Lightweight Thermal Imager: Conducted MS I/III decision and transitioned to procurement (JUL/\$42K).
- (U) Water Pressure Proof Night Vision Goggles: Conducted MS I/III decision and transitioned to procurement (3QTR/\$42K).
- (U) Improved Special Operations Forces HF Manpack: Prepared program documentation for Milestone II decision (JUL/\$150).
- (U) KN-200 Night Optics: Transitioned to procurement (3QTR/\$42K).

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S700

Date: February 1994

Budget Activity: 7

- (U) Special Operations Power Sources (SOPS): Convened MS I/III In Process Review, obtained production approval. Awarded SOPS contract for 781 standard systems. Completed SOPS TECOM Technical Tests (Limited Production Urgent). SOPS Type Classification standard approval (2QTR/\$308K).
- (U) Improved Lightweight Satellite Antenna (ILSA): Performed the Market Survey, developed the ILSA Acquisition Strategy, completed Concept Formulation phase, and started development of the Procurement Data Package. Initiated Market Survey to determine potential vendors of suitable equipment (3QTR/\$169K).
- (U) Naval Special Warfare (NSW) Task Unit Communications System: Completed prototype engineering development, conducted technical/customer testing. Prepared documentation package for Milestone II Acquisition Review Board (3QTR/\$50K).
- (U) Tactical Radio System: Reviewed program requirements and prepared Acquisition Strategy for the NSW Combatant Craft Radio Control/Intercom (RC/I) System. Initiated all initial program documentation for the SOPS NSW Drop in Communications Package (DICP) and RC/I; including, Acquisition Plan, Integrated Program Summary, Life Cycle Cost Analysis, Integrated Logistics Support Plan, and Test and Evaluation Master Plan. Preliminary Design Review for the NSW DICP, prepared documentation package for the NSW DICP and RC/I. Conducted Critical Design Review for NSW DICP and MS II Review. In process of preparing documentation for release Request For Proposal and Market Investigation for NSW RC/I to ensure RFP reflects current technology, reliability, and associated costs. (3QTR/\$100K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date:** February 1994

**Project Number:** S700

**Budget Activity:** 7

**Program Element:** 1160404BB

**PE Title:** Special Operations Tactical Systems Development

- (U) **Miniature Multi-Band Beacon:** Completed prototype engineering development, continue technical testing and customer testing and prepare for field test, procurement data package, and documentation for Milestone III (1-4QTR/\$2,067K).
- (U) **Special Forces Base Station (SFBS):** Continuing Market Survey, in process of development of Concept Formulation Package, developing an Acquisition Strategy, generate Life Cycle Cost Estimate and initiating of Reliability/Availability/Maintainability (JUL/\$250K).
- (U) **FY 1994 Plans:**
  - (U) **Army Special Operations Command Network:** Mature and finalize design, define non-developmental item hardware procurement. Test and evaluate system and conduct MS III Acquisition Review Board(3QTR/\$5,179K).
  - (U) **Naval Special Warfare Tactical Radio System:** Complete prototype engineering development, conduct technical testing, seek MS III approval to enter production phase (3QTR/\$341K).
  - (U) **Special Forces Base Station:** Initiate and conduct MS I, release Request For Proposal, conduct Source Selection Evaluation Board, and develop prototype of systems design, fabrications, integration, and conduct demonstration/validation test. Continue integrated logistics support, Computer Resources Management Plan, and preparation for milestone decision (3QTR/\$975K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160404BB**

PE Title: **Special Operations Tactical Systems Development**

Project Number: **S700**

Budget Activity: **7**

Date: **February 1994**

- (U) **Improved Lightweight Satellite Antenna** : Prepare technical program data package, conduct MSI/II. Validate manufacturing and production process, Test and Evaluate (2QTR/\$732K).
- (U) **SOF Tactical Assured Connectivity**: Initiate development of programmatic documentation required for NDI Milestone I/III decision leading to Procurement in FY95 (3QTR/\$341K).
- (U) **Mobile Communications**: Conduct market survey for integrated AFSOF Mobile Communications Package. Develop Acquisition Strategy; conduct Life Cycle Cost Estimates; and determine critical system characteristics for MS O/II decision, design prototype for procurement in FY 95 (3QTR/\$146K).
- (U) **FY 1995 Plans**:
  - (U) **Special Forces Base Station**: Initiate and conduct Milestone II engineering and manufacturing development, mature and finalize selected design, validate manufacturing and production process, and conduct operational evaluation of system. Prepare and conduct Milestone III decision, Production and deployment (3QTR/\$3,639K).
  - (U) **SOF Development Efforts**: Provides funding for direct support of documentation, studies, evaluation and analysis to initiate the development of products, developmental testing and operational evaluation of systems to support SOF (3QTR/\$828K).
- (U) **Project to completion**: This is a continuing project.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development  
Project Number: S700  
Budget Activity: 7  
Date: February 1994

(U) Work Performed By: In-house development organizations are U.S. Army Communications and Electronics Command, Ft. Monmouth, NJ; Naval Research Laboratory, Washington, DC; Naval Surface Warfare Center, Crane Division, Crane IN; and Naval Electronic Systems Engineering Activity, St. Indigoes, MD. Major contractors are: Barrymore Research Corp., Sunnyvale, CA; Motorola Co., Inc., Scottsdale, AZ; SSSDS, Denver, CO; and Harris Corp., Melbourne, FL; Department of Energy, Idaho.

(U) Related Activities: There is no unnecessary duplication of effort within the Department of Defense.

(U) Other Appropriation Funds: Not Applicable.

(U) International Cooperative Agreements: Not Applicable.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: S800      Date: February 1994  
 PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SOF MUNITIONS ADVANCED DEVELOPMENT	14,939*	14,648	9,540	8,844	4,007	5,139	2,002	Cont.	Cont.

\* FY93 projects D489, SF400, and the munitions sub-projects of SO416 and S300 have been combined to form this project. FY93 funds above were previously detailed as follows: D489 \$9,821, SF400 \$3,927, SO416 \$691, and S300 \$500.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project provides for developing and testing preplanned product improvements to selected, specialized munitions and equipment to meet unique SOF requirements. Sub-projects include:

- (U) Improved 25mm Ammunition. The AC-130U 25mm gun system utilizes high explosive incendiary (HEI) ammunition to provide effective suppressive firepower. Available HEI ammunition does not meet present gunship requirements for increased standoff ranges. This project modifies a 25mm round by replacing the current chemical fuze with a superquick fuze to meet increased standoff requirements and achieve point detonation. Tests for safety/reliability as well as operational flight test evaluations are included.
- (U) Improved 40mm Ammunition. The BOFORS L-60 40mm gun system is used to provide precise firepower against light armored vehicles. This project develops a more effective 40mm round to successfully engage and defeat light armored vehicles. A safety improvement is needed over the current MK-27 fuze which is prone to fail and is a safety

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S800  
Budget Activity: 7

Date: February 1994

hazard. This project will develop, test, and evaluate a BOFORS and an Alliant Tech replacement fuze for 1.4 million rounds.

