



07 OCT 2002

C. Butler
THRU: ARMY ACQUISITION EXECUTIVE

FOR: VICE CHIEF OF STAFF, ARMY

SUBJECT: UH-60 Black Hawk Recapitalization Program
Baseline (RPB) Approval

The enclosed subject memorandum is provided for both the Army Acquisition Executive and Vice Chief of Staff, Army signatures. The UH-60 Black Hawk RPB obtained the required documentation and coordination from the Army Staff.

Very respectfully,

John S. Caldwell, Jr.
John S. Caldwell, Jr.
LTG, GS

Enclosure



DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20310

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: BLACK HAWK Recapitalization Program Baseline (RPB) Approval

In accordance with the Army Recapitalization Management Policy, the BLACK HAWK RPB dated 15 July 2002 is approved for implementation. The Program Executive Officer and Project Manager will execute all selected upgrades and rebuilds for the BLACK HAWK system in accordance with the funding and schedule baselines documented in the RPB. The RPB will provide the basis for sound management and a historical record from which to measure success.

It is imperative that we work together and establish close partnerships at all levels to ensure success. Our Warfighters depend on this recapitalization effort to maintain system readiness, sustainability, and combat overmatch as we transform the Army.


Claude M. Bolton, Jr.
Army Acquisition Executive


JOHN M. KEANE
General, U.S. Army
Vice Chief of Staff, Army

Enclosures

DISTRIBUTION:
ASSISTANT SECRETARY OF THE ARMY (ACQUISITION, LOGISTICS AND TECHNOLOGY), ATTN: SAAL-ZR, SAAL-RP
ASSISTANT SECRETARY OF THE ARMY (FINANCIAL MANAGEMENT AND COMPTROLLER), ATTN: SAFM-BUI
GENERAL COUNSEL, ATTN: SAGC
DEPUTY CHIEF OF STAFF FOR LOGISTICS, ATTN: DALO-SM
DIRECTOR, PROGRAM ANALYSIS AND EVALUATION, ATTN: DACS-DPZ-A
DIRECTOR, U.S. ARMY COST AND ECONOMIC ANALYSIS CENTER, ATTN: SAFM-CA-ZA

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PROGRAM EXECUTIVE OFFICERS, AVIATION, ATTN: SFAE-AV

UNCLASSIFIED

UH-60 BLACK HAWK RECAPITALIZATION PROGRAM BASELINE

**UH-60A to A Recapitalization/Rebuild Program
UH-60A/L to UH-60M Recapitalization/Upgrade Program**



15 July 2002

UNCLASSIFIED

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1. INTRODUCTION

The purpose of this document is to document and track the Utility Helicopters Project Manager's recapitalization effort per guidance provided in the Recapitalization Program Baseline Guidance of 7 November 2001. This is a BLACK HAWK Recapitalization Program Baseline (RPB) and outlines the parameters of both the UH-60A to A Recapitalization/Rebuild and UH-60M Recapitalization/Upgrade Programs. While the guidance indicates this is a decision document, it should be noted that the UH-60M is an ACAT ID program that has already received acquisition milestone approval of its Acquisition Strategy and Acquisition Program Baseline.

2. RECAPITALIZATION PROGRAM BASELINE DESCRIPTION

On 31 May 2001, the Army Acquisition Executive (AAE) and the Vice Chief of Staff of the Army (VCSA) authorized the Utility Helicopter Recapitalization Strategy, which includes the existing DAB-approved UH-60M Program (a Recapitalization/Upgrade effort), continuation of the UH-60L new procurement, and initiation of the UH-60A to A Recapitalization/Rebuild (Recap/Rebuild) effort.

