Exhibit R-2, RDT&E Budget Item Justification: PB 2013 United States Special Operations Command	DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 1160482BB: *SOF Rotary Wing Aviation*

COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	54.985	51.123	24.430	-	24.430	47.448	32.663	14.820	18.268	Continuing	Continuing
D615: *SOF Rotary Wing Aviation*	54.985	51.123	24.430	-	24.430	47.448	32.663	14.820	18.268	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element develops SOF-unique modifications and upgrades to SOF rotary wing aircraft that operate in increasingly hostile environments. Rotary wing aircraft supported by this project include: MH-60L/M, MH-47G, and A/MH-6M. These aircraft provide aviation support to Special Operations Forces (SOF) in worldwide contingency operations and low-intensity conflicts. They must be capable of rapid deployment; undetected penetration of hostile areas; and operating at extended ranges under adverse weather conditions to infiltrate, provide logistics for, reinforce, and extract SOF. The threat is characterized by an extensive and sophisticated ground based air defense system and an upgraded air-to-air capability targeted against helicopters.

B. Program Change Summary ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	14.473	51.123	35.551	-	35.551
Current President's Budget	54.985	51.123	24.430	-	24.430
Total Adjustments	40.512	-	-11.121	-	-11.121
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	41.520	-			
• SBIR/STTR Transfer	-0.837	-			
• Other Adjustment	-0.171	-	-11.121	-	-11.121

Change Summary Explanation

FY 2011: Net increase of $40.512 million is due to a USSOCOM request for Congressional transfer of procurement to RDT&E ($19.292 million) for MH-60 SOF Modernization flight and qualification testing, a reprogramming of (-$4.086 million) to several program elements that were used for MH-60 SOF Modernization flight and qualification testing, a reprogramming (-$0.496 million) to the YMQ-18A Forester Advanced Concepts Technology Demonstration; an Omnibus reprogramming (FY11-25 PA , dated 6 September 2011) to support Hostile Fire Indication Systems: integration into the AVR-2B laser warning sensor ($9.600 million), a Hostile Fire Indication System fully fused extended user evaluation ($5.610 million), development of Degraded Visual Environment (DVE) ($6.0 million) and Multiple Impact Transparent Armor System (MITAS) ($5.650 million) to procure shipsets on MH-47s and MH-60s to increase aircrew and passenger safety; 1415-3 internal reprogramming request is pending to transfer the MITAS $5.650 million from RDT&E to procurement to procure shipsets; and economic adjustments of (-$0.171 million) and a transfer to Small Business Innovative Research (-$0.837 million).

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FY 2012: None.

FY 2013: Net decrease of (-$11.121 million) is due to reprogramming to support higher command priorities (-$11.415 million), and economic assumption increase of $0.294 million.

Schedule: None.

Technical: None.

Exhibit R-2A, RDT&E Project Justification: PB 2013 United States Special Operations Command			DATE: February 2012
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COST ($ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
D615: *SOF Rotary Wing Aviation*	54.985	51.123	24.430	-	24.430	47.448	32.663	14.820	18.268	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

This project develops/upgrades SOF rotary wing aircraft systems that operate in increasingly hostile environments. Rotary wing aircraft supported by this project include: MH-60L/M, MH-47G, and A/MH-6M. These aircraft provide aviation support to SOF in worldwide contingency operations and low-intensity conflicts, and they must be capable of rapid deployment; undetected penetration of hostile areas; and operating at extended ranges under adverse weather conditions to infiltrate, provide logistics for, reinforce, and extract SOF. The threat is characterized by an extensive and sophisticated ground based air defense system and an upgraded air-to-air capability targeted against helicopters. Sub-projects include:

• A/MH-6M Block 3.0 Upgrade includes development of an integrated digital moving map, upgraded multifunctional displays, improved communication/navigation suites, lightweight mission processor, structural upgrades, and next generation main/tail rotor systems. This upgrade modification will increase safety margins and increase operational capabilities at higher altitude and temperature conditions.

