

UNCLASSIFIED

EXHIBIT R-2, FY 2001 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</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>
E1662 F/A-18 Improvements	94,591	175,130	124,842	89,444	22,034	31,125	19,321	0	3,272,728
E2065 F/A-18 RADAR Upgrade	2,489	3,920	104,098	106,936	86,276	50,948	29,908	3,900	661,602*
E2130 F/A-18 Follow-On Variant	197,655	141,834	19,153	1,290	0	0	0	0	5,574,010
TOTAL	294,735	320,884	248,093	197,670	108,310	82,073	49,229	3,900	9,523,009

***This includes RUG Phase I and II**

Quantity of RDT&E Articles

10

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The F/A-18 is capable of using external equipment to perform either fighter or attack missions. The capabilities of the F/A-18 weapon system can be upgraded to accommodate and incorporate new or enhanced weapons as well as advances in technology to respond effectively to emerging future threats. Continued development capability is required to successfully optimize new F/A-18 weapon system capabilities in the Fleet. Additionally, continued improvements in reliability and maintainability are necessary to ensure maximum benefit is achieved through reduced cost of ownership and to provide enhanced availability.

F/A-18 Improvements: The F/A-18 Naval Strike Fighter program transitioned from full-scale engineering development to operational systems development during FY 1983. As F/A-18 squadrons report discrepancies and new requirements, a continuing capability is needed to perform technical evaluations, investigative flight testing, software support, and incorporate Pre-Planned Product Improvements (P³I) (i.e., capability enhancements).

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F/A-18 Radar Upgrade: The F/A-18 Radar Upgrade, Active Electronically Scanned Array (AESA) development program, beginning in FY 1999, is the last of three pre-planned upgrades to the F/A-18 Type/Model/Series radar. The AESA corrects operational test deficiencies noted in the AN/APG-73. It provides for multi-target tracking, Synthetic Aperture Radar (SAR) imagery, SAR Target Location Error (TLE), and improved spotlight map resolution. In addition, it provides for greater lethality than previous F/A-18 radars by allowing for full tactical support of existing and planned air-to-air (A/A) and air-to-ground (A/G) weapons which significantly increases A/A and A/G detection and tracking ranges. The AESA provides greater survivability through self-protection and standoff jamming capabilities, while its greater range allows for reduced detection by enemy radar. The AESA is also more affordable than previous radars. Significant savings in operating and support costs can be realized through a five fold increase in reliability over the AN/APG-73 as well as incorporating open architecture and Higher Order Language software. Additionally, savings can be realized by avoiding parts obsolescence redesign costs that will be experienced on the AN/APG-65 and AN/APG-73.

F/A-18 Follow-On Variant: The follow-on F/A-18 (E/F version) is an airframe upgrade incorporating increased capabilities, performance, and survivability necessary to satisfy the 41% percent increase in range over the C/D in the high-low-low-high attack/interdiction mission carrying three 480 gallon drop tanks, four 1,000 pound bombs, and two AIM-9 air-to-air missiles. The E/F version has increased internal fuel capacity, increased weapons carriage capability, increased carrier recovery payload, enhanced survivability/vulnerability, increased growth capacity, and increased engine thrust. It retains all of the P³I enhancements developed for the earlier night attack C/D version of the aircraft.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing development for upgrade of existing operational systems.

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

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PROGRAM ELEMENT: 0204136N

PROJECT NUMBER: E1662

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: F/A-18 IMPROVEMENTS

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</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>
E1662 F/A-18 Improvements	94,591	175,130	124,842	89,444	22,034	31,125	19,321	0	3,272,728

