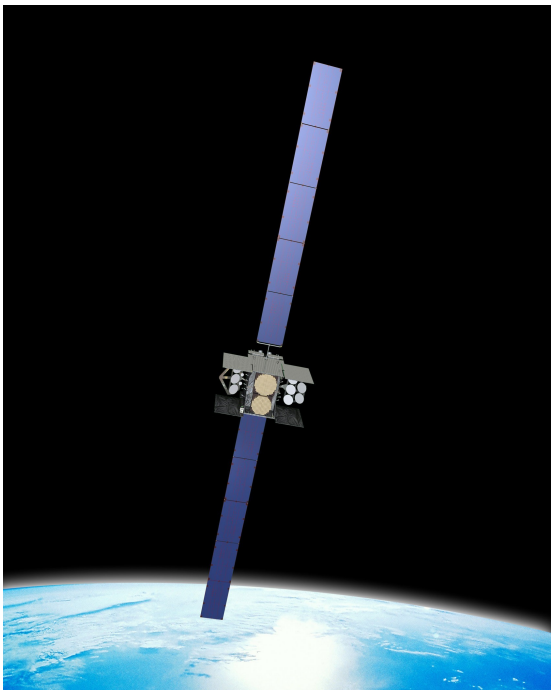
Selected Acquisition Report (SAR)

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



Wideband Global SATCOM (WGS)

As of December 31, 2012

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Program Name

Wideband Global SATCOM (WGS)

DoD Component

Air Force

Responsible Office

Responsible Office

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Date Assigned July 19, 2010

References

SAR Baseline (Production Estimate)

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

Approved APB

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

Mission and Description

Wideband Global SATCOM (WGS), previously reported as Wideband Gapfiller Satellites, will augment the Defense Satellite Communications System III (DSCS 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 will provide 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.

Executive Summary

WGS Block 1 satellites (WGS 1-3) continue to successfully perform operations over the Pacific Command (PACOM), Central Command (CENTCOM), Africa Command (AFRICOM) and European Command (EUCOM) Areas of Responsibility.

Production on the Block II contract (WGS 4-6) continues. WGS-4 successfully launched from Cape Canaveral Air Force Station on January 19, 2012 and was handed over to the Combatant Commander on August 6, 2012. WGS-5 went into storage on March 12, 2012 and came out of storage August 2012 in preparation for a May 22, 2013 launch. WGS-6 completed Spacecraft Thermal Vacuum (SCTV) on April 4, 2012, went into storage August 13, 2012 and is awaiting launch in August 2013.

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 total Australian International Partnership (IP) cost increased from $320.4M to $322.0M due to the addition of 3 months storage and database maintenance.

The WGS 7-10 contract was awarded August 20, 2010 and consisted of WGS-7 advanced procurement, non-recurring engineering and factory restart efforts. The contract was modified August 31, 2011 to award full production and launch of WGS-7 plus the advanced procurement for WGS-8. The WGS-8 production option was exercised on December 16, 2011.

The WGS-9 financial data is not reported in this SAR because funding for the satellite is provided under a cooperative agreement through international partnership. The Memorandum of Understanding (MOU) with Canada, Denmark, Luxembourg, the Netherlands, New Zealand and the United States was signed January 12, 2012 for the procurement of WGS-9 in exchange for access to the WGS constellation. Once the MOU was signed, the WGS-9 production option was put on contract January 13, 2012.

The WGS-10 production contract was awarded July 27, 2012. The WGS Acquisition Program Baseline (APB) was amended on May 8, 2012 footnoting an increase in the total production quantities from seven to eight satellites (to include WGS-10, but not the IP funded WGS-6 and WGS-9) without altering/updating any of the previous cost data.

The contract for the Spacecraft Modernization Initiative, Wideband Digital Channelizer Upgrade, was awarded on June 26, 2012 and has been incorporated on WGS-8 through WGS-10. This modification increases available bandwidth by 90% per satellite.