- (U) Improved 105mm Ammunition. The AC-130 105mm Howitzer gun system is intended to provide lethal firepower against light armor and hardened targets. This effort will evaluate candidates to modify or develop lethality improvements to include fuzing, penetration, propulsion, and warhead improvements.
- (U) Lethality Enhancements. The AC-130 gunship requires munitions that can be fired from extended ranges and still be effective against hardened targets. Candidate improved standoff weapons may exist in the current inventory and with some modification, be effective by increasing survivability or, they may be identified as having application for further development. Also included in this project is an effort to improve Light Detection and Ranging coherent laser radar technology to give the AC-130 ballistic wind measurement from the gunship to the target.
- (U) 40/105mm Blast Reduction. All non-SOF unique ammunition to date has proven to be unsuitable for aircraft use because of the inherent blast overpressure. This project evaluates alternative methods and muzzle devices for 40 and 105mm guns to reduce said blast and overpressure while minimizing weapon signature. Blast reducers will further diminish technical risk for new ammunition developments by allowing increased muzzle energy and possibly permit some existing high energy ammunition to be used by SOF gunships.
- (U) Penetration Augmented Munition. Presently SOF has a limited capability to significantly damage concrete structures or pylons assigned as targets. This program develops a man portable, one step setup munition system with increased penetrating capability and greater warhead explosiveness.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Program Element: 1160404BB**

**Date: February 1994**

**PE Title: Special Operations Tactical Systems Development**

**Project Number: S800**

**Budget Activity: 7**

- (U) **Selectable Lightweight Attack Munition.** Develops a hand emplaced detonation device with various detonation methods (magnetic, command, timed, and infrared) to provide the capability to attack targets at a standoff distance up to 25 meters.
- (U) **Remote Activated Munitions System (RAMS).** Provides a capability to remotely control detonation of demolition charges or the remote operation of other items of equipment such as beacons, laser markers, radio functions, and weapons.
- (U) **SOF Enhanced Moldable Explosive Charge.** An improved formulation, higher energy density, for C-4.
- (U) **Demo Kit.** Equipment to attach, initiate and control explosives for SOF applications.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) **Improved 25mm Ammunition:** Completed development/modification and test of fuze (MAY/\$247K).
- (U) **Lethality Enhancements:** Initiated development of the capability for low cost/high payoff hardware solutions for increased standoff and improve delivery of munitions against lightly armored targets. Cancellation of Hellfire missile resulted in rescoping of lethality programs. New proposals received from Government laboratories and contracts will be issued for enhanced lethality assessments in early FY94 (NOV93/\$3,405).



## UNCLASSIFIED

### FY 1995 RDT&E DESCRIPTIVE SUMMARY

Date: February 1994

Program Element: 1160404BB

Project Number: S800

PE Title: Special Operations Tactical Systems Development

Budget Activity: 7

- (U) 40/105mm Blast Reduction: Complete 40mm blast reduction improvements and continue development of 105mm improvements in design/fabrication/testing to decrease muzzle overpressure and flash reduction. 40mm blast reduction improvements were completed early third quarter delaying 105mm efforts which resulted in program shifting to early FY94 completion (NOV93/\$966K).
- (U) Penetration Augmented Munition: Fabricated Penetration Augmented Munition hardware and initiated and continued engineering and manufacturing testing (1-4QTR/\$3,300K).
- (U) Selectable Lightweight Attack Munition: Fabricated hardware, completed user testing, completed technical testing, Milestone III In Process Review, Type Classify Standard (JUL/\$6,521K).
- (U) Remote Activated Munition System (RAMS): Initiated program, conducted Market Survey, and prepared documentation to support Development or Non-Developmental Item decision. Obtained RAMS prototype brassboard hardware, conducted demonstration testing, and completed initial operational testing (1-4QTR/\$500K).
- (U) FY 1994 Plans:
  - (U) 40/105mm Ammunition: Complete 105mm blast reduction improvements and evaluate Army and Navy developed ammunition for use on the AC-130 gunship (1-4QTR/\$2,905K).
  - (U) Lethality Enhancements: Continue development of improved standoff capability for the AC-130 gunship (1-4QTR/\$2,157K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160404BB**

PE Title: **Special Operations Tactical Systems Development**

Project Number: **S800**

Date: **February 1994**

Budget Activity: **7**

- (U) Penetration Augmented Munition: Conduct System Integration Test; Conduct Critical Design Review; fabricate production prototype hardware and initiate technical and user tests (1-4QTR/\$5,341K).
- (U) Selectable Light Weight Attack Munition: Complete technical tests, Milestone III In Process Review, and type classify standard (2QTR/\$1,931K).
- (U) Remote Activated Munitions System: Finalize design, fabricate and evaluate engineering hardware in Military environment, and initiate build of test hardware (1-4QTR/\$2,314K).

**(U) FY 1995 Plans:**

- (U) Lethality Enhancements: Evaluate and adapt advanced technologies for improving "1st Shot" hit capabilities (3QTR/\$2,210K). Adapt/modify existing U.S. Government and foreign services munitions for gunship employment (3QTR/\$2,404K).
- (U) Penetration Augmentation Munition: Complete technical and user testing; type classify PAM; and award production contract (1-4QTR/\$2,673K).
- (U) Remote Activated Munitions System (RAMS): Complete RAMS Technical Test/Operational Test (TT/OT); conduct Milestone III In Process Review; and type classify standard (1-4QTR/\$980K).
- (U) SOF Enhanced Moldable Explosive Charge (SEMEC): Initiate SEMEC program. Conduct worldwide survey; write request for proposal statement of work; and award RDT&E contract (2QTR/\$588K).

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: S800

Budget Activity: 7

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

- (U) SOF Demolition Kit (DEMOKIT): Initiate SOF DEMOKIT program. Conduct market survey and write statement of work (2QTR/\$685K).

(U) Program to Completion: This is a continuing program.

