RCS: DD-A&T(Q&A)823-385

Handheld, Manpack, and Small Form Fit Radios (HMS)

As of FY 2021 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name

Handheld, Manpack, and Small Form Fit Radios (HMS)

DoD Component

Army

Joint Participants

US Navy; US Marine Corps; US Air Force

Program management and execution responsibility resides with the Department of the Army per the DAE ADM dated July 11, 2012.

Responsible Office

COL Garth Winterle
6560 Surveillance Loop
Aberdeen Proving Ground, MD 21005

garth.k.winterle.mil@mail.mil

Phone: 443-395-2669
Fax: 443-395-7680
DSN Phone: 648-2669
DSN Fax: 648-7680
Date Assigned: July 12, 2018

References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated October 20, 2011

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 4, 2017

Mission and Description

The Handheld, Manpack, and Small Form Fit (HMS) radio program is a single Acquisition Category IC program encompassing Handheld (HH) and Manpack (MP) radios. HMS provides voice and data communication to the expeditionary Warfighter with an on-the-move, at-the-halt, and stationary Line of Sight (LOS)/Beyond Line of Sight (BLOS) capability for both dismounted personnel and platforms. HMS radio systems are software reprogrammable, networkable, multi-mode systems capable of simultaneous voice and data communication. HMS radios will support a variety of other platforms, including tactical End User Devices (EUD) voice and data needs. HMS provides tailorable and scalable, software-defined radio systems meeting U.S. Army, Air Force, Navy, Marine Corps and Special Operations Command communications needs.

HMS systems are capable of providing both Classified and Unclassified communications. The radios provide the Single Channel Ground and Airborne Radio System (SINCGARS) legacy waveform for Classified and Unclassified communications. They also provide advanced waveforms (e.g. TrellisWare TSM) that provide Secure but Unclassified (SBU) communications. The MP radio provides the Mobile User Objective System (MUOS) waveform for Tactical Satellite communications. The HMS program is currently in the process of conducting significant testing, including Laboratory and Field Based Risk Reduction events culminating in an Operational Test event.

The HH radio suite consist of one-channel Rifleman Radio (RR), two-channel Leader Radio (LR) and Single-Channel Data Radio (in support of Integrated Visual Augmentation System (IVAS)). The RR is a handheld radio that connects Soldiers at the lowest echelon of the Army network. It is a sensitive but unclassified radio system capable of voice and data communications. The LR is a multiband, two-channel handheld radio to be used at the team, squad, and platoon level. The LR will simultaneously support SINCGARS voice interoperability and other advanced networking waveform communications, in one radio with both handheld and mounted configurations. The Single-Channel Data Radio is a secure, two-way tactical radio that provides intra-squad data communications and is considered a support item of the IVAS.

The MP Radio is a NSA-certified Type 1 radio used for transmission of up to TOP SECRET information. MP is capable of providing two simultaneous channels of secure voice and data communication using SINCGARS, Demand Assigned Multiple Access Satellite Communication, MUOS waveform, and other advanced networking waveforms. The MP provides range extension and connects Soldiers in the lower-tier network to the mid-tier network. It is interoperable with legacy waveforms and capable of route and retransmission. The MP provides networking waveforms connectivity, Networked LOS and BLOS voice and data communication and will serve in vehicular and man-packable configurations.

Executive Summary

Program Highlights Since Last Report

Generation (GEN) 1 Manpack (MP) served as the ground terminal in the Navy's Mobile User Objective System Multi-Service Operational Test and Evaluation 2B, and the results were determined to be operationally effective, suitable, and cyber survivable. GEN 2 MP has participated in various sandbox events in 2019 and the radios are currently being assessed at the Maneuver Battle Lab. On May 26, 2019, a MP CPD memorandum was signed clarifying requirements. These clarifications ensure the Army can procure and field the latest commercial technology. Additionally, this memorandum allows the Army to take advantage of current and future waveform technologies, which provides an increased benefit to the force. On June 06, 2019, in accordance with an ADM signed June 03, 2019, HMS awarded LRIP delivery orders to procure 1,720 GEN 2 MP (860 per vendor). The GEN 2 MP Radios are working toward a planned HMS Operational Test in 4th Quarter FY 2020.

On December 20, 2019, in accordance with an ADM signed June 03, 2019, HMS awarded a competitive Leader Radio (LR) LRIP delivery order to procure 2,004 (1,244 Harris/760 Thales). LR Lab Based Risk Reduction began in July 2018 and is currently ongoing. LR Early User Assessment concluded November 26, 2019. Operational Test is planned for 4th Quarter FY 2020.

Through the Configuration Steering Board (CSB) process and a subsequent ADM signed January 14, 2020, the Army removed legacy HMS radio requirements and directed the incorporation of the new Single-Channel Data Radio in support of the Integrated Visual Augmentation System (IVAS) into the program baseline (104,496 radios). The Rifleman Radio Army Acquisition Objective (AAO) was reduced to reflect quantities procured to date (21,579), and the Small Form Fit (SFF) B and SFF D radio variant requirements were reduced to 0.

A revised APB will be submitted for approval to re-baseline the program schedule and incorporate the new AAO changes at the next milestone decision.

The HMS radio program requirements are currently pending an update to address the incorporation of the new single-channel data radio variant into the program baseline; funding is adequate to meet the cost baseline.

There are no significant software-related issues with this program at this time.

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
May 2004	Milestone B Decision - Joint Tactical Radio Systems (JTRS) Cluster 5 program Milestone Decision Review was held on April 26, 2004 and approved in May 2004 to proceed into System Development and Demonstration (SDD).
July 2004	SDD Contract Award - Awarded to General Dynamics C4 Systems in July 2004. A protest was filed, the Government Accountability Office rejected the protest, work resumed in October 2004.
February 2005	All JTRS programs were re-aligned under the Joint PEO (JPEO) JTRS.
November 2005	A DAB re-planning meeting was held to restructure the JTRS Enterprise. JTRS Cluster 5 was renamed JTRS HMS.
June 2011	Milestone C Decision - JTRS HMS Milestone Decision Review was held in May 2011 and final approval received in June.
November 2011	Initial Operational Test and Evaluation: LRIP Rifleman Radio schedule event completed.
May 2012	Follow-on Operational Test and Evaluation (FOT&E): Manpack with Mobile User Objective System (MUOS) schedule event completed.
July 2012	IOC: LRIP Rifleman Radio schedule event completed.
July 2012	In-Process Review: LRIP Manpack schedule event completed.
July 2012	ADM signed that transitioned program management and execution responsibility to the Department of the Army.
December 2012	The FRP decisions for Rifleman Radio and Manpack Radio slipped from 2012 to 2015 due to a decision to transition to a full and open competition multi-vendor acquisition strategy.
May 2014	Acquisition strategy approved to procure Non-Developmental Items (NDI) through two full and open competitions (Rifleman Radio and Manpack Radio) available to all potential industry partners.
August 2014	IOC: LRIP Manpack Radio schedule event completed.
April 2015	Handheld Radio Production Contract Awards - April 29, 2015
February 2016	Manpack Radio Production Contract Awards - February 26, 2016
June 2016	FOT&E: Manpack with MUOS schedule event completed during the Multi-Service Operational Test & Evaluation (MOT&E) held by Navy MUOS systems. The MOT&E used the Manpack AN/PRC-155 as the platform to test the MUOS waveform and served as the HMS program's FOT&E achieving completion of the APB schedule event on June 20, 2016 when the test report was received.
January 2017	APB Revision Approved - Change 1 to the HMS Production APB was approved on January 6, 2017. This revision corrected schedule events that were previously in APB threshold deviation.
March 2017	Acquisition strategy addendum approved to procure the two-channel, handheld Leader Radio through NDI full and open competition contracts available to all potential industry partners.
March 2017	ACAT IC Delegation received March 17, 2017 naming the Secretary of the Army as the MDA.

May 2017	Leader Radio Request for Proposal and Manpack Radio test asset delivery order were delayed as a result of anticipated threshold radio waveform adjustments stemming from the 2017 Army Network Review. These adjustments are necessary in order to reduce vulnerabilities and focus on solutions to address capability gaps relative to emerging threats.
September 2018	Leader Radio capability on-ramped to the existing Handheld Radio Production Contracts - September 18, 2018
December 2019	As a result of the annual Configuration Steering Board, the HMS program Basis of Issue (BOI) was adjusted to support Army Network Modernization priorities. HMS was directed to remove remaining legacy radio variants from the program baseline and incorporate the Single-Channel Data Radio in support of the Integrated Visual Augmentation System (IVAS) into the program baseline.