• The A/MH-6 Improved Seat system will provide a crash-worthy ballistic protection, crash attenuation, and restraint system upgrades to prevent severe injury to Army Special Operations Aviation (ARSOA) pilots. The Center for Army Lessons Learned reported that over a three year period, 50 ARSOA pilots suffered serious back injuries and were grounded due to hard landings.

• Hostile Fire Indicating System (HFIS) detects, classifies, and alerts the aircrew to the presence of small caliber weapons fire for SOF MH-47/60 platforms. By providing detection and angle of arrival information, the HFIS will allow the aircrew to perform evasive and counter-fire actions significantly increasing the aircraft's probability of survival. The Helicopter Survivability Task Force (HSTF) additional funds will incorporate Hostile Fire Indication in the Infrared Spectrum as well as providing sensor fusion of Infrared, Ultra-Violet, and acoustic sensors in order to reduce false alarms and increase probability of detection.

• The MH-47 Engine Automatic Re-Light (EARL) system will detect the presence of an impending or an in-progress engine flame-out event and re-establish combustion within the engine to avoid an actual engine flame-out. EARL will recognize the event much faster than a pilot and then proceed to reignite/restart the engine while monitoring and adjusting engine parameters including the ignition system and fuel flow scheduling. EARL is required to address safety issues in the MH-47 fleet where engine flame-out has been cited as one of the probable causes of the loss of an MH-47G with loss of life in support of Operation Enduring Freedom.

• MH-47 Low Cost Modifications program is an effort to integrate an improved Common Rotor Blade (CRB) being developed by the Army into the MH-47G.

• MH-60 SOF Modernization program provides for the systems engineering and platform integration efforts, to include continued flight and qualification testing and test support.

Exhibit R-2A, RDT&E Project Justification: PB 2013 United States Special Operations Command		DATE: February 2012
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• Next Generation Forward Looking Infrared Radar (NGFLIR) develops and qualifies a laser rangefinder/designator (LRF/D) for the AN/ZSQ-3 Electro Optical Sighting System (EOSS).

• Reduced Optical Signature Emissions Solution (ROSES) program reduces the optical signature output of the current infrared expendable decoys for purposes of reducing Army Special Operations Aviation (ARSOA) aircraft vulnerabilities. This flare solution will have the capability to decoy currently fielded infrared missiles and more sophisticated emerging threats, and is an interim solution pending flare technology advancements.

• Degraded Visual Environment (DVE) Solution will fuse information from currently fielded aircraft sensors with emerging technology to display real-time reference points, obstacles, and landing zone information to the aviator. The DVE solution will provide MH-47/60/6 aircrews with visual cues for obstacle avoidance and aircraft control during all phases of flight and significantly increase crew and passenger survivability in DVE such as dirt and snow. Additional funding is provided to enhance the maturity of the rotor-craft and begin software development.

• Aircraft Occupant Ballistic Protection System (AOBPS) is a follow-on procurement for ship-sets of Multiple Impact Transparent Armor System (MITAS) panels that were developed with Helicopter Survivability Task Force (HSTF) FY 2010 RDT&E funds. These components will replace panels and windows to increase aircrew and passenger safety and survivability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Title: A/MH-6M Block 3.0 Upgrade ***FY 2012 Plans:*** Begins development of cockpit upgrades, improved rotor systems, and upgrades to airframe. ***FY 2013 Plans:*** Continue development of cockpit upgrades, improved rotor systems, and upgrades to airframe.	-	18.765	13.145
Title: A/MH-6 Improved Seat System ***FY 2011 Accomplishments:*** Completed development of integrated crash-worthy seat system for the A/MH-6M.	2.616	-	-
Title: Hostile Fire Indicating System (HFIS) ***FY 2011 Accomplishments:*** Completed development of the detection, classification and alert systems for the HFIS. HSTF provided additional $15.210 million for AVR-2B HFIS integration and HFIS sensor fusion with extended user evaluation.	18.872	-	-
Title: MH-47 Engine Automatic Re-Light (EARL) ***FY 2012 Plans:***	-	2.563	0.793

