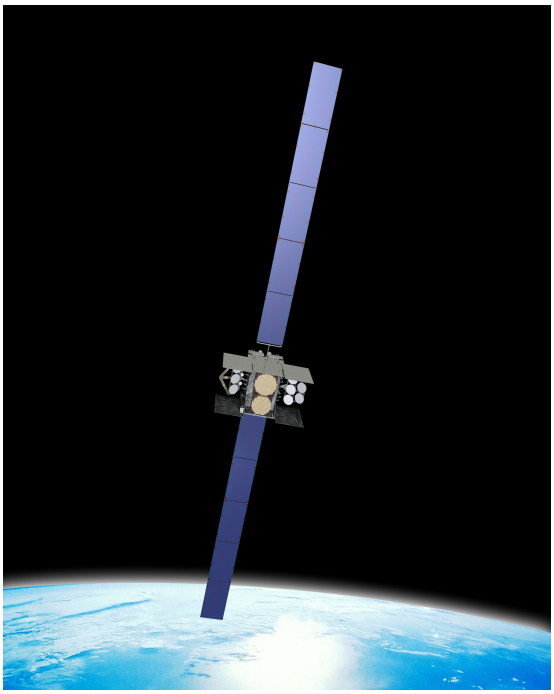
Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-326



Wideband Global SATCOM (WGS)

As of FY 2015 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations

Acq O&M - Acquisition-Related Operations and Maintenance
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
BA - Budget Authority/Budget Activity
BY - Base Year
DAMIR - Defense Acquisition Management Information Retrieval
Dev Est - Development Estimate
DoD - Department of Defense
DSN - Defense Switched Network
Econ - Economic
Eng - Engineering
Est - Estimating
FMS - Foreign Military Sales
FY - Fiscal Year
IOC - Initial Operational Capability
$K - Thousands of Dollars
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MILCON - Military Construction
N/A - Not Applicable
O&S - Operating and Support
Oth - Other
PAUC - Program Acquisition Unit Cost
PB - President's Budget
PE - Program Element
Proc - Procurement
Prod Est - Production Estimate
QR - Quantity Related
Qty - Quantity
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
Sch - Schedule
Spt - Support
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting

Program Information

Program Name

Wideband Global SATCOM (WGS)

DoD Component

Air Force

Responsible Office

Responsible Office

Mr. Robert E. Tarleton, Jr.
SMC/MC
Los Angeles AFB
483 N. Aviation Blvd.
El Segundo, CA 90245-2802
robert.tarleton@us.af.mil

Phone 310-653-9001
Fax 310-653-9636
DSN Phone 633-9001
DSN Fax 633-9636

Date Assigned February 18, 2014

References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated August 11, 2010

Approved APB

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated March 12, 2014

Mission and Description

Wideband Global SATCOM (WGS), previously reported as Wideband Gapfiller Satellites, is a constellation of the Department of Defense's highest capacity communication satellites. WGS Block I satellites became operational with WGS-1 in April 2008 (Initial Operational Capability declared in January 2009), WGS-2 in August 2009 and WGS-3 in June 2010. The first of the WGS Block II satellites, WGS-4, became operational August 2012. WGS provides service in both the X and Ka-band frequency spectrums, including a new two-way Ka-band service.

WGS will augment the Defense Satellite Communications System III and the Global Broadcast Service Phase II. WGS is a fully duplexed communications platform offering warfighters a significant increase in capacity, connectivity and interoperability. It provides high capacity and digitally channelized service at both X and Ka frequency bands, opening up a new 2-way Ka communication capability. This highly flexible communications satellite design leverages commercial processes, practices and technology to provide a wideband payload compatible with existing and future terminals. WGS provides an order-of-magnitude increase in communications bandwidth to our infrastructure users, Soldiers, Sailors, Airmen and Marines.

The WGS program has two International Partnerships. In exchange for access to a portion of the WGS constellation, Australia is providing funds for WGS-6 while Canada, Denmark, Luxembourg, The Netherlands, New Zealand and the United States are providing funds for WGS-9.

Executive Summary

Wideband Global SATCOM (WGS) Block I satellites (WGS 1-3) continue to perform operations over the Pacific Command, Central Command, Africa Command and European Command Areas of Responsibility.