Quantity of RDT&E Articles: Not Applicable

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The F/A-18 is a multi-mission strike fighter aircraft that is used in both fighter and attack roles through selected use of external equipment (fuel tanks, targeting/navigation, Forward Looking Infrared (FLIR) pods, and various bomb/missile launching racks). In order to respond effectively to emerging future threats, F/A-18 aircraft capabilities are being upgraded to incorporate new/enhanced weapons systems and avionics including the Positive Identification System (PIDS) (incorporates Congressionally mandated Combined Interrogator Transponder (CIT) Identification Friend or Foe (IFF) System, Digital Communications System (DCS), Joint Helmet Mounted Cueing System (JHMCS), Advanced Targeting Forward Looking Infrared (ATFLIR), conversion of the System Configuration Set (SCS) to a Higher Order Language (HOL), development of the F/A-18 E/F Advanced Crew Station (ACS), initiation of development efforts for Expand 4/5 providing high resolution maps to be displayed in the cockpit, and upgrade of the existing Global Positioning System/Inertial Navigation System in order to meet precision strike/precision approach requirements. Continued hardware/software development is required to successfully optimize fleet F/A-18 weapons systems. As F/A-18 Squadrons report system problems/requirements, a continuing capability is needed to perform technical evaluations/investigative flight testing, provide software support and integrate selected improvements.

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PROJECT NUMBER: E1662

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: F/A-18 IMPROVEMENTS

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$2,898) Continued to conduct engineering analysis and developed improvements to existing systems and subsystems for deficiencies identified during development of the aircraft. Provided technical support for the integration of new weapons and systems.
- (U) (\$2,159) Continued to develop and integrate enhancements to the effectiveness, operability, and safety of the F/A-18 Weapon System (airframe, avionics, and weapons) and subsystems to include Multifunctional Information Distribution System (MIDS), AIM-9X, and Tactical Air Moving Capability (TAMMAC). Continued to investigate deficiencies and develop corrective action.
- (U) (\$39,614) Continued development of DCS, PIDS, and JHMCS. Completed Phase I of BOL CHAFF wing tip certification on F/A-18C/D.
- (U) (\$49,920) Continued ATFLIR development, received Shape/Mass Model adapter, and started DT-IIA testing. Commenced conversion of the SCS to a HOL.

2. FY 2000 PLAN:

- (U) (\$1,478) Continue to conduct engineering analysis and develop improvements to existing systems and subsystems for deficiencies identified during development of the aircraft. Provide technical support for the integration of new weapons and systems.
- (U) (\$5,500) Continue to develop and integrate enhancements to the effectiveness, operability, and safety of the F/A-18 Weapon System (airframe, avionics, and weapons) and subsystems to include MIDS, AIM-9X, and TAMMAC. Continue to investigate deficiencies and develop corrective action.
- (U) (\$16,108) Continue development of DCS, PIDS, and JHMCS.

**R-1 Item No. 160
UNCLASSIFIED**

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PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: F/A-18 IMPROVEMENTS

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

- (U) (\$93,770) Continue ATFLIR development, DT-IIA testing and start DT-IIB testing. Initiate development studies for a Precision Navigation System.
- (U) (\$51,313) Continue conversion of the SCS to a HOL. Commence development of ACS to enable Independent Weapon System Operator functionalities.
- (U) (\$6,961) Initiate development studies and software improvements for Radar ECCM and ID techniques. Continue with BOL CHAFF flight testing and integration.

3. FY 2001 PLAN:

- (U) (\$1,207) Continue to conduct engineering analysis and develop improvements to existing systems and subsystems for deficiencies identified during development of the aircraft. Provide technical support for the integration of new weapons and systems.
- (U) (\$8,453) Continue to develop and integrate enhancements to the effectiveness, operability, and safety of the F/A-18 Weapon System (airframe, avionics, and weapons) and subsystems to include MIDS, AIM-9X, and TAMMAC. Continue to investigate deficiencies and develop corrective action.
- (U) (\$3,293) Complete development of DCS and PIDS. Continue development of JHMCS.
- (U) (\$37,419) Continue ATFLIR development, start DT-IIC testing. Continue development efforts for Precision Navigation System.
- (U) (\$74,470) Continue development of an Advanced Crew Station and conversion of the SCS to a HOL.

