

UNCLASSIFIED

EXHIBIT R-2, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROGRAM ELEMENT TITLE: Electronic Warfare Development

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Complete</u>	<u>To Program</u>	<u>Total</u>
E0556 EW Counter Response	5,278	64,964	87,319	48,574	25,383	22,951	34,844	44,694	CONT.	CONT.
E2175 Tactical Air Electronic Warfare	86,487	67,396*	73,051	32,288	7,784		0	0	0	495,844
R2260 Specific Emitter Identification	1,376	1,688	1,811	1,813	1,869	1,927	1,982	2,039	CONT.	CONT.
Z1742 EW Technical Development and Testing	656	825	896	922	949	975	1,001	1,026	CONT.	CONT.
TOTAL	\$93,797	\$134,873	\$163,077	\$83,597	\$35,985	\$25,853	\$37,827	\$47,759	CONT.	CONT.
Quantity of RDT&E Articles	481	461	8	3	0	0	0	0		

* Includes \$9.3 M Congressional transfer being executed for IDECM under E2635.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This element includes development of electronic warfare systems for the United States Navy (USN), United States Marine Corps (USMC), and United States Army (USA) tactical aircraft, USMC helicopters, surface combatants, data link vulnerability assessments, precision targeting , USMC communications and non-communications jammers , and development and testing of electronic warfare devices for emergency contingencies.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING & MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to full rate production approval decision.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: E0556

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: EW Counter Response

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Complete</u>	<u>To Program</u>	<u>Total</u>
<u>E0556 EW Counter Response</u>	<u>5,278</u>	<u>64,964</u>	<u>87,319</u>	<u>48,574</u>	<u>25,383</u>	<u>22,951</u>	<u>34,844</u>	<u>44,694</u>	<u>CONT</u>	<u>CONT</u>
TOTAL	*5,278	64,964	87,319	48,574	25,383	22,951	34,844	44,694	CONT	CONT
Quantity of RDT&E Articles	0	3	6	1	0	0	0	0		

*FY 1998 budget reflects \$1,878K Congressional Add for Precision Targeting (E2422)

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The EA-6B weapon system is designed for jamming and destruction of enemy landbased, shipborne and airborne command, control and communications (C3) and radars associated with early warning, target acquisition surveillance, anti-aircraft artillery, air-to-surface, surface-to-surface, and surface-to-air missiles. In this capacity, it will support carrier based tactical aircraft, battle group operations, and joint forces, in dense radar controlled environments. The efforts under this program element (PE) provide for the electronic countermeasures response to these advanced threat weapon systems and C3 networks which are expanding in density and technical complexity. This PE funds the continuing development and integration of all EW systems for the EA-6B electronic support aircraft. The test articles being funded are; two EA-6B aircraft modified to support the Improved Capability (ICAP) III program and eight Low Band Transmitter (LBT) Engineering Development Models (EDMs). The two EA-6B aircraft modified to the ICAP III configuration are for the Engineering and Manufacturing Development (E&MD) phase of the program, (one validation aircraft will deliver in FY 2000; the other verification aircraft in FY 2001). These aircraft will be used as test articles during government test and evaluation (TECHEVAL/OPEVAL). The LBT EDMs are broken out as; three LBT Antenna Set EDMs for FY 1999 and five Amplifier Set EDMs for FY 2000. The ALQ-99 LBT Antenna Group will provide an expanded war fighting capability against the early warning/acquisition radars and communication links of modern integrated air defense systems. The LBT entered E&MD in September 1996. Approval for Low Rate Initial Production (LRIP) is anticipated in June 2001, followed by Full Rate Production (FRP) approval (Milestone III) in December 2001.

A requirement exists to begin planning and analysis of alternatives for a Command and Control Warfare (C2W) replacement to the EA-6B. This weapon system, known as the C2W follow-on, will be required after the year 2015.

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PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: E0556

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: EW Counter Response

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

- (U) (1,878) (E2422) Congress zeroed all FY98 RDT&E funding due to late award of ICAP III contract. Congress later added funding to complete the demonstration of a flyable prototype for an anti-jamming Global Positioning System (GPS).
- (U) (3,400) (E0556) The LBT underwent redesign efforts required to meet key performance parameters. A Critical Design Review (CDR) was completed which showed the redesign of the LBT should successfully meet requirements. Two prototype amplifiers and antennas have been successfully tested.