WGS Block II satellites (WGS 4-6) have all launched successfully from Cape Canaveral Air Force Station, Florida. WGS-4 continues to perform operations over the European Command, Central Command, Africa Command and Pacific Command Areas of Responsibility. WGS-5 was successfully launched on May 23, 2013 and was operationally activated on December 10, 2013, providing capacity over the Northern Command, Pacific Command, Southern Command and Africa Command Areas of Responsibility. WGS-6 was launched on August 7, 2013 and was operationally activated on February 17, 2014, providing capacity over the Northern Command, Pacific Command and Southern Command Areas of Responsibility.

Per direction of the Milestone Decision Authority in a May 2013 Acquisition Decision Memorandum (ADM) the WGS APB was updated to reflect a schedule milestone for Full Operational Capability (FOC) with an Objective of February 2014 and Threshold of August 2014. Additionally the ADM directed development of a new O&S Service Cost Position (SCP) and we have matched the O&S cost objective in the new APB with the latest SCP.

The WGS 7-10 contract was awarded August 20, 2010 and is in full production. The Wideband Digital Channelizer upgrade, to be implemented on WGS 8-10, completed the unit Critical Design Review on October 25, 2013, and the engineering model qualification unit build is underway. WGS-7 is currently scheduled to launch in July 2015.

The WGS-6 financial data is not reported in this SAR because funding is provided by Australia in exchange for access to a portion of the WGS constellation bandwidth.

The WGS-9 financial data is not reported in this SAR because funding is provided by Canada, Denmark, Luxembourg, The Netherlands, and New Zealand in exchange for access to a portion of the WGS constellation bandwidth.

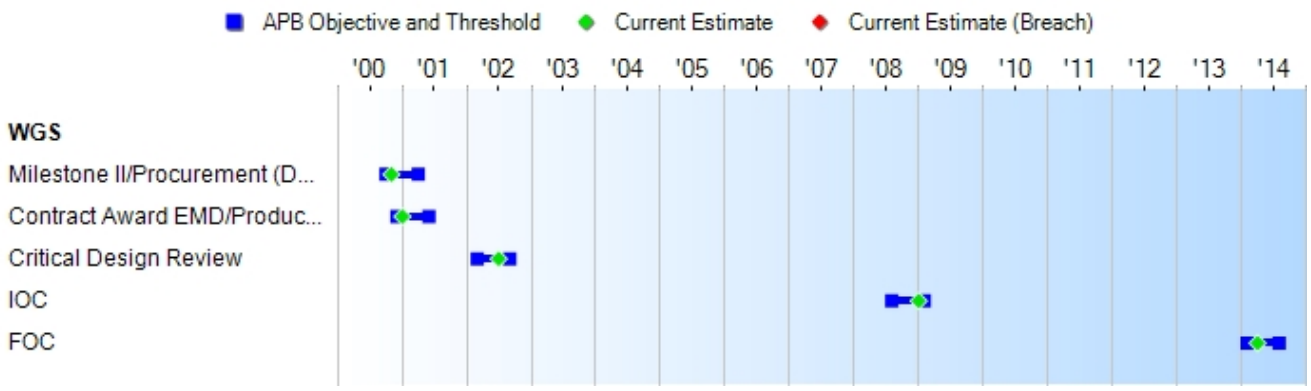
There are no significant software-related issues with this program at this time.

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

Schedule



Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	
Milestone II/Procurement (DAB)	OCT 2000	OCT 2000	APR 2001	NOV 2000	
Contract Award EMD/Production	DEC 2000	DEC 2000	JUN 2001	JAN 2001	
Critical Design Review	MAR 2002	MAR 2002	SEP 2002	JUL 2002	
IOC	AUG 2008	AUG 2008	FEB 2009	JAN 2009	
FOC	JUN 2013	FEB 2014	AUG 2014	APR 2014	(Ch-1)

Change Explanations

(Ch-1) The Current Estimate for FOC changed from FEB 2014 to APR 2014. All paperwork to support the declaration of FOC by Air Force Space Command has been submitted for final headquarters coordination and we anticipate no issues satisfying this final schedule milestone for WGS.