The program was delegated to the Air Force as an Acquisition Category IC on July 24, 2012.

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

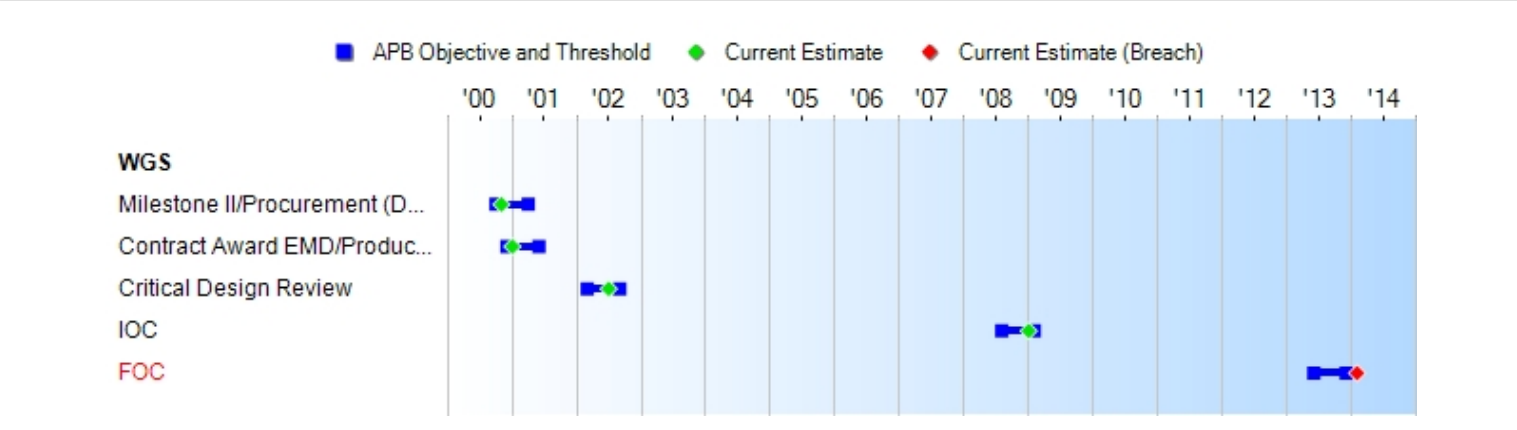
Explanation of Breach

Schedule Acquisition Program Baseline (APB) breach due to launch delays as a result of the on-going anomaly investigation of the Delta IV second stage (RL-10). Full Operational Capability (FOC) current estimate slipping from June 2013 to February 2014.

Operating and Support (O&S) Cost APB breach due to Unit-Level Manpower and Indirect Support cost elements not initially included in the 2010 APB O&S cost estimate and also due to significant program growth within these two elements of manpower and indirect support.

A Program Deviation Report was provided to the Milestone Decision Authority on February 26, 2013.

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	JUN 2013	DEC 2013	**FEB 2014**[1] (Ch-1)

[1] *APB Breach*

Acronyms And Abbreviations

DAB - Defense Acquisition Board
EMD - Engineering and Manufacturing Development
FOC - Full Operational Capability
IOC - Initial Operational Capability

Change Explanations

(Ch-1) Current estimate for FOC updated from June 2013 to February 2014 due to launch delays as a result of the on-going anomaly investigation of the Delta IV second stage (RL-10). A Program Deviation Report was submitted; awaiting Acquisition Decision Memorandum.

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 Global Broadcast Service (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.

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

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

Change Explanations

None

Memo

*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.