2. FY 1999 PLAN:

- (U) (5,577) Continue software/techniques and test support for ongoing new threat development and testing in ICAP II. Continue Coherent Counter Measures (COCM) and Pro Forma Counter Measures (PCM) programs for the EA-6B (level of effort commensurate with available funds).
- (U) (54,683) Continue development of ICAP III system via contract awarded in March 1998. Specifically, FY99 efforts will perform laboratory testing, perform systems design, development and fabrication, and begin modification of two development aircraft with new tactical jamming and display equipment.
- (U) (3,300) Continue E&MD of the LBT and manufacture three complete Antenna Set EDM units.
- (U) (1,404) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

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PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: EW Counter Response

3. FY 2000 PLAN:

- (U) (8,700) Continue software/techniques and test support for ongoing new threat development and testing in ICAP II. Continue COCM and PCM programs for the EA-6B (level of effort commensurate with available funds).
- (U) (74,619) Continue development of ICAP III system. Specifically, FY00 efforts will perform laboratory testing, perform systems design, development and fabrication, and modification of two development aircraft with new tactical jamming and display equipment.
- (U) (4,000) Continue E&MD of the LBT. Manufacture and test five Amplifier Set EDM units.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	1,941	65,373	70,769
(U) Appropriated Value:	2,676	65,373	
(U) Adjustments from Pres Budget:	+3,337	-409	+16,550
(U) FY2000/2001 President's Budget Submit:	5,278	64,964	87,319

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PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: E0556

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: EW Counter Response

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1998 net increase of +\$3,337 thousand reflects a -\$63 thousand reduction for Small Business Innovative Research (SBIR) (E2422); and +\$3,400 thousand increase for a Below Threshold Reprogramming (BTR) (E0556).

The FY 1999 net decrease of -\$409 thousand reflects minor pricing adjustments.

The FY 2000 net increase of +\$16,550 thousand reflects a +\$1,000 thousand for C2W follow-on; +\$4,000 thousand for LBT development; +\$13,850 thousand for ICAP III development; +\$37 thousand for NWCF rate adjustments; and -\$2,337 thousand for minor pricing adjustments.

(U) Schedule: The ICAP III milestones have been adjusted due to the final contract award which lengthened the E&MD program. The LBT program, due to the technical problems discussed above, has slipped, and Milestone III is now in the 1st quarter of FY 2002.

(U) Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
APN	<u>112,476</u>	<u>95,152</u>	<u>161,047</u>	<u>195,325</u>	<u>210,267</u>	<u>162,339</u>	<u>155,634</u>	<u>137,904</u>	<u>957,481</u>

Related RDT&E

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PROGRAM ELEMENT: 0604270N

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PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: EW Counter Response

(U) P.E. Not applicable.

(U) D. ACQUISITION STRATEGY:

- The LBT development contract occurred following a full and open competition and was awarded to Tracor-AEL. Following development and successful DT/OT, sole source production contracts will be awarded for LRIP in FY 2001 and FRP in FY 2002.
- The ICAP III contract, an E&MD CPFF/AF basic contract with two Fixed Price Incentive (FPI) production options, was awarded to a Northrop Grumman team in March 1998 following a full and open competition and Milestone II. Completion of these two events establishes formal milestones and changes in schedule. An LRIP decision will occur in FY 2002 following an operational assessment. Formal technical and operational evaluations (DT/OT) will occur in FY 2002 and FY 2003. Milestone III and FRP are scheduled for FY 2003.