D. (U) WORK PERFORMED BY: AC-130 Munitions work is performed by Aeronautical Systems Center, SOF Munitions Program Office, ASC/YHB, Eglin AFB, FL. The Project Manager for Mines, Countermines and Demolitions (PM-MCD), Picatinny Arsenal, NJ is assigned the responsibility for landmine, countermine and explosive demolition development. The major supporting laboratory is the Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, NJ. The concept design was designed in-house by the ARDEC, Picatinny Arsenal, NJ. The major contractors employed at this time are: Alliant Techsystems Inc. at Hopkins and Edina, MN for Penetration Augmented Munition (PAM), Selectable Lightweight Attack Munition (SLAM), PGU-38U, and AAI, Hunt Valley, MD for TDFD and PGU-31B. In-house development for Remotely Activated Munitions System (RAMS) are to be accomplished by Army Research Lab, Adelphi, MD; Development contractors for SOF Enhanced Moldable Explosive Charge and Demolition Kit are to be determined.

E. (U) COMPARISON WITH FY 1994 DESCRIPTIVE SUMMARY:

Narrative Description of Changes

1. Technical Changes: EX51 and Time Delay Firing Device deferred in order to fund higher priority projects.
2. Schedule Changes: None.

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134

EXHIBIT PB-33B

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB

PE Title: Special Operations Tactical Systems Development

Project Number: S800

Date: February 1994

Budget Activity: 7

**3. Cost Changes: None.**

**F. (U) ACQUISITION PROGRAM DOCUMENTATION:**

- (U) Improved Munitions for the AC-130 Gunship - AFSOC MNS, 09 Nov 90.
- (U) AC-130 Gunship Advanced Munitions - AFSOC SON, Jan 91.
- (U) AC-130 Ammo - AFSUCON, 29 Jan 91.
- (U) 40mm APFSDS PGU-31/B for the AC-130 Gunship, ORD AFSOC SORD, 05 Feb 91.
- (U) 40mm PGU-31/B - Acquisition Procurement Baseline, 12 Aug 91.
- (U) PAM - JFKSWCS ROC, 16 Apr 91.
- (U) ESLAM/SLAM - JFKSWCS ROC, 15 Feb 90.
- (U) TDFD - JFKSWCS LTR RQMT, 24 Feb 84.
- (U) RAMS - JFKSWCS MNS (Remote Initiators), Nov 91.
- (U) RAMS - JFKSWCS-ORD, Feb 93 (in Draft).
- (U) ATFD/ALF MK56 Mod O OR 156-03-87, 04 Apr 87.
- (U) FD EX51 OR 152-03-87, 03 Apr 87.
- (U) FD EX51 Temp (REV 3), Jan 93.

**G. (U) RELATED ACTIVITIES: There is no unnecessary duplication of effort within the Department of Defense.**

**H. (U) OTHER APPROPRIATION FUNDS: Not Applicable.**

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FY 1995 RDT&E DESCRIPTIVE SUMMARY

Date: February 1994

Project Number: S800  
Budget Activity: 7

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development

I. (U) INTERNATIONAL COOPERATIVE AGREEMENTS: Not Applicable.

J. (U) MILESTONE SCHEDULE:

<u>Milestone Penetration Augmentation Munition (PAM)</u>	
ROC	3rd QTR FY91
Milestone I/II	3rd QTR FY91
Milestone III	2nd QTR FY95
First Unit Equipped (FUE)	1st QTR FY97

<u>Milestone Selectable Lightweight Attack Munition (SLAM)</u>	
ROC	2nd QTR FY90
Milestone I/II	3rd QTR FY90
Milestone III	2nd QTR FY94
Milestone III (TC-STD)	N/S
FUE	1st QTR FY95

<u>Milestone Remote Activated Munitions System (RAMS)</u>	
MNS	1st QTR FY92
<u>ORD</u>	In Draft
Milestone I/II	4th QTR FY93

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Program Element: 1160404BB**

**PE Title: Special Operations Tactical Systems Development**

**Project Number: S800**

**Budget Activity: 7**

**Date: February 1994**

**Milestone III  
FUE**

**3rd QTR FY95  
2nd QTR FY97**

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**137**

**EXHIBIT PB-33B**

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB      Project Number: S900      Date: February 1994  
PE Title: Special Operations Tactical Systems Development      Budget Activity: 7

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> Popular Name	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	To	Total
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	<u>Program</u>
SOF MISCELLANEOUS EQUIPMENT ADVANCED DEVELOPMENT	1,313	1,451	0	466	1,486	1,869	0	0	12,235

• FY93 projects D477 and D479 have been combined to form this project. FY93 funds above were as follows: D477 \$75 and D479 \$1,238.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project reduces detection and vulnerability of airdrop operations and airdrop aircraft to enemy air defenses, and to provide an improved airdrop resupply capability for special operations forces. The current focus is on increasing the accuracy, increasing the survivability of airdrop items; and increasing the operating envelope of personnel airdrop. This project develops, modifies, and tests lightweight specialized clothing and equipment required for special operations conducted in harsh environments over extended periods of time in areas where support base operations are not feasible. These items must be effective at extended ranges and ruggedized to accompany special operations forces in their air, land, and sea environment. Sub-projects include:

- (U) Aerial Resupply Accompanying Bundle System (ARABS) Material Change. A pre-planned product improvement that provides Global Positioning System compatibility to ARABS as well as an improved flare system.
- (U) High Speed Airdrop Container. Container used for high speed, low altitude resupply of materials up to 500 lbs from USAF fighter aircraft.



**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development  
Project Number: S900  
Budget Activity: 7  
Date: February 1994

- (U) Improved Night Observation Device. Integrated day/night image intensification scopes for both fire control and observation.
- (U) Automatic Ripcord Release. Safety device for high altitude, low opening and high altitude, high opening parachute operations.
- (U) Active Noise Reduction. Aircrew helmet/headset system for reducing aircraft noise, hearing loss, and noise induced fatigue. Increases speech communication intelligibility.
- (U) Lightweight Extreme Weather Shelter. Lightweight portable individual tent for use in arctic environments.
- (U) Light Vehicle Countermine Protection System. Add on kit to the HMMWV to enhance crew survivability against land mines.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

- (U) FY 1993 Accomplishments:
  - (U) Aerial Resupply Accompanying Bundle System (ARABS) Material Change. Awarded pre-planned product improvement R&D contract for the inclusion of GPS and improved flare system into the ARABS (SEP/\$141K).
  - (U) High Speed Airdrop Container. Requirement canceled due to changing mission requirements and world situation. Program close-out and document storage will include a drawing package (SEP/\$309K).