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

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PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: F/A-18 IMPROVEMENTS

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	95,583	169,129	118,174
(U) Appropriated Value:	97,198	176,129	
(U) Adjustments from President's Budget:	-992	+6,001	+6,668
(U) FY 2001 President's Budget Submit:	94,591	175,130	124,842

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1999 net decrease of \$992 thousand consists of increases for joint helmet mounted cueing system (JHMCS) and HOL, offset by decreases for SBIR, MRTFB, minor reprogrammings, and inflation adjustments.

The FY 2000 net increase of \$6,001 consists of increases for BOL CHAFF and Radar ECCM Improvements offset by a decrease for an Across-the-Board Congressional rescission.

The FY 2001 net increase of \$6,668 thousand reflects increases for MIDS Integration, ATFLIR development and HOL offset by decreases for minor pricing and inflation adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

UNCLASSIFIED

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PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: F/A-18 IMPROVEMENTS

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn:</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</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-1 (E/F)	2,816,393	2,837,795	2,919,621	2,928,703	3,118,941	3,192,253	3,250,587	14,963,715
APN-5 .	171,421	319,650	212,614	197,869	231,353	249,353	256,532	Cont.

Related RDT&E

- (U) P.E. 0207163N Advanced Medium Range Air-to-Air Missile (AMRAAM)
- (U) P.E. 0604727N Joint Stand-off Weapon (JSOW) System
- (U) P.E. 0604270N EW Development
- (U) P.E. 0604777N Navigation ID System, project X0921, NAVSTAR GPS equipment
- (U) P.E. 0404215N Standards Development
- (U) P.E. 0204136N Radar Upgrade (AESA)

(U) D. ACQUISITION STRATEGY: The F/A-18 Improvements program consists of extensive development projects and integration of avionics systems onto the F/A-18E/F that were initially developed for incorporation onto the F/A-18C/D as the lead platform. The major programs within the F/A-18 Improvements Line are as follows:

- PIDS. PIDS is a sole source cost plus fixed fee contract on an R&D Basic Ordering Agreement. Will be bought as CFE through the prime contractor.
- ATFLIR. The ATFLIR development was a sole source incentive fee contract to Boeing. Boeing competed the development contract.

The procurement supplier is planned to be sole source to Boeing.

- Higher Order Language (HOL). The conversion of the System Configuration Set software to HOL will be accomplished by the F/A-18 Advanced Weapons Laboratory at China Lake as the designated Software Support Activity for the F/A-18. The design of the software will be accomplished by Boeing under sole source contracts. For CY 1999, work will be performed under an 845 agreement contract. Beginning in January 2000, the contract vehicle will shift to a Technical Direction Letter contract at China Lake. As the Prime contractor for the aircraft, Boeing is the design agent for software of aircraft in production.

UNCLASSIFIED

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(U) D. ACQUISITION STRATEGY (con't)

- Advanced Crew Station. The design and development of the Advanced Crew Station modification will be sole source to Boeing as the Prime aircraft contractor.
- DCS. DCS is a sole source cost plus fixed fee contract on an R&D Basic Ordering Agreement. Equipment is GFE.
- JHMCS. JHMS is a sole source award fee Joint Air Force contract to Boeing.

(U) E. SCHEDULE PROFILE: (not applicable)