Threshold Breaches

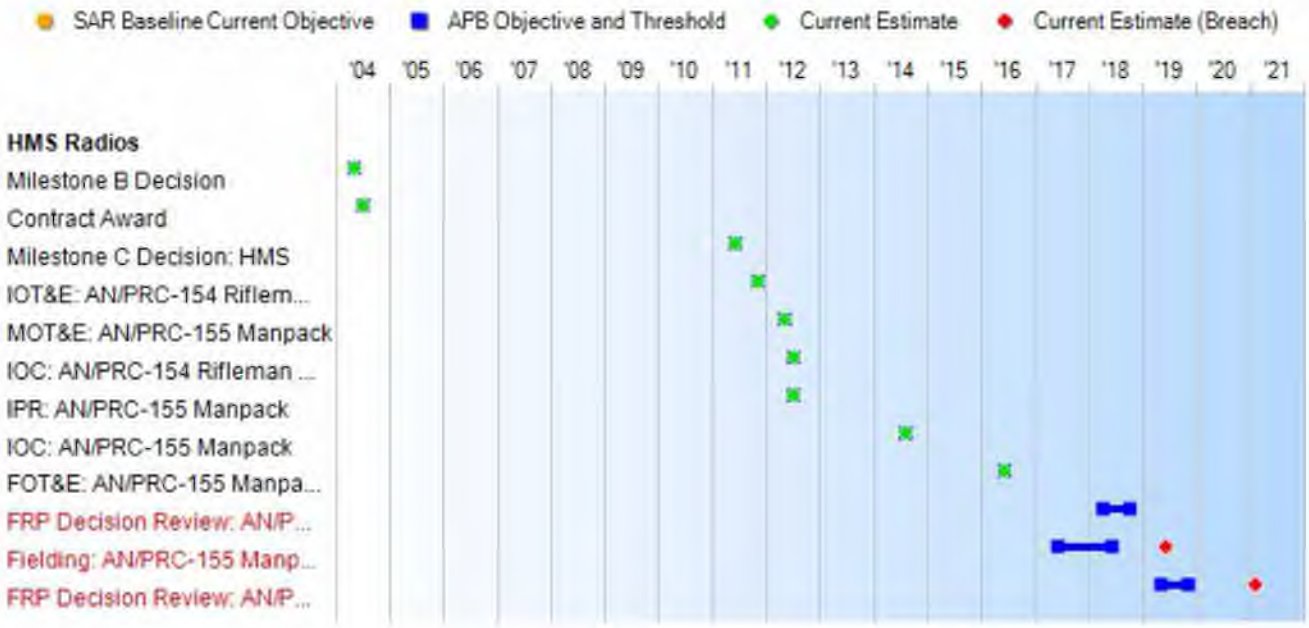
APB Breaches		
Schedule		☑
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Explanation of Breach

The schedule deviations to the current APB were previously reported in the December 2016 and December 2017 SAR submissions.

Schedule



Schedule Events				
Events	**SAR Baseline Production Estimate**	**Current APB Production Objective/Threshold**		**Current Estimate**
Milestone B Decision	Apr 2004	May 2004	May 2004	May 2004
Contract Award	Jul 2004	Jul 2004	Jul 2004	Jul 2004
Milestone C Decision: HMS	May 2011	Jun 2011	Jun 2011	Jun 2011
IOT&E: AN/PRC-154 Rifleman Radio	Nov 2011	Nov 2011	Nov 2011	Nov 2011
MOT&E: AN/PRC-155 Manpack	May 2012	May 2012	May 2012	May 2012
IOC: AN/PRC-154 Rifleman Radio	Jan 2012	Jul 2012	Jul 2012	Jul 2012
IPR: AN/PRC-155 Manpack	Feb 2012	Jul 2012	Jul 2012	Jul 2012
IOC: AN/PRC-155 Manpack	Mar 2013	Aug 2014	Aug 2014	Aug 2014
FOT&E: AN/PRC-155 Manpack with MUOS	Jun 2013	Jun 2016	Jun 2016	Jun 2016
FRP Decision Review: AN/PRC-154 Rifleman Radio	May 2012	Apr 2018	Oct 2018	**TBD**[1]
Fielding: AN/PRC-155 Manpack with MUOS	Jun 2014	Jun 2017	Jun 2018	**Jun 2019**[1] (Ch-1)
FRP Decision Review: AN/PRC-155 Manpack	Dec 2012	May 2019	Nov 2019	**Feb 2021**[1]

[1] *APB Breach*

Change Explanations

(Ch-1) Current estimate for Fielding: AN/PRC-155 Manpack with MUOS changed from March 2020 to June 2019 due to fielding of MP Gen 1 on June 26, 2019 to the 25th ID which supported the MUOS MOT&E 2B.

Notes

HMS procured AN/PRC-154s (RR) and AN/PRC-155s (Gen 1 MP) based on the program's previous acquisition strategy. Due to program changes, these nomenclatures will not be applicable to the FRP Decision Review events. The Full and Open Competition contracts for LR (awarded April 29, 2015) and Generation 2 MP (awarded February 26, 2016) allowed new vendors and/or products to enter the radio marketplace, each with a unique nomenclature.

Acronyms and Abbreviations

AN/PRC - Army Navy/Portable Radio Communications
FOC - Full Operational Capability
FOT&E - Follow-On Test and Evaluation
FRP - Full Rate Production
HMS - Handheld, Manpack, and Small Form Fit
IOC - Initial Operational Capability
IOT&E - Initial Operational Test and Evaluation
LR - Leader Radio
MOT&E - Multi-Service Operational Test and Evaluation
MP - Manpack
MS - Milestone
MUOS - Mobile User Objective System
RR - Rifleman Radio
TBD - To Be Determined

Performance

Performance Characteristics				
SAR Baseline Production Estimate	**Current APB Production Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
Intra-Squad Communication: AN/PRC-154 Rifleman Radio				
Voice	Voice	(T=O) Voice	Voice	Voice
Soldier Location: AN/PRC-154 Rifleman Radio				
Automatic PLI	Automatic PLI	(T=O) Automatic PLI	Automatic PLI	Automatic PLI
Net Ready (NR) Capability: AN/PRC-154 Rifleman Radio				
The capability, system, and/or service must fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include 1 Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) IA requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and IA attributes, data correctness, data availability, and consistent data processing specified in	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) IA requirements including availability, integrity, authentication, confidentiality, and non-repudiation, and issuance of an IATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and IA attributes, data correctness, data availability, and consistent data	Threshold demonstrated at NIE 15.1	The capability, system, and/or service must fully support execution of joint critical operational activities and information exchanges identified in the DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, except tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT Standards

Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communicat-ions 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementa-tion guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA, and 5) Supportabil-ity requirements to include SAASM, Spectrum and JTRS requirements	the applicable joint and system integrated architecture views.	processing specified in the applicable joint and system integrated architecture views.		identified in the TV-1 and implementation guidance of GESPs necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, integrity, authentication, confidentiality, and non -repudiation, and issuance of an IATO or ATO by the DAA, and 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements.
Sustainment (Operational Availability (Ao)): AN/PRC-154 Rifleman Radio				
0.99 (Channel)	0.99 (Channel)	0.96 (Channel)	0.999 (Channel)	0.999 (Channel)
Voice and Data Communication: AN/PRC-155 Manpack				
Must provide networked voice and data exchange to support timely tactical actions while dispersed across the battlefield.	Must provide networked voice and data exchange to support timely tactical actions while dispersed across the battlefield.	(T=O) Must provide networked voice and data exchange to support timely tactical actions while dispersed across the battlefield.	MP demonstrated networked voice and data exchange (i.e., mission command information) supporting timely tactical actions while dispersed across the battlefield using	Must provide networked voice and data exchange to support timely tactical actions while dispersed across the battlefield.

			gateways.	
Net Ready (NR) Capability: AN/PRC-155 Manpack				
The capability, system, and/or service must fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include 1 Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net -Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communica-tions 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementat-ion guidance of	The capability, system, and/or service must fully support execution of all operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementation guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, integrity, authentication,	The capability, system, and/or service must fully support execution of joint critical operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, excepting tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementation guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, integrity, authentication,	MP Radio was demonstrated at NIE 14.2 as meeting its Net Ready - KPP requirements, with the exception of a limited subset of information exchange requirements for SINCGARS voice and data, SATCOM voice, SRW / SINCGARS / SATCOM simultaneity, and route and retransmit operations.	The capability, system, and/or service must fully support execution of joint critical operational activities and information exchanges identified in DoD Enterprise Architecture and solution architectures based on integrated DoDAF content, and must satisfy the technical requirements for transition to Net-Centric military operations to include 1) Solution architecture products compliant with DoD Enterprise Architecture based on integrated DoDAF content, including specified operationally effective information exchanges 2) Compliant with Net-Centric Data Strategy and Net-Centric Services Strategy, and the principles and rules identified in the DoD IEA, except tactical and non-IP communications 3) Compliant with GIG Technical Guidance to include IT Standards identified in the TV-1 and implementation guidance of GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, integrity, authentication,