UNCLASSIFIED

FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160404BB  
PE Title: Special Operations Tactical Systems Development  
Project Number: S900  
Budget Activity: 7  
Date: February 1994

- (U) Automatic Ripcord Release. Conducted Milestone III In Process Review and awarded initial production contract. Becomes a stock funded item (MAY/\$143K).
- (U) Lightweight Extreme Weather Shelter. Completed Production Data Package documentation and manuals. preparation of commercial item description and type classification standard (AUG/\$75K).
- (U) Light Vehicle Countermine Protection System. Completed design development and testing of kits to meet urgent requirement (MAY).
- (U) Light Vehicle Countermine Protection System. Begin Phase 0 and Phase I acquisition activities for follow-on procurement. Late start due to these systems being declared as an urgent requirement late in FY93. Follow-on procurement will require formal Phase 0 and Phase I activities for compliance with DoD 5000.1. Cancellation of Aerial Resupply Accompanying Bundle System Global Positioning System and High Speed Airdrop Container has resulted in sufficient funds to support this requirement (2QTR94/\$645K).
- (U) FY 1994 Plans:
  - (U) Active Noise Reduction. Complete technology investigation and conduct testing to verify signal-to-noise muting for speech and other information-bearing sounds (4QTR/\$1,451K).
- (U) FY 1995 Plans: None.
- (U) Project to Completion: Begins and completes full scale development of an Improved Night Observation Device.

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Date: February 1994**

**Project Number: S900**

**Budget Activity: 7**

**Program Element: 1160404BB**

**PE Title: Special Operations Tactical Systems Development**

**(U) Work Performed By:** U.S. Army Natick Research and Development Center, Natick, MA; Naval Coastal Systems Center, Panama City, FL; U.S. Army Ft. Belvoir R&D Center, Ft. Belvoir, VA; Yuma Proving Ground, Yuma, AZ; Combat Systems Test Activity, MD; Eglin AFB, FL; Sandia National Laboratories, Albuquerque, NM; U.S. Army Armament Research, Picatinny Arsenal, NJ; U.S. Naval Ordnance Station, Indian Head, MD; and Para-Flite, Inc., Picatinny Arsenal, NJ; and Bose Corporation, Framingham, MA; Human Systems Center, Brooks AFB, TX; and Air Force Flight Test Center, Edwards AFB, CA.

**(U) Related Activities:** There is no unnecessary duplication of effort within the Department of Defense.

**(U) Other Appropriation Funds:** Not Applicable.

**(U) International Cooperative Agreements:** Not Applicable.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Budget Activity: 7  
Date: February 1994

Program Element: 1160405BB  
PE Title: Special Operations Intelligence Systems Development

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Number &amp; Title</u>	<u>FY 1993 Actual</u>	<u>FY 1994 Estimate</u>	<u>FY 1995 Estimate</u>	<u>FY 1996 Estimate</u>	<u>FY 1997 Estimate</u>	<u>FY 1998 Estimate</u>	<u>FY 1999 Estimate</u>	<u>Total</u>	
								<u>Complete</u>	<u>Program</u>
S400 SPECIAL OPERATIONS INTELLIGENCE RESEARCH AND DEVELOPMENT									
	<u>27,984</u>	<u>6,686</u>	<u>2,958</u>	<u>3,388</u>	<u>3,057</u>	<u>2,468</u>	<u>3,122</u>	<u>Cont.</u>	<u>Cont.</u>
Total		6,686	2,958	3,388	3,057	2,468	3,122	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF ELEMENT:** Projects in PE 1160405BB are in BA 7, Operational Systems Development. Projects in this BA and PE provide for identification, development, testing, and rapid procurement of selected SOF intelligence equipment to eliminate deficiencies in providing timely intelligence to deployed forces.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160405BB  
 PE Title: SOF Intelligence Research and Development  
 Project Number: S400  
 Budget Activity: 7  
 Date: February 1994

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SOF INTELLIGENCE RESEARCH AND DEVELOPMENT	27,984	6,686	2,958	3,388	3,057	2,468	3,122	Cont.	Cont.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project provides for the identification, development, and testing of selected SOF intelligence equipment to eliminate deficiencies in providing timely intelligence to deployed forces. The following distinct sub-projects address the primary areas of intelligence dissemination, sensor systems, integrated threat warning to SOF mission platforms, and tactical exploitation of national capabilities. Sub-projects include:

- (U) Special Operations Command Research, Analysis, and Threat Evaluation System (SOCRATES). SOCRATES provides a wide range of mission required automated intelligence and imagery support to HQ USSOCOM, component commands and operating forces as well as USCENCOM and components in garrison. SOCRATES, a Wide Area Network based multi-functional intelligence system, incorporates a variety of computers, data bases, intelligence communication systems, secure phones, facsimile equipment, imagery processing, secondary imagery dissemination and map handling equipment. SOCRATES provides SOF with unprecedented access to both national and specially-focused intelligence products, satisfying long-standing intelligence deficiencies identified in all five regional CINC Theater Intelligence Architectures. SOCRATES funding includes development and acquisition of the Man-Transportable SOCRATES to provide a rugged, deployable capability to the Forward Operating Base level. Product improvements are focused on integration of emerging Intelligence Community systems, technology, and standards into the SOCRATES architecture. Near term improvements are focused on implementation of UNIX-based Client Server

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Program Element: 1160405BB**

**PE Title: SOF Intelligence Research and Development**

**Project Number: S400**

**Date: February 1994**

**Budget Activity: 7**

Environment and integration of Department of Defense Intelligence Information System Management Board directed Joint Deployable Intelligence Support System standards.

(U) SOF Intelligence Vehicle (SOF IV). The SOF IV is a mobile, tactical, all-source intelligence processing and dissemination system. The SOF IV extends the Special Operations Command Research, Analysis and Threat Evaluation System architecture to the Joint Special Operations Task Force level, thereby permitting the receipt, processing, and manipulation of near-real-time intelligence information in order to produce highly tailored, accurate and timely intelligence products to support deployed SOF. The system employs a high mobility multi-purpose wheeled vehicle configured with a rigid wall, standard integrated command post shelter to house computer servers and communications equipment, and a tent extension for the remote operation of software products. It incorporates DoD Intelligence Information System and Joint Defense Intelligence Support Service (JDISS) standards in accordance with JCS direction, and permits automated interface to all theater-level Intelligence Data Handling System.