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

PROGRAM ELEMENT: 0204136N

DATE: February 2000

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PROJECT NUMBER: E1662

PROJECT TITLE: F/A-18 IMPROVEMENTS

<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>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
PIDS/DCS Development/Integration	SS/CPFF/FFP	MDA St. Louis, MO	79,938	18,082	11/98	10,044	11/99	523	11/00	0	108,587	108,587
DCS E&MD	SS/FFP	Rockwell-Collins Cedar Rapids, IOWA	16,196								16,196	16,196
ATFLIR E&MD (Basic Contract) Note 1	CPIF/AF	MDA St. Louis, MO	10,079	31,900	11/98						41,979	41,979
ATFLIR AWARD FEE (non-add)			(803)	(2,445)							(3,248)	(3,248)
ATFLIR EMD (Option Contract)	CPIF/AF	MDA St. Louis, MO	0			60,000	10/99	13,745	10/00	5,084	78,829	78,829
ATFLIR AWARD FEE (non-add)						(1,178)		(1,257)		(1,493)	(3,928)	(3,928)
ATFLIR Support Equipment	WX	NAWCAD Lakehurst, NJ	12	111	11/98	9,338	11/99	5,194	11/00	0	14,655	
Advanced Crew Station	CPIF	MDA St. Louis	0			4,081	11/99	17,320	11/00	34,778	56,179	56,179
HOL Conversion	TDL	China Lake, CA	0			34,600	11/99	37,000	11/00	18,100	89,700	89,700
HOL Conversion	CPIF	MDA St. Louis	0	8,500	06/99	4,737	11/99	2,229	11/00	6,941	22,407	22,407
JHMCS E&MD	MIPR	WPAFB Dayton, OH	5,000	4,718	11/98	788	11/99	792	11/00	0	11,298	11,298
Miscellaneous Development	Various	Various	5,284	691	10/99						5,975	
Software Development Engineering	WX	NAWCWD China Lake, CA	38,766	16,441	10/98	31,739	10/99	30,758	10/00	71,771	189,475	
Misc. Product Development	WX	Other Field Activities	2,615	504	10/98	734	10/99	4,075	10/00	0	7,928	
Subtotal Product Development			157,890	80,947		156,061		111,636		136,674	643,208	

Note 1: Award Fees included in total contract value (Award Fees are non-add). FY99 and prior year award fee earned is 74.7% (ATFLIR)

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UNCLASSIFIED**

UNCLASSIFIED

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PROJECT NUMBER:

E1662

PROJECT TITLE:

F/A-18 IMPROVEMENTS

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Support	Not Applicable										0	
Product T&E	WX	OPTEVFOR Norfolk, VA		147	11/99			995	11/00	8,736	9,878	
	WX	NAWCAD Patuxent River, MD	40,493	10,925	10/98	16,634	10/99	10,388	11/00	10,945	89,385	
Subtotal Test & Evaluation			40,493	11,072		16,634		11,383		19,681	99,263	
Contractor Support/Travel/Misc	Various	NAVAIR Patuxent River, MD	6,554	2,572	11/98	2,435	11/99	1,823	11/00	5,569	18,953	
Subtotal Management Services FY92 & Prior			6,554	2,572		2,435		1,823		5,569	18,953	
Total Cost			2,716,241	94,591		175,130		124,842		161,924	3,272,728	

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EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

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PROGRAM ELEMENT: 0204136N
PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT NUMBER: E2065
PROJECT TITLE: RADAR UPGRADE

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</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>
E2065 F/A-18 Radar Upgrade	2,489	3,920	104,098	106,936	86,276	50,948	29,908	3,900	661,602*

*Adding RUG Phase I and RUG Phase II

Quantity of RDT&E Articles: Not Applicable

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Active Electronically Scanned Array (AESA) development program, beginning in FY 1999, is the last of three pre-planned upgrades to the F/A-18 Type/Model/Series radar. The AESA corrects operational test deficiencies noted in the AN/APG-73. It provides for multi-target tracking, SAR imagery, SAR TLE, and improved spotlight map resolution. In addition, it provides for greater lethality than previous F/A-18 radars by allowing for full tactical support of existing and planned air-to-air (A/A) and air-to-ground (A/G) weapons which significantly increases A/A and A/G detection and tracking ranges. The AESA provides greater survivability through self-protection and standoff jamming capabilities, while its greater range allows for reduced detection by enemy radar. The AESA is also more affordable than previous radars. Significant savings in operation and support costs can be realized through a five fold increase in reliability over the AN/APG-73 as well as incorporating open architecture and Higher Order Language software. Additionally, savings can be realized by avoiding parts obsolescence redesign costs that will be experienced on the AN/APG-65 and AN/APG-73.