(U) E. SCHEDULE PROFILE

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>TO COMPLETE</u>
(U) Program Milestones	2Q ICAPIII Milestone II			3Q/01 Low Band TX Program Review 2Q/03 ICAP III Milestone III 1Q/02 Low Band TX Milestone III
(U) Engineering Milestones		3Q ICAP III PDR	2Q ICAP III CDR	
(U) T&E Milestones				2Q/01 to 1Q/02 Low Band TX DT/OT 2Q/02 to 1Q/03 ICAP III DT/OT
(U) Contract Milestones	2Q ICAPIII Contract Awarded			3Q Low Band TX LRIP 1Q/02 Low Band TX FRP

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EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

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PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: E0556

PROJECT TITLE: EW Counter Response

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Systems Engineering	WX	NRL, Wash. DC	5,816	650	Oct 98	900	Oct 99	CONT	CONT	
Systems Engineering	WX	NADEP, JAX	3,099	330	Oct 98	450	Oct 99	CONT	CONT	
Systems Engineering	WX	NSWC, Crane	4,592	1,280	Oct 98	1,800	Oct 99	CONT	CONT	
Systems Engineering	WX	NAWCAD, PAX	5,585	1,813	Oct 98	3,400	Oct 99	CONT	CONT	
Systems Engineering	WX	NAWCAD, LKE	1,864	100	Oct 98	150	Oct 99	CONT	CONT	
Systems Engineering	WX	NAWCWD, PT MUGU	8,489	3,590	Oct 98	4,785	Oct 99	CONT	CONT	
Primary Hardware Development	CPIF	AIL, Deer Park, NY	52,025	0	Nov 98	0	Nov 99	0	52,025	52,025
Primary Hardware Development	CPFF	Tracor/AEL, Lansdale, PA	15,227	3,300	Nov 98	4,000	Nov 99	4,000	26,527	23,000
Primary Hardware Development	CPAF/IF	Northrop Grumman, Bethpage, NY	19,500	47,765	Nov 98	64,937	Nov 99	38,344	170,546	132,335
Award Fees	CPAF	Northrop Grumman, Bethpage, NY	0	2,235	Apr 99	2,682	Apr 00	7,856	12,773	12,773
Primary Hardware Development	CPFF	Falon, Inc, San Diego, CA	3,246	0	Nov 98	0	Nov 99	0	3,246	3,246
Systems Engineering	Various	MISC	41,440	767	Nov 98	1,550	Nov 99	CONT	CONT	
Subtotal Product Development			161,383	61,830		84,654		CONT	CONT	

Remarks: The total cost figure for the TRACOR/AEL and the Northrop Grumman contracts are the Independent Government Estimate figures for total contract efforts less award fees, which are listed separately. The target value of contract figures are the total estimated cost of the awarded contracts less the award fees. To date no award fees have been paid to the contractor.

Development Support	SS/FP	JHU/APL, Columbia, MD	0	1,540	Nov 98	1,715	Nov 99	CONT	CONT	
Development Support	FP	Anaden Corp., Arlington, VA	0	40	Nov 98	0	Nov 99	0	40	
Development Support	Various	MISC	12,009	0	0	0	0	0	0	
Subtotal Support			12,009	1,580		1,715		CONT	CONT	

Remarks:

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EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

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Cost Categories:	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Operational Test and Evaluation	WX	OPTEVFOR, Norfolk, VA	1,459	150	Nov 98	950	Nov 99	CONT	CONT	
Subtotal Test & Evaluation			1,459	150		950		CONT	CONT	
 Remarks: Funding is required to conduct ICAP III and LBT operational assessment planning, execution, and reporting.										
Subtotal Management			0	0		0		0	0	
SBIR Assessment			0	1,404		0		0	0	
Remarks:										
Total Cost			174,851	64,964		87,319		CONT	CONT	

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: FEBRUARY 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: E2175

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: TACAIR EW

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
E2175 Tactical Air Electronic Warfare	86,487	67,396*	73,051	32,288	7,784	0	0	0	0	495,844
TOTAL										
Quantity of RDT&E Articles	481	458	2	2	0	0	0	0	0	0

* Includes \$9.3 M Congressional Transfer being executed for IDECM under E2635.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: INTEGRATED DEFENSIVE ELECTRONIC COUNTERMEASURES (IDECM): This joint service subproject develops the new techniques generator and fiber optic towed decoy of the Radio Frequency Countermeasures (RFCM) Subsystem as well as the Navy-unique portions of the Common Missile Warning System (CMWS) and Advanced Strategic and Tactical Expendables (ASTE). It also integrates RFCM, CMWS and ASTE with Radar Warning Receiver (RWR), Countermeasures Dispensing Set (CMDS) and associated cockpit controls and displays to provide the lead aircraft (F/A-18E/F) with increased survivability against Infrared/Radio Frequency (IR/RF) threats.