Track To Budget

RDT&E				
APPN 3600	BA 04	PE 0603854F	(Air Force)	
	Project 4811	Wideband Gapfiller Satellites	(Shared)	(Sunk)
Procurement				
APPN 3020	BA 05	PE 0303600F	(Air Force)	
	ICN GAP000	Wideband Gapfiller Satellites		
APPN 3080	BA 03	PE 0303600F	(Air Force)	
	ICN 836780	Wideband Gapfiller Satellites	(Shared)	(Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY2010 $M			BY2010 $M	TY $M		
Appropriation	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	3400.7	3159.0	3159.0	3413.0
Flyaway	3160.4	--	--	3367.9	3129.7	--	3383.9
Recurring	3160.4	--	--	3367.9	3129.7	--	3383.9
Non Recurring	0.0	--	--	0.0	0.0	--	0.0
Support	33.0	--	--	32.8	29.3	--	29.1
Other Support	33.0	--	--	32.8	29.3	--	29.1
Initial Spares	0.0	--	--	0.0	0.0	--	0.0
MILCON	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
Total	3610.6	3610.6	N/A	3845.0	3539.7	3539.7	3822.6

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.

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
FY2014 President's Budget / December 2012 SAR (TY$ M)

Appropriation	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	To Complete	Total
RDT&E	409.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	409.6
Procurement	3076.6	36.8	38.4	64.1	69.3	67.5	48.9	11.4	3413.0
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 2014 Total	3486.2	36.8	38.4	64.1	69.3	67.5	48.9	11.4	3822.6
PB 2013 Total	3472.2	36.8	61.0	88.2	86.4	85.8	38.0	0.0	3868.4
Delta	14.0	0.0	-22.6	-24.1	-17.1	-18.3	10.9	11.4	-45.8

Program funding and production quantities listed in this SAR are consistent with the FY 2014 President's Budget (PB). The FY 2014 PB did not reflect the enacted DoD appropriation for FY 2013, nor sequestration; it reflected the President's requested amounts for FY 2013.

Quantity	Undistributed	Prior	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	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 2014 Total	0	8	0	0	0	0	0	0	0	8
PB 2013 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	558.8	--	--	558.8	--	558.8
2012	2	792.9	--	--	792.9	--	792.9
2013	--	36.8	--	--	36.8	--	36.8
2014	--	38.4	--	--	38.4	--	38.4
2015	--	64.1	--	--	64.1	--	64.1
2016	--	69.3	--	--	69.3	--	69.3
2017	--	67.5	--	--	67.5	--	67.5
2018	--	48.9	--	--	48.9	--	48.9
2019	--	11.4	--	--	11.4	--	11.4
Subtotal	**8**	**3383.9**	**--**	**--**	**3383.9**	**--**	**3383.9**

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	307.1	--	--	307.1	--	307.1
2009	--	50.0	--	--	50.0	--	50.0
2010	--	192.8	--	--	192.8	--	192.8
2011	1	534.6	--	--	534.6	--	534.6
2012	2	743.4	--	--	743.4	--	743.4
2013	--	33.5	--	--	33.5	--	33.5
2014	--	34.3	--	--	34.3	--	34.3
2015	--	56.1	--	--	56.1	--	56.1
2016	--	59.6	--	--	59.6	--	59.6
2017	--	56.9	--	--	56.9	--	56.9
2018	--	40.5	--	--	40.5	--	40.5
2019	--	9.3	--	--	9.3	--	9.3
Subtotal	**8**	**3367.9**	**--**	**--**	**3367.9**	**--**	**3367.9**

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	505.6
2008	1	430.9
2009	--	--
2010	--	--
2011	1	565.0
2012	2	923.6
2013	--	--
2014	--	--
2015	--	--
2016	--	--
2017	--	--
2018	--	--
2019	--	--
Subtotal	**8**	**3367.9**

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.

The total Australian International Partnership cost increased from $320.4M to $322.0M due to the addition of 3 months storage and database maintenance.