(U) SOF Imagery Receiver and Intelligence System (IRIS). SOF IRIS is a man-portable, "S" band intelligence terminal that will provide a method of receiving near-real-time imagery, via established communications paths, at field locations. The IRIS consists of a combined receiver/processor unit and antenna, with interfaces to existing/emerging secondary imagery dissemination systems. The system receives data conforming to National Imagery Transmission Formats using Tactical Communications Protocol 2; provides for the transfer of compressed or uncompressed files; uses encrypted communications; and can receive either sensitive compartmented information or collateral imagery products.

## UNCLASSIFIED

### FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160405BB

PE Title: SOF Intelligence Research and Development

Project Number: S400

Date: February 1994

Budget Activity: 7

- (U) Multi-mission Advanced Tactical Terminal (MATT). The MATT sub-project provides near-real-time operational intelligence information from national and tactical sources directly to SOF aircraft, ground-based units, and eventually maritime elements. The information will provide situational awareness, threat avoidance, and target acquisition, and will support mission planning. The MATT receiver/processor is a miniaturized, UHF, multi-channel receiver. It has embedded communications security and correlation, and programmable capability, including the potential incorporation of advanced cryptographic devices and transmit capabilities, which will transform the MATT into a highly integrated, miniaturized C4I system.
- (U) SOF Modular Remote Sensing System: This sub-project will provide the necessary research, development and testing of an advanced, modular receiver suite of intelligence equipment to be used by deployed SOF elements. Current technology will be adapted to achieve performance and light-weight application advantages over existing intelligence systems.
- (U) Communications Monitoring Equipment (CME). The CME project will develop, downsize, and procure highly specialized tactical communications monitoring equipment to meet SOF intelligence requirements.
- (U) Language Identification and Voice Identification Device (LIVID). The LIVID sub-project will develop and provide an integrated capability to quickly and accurately identify threat activity through speech identification technology.
- (U) Signal Intelligence (SIGINT) Support to SOF. Effort provides a method to acquire and evaluate commercial and government-off-the-shelf and non-developmental item responses to SOF SIGINT requirements. Successful evaluations assist development of full acquisition programs.



**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160405BB      Project Number: S400      Date: February 1994  
PE Title: SOF Intelligence Research and Development      Budget Activity: 7

- (U) Joint Intelligence System Integration (JISI). The JISI sub-project funds a series of integration efforts within the authority of the Intelligence Threat Warning System Mission Need Statement to incorporate various SOF intelligence systems on the respective platforms employed by each of the SOF commands. Integration efforts will permit the operation of each intelligence system from within a controlling suite installed aboard a SOF platform without any system or platform degradation.
- (U) PRIVATEER and SILENT SHIELD. Efforts integrate SOF intelligence systems within the naval patrol craft and SOF aircraft, respectively. Candidate systems for integration as part of PRIVATEER and SILENT SHIELD include SOF Signals Intelligence Manpack System, Man-Transportable SOCRATES, Multi-mission Advanced Tactical Terminal, and SOF IRIS. Consolidation of these integration efforts into a separate sub-project was done to permit greater visibility of the RDT&E funding profiles required to complete the associated integration tasks. This integration effort specifically complies with the Congressional directive to provide joint intelligence capabilities, vice component specific, to all USSOCOM components.
- (U) Tactical Exploitation of National Capabilities (TENCAP). TENCAP is a phased sub-project to introduce and integrate national systems capabilities into the SOF force structure and operations. TENCAP activities include increasing national systems awareness among the SOF commanders; demonstrating the tactical utility of national system data; technology testing and evaluation of operational concepts in biennial Joint Chiefs of Staff Special Projects; and transitioning promising concepts and technologies into the SOF inventory.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

(U) FY 1993 Accomplishments:

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160405BB

PE Title: SOF Intelligence Research and Development

Project Number: S400  
Budget Activity: 7

Date: February 1994

- (U) Special Operations Command Research, Analysis and Threat Evaluation System (SOCRATES). Accepted two prototype Man Transportable SOCRATES systems and began integration testing with SOCRATES and standard SOF communications equipment. Conducted test and evaluation for transition to Client Server Environment at headquarters and component locations. Continued integration of Secondary Imagery Dissemination System standards and software into SOCRATES architecture. Began development of multi-level security capabilities in cooperation with the Defense Information Systems Agency for Ops/Intel interface and Rome Labs for Emerald Multi-Level Security. Employment of SOCRATES continues to support real world crisis/contingency operations and JCS exercises (OCT-SEP/\$2,193K).
- (U) SOF Intelligence Vehicle (SOF IV). Began the integration of the Multi-mission Advanced Tactical Terminal and SOF Imagery Receiver and Intelligence System into the SOF IV design. Completed software baseline and integration testing. Initiated development of operational test plans and procedures (OCT-SEP/\$1,953K).
- (U) Multi-mission Advanced Tactical Terminal (MATT): Completed core system design, documentation and DT-II. Completed Initial Operational Test and Evaluation on core system design. Continued to develop and integrate the Tactical Information Broadcast Service capability and other producibility enhancements into the core system design. Performed studies and initiated actions to integrate MATT on the PAVE LOW and COMBAT TALON I airframes. MATT prototype employed operationally in support of real world contingencies (OCT-SEP/\$10,946K).
- (U) SOF Modular Remote Sensing System. Continue prototype development efforts. Continued development efforts and testing of specialized lightweight, high density lithium batteries that provide long-life power for this

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: S400

Budget Activity: 7

Program Element: 1160405BB

PI Title: SOF Intelligence Research and Development

application. Continued development efforts and testing of specialized lightweight communications and intercept antennas (OCT-SEP/\$4,101K).

(U) Language Identification and Voice Identification Device. Completed Phase I development effort. Initiated Development, Test and Evaluation of Phase I prototype (OCT-SEP/\$250K project S200 funds).

(U) Joint Intelligence System Integration. PRIVATEER initiated procurement of hardware, software and systems integration for the initial prototype (1-4QTR/\$2,200K). SILENT SHIELD completed market survey and integration study for prototype system. Prototype package development effort awarded for system delivery during the 4th quarter FY94. SILENT SHIELD prototype capability deployed operationally in support of real world contingencies (OCT-JUN/\$3,600K).

(U) SIGINT Support to SOF evaluation and test of downsized direction finding processors, downsized receiver technologies, and automated analytical tools embedded in laptop computers; evaluation of networking communications tools for intelligence systems; and downsized, improved sensitivity antenna systems (OCT-SEP/\$1,566K).