(U) AN/ALR-67(V)3&4 RADAR WARNING RECEIVER: This subproject is developing the system which provides enhanced situational awareness by providing accurate azimuth display of all programmed threats, independent of aircraft attitude. This also acts as Electronic Warfare (EW) Bus Controller.

(U) AN/ALE-50 ADVANCED AIRBORNE EXPENDABLE DECOY (AAED): This Joint Service (with Air Force) subproject is developing the system which will decoy enemy radio frequency homing missiles away from friendly aircraft.

(U) FLEET ELECTRONIC WARFARE SUPPORT GROUP (FEWSG): This subproject develops new EW equipment and technology which is used to provide realistic hostile EW threat environment, and support the evaluation and development of tactics and training.

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PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT NUMBER: E2175

PROJECT TITLE: TACAIR EW

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

- (U) (\$56,661) IDECM: Continued funding E&MD contract for IDECM RFCM subsystem. Continued A-Kit design contract efforts for integration of the RFCM subsystem onto the F/A-18E/F and integration of CMWS/ASTE subsystems onto the AV-8B and F/A-18E/F. Provided funding to support Navy unique efforts in the Joint Service CMWS/ASTE programs. Initiated RFCM subsystem testing on the F/A-18 and CMWS/ASTE subsystems testing on the AV-8B. Continue Multiplatform Launcher Controller (MPLC) modifications for IDECM.
- (U) (\$15,608) ALR-67(V)3: Completed Technical Operational Assessment (OA) to support low rate initial production (LRIP). Begin Operational Evaluation (OPEVAL) to support full rate production. Continue test and integration support contract.
- (U) (\$11,366) AN/ALE-50/AAED: Completed OA on F/A-18E/F. Continued logistics development of Consolidated Automated Support System (CASS), Depot, and I-Level Test Program Set (TPS) and patch panels to conduct Shop Replaceable Assembly (SRA) maintenance. Completed Operational Test (OT) on B-1B.
- (U) (\$2,852) FEWSG: Completed FY98 prioritized equipment exploitations by performing technique upgrade studies and developing simulation expansion prototypes for AN/AST-6 and ALQ-167. Closed out AN/ALQ-170 Performance Enhancement Program (PEP) development efforts. Examined, cataloged, stored and disposed of PEP hardware, software and documentation developed through FY 1997.

2. FY 1999 PLAN:

- (U) *(\$58,056) IDECM: Continue funding E&MD contract for IDECM RFCM subsystem. Perform IDECM RFCM subsystem operational assessment (OA) on F/A-18. Continue A-Kit design contract efforts for integration of the RFCM subsystem onto the F/A-18E/F and integration of CMWS/ASTE subsystems onto the AV-8B and F/A-18E/F. Provide funding to support Navy unique efforts in the Joint Service CMWS/ASTE programs. Continue RFCM subsystem testing on the F/A-18. Complete MPLC transition to IDECM configurations. *Includes the \$9.3M (Project E2635) Congressional reappropriation of funding from APN line 48 at the Navy's request for continuation of the IDECM RFCM program.
- (U) (\$2,376) ALR-67(V)3: Complete all RDT&E,N efforts. Complete OPEVAL. Correct deficiencies after OPEVAL report.

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PROJECT NUMBER: E2175

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: TACAIR EW

2. FY 1999 PLAN: continued

- (U) (\$3,164) AN/ALE-50/AAED: Complete logistics development of CASS, Depot, and 1-Level TPS and patch panels to conduct SRA maintenance. Complete OPEVAL on F/A-18E/F.
- (U) (\$2,187) FEWSG: Prototype and test multi-threat frequency agile AST-6 Hi-J Band. Research I-Band ALQ-167 DRFM frequency extension . Test and prototype AST-6(V)X5 Airborne intercept Radars Simulator. Test and evaluate ALQ-167(V)62 techniques. Perform and test prototype conversion of ALQ-167(V)40 to (V)43. Research universal control box night vision goggles filter and research 200KW Travelling Wave Tube Amplifier (TWTA) for ALQ-167. Continue equipment exploitation.
- (U) *(\$1,613) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638. * Includes assessment for Project E2635.