Memo

WGS must meet the following conditions for a successful FOC:

a) Satellites 1-5 must be operating in their assigned orbital locations.
b) Satellites 1-5 must be capable of supporting deployed military forces in each coverage area and have the ability to focus those coverage areas anywhere within the satellite Field of View.
c) Satellites 1-5 must be fully capable of providing intra and inter-coverage connectivity and frequency cross-banding.
d) Satellites 1-5 and the control system must be fully capable of providing S-band platform and payload control.
e) Satellites 1-5 and the control system must be fully capable of providing X and Ka in-band satellite control in each satellite's operations region.
f) Satellites 1-5 must be fully interoperable with existing DoD X-band and GBS Ka-band terminals.
g) All program support needed to operate and maintain satellites 1-5 and associated mission control must be in place, to include: All operator, maintenance and software training completed, all training equipment and software delivered, all provisioning data delivered, all spares delivered, all depot support equipment delivered, all software maintenance documentation and maintenance support equipment delivered, payload equipment string delivered,

and contractor anomaly resolution and software maintenance capability in place.

Acronyms and Abbreviations

DAB - Defense Acquisition Board
EMD - Engineering and Manufacturing Development
FOC - Full Operational Capability
GBS - Global Broadcast Service

Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Coverage	Capable of providing communicat-ions connec-tivity anywhere between 70 deg N and 65 deg S latitude and at all longitudes within each satellites field of view, 24 hrs a day	Capable of providing communicat-ions connec-tivity anywhere between 70 deg N and 65 deg S latitude and at all longitudes within each satellites field of view, 24 hrs a day	Capable of providing communicat-ions connec-tivity anywhere between 65 deg N and 65 deg S latitude and at all longitudes within each satellites field of view, 24 hrs a day	Confirmed by analysis using industry-standard Satellite Tool Kit (STK). Operationally verified at 64 deg N latitude	Capable of providing communicat-ions connec-tivity anywhere between 65 deg N and 65 deg S latitude and at all longitudes within each satellites field of view, 24 hrs a day
Capacity	Each satellite should provide a min throughput of 3.6 Gbps	Each satellite should provide a min throughput of 3.6 Gbps	Each satellite should provide a min throughput of 1.2 Gbps	Calculated simplex throughput of 4.186 Gbps Current average throughput is 2.1 Gbps	Each satellite should provide a min throughput of ~2.14 Gbps
Access and Control	Provide platform and payload controlled capabilities to perform Launch and Early Orbit, On-Orbit Operations, Station-keeping, Satellite Reposition-ing, Platform and Payload Maintenance, and Anomaly Identification and	Provide platform and payload controlled capabilities to perform Launch and Early Orbit, On-Orbit Operations, Station-keeping, Satellite Reposition-ing, Platform and Payload Maintenance, and Anomaly Identification and	Provide platform and payload controlled capabilities to perform Launch and Early Orbit, On-Orbit Operations, Station-keeping, Satellite Reposition-ing, Platform and Payload Maintenance, and Anomaly Identification and	Positive platform and payload operator ratings	Provide platform and payload controlled capabilities to perform Launch and Early Orbit, On-Orbit Operations, Station-keeping, Satellite Reposition-ing, Platform and Payload Maintenance, and Anomaly Identification and

	Resolution	Resolution	Resolution		Resolution
Interoperability	Satellites must be fully inter-operable with existing and programmed DSCS and GBS terminals	Satellites must be fully inter-operable with existing and programmed DSCS and GBS terminals	Satellites must be fully inter-operable with existing and programmed DSCS and GBS terminals	Confirmed inter-operability with 40 terminal types, including DSCS and GBS	Satellites must be fully inter-operable with existing and programmed DSCS and GBS terminals

Requirements Source

Operational Requirements Document (ORD) 004-99 dated May 3, 2000

Change Explanations

None

Memo

Capacity demonstrated performance of 4.186 Gbps is based on a scenario of optimized ground terminal power/antenna aperture function. Interoperability demonstrated performance is based on testing with 40 terminals.