(U) Tactical Exploitation of National Capabilities (TENCAP). Accelerated implementation of TENCAP program. Completed JCS Special Project 93. Completed Project BEACHCOMBER (primary imagery in support of beach operations). Evaluated application of national systems in supporting combat recovery (OCT92-MAR94/\$1,425K).

(U) FY 1994 Plans:

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160405BB  
PE Title: SOF Intelligence Research and Development  
Project Number: S400  
Budget Activity: 7  
Date: February 1994

- (U) Special Operations Command Research, Analysis and Threat Evaluation System (SOCRATES). Conduct OT&E test of Man-Transportable SOCRATES (MTS) prototypes and transition to production. Continue integration of emerging Department of Defense Intelligence Information System standard capabilities into the SOCRATES architecture (1-4QTR/\$488K).
- (U) SOF Imagery Receiver and Intelligence System. Integrate and test High Speed Serial Interface with MTS. Conduct operational test (1-3QTR/\$244K).
- (U) Multi-mission Advanced Tactical Terminal (MATT). Perform Full Operational Test and Evaluation of Tactical Information Broadcast System capability and transition to production. Continue MH-53J integration efforts and commence platform integration studies on other SOF platforms, i.e. Combat Talon II (1-4QTR/\$3,319K).
- (U) SOF Modular Remote Sensing System. Complete prototype development effort. Conduct OT&E. Conduct development and test of fuel cell power sources applicable to this application (1QTR94-3QTR94).
- (U) Communication Monitoring Equipment. Complete Phase II prototyping effort. Conduct Development Test and Evaluation (DT&E) of Phase II prototype. Complete Phase III prototyping efforts. Conduct DT&E of Phase III prototype (1-4QTR/\$956K).
- (U) Language Identification and Voice Identification Device. Complete the DT&E of Phase I prototype. Initiate Phase II effort to incorporate improvements/enhancements to Phase I prototype. Conduct OT&E of Phase II prototype (1-4QTR/non MFP11 funds).

**UNCLASSIFIED**

**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: S400

Budget Activity: 7

Program Element: 1160405BB

PE Title: SOF Intelligence Research and Development

- (U) Joint Intelligence System Integration. PRIVATEER shipboard antenna characterization, equipment installation and evaluation, prototype test and evaluation, operation training, initial user testing, and maintenance support to testing (1-4QTR/\$700K). SILENT SHIELD fabrication and test ground training system and provide test maintenance support overall systems test and evaluation. Evaluate prototypes for follow-on procurement efforts (1-4QTR/\$227K).
- (U) Tactical Exploitation of National Capabilities. Further develop exercise BEACHCOMBER capabilities. Investigate advanced imagery conversion and compression techniques. Explore the tactical application of automated multi-level security concepts and technologies. Commence planning for Joint Chiefs of Staff Special Project 95, a TENCAP demonstration which applies strategic capabilities to tactical applications such as escape and evasion, targeting and mine clearing. Continue national system exercise support for SOF. Evaluate alternative concepts for primary imagery dissemination and fusion. Apply and assess visible marking technology to the SOF mission. Investigate national precision targeting, tracking and signals location technology for SOF applications. Assess tactical application of national beacon technology. Commence defining SOF tactical data processor and fusion workstation needs (1-4QTR/\$752K).
- (U) FY 1995 Plans:
  - (U) Special Operation Command Research, Analysis and Threat Evaluation System (SOCRATES). Client Server Environment implementation to subordinate commands. Evaluation and integration of commercial off-the-shelf and government off-the-shelf products for SOCRATES enhancements (1-4QTR/\$135K).

## UNCLASSIFIED

### FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160405BB

PE Title: SOF Intelligence Research and Development

Project Number: S400

Date: February 1994

Budget Activity: 7

- (U) Multi-Mission Advanced Tactical Terminal (MATT). Continue platform integration studies on other SOF platforms. Develop preliminary designs for integrating advanced cryptographic device into the MATT system (1-4QTR/\$1,546K).
- (U) Joint Intelligence Systems Integration. SILENT SHIELD - enhance prototype resources with high order capabilities increasing system performance, power, and analytical and reporting capabilities. Expanded capabilities include the MATT, Communication Monitoring Equipment, and Man Transportable SOCRATES functionalities. Expand test and evaluation to further refine system baseline, continue program acquisition documentation development leading towards FY96 procurement effort (1-4QTR/\$408K).
- (U) Tactical Exploitation of National Capabilities. Use Joint Staff Special Project 95 as a vehicle for demonstrating and assessing national technologies to SOF forces (1-4QTR/\$869K).
- (U) Project to Completion: This is a continuing project.
- (U) Work Performed By: Special Operations Command Research, Analysis and Threat Evaluation System (SOCRATES) integration support provided by SAIC. Man-Transportable SOCRATES (MTS) development will be accomplished by the Office of Special Technology, Fort Washington, MD. SOF Imagery Receiver and Intelligence System (IRIS) Engineering Development Model (EDM) development contract was awarded to Harris Corporation, Melbourne, FL. Joint Intelligence System Integration (JISI) work for: PRIVATEER provided by NCCOSC In-Service Engineering (NISE) East, Charleston, SC; NISE East, St Inigoes, MD; Naval Security Group, Washington D.C.; and the National Security Agency (NSA), Ft Meade, MD. SILENT SHIELD provided by Detachment 2, 2762nd Logistics Squadron, Air Force Materiel Command, Greenville, TX. Signal Intelligence (SIGINT) Support to SOF work performed by NSA, Ft Meade, MD and U.S. Army

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## FY 1995 RDT&E DESCRIPTIVE SUMMARY

Program Element: 1160405BB  
PE Title: SOF Intelligence Research and Development  
Project Number: S400  
Budget Activity: 7

Date: February 1994

Intelligence and Electronic Warfare Directorate, Vint Hill Farms Station, VA. Language Identification and Voice Identification Device (LIVID) work performed by NSA. Communication Monitoring Equipment (CME) contracting efforts will be performed through NSA. Various contractors may support Tactical Exploitation of National Capabilities (TENCAP). SOF Intelligence Vehicle (SOF IV) work performed by Office of Special Technology, Ft. Washington, MD through competitive contracts awarded by Aberdeen Proving Grounds to Motorola Government Electronics Group. SOF Modular Remote Sensor System (SOF MOSS) system integration efforts are being conducted by the NSA. Delfin Systems, MAXIM Signal Products, Santa Clara, CA is providing primary components. Small intercept and communications antennas are being developed by Ball Aerospace, Boulder, CO. Another intercept antenna is being provided by California Microwave, Inc. Woodland Hills, CA. Multi-mission Advanced Tactical Terminal (MATT) design enhancement and system integration will be performed by the Operational Support Office. Aircraft integration will be performed by a team composed of MATT engineers from applicable aircraft System Program Offices (SPOs).

