



# Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-376



## **B-2 RMP**

As of September 30, 2011

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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**UNCLASSIFIED**

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## Program Information

### Designation And Nomenclature (Popular Name)

B-2 Radar Modernization Program

### DoD Component

Air Force

## Responsible Office

### Responsible Office

|  |                      |              |
|--|----------------------|--------------|
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| Wright Patterson AFB, OH 45433-7148  |                      |              |
| <a href="mailto:Mark.Williams@wpafb.af.mil">Mark.Williams@wpafb.af.mil</a> | <b>Date Assigned</b> | June 4, 2010 |

## References

### SAR Baseline (Production Estimate)

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated January 29, 2009

### Approved APB

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated January 29, 2009

## **Mission and Description**

The currently fielded B-2 radar system, designated the AN/APQ-181, was developed on the original B-2 Engineering and Manufacturing Development contract. The AN/APQ-181 is a multi-mode radar designed to support a wide variety of missions and functions. The primary requirements are to provide navigation updates, support penetration of enemy air defenses, support rendezvous with tanker aircraft and other B-2s, support bomb damage assessment, detect hazardous weather, support weapons delivery, determine runway status, and operate with a low probability of intercept. This last requirement resulted in the radar designed to operate in a frequency spectrum where the government is considered a secondary user.

In October 2000, the Department of Commerce notified the Department of Defense that the portion of the electromagnetic spectrum used by the B-2 radar would be redesignated for commercial use. Consequently, the B-2 will not be able to operate without interference with primary users. In order to ensure the continued operation of the B-2, the B-2 radar system must be modified to operate in another portion of the electromagnetic spectrum where the United States Government is guaranteed primary user status. The National Telecommunications and Information Administration (NTIA) requires all actions be completed by a classified Near Term Date, after which current B-2 radar operation will be prohibited. Recently, the NTIA issued a temporary legacy frequency assignment applicable to the United States and Possessions. However, this extension can be revoked at any time if a primary user emerges.

The B-2 Radar Modernization Program replaces the radar antenna and modifies its associated support electronics to enable the B-2 to remain compliant with law by changing the operating frequency of the radar and maintaining spectral purity within the portion of the electromagnetic spectrum. No changes to radar signal processing or radar data processing are required or anticipated.

## **Executive Summary**

This quarterly exception SAR is being submitted to terminate reporting for the B-2 RMP which reports greater than 90 percent expended; therefore, pursuant to section 2432 of title 10, United State Code, this will be the final Selected Acquisition Report (SAR) for the program.

Since the last SAR in December 2010, the Low Rate Initial Production (LRIP) phase was completed and the Full Rate Production (FRP) contract option 2 continued to execute on schedule.

Life-of-Type (LOT) III contract for 38,976 parts progressed and started delivery of parts in September 2011 (three months early).

The LRIP installs completed June 6, 2011. The LRIP contract closed out June 24, 2011. FRP installs are progressing on schedule. The first FRP install was delivered August 26, 2011 (five days ahead of schedule). The remaining installs are progressing on schedule.

There are no significant software issues with this program.

### Threshold Breaches

| APB Breaches |  |  |
|--------------|--|--|
|--------------|--|--|

|                    |             |                                     |
|--------------------|-------------|-------------------------------------|
| <b>Schedule</b>    |             | <input checked="" type="checkbox"/> |
| <b>Performance</b> |             | <input type="checkbox"/>            |
| <b>Cost</b>        | RDT&E       | <input type="checkbox"/>            |
|                    | Procurement | <input type="checkbox"/>            |
|                    | MILCON      | <input type="checkbox"/>            |
|                    | Acq O&M     | <input type="checkbox"/>            |
| <b>Unit Cost</b>   | PAUC        | <input type="checkbox"/>            |
|                    | APUC        | <input type="checkbox"/>            |