Acronyms and Abbreviations

deg N - degrees North
deg S - degrees South
DSCS - Defense Satellite Communications System
Gbps - Gigabits per second
GBS - Global Broadcast Service
hrs - hours
min - minimum

Track to Budget

RDT&E

Appn		BA	PE		
Air Force	3600	04	0603854F		
	Project		**Name**		
	4811		Wideband Gapfiller Satellites	(Shared)	(Sunk)

Procurement

Appn		BA	PE		
Air Force	3020	05	0303600F		
	Line Item		**Name**		
	GAP000		Wideband Gapfiller Satellites		
Air Force	3080	03	0303600F		
	Line Item		**Name**		
	836780		Wideband Gapfiller Satellites	(Shared)	(Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

Appropriation	BY2010 $M			BY2010 $M	TY $M		
	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	417.2	417.2	458.9	444.3	380.7	380.7	409.6
Procurement	3193.4	3193.4	3512.6	3325.3	3159.0	3159.0	3322.2
Flyaway	--	--	--	3292.5	--	--	3293.1
Recurring	--	--	--	3292.5	--	--	3293.1
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	32.8	--	--	29.1
Other Support	--	--	--	32.8	--	--	29.1
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	3610.6	3610.6	N/A	3769.6	3539.7	3539.7	3731.8

Confidence Level for Current APB Cost 50% -
The Independent Cost Estimate (ICE) to support WGS Milestone C decision, like all life-cycle cost estimates previously performed by the Cost Assessment and Program Evaluation (CAPE) office, is built upon a product-oriented work breakdown structure, based on historical actual cost information to the maximum extent possible, and, most importantly, based on conservative assumptions that are consistent with actual demonstrated contractor and government performance for a series of acquisition programs in which the Department has been successful.

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for Major Defense Acquisition Programs (MDAPs). Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about equally likely that the estimate will prove too low or too high for execution of the program described.

Confidence Level for Current APB O&S Estimate Exceeds 50% -
A mathematically derived confidence level was not computed for the Operations and Support (O&S) estimate used in the Current Baseline. The O&S estimate does however represent the expected value, or mean, of the distribution, and it exceeds the 50% confidence level. This estimate takes into consideration relevant risks, including ordinary levels of external and unforeseen events. It aims to provide sufficient resources to execute the O&S program under normal conditions encountering average levels of technical, schedule, and programmatic risk and external influence.

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	0	0	0
Procurement	7	7	8
Total	7	7	8

The WGS Acquisition Program Baseline (APB) was amended with an administrative note only on May 8, 2012 increasing the total quantities from seven to eight satellites. The eight satellites in the approved APB include: three satellites (WGS 1-3) on the Block I contract, two satellites (WGS 4-5) on the Block II contract and three additional satellites (WGS 7-8 and WGS-10) on the WGS 7-10 contract.

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2015 President's Budget / December 2013 SAR (TY$ M)

Appropriation	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
RDT&E	409.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	409.6
Procurement	3064.5	34.0	39.0	53.9	71.0	48.5	11.3	0.0	3322.2
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2015 Total	3474.1	34.0	39.0	53.9	71.0	48.5	11.3	0.0	3731.8
PB 2014 Total	3523.0	38.4	64.1	69.3	67.5	48.9	11.4	0.0	3822.6
Delta	-48.9	-4.4	-25.1	-15.4	3.5	-0.4	-0.1	0.0	-90.8

Quantity	Undistributed	Prior	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	8	0	0	0	0	0	0	0	8
PB 2015 Total	0	8	0	0	0	0	0	0	0	8
PB 2014 Total	0	8	0	0	0	0	0	0	0	8
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
1999	--	--	--	--	--	--	0.7
2000	--	--	--	--	--	--	4.5
2001	--	--	--	--	--	--	77.7
2002	--	--	--	--	--	--	79.0
2003	--	--	--	--	--	--	--
2004	--	--	--	--	--	--	--
2005	--	--	--	--	--	--	31.7
2006	--	--	--	--	--	--	78.5
2007	--	--	--	--	--	--	28.5
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	9.8
2010	--	--	--	--	--	--	42.5
2011	--	--	--	--	--	--	56.7
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**409.6**

Annual Funding BY$
3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2010 $M	Non End Item Recurring Flyaway BY 2010 $M	Non Recurring Flyaway BY 2010 $M	Total Flyaway BY 2010 $M	Total Support BY 2010 $M	Total Program BY 2010 $M
1999	--	--	--	--	--	--	0.8
2000	--	--	--	--	--	--	5.4
2001	--	--	--	--	--	--	91.6
2002	--	--	--	--	--	--	92.1
2003	--	--	--	--	--	--	--
2004	--	--	--	--	--	--	--
2005	--	--	--	--	--	--	34.7
2006	--	--	--	--	--	--	83.4
2007	--	--	--	--	--	--	29.5
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	9.8
2010	--	--	--	--	--	--	42.0
2011	--	--	--	--	--	--	55.0
Subtotal	**--**	**--**	**--**	**--**	**--**	**--**	**444.3**