A. The UH-60A to A Recap/Rebuild Program will Recap/Rebuild 193 UH-60A model aircraft through FY13 to the UH-60A Recap standard. It will sustain the UH-60A fleet until induction into the UH-60M Program, enhance Safety and Readiness, reduce maintenance burden, reduce O&S cost growth, and provide Recap components to support both the UH-60A and UH-60M programs. These objectives will be met by:

- Corrosion prevention measures will be applied to the airframe and airframe defects will be repaired.
- Recap components, including recapitalized T700-GE-700 engines, will be installed. Existing component overhaul lines will be converted to the new Recap standards as the individual DMWRs are upgraded and programs established.
- Approximately 75% of the depot level reparable will be utilized on the UH-60M. Annex B contains a list of the depot level reparable being reviewed under this effort to identify DMWR improvements.

B. The UH-60M Recap/Upgrade (UH-60M) Program will Recap/Upgrade 1217 UH-60A and UH-60L aircraft into UH-60M aircraft through FY26. The objectives are to digitize the cockpit to allow for improved aircraft systems and combat situational awareness, improve lift and range of the UH-60A portion of the fleet to match the UH-60L performance, improve handling characteristics to improve maneuverability and safety, reduce O&S cost growth, and enhance safety. This will be accomplished by:

- Replacement of cabin components and refurbishment of tailcone, stabilator, vertical pylon, airframe tuning devices, troop seats, and crew seats.
- Replace electrical wiring to meet Electromagnetic Environmental Effects (E³) requirements.
- Replace existing flight controls with dual digital flight controls.
- Replace UH-60A T700-GE-700 and the UH-60L T700-GE-701C engines with T700-GE-701D engines for improved lift, range, reliability and O&S costs.
- Replace UH-60A transmissions with improved durability gearboxes (IDGB).
- Replace main rotor blades with the wide chord blade for additional lift.
- Incorporate a communications/navigation MIL-STD-1553 data bus, Control Display Units (CDU), four Multi-Function Displays (MFDs), and hardware and software necessary to allow digital communications via the Improved Data Modem (IDM).

3. RECAPITALIZATION PROGRAM FUNDING

The Recapitalization funding profiles in the table below represent funding in the President's Budget 03. The UH-60M program is funded with RDTE and APA, while the UH-60A to A Recap/Rebuild program uses OMA funds.

Funding (\$M)	FY02	FY03	FY04	FY05	FY06	FY07	EPP	Total **
RDA Funded	71.8	99.1	234.4	263.0	460.0	436.7	8319.3	9893.4
RDTE*	71.8	99.1	54.4	23.5	7.7		0.0	256.5
PA			180.0	239.6	461.3	436.7	8319.3	9636.8
Weapon System								
Training Devices								
Initial Spares								
STS								
PA (New) No MDEP								
Weapon Systems & MWOs (est)								
Training Devices (est)								
Initial Spares (est)								
STS (est)								
*Includes \$14.002M designated for HUMMS in FY02								
**UH-60A Rebuild effort ends in FY13, UH60M effort continues to FY22.								
OMA Funded (Rebuild) RR	20.7	100.3	106.2	107.4	108.6	112.1	711.2	1266.5
Depot Maintenance	18.7	95.8	102.1	104.1	106.0	109.5	704.1	1240.3
SSTS (Recap)	2.0	2.0	1.5	0.7			0.0	6.2
COSIS	0.0						0.0	0.0
SDO	0.0	0.4	0.5	0.5	0.5	0.5	2.8	5.0
SDT	0.0	2.1	2.1	2.1	2.1	2.1	12.8	23.6
PPSS								
MWO								
Initial Spares								
Support Equipment (TMDE)								
Training Devices								
CLS								
Total Required	92.6	199.4	340.6	370.4	577.6	548.8	7196.2	11159.8
System Name								
UH-60A	Average Procurement Unit Cost					4.77 (BY01\$M)		
UH-60M	Average Procurement Unit Cost					Threshold: \$9.390 (BY01\$M)		

Table 1. UH-60 Recapitalization Program Funding Profile

4. RECAPITALIZATION PROGRAM SCHEDULE

The following table presents the projected UH-60 Recapitalization schedule based on President's Budget 03. Quantities reflected in the table are deliveries, which are preceded by 12 to 18 months of induction, tear down, manufacturing and reassembly activities. Dates and quantities are subject to change as a result of definitive funding.