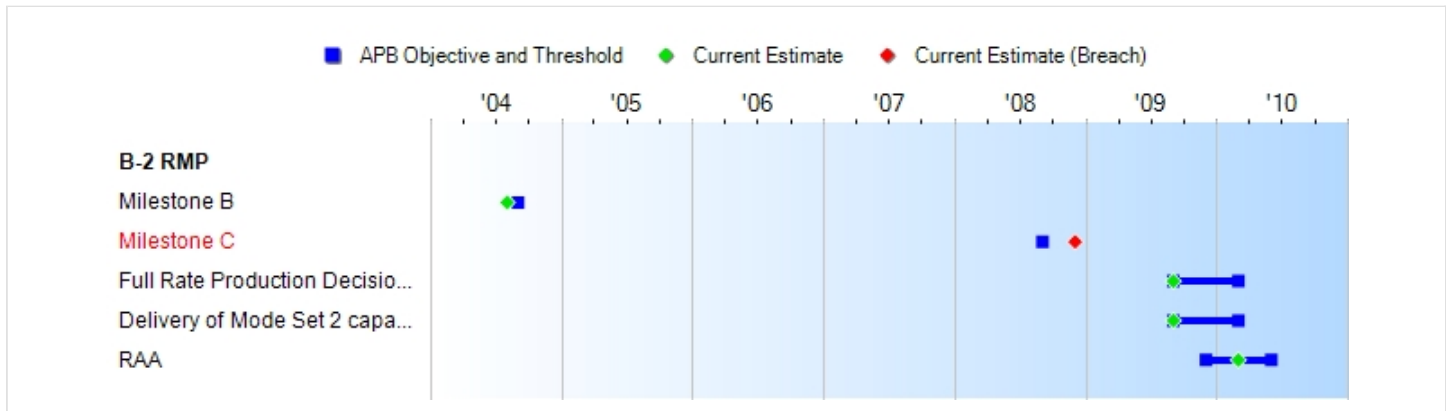
#### Explanation of Breach

The schedule breach was reported in the December 2009 Selected Acquisition Report.

| Nunn-McCurdy Breaches |  |  |
|-----------------------|--|--|
|-----------------------|--|--|

|                              |      |      |
|------------------------------|------|------|
| <b>Current UCR Baseline</b>  |      |      |
|                              | PAUC | None |
|                              | APUC | None |
| <b>Original UCR Baseline</b> |      |      |
|                              | PAUC | None |
|                              | APUC | None |

### Schedule



| Milestones                           | SAR Baseline Prod Est | Current APB Production Objective/Threshold |          | Current Estimate            |
|--------------------------------------|-----------------------|--|----------|-----------------------------|
| Milestone B                          | SEP 2004              | SEP 2004                                   | SEP 2004 | AUG 2004                    |
| Milestone C                          | SEP 2008              | SEP 2008                                   | SEP 2008 | <b>DEC 2008<sup>1</sup></b> |
| Full Rate Production Decision Review | SEP 2009              | SEP 2009                                   | MAR 2010 | SEP 2009                    |
| Delivery of Mode Set 2 capability    | SEP 2009              | SEP 2009                                   | MAR 2010 | SEP 2009                    |
| RAA                                  | DEC 2009              | DEC 2009                                   | JUN 2010 | MAR 2010                    |

<sup>1</sup>APB Breach

#### Acronyms And Abbreviations

RAA - Required Assets Available

#### Change Explanations

None

#### Memo

RAA is defined as sufficient support equipment, spares, hardware, and fully qualified Mode Set 1 software to support five operational aircraft at Whiteman Air Force Base.

Milestone C changed from September 2008 to December 2008 to match the date the Acquisition Decision Memorandum was signed. This was reported in the 2009 Selected Acquisition Report.