Annual Funding TY$
3020 | Procurement | Missile Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2001	--	24.6	--	--	24.6	--	24.6
2002	2	372.9	--	--	372.9	--	372.9
2003	1	184.1	--	--	184.1	--	184.1
2004	--	21.8	--	--	21.8	--	21.8
2005	--	35.4	--	--	35.4	--	35.4
2006	--	76.1	--	--	76.1	--	76.1
2007	1	428.7	--	--	428.7	--	428.7
2008	1	304.8	--	--	304.8	--	304.8
2009	--	50.4	--	--	50.4	--	50.4
2010	--	197.0	--	--	197.0	--	197.0
2011	1	517.0	--	--	517.0	--	517.0
2012	2	785.8	--	--	785.8	--	785.8
2013	--	36.8	--	--	36.8	--	36.8
2014	--	34.0	--	--	34.0	--	34.0
2015	--	39.0	--	--	39.0	--	39.0
2016	--	53.9	--	--	53.9	--	53.9
2017	--	71.0	--	--	71.0	--	71.0
2018	--	48.5	--	--	48.5	--	48.5
2019	--	11.3	--	--	11.3	--	11.3
Subtotal	**8**	**3293.1**	**--**	**--**	**3293.1**	**--**	**3293.1**

Annual Funding BY$
3020 | Procurement | Missile Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2010 $M	Non End Item Recurring Flyaway BY 2010 $M	Non Recurring Flyaway BY 2010 $M	Total Flyaway BY 2010 $M	Total Support BY 2010 $M	Total Program BY 2010 $M
2001	--	28.8	--	--	28.8	--	28.8
2002	2	429.1	--	--	429.1	--	429.1
2003	1	209.4	--	--	209.4	--	209.4
2004	--	24.3	--	--	24.3	--	24.3
2005	--	38.3	--	--	38.3	--	38.3
2006	--	80.0	--	--	80.0	--	80.0
2007	1	439.9	--	--	439.9	--	439.9
2008	1	307.2	--	--	307.2	--	307.2
2009	--	50.1	--	--	50.1	--	50.1
2010	--	193.0	--	--	193.0	--	193.0
2011	1	496.0	--	--	496.0	--	496.0
2012	2	740.8	--	--	740.8	--	740.8
2013	--	33.8	--	--	33.8	--	33.8
2014	--	30.6	--	--	30.6	--	30.6
2015	--	34.5	--	--	34.5	--	34.5
2016	--	46.7	--	--	46.7	--	46.7
2017	--	60.4	--	--	60.4	--	60.4
2018	--	40.4	--	--	40.4	--	40.4
2019	--	9.2	--	--	9.2	--	9.2
Subtotal	**8**	**3292.5**	**--**	**--**	**3292.5**	**--**	**3292.5**

Cost Quantity Information
3020 | Procurement | Missile Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned with Quantity) BY 2010 $M
2001	--	--
2002	2	643.0
2003	1	299.8
2004	--	--
2005	--	--
2006	--	--
2007	1	504.5
2008	1	435.6
2009	--	--
2010	--	--
2011	1	520.4
2012	2	889.2
2013	--	--
2014	--	--
2015	--	--
2016	--	--
2017	--	--
2018	--	--
2019	--	--
Subtotal	**8**	**3292.5**

Annual Funding TY$
3080 | Procurement | Other Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2003	--	--	--	--	--	15.1	15.1
2004	--	--	--	--	--	10.8	10.8
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	--
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	1.6	1.6
2011	--	--	--	--	--	1.6	1.6
Subtotal	**--**	**--**	**--**	**--**	**--**	**29.1**	**29.1**

Annual Funding BY$
3080 | Procurement | Other Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2010 $M	Non End Item Recurring Flyaway BY 2010 $M	Non Recurring Flyaway BY 2010 $M	Total Flyaway BY 2010 $M	Total Support BY 2010 $M	Total Program BY 2010 $M
2003	--	--	--	--	--	17.4	17.4
2004	--	--	--	--	--	12.2	12.2
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	--
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	1.6	1.6
2011	--	--	--	--	--	1.6	1.6
Subtotal	**--**	**--**	**--**	**--**	**--**	**32.8**	**32.8**