R-1 Item No. 160
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PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: RADAR UPGRADE

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$2,489) Conducted Pre-EMD AESA radar development activities.

2. FY 2000 PLAN:

- (U) (\$2,300) Continue Pre-EMD AESA radar development activities. Conduct Preliminary Design Review (PDR).
- (U) (\$666) Commence software development and systems integration efforts.
- (U) (\$786) Commence radar development/planning and prepare Milestone II documentation.
- (U) (\$168) Start test and evaluation planning phase. Start Integrated Logistics Support Efforts.

3. FY 2001 PLAN:

- (U) (\$99,098) Commence EMD. Conduct radar and aircraft installation Critical Design Reviews, Integrated Forebody testing, and radar cross-section assessments. Conduct Integrated Baseline Review.
- (U) (\$3,100) Continue radar development/planning and commence bench testing of aperture and radar processor. Continue Integrated Logistics efforts.
- (U) (\$1,250) Continue software development and systems integration efforts.
- (U) (\$650) Continue test planning for Developmental Test, Validation/Verification, and Operational Test.

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PROJECT TITLE: RADAR UPGRADE

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	0	3,943	91,526
(U) Appropriated Value:	0	3,943	
(U) Adjustments from President's Budget:	+2,489	-23	+12,572
(U) FY 2001 President's Budget Submit:	2,489	3,920	104,098

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1999 net increase of \$2,489 thousand consists of an increase for AESA Pre-EMD development activities. FY 2000 reflects a decrease for an Across-the-Board Congressional Recision. The FY 2001 net increase of \$12,572 thousand reflects an increase for AESA development, offset by decreases for minor pricing and inflation adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable

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PROJECT TITLE: RADAR UPGRADE

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</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-5 (1)	18,827	56,941	18,543	3,713	4,232	17,979	16,595	12,723
APN-1E/F (2)	4,305	0	0	47,700	121,400	121,000	179,500	469,600

(1) RUG Phase I & Phase II (retrofit)

(2) RUG Phase I and AESA (production incorporated)

Related RDT&E

(U) P.E. 0204136N F/A-18 Squadrons (Project E1662: F/A-18 Improvements – Higher Order Language, Aft Crew Station Upgrade)

(U) P.E. 0603261N Tactical Airborne Reconnaissance

(U) D. ACQUISITION STRATEGY: The AESA program employs a two-phase approach with sole source contracts to Boeing, the airframe prime manufacturer. Phase I is a moderate risk reduction phase conducted in FY 1999 and FY 2000. During this phase, Boeing conducted competitive source selection at the radar system subcontract level. A BOA order for RFP development and subcontractor selection was made to conduct this effort. It includes an “845” agreement for prototype development, which includes commercial development/amortization provisions. Conducting the competition early in the program allowed for focused risk reduction and contractor investment.

Phase II will consist of a typical EMD program and development contract. The program transitions to Phase II with a successful Milestone II Decision in FY 2001. Once the program enters production, the “845” agreement allows the contractor to amortize unreimbursed development costs into the production unit cost. This strategy fully utilizes acquisition reform initiatives such as: early partnering with industry; alpha contracting; leveraging industry investment; optimizing use of Commercial Off-the Shelf software and Non-Developmental Item; Cost as an Independent Variable; and Electronic Data Deliverables.