(U) **Related Activities:** There is no unnecessary duplication of effort within the Department of Defense. PE 1160402BB (Special Operations Advanced Technology Development), Project S200, Special Operation Special Technology (SOST) project has accomplished prototyping efforts in support of SOF Imagery Receiver and Intelligence System (IRIS), Language Identification and Voice Identification Device (LIVID), and SOF Signal Intelligence (SIGINT) Manpack System (SSMS). IRIS and MATT are planned for integration into the SOF Intelligence Vehicle. Within Joint Intelligence System Integration (JIS), the PRIVATEER, SILENT SHIELD and SIGINT Support to SOF efforts exploit the technologies of other SOF Intelligence systems that include the SSMS, SOF Modular Remote Sensor System (SOF MOSS), Multi-mission Advanced Tactical Terminal (MATT), Communication Monitoring Equipment (CME), LIVID and SOF IRIS. The LIVID uses technology developed by the National Security Agency within the consolidated Cryptologic Program, there is no corresponding program element number. The Communications Monitoring Equipment sub-project contains sub-projects managed by NSA and funded by Advanced Research Projects Agency and Office of National Drug Control and Policy.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Program Element: 1160405BB**

**PE Title: SOF Intelligence Research and Development**

**Project Number: S400**

**Budget Activity: 7**

**Date: February 1994**

**(U) Other Appropriation Funds: Not Applicable.**

**(U) International Cooperative Agreements: Not Applicable.**

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155

**EXHIBIT PB-33B**



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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Budget Activity: 7  
Date: February 1994

Program Element: 1160407BB  
PE Title: SOF Medical Technology Development

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Number &amp; Title</u>	<u>FY 1993 Actual</u>	<u>FY 1994 Estimate</u>	<u>FY 1995 Estimate</u>	<u>FY 1996 Estimate</u>	<u>FY 1997 Estimate</u>	<u>FY 1998 Estimate</u>	<u>FY 1999 Estimate</u>	<u>Total</u>	
								<u>Complete</u>	<u>Program</u>
S275 SPECIAL OPERATIONS MEDICAL TECHNOLOGY RESEARCH AND DEVELOPMENT	541	1,310	1,798	1,785	2,141	2,352	2,539	<u>Cont.</u>	<u>Cont.</u>
Total	541	1,310	1,798	1,785	2,141	2,352	2,539	<u>Cont.</u>	<u>Cont.</u>

\* An additional \$645K from PE 1160404BB (Special Operations Tactical Systems Development; Project S0417; Sub-project Navy RDT&E) was applied to this effort in FY 1993.

**B. (U) BRIEF DESCRIPTION OF ELEMENT:** Projects in PE 1160407BB are in BA7, Operational Systems Development. Projects in this BA and PE provide studies and laboratory prototypes for USSOCOM to link non-system basic and exploratory research and development to SOF specific system full-scale development and procurement. The focus is on medical technologies, centering on physiologic, psychologic and ergonomic factors affecting the ability of forces to perform their missions.

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158

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: 1160407BB      Project Number: S275      Date: February 1994  
 PE Title: SOF Medical Technology Development      Budget Activity: 7

**A. (U) RESOURCES: (\$ in Thousands)**

<u>Project Title</u> <u>Popular Name</u>	<u>FY 1993</u> <u>Actual</u>	<u>FY 1994</u> <u>Estimate</u>	<u>FY 1995</u> <u>Estimate</u>	<u>FY 1996</u> <u>Estimate</u>	<u>FY 1997</u> <u>Estimate</u>	<u>FY 1998</u> <u>Estimate</u>	<u>FY 1999</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Program</u>
SPECIAL OPERATIONS FORCES MEDICAL TECHNOLOGY RESEARCH AND DEVELOPMENT	541*	1,310	1,798	1,785	2,141	2,352	2,539	Cont.	Cont.

\* An additional \$645K from PE 1160404BB, Project S0417, Sub-project Navy Medical RDT&E, was applied to this effort.

**B. (U) BRIEF DESCRIPTION OF PROJECT:** This project provides studies and non-system basic and exploratory research and development. The focus is on medical technologies, centering on physiologic, psychological and ergonomic factors affecting the ability of forces to perform their missions. Current medical research and equipment does not meet force requirements. The unique nature of special operations and the requirements for lightweight, sustainable medical equipment; high altitude life support capabilities for combat parachutists; and improved life support capabilities for the combat swimmer must be resolved. This project addresses the physiologic, psychological, and ergonomic aspects of all operations, and provides guidelines for the development of selection and conditioning criteria, thermal protection, decompression procedures, and life support systems. This project will support the development of biomedical enhancements for the unique requirements of SEALs and SEAL Delivery Vehicle teams in the conduct of their diverse underwater missions. This effort is defined by the following seven areas of investigation:

- (U) Inhaled Gas Toxicology: (1) evaluate the feasibility of using pharmacologic intervention to reduce or eliminate the possibility of central nervous system toxicity; (2) revise the Dry Deck Shelter atmospheric contaminants in submarine high pressure air banks; (3) studies the clinical symptoms experienced when divers are exposed to an elevated partial

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

**Program Element: 1160407BB**  
**PE Title: SOF Medical Technology Development**

**Project Number: S275**  
**Budget Activity: 7**

**Date: February 1994**

pressure of carbon dioxide and develops a training protocol to help trainees recognize the early symptoms of carbon dioxide buildup.

- (U) Decompression Procedures for Diving Operations: (1) complete work on a worst-case air/0.7 partial pressure of O2 in nitrogen (0.7 PPO2) decompression algorithm and make it available to mission planners and medical officers on a laptop microprocessor as well as providing the software for Underwater Decompression Meter; (2) extend development of the nitrox decompression algorithm to a 1.2 PPO2 gas mix; (3) develop procedures for shortening decompression time in diving operations through the use of oxygen decompression; (4) decrease the decompression obligation in diving operations through the use of surface-interval oxygen breathing; (5) develop algorithms and guidelines for flying after diving and diving at altitude.
- (U) Thermal Protection: (1) evaluate the adequacy of thermal protection in current SOF operations; (2) conduct a survey of available thermal protection garments and conduct a comparative study to determine their relative effectiveness at protecting personnel engaged in small boat operations.
- (U) Combat Casualty Management: (1) review the emergency medical equipment currently used in the Special Operations Community and compare this to currently available civilian technology; also provide field testing of emergency medical equipment in the adverse environmental conditions; (2) evaluate current casualty care doctrine to ensure consideration of the wide variety of tactical scenarios encountered in Special Operations and apply the latest concepts in casualty care to these circumstances.

