

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

**DATE: February 2000**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604216N**

**PROGRAM ELEMENT TITLE: Multi-Mission Helicopter Upgrade Development**

**(U ) COST: (Dollars in Thousands)**

<u>Project Number &amp; Title</u>	<u>FY 1999*</u> <u>Actual</u>	<u>FY 2000</u> <u>Budget</u>	<u>FY 2001</u> <u>Estimate</u>	<u>FY 2002</u> <u>Estimate</u>	<u>FY 2003</u> <u>Estimate</u>	<u>FY 2004</u> <u>Estimate</u>	<u>FY 2005</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total*</u> <u>Program</u>
H1707, MMH Upgrade Dev	216,118	132,963	69,946	7,886	6,670	0	0	0	786,394
RDT&E Test Articles	2								2
<b>TOTAL</b>	<b>216,118</b>	<b>132,963</b>	<b>69,946</b>	<b>7,886</b>	<b>6,670</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>786,394</b>
Quantity of RDT&E Articles	2								2

FY 1999 H1707 funding includes the following Congressional Adds from program element 0604212N:  
 Project H2414 in the amount of \$6M for Parametric Airborne Dipping Sonar, which has been reduced by \$189K for Congressional Undistributed adjustments,  
 Project H2631 in the amount of \$10M for LAMPS COTS Sonar, which has been reduced by \$314K for Congressional Undistributed adjustments, and  
 Project H2633 in the amount of \$1M for Ship Ground Station Upgrade, which has been reduced by \$31K for Congressional Undistributed adjustments.

FY 2000 H1707 funding includes the following Congressional Adds from program element 0604212N:  
 Project H2414 in the amount of \$15M for Parametric Airborne Dipping Sonar, which has been reduced by \$83K for Congressional Undistributed adjustments,

\*From program inception through FY99, program funded under P.E. 0604212N, ASW & Other Helo Development, Project Unit H1707.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Block II Upgrade improves the capability of the LAMPS MK III Weapons System to provide battle group protection and to add significant capability in coastal littorals and regional conflicts. The Block II Upgrade represents a significant avionics modification to the SH-60 by enhancing primary mission areas of ASW and Anti-Surface Warfare (ASUW). ALFS will be added to enhance the existing acoustic suite. An added multi-mode radar includes an inverse synthetic aperture radar mode (permits stand-off classification of hostile threats). An improved electronics surveillance measures system (ESM) will enable passive detection and targeting of radar sources not currently detectable.

(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 production approval decision.

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

**DATE: February 2000**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604216N**

**PROJECT NUMBER: H1707**

**PROGRAM ELEMENT TITLE: Multi-Mission Helicopter Upgrade Development PROJECT TITLE: MMH Upgrade Dev**

**( U ) COST: (Dollars in Thousands)**

<u>Project Number &amp; Title</u>	<u>FY 1999*</u> <u>Actual</u>	<u>FY 2000</u> <u>Budget</u>	<u>FY 2001</u> <u>Estimate</u>	<u>FY 2002</u> <u>Estimate</u>	<u>FY 2003</u> <u>Estimate</u>	<u>FY 2004</u> <u>Estimate</u>	<u>FY 2005</u> <u>Estimate</u>	<u>FY 2006</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>	<u>Total*</u> <u>Program</u>
H1707, LAMPS III Imp	216,118	132,963	69,946	7,886	6,670	0	0	0	0	786,394
Quantity of RDT&E Articles	2									

FY 1999 H1707 funding includes the following Congressional Adds from program element 0604212N:

Project H2414 in the amount of \$6M for Parametric Airborne Dipping Sonar, which has been reduced by \$189K for Congressional Undistributed adjustments, Project H2631 in the amount of \$10M for LAMPS COTS Sonar, which has been reduced by \$314K for Congressional Undistributed adjustments, and Project H2633 in the amount of \$1M for Ship Ground Station Upgrade, which has been reduced by \$31K for Congressional Undistributed adjustments.

FY 2000 H1707 funding includes the following Congressional Adds from program element 0604212N:

Project H2414 in the amount of \$15M for Parametric Airborne Dipping Sonar, which has been reduced by \$83K for Congressional Undistributed adjustments,