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PROJECT TITLE: RADAR UPGRADE**

(U) E. SCHEDULE PROFILE:

FY 1999

FY 2000

FY 2001

TO COMPLETE

(U) Program Milestones

3Q/00- PRE-MSII

1Q/01- MSII

3Q/06 - MSIII

(U) Engineering Milestones

3Q/00-PDR

2Q/01-CDR

(U) T&E Milestones

2Q- 4Q/05
OPEVAL

(U) Contract Milestones

4Q/99-PRE EMD

2Q/01 – EMD
Contract Award

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EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

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PROJECT TITLE:

E2065
F/A-18 RADAR
UPGRADE

<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>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
AESA Radar Contract	SS/TBD	BOEING St. Louis, MO		2,000	09/99	2,300	12/99	98,898	01/01	201,659	304,857	304,857
AESA Radar Software Development/Integration	WX	NAWCWD China Lake, CA		389	12/99	670	01/00	3,500	10/00	40,278	44,837	
AESA Radar Development	WX	NAWCAD Patuxent River, MD		100	12/99	650	01/00	1,250	10/00	1,608	3,608	
RUG PHASE I	SS/LTR(FPIF)	MDA St. Louis, MO	171,000								171,000	171,000
RUG PHASE II	CPIF	MDA St. Louis, MO	51,729								51,729	51,729
RUG PHASE II Integration	CPFF	MDA St. Louis, MO	11,000								11,000	11,000
Subtotal Product Development			233,729	2,489		3,620		103,648		243,545	587,031	
AESA Test & Evaluation	WX	NAWCAD Patuxent River, MD								7,380	7,380	
AESA Radar OPEVAL	WX	OPTEVFOR Norfolk, VA								4,742	4,742	

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February 2000

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N

PROJECT NUMBER: E2065

PROJECT TITLE: F/A-18 RADAR
UPGRADE

<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>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
RUG Upgrade Test & Evaluation	WX	NAWCWD China Lake, CA	49,390								49,390	
RUG UPGRADE OPEVAL	WX	COMOPTEVFOR	1,799								1,799	
RUG Upgrade Test & Evaluation	Various	Other Field Activities	4,815								4,815	
Subtotal Test & Evaluation			56,004							12,122	68,126	
AESA Contractor Support /Travel/Misc	Various	NAVAIR Patuxent River, MD				300	12/99	450	10/00	3,792	4,542	
RUG Contractor Support/Travel/Misc	Various	NAVAIR Patuxent River, MD	1,963								1,963	
Subtotal Management Services			1,963			300		450		3,792	6,505	
Total Cost			291,696	2,489		3,920		104,098		259,459	661,662	

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N

PROJECT NUMBER: E2130

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: FOLLOW-ON VARIANT

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</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>
E2130 Follow-On Variant	197,655	141,834	19,153	1,290	0	0	0	0	5,574,010

Quantity of RDT&E Articles

10

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The F/A-18 is a twin-engine, mid-wing, multi-mission, tactical aircraft employed in Navy and Marine Corps strike fighter squadrons. The F/A-18, through selected use of external equipment is designed for flexibility in fighter, attack, fleet air defense, and close air support roles. The F/A-18E/F variant is an upgrade to the night attack "C" and "D" models. The F/A-18E/F will be the second major upgrade since the program's inception. The F/A-18 continues to adapt its strike fighter role to evolving threats into the next century. The F/A-18E/F E&MD program is under a Congressional mandated cost cap of \$4.883B FY90 dollars. Pre-development efforts of \$36.6M (in FY90 base year dollars), previously funded under the F/A-18C/D program, is reflected in the RDT&E total, but is not included in the approved \$4.883B development cap.

R-1 Item No. 160
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N

PROJECT NUMBER: E2130

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: FOLLOW-ON VARIANT

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$131,928) Continued engineering and manufacturing design activity in support of development flight test.
- (U) (\$4,614) Continued to develop and integrate mission software.
- (U) (\$55,113) Continued developmental flight testing, begin and complete DT-IID (TECHEVAL), and start DT-IIE and OT-IIC (OPEVAL).
- (U) (\$6,000) Continued Test Program Set (TPS) development.

2. FY 2000 PLAN:

- (U) (\$98,251) Complete engineering and manufacturing design activity in support of developmental flight test and prepare for Milestone-III (MS-III) Defense Acquisition Board (DAB).
- (U) (\$5,226) Continue to develop and integrate mission software.
- (U) (\$29,357) Complete DT-IIE and OT-IIC (OPEVAL).
- (U) (\$9,000) Continue Test Program Set (TPS) development.