GESPs, necessary to meet all operational requirements specified in the DoD Enterprise Architecture and solution architecture views 4) IA requirements including availability, integrity, authenticat-ion, confident-iality, and nonrepudia-tion, and issuance of an ATO by the DAA, and 5) Supportabi-lity requirements to include SAASM, Spectrum and JTRS requirements	confidentiality, and non -repudiation, and issuance of an ATO by the DAA, and 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements	confidentiality, and non -repudiation, and issuance of an ATO by the DAA, and 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements		confidentiality, and non -repudiation, and issuance of an ATO by the DAA, and 5) Supportability requirements to include SAASM, Spectrum and JTRS requirements.
Sustainment (Operational Availability (Ao)): AN/PRC-155 Manpack				
0.99 (Channel)	0.99 (Channel)	0.96 (Channel)	0.86 (Channel)	0.97 (Channel)
Multi-Channel Operations: AN/PRC-155 Manpack				
To enable Warfighters to conduct combat missions across the battlefield, any channel of the MP must have ability to operate any of the waveforms listed as Objective in Table EE-2 of the CPD. The MP must also allow simultaneous operations using waveform combinations listed as Objective identified in Table EE-3.2 of the CPD. In addition the MP must have the ability to route and retransimit threshold waveforms listed as Objective in	To enable Warfighters to conduct combat missions across the battlefield, any channel of the MP must have ability to operate any of the waveforms listed as Objective in Table EE-2 of the CPD. The MP must also allow simultaneous operations using waveform combinations listed in Table EE-3.2 of the CPD. In addition the MP must have the ability to route and retransimit threshold waveforms listed as Objective in Table EE-4 of the CPD.	To enable Warfighters to conduct combat missions across the battlefield, any channel of the MP must have ability to operate any of the waveforms listed as Thresholds in Table EE-2 of the CPD. The MP must also allow simultaneous operations using waveform combinations listed in Table EE-3 of the CPD. In addition the MP must have the ability to route and retransimit threshold waveforms listed in Table EE-4 of the CPD.	The radio enables Warfighters to conduct combat missions across the battlefield using the SRW, basic modes of SINCGARS and basic modes of UHF SATCOM. The MP has demonstrated simultaneous operations using combinations of these waveforms.	To enable Warfighters to conduct combat missions across the battlefield, any channel of the MP must have ability to operate any of the waveforms listed as Thresholds in Table EE-2 of the CPD. The MP must also allow simultaneous operations using waveform combinations identified in Table EE-3 of the CPD. In addition the MP must have the ability to route and retransmit threshold waveforms listed in Table EE-4 of the CPD.

Table EE-4 of the CPD.				

Requirements Reference

Rifleman Radio CPD dated March 21, 2013 and Manpack CPD dated May 10, 2012

Change Explanations

None

Notes

LR and MP CPDs were amended to address waveforms and weight/size as a result of anticipated threshold radio waveform adjustments stemming from the Network Review.

In order to address soldier and stakeholder concerns with regard to excessive heat and weight of the Generation 2 MP, HMS coordinated with PEO Soldier, United States Army Natick Soldier Research, Development and Engineering Center, and organizations within CHS to re-design an enhanced rucksack based off of recent Warfighter feedback from NIE 18.2. The new radio ruck will improve the heat dissipation of the MP while providing proper weight distribution and allowing the Soldier to alter it to fit different load carrying mission sets. Additionally, this rucksack intends to be airborne certified through testing conducted by Army Test and Evaluation Command.

The program office is planning to complete a new APB in conjunction with FRP. The revised APB will re-baseline all program schedule threshold deviations and incorporate the new LR, MP Gen 2, and Single-Channel Data Radio requirements at the next milestone decision (FRP).

Acronyms and Abbreviations

ATO - Approval to Operate
CHS - Common Hardware Systems
CPD - Capability Production Document
DAA - Designated Approval Authority
DISR - Department of Defense Information Technology Standards Registry
DoDAF - Department of Defense Architecture Framework
GESP - Global Information Grid Enterprise Service Profile
GIG - Global Information Grid
HMS - Handheld, Manpack, and Small Form Fit
IA - Information Assurance
IATO - Interim Approval to Operate
IEA - Information Environment Architecture
IP - Internet Protocol
KIP - Key Interface Profiles
LR - Leader Radio
MP - Manpack
NCOW RM - Net-Centric Operations and Warfare Reference Model
NIE - Network Integration Evaluation
NR - Net Ready
PEO - Program Executive Office
PLI - Position Location Information
SAASM - Selective Availability Anti-Spoofing Module
SATCOM - Satellite Communications
SINCGARS - Single Channel Ground and Airborne Radio System
SRW - Soldier Radio Waveform
TV - Technical View
UHF - Ultra High Frequency

Track to Budget

RDT&E

Appn		BA	PE		
Navy	1319	05	0604280N		
	Project		**Name**		
	3075		Joint Tactical Radio System (JTRS) / HMS JTRS		(Sunk)
Army	2040	05	0604280A		
	Project		**Name**		
	162		Joint Tactical Radio / Network Enterprise Domain (NED)		(Sunk)
	DZ5		Joint Tactical Radio		(Sunk)
Army	2040	05	0604805A		
	Project		**Name**		
	615		JTRS - Ground Domain Integration		(Sunk)
	61A		JTRS Cluster 5 Development		(Sunk)
Army	2040	05	0605042A		
	Project		**Name**		
	FA1		Manpack Radio	(Shared)	
	FA2		Rifleman Radio	(Shared)	

Procurement

Appn		BA	PE		
Navy	1109	04	0206313M		
	Line Item		**Name**		
	4633		Radio Systems		(Sunk)
Navy	1810	02	0204163N		
	Line Item		**Name**		
	3057		Communication Items Under $5M		(Sunk)
Army	2035	02	0604280A		
	Line Item		**Name**		
	B90210		JTRS Cluster 5 (Handheld)		(Sunk)
	B90215		JTRS (Manpack)		(Sunk)
	B95006		Handheld Radio		
	B95007		Manpack Radio		
Army	2035	03	0604827A		
	Line Item		**Name**		
	K36402		Heads Up Display (HUD)	(Shared)	
	R80501		Ground Soldier System		(Sunk)
Air Force	3080	03	0207423F		
	Line Item		**Name**		

837100	Tactical C-E Equipment	(Shared)	(Sunk)

Notes

B90000 is the parent for JTRS Cluster 5 (Handheld - B90210) and JTRS (Manpack - B90215).

B95004 is the parent for Handheld Radio (B95006) and Manpack Radio (B95007).

A Congressional mark was assessed against FY 2019 Procurement in the amount of $53.090M and is therefore not included in the B95004 Army PE.

HMS is procuring Single-Channel Data Radios in support of Integrated Visual Augmentation System (IVAS) under K36402 Heads Up Display (HUD) in FY 2021; funds will be realigned from K36402 to HMS in POM for FY 2022 and FY 2023.

Acq O&M

Appn		BA	PE
Army	2020	04	0702806A

Subactivity Group	Name	
435	Acquisition and Management Support: Tactical Radios	(Shared)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2011 $M			BY 2011 $M	TY $M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	1254.7	1257.0	1382.7	1242.5	1238.5	1238.5	1232.2
Procurement	6987.9	6952.9	7648.2	7623.0	7962.5	7962.5	9693.9
Flyaway	--	--	--	5416.2	--	--	6883.7
Recurring	--	--	--	5244.6	--	--	6685.2
Non Recurring	--	--	--	171.6	--	--	198.5
Support	--	--	--	2206.8	--	--	2810.2
Other Support	--	--	--	1980.8	--	--	2513.7
Initial Spares	--	--	--	226.0	--	--	296.5
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	72.2	0.0	0.0	95.6
Total	8242.6	8209.9	N/A	8937.7	9201.0	9201.0	11021.7

Current APB Cost Estimate Reference

HMS cost estimate is the 2011 MS C APB as reflected in the CAPE ICE dated October 20, 2011

Cost Notes

No additional programmatic risks were identified in the latest Program Office Estimate.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	582	582	833
Procurement	270369	270369	299139
Total	270951	270951	299972

Quantity Notes

Unit of measure is an HMS radio, which includes different configurations and multiple variants (Rifleman Radio, Leader Radio, Manpack Radio, and Single-Channel Data Radio (in support of Integrated Visual Augmentation System (IVAS)).

Handheld Radios (Army) - 226,075:
- Leader Radio - 100,000
- Rifleman Radio - 21,579
- Single-Channel Data Radio - 104,496

Manpack (Combined) - 73,064:
- Army - 65,622
- Other Services - 7,442

Quantities reflected in the Manpack section represent Receiver Transmitters (R/Ts)

Cost and Funding

Funding Summary

Appropriation Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)									
Appropriation	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
RDT&E	1168.9	25.7	10.1	5.3	5.4	5.5	5.6	5.7	1232.2
Procurement	1840.7	468.0	682.5	856.7	925.1	1032.9	899.8	2988.2	9693.9
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	5.6	5.8	5.9	6.1	6.3	6.5	6.7	52.7	95.6
PB 2021 Total	3015.2	499.5	698.5	868.1	936.8	1044.9	912.1	3046.6	11021.7
PB 2020 Total	3054.8	509.5	542.5	625.3	790.7	713.8	778.8	3566.0	10581.4
Delta	-39.6	-10.0	156.0	242.8	146.1	331.1	133.3	-519.4	440.3

Quantity Summary FY 2021 President's Budget / December 2019 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	To Complete	Total
Development	833	0	0	0	0	0	0	0	0	833
Production	0	37338	6352	52296	56130	39496	23745	19174	64608	299139
PB 2021 Total	833	37338	6352	52296	56130	39496	23745	19174	64608	299972
PB 2020 Total	833	37023	8932	12791	16514	20489	18165	18916	137539	271202
Delta	0	315	-2580	39505	39616	19007	5580	258	-72931	28770

Cost and Funding

Annual Funding By Appropriation

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
		TY $M					
Fiscal Year	Quantity	End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	--	--	--	--	--	--	132.9
2008	--	--	--	--	--	--	150.6
2009	--	--	--	--	--	--	127.1
2010	--	--	--	--	--	--	178.3
2011	--	--	--	--	--	--	66.1
2012	--	--	--	--	--	--	117.2
2013	--	--	--	--	--	--	83.5
Subtotal	271	--	--	--	--	--	855.7