Nuclear Cost

None

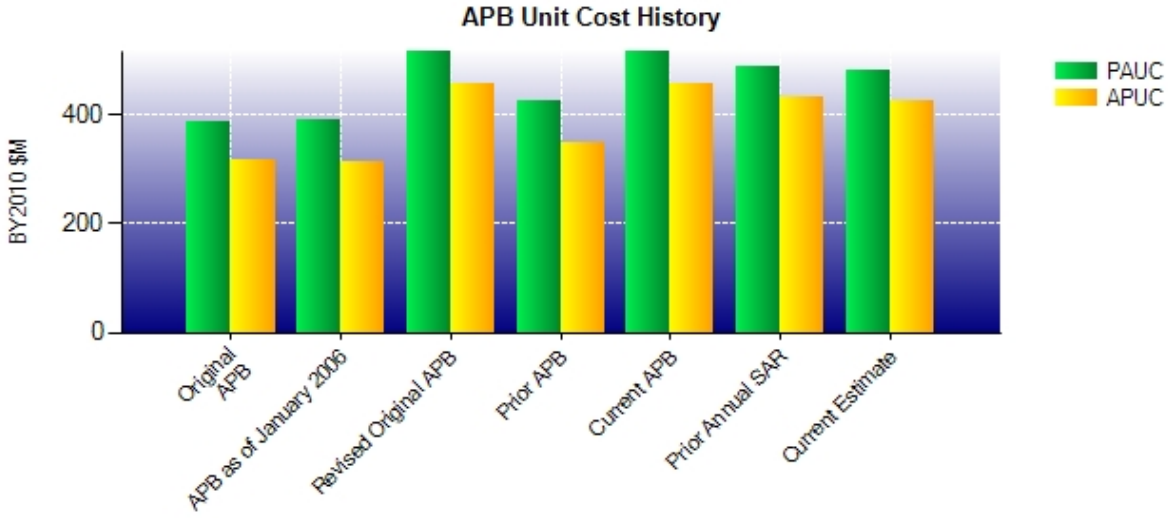
Unit Cost

Unit Cost Report

	BY2010 $M	BY2010 $M	
Unit Cost	**Current UCR Baseline (AUG 2010 APB)**	**Current Estimate (DEC 2012 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	3610.6	3845.0	
Quantity	7	8	
Unit Cost	515.800	480.625	-6.82
Average Procurement Unit Cost (APUC)			
Cost	3193.4	3400.7	
Quantity	7	8	
Unit Cost	456.200	425.088	-6.82

	BY2010 $M	BY2010 $M	
Unit Cost	**Revised Original UCR Baseline (AUG 2010 APB)**	**Current Estimate (DEC 2012 SAR)**	**BY % Change**
Program Acquisition Unit Cost (PAUC)			
Cost	3610.6	3845.0	
Quantity	7	8	
Unit Cost	515.800	480.625	-6.82
Average Procurement Unit Cost (APUC)			
Cost	3193.4	3400.7	
Quantity	7	8	
Unit Cost	456.200	425.088	-6.82

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	APR 2007	425.000	348.700	395.100	328.160
Current APB	AUG 2010	515.800	456.200	505.671	451.286
Prior Annual SAR	DEC 2011	486.712	431.188	483.550	432.350
Current Estimate	DEC 2012	480.625	425.088	477.825	426.625

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	4.712	-12.370	0.000	0.000	-20.150	0.000	-0.038	-27.846	477.825

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	4.625	-5.573	0.000	0.000	-23.675	0.000	-0.038	-24.661	426.625

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	3822.6
Total Quantity	N/A	3	7	8
Prog. Acq. Unit Cost (PAUC)	N/A	347.500	505.671	477.825

Cost Variance

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	380.7	3159.0	--	3539.7
Previous Changes				
Economic	+0.8	+24.6	--	+25.4
Quantity	--	+406.7	--	+406.7
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+28.1	-131.4	--	-103.3
Other	--	--	--	--
Support	--	-0.1	--	-0.1
Subtotal	+28.9	+299.8	--	+328.7
Current Changes				
Economic	-0.1	+12.4	--	+12.3
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+0.1	-58.0	--	-57.9
Other	--	--	--	--
Support	--	-0.2	--	-0.2
Subtotal	--	-45.8	--	-45.8
Adjustments	--	--	--	--
Total Changes	+28.9	+254.0	--	+282.9
CE - Cost Variance	409.6	3413.0	--	3822.6
CE - Cost & Funding	409.6	3413.0	--	3822.6