3. FY 2000 PLAN:

- (U) (\$73,051) IDECM: Continue funding Engineering and Manufacturing (E&MD) contract for IDECM RFCM subsystem. Continue A-Kit design contract efforts for integration of the RF subsystem onto the F/A-18E/F and integration of CMWS/ASTE subsystems onto the AV-8B and F/A-18E/F. Provide funding to Navy unique efforts in the Joint Service CMWS and ASTE programs. Conduct RFCM subsystem TECHEVAL and OPEVAL testing on the F/A-18E/F and CMWS and ASTE subsystems testing on the AV-8B.
- (U) (\$0) FEWSG: Funds deleted due to Program Budget Decision (PBD) 604: Non pay inflation adjustment. The impact of this adjustment is that the FEWSG requirements will not be executable.

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PROJECT NUMBER: E2175

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: TACAIR EW

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	91,666	60,687	30,305
(U) Appropriated Value:	95,027	*69,987	
(U) Adjustments from Pres Budget:	-5,179	-2,591	+42,746
(U) FY 2000 President's Budget Submit:	86,487	*67,396	73,051

*FY 1999 Appropriated value includes \$9.3 thousand for Project E2635 Congressional transfer.

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1998 net decrease of -\$5,179 thousand reflects -\$3,250 thousand for a Small Business Innovation Research adjustment and \$1,929 thousand for below threshold reprogrammings.

The FY 1999 net decrease of -\$2,591 thousand reflects -\$1,000 VECTOR offsets to N88, -\$149 thousand for minor pricing adjustments and -\$1,421 thousand for a contract advisory and assistance adjustment. Project E2635 decrease equals -\$21 thousand for a Revised Economic Assumption adjustment.

FY 2000 net increase of +\$42,746 thousand reflects +\$16,933 thousand to restructure Tactical Aircraft Electronic Warfare systems for optimal funding, +\$26,753 thousand for IDECM from the Acquisition Stability Reserve fund, +\$10,600 thousand for ship depot maintenance adjustment, -\$346 thousand for termination of Joint Emitter Targeting System (JETS), -\$10,000 thousand for Tactical EW restructure, and -\$1194 thousand for minor pricing adjustments.

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(U) Schedule ALR-67(V)3 LRIP moved from 2Q/98 to 3Q/98. ALR-67(V)3 OPEVAL completion from 1Q/99 to 2Q/99. ALR-67(V)3 FRP moved from 2Q/99 to 3Q/99. IDECM DT IIB moved from 4Q/98-3Q/99 to 2Q/99-3Q/99. IDECM DT IIA moved from 3Q/98-2Q/99 to 1Q/99-4Q/99. IDECM RFCM LRIP moved from 2Q/99 to 4Q/99. RFCM OT-IIA Operational Assessment (OA) 3Q/99-4Q/99. IDECM DT IIC moved from 3Q/99-2Q/00 to 1Q/00-3Q/00. RFCM OPEVAL OT-IIA moved from 2Q/00-2Q/01 to 3Q/00-4Q/00.

(U) Technical Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
APN Line 48 - AN/ALR-67(V)3	0	11,207	17,097	18,447	17,094	21,427	21,353	23,592	194,700
(Prior to FY96 - \$130,105)									
APN Line 41 - FEWSG	521	555	600	612	679	654	670	684	5,342
APN Line 48 - IDECM	0	0	0	5,579	10,967	12,908	22,322	13,022	142,600

Related RDT&E

(U) P.E. 0604270N (Advanced EW Technology)

(U) P.E. 0604256N (Threat Simulator Development)

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PROJECT TITLE: TACAIR EW

(U) C. ACQUISITION STRATEGY:

IDECM- Sole source LRIP contract (FY99), sole source FRP (FY01) contract with one option (FY02); full and open competition FRP contract with options (FY03 and beyond) AN/ALR-67(V)3-Sole source fixed price for LRIP with one fixed price option for production.