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
		BY 2011 $M					
Fiscal Year	Quantity	End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2007	--	--	--	--	--	--	139.7
2008	--	--	--	--	--	--	155.5
2009	--	--	--	--	--	--	129.6
2010	--	--	--	--	--	--	179.1
2011	--	--	--	--	--	--	64.8
2012	--	--	--	--	--	--	113.1
2013	--	--	--	--	--	--	79.7
Subtotal	271	--	--	--	--	--	861.5

Annual Funding 2040 | RDT&E | Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2004	--	--	--	--	--	--	21.9
2005	--	--	--	--	--	--	96.1
2006	--	--	--	--	--	--	124.6
2007	--	--	--	--	--	--	--
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	--
2011	--	--	--	--	--	--	0.8
2012	--	--	--	--	--	--	0.1
2013	--	--	--	--	--	--	--
2014	--	--	--	--	--	--	31.8
2015	--	--	--	--	--	--	9.5
2016	--	--	--	--	--	--	4.5
2017	--	--	--	--	--	--	11.4
2018	--	--	--	--	--	--	8.8
2019	--	--	--	--	--	--	3.7
2020	--	--	--	--	--	--	25.7
2021	--	--	--	--	--	--	10.1
2022	--	--	--	--	--	--	5.3
2023	--	--	--	--	--	--	5.4
2024	--	--	--	--	--	--	5.5
2025	--	--	--	--	--	--	5.6
2026	--	--	--	--	--	--	5.7
Subtotal	562	--	--	--	--	--	376.5

Annual Funding 2040 | RDT&E | Research, Development, Test, and Evaluation, Army							
Fiscal Year	Quantity	BY 2011 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2004	--	--	--	--	--	--	24.9
2005	--	--	--	--	--	--	106.2
2006	--	--	--	--	--	--	133.9
2007	--	--	--	--	--	--	--
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	--
2011	--	--	--	--	--	--	0.8
2012	--	--	--	--	--	--	0.1
2013	--	--	--	--	--	--	--
2014	--	--	--	--	--	--	29.7
2015	--	--	--	--	--	--	8.7
2016	--	--	--	--	--	--	4.1
2017	--	--	--	--	--	--	10.1
2018	--	--	--	--	--	--	7.7
2019	--	--	--	--	--	--	3.2
2020	--	--	--	--	--	--	21.7
2021	--	--	--	--	--	--	8.4
2022	--	--	--	--	--	--	4.3
2023	--	--	--	--	--	--	4.3
2024	--	--	--	--	--	--	4.3
2025	--	--	--	--	--	--	4.3
2026	--	--	--	--	--	--	4.3
Subtotal	562	--	--	--	--	--	381.0

RDT&E funding FY 2019 - FY 2025, as shown below, will be realigned to support emerging Army priorities to include the Integrated Tactical Network.

(TY, $M)

2019: $15.059
2020: $2.750
2021: $18.078
2022: $42.225
2023: $21.788
2024: $21.094
2025: $20.867

Annual Funding 1109 | Procurement | Procurement, Marine Corps							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2024	272	11.2	--	--	11.2	1.9	13.1
2025	266	11.8	--	--	11.8	2.2	14.0
2026	265	11.7	--	--	11.7	2.3	14.0
2027	265	11.7	--	--	11.7	2.3	14.0
2028	265	12.1	--	--	12.1	2.5	14.6
2029	265	11.9	--	--	11.9	2.4	14.3
2030	265	14.8	--	--	14.8	2.5	17.3
2031	265	14.7	--	--	14.7	2.7	17.4
2032	265	14.6	--	--	14.6	2.7	17.3
2033	--	--	--	--	--	0.3	0.3
Subtotal	2393	114.5	--	--	114.5	21.8	136.3

Annual Funding 1109 | Procurement | Procurement, Marine Corps							
Fiscal Year	Quantity	BY 2011 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2024	272	8.6	--	--	8.6	1.5	10.1
2025	266	8.9	--	--	8.9	1.7	10.6
2026	265	8.7	--	--	8.7	1.7	10.4
2027	265	8.5	--	--	8.5	1.7	10.2
2028	265	8.6	--	--	8.6	1.8	10.4
2029	265	8.3	--	--	8.3	1.7	10.0
2030	265	10.1	--	--	10.1	1.8	11.9
2031	265	9.9	--	--	9.9	1.8	11.7
2032	265	9.6	--	--	9.6	1.8	11.4
2033	--	--	--	--	--	0.2	0.2
Subtotal	2393	81.2	--	--	81.2	15.7	96.9

Annual Funding 1810 | Procurement | Other Procurement, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	50	3.5	--	--	3.5	--	3.5
2013	--	--	--	--	--	--	--
2014	--	--	--	--	--	--	--
2015	--	--	--	--	--	--	--
2016	--	--	--	--	--	--	--
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	--
2019	--	--	--	--	--	--	--
2020	--	--	--	--	--	--	--
2021	--	--	--	--	--	--	--
2022	--	--	--	--	--	--	--
2023	--	--	--	--	--	--	--
2024	23	0.9	--	--	0.9	0.1	1.0
2025	23	1.0	--	--	1.0	0.1	1.1
2026	22	1.0	--	--	1.0	0.1	1.1
2027	22	1.0	--	--	1.0	0.2	1.2
2028	22	1.0	--	--	1.0	0.2	1.2
2029	22	1.0	--	--	1.0	0.2	1.2
2030	22	1.2	--	--	1.2	0.3	1.5
2031	22	1.2	--	--	1.2	0.3	1.5
2032	22	1.2	--	--	1.2	0.3	1.5
Subtotal	250	13.0	--	--	13.0	1.8	14.8

Annual Funding 1810 | Procurement | Other Procurement, Navy							
Fiscal Year	Quantity	BY 2011 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	50	3.4	--	--	3.4	--	3.4
2013	--	--	--	--	--	--	--
2014	--	--	--	--	--	--	--
2015	--	--	--	--	--	--	--
2016	--	--	--	--	--	--	--
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	--
2019	--	--	--	--	--	--	--
2020	--	--	--	--	--	--	--
2021	--	--	--	--	--	--	--
2022	--	--	--	--	--	--	--
2023	--	--	--	--	--	--	--
2024	23	0.7	--	--	0.7	0.1	0.8
2025	23	0.8	--	--	0.8	--	0.8
2026	22	0.7	--	--	0.7	0.1	0.8
2027	22	0.7	--	--	0.7	0.2	0.9
2028	22	0.7	--	--	0.7	0.2	0.9
2029	22	0.7	--	--	0.7	0.1	0.8
2030	22	0.8	--	--	0.8	0.2	1.0
2031	22	0.8	--	--	0.8	0.2	1.0
2032	22	0.8	--	--	0.8	0.2	1.0
Subtotal	250	10.1	--	--	10.1	1.3	11.4

Annual Funding 2035 | Procurement | Other Procurement, Army							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2011	5297	33.3	--	6.9	40.2	0.1	40.3
2012	19858	354.0	--	31.4	385.4	60.1	445.5
2013	1500	151.7	--	0.6	152.3	52.5	204.8
2014	100	82.9	--	4.7	87.6	143.2	230.8
2015	100	0.4	--	0.2	0.6	20.0	20.6
2016	153	14.8	--	0.3	15.1	39.5	54.6
2017	202	34.6	--	--	34.6	112.1	146.7
2018	6354	318.5	--	4.8	323.3	85.3	408.6
2019	3724	162.3	--	52.6	214.9	70.4	285.3
2020	6352	266.4	--	55.0	321.4	146.6	468.0
2021	52296	470.2	--	35.8	506.0	176.5	682.5
2022	56130	622.2	--	5.7	627.9	228.8	856.7
2023	39496	704.5	--	0.2	704.7	220.4	925.1
2024	22915	739.4	--	0.3	739.7	249.8	989.5
2025	18350	599.0	--	--	599.0	253.2	852.2
2026	11851	346.7	--	--	346.7	213.6	560.3
2027	10721	314.0	--	--	314.0	127.1	441.1
2028	6681	175.1	--	--	175.1	104.4	279.5
2029	8692	254.8	--	--	254.8	102.4	357.2
2030	8686	277.0	--	--	277.0	112.4	389.4
2031	6673	195.0	--	--	195.0	101.9	296.9
2032	5566	176.3	--	--	176.3	93.5	269.8
2033	--	--	--	--	--	23.4	23.4
Subtotal	291697	6293.1	--	198.5	6491.6	2737.2	9228.8

Annual Funding 2035 | Procurement | Other Procurement, Army							
Fiscal Year	Quantity	BY 2011 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2011	5297	32.6	--	6.7	39.3	0.1	39.4
2012	19858	340.9	--	30.2	371.1	58.0	429.1
2013	1500	143.2	--	0.6	143.8	49.5	193.3
2014	100	77.0	--	4.4	81.4	132.9	214.3
2015	100	0.4	--	0.2	0.6	18.3	18.9
2016	153	13.4	--	0.3	13.7	35.6	49.3
2017	202	30.6	--	--	30.6	99.3	129.9
2018	6354	276.6	--	4.2	280.8	74.0	354.8
2019	3724	138.2	--	44.8	183.0	59.9	242.9
2020	6352	222.4	--	45.9	268.3	122.4	390.7
2021	52296	384.8	--	29.3	414.1	144.5	558.6
2022	56130	499.3	--	4.6	503.9	183.5	687.4
2023	39496	554.2	--	0.2	554.4	173.3	727.7
2024	22915	570.3	--	0.2	570.5	192.6	763.1
2025	18350	452.9	--	--	452.9	191.5	644.4
2026	11851	257.0	--	--	257.0	158.3	415.3
2027	10721	228.2	--	--	228.2	92.4	320.6
2028	6681	124.8	--	--	124.8	74.3	199.1
2029	8692	178.0	--	--	178.0	71.5	249.5
2030	8686	189.7	--	--	189.7	77.0	266.7
2031	6673	130.9	--	--	130.9	68.4	199.3
2032	5566	116.0	--	--	116.0	61.6	177.6
2033	--	--	--	--	--	15.1	15.1
Subtotal	291697	4961.4	--	171.6	5133.0	2154.0	7287.0

An Above Threshold Reprogramming (ATR) removed $16.2M from HMS FY 2014 procurement funding, but was not previously reflected in the DAMIR system. This oversight has since been corrected and justifies the $16.2M delta in the Funding Summary section for prior years.