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	+27.0	-126.8	--	-99.8
Other	--	--	--	--
Support	--	-0.1	--	-0.1
Subtotal	+27.0	+256.1	--	+283.1
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+0.1	-48.7	--	-48.6
Other	--	--	--	--
Support	--	-0.1	--	-0.1
Subtotal	+0.1	-48.8	--	-48.7
Adjustments	--	--	--	--
Total Changes	+27.1	+207.3	--	+234.4
CE - Cost Variance	444.3	3400.7	--	3845.0
CE - Cost & Funding	444.3	3400.7	--	3845.0

Previous Estimate: December 2011

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for current and prior escalation. (Estimating)	+0.1	+0.1
RDT&E Subtotal	+0.1	0.0

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+12.4
Adjustment for current and prior escalation. (Estimating)	-4.5	-4.6
FY 2014 President's Budget reallocated funding for higher Department priorities. (Estimating)	-77.4	-88.9
Reprogramming for higher headquarters Air Force requirements. (Estimating)	-15.0	-15.4
Revised estimate for incorporating on-orbit checkout required for satellite turn-over to operations (FY 2018-2019). (Estimating)	+17.6	+21.4
Increased for WGS-4 projected cost overrun of FY 2007 funds. (Estimating)	+30.4	+29.6
Correction to reflect Congressional General Reductions (CGRs) not reported in last year's SAR. (Estimating)	+0.2	-0.1
Adjustment for current and prior escalation. (Support)	+0.1	-0.1
Adjustment to reflect CGRs not reported in last year's SAR. (Support)	-0.2	-0.1
Procurement Subtotal	-48.8	-45.8

Contracts

Appropriation: RDT&E	
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-0001/1, FPIF/CPFF
Award Date	August 20, 2010
Definitization Date	August 20, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
57.1	64.4	0	66.6	73.9	0	52.4	52.2

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/25/2013)	+0.8	-0.1
Previous Cumulative Variances	-0.2	+7.1
Net Change	+1.0	-7.2

Cost And Schedule Variance Explanations

The favorable net change in the cost variance is due to the expertise of the current team and lessons learned from prior flights, resulting in less labor and management oversight than originally anticipated.

The unfavorable net change in the schedule variance is due to Earned Value catch up for schedule claimed ahead of plan.

Contract Comments

This contract is more than 90% complete; therefore, this is the final report for this contract.

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the addition of a $9.5M Cost-Plus-Fixed-Fee (CPFF) effort for engineering support of the Spacecraft Modernization Initiative Digital Channelizer study added to this contract on July 3, 2012.

Appropriation: RDT&E

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-0001/4, FFP
Award Date	June 26, 2012
Definitization Date	June 26, 2012

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
28.0	N/A	0	28.0	N/A	0	28.0	28.0

Cost And Schedule Variance Explanations

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

Contract Comments

This is the first time this contract is being reported.

This $27.95M Firm-Fixed-Price (FFP) effort was awarded June 26, 2012 for the Digital Channelizer Non-Recurring Engineering effort.

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-0001/2, FPIF/CPFF
Award Date	August 20, 2010
Definitization Date	August 20, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
125.1	134.5	0	126.9	135.2	0	102.2	101.4

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/25/2013)	+6.9	-0.9
Previous Cumulative Variances	+6.6	-1.7
Net Change	+0.3	+0.8

Cost And Schedule Variance Explanations

The favorable net change in the cost variance is due to performance efficiencies as a result of lessons learned from prior flights.

The favorable net change in the schedule variance is due to Earned Value claimed for material and subcontract scheduled in earlier periods at the original end date of the Advanced Procurement/Factory Restart efforts.