(U) D. SCHEDULE PROFILE

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>To Complete</u>
(U) Program Milestones	3Q/98 ALR-67(V)3 LRIP	3Q/99 ALR-67(V)3 FRP		
		4Q/99 RFCM LRIP		2Q/01 RFCM MS III
(U) Engineering Milestones				3Q/02 IDECM MS III
(U) T&E Milestones	3Q/98-2Q/99 ALR-67(V)3 OPEVAL	3Q-4Q/99 AAED SYS OPEVAL (F-18)	1Q/99-4Q/99 IDECM DT IIA	1Q/00-3Q/01 IDECM DT-IIC 3Q/00-4Q/00 OT-IIA RFCM OPEVAL
		2Q/99-3Q/99 IDECM DT IIB 3Q/99-4Q/99 RFCM OT-IIA(OA)		1Q/01-4Q/01 IDECM DT-IID 1Q/02-2Q/02 OT-IIB IDECM OPEVAL RFCM FOT&E
(U) Contract Milestones				

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EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE FEBRUARY 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: E2175

PROJECT TITLE: TACAIR EW

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Primary HDWR DEV(AN/ALR-67(V)3)	SS-CPFF	RAYTHEON/CA EL SEGUNDO	15789	1,554	2/99	0		0	17,343	17,343
Primary HDWR DEV (AN/ALE-50)	CPFF	RAYTHEON/CA GOLETA	8,697	1,175	12/98	0		0	9,872	9,872
Integrated Logistics SPT (AN/ALE-50)	CPFF	RAYTHEON/ GOLETA,CA	16,637	1,250	12/98	0		0	17,887	17,887
Ancillary Hardware Development(IMPLC)		RAYTHEON/CA GOLETA,CA	17,828	1,218	12/98	1,626	12/99	701	21,373	21,373
Software Development (IDECM)	CPFF	RAYTHEON/CA EL SEGUNDO	3,673	109	12/98	250	12/99	250	4,532	4,282
Primary Hardware Development (CMWS)	CPAF	SANDERS/NH	10,033	0		3,100	12/99	1,365	14,498	116,000
Primary Hardware Development (IDECM)	C-CPIF	SANDERS/NH	50,468	*31,492	01/99	30,775	12/99	16,664	129,399	176,700
Primary Hardware Develop (Award Fee)	AWARD	SANDERS/NH	1,350	0		0			1,350	
Software Development (IDECM)	TBD	TRACOR/TX	2,285	0		0		0	2,285	2,394
Primary Hardware Development (ASTE)	TBD	TRACOR/TX	3,102	1,740	12/98	1,100	12/99	458	6,400	22,000
Software Development (IDECM)	CPFF	LITTON/CA	4,350	0		0		0	4,350	4,959
Aircraft Platform Integration (IDECM)	TBD	BOEING, MO	56,919	6,889	12/98	8,700	12/99	2,245	74,753	74,753
Government Engineering Support	WX/RX	CHINA L/CA	29,916	6,187	10/98	8,640	10/99	CONT.	CONT.	
Government Engineering Support	WX/RX	PMTTC,CA	36,882	1,863	12/98	0		0	38,745	38,745
MISCELLANEOUS (efforts < \$1M each)		VARIOUS	10,805	*1,572	12/98	1,799	12/99	CONT.	CONT.	
Subtotal Project Development			268,734	55,049		55,990		CONT	CONT	

Remarks: For Sanders contract 74% of the planned FY96 award fee was awarded during first award period (\$995k of \$1,350k) Sanders (IDECM) target contract value includes Air Force funding and contractor investments. Navy portion of Sanders (IDECM) contract is only \$129.4M. Sanders(CMWS) target contract value includes Army and Air Force funding and contractor investments. Navy portion of Sanders(CMWS) contract is \$14.5M. TRACOR(ASTE) target contract value includes Air Force funding and contractor investments. Navy portion of TRACOR contract is \$6.4 M.
*Includes \$8M of Congressional transfer (Project E2635) for Sanders contract and balance of \$1.3M is in the Miscellaneous column for support less than a million.