FY 2018 procurement Total Program reflects the Army Budget of $415.3 - $6.7M (for SFAB 1 & 2) = $408.6M

FY 2019 procurement Total Program reflects the Army Budget of $298.5 - $13.2M (for Army withheld funds as potential billpayer) = $285.3M

FY 2021 procurement Total Program figures reflect the Army Budget of $550.8M + $164.0M (for Single Channel Data Radio in support of Integrated Visual Augmentation System (IVAS) - $32.3M (Air-to-Ground integration) = $682.5M

FY 2022 procurement Total Program figures reflect the Army Budget of $687.8M + $168.9M (for Single Channel Data Radio in support of IVAS) = $856.7M

FY 2023 procurement Total Program figures reflect the Army Budget of $838.2M + $86.9M (for Single Channel Data Radio in support of IVAS) = $925.1M

Annual Funding 3080 | Procurement | Other Procurement, Air Force							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2024	535	25.0	--	--	25.0	4.3	29.3
2025	535	27.4	--	--	27.4	5.1	32.5
2026	535	26.9	--	--	26.9	5.1	32.0
2027	534	26.9	--	--	26.9	5.1	32.0
2028	533	27.3	--	--	27.3	5.5	32.8
2029	532	27.5	--	--	27.5	5.4	32.9
2030	532	35.4	--	--	35.4	6.0	41.4
2031	532	34.3	--	--	34.3	6.2	40.5
2032	531	33.9	--	--	33.9	6.1	40.0
2033	--	--	--	--	--	0.6	0.6
Subtotal	4799	264.6	--	--	264.6	49.4	314.0

Annual Funding 3080 | Procurement | Other Procurement, Air Force							
Fiscal Year	Quantity	BY 2011 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2024	535	19.7	--	--	19.7	3.4	23.1
2025	535	21.2	--	--	21.2	3.9	25.1
2026	535	20.4	--	--	20.4	3.8	24.2
2027	534	20.0	--	--	20.0	3.8	23.8
2028	533	19.9	--	--	19.9	4.0	23.9
2029	532	19.6	--	--	19.6	3.9	23.5
2030	532	24.8	--	--	24.8	4.2	29.0
2031	532	23.5	--	--	23.5	4.3	27.8
2032	531	22.8	--	--	22.8	4.1	26.9
2033	--	--	--	--	--	0.4	0.4
Subtotal	4799	191.9	--	--	191.9	35.8	227.7

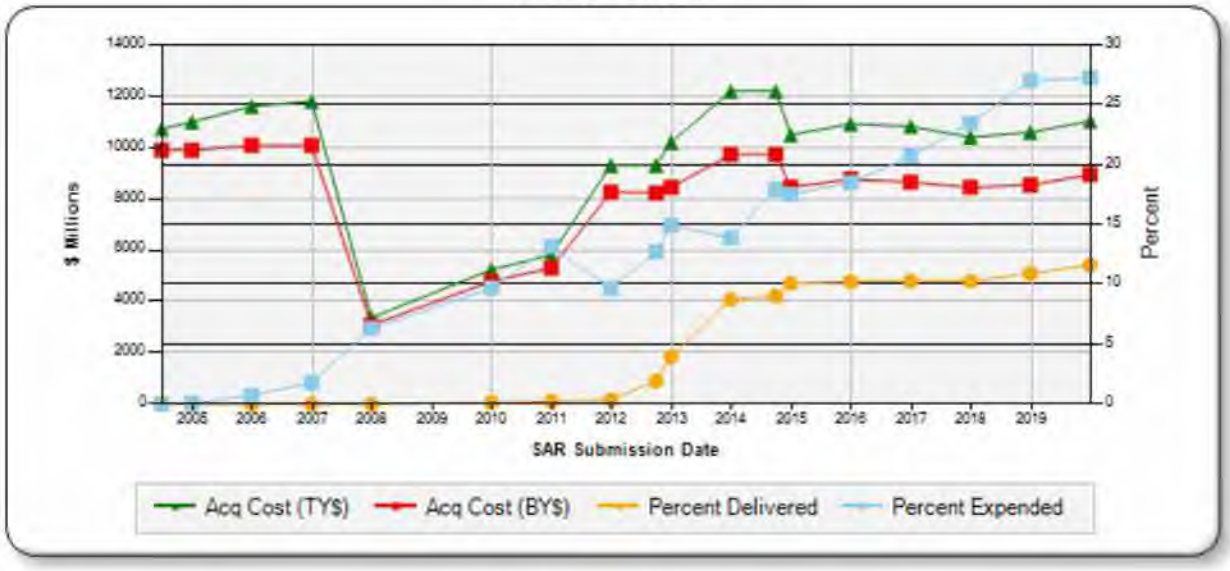
Annual Funding 2020 | Acq O&M | Operation and Maintenance, Army	
Fiscal Year	TY $M Total Program
2019	5.6
2020	5.8
2021	5.9
2022	6.1
2023	6.3
2024	6.5
2025	6.7
2026	6.9
2027	7.1
2028	7.3
2029	7.5
2030	7.7
2031	8.0
2032	8.2
Subtotal	95.6

Annual Funding 2020 | Acq O&M | Operation and Maintenance, Army	
Fiscal Year	BY 2011 $M
	Total Program
2019	4.8
2020	4.9
2021	4.9
2022	5.0
2023	5.0
2024	5.1
2025	5.1
2026	5.2
2027	5.2
2028	5.3
2029	5.3
2030	5.4
2031	5.5
2032	5.5
Subtotal	72.2