## Performance

| Characteristics  | SAR Baseline Prod Est   | Current APB Production Objective/Threshold  |   | Demonstrated Performance  | Current Estimate  |
|--|---|---|---|---|---|
| Enable the aircraft to employ weapons                          | Aircraft system level CEP shall not exceed the results from the baseline tests (2005-2006).             | Aircraft system level CEP shall not exceed the results from the baseline tests (2005-2006).             | Aircraft system level CEP shall not exceed the results from the baseline tests (2005-2006).             | Demonstrated early 2008; IOT&E report accepted by DT&E 29 May; Beyond LRIP Report to Congress in Sep 09.  | Weapon accuracy (CEP) IAW FY04-06 Force Development Evaluation results.                                 |
| Enable location and characterization of atmospheric conditions |   |   |   |   |   |
| Thunderstorms/Nuclear Debris                                   | Avoid thunderstorms, with a min. rain rate of 1 mm/hr, by a min. of 40 NM; avoid nuclear debris clouds. | Avoid thunderstorms, with a min. rain rate of 1 mm/hr, by a min. of 40 NM; avoid nuclear debris clouds. | Avoid thunderstorms, with a min. rain rate of 1 mm/hr, by a min. of 40 NM; avoid nuclear debris clouds. | Demonstrated thunderstorm short range performance. Compliant via flight tests and data analysis. IOT&E report, accepted by DOT&E on 29 May 09. Nuclear debris is part of Mode Set 2 flight testing which completed in Apr 09. FOT&E in Sep 09 to test Mode Set 2. | Avoid thunderstorms, with a min. rain rate of 1 mm/hr, by a min. of 40 NM; avoid nuclear debris clouds. |
| Rainfall/Debris Density  | Display green, yellow and red bands based on  | Display green, yellow and red bands based on  | Display green, yellow and red bands based on  | Compliant via flight tests and data analysis.   | Display green, yellow and red bands based on  |

|   |  |  |   |   |   |
|---|--|--|---|---|---|
|   | rainfall rates and debris density out to 160 NM. Avoid thunderstorms, with a min. rain rate of 1mm/hr, by a min. of 40 NM.   | rainfall rates and debris density out to 160 NM. Avoid thunderstorms, with a min. rain rate of 1mm/hr, by a min. of 40 NM.   | rainfall rates and debris density out to 160 NM. Avoid thunderstorms, with a minimum rain rate of 1mm/hr, by a minimum of 40 NM.  | IOT&E report, accepted by DOT&E on 29 May 09.   | rainfall rates and debris density out to 160 NM   |
| Shall not diminish current B-2 penetration capabilities and survivability characteristics               | a) Once modified, the aircraft shall not exceed the values in App 70 of the Weapon System Specification<br>b) Improve performance.   | a) Once modified, the aircraft shall not exceed the values in App 70 of the Weapon System Specification<br>b) Improve performance.   | a) Once modified, the aircraft shall not exceed the values in App 70 of the Weapon System Specification<br>b) LPI performance of RMP shall meet the performance of the legacy radar when tested under similar conditions. | LO flight test conducted in May 07; LPI flight tests in Jul & Aug 08. Performance met expectations.     | a) B-2 RMP installation meets the Block 30 Appendix 70 specification for the current radar's portion of the LO budget;<br>b) LPI performance to Block 30 radar I/FOT&E and FDE test results |
| Shall comply with spectrum management directives  | Achieve and comply with DD1494 Stage 3 Certification prior to range testing; achieve and comply with DD1494 Stage 4 Certification prior to initial operational capability. | Achieve and comply with DD1494 Stage 3 Certification prior to range testing; achieve and comply with DD1494 Stage 4 Certification prior to initial operational capability. | Achieve and comply with DD1494 Stage 3 Certification prior to range testing; achieve and comply with DD1494 Stage 4 Certification prior to initial operational capability.  | Stage 4 application submitted; in review at 88th Comm Grp; no issues. Planned to be signed by Apr 2010. | Achieve and comply with DD1494 Stage 3 Certification prior to range testing; achieve and comply with DD1494 Stage 4 Certification prior to initial operational capability.                  |
| Shall not degrade situational awareness--tanker rendezvous, station keeping, and air-traffic capability | a) Detect a tanker at up to Y NM. (see classified App); b)   | a) Detect a tanker at up to Y NM. (see classified App); b)   | a) Detect a tanker in RWS and lock on in AAT by X NM (see   | Flight tested in May 08. Significant capability to detect/track/rendezvous                              | Minimum capability of 80NM with positional accuracy to ensure safe  |