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DATE FEBRUARY 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER:

E2175

PROJECT TITLE:

TACAIR EW

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999		FY 2000		Cost to Complete	Total Cost	Target Value of Contract
				FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date			
Program Management Support		NAWC-PAX	18,002	3,393	10/98	1,962	10/99	CONT.	CONT.	
MISCELLANEOUS (efforts < \$1m each)		Various	5,614	193	10/98	869				
Subtotal Support			23,616	3,586		2,831				

Remarks

ENGINEER/LOGISTIC/TECH SPT	WX	NAWC-AD/PAX	18,268	1,198	10/98	2,079	10/99	CONT.	CONT.	
ENGINEERING/TECH SPT	WX	NAWC-WD,CA	12,882	5,650	10/98	12,151	10/99	CONT.	CONT.	
MISCELLANEOUS (EFFORTS <\$1M EACH)				300		0		CONT.	CONT.	
Subtotal Test & Evaluation			31,150	7,148		14,230		CONT	CONT	

Remarks

Subtotal Management			0	0		0		0	0	
SBIR Assessment				*1,613						
Remarks: *Includes Proj E2635 SBIR assessment										

Total Cost			323,500	67,396		73,051		32,288		
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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: R2260

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: Specific Emitter Identification

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1998 BUDGET	FY 1999 BUDGET	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
R2260 Specific Emitter Identification	1,376	1,688	1,811	1,813	1,869	1,927	1,982	2,039	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project supports systems development and collection of Specific Emitter Identification (SEI) information from National Technical Means (NTM) to track commercial ships over 200 gross registered tons world-wide. Research and development will cover improvements and enhancements to Electronic Intelligence technology. This will include improved/next generation SEI technology for miniaturization and automation of hardware, national collection systems, signal processing and analysis, and de-interleaving of signals. Propagation in a multi-path signal environment will also be assessed. All work on this project will be undertaken in pursuit of goals stated by the Office of Naval Intelligence and the National Security Agency in support of the Worldwide Ship Tracking Program.

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DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: R2260

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: Specific Emitter Identification

B. (U) PROGRAM CHANGE SUMMARY:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget	1,381	1,697	1,976
(U) Appropriated Value	1,381	1,697	
(U) Adjustments from FY 1999 PRESBUDG	-5	-9	-165
(U) FY 2000 DoN Budget Submission	1,376	1,688	1,811

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1998 adjustment reflects an Actual Update adjustment (-\$5). The FY 1999 adjustment reflects Revised Economic Assumptions (-\$4) and Civilian Personnel Underexecution (-\$5). The FY 2000 adjustment reflects a reduction for realignment of SEI to Training (-\$200) and a net Navy Working Capital Fund Rate adjustment (+\$35).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

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DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: R2260

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: Specific Emitter Identification

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

(U) FY 1998 Accomplishments:

(U) (\$1,376) Work successfully demonstrated interoperability of SEI data in support of worldwide efforts. Data formats and connectivity was demonstrated through Joint Maritime Command Information Center (JMCIS) to address fleet requirements. New techniques for automation and data compression were evaluated for SEI application, including polynomials and wavelets.

(U) FY 1999 PLAN:

(U) (\$1,688) Next generation SEI technology will be developed to provide miniaturized, automated, high fidelity operation. SEI hardware and enhanced windows-based software will be fielded at operational sites overseas and tested for acceptable operation. Extended signal processing technology will be developed to optically process data for increased throughput and reduced size.

(U) FY 2000 PLAN:

(U) (\$1,811) Work will address the need for more noise-robust algorithms for increased SEI resolution and precision. Application of the new algorithms will permit de-interleaving and identification of modern complex wide-band signals.