Platform	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08 - 16	Total*
UH-60A			3	17	19	20	20	114	193
UH-60M			4**		10	15	36	741	1217

* UH-60A Rebuild Effort ends in FY13. UH-60M effort continues to FY22.

** Prototype aircraft (3 recap and one production) do not count against total quantity of 1217.

Table 2. UH-60 Recapitalization Fielding Schedule

5. RECAPITALIZATION PROGRAM BASELINE PERFORMANCE

A. The performance metrics, outlined in Table 3, will be utilized to measure the success of the UH-60 Recapitalization program. These metrics, listed below, will provide the PM with the necessary information to monitor and assess the effectiveness of the program.

- Maximize marginal return on recapped components
- Increase unscheduled MTBR of selected recapitalized components
- Reduce average fleet life

B. The methodologies to obtain the required data are being developed and coordinated with the Army Total Ownership Cost (ARTOC) Directorate. The Data Collection effort will be developed and coordinated with AMSAA. It is the intent of the Program Office to maximize the benefits of the existing AMSAA Data Collection effort.

C. Data collection efforts will consist of the following:

- Lead the Fleet: Assign one aircraft to Aviation Technical Test Center, Ft. Rucker
- AMSAA data collection
- Supply Data
 - Demand History
 - DA 2410 Tracking System
 - Operations and Support Management Information System (OSMIS)
 - Tail Number Tracking System

Metric	Objective	Source of Data
Formula	Performance Measures	
1. O&S Cost Per Flight Hour Prediction	10% return on each of top 10 cost drivers	OSMIS database DA2410 Database
$PFHCS = \frac{AC(B)}{MTBR(B)} - \frac{AC(R)}{MTBR(R)}$	<p>These metrics can and must be assessed. As predictions, they are guiding the sequence for selecting NIIN Recap candidates to structure the Recap Options.</p> <p>Potential Savings predicted using LOGAM. These predictions will serve as the baseline to measure the effectiveness of the component Recapitalization effort.</p> <p>Assessments will be completed yearly upon posting of OSMIS Data for the previous FY.</p>	
<p>Where: PFHCS = Potential Flight Hour Cost Savings (\$/HR) AC(B) – Average Cost of Baseline Component (OSMIS) AC(R) = Average Cost of Recapped Component (OSMIS) MTBR(R) = Unscheduled Mean Time Between Removal – Recapped Component (2410 Data) MTBR(B) = Unscheduled Mean Time Between Removal – Baseline Component (2410 Data)</p>		
2. Restoration of inherent Reliability for Recapitalized Components	10 % Increase See performance measurement	DA2410 database CDDB
$MTBR = \frac{\sum_{i=1}^n \left(\frac{MTBR(R)_i}{MTBR(B)_i} - 1 \right)}{N} \times 100\%$	<p>The first calculation is made when recapped components have 10 fleet wide failures each or selected components accumulate 10,000 flight hours. Intermediate calculations are made annually thereafter to monitor progress.</p>	
<p>Where: MTBR = Percentage Change of Unscheduled Mean Time Between Removal (%) MTBR(R) = Unscheduled Mean Time Between Removal – Recapped Component MTBR(B) = Unscheduled Mean Time Between Removal – Baseline Component N = Sum of Components</p>		
3. Reduce Average Fleet-Life	13.6 years by 2010	Tail Number Sequence Listing
$AFL = \sum_{i=1}^n \frac{A_i}{N}$	<p>The approved recapitalization plan (UH-60A and UH-60M) will reduce the current baseline projection of 21.2 years to less than 13.6 years in FY10. The 10 year fleet half-life metric will be reached about FY16</p>	
<p>Where: AFL = Average Fleet Life A = Age of ACFT in years based on DD250 date N = Sum of ACFT in fleet</p>		

Table 3. Performance Metrics

6. RECAPITALIZATION INTERFACES

The BLACK HAWK Recapitalization Program relies on a number of partnerships to achieve cost, schedule and performance objectives. Each partner brings unique critical skills to the Recap effort and is involved in both the UH-60A to A and UH-60M Recap programs. Table 4 outlines the specifics of each partnership. Partnerships established during the UH-60A to A Recap effort will be continued during the UH-60M Program as applicable.