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Begins development of the MH-47 fleet EARL system. ***FY 2013 Plans:*** Continue development of the MH-47 fleet EARL system.			
Title: MH-47 Low Cost Modifications ***FY 2012 Plans:*** Begins integration of the Army's improved common rotor blade into the MH-47G. ***FY 2013 Plans:*** Continue integration of the Army's improved common rotor blade into the MH-47G.	-	5.122	5.735
Title: MH-60 SOF Modernization Program ***FY 2011 Accomplishments:*** Continued systems integration and qualification efforts on one prototype MH-60M helicopter. ***FY 2012 Plans:*** Completes systems integration and qualification efforts on one prototype MH-60M helicopter.	19.045	22.782	-
Title: Next Generation FLIR ***FY 2011 Accomplishments:*** Completed development, integration and qualification of LRF/D for the AN/ZSQ-3 Electrical Optical Sighting System.	1.391	-	-
Title: Reduced Optical Signature Emissions Solution (ROSES) ***FY 2011 Accomplishments:*** Continued development of ROSES. ***FY 2012 Plans:*** Completes development of ROSES.	1.411	1.891	-
Title: Degraded Visual Environment (DVE) ***FY 2011 Accomplishments:*** Omnibus provided for a collaborative effort with Defense Advanced Research Project Agency (DARPA) to begin development of firmware/software for the DVE sensor solution with avionics backbone for ARSOA platforms. This effort is the engineering foundation to the FY 2013 sensor solution effort. ***FY 2013 Plans:***	6.000	-	4.757

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2011	FY 2012	FY 2013
Begin development, integration, and testing of DVE sensors solution with avionics backbone (developed with FY 2011 funds) for Army Special Operations Aviation (ARSOA) platforms.			
Title: Aircraft Occupant Ballistic Protection System (AOBPS) ***FY 2011 Accomplishments:*** Reprogramming to procurement in order to procure shipsets of MITAS panels that were developed with HSTF FY 2010 RDT&E funds. These components will replace panels and windows to increase aircrew and passenger safety and survivability.	5.650	-	-
Accomplishments/Planned Programs Subtotals	54.985	51.123	24.430

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
• PROC2: *ROTARY WING UPGRADES AND SUSTAINMENT*	95.473	41.411	73.888		73.888	83.608	162.768	182.903	183.589	Continuing	Continuing

D. Acquisition Strategy

• A/MH-6M Block 3.0 Upgrade - This effort develops and qualifies several aircraft improvements such as an integrated digital moving map, upgraded multifunctional displays, improved communication/navigation suites, lightweight mission processor, structural upgrades, and next generation main and tail rotor systems. This effort is critically required to make the A/MH-6M more relevant on the battlefield today and well into 2020 decade. This effort will increase safety margins and increase operational capabilities at higher altitude and temperature conditions. Competitive source selection processes will be conducted for the Block 3.0 upgrades to the extent possible. Proprietary considerations may direct some efforts to the original equipment manufacturer.

• A/MH-6M Improved Seat System - This effort develops and qualifies an integrated ballistic tolerant, ergonomic, and crashworthy crew seat system for the A/MH-6M fleet. This modification will provide critical protection from crash loads and airframe vibrations by upgrading the current A/MH-6M seat and restraint system. A competitive source selection process will be conducted for the crashworthy seat system replacement to the extent possible. Proprietary considerations may direct some efforts to the original equipment manufacturer.

• HFIS - This effort will develop, integrate, install, and field the capability to detect, classify, and alert the aircrew to the presence of small arms fire, Anti-Aircraft Artillery, and Rocket Propelled Grenades. HFIS will allow aircrews to perform evasive and counter-fire actions, which will increase aircraft survivability and mission success. A competitive source selection process will be conducted for the HFIS effort to the extent possible. Proprietary considerations may direct some efforts to the original equipment manufacturer. The HSTF additional funds will incorporate Hostile Fire Indication in the Infrared Spectrum as well as providing sensor fusion of Infrared, Ultra-violet, and acoustic sensors in order to reduce false alarms and increase probability of detection.

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• MH-47 EARL System - This effort develops and qualifies a solution to address safety issues in the MH-47 fleet through the development, test, qualification, and fielding of changes to the engine control system to perform automatic engine failure detection and flame-out protection. A competitive source selection process will be conducted for the EARL system to the extent possible. Proprietary considerations may direct some efforts to the original equipment manufacturer.