|  |   |   |   |   |                              |
|--|---|---|---|---|------------------------------|
|  | Enable the B-2 to maintain 0.5 NM min. separation using the 5 NM scope. | Enable the B-2 to maintain 0.5 NM min. separation using the 5 NM scope. | classified App); b) Enable the B-2 to maintain 0.5 NM min. separation using the 5 NM scope. | with tanker, station keeping and air traffic situational awareness has been demonstrated. IOT&E report accepted by DT&E May 29, 2009; Beyond LRIP Report to Congress. | separation of at least 0.5NM |
| All top-level IERs will be satisfied to the standards specified in the thresholds and objective values | 100% of top-level IERs  | 100% of top-level IERs  | 100% of top-level IERs designated critical  | 100% of Top-level IERs satisfied.   | 100% of top-level IERs       |

**Requirements Source:**

Capability Production Document (CPD) for B-2 Radar Modernization Program (RMP), validated July 11, 2006.

**Acronyms And Abbreviations**

- AAT - Air to Air Track
- App - Appendix
- CEP - Circular Error Probability
- DOT&E - Director, Operational Test & Evaluation
- DT&E - Developmental Test & Evaluation
- FDE - Force Development Evaluation
- hr - hour
- I/FOT&E - Initial and Follow-on Operational Test & Evaluation
- IAW - In Accordance With
- IER - Information Exchange Requirement
- KPP - Key Performance Parameter
- LO - Low Observability
- LPI - Low Probability of Intercept
- Min - Minimum
- mm - millimeter
- NM - Nautical Miles
- TBD - To Be Determined

**Change Explanations**

None

**Memo**

Classified Performance information is provided in the classified annex to this submission.

## Track To Budget

### General Memo

The funding for the B-2 Radar Modernization Program (RMP) is embedded within the primary B-2 Program Elements. These lines are shared with other B-2 programs that support the B-2 weapon system, which includes the B-2 Extremely High Frequency (EHF) Increment I program.

Aircraft Procurement, Air Force BA 05 line is shared for all B-2 Mods (B-2 RMP is Mod No. 110033 on the Exhibit P-40, Budget Item Justification). Funding for Initial Spares is in the shared BA 06 line.

### RDT&E

|           |              |   |             |        |
|-----------|--------------|---|-------------|--------|
| APPN 3600 | BA 07        | PE 0101127F   | (Air Force) |        |
|           | Project 5345 | B-2 Advanced Technology Bomber/B-2 Advanced Technology Bomber | (Shared)    | (Sunk) |
| APPN 3600 | BA 05        | PE 0604240F   | (Air Force) |        |
|           | Project 3843 | B-2 Advanced Technology Bomber/B-2 Advanced Technology Bomber | (Shared)    | (Sunk) |

### Procurement

|           |            |                                       |             |  |
|-----------|------------|---------------------------------------|-------------|--|
| APPN 3010 | BA 06      | PE 0101127F                           | (Air Force) |  |
|           | ICN 000999 | B-2 Radar Modernization Program (RMP) | (Shared)    |  |
| APPN 3010 | BA 05      | PE 0101127F                           | (Air Force) |  |
|           | ICN B00200 | B-2 Radar Modernization Program (RMP) | (Shared)    |  |