*Depot/Industry Partnership	Agreements	Date of signature/ Implementation	Test Relationship (if required)	Recap Initiative
UH-60A Interfaces				
Industry- CCAD/ General Electric Company	T700 Engine Support	1 Jan 01	None	Provide Parts and Components to support CCAD engine overhaul effort
UH-60M Interfaces				
Industry- Sikorsky Aircraft Corporation	UH-60M Integration/Qualification	5-May-01	Yes - ATEC/OPTEC for developmental and operational testing and live fire test and evaluation. The Test and Evaluation Master Plan has been approved.	Design and build 4 prototype UH-60M aircraft from UH-60A/Ls
Industry- Sikorsky Aircraft Corporation	Production	Pending	None	Recapitalize 1,217 UH-60A/Ls to UH-60Ms
Industry- General Electric Company	Multi-year contract for engines	Current Contract in process of being modified	Yes - ATEC/OPTEC for developmental and operational testing. Dates Pending	Design and build 701D engines for prototype aircraft and production
Industry / Depot- Depot / Industry partnership SAC / Gov't	Partnership study in process	Pending	None	SAC partner with government depot / other activities to share appropriate recapitalization work

Table 4. UH-60 Recapitalization Interfaces



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
ACQUISITION LOGISTICS AND TECHNOLOGY
103 ARMY PENTAGON
WASHINGTON DC 20310-0103

07 NOV 2001

REPLY TO
ATTENTION OF
SAAL-SI

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Recapitalization Program Baseline

This memorandum sets forth guidance that should be followed to document and track the Army's Recapitalization effort. Enclosed is the template that will be used to develop and execute the individual systems Recapitalization Program Baseline. The Program/Project/Product Manager of the systems that have already been approved by the Army Acquisition Executive/Vice Chief of Staff, Army (AAE/VCSA) will be afforded 90 days from the date of this document to follow and complete the Recapitalization approval process laid out in this Recapitalization Program Baseline guidance. Future candidate systems that have not been seen by the AAE/VCSA will be afforded 60 days after an option is adopted, to complete the process of creating a baseline. All recapitalization systems will obtain validation, within afforded time frames, of the Baseline Cost Data, Cost Benefit Analysis and Trade Off Analysis from the Cost and Economic Analysis Center.

The point of contact for this matter is COL Jim Wells, DSN: 224-3993 or 703-614-3993.

A handwritten signature in black ink, appearing to read "John S. Caldwell, Jr.", written over the typed name.

JOHN S. CALDWELL, JR.
Lieutenant General, GS
Military Deputy to the
Assistant Secretary of the
Army (Acquisition, Logistics
and Technology)

Enclosure

DISTRIBUTION:
ASSISTANT SECRETARY OF THE ARMY (ACQUISITION, LOGISTICS AND
TECHNOLOGY), ATTN: SAAL-ZR, SAAL-RP
ASSISTANT SECRETARY OF THE ARMY (FINANCIAL MANAGEMENT
AND COMPTROLLER), ATTN: SAFM-BUI



DEPARTMENT OF THE ARMY
OFFICE OF THE PROGRAM EXECUTIVE OFFICER, AVIATION
REDSTONE ARSENAL, AL 35898-5000

REPLY TO
ATTENTION OF

SFAE-AV-UH

15 July 2002

DECISION MEMORANDUM

SUBJECT: UH-60 BLACK HAWK Recapitalization Program Baseline (RPB), UH-60 BLACK HAWK Performance Plan and Agreement (PPA), and UH-60A to A Recapitalization/Rebuild Decision Review

1. References:

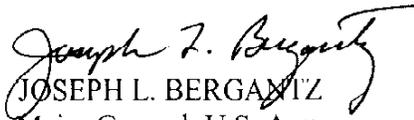
- a. Memorandum, HQDA, 11 Apr 01, subject: Army Recapitalization Management Policy.
- b. Memorandum, HQDA, 29 Oct 01, subject: Recapitalization Program Baseline.