• MH-47 Low Cost Modification to integrate the Army Common Rotor Blade (CRB) - This effort integrates and qualifies a CRB solution that significantly increases payload capability, expands forward flight envelope, improves manufacturing and maintenance characteristics, and maintains commonality with the Army. As the MH-47 CRB integration leverages Army CRB development activities with the original equipment manufacturer, this effort will consist mostly of Government executed integration, testing, and qualification efforts with some analytical engineering services to be procured. Because of proprietary considerations, efforts may be directed to the original equipment manufacturer.

• MH-60M SOF Modernization Program - This supports the Systems Integration and Qualification efforts on the prototype MH-60M helicopter. This includes, but is not limited to, government and contractor flight test support, engineering analysis, documentation, and airworthiness substantiation. There are no proprietary considerations that may direct some efforts to the original equipment manufacturer.

• NGFLIR - Develops, integrates and qualifies the laser rangefinder and designator to the AN/ZSQ-3 and develops a drop-in, advanced, dual-color (long and mid-wave) IR detector upgrade for the AN/ZSQ-2. NGFLIR will be installed on the MH-47/60 and AH-6M platforms within the ARSOA fleet. Proprietary considerations may direct some efforts to the original equipment manufacturer.

• ROSES - This effort develops and qualifies a flare solution that discharges fewer expendables per dispense and emits less visible light to improve aircrew's ability to survive in sophisticated threat environments. A competitive source selection process will be conducted for the ROSES to the extent possible. Proprietary considerations may direct some efforts to the original equipment manufacturer.

• DVE - This effort integrates and qualifies a solution to address a safety of flight issue while flying in degraded visual environments. A competitive source process will be conducted for the DVE solution to the extent possible while capitalizing on Science and Technology initiatives and other Service DVE investments. Proprietary considerations may direct some efforts to the original equipment manufacturer. Additional funds will be employed to begin the development of the software/firmware for the Synthetic Vision Backbone which uses Digital Terrain Elevation Data or High Resolution digital elevation maps, Threat Data, and Blue Force Tracker combined with Q2 Electro-Optic Sighting System overlay and Silent Knight Radar or DVE sensors (not yet defined) to provide a synthetic vision scene to aid the aircrew in degraded visual environments. The Synthetic Vision Backbone is sensor agnostic, maximizing the use of a priori data with sensors used for change detection.