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Program Element: **1160407BB**

PE Title: **SOF Medical Technology Development**

Date: **February 1994**

Project Number: **S275**

Budget Activity: **7**

- (U) **Exercise-related Injuries:** evaluate the effectiveness of applying sports medicine diagnostic, therapeutic, and rehabilitative techniques in the management of the traumatic and overuse injuries commonly encountered among SOF operators.
- (U) **Mission-related Physiology:** (1) evaluate biomedical factors which need to be considered in the development of the Advanced SEAL Delivery System; (2) develop accurate measures to evaluate SOF mission-related performance; (3) evaluate the suitability of Photorefractive Keratectomy, a new refractive surgical procedure, for SOF personnel; (4) delineate nutritional strategies designed to help SOF personnel apply known nutritional concepts to optimize performance in SOF mission and training scenarios; (5) evaluate potential; ergogenic agents as they apply to enhancing SOF mission-related performance.
- (U) **Medical Refresher Training Techniques:** (1) examine novel ways of both providing and documenting medical sustainment training for Naval Special Warfare corpsmen and physicians; (2) develop a system for constantly upgrading the medical expertise of SOF medical personnel by incorporating new research reports and clinical information in isolated duty circumstances.

**C. (U) PROJECT ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1993 Accomplishments:**

- (U) Initiated studies as follows:
  - (U) Autologous Erythrocyte Infusion (2QTR/\$99K).
  - (U) Exercise-Related Injury Program (2QTR/\$40K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Program Element: 1160407BB

Project Number: S275

PE Title: SOF Medical Technology Development

Budget Activity: 7

- (U) SEAL Computer Assisted Medical Reference System (2QTR/\$64K).
- (U) Combat Casualty Equipment Review (2QTR/\$41K).
- (U) Biomedical Factors in Advanced SEAL Delivery System (2QTR/\$16K).
- (U) Hypercarpia Recognition Training (2QTR/\$93K).
- (U) Quantification of Mission Related Performance (2QTR/\$112K).
- (U) Computer-based Corpsman Training Program (2QTR/\$51K).
- (U) 1.2 ATA O2 Decompression Algorithm (2QTR/\$59K).
- (U) Maximum Performance Nutritional Manual (2QTR/\$72K).
  
- (U) Continued studies as follows:
  - (U) Surface Interval Oxygen Repetitive Dive Tables (1-4QTR/\$87K).
  - (U) Emergency Oxygen Decompression Procedures (1-4QTR/\$170K).
  - (U) Prophylactic Measures for central nervous system oxygen toxicity (1-4QTR/\$185K).
  
- (U) Completed studies as follows:
  - (U) Vibration/Shock Injury in High Speed Boat Operations (3QTR/\$38K).
  - (U) Thermal Protection in Current Naval Special Warfare Operations (4QTR/\$59K).

**(U) FY 1994 Plans:**

- (U) Initiate Studies as follows:
  - (U) Excimer Laser Photorefractive Keratectomy in Naval Special Warfare Personnel (2QTR/\$87K)

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FY 1995 RDT&E DESCRIPTIVE SUMMARY

Date: February 1994

Program Element: 1160407BB

PE Title: SOF Medical Technology Development

Project Number: S275  
Budget Activity: 7

- (U) Combat Casualty Care in Special Operations (2QTR/\$30K).
- (U) Complete studies as follows:
  - (U) Exercise-Related Injury Program (3QTR/\$40K).
  - (U) SEAL Computer-Assisted Medical Reference System (3QTR/\$63K).
  - (U) Computer-Based NSW Corpsman Training Program (3QTR/\$100K).
  - (U) Quantification of NSW Mission-Related Performance (3QTR/\$138K).
  - (U) Biomedical Factors In Advanced SEAL Delivery System (4QTR/\$17K).
  - (U) Hypercarpia Recognition Training (3QTR/\$81K).
  - (U) Combat Casualty Equipment Review (3QTR/\$40K).
  - (U) Maximum Performance Nutrition Manual (4QTR/\$52K).
  - (U) Emergency Oxygen Decompression Procedures (3QTR/\$119K).
  - (U) Surface Interval Oxygen Repetitive Dive Tables (3QTR/\$130K).
  - (U) Prophylactic measures for central nervous system oxygen toxicity (4QTR/\$205K).
  - (U) 1.2 ATA O2 Decompression Algorithm (4QTR/\$208K).

- (U) FY 1995 Plans: Initiate new studies as follows (Dates shown are initiation dates):
  - (U) Shock, Vibration, and Thermal Protection in Small Boat Operations (1QTR/\$242K).
  - (U) Biomedical Mission Planning (2QTR/\$254K).
  - (U) Hardening SOP Personnel for Radio Frequency Environment (2QTR/\$504K).

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**FY 1995 RDT&E DESCRIPTIVE SUMMARY**

Date: February 1994

Project Number: S275  
Budget Activity: 7

Program Element: 1160407BB

PE Title: SOF Medical Technology Development

- (U) Ergogenics in Naval Special Warfare (2QTR/\$235K).
- (U) Flying After Diving/Altitude (1QTR/\$326K).
- (U) Dry Deck Shelter Atmosphere Control (1QTR/\$237K).

(U) Project to Completion: This is a continuing project.

(U) Work Performed By: Funding will be provided to the appropriate Service laboratory to execute these projects against valid SOF biomedical requirements. Naval Medical Research Institute, Bethesda, MD; Naval Medical Research and Development Command, Bethesda, MD; U.S. Army Research Institute of Environmental Medicine, Natick, MA; Naval Aerospace Medical Research Laboratory, Pensacola, FL; Naval Health Research Center, San Diego, CA; NSWC Dahlgren Division Coastal Systems Station, Panama City, FL; and SMG Uniformed Services University.

(U) Related Activities: There is no unnecessary duplication of effort within the Department of Defense.

(U) Other Appropriation Funds: Not Applicable.

(U) International Cooperative Agreements: Not Applicable.