Low Rate Initial Production

There is no LRIP for this Program.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Memo
Multilateral	1/12/2012	1	376.5	A Memorandum of Understanding (MOU) with Canada, Denmark, Luxembourg, the Netherlands and New Zealand was signed on January 12, 2012 for the procurement of WGS-9 in exchange for access to the WGS constellation.
Australia	11/14/2007	1	322.0	MOU between the DoD of the United States of America and the DoD of Australia concerning production, operations, and support of WGS was signed on November 14, 2007. Australia is providing funds for WGS-6 in exchange for access to the WGS constellation.

The WGS program has no Foreign Military Sales; all sales in the table are International Cooperations.

Nuclear Costs

None

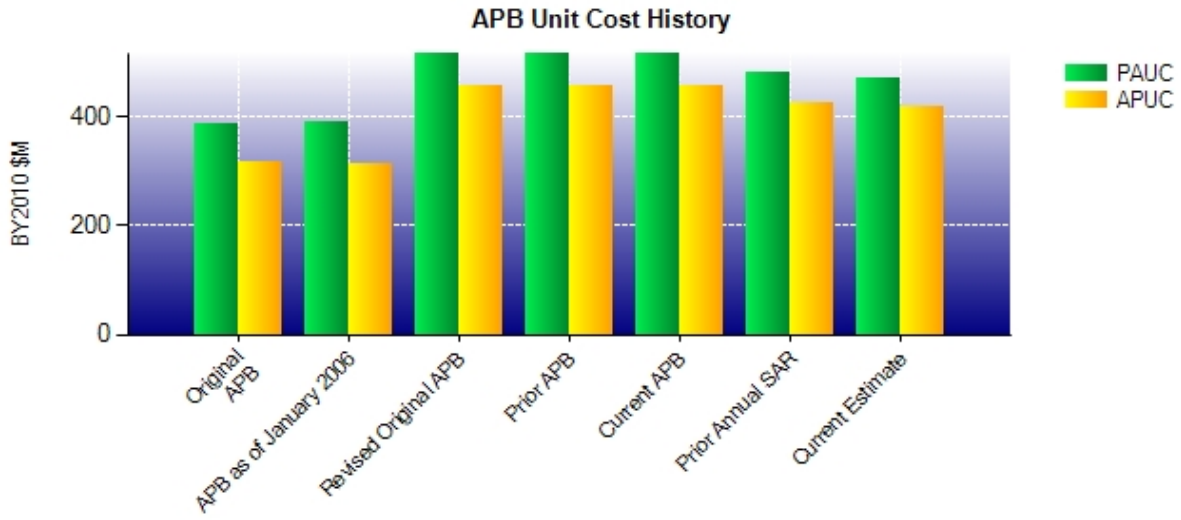
Unit Cost

Unit Cost Report

	BY2010 $M	BY2010 $M	
Unit Cost	**Current UCR Baseline (MAR 2014 APB)**	**Current Estimate (DEC 2013 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	3610.6	3769.6	
Quantity	7	8	
Unit Cost	515.800	471.200	-8.65
Average Procurement Unit Cost (APUC)			
Cost	3193.4	3325.3	
Quantity	7	8	
Unit Cost	456.200	415.662	-8.89

	BY2010 $M	BY2010 $M	
Unit Cost	**Revised Original UCR Baseline (AUG 2010 APB)**	**Current Estimate (DEC 2013 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	3610.6	3769.6	
Quantity	7	8	
Unit Cost	515.800	471.200	-8.65
Average Procurement Unit Cost (APUC)			
Cost	3193.4	3325.3	
Quantity	7	8	
Unit Cost	456.200	415.662	-8.89

Unit Cost History



		BY2010 $M		TY $M	
	Date	PAUC	APUC	PAUC	APUC
Original APB	DEC 2000	387.400	317.933	347.500	287.900
APB as of January 2006	FEB 2004	390.600	314.300	353.420	286.480
Revised Original APB	AUG 2010	515.800	456.200	505.671	451.286
Prior APB	AUG 2010	515.800	456.200	505.671	451.286
Current APB	MAR 2014	515.800	456.200	505.671	451.286
Prior Annual SAR	DEC 2012	480.625	425.088	477.825	426.625
Current Estimate	DEC 2013	471.200	415.662	466.475	415.275