\*From program inception through FY99, program funded under P.E. 0604212N, ASW & Other Helo Development, Project Unit H1707.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Block II Upgrade improves the capability of the LAMPS MK III Weapons System to provide battle group protection and adds significant capability in coastal littoral and regional conflicts. The Block II Upgrade entered Engineering and Manufacturing Development (EMD) in FY93 and represents a significant avionics modification to the SH-60B greatly enhancing both primary mission areas of Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASUW). The Airborne Low Frequency Sonar (ALFS) will be added to enhance the existing acoustic suite. ASUW effectiveness will be improved with the addition of a multi-mode radar which includes an inverse synthetic aperture radar mode to permit stand-off classification of hostile threats. An improved Electronic Surveillance/Support Measures (ESM) system will enable passive detection and targeting of radar sources not detectable with the current system. Aircrew and aircraft survivability in hostile environments will be significantly improved through software integration of the self-defense equipments. Provisions for a tactical data transfer system to improve platform interoperability by rapid, secure transfer of mission information between multiple air and surface units is included in the upgrade. This project procures two low rate initial production test articles.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$94,971) EMD Phase I AND II: Initiated ESM development, initiated design of operator/tactical assistance software programs and integrated self defense suite, mission processor value engineering change proposal, continued radar development, continued system software development, supported DT-IIB/OT-IIA. Conducted Critical Design Review (CDR) #2. Procurement of management, manufacturing, material, and engineering labor associated with the Test Articles avionics.

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- (U) (\$24,800) Continued Non-recurring engineering effort associated with the Test Articles airframes remanufacture. Procured management, manufacturing, material, and engineering labor for the Test Articles Airframes remanufacture.

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**PROGRAM ELEMENT TITLE: Multi-Mission Helicopter Upgrade Development PROJECT TITLE: MMH Upgrade Dev**

- (U) (\$43,401) Continued efforts to incorporate commercial off the shelf avionics technology, referred to as Common Cockpit, into prototypes.
- (U) (\$11,973) Continued efforts to refurbish ALFS units, deficiency corrections, Integrated Logistics Support, Engineering and Testing.
- (U) (\$7,803) Continued documentation and processing requirements for multiple LRIP reviews. Procured lab assets for EMD Phase II. Continued Navy logistics, systems engineering and test support, trainer design and development support, updated Naval Training Plan documentation, performed program management and travel. Supported requirements for LRIP test articles including trainer systems development, Integrated Logistics Support, and field activity support.
- (U) (\$7,418) Performed Radar Solo Flight testing for SH-60R, and ALFS subsystem initial operational testing. Conducted data reduction and analysis.
- (U) (\$5,811) (Congressional add) Redesigned, repaired, and developed system performance enhancements for Parametric Airborne Dipping Sonar (PADS) to conduct helicopter flight demonstration.
- (U) (\$969) (Congressional add) Upgraded testing capability that will enable the Ship Ground Station to support air interoperability and the SH-60R test requirements.
- (U) (\$9,686) (Congressional add) Incorporated COTS technology into acoustic/radar processors for the SH-60R development of test articles.
- (U) (\$6,840) Procured GFE for Test Articles.
- (U) (\$2,446) Procured prototype support: GFE repair, flight tests of prototypes, and SLEP fatigue redesign.

**2. FY 2000 PLAN:**

- (U) (\$81,704) EMD Phase I And II: Continue ESM development, continue design of operator/tactical assistance software programs and integrated self-defense suite, continue system software development, support DT-II and ALFS Operational testing. Conduct Test Readiness Review (TRR), and continue test flights of test article aircraft. Conduct first flights on prototype aircraft. Continue procurement of management, manufacturing, material, and engineering labor associated with Test Articles avionics.
- (U) (\$8,265) Continue procurement of management, manufacturing, material, and engineering labor for the Test Articles Airframes remanufacture.
- (U) (\$6,388) Continue avionics hardware updates, production test equipment development, Integrated Logistics Support, Engineering, and Testing.
- (U) (\$8,513) Continue documentation and processing requirements for a multiple LRIP reviews. Complete procurement of lab assets for EMD Phase II. Continue Navy logistics, systems engineering and test support, program management and travel. Support requirements for LRIP test articles including aircraft maintenance, trainer systems development, Integrated Logistics Support, and field activity support.

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- (U) (\$8,374) Conduct DT-II/OT-II testing for SH-60R and ALFS operational testing. Conduct data reduction and analysis, and prepare test report.

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**DATE: February 2000**

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**PROJECT NUMBER: H1707**

**PROGRAM ELEMENT TITLE: Multi-Mission Helicopter Upgrade Development PROJECT TITLE: MMH Upgrade Dev**

- (U) (\$1,919) Complete efforts to incorporate commercial-off-the-shelf avionics technology, referred to as Common Cockpit, into prototypes.
- (U) (\$1,210) Complete procurement of GFE for Test Articles.
- (U) (\$1,673) Procure test articles support: GFE repair, parts support, maintenance of test articles, and complete SLEP fatigue redesign.
- (U) (\$14,917) (Congressional add) Develop, build, and test new Parametric Airborne Dipping Sonar (PADS) prototype. Includes Integrated Logistics Support analyzes, flight demonstration, and engineering support.