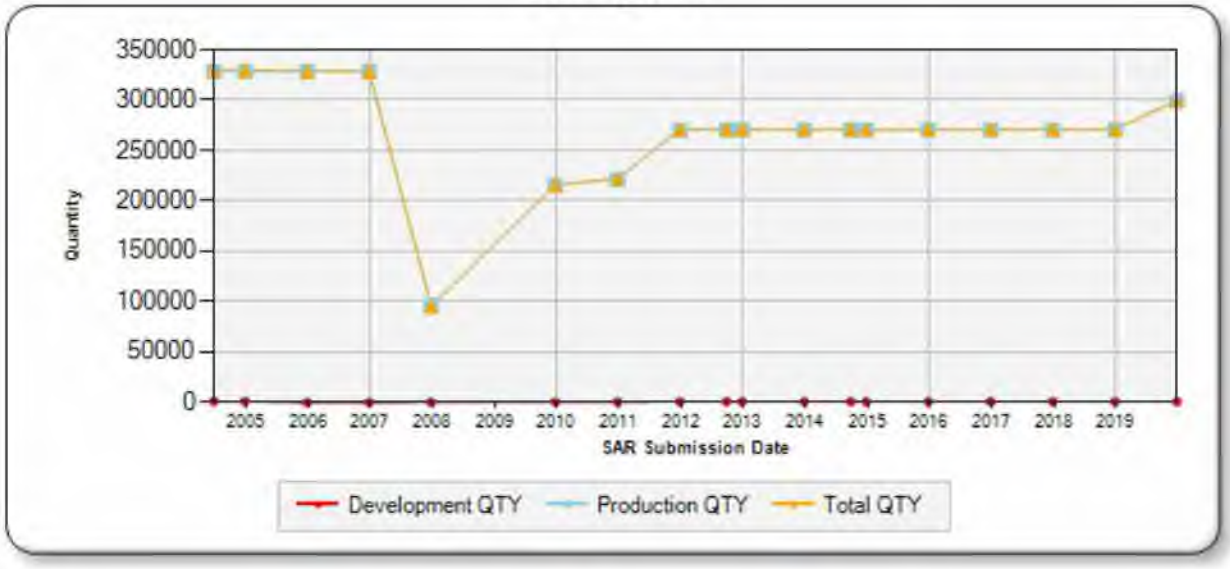
Charts

HMS first began SAR reporting in June 2004

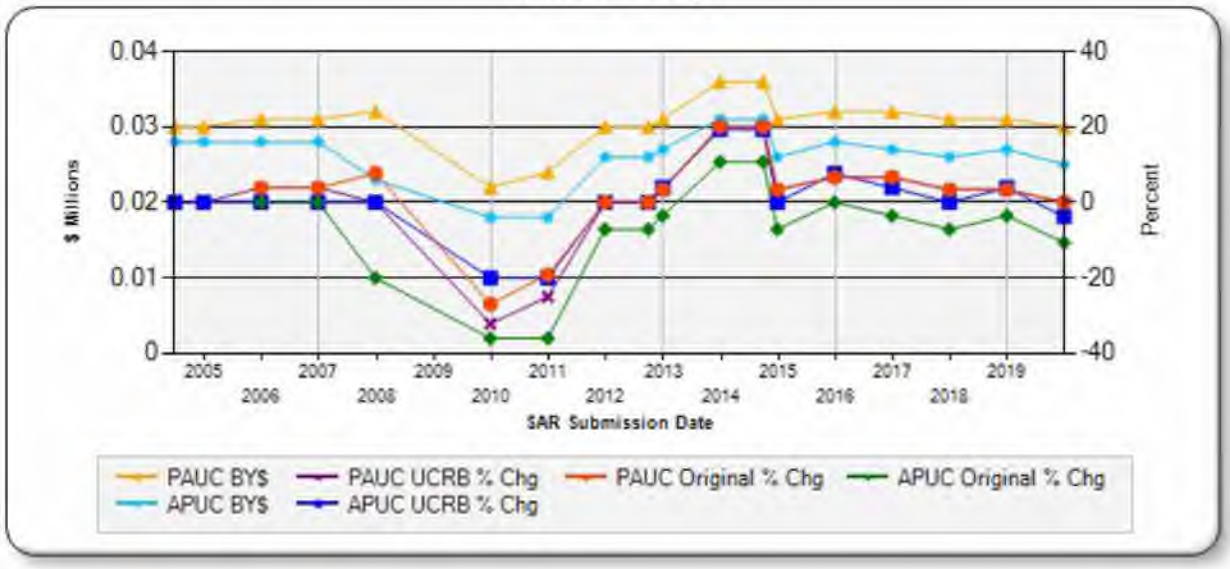
Program Acquisition Cost - HMS
Base Year 2011 $M



Quantity - HMS



Unit Cost - HMS
Base Year 2011 $M



Risks

Significant Schedule and Technical Risks

Significant Schedule and Technical Risks	
Milestone B (May 2004)	
1.	Waveform Availability
2.	Size, Weight and Power Issues
3.	Aggressive schedule for software development and component system testing
Milestone C (June 2011)	
1.	Mobile User Objective System (MUOS) requirements and availability
2.	Manpack software and National Security Agency corrective action issues
Current Estimate (December 2019)	
1.	Threshold Radio Waveforms. HMS has made threshold radio waveform adjustments (TSM waveform) stemming from the ongoing changes to network architecture. These adjustments are necessary in order to address vulnerabilities and focus on solutions to address capability gaps relative to emerging threats. These updates have improved the radio's overall performance capability.

Risks

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (January 2017)	
1.	The CAPE ICE generated in support of the Milestone C decision in June of 2011 was used to establish the current APB. It is difficult to calculate mathematically the precise confidence levels associated with cost estimates prepared for MDAP programs. Based on the rigor in methods used in building the estimate, the strong adherence to the collection and use of historical cost information and the review of applied assumptions, CAPE projects that it is about equally likely that the estimate will prove too low or too high for execution of the program. The most significant cost driver in the HMS cost estimate is the recurring manufacturing cost for radios. This recurring manufacturing cost estimate assumes high component design maturity and requirements stability.
Original Baseline Estimate (May 2004)	
1.	The Original Estimate represents the Program's Milestone B cost position.
Revised Original Estimate (N/A)	
1.	N/A
Current Procurement Cost (December 2019)	
1.	The Current Procurement Cost incorporates schedule and requirements updates since Milestone C. A revised APB will be submitted for approval to re-baseline all program schedule threshold deviations and incorporate the new Leader Radio, Generation 2 Manpack, and Single-Channel Data Radio requirements at the next milestone decision. The most significant cost driver in the HMS cost estimate remains the recurring manufacturing cost for radios. This recurring manufacturing cost estimate assumes high component design maturity and continued unit cost reductions resulting from annual competitive delivery orders.

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	6/17/2011	6/3/2019
Approved Quantity	6350	37338
Reference	Milestone C ADM	LRIP ADM, 2014 Acquisition Strategy (AS), 2017 AS addendum, 2018 ADMs, & 2019 ADM
Start Year	2011	2011
End Year	2012	2019

The Current Total LRIP Quantity is more than 10% of the total production quantity . However, Leader Radio (LR) and Generation (GEN) 2 Manpack (MP) LRIPs only account for 3.6% of the HMS Army Acquisition Objective (AAO). In accordance with the program's May 1, 2014 approved Acquisition Strategy, HMS awarded GEN 2 contracts for the Rifleman Radio (RR), MP, and LR. These radios are Army Acquisition Executive (AAE) authorized procurements to meet operational needs while ramping up to an FRP decision scheduled for FY 2021.

Notes

The Milestone C ADM signed on June 17, 2011 approved entry into Production and Deployment and authorized the Army to contract for an initial LRIP procurement of 6,250 GEN 1 RR (AN/PRC-154) and 100 GEN 1 MP radios (AN/PRC-155). The ADM directed the Services to fund to the OSD CAPE ICE position. A follow-on ADM signed July 11, 2012 approved the procurement of an additional LRIP of 13,077 GEN 1 RR. An October 11, 2012 ADM authorized an additional LRIP procurement of up to 3,726 GEN 1 MP. A December 12, 2013 ADM authorized LRIP procurement of an additional 1,500 GEN 1 MP. In accordance with the program's May 1, 2014 approved Acquisition Strategy, HMS procured 200 GEN 2 RR (100 per vendor) and 153 GEN 2 MP (51 per vendor). Also in accordance with the program's May 1, 2014 approved Acquisition Strategy, an additional 202 GEN 2 MP were procured (101 per vendor) - the third vendor for GEN 2 MP was terminated for convenience in August of 2017. An April 12, 2018 ADM authorized an additional LRIP procurement of up to 2,258 GEN 2 MP. On July 10, 2018, HMS utilized Other Transactional Agreements to procure 296 (LR (148 per vendor) in accordance with the Acquisition Strategy Addendum signed March 8, 2017. A September 6, 2018 ADM authorized an LRIP procurement of up to 3,800 LR. A June 3, 2019 ADM authorized an additional LRIP procurement of up to 2,004 LR and 1,720 GEN 2 MP.

In addition, the Government received all 2,052 one-channel Rifleman Radios for Nett Warrior. Nett Warrior Radios are not a part of the HMS program and are procured for PEO Soldier; however, they are a part of the RR Army Acquisition Objective.

Foreign Military Sales

Notes

There are no FMS for this program.

HMS Radio products are categorized as Major Defense Equipment under the International Traffic in Arms Regulations. Export of Significant Military Equipment, such as HMS radios, must be approved by the U.S. Department of State when embedded with Type 1 encryption. Coalition partners may purchase HMS radios via FMS or possibly, Direct Commercial Sales, once the HMS radios successfully complete operational test and satisfy all certification requirements. In all cases, export of HMS products is subject to the following considerations: a previous export for a legacy capability does not constitute automatic approval for that legacy capability instantiated due to embedded Type 1 encryption; all requests for sales will be adjudicated on a case-by-case basis and approved by the NSA; Tactical Radios with waveforms installed must be certified by NSA; Tactical Radio waveforms, as individual products, are not authorized for sale or export (Sharing of the Link 16 waveform with the MIDS participants per the MIDS Memorandum of Understanding is the only current exception to this rule); HMS variants may be available for foreign sales opportunities in the future.

Acronyms and Abbreviations

HMS - Handheld, Manpack, and Small Form Fit
MIDS - Multifunctional Information Distribution System
NSA - National Security Agency

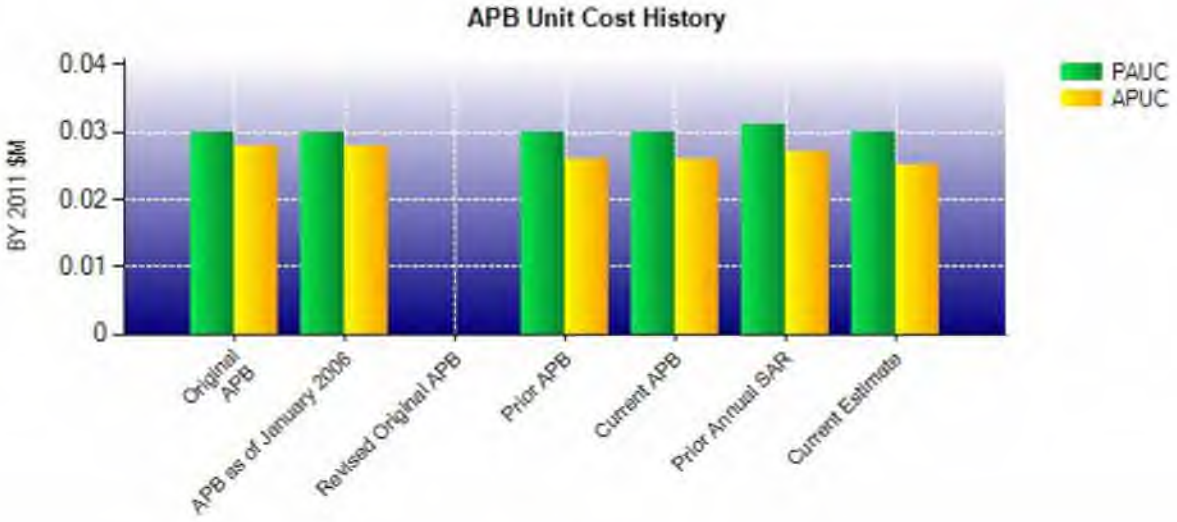
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2011 $M Current UCR Baseline (Jan 2017 APB)	BY 2011 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	8209.9	8937.7	
Quantity	270951	299972	
Unit Cost	0.030	0.030	0.00
Average Procurement Unit Cost			
Cost	6952.9	7623.0	
Quantity	270369	299139	
Unit Cost	0.026	0.025	-3.85