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial PAUC Dev Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
347.500	3.214	74.201	0.000	19.057	64.585	0.000	-2.886	158.171	505.671

Current SAR Baseline to Current Estimate (TY $M)

PAUC Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
505.671	3.562	-12.370	0.000	0.000	-30.350	0.000	-0.038	-39.196	466.475

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial APUC Dev Est	Changes								APUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
287.900	2.786	108.257	0.000	0.000	55.229	0.000	-2.886	163.386	451.286

Current SAR Baseline to Current Estimate (TY $M)

APUC Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
451.286	3.475	-5.573	0.000	0.000	-33.875	0.000	-0.038	-36.011	415.275

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	OCT 2000	OCT 2000	NOV 2000
Milestone III	N/A	N/A	N/A	N/A
IOC	N/A	DEC 2004	AUG 2008	JAN 2009
Total Cost (TY $M)	N/A	1042.5	3539.7	3731.8
Total Quantity	N/A	3	7	8
Prog. Acq. Unit Cost (PAUC)	N/A	347.500	505.671	466.475

Cost Variance

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	380.7	3159.0	--	3539.7
Previous Changes				
Economic	+0.7	+37.0	--	+37.7
Quantity	--	+406.7	--	+406.7
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+28.2	-189.4	--	-161.2
Other	--	--	--	--
Support	--	-0.3	--	-0.3
Subtotal	+28.9	+254.0	--	+282.9
Current Changes				
Economic	--	-9.2	--	-9.2
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	-81.6	--	-81.6
Other	--	--	--	--
Support	--	--	--	--
Subtotal	--	-90.8	--	-90.8
Total Changes	+28.9	+163.2	--	+192.1
CE - Cost Variance	409.6	3322.2	--	3731.8
CE - Cost & Funding	409.6	3322.2	--	3731.8

Summary Base Year 2010 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	417.2	3193.4	--	3610.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	+383.0	--	+383.0
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+27.1	-175.5	--	-148.4
Other	--	--	--	--
Support	--	-0.2	--	-0.2
Subtotal	+27.1	+207.3	--	+234.4
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	-75.4	--	-75.4
Other	--	--	--	--
Support	--	--	--	--
Subtotal	--	-75.4	--	-75.4
Total Changes	+27.1	+131.9	--	+159.0
CE - Cost Variance	444.3	3325.3	--	3769.6
CE - Cost & Funding	444.3	3325.3	--	3769.6

Previous Estimate: December 2012

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-9.2
Reallocation of funding in FY 2015 PB to higher department priorities. (Estimating)	-46.8	-48.5
Revised estimate to reflect reduced satellite storage requirement. (Estimating)	-31.2	-35.6
Adjustment for current and prior escalation. (Estimating)	+6.6	+6.9
Reduced estimate to reflect FY 2014 sequestration reduction. (Estimating)	-4.0	-4.4
Procurement Subtotal	-75.4	-90.8

Contracts

Appropriation: Procurement	
Contract Name	**WGS-Block II Follow-On (SVs 7-10)**
Contractor	Boeing Satellite Systems, Inc.
Contractor Location	2260 Imperial Hwy. El Segundo, CA 90245
Contract Number, Type	FA8808-10-C-0001/3, FFP
Award Date	August 31, 2011
Definitization Date	August 31, 2011

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price at Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
442.6	N/A	1	1157.3	N/A	3	1157.3	1157.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the exercise of production options for satellites 8 and 10.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this FFP contract.

Deliveries and Expenditures

Delivered to Date	Plan to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	8	5	8	62.50%
Total Program Quantity Delivered	8	5	8	62.50%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	3731.8	Years Appropriated	16
Expended to Date	2701.1	Percent Years Appropriated	76.19%
Percent Expended	72.38%	Appropriated to Date	3508.1
Total Funding Years	21	Percent Appropriated	94.01%

The above data is current as of 1/21/2014.