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

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BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N

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PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: FOLLOW-ON VARIANT

3. FY 2001 PLAN:

- (U) (\$4,411) Continue to develop and integrate mission software.
- (U) (\$8,542) Complete integration and testing of avionics subsystems.
- (U) (\$6,200) Continue Test Program (TPS) development.

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

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PROGRAM ELEMENT: 0204136N

PROJECT NUMBER: E2130

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: FOLLOW-ON VARIANT

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	206,450	142,642	28,550
(U) Appropriated Value:	216,607	142,642	
(U) Adjustments from President's Budget:	-8,795	-808	-9,397
(U) FY 2001 President's Budget Submit	197,655	141,834	19,153

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY1999 decrease consists of SBIR and MRTFB assessments as well as minor pricing and inflation adjustments.

(U) The FY00 decrease reflects a \$808 thousand reduction for an Across the Board Congressional Rescission.

(U) The FY 2001 net decrease of \$9,397 thousand consists of reductions for HOL development and minor pricing and inflation adjustments.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable.

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

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PROGRAM ELEMENT: 0204136N

PROJECT NUMBER: E2130

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: FOLLOW-ON VARIANT

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</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) A/C QTY	30	36	42	45	48	48	48	219
(U) APN-1	2,816,393	2,837,795	2,919,621	2,928,703	3,118,941	3,192,253	3,250,587	14,963,715
(U) APN-6	83,504	80,173	141,757	116,654	53,766	56,645	78,668	241,957

Related RDT&E

- (U) PE 0207163N (AMRAAM)
- (U) PE 0604727N (Joint Standoff Weapon System) (JSOW)
- (U) PE 0604270N (EW Development)
- (U) PE 0604777N (Navigation/ID System)
- (U) PE 0305141D (Joint UAV)
- (U) PE 0603261N (Tactical Airborne Reconnaissance)
- (U) PE 0204163N (Fleet Communications)
- (U) PE 0604215N (Standards Development)

R-1 Item No. 160
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N

PROJECT NUMBER: E2130

PROGRAM ELEMENT TITLE: F/A-18 SQUADRONS

PROJECT TITLE: FOLLOW-ON VARIANT

(U) D. ACQUISITION STRATEGY: The July 1992 award of the two RDT&E,N contracts to MDA (airframe) and General Electric (engine), both sole source cost plus incentive fee/award fee, effectively initiated the F/A-18E/F E&MD program. The airframe and engine contracts are incrementally funded through FY00 and FY99, respectively. In March 1997, the F/A-18E/F program received approval to enter the Low Rate Initial Production (LRIP) phase. The airframe and engine contracts for this phase are Cost Plus Incentive Fee (CPIF) for LRIP I and Fixed Price Incentive Fee (FPIF) for LRIP II and LRIP III. LRIP III is a priced option to the LRIP II contract. The LRIP II/III contract possesses a common incentive profit structure which affords contractors maximum opportunity to implement quality, reliability, and producibility improvements. Benefits of the F/A-18E/F LRIP contracts include: 1) a measurable profit incentive across the LRIP period of performance; 2) commercial-like long time relationship with contractors which tie customer (fleet) satisfaction to long term profitability; 3) progressive assumption of risk by the contractors; 4) a single negotiation for LRIP II and III.