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PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: R2260

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: Specific Emitter Identification

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E:

(U) PE 0602270N Electronic Warfare Technology

(U) PE 0603270N Advanced Electronic Warfare Technology

D. SCHEDULE PROFILE: Not applicable.

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DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: R2260

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: Specific Emitter Identification

A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
a. Software Development	445	391	394
b. Government Engineering Support	155	160	207
c. Developmental Test & Evaluation	162	330	360
d. Primary Hardware Development	380	467	510
e. Contractor Engineering Support	204	300	300
f. Program Management	30	40	40
Total	1,376	1,688	1,811

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DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: R2260

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: Specific Emitter Identification

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING: (\$ in thousands)

PERFORMING ORGANIZATIONS

Contractor/Contract Government Method/ Performing Fund Type Activity Vehicle		Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1998 & Prior	FY 1999 Budget	FY 2000 Budget	FY 2001 Budget	To Complete	Total Program
Product Development										
TRW	FFP	10/98	2,500	2,500	400	541	568	576	405	2,500
NRL	WX	10/98	N/A	N/A	562	607	630	630	cont.	cont.
Support and Management										
NRL	WX	10/98	N/A	N/A	60	70	90	90	cont.	cont.
Test and Evaluation										
KAMAN		10/98	1,900	1,900	204	300	326	321	749	1,900
NRL	WX	10/98	5,649	5,649	150	170	197	196	4,936	5,649

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DATE: February 1999

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PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: R2260

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: Specific Emitter Identification

GOVERNMENT FURNISHED PROPERTY

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Project Office EAC	Total FY 1998 & Prior	FY 1999 Budget	FY 2000 Budget	FY 2001 Budget	To Complete	Total Program
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No Government Furnished Equipment

	Total FY 1998 & Prior	FY 1999 Budget	FY 2000 Budget	FY 2001 Budget	To Complete	Total Program
Subtotal Product Development	962	1,148	1,198	1,206	cont.	cont.
Subtotal Support and Management	60	70	90	90	cont.	cont.
Subtotal Test and Evaluation	354	470	523	517	cont.	cont.
Total Project	1,376	1,688	1,811	1,813	cont.	cont.

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DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: Z1742

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: Electronic Warfare Technical Development and Testing

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1998 BUDGET	FY 1999 BUDGET	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Z1742 Electronic Warfare Technical Development and Testing	656	825	896	922	949	975	1,001	1,026	CONT.	CONT.

- A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: THIS program, referred to as "Skunkworks", establishes a standing research group for developing and testing low cost, high payoff Electronic Warfare (EW) systems to meet warfighting requirements during crisis situations. The program typically produces a new product at the end of each 12 month period. This unique characteristic ensures that the team continually functions in a quick reaction mode, and is therefore well trained in all aspects of rapid response systems engineering and fabrication. Each year, in the absence of a critical situation, the team develops, demonstrates and tests a prototype EW system which meets a specific Navy requirement.

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DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROJECT NUMBER: Z1742

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT TITLE: Electronic Warfare Technical
Development and Testing

(U) Program Accomplishments and Plans:

1. FY 1998 Accomplishments:

- (U) (\$200) Continued development of Advanced Support Pod (ASP) system. Integrated Naval Research Laboratory hardware with contractor software.**
- (U) (\$300) Conducted laboratory and field demonstration of ASP. Conducted flight testing for P-3 aircraft fleet clearance.**
- (U) (\$156) Continued to investigate ASP transition to rotary-wing platforms.**

2. FY 1999 Plan:

- (U) (\$290) Perform systems engineering and analysis for a tactical deception system.**
- (U) (\$445) Design and fabricate a deception unit.**
- (U) (\$ 90) Conduct field testing of the deception unit**

3. FY 2000 Plan:

- (U) (\$317) Perform systems engineering analysis for a system to provide localized protection from GPS-guided munitions.**
- (U) (\$460) Design and fabricate system to provide localized protection from GPS-guided munitions.**
- (U) (\$119) Conduct field testing on system to provide localized protection from GPS-guided munitions.**

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DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604270N

PROGRAM ELEMENT TITLE: Electronic Warfare Development

PROJECT NUMBER: Z1742

PROJECT TITLE: Electronic Warfare Technical
Development and Testing

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	656	829	879
(U) Appropriated Value:	656	829	
(U) Adjustments from Pres Budget:	0	-4	+17
(U) FY2000/2001 President's Budget Submit:	656	825	896

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

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