**3. FY 2001 PLAN:**

- (U) (\$51,367) EMD Phase I And II: Continue ESM development, continue design of operator/tactical assistance software programs and integrated self-defense suite, continue system software development, support Techeval/Opeval. Conduct Test Readiness Review (TRR). Conduct flights of test articles aircrafts. Continue procurement of management, manufacturing, material, and engineering labor associated with the Test Articles avionics.
- (U) (\$1,389) Avionics hardware updates and corrections, Integrated Logistics Support, Engineering, and Testing.
- (U) (\$4,976) Continue documentation and processing requirements for multiple LRIP reviews. Continue Navy logistics, systems engineering and test support, program management and travel. Support requirements for LRIP test articles including aircraft maintenance, trainer systems development, Integrated Logistics Support, and field activity support.
- (U) (\$12,214) Complete DT-II/OT-II testing for SH-60R. Conduct data reduction and analysis, and prepare test report.

**(U) B. PROGRAM CHANGE SUMMARY**

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY2001</u>
(U) FY 2000 President's Budget:	230,412	118,701	31,332
(U) Appropriated Value:	232,517	133,701	
(U) Adjustments from Pres Budget:	-14,294	+14,262	+38,614

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(U) FY2001 President's Budget Submit:      216,118      132,963      69,946

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**PROGRAM ELEMENT TITLE: Multi-Mission Helicopter Upgrade Development    PROJECT TITLE: MMH Upgrade Dev**

**CHANGE SUMMARY EXPLANATION:**

(U) Funding. The FY 1999 net decrease of \$14,294 thousand reflects a reduction of \$5,994 thousand for a SBIR assessment, and a reduction of \$8,300 thousand for a reprioritization of requirements within the Navy. The FY 2000 net increase of \$14,262 thousand reflects the \$15,000 thousand Congressional Add for PADS and a \$738 thousand reduction for an Across-the-Board Congressional rescission. The FY 2001 net increase of \$38,614 thousand reflects a \$34,000 thousand increase to provide funds for the EMD II contract award and EMD I cost growth, a \$5,300 thousand increase for a SH-60R revised procurement profile, a \$21 thousand increase for Military and Civilian Pay, a \$46 thousand decrease for Strategic Sourcing Plan savings and Navy Working Capital Fund (NWCF) adjustments, a \$477 thousand decrease for revised economic assumptions, and a \$184 thousand decrease for reprioritization of requirements within the Navy.

(U) Schedule: The delay in delivery of the two prototype test article aircraft caused the program to move TRR, DT-II/OT-II, TECHEVAL/OPEVAL, MILESTONE III.

(U) Technical: Not Applicable

**(U) C. OTHER PROGRAM FUNDING SUMMARY**

<u>Appn</u>	<u>FY 1999</u> <u>Actual</u>	<u>FY 2000</u> <u>Estimate</u>	<u>FY 2001</u> <u>Estimate</u>	<u>FY 2002</u> <u>Estimate</u>	<u>FY 2003</u> <u>Estimate</u>	<u>FY 2004</u> <u>Estimate</u>	<u>FY 2005</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>
APN 1 Line SH-60R P1#08		216,692	162,327	209,613	526,400	568,123	555,565	2,798,035
APN-6 Line SH-60R Initial Spares		14,206	14,628	25,125	49,493	364	340	0

Related RDT&E

- (U) P.E. 0604507N (Enhanced Modular Signal Processor)
- (U) P.E. 0604261N (Acoustic Search Sensors)
- (U) P.E. 0604212N (ASW & Other Helo Development)

(U) C. ACQUISITION STRATEGY: The contracting plan for Common Cockpit was changed from a Federal Acquisition Regulation contract to a Section 845 Other Transaction. In FY99, we have two prime contractors for the LRIP Test Articles. A sole source contract will be awarded to Sikorsky for the Air Vehicle portion, and Lockheed Martin Federal Systems for the avionics integration.