WGS APB was amended with an administrative note only on May 8, 2012 increasing the total quantities from seven to eight satellites. The eight satellites in the approved APB include: three satellites (WGS 1-3) on the Block I contract, two satellites (WGS 4-5) on the Block II contract and three additional satellites (WGS 7-8 and WGS-10) on the WGS 7-10 contract.

A third satellite (WGS-6) on the Block II contract is funded by Australia and is not included in the APB and SAR costs, budgets or quantities. Similar to WGS-6, WGS-9 is being funded by international partners (Canada, Denmark, Luxembourg, The Netherlands, New Zealand and the United States) and is also not included in the APB and SAR costs, budgets or quantities.

Three satellites (WGS 1-3) on the Block I contract and two satellites (WGS-4 and 5) on the Block II contract have been delivered to date. WGS-1 was accepted by the Government on January 18, 2008. WGS-2 was accepted by the Government on June 15, 2009. WGS-3 was accepted by the Government on March 1, 2010. WGS-4 was accepted by the Government on April 11, 2012. WGS-5 was accepted by the Government on October 1, 2013.

Operating and Support Cost

WGS

Assumptions and Ground Rules

Cost Estimate Reference:
The WGS O&S costs reflect the reconciliation between the Air Force Cost Analysis Agency (AFCAA) Non-Advocate Cost Assessment and the SMC Single Best Estimate which is the current approved Service Cost Position (SCP). The SCP was updated at the direction of a May 2013 Acquisition Decision Memorandum (ADM).

WGS costs are in BY 2010. The costs include program Unit-Level Manpower, Unit Operations, Maintenance, Sustaining Support, Continuing System Improvements and Indirect Support for the space segment. WGS was developed to maximize use of existing Army and Air Force infrastructures; the O&S costs are based on current and future infrastructure cost projections.

The Current Estimate numbers above reflect the current WGS Program Office Estimate updated in December 2013.

Sustainment Strategy:
O&S costs include all costs for operating, maintaining and supporting the eight WGS satellites for a life cycle of 22 years (2009-2030). Contract Logistics Support (CLS) is provided by Boeing covering the whole system, via a Time and Material (T&M) Contract Line Item Number (CLIN) option exercised every calendar year as necessary. Future strategy is to establish separate CLS sustainment contract with projected start in 2014.

Antecedent Information:
The antecedent system is Defense Satellite Communication System (DSCS) III. The first DSCS III satellite was launched in October 1982 and the last DSCS III satellite was launched in August 2003. O&S effort for DSCS transitioned to Air Force Operations and Maintenance funding in FY 2005. Prior to this transition, on-going O&S for on-orbit DSCS satellites were part of missile procurement costs. O&S costs include all costs for operating, maintaining and supporting the DSCS assets (14 satellites and ground segment) for an assumed designed life of ten years. The BY is 2010.

Unitized O&S Costs BY2010 $M		
Cost Element	**WGS Annual Average for System**	**DSCS (Antecedent) Annual Average for System**
Unit-Level Manpower	8.645	0.000
Unit Operations	0.239	0.830
Maintenance	1.751	0.000
Sustaining Support	6.488	12.802
Continuing System Improvements	2.637	0.000
Indirect Support	3.822	1.304
Other	0.000	2.371
Total	23.582	17.307

Unitized Cost Comments:
Total annual average for system: $23.582M X 22 years of sustainment = $518.8M, Current Estimate (BY 2010).

	Total O&S Cost $M			
	Current Production APB Objective/Threshold		Current Estimate	
	WGS		WGS	DSCS (Antecedent)
Base Year	546.7	601.4	518.8	173.1
Then Year	662.0	N/A	634.5	156.1

Total O&S Costs Comments:

O&S Cost Variance		
Category	**Base Year 2010 $M**	**Change Explanation**
Prior SAR Total O&S Estimate December 2012	533.1	
Cost Estimating Methodology	+11.688	Updated AFI 65-503 factors and added DTM 09-007 factors to estimate indirect costs
Cost Data Update	+1.015	Updated contractor data
Labor Rate	0.000	
Energy Rate	0.000	
Technical Input	-26.999	Updated manpower data from 3rd Space Operations Squadron and AFSPC
Programmatic/Planning Factors	0.000	
Other	0.000	
Total Changes	-14.926	
Current Estimate	518.8	

Disposal Costs:

There are none.