

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

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604216N

PROGRAM ELEMENT TITLE: Multi-Mission Helicopter Upgrade Development

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998*</u> <u>Budget</u>	<u>FY 1999*</u> <u>Budget</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>	<u>Total*</u> <u>Program</u>
H1707, MMH Upgrade Dev RDT&E Test Articles	94,722	230,412 3	118,701	31,332	8,067	6,856	0	0	0	751,298 3
TOTAL	94,722	230,432	118,701	31,332	8,067	6,856	0	0	0	751,298
Quantity of RDT&E Articles		3								3

FY98 H1707 funding includes Congressional Adds from program element 0604212N projects H0485 (\$2,228 thousand for ALFS), H2412 (\$14,154 thousand for SH-60R Block II), H2413 (\$4,718 thousand for Air Interoperability Center), and H2414 (\$4,718 thousand for Parametric Airborne Dipping Sonar). In addition, FY98 is \$1 thousand over controls due to an administrative error in controls.

FY99 H1707 funding includes Congressional Adds from program element 0604212N projects H2414 (\$5,986 thousand for Parametric Airborne Dipping Sonar), H2631 (\$9,997 thousand for LAMPS COTS), and H2633 (\$998 thousand for Ship Ground Station Upgrade).

*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:

(U) H1707 - 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 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

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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 & Title</u>	<u>FY 1998*</u> <u>Budget</u>	<u>FY 1999*</u> <u>Budget</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>	<u>Total*</u> <u>Program</u>
H1707, LAMPS III Imp	94,722	230,412	118,701	31,332	8,067	6,856	0	0	0	751,298
Quantity of RDT&E Articles		3								

FY98 H1707 funding includes projects H2412 (\$14,154 thousand for SH-60R Block II), H2413 (\$4,718 thousand for Air Interoperability Center), H2414 (\$4,718 thousand for Parametric Airborne Dipping Sonar). The FY98 program also reflects \$2.2M for ALFS development reflected under project unit H0485 for execution. In addition, FY98 is \$1 thousand over controls due to an administrative error in controls.

FY99 H1707 funding includes projects H2414 (\$5,986 thousand for Parametric Airborne Dipping Sonar), H2631 (\$9,997 thousand for LAMPS COTS), and H2633 (\$998 thousand for Ship Ground Station Upgrade).

*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 three low rate initial production test articles.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

- (U) (\$47,919) Continued systems integration and test, continue radar development, complete Phase I air vehicle development, continue system software development.
- (U) (\$17,710) Began efforts to incorporate commercial off the shelf avionics technology, referred to as Common Cockpit, into prototypes.
- (U) (\$9,411) Refurbished ALFS systems for LRIP Test Articles, ALFS engineering support, Integrated Logistics Support, and test planning.
- (U) (\$7,279) Provided Navy systems engineering support, logistics support analysis, plan for EMD Phase II, trainer specification preparation, program management and travel.

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- (U) (\$2,967) Funded Test Team management and DT/OT test planning and support.
- (U) (\$4,718) Congressional add for the Air Interoperability Center provided for engineering, development, integration, and testing efforts in support of test requirements.
- (U) (\$4,718) Congressional add provided funds to accomplish aircraft integration and flight demonstration of Parametric Airborne Dipping Sonar (PADS).