• AOBPS -This is a follow-on procurement for shipsets of Multiple Impact Transparent Armor System panels that were developed with HSTF FY 2010 RDT&E funds. These components will replace panels and windows to increase aircrew and passenger safety and survivability.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 United States Special Operations Command			DATE: February 2012
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
A/MH-6M Block 3.0 Upgrades	C/Various	PM MELB:Ft. Eustis, VA.	-	18.765	Jan 2012	13.145	Jan 2013	-		13.145	Continuing	Continuing	
MH-47G EARL	C/Various	PM TAPO:Ft. Eustis, VA.	-	2.563	Jan 2012	0.793	Apr 2013	-		0.793	Continuing	Continuing	
MH-47G Low Cost Mods	C/Various	PM TAPO:Ft. Eustis, VA.	-	5.122	Jan 2012	5.735	Jan 2013	-		5.735	Continuing	Continuing	
ROSES	C/Various	PM TAPO:Ft. Eustis, VA.	6.667	1.891	Jan 2012	-		-		-	0.000	8.558	
DVE	C/Various	PM TAPO:Ft. Eustis, VA.	-	-		4.757	Jan 2013	-		4.757	Continuing	Continuing	
Prior Year - Completed efforts	Various	Various:Various	81.258	-		-		-		-	0.000	81.258	
		Subtotal	87.925	28.341		24.430		-		24.430			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MH-60 SOF Modernization Program	C/Various	Various:Various	49.261	22.782	Nov 2011	-		-		-	0.000	72.043	
Prior Years	Various	Various:Various	15.836	-		-		-		-	0.000	15.836	
		Subtotal	65.097	22.782		-		-		-	0.000	87.879	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2012 Cost	FY 2012 Award Date	FY 2013 Base Cost	FY 2013 Base Award Date	FY 2013 OCO Cost	FY 2013 OCO Award Date	FY 2013 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Years	Various	Various:Various	5.279	-		-		-		-	0.000	5.279	
		Subtotal	5.279	-		-		-		-	0.000	5.279	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 United States Special Operations Command			DATE: February 2012
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	Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	158.301	51.123		24.430		-		24.430			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2013 United States Special Operations Command		DATE: February 2012
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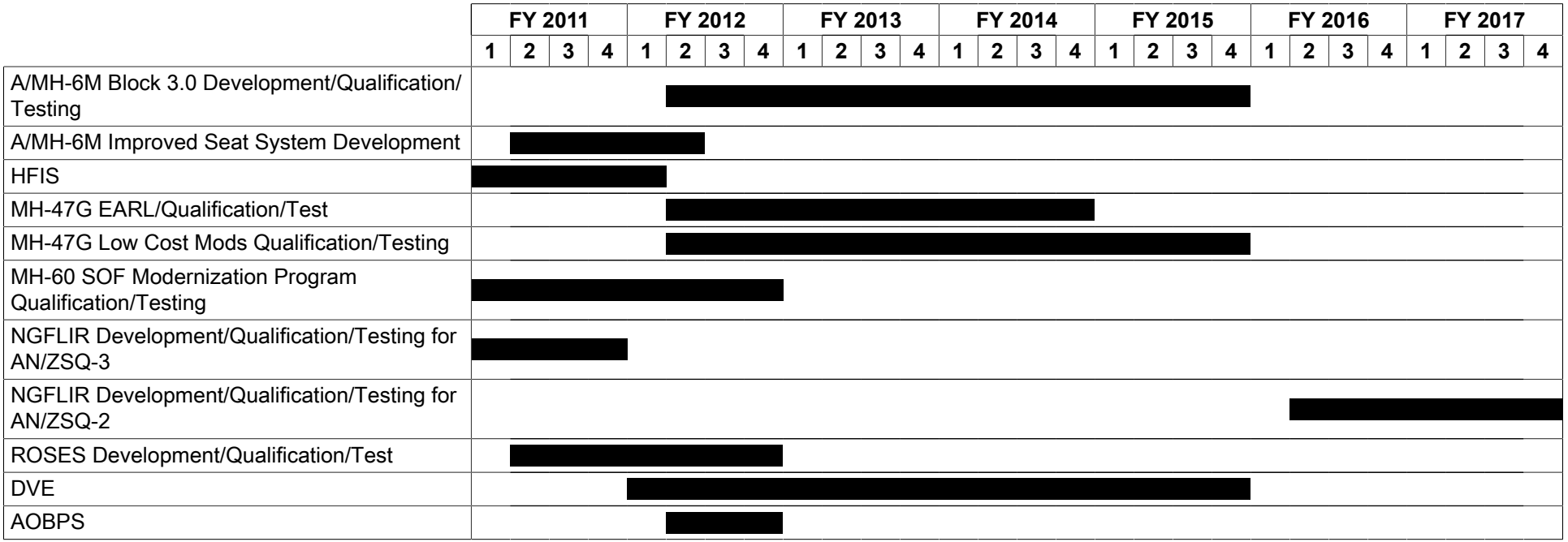

Exhibit R-4A, RDT&E Schedule Details: PB 2013 United States Special Operations Command		DATE: February 2012
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
A/MH-6M Block 3.0 Development/Qualification/Testing	2	2012	4	2015
A/MH-6M Improved Seat System Development	2	2011	2	2012
HFIS	1	2011	1	2012
MH-47G EARL/Qualification/Test	2	2012	4	2014
MH-47G Low Cost Mods Qualification/Testing	2	2012	4	2015
MH-60 SOF Modernization Program Qualification/Testing	1	2011	4	2012
NGFLIR Development/Qualification/Testing for AN/ZSQ-3	1	2011	4	2011
NGFLIR Development/Qualification/Testing for AN/ZSQ-2	2	2016	4	2017
ROSES Development/Qualification/Test	2	2011	4	2012
DVE	1	2012	4	2015
AOBPS	2	2012	4	2012

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