(U) E. SCHEDULE PROFILE

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) Program Milestones	2Q/99-NPR	2Q/MS-III 4Q/IOC	
(U) Engineering Milestones	1Q/99-ENG FPQ		
(U) T&E Milestones	1Q/99-2Q/99-DT-IID (TECHEVAL) 3Q/99 -1Q/00 OT-IIC (OPEVAL)		
(U) Contract Milestones			

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February 2000

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N

PROJECT NUMBER: E2130

PROJECT TITLE: FOLLOW-ON VARIANT

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999</u>		<u>FY 2000</u>		<u>FY 2001</u>		<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
				<u>FY 1999 Cost</u>	<u>Award Date</u>	<u>FY 2000 Cost</u>	<u>Award Date</u>	<u>FY 2001 Cost</u>	<u>Award Date</u>			
Pre-E&MD Activity	SS/CPFF	MDA St. Louis, MO	81,785	0		0				0	81,785	81,785
*Airframe E&MD	SS/CPIF/ AF	MDA St. Louis, MO	3,654,456	131,928	11/98	89,995	11/99			0	3,876,379	3,876,379
Airframe E&MD AWARD FEE (Note 1) non- add			(145,268)	(62,329)		(85,346)					(292,943)	
Contract OPEVAL Support	CPFF/BOA	MDA St. Louis, MO	6,928	0	11/98	4,756	11/99			0	11,684	11,684
*Pre-E&MD Activity	SS/CPFF	GE Lynn, MA	51,500	0		0				0	51,500	51,500
Engine E&MD	SS/CPIF/ AF	GE Lynn, MA	819,421	0		0				0	819,421	819,421
Engine E&MD AWARD FEE (Note 1) non-add			(48,378)								(48,378)	
Radar Integration	SS/CPFF	HUGHES LA, CA	7,480	2,407	4/99	0				0	9,887	9,887
Miscellaneous Development Efforts	Various	Other Contracts	20,214		7/99	3,500	11/99			0	23,714	23,714
Materials Development	WX	NAWCAD Warminster, PA	26,351	0		0				0	26,351	
Software Development	WX	NAWCWD China Lake, CA	50,749	4,614	10/99	5,226	10/99	4,411	10/00	20	65,020	
Support Equipment Development	WX	NAWCAD Lakehurst, NJ	28,997	6,264	10/99	9,000	10/99	6,200	10/00	1,000	51,461	
Maintenance Support Planning	WX	NADEP North Island, CA	10,179	0		0				0	10,179	
Avionics Support	WX	NAWCAD Indianapolis, IN	9,502			0				0	9,502	
Misc. Product Development/GFE	WX	Other Field Activities	125,398	8,559		6,486	10/99	2,795	10/00	90	143,329	
Subtotal Product Development			4,892,960	153,772		118,963		13,406		1,110	5,180,211	

Remarks Note 1: Award Fees included in the total contract value (Award fees are non-add)). FY99 and prior year award fee earned is 95.3%

**R-1 Item No. 160
UNCLASSIFIED**

UNCLASSIFIED

EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February 2000

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0204136N

PROJECT NUMBER: E2130
PROJECT TITLE: FOLLOW-ON VARIANT

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Support			0	0		0		0				
Subtotal Support (Not Applicable)			0	0		0		0				
Operational Test	WX	OPTEVFOR Norfolk, VA	1,568	11,889	11/98	1,000	10/99	4,000	10/00	0	18,457	
Flying Qualities and Performance	MIPR	NASA Langley, AFB	7,156	0		820				0	7,976	
Integrated Test Team	WX	NAWCAD Patuxent River, MD	220,268	23,182	11/98	12,648	10/99	725	10/00	0	256,823	
Wind Tunnel Test	MIPR	Arnold Eng Development Center(AEDC) Tullahoma, TN	33,765	4,176	11/98	6,000	10/99			0	43,941	
Misc Test & Evaluation	Various	Other Field Activities	8,002	0		0				0	8,002	
Subtotal Test & Evaluation			270,759	39,247		20,468		4,725		0	335,199	
Contractor Support/Travel/Misc	Various	NAVAIR Patuxent River, MD	50,359	4,636	11/99	2,403	10/99	1,022	11/00	180	58,600	
Subtotal Management SBIR Assessment			50,359	4,636		2,403		1,022		180	58,600	
Total Cost			5,214,078	197,655		141,834		19,153		1,290	5,574,010	

**R-1 Item No. 160
UNCLASSIFIED**