2. FY 1999 PLAN:

- (U) (\$79,977) EMD Phase I AND II: Start ESM development, initiate design of operator/tactical assistance software programs and integrated self defense suite, mission processor value engineering change proposal, complete radar development, continue system software development, support DT-IIB/OT-IIA. Conduct Test Readiness Review (TRR) and CDR #2. Conduct first flights of prototype aircraft.
- (U) (\$24,800) Begin Contractor non-recurring engineering efforts including remanufacture kit design, technical drawings/tooling. Begin non-recurring engineering effort for Service Life Extension Program (SLEP) kits. Commence Non-recurring effort for avionics.
- (U) (\$35,909) Procurement of management, manufacturing, material, engineering labor, and spares associated with LRIP Test Articles.
- (U) (\$41,382) Continue efforts to incorporate commercial off the shelf avionics technology, referred to as Common Cockpit, into prototypes.
- (U) (\$12,082) Continue efforts to refurbish ALFS units, deficiency corrections, Integrated Logistics Support, Engineering and Testing.
- (U) (\$6,266) Complete documentation and processing requirements for a LRIP review. Procurement of lab assets for EMD Phase II. Continue Navy logistics, systems engineering and test support, trainer design and development support, update Naval Training Plan documentation, program management and travel. Support requirements for LRIP test articles including trainer systems development, Integrated Logistics Support, and field activity support.
- (U) (\$8,106) DT-IIB/OT-IIA testing for SH-60R and ALFS subsystem initial operational testing. Conduct data reduction and analysis.
- (U) (\$5,838) Congressional add provided funds to accomplish aircraft integration and flight demonstration of Parametric Airborne Dipping Sonar (PADS).
- (U) (\$974) Congressional add provided funds for upgrade of the Ship Ground Station program which is to develop a testing capability that will enable the ship ground station to support air interoperability and the SH-60R test requirements.
- (U) (\$9,731) Congressional add provided funds to incorporate COTS technology into acoustic/radar processors for the SH-60R development of test articles.
- (U) (\$5,347) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638 (H1707 \$4,929; H2414 \$148; H2631 \$246; H2633 \$24).

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3. FY 2000 PLAN:

- (U) (\$68,901) 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-IIB/OT-IIA. Conduct flights of prototype aircraft.
- (U) (\$6,000) Continue Contractor non-recurring engineering efforts including remanufacture kit design, technical drawings/tooling. Continue non-recurring effort for avionics.
- (U) (\$22,872) Procurement of management, manufacturing, material, and engineering labor associated with LRIP Test Articles.
- (U) (\$8,303) ALFS hardware updates, production test equipment development, Integrated Logistics Support, Engineering, and Testing.
- (U) (\$2,933) Complete documentation and processing requirements for a LRIP review. Procurement of lab assets for EMD Phase II. Continue Navy logistics, systems engineering and test support, trainer design and development support, update Naval Training Plan documentation, program management and travel. Support requirements for LRIP test articles including trainer systems development, Integrated Logistics Support, and field activity support.
- (U) (\$5,764) DT-IIB/OT-IIA testing for SH-60R and ALFS subsystem operational testing. Conduct data reduction and analysis, and prepare test report.
- (U) (\$3,928) Complete efforts to incorporate commercial off the shelf avionics technology, referred to as Common Cockpit, into prototypes.

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(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	92,794	215,517	120,356
(U) Appropriated Value:	97,119	232,517	
(U) Adjustments from Pres Budget:	1,928	14,895	-1,655
(U) FY 2000 President's Budget Submit:	94,722	230,412	118,701

CHANGE SUMMARY EXPLANATION:

(U) Funding: The net increase of \$+1,928 thousand in FY98 reflects a SBIR adjustment (\$-2,359 thousand) and an increase of \$+4,287 thousand of below threshold reprogrammings. FY98 is \$1k over controls due to administrative error in controls. The net increase of \$+14,895 thousand in FY99 reflects an economic assumption adjustment (\$-533 thousand), congressional cut (\$-1,000 thousand), FFRDC distribution adjustment (\$-32 thousand), Contract Advisory & Assistance adjustment (\$-503 thousand), civilian personnel underexecution (\$-37 thousand), congressional add for PADS (\$+6,000 thousand), congressional add to Upgrade Ship Ground Station (\$+1,000 thousand), and congressional add for SH-60 LAMPS COTS Acoustic/Radar processors (\$+10,000 thousand). The net decrease of \$-1,655 thousand in FY00 reflects the PBD 604 adjustment (\$-1,715 thousand), and the PBD 606 adjustment (\$+60 thousand).

(U) Schedule: Not Applicable

(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 1 Line-SH-60R P1#10			216,692	266,223	395,261	464,156	555,778	552,769	1,487,112
APN-6 Line SH-60R Initial Spares			13,372	23,062	37,297	42,246			

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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 has been changed from a Federal Acquisition Regulation contract to a Section 845 Other Transaction. In FY99, we anticipate 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.