2. In accordance with reference 1.a., I have conducted a Decision Review of the UH-60A to A Recapitalization/Rebuild Program and approved its entry into Phase I (Program Definition) and Phase II (Production and Fielding), pending final approval of the RPB and PPA by the Army Acquisition Executive and the Vice Chief of Staff, Army (VCSA).

3. On 31 May 2001, the VCSA approved the General Officer Working Group-recommended Option 9 for the Utility Helicopter Recapitalization strategy that included the Defense Acquisition Board (DAB) approved UH-60M Program (a Recapitalization/Upgrade effort), continued UH-60L new procurement, and the UH-60A to A Recapitalization/Rebuild effort. The DAB approved the Acquisition Strategy for the UH-60M Acquisition Program Baseline during the System Development and Demonstration Milestone B Decision Review on 30 March 2001, which is directly applicable to the current UH-60A to A Recapitalization/Rebuild strategy.

4. Additionally, I have reviewed and concurred with the required documentation for entry into Phase I and Phase II.

Encl


JOSEPH L. BERGAMIZ
Major General, U.S. Army
Program Executive Officer, Aviation



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
COST AND ECONOMIC ANALYSIS CENTER
1421 JEFFERSON DAVIS HWY SUITE 9000
ARLINGTON VA 22202-3259



SFFM-CA-ZA (11-18a)

20 MAR 2002

MEMORANDUM FOR THE PROGRAM EXECUTIVE OFFICER, AVIATION,
ATTN: SFAE-AV, REDSTONE ARSENAL, AL 35898

SUBJECT: Black Hawk UH-60 Recapitalization Baseline
Cost Sufficiency Review

1. The Army Cost and Economic Analysis Center has reviewed the cost presented by the Program Manager for the Black Hawk UH-60 Recapitalization Baseline, dated 07 Feb 2002 (enclosed). Our review focused only on the investment portion of the recapitalization baseline to include Research, Development, Testing, and Evaluation (RDT&E), Procurement, and Operations and Maintenance (O&M) funding. Per our agreement with Office of the Assistant Secretary of the Army Acquisition, Logistics, and Technology (OASAALT), we did not examine the potential savings or affordability of the recapitalization program. The submission provided a reasonable estimate of the total recapitalization baseline cost. However, we do not agree with the time phasing methodology and suggest that in the near term a greater number of aircraft can undergo recapitalization than is projected.

2. The U.S. Army Cost and Economic Analysis Center points of contact are: Mr. Steve Loftus, (703) 601-4125 or DSN 329-4125; and Mr. Bob Conley, (703) 601-4173 or DSN 329-4173.

Encl


ROBERT W. YOUNG
Director

CF:
PM - Utility Helicopters
ASA (ALT), ATTN: SAAL-SI



FUNDING AND SCHEDULE SUBMISSION, DATED 07 FEBRUARY 2002

RECAPITALIZATION PROGRAM FUNDING. The Recapitalization funding profiles in the table below represent funding in the President's Budget 03. The UH-60M program is funded with RDTE and APA, while the UH-60A to A Recap/Rebuild program uses OMA funds.