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2011 $M Original UCR Baseline (May 2004 APB)	BY 2011 $M Current Estimate (Dec 2019 SAR)	% Change
Program Acquisition Unit Cost			
Cost	9889.2	8937.7	
Quantity	329574	299972	
Unit Cost	0.030	0.030	0.00
Average Procurement Unit Cost			
Cost	9352.6	7623.0	
Quantity	328514	299139	
Unit Cost	0.028	0.025	-10.71



APB Unit Cost History					
Item	Date	BY 2011 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	May 2004	0.030	0.028	0.033	0.031
APB as of January 2006	May 2004	0.030	0.028	0.033	0.031
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	Oct 2011	0.030	0.026	0.034	0.029
Current APB	Jan 2017	0.030	0.026	0.034	0.029
Prior Annual SAR	Dec 2018	0.031	0.027	0.039	0.034
Current Estimate	Dec 2019	0.030	0.025	0.037	0.032

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.033	0.002	0.012	0.003	0.000	-0.018	0.000	0.002	0.001	0.034

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.034	0.000	0.000	-0.007	0.001	0.006	0.000	0.003	0.003	0.037

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.031	0.002	0.013	0.003	0.000	-0.022	0.000	0.002	-0.002	0.029

Current SAR Baseline to Current Estimate (TY $M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.029	0.000	0.000	-0.007	0.001	0.006	0.000	0.003	0.003	0.032

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Apr 2004	Apr 2004	May 2004
Milestone C	N/A	Mar 2008	May 2011	Jun 2011
IOC	N/A	Feb 2007	Jan 2012	Jul 2012
Total Cost (TY $M)	N/A	10717.0	9201.0	11021.7
Total Quantity	N/A	328674	270951	299972
PAUC	N/A	0.033	0.034	0.037

Cost Variance

Summary TY $M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Production Estimate)	1238.5	7962.5	--	--	9201.0
Previous Changes					
Economic	-6.8	+24.3	--	+0.4	+17.9
Quantity	--	--	--	--	--
Schedule	--	+1333.2	--	--	+1333.2
Engineering	--	--	--	--	--
Estimating	+22.9	-300.1	--	+95.2	-182.0
Other	--	--	--	--	--
Support	--	+211.3	--	--	+211.3
Subtotal	+16.1	+1268.7	--	+95.6	+1380.4
Current Changes					
Economic	-0.2	-8.5	--	--	-8.7
Quantity	--	+830.3	--	--	+830.3
Schedule	--	-3359.8	--	--	-3359.8
Engineering	--	+419.8	--	--	+419.8
Estimating	-22.2	+1947.2	--	--	+1925.0
Other	--	--	--	--	--
Support	--	+633.7	--	--	+633.7
Subtotal	-22.4	+462.7	--	--	+440.3
Total Changes	-6.3	+1731.4	--	+95.6	+1820.7
Current Estimate	1232.2	9693.9	--	95.6	11021.7

Summary BY 2011 $M					
Item	RDT&E	Procurement	MILCON	Acq O&M	Total
SAR Baseline (Production Estimate)	1254.7	6987.9	--	--	8242.6
Previous Changes					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	--	+244.9	--	--	+244.9
Engineering	--	--	--	--	--
Estimating	+6.0	-38.8	--	+72.2	+39.4
Other	--	--	--	--	--
Support	--	+5.9	--	--	+5.9
Subtotal	+6.0	+212.0	--	+72.2	+290.2
Current Changes					
Economic	--	--	--	--	--
Quantity	--	+564.7	--	--	+564.7
Schedule	--	-2357.2	--	--	-2357.2
Engineering	--	+335.9	--	--	+335.9
Estimating	-18.2	+1385.1	--	--	+1366.9
Other	--	--	--	--	--
Support	--	+494.6	--	--	+494.6
Subtotal	-18.2	+423.1	--	--	+404.9
Total Changes	-12.2	+635.1	--	+72.2	+695.1
Current Estimate	1242.5	7623.0	--	72.2	8937.7

Previous Estimate: December 2018

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.2
Revised estimate due to refinement of testing and labor support costs for HMS from FY2020 through FY2025. (Estimating)	-18.2	-22.2
RDT&E Subtotal	-18.2	-22.4

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-8.5
Quantity variance resulting from an increase of 28,770 HMS radios from 262,927 to 291,697 (Army). (Quantity)	+564.7	+830.3
Schedule variance in FY 2021 through FY 2025 due to benefit of economies of scale procurements (Army). (Schedule)	0.0	-433.4
Production start shifted quantities to FY 2024 instead of FY 2025, reducing quantities in FY 2025-2032 which yielded a net cost decrease primarily due to inflation (Navy). (Schedule)	0.0	-0.7
Schedule variance due to the addition of R/Ts (three dual vehicle mounts) which offsets the cost savings presented by the shift in the production line from 2025 to 2024. (Schedule)	0.0	+0.1
Production start shifted quantities to FY 2024 instead of FY 2025, reducing quantities in FY 2025-2032 which yielded a net cost decrease primarily due to inflation (Air Force). (Schedule)	0.0	-1.3
Schedule variance due to FY 2019 cuts in funding. (Army) (Schedule)	-10.4	-12.2
Revised estimated costs to reflect actual contract cost data (Marine Corps). (Estimating)	-8.9	-12.7
Revised estimated costs to reflect actual contract cost data (Navy). (Estimating)	-0.8	-1.2
Revised estimated costs to reflect actual contract cost data (Air Force). (Estimating)	-46.8	-65.0
Revised estimated costs to reflect actual contract cost data (Army). (Estimating)	-45.6	-56.8
Revised estimate due to the removal of an Above Threshold Reprogramming. (Army) (Estimating)	-15.0	-16.2
Revised estimate to reflect addition of Single-Channel Data Radio Procurement in FY 2021 - FY 2023 (Army). (Engineering)	+335.9	+419.8
Additional Schedule variance due to addition of 104,496 Single-Channel Data Radios (Army). (Schedule) (Schedule)	-2346.8	-2912.3
Revised estimate to reflect most recent contract cost data (Army). (Estimating)	+1501.2	+2098.2
Adjustment for current and prior escalation. (Estimating)	+1.0	+0.9
Adjustment for current and prior escalation. (Support)	+0.2	+0.5
Increase in Other Support directly related to schedule shift in the procurement buy profiles (Marine Corps). (Support)	+1.7	+2.3
Decrease Initial Spares directly related to schedule shift in the procurement buy profiles (Marine Corps). (Support)	+0.1	-0.1
Increase in Other Support due to separating warranty costs out of production and into fielding contractor logistics support (CLS) and reflects updated fielding costs for Navy MP systems (Navy). (Support)	+0.4	+0.4

Increase in Other Support due to separating warranty costs out of production and into fielding (CLS) and reflects updated fielding costs for Army MP systems (Army). (Support)	+450.8	+574.3
Increase in Initial Spares due to allocation of 5% of production to spares which now includes Single-Channel Data Radio spares as well (Army). (Support)	+39.6	+54.0
Increase in Other Support due to separating warranty costs out of production and into fielding (CLS) and reflects updated fielding costs for Air Force MP systems (Air Force). (Support)	+3.0	+3.9
Decrease in Initial Spares estimate shift in the procurement buy profiles resulting in reduced quantities in FY 2025-2032 (Air Force). (Support)	-0.7	-1.1
Decrease in Initial Spares estimate shift in the procurement buy profiles resulting in reduced quantities in FY 2025-2032 (Air Force). (Support)	-0.5	-0.5
Procurement Subtotal	+423.1	+462.7

Change Explanations Notes

Revised estimate from FY 2020 through FY 2025 due to refinement of testing and labor support costs for HMS.

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: Thales - Handheld Radio Production Contract
Contractor: Thales Defense & Security, Inc.
Contractor Location: 22605 Gateway Center Dr.
Clarksburg, MD 20871
Contract Number: W15P7T-15-D-0015/1
Contract Type: Firm Fixed Price (FFP), Indefinite Delivery Indefinite Quantity (IDIQ)
Award Date: April 29, 2015
Definitization Date: April 29, 2015

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
2.3	N/A	0	104.8	N/A	2400	104.8	104.8

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the on-ramp and award of Leader Radio assets and services. This award procures radios, necessary ancillaries and documentation to support subsequent fielding activities.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP/IDIQ) contract.

Notes

This is a FFP contract that is administered on an IDIQ basis as task orders are awarded.