(U) D. SCHEDULE PROFILE

	<u>FY 1998*</u>	<u>FY 1999*</u>	<u>FY 2000</u>	<u>To Complete</u>
(U) Program Milestones				
(U) Engineering Milestones		TRR 1Q CDR #2 2Q-4Q		TRR 2Q/01
(U) T&E Milestones		DT-IIB/OT-IIA 3Q Start	DT-IIB/OT-IIA 1Q Complete	TECHEVAL/OPEVAL Start 2Q/01
(U) Contract Milestones			LRIP 2Q	

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

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H1707

PROJECT TITLE:

MMH Upgrade Dev

<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>
EMD Hardware/Software Development	SS/CPFF	Lockheed Martin Owego, NY	222,836	79,977	Nov 98	68,901	Nov 99	17,912	389,626	389,626
ALFS System Refurbishment & Eng	C/CPIF	Raytheon Fullerton, CA	13,083	10,082	Mar 99	6,145	Nov 99	1,000	30,310	30,310
COTS Avionics Technology/H-60 Common Cockpit	845 O/T	Lockheed Martin Owego, NY	17,710	41,382	Nov 98	3,928	Nov 99	0	63,020	63,020
LRIP/Test Articles/NRE	SS/FF	Lockheed Martin Owego, NY & Sikorsky Stratford, CT	0	60,709	May 99	28,872	Nov 99	11,839	101,420	101,420
COTS Acoustics/Radar Development	FF	Lockheed Martin Owego NY	0	9,731	Apr 99	0	N/A	0	9,731	9,731
PADS Development	SS/CPIF	Sontech Bedford, NH	2,574	3,200	May 99	0	N/A	0	5,774	5,774
Subtotal Project Development			256,203	205,081		107,846		30,751	599,881	599,881
Remarks 1/Total Cost includes EMD II efforts 2/Total Cost does not reflect H0485 funding										
Engineering & Technical Support	WX	NAWCA Warminster, PA	13,435	0	N/A	0	N/A	0	13,435	N/A
MISC In-House	WX	Various	18,870	6,102	Oct 98	2,694	Oct 99	1,200	28,866	N/A
MISC Contracts	RX	Various	4,798	1,613	Dec 98	2,019	Dec 99	828	9,258	N/A
AIC Engineering Support	WX	NAWCAD Pax	3,148	0	N/A	0	N/A	0	3,148	N/A
AIC Engineering Support	RX	NAWCAD Pax	1,570	0	N/A	0	N/A	0	1,570	N/A
PADS Misc In-House Support	WX	NAWCAD Pax	4,425	2,338	Apr 99	0	N/A	0	6,763	N/A
PADS Misc Contract Support	Rx	NAWCAD Pax	248	300	Jun 99	0	N/A	0	548	N/A
Ship Ground Station In-House Support	WX	NAWCAD Pax	0	974	Apr 99	0	N/A	0	974	N/A
Subtotal Support			46,494	11,327		4,713		2,028	64,562	0

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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	Cost to Complete	Total Cost	Target Value of Contract
Remarks										
Test and Evaluation	WX	NAWCAD Pax River, MD	4,727	8,106	Oct 98	5,764	Oct 99	12,724	31,321	N/A
Subtotal Test & Evaluation			4,727	8,106		5,764		12,724	31,321	0
Remarks										
Misc Contracts Management Support	RX	Various	850	213	Nov 98	40	Nov 99	42	1,145	N/A
Misc In-House Management Support	WX	Various	232	338	Jan 99	338	Oct 99	676	1,584	N/A
PAD Misc Contract Mgmt Support	RX	NAWCAD Pax	45	0	N/A	0	N/A	0	45	N/A
Subtotal Management			1,127	551		378		718	2,774	0
Remarks										
SBIR Assessment			0	5,347	N/A	0	N/A	0	5,347	N/A
Other FY93 & Prior Costs			47,413	0	N/A	0	N/A	0	47,413	N/A
Total Cost			355,964	230,412		118,701		46,221	751,298	138,597

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

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