Contract Comments

This contract is more than 90% complete; therefore, this is the final report for this contract.

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the addition of scope to execute Bus Payload Distribution Unit and Payload Power Distribution Unit design updates. Also, the System Safety Augmentation and Hazard Analysis Study was added on December 21, 2012.

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

Cost And Schedule Variance Explanations

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

Contract Comments

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.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	8	4	8	50.00%
Total Program Quantities Delivered	8	4	8	50.00%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	3822.6	Years Appropriated	15
Expenditures To Date	2462.9	Percent Years Appropriated	71.43%
Percent Expended	64.43%	Appropriated to Date	3523.0
Total Funding Years	21	Percent Appropriated	92.16%

The above data is current as of 4/26/2013.

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.

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 one satellite (WGS-4) 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.

Operating and Support Cost

WGS

Assumptions and Ground Rules

Cost Estimate Reference:

WGS costs reflect the current April 2012 WGS Program cost estimate and are in Base Year 2010 (BY 2010). The costs include program software maintenance, unit level consumption, depot maintenance, contractor logistics support and sustaining engineering support for the space segment. WGS was developed to maximize use of existing Army and Air Force infrastructures; the operating and support costs are based on current and future infrastructure cost projections.

Sustainment Strategy:

Operating and Support (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 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	9.900	0.000
Unit Operations	0.000	0.830
Maintenance	2.100	0.000
Sustaining Support	6.200	12.802
Continuing System Improvements	2.800	0.000
Indirect Support	3.300	1.304
Other	0.000	2.371
Total	24.300	17.307

Unitized Cost Comments:

New WGS cost estimate developed in April 2012 to reflect actual cost of O&S system and the current Office of the Secretary of Defense (OSD) Operating and Support Cost Element Structure (CES), better align the O&S requirements within these cost elements, and to provide a more inclusive set of WGS O&S requirements. The previous estimate was based on old Manpower Estimate Report (MER) data (2000) and did not include Indirect Support costs. The new WGS cost estimate includes current Unit Manpower Document (UMD) data, Indirect Support costs, as well as inclusion of ~4 years of contract sustainment actuals to develop a more accurate cost estimating model/methodology approach. Overall cost estimate increases are primarily due to current Unit-Level Manpower and inclusion of Indirect Support costs.

Unit-Level Manpower increased from $3.813M to $9.9M due to new cost model development, use of current UMD data (overall increase in Unit-Level personnel in current UMD compared to 2000 MER data) and realignment of contract operations support costs which were previously booked under the Sustaining Support element.

Unit Operations decreased from $0.697M to $0 due to new cost model development and realignment of costs into Unit-Level Manpower element.

Maintenance increased from $0 to $2.1M due to new cost model development and realignment of costs previously booked under the Sustaining Support element.

Sustaining Support decreased from $10.940M to $6.2M due to new cost model development and realignment of costs to Unit-Level Manpower, Maintenance and Continuing System Improvement elements.

Continuing System Improvements increased from $0 to $2.8M due to new cost model development and realignment of costs from Sustaining Support element.

Indirect Support increased from $0 to $3.3M due to element previously not included in prior cost estimate.

	Total O&S Cost $M			
	Current Production APB Objective/Threshold		Current Estimate	
	WGS		WGS	DSCS (Antecedent)
Base Year	256.0	281.6	**533.1** [1]	173.1
Then Year	302.5	N/A	718.7	156.1

[1] **APB O&S Cost Breach**

Total O&S Costs Comments:
WGS current Production Acquisition Program Baseline does not include Military and Civilian Unit-Level Manpower or Indirect Support costs. The WGS Current Estimate (CE) numbers above (BY $533.1M and TY $718.7M) do include these costs. If these costs are removed from the WGS CE and compared to the APB estimate then no O&S cost breach would occur (BY $274.7M and TY $417.2M).

Disposal Costs

There are none.