Contract Identification

Appropriation: Procurement
Contract Name: Harris - Handheld Radio Production Contract
Contractor: Harris Corporation
Contractor Location: 1680 University Ave
Rochester, NY 14610
Contract Number: W15P7T-15-D-0016/1
Contract Type: Firm Fixed Price (FFP), Indefinite Delivery Indefinite Quantity (IDIQ)
Award Date: April 29, 2015
Definitization Date: April 29, 2015

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
2.0	N/A	0	102.6	N/A	2884	102.6	102.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the on-ramp and award of Leader Radio assets and services. This award procure radios, necessary ancillaries and documentation to support subsequent fielding activities.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP/IDIQ) contract.

Notes

This is a FFP contract that is administered on an IDIQ basis as task orders are awarded.

Contract Identification

Appropriation: Procurement
Contract Name: Harris - Generation 2 Manpack Radio
Contractor: Harris Corporation
Contractor Location: 1680 University Avenue
Rochester, NY 14610
Contract Number: W15P7T-16-D-0002/1
Contract Type: Firm Fixed Price (FFP), Indefinite Delivery Indefinite Quantity (IDIQ)
Award Date: February 26, 2016
Definitization Date: February 26, 2016

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1.4	N/A	0	179.2	N/A	2141	179.2	179.2

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the award of Delivery Orders 0002, 0003, 004, 005, and 0006. These awards procure radios, necessary ancillaries, and documentation to assess delayed performance thresholds and support subsequent fielding activities.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP/IDIQ) contract.

Notes

This is a FFP contract that is administered on an IDIQ basis as task orders are awarded.

Contract Identification

Appropriation: Procurement
Contract Name: Collins Aerospace - Generation 2 Manpack Radio
Contractor: Rockwell Collins Inc.
Contractor Location: 400 Collins Road NE
Cedar Rapids, IA 52498
Contract Number: W15P7T-16-D-0003/1
Contract Type: Firm Fixed Price (FFP), Indefinite Delivery Indefinite Quantity (IDIQ)
Award Date: February 26, 2016
Definitization Date: February 26, 2016

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
4.3	N/A	0	181.6	N/A	2141	181.6	181.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the award of Delivery Orders 0002, 0003, 0004, 0005, and 0006. These awards procure radios, necessary ancillaries, and documentation to assess delayed performance thresholds and support subsequent fielding activities.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP/IDIQ) contract.

Notes

This is a FFP contract that is administered on an IDIQ basis as task orders are awarded.

Rockwell Collins was acquired by United Technologies Corporation (November 26, 2018) and the company's name changed to Collins Aerospace.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	833	833	833	100.00%
Production	33905	33986	299139	11.36%
Total Program Quantity Delivered	34738	34819	299972	11.61%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	11021.7	Years Appropriated	17
Expended to Date	3001.6	Percent Years Appropriated	56.67%
Percent Expended	27.23%	Appropriated to Date	3514.7
Total Funding Years	30	Percent Appropriated	31.89%

The above data is current as of February 10, 2020.

Notes

As of February 10, 2020, the Government received 19,327 Generation (GEN) 1 Rifleman Radios (RR) and 5,326 GEN1 Manpack radios. The Government received 200 GEN2 RR (100 from each vendor) and 355 GEN2 MP (152 from each of the two current MP vendors and 51 from a previous vendor that is no longer on contract). The Government received an additional 2,258 GEN2 MP (1,129 per vendor). The Government has ordered Leader Radios (LR) via three sources: Other Transaction Authority (OTA) - 296 LRs (148 per vendor) ordered and received; Defense Logistics Agency (DLA) - 720 LRs ordered and received; and the program office's Handheld Indefinite Delivery Indefinite Quantity (IDIQ) Contract - 3,080 ordered with 2,866 received. The Government ordered an additional 1,720 GEN2 MP (860 per vendor) with 291 delivered to date. The Government competitively ordered an additional 2,004 LRs (Harris: 1,244 & Thales: 760) with 295 delivered to date.

In addition, the Government received all 2,052 one-channel Rifleman Radios for Nett Warrior. Note: Nett Warrior Radios are not a part of the HMS program and are procured for PEO Soldier; however, they are a part of the RR Army Acquisition Objective.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	December 31, 2019
Source of Estimate:	POE
Quantity to Sustain:	277560
Unit of Measure:	Radio
Service Life per Unit:	18.00 Years
Fiscal Years in Service:	FY 2012 - FY 2052

Sustainment Life Breakdown:

Manpack Radio total quantity is 73,064.

Leader Radio total quantity is 100,000.

Single-Channel Data Radio (in support of Integrated Visual Augmentation System (IVAS) total quantity is 104,496.

Rifleman Radio total quantity is 21,579 and is not included within the current O&S estimate as it is no longer being sustained.

Developmental units (quantity of 833) will not be sustained.

Procurement captures 2 years fielding costs predominantly through warranty and spares. O&S captures the remaining 18 years of service life.

Revised sustainment strategy is in progress and will be updated at full rate production (FRP).

Sustainment Strategy

Manpack (MP):

The development contract for Generation (GEN) 1 radios includes fixed-price options for the manufacturing of production-ready MP Radios for operational test to establish an initial production base, development of logistics support documentation and sustainment support. A follow-on Firm Fixed Price (FFP) / Cost Plus Fixed Fee (CPFF) GEN 1 Modification Contract was awarded to the GEN 1 vendor on March 24, 2015 to provide continued support of GEN 1 radios following the development contract. Contractor repair of unserviceable GEN 1 radios is planned to begin to transition to organic repair at Tobyhanna Army Depot (TYAD) upon the expiration of the MP Radio GEN 1 Modification Contract.

For GEN 2, MP Radios will be procured through a multiple award, FFP, Indefinite Delivery Indefinite Quantity contract. The contract provides for sustainment services which includes: warranties, radio repairs, spares, delivery and update of training material, delivery and update of technical manuals/bulletins, training, Field Service Representative (FSR) support, and the management and updates to the software and hardware baselines. Final disposition of all unserviceable radios will be accomplished at TYAD. All MP contracts will contain provisions to procure sustainment spares to replace unserviceable radios and ancillary items requisitioned through Standard Army Supply System (SASS), operations, maintenance, training documentation, the ability to procure the software development environment, and data to maintain the software baseline. A sustainment strategy is currently in development.

Leader Radio (LR):

All LR procured by HMS that become unserviceable will be returned to TYAD through the SASS. Radios will be returned to the Original Equipment Manufacturer for warranty repair or replacement. LR may come with a standard and/or additional warranty based on the cost and value to the Government. Upon expiration of the warranty period, there is no current plan to perform depot-level repair of the radio. Final disposition of all unserviceable radios will be accomplished at TYAD. All LR contracts will contain provisions to procure sustainment spares to replace unserviceable radios and ancillary items requisitioned through SASS, operations, maintenance, training documentation and the ability to procure the software development environment and data to maintain the software baseline. A sustainment strategy is currently in development.

Single-Channel Data Radio (IVAS):

All Single-Channel Data Radios procured by HMS that become unserviceable will be replaced through the Army Working Capital Fund (AWCF). Radios still under warranty will be returned to the Original Equipment Manufacturer for warranty repair or replacement. Single-Channel Data Radios will be procured with a standard warranty and extended warranties may be procured based on the cost and value to the Government. Upon expiration of the warranty period, there is no current plan to perform depot-level repair of the radio. Final disposition of all unserviceable radios will be accomplished at TYAD. All contracts will contain provisions to procure sustainment spares to replace unserviceable radios and ancillary items requisitioned through SASS, operations, maintenance, training documentation and the ability to procure the software development environment and data to maintain the software baseline.

Antecedent Information

No Antecedent. By the nature of the waveforms used in current HMS products and the tactical implementation of where the waveforms are found in the fielded formations, there are no analogous current or legacy radios to the MP, LR, or Single-Channel Data Radio.

Annual O&S Costs BY2011 $K		
Cost Element	**HMS Radios Average Annual Cost Per Radio**	**No Antecedent (Antecedent) N/A**
Unit-Level Manpower	0.000	0.000
Unit Operations	0.000	0.000
Maintenance	2.133	0.000
Sustaining Support	0.022	0.000
Continuing System Improvements	0.083	0.000
Indirect Support	0.000	0.000
Other	0.000	0.000
Total	2.238	--

Item	Total O&S Cost $M			
	HMS Radios			No Antecedent (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	14710.4	16181.4	11181.2	N/A
Then Year	20019.2	N/A	18227.6	N/A

Equation to Translate Annual Cost to Total Cost

The Total O&S cost ($M) is the Average Annual Cost ($2.238K) x Total Number of Radios (277,560) x 18-year O&S sustainment life / 1000.

O&S Cost Variance		
Category	**BY 2011 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2018 SAR	11832.7	
Programmatic/Planning Factors	-295.8	The current SAR position includes IVAS radio and excludes Rifleman radio.
Cost Estimating Methodology	-355.7	Current Manpack estimates are based on Gen1 Manpack sustainment contract actuals for repair labor and HW.
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	-651.5	
Current Estimate	11181.2	

O&S Costs are updated to reflect removal of Rifleman radio, and inclusion of IVAS radios. Updates are based upon current contract pricing for LR and MP radios. Gen2 Manpack radio O&S costs were updated based upon Gen1 Manpack historical sustainment costs.

Disposal Estimate Details

Date of Estimate:	October 18, 2019
Source of Estimate:	POE
Disposal/Demilitarization Total Cost (BY 2011 $M):	76.4

The O&S estimate does not include Disposal costs in the amount of $76.4 (BY 2011 $M). Disposal costs are updated based upon historical actual radio disposal costs.