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(U) D. SCHEDULE PROFILE	<u>FY 1999*</u>	<u>FY 2000</u>	<u>FY2001</u>	<u>To Complete</u>
(U) Program Milestones				IOC 4Q/02 Milestone III 2Q/03
(U) Engineering Milestones		TRR#1 1Q/00	TRR#2 2Q/01	
	CDR #2 4Q/99			
(U) T&E Milestones		DT-II/OT-II 2Q/00 Start	DT-II/OT-II 2Q/01 Complete	TECHEVAL/OPEVAL 1Q/02 Start
(U) Contract Milestones		LRIP 2Q/00		

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

**DATE: February 2000**

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**PROJECT NUMBER:**

**H1707**

**PROJECT TITLE:**

**MMH Upgrade Dev**

<u>Cost Categories:</u>	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; 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>FY2001 Cost</u>	<u>FY2001 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
EMD Hardware/Software Development	SS/CPFF	Lockheed Martin Owego, NY	222,836	94,971	Nov 98	81,704	Nov 99	51,367	Nov 00	7,334	458,212	458,212
ALFS System Refurbishment & Eng	C/CPIF	Raytheon Fullerton, CA	13,083	9,215	Mar 99	3,470	Feb 00	1,000	Dec 00		26,768	26,768
COTS Avionics Technology/H-60 Common Cockpit	845 O/T	Lockheed Martin Owego, NY	17,710	43,401	Nov 98	1,919	Nov 99				63,030	63,030
Airframes/NRE	SS/CPIF	Sikorsky, Straford, CT		24,800	Jul 99	8,265	Dec 99				33,065	33,065
COTS Acoustics/Radar Development	FF	Lockheed Martin Owego, NY		8,078	Jan 00						8,078	8,078
COTS Acoustics/Radar Material	BOA	Lockheed Martin Owego, NY		1,314	Oct 99						1,314	1,314
PADS Development	SS/CPIF	Sontech Bedford, NH	2,574	2,814	Sep 99	10,900	Jun 00				16,288	16,288
GFE Repair/SLEP Redesign	BOA	Sikorsky, Stratford CT		2,446	Jan 99	1,673	Feb 00				4,119	4,119
Misc Test Articles GFE Procurement	MISC	Various		6,840	Jul 99	1,210	May 00				8,050	8,050
<b>Subtotal Project Development</b>			<b>256,203</b>	<b>193,879</b>		<b>109,141</b>		<b>52,367</b>		<b>7,334</b>	<b>618,924</b>	<b>618,924</b>
Remarks Total Cost does not reflect H0485 funding												
Engineering & Technical Support	WX	NAWCAD Warminster, PA	13,435								13,435	
MISC In-House	WX/MIPR	Various	17,870	5,846	Oct 98	8,385	Dec 99	3,152	Oct 00	1,737	36,990	
MISC Contracts	RX	Various	3,798	1,240	Dec 98	2,019	Feb 00	1,506	Jan 01	911	9,474	
AIC Engineering Support	WX	NAWCAD Pax	3,148								3,148	
AIC Engineering Support	RX	NAWCAD Pax	1,570								1,570	
PADS Misc In-House Support	WX	NAWCAD Pax	4,425	2,788	Apr 99	3,517	Apr 00				10,730	
PADS Misc Contract Support	RX	NAWCAD Pax	248		Jun 99	250	May 00				498	
Ship Ground Station In-House Support	WX	NAWCAD Pax		969	Apr 99						969	
COTS Acoustics/Radar Contract Sup.	WX/MIPR	Various		294	Sep 99						294	
<b>Subtotal Support</b>			<b>44,494</b>	<b>11,137</b>		<b>14,171</b>		<b>4,658</b>		<b>2,648</b>	<b>77,108</b>	

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

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MMH Upgrade Dev

Cost Categories:	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; 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>FY2001 Cost</u>	<u>FY2001 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Remarks												
Test and Evaluation	WX	NAWCAD Pax River, MD	4,727	7,418	Oct 98	8,374	Dec 99	12,214	Oct 00	4,165	36,898	
<b>Subtotal Test &amp; Evaluation</b>			<b>4,727</b>	<b>7,418</b>		<b>8,374</b>		<b>12,214</b>		<b>4,165</b>	<b>36,898</b>	
Remarks												
Misc Contracts Management Support	RX	Various	850	2,206	Nov 98	40	Nov 99	29	Nov 00	40	3,165	
Misc In-House Management Support	WX	Various	232	1,269	Jan 99	987	Oct 99	678	Jan 01	369	3,535	
PADS Misc Contract Mgmt Support	RX	NAWCAD Pax	45	209	May 99	250	May 00				504	
<b>Subtotal Management</b>			<b>1,127</b>	<b>3,684</b>		<b>1,277</b>		<b>707</b>		<b>409</b>	<b>7,204</b>	
Remarks												
<b>Other FY93 &amp; Prior Costs</b>			<b>46,260</b>								<b>46,260</b>	
<b>Total Cost</b>			<b>352,811</b>	<b>216,118</b>		<b>132,963</b>		<b>69,946</b>		<b>14,556</b>	<b>786,394</b>	

Remarks  
\* From program inception through FY99, funded under PE 0604212N, ASW & Other Helo Development, Project H1707

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