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RDA Funded	71.84	99.06	234.38	263.04	469.02	436.72	1502.22	8319.30	9821.52
RDTE*	71.84	99.06	54.42	23.47	7.73	0.00	184.68	0.00	184.68
PA			179.95	239.57	461.29	436.72	1317.54	8319.30	9636.84
Weapon System									
Training Devices									
Initial Spares									
STS									
*Includes \$14.002M designated for HUMMS in FY02									
**UH-60A Rebuild effort ends in FY13, UH60M effort continues to FY22.									
OMA Funded (Rebuild) RR	20.71	100.34	106.24	107.35	108.58	112.09	534.60	719.71	1254.31
Depot Maintenance	18.65	95.83	102.14	104.05	105.98	109.49	517.49	704.11	1221.60
SSTS (Recap)	2.00	2.00	1.50	0.70	0.00	0.00	4.20	0.00	4.20
CISIS									
SDO	0.04	0.37	0.46	0.46	0.46	0.46	2.21	2.76	4.97
SDT	0.02	2.14	2.14	2.14	2.14	2.14	10.70	12.64	23.54
PPSS									
MWO									
Initial Spares									
Support Equipment (TMDE)									
Training Devices									
CLS									
Total Required	92.6	199.4	340.6	370.4	577.6	548.8	2036.8	9039.0	11075.8
System Name	Programs Acquisitions Unit Cost								
UH-60A	Average Procurement Unit Cost						4.77 (BY01\$M)		
UH-60M	Average Procurement Unit Cost						Threshold: \$9.390 (BY01\$M)		

(Note: The total amount represented in the above funding table does not include FY02)

RECAPITALIZATION PROGRAM SCHEDULE. The following table presents the projected UH-60 Recapitalization schedule based on President's Budget 03. Quantities reflected in the table are deliveries, which are preceded by 12 to 18 months of induction; tear down, manufacturing and reassembly activities. Dates and quantities are subject to change as a result of definitive funding.

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UH-60M			4**		10	15	36	741	1217

* UH-60A Rebuild Effort ends in FY13, UH-60M effort continues to FY22.

** Prototype aircraft (3 recap and one production) do not count against total quantity of 1217.

**Office, Assistant Secretary of the Army (ALT)
SUMMARY OF ACTION**

TO: VCSA

THRU: AAE

THRU: MILDEP

ACTION OFFICER: MAJ(P) Scott Pacello
OFFICE SYMBOL: SAAL-SA
PHONE NO: 604-7010
DATE/TIME: 18 Aug 02/0800 hrs

SUSPENSE DATE:
9 September 2002

CONTROL NO.
NA

21001169 7000

SUBJECT: UH-60 Black Hawk Recapitalization Program Baseline (RPB) Approval

RECOMMENDATION: AAE Approve, Sign and Forward RPB to VCSA for signature.

SUMMARY OF ACTION:

LTG Caldwell tasked the Program Executive Officers (PEO) of the recap systems approved by the VCSA to comply with the RPB guidance. PEO Aviation conducted a Decision Review of the UH-60 Black Hawk Recapitalization Program and validated the Recap baseline pending final approval by the Army Acquisition Executive/Vice Chief of Staff, Army.

- TAB A – MIL DEP recommendation to approve, sign and forward the approval memorandum to the AAE/VCSA.
- TAB B – AAE/VCSA approval letter
- TAB C – RPB
- TAB D – MIL DEP Recapitalization Guidance Letter
- TAB E – PEO Aviation validation letter

MILITARY DEPUTY ACTION

- [Approved] [Recommend Approval]
- [Disapproved] [Recommended Disapproval]
- PSM Noted

Comments :

ASA (ALT) ACTION

- Approved Disapproved
- PSM Noted

Comments:

COORDINATION

APPROVALS

CC	NCC	OFFICE	NAME	PHONE		APPR	DISAPP	INITIAL	DATE
X		OGC	Mr. Norsworthy	697-5120	BRANCH	X		ME	30 SEP
X		GB	LTC Thea Harvell	692-8223	DIV	X		ME	30 SEP
X		CEAC	Mr. Young	681-3217	EXEC	X		JS	10/02
X		G4/DALO-SM	Ms. Kelley	614-4443	ASST DEP	✓		Src	1/10
X		SAAL-ZL	Mr. Pybus	697-5050	DEP				
X		SAAL-SI	COL Wells	614-3993					
X		SAAL-RI	MAJ(P) Shoop	614-3753					

CC = Concur NCC = Nonconcurr APPR = Approved DISAPP = Disapproved

MS Word SAAL FORM 5 Developed by Sonal Patel

Version Dated 20 August 2002

B **BOX**