## Cost and Funding

### Cost Summary

#### Total Acquisition Cost and Quantity

| Appropriation  | BY2008 \$M            |  |       | BY2008 \$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          | 730.9                 | 730.9                                      | 804.0 | 666.8            | 719.1                 | 719.1                            | 648.5            |
| Procurement    | 593.6                 | 593.6                                      | 653.0 | 545.0            | 629.3                 | 629.3                            | 566.7            |
| Flyaway        | 481.1                 | --   | --    | 507.6            | 508.7                 | --                               | 527.1            |
| Recurring      | 398.1                 | --   | --    | 460.6            | 420.5                 | --                               | 478.1            |
| Non Recurring  | 83.0                  | --   | --    | 47.0             | 88.2                  | --                               | 49.0             |
| Support        | 112.5                 | --   | --    | 37.4             | 120.6                 | --                               | 39.6             |
| Other Support  | 88.0                  | --   | --    | 14.4             | 93.7                  | --                               | 14.9             |
| Initial Spares | 24.5                  | --   | --    | 23.0             | 26.9                  | --                               | 24.7             |
| 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          | 1324.5                | 1324.5                                     | N/A   | 1211.8           | 1348.4                | 1348.4                           | 1215.2           |

The RMP Full Rate Production (FRP) program office estimate was validated by the Air Force Cost Analysis Agency (AFCAA) on September 10, 2009. The cost estimate reflected a 55% confidence level due to the low risk of the production effort; the development cost estimate was based on actual costs incurred as the development program was more than 96% complete.

| Quantity    | SAR Baseline Prod Est | Current APB Production | Current Estimate |
|-------------|-----------------------|------------------------|------------------|
| RDT&E       |                       | 7                      | 7                |
| Procurement |                       | 13                     | 13               |
| Total       |                       | 20                     | 20               |

The unit of measure is modified aircraft.

## Cost and Funding

### Funding Summary

#### Appropriation and Quantity Summary SEP 2011 Exception SAR (TY \$M)

| Appropriation  | Prior  | FY2011 | FY2012 | FY2013 | FY2014 | FY2015 | FY2016 | To Complete | Total  |
|----------------|--------|--------|--------|--------|--------|--------|--------|-------------|--------|
| RDT&E          | 647.3  | 1.2    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | 648.5  |
| Procurement    | 530.4  | 23.1   | 13.2   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | 566.7  |
| 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    |
| SEP 2011 Total | 1177.7 | 24.3   | 13.2   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | 1215.2 |
| PB 2012 Total  | 1186.5 | 23.8   | 14.8   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | 1225.1 |
| Delta          | -8.8   | 0.5    | -1.6   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | -9.9   |

| Quantity       | Undistributed | Prior | FY2011 | FY2012 | FY2013 | FY2014 | FY2015 | FY2016 | To Complete | Total |
|----------------|---------------|-------|--------|--------|--------|--------|--------|--------|-------------|-------|
| Development    | 7             | 0     | 0      | 0      | 0      | 0      | 0      | 0      | 0           | 7     |
| Production     | 0             | 13    | 0      | 0      | 0      | 0      | 0      | 0      | 0           | 13    |
| SEP 2011 Total | 7             | 13    | 0      | 0      | 0      | 0      | 0      | 0      | 0           | 20    |
| PB 2012 Total  | 7             | 13    | 0      | 0      | 0      | 0      | 0      | 0      | 0           | 20    |
| Delta          | 0             | 0     | 0      | 0      | 0      | 0      | 0      | 0      | 0           | 0     |

#### FY2012 President's Budget / December 2010 SAR (TY\$ M)

| Appropriation | Prior  | FY2011 | FY2012 | FY2013 | FY2014 | FY2015 | FY2016 | To Complete | Total  |
|---------------|--------|--------|--------|--------|--------|--------|--------|-------------|--------|
| RDT&E         | 647.5  | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | 647.5  |
| Procurement   | 539.0  | 23.8   | 14.8   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | 577.6  |
| 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 2012 Total | 1186.5 | 23.8   | 14.8   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | 1225.1 |
| PB 2011 Total | 1227.9 | 23.2   | 14.7   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | 1265.8 |
| Delta         | -41.4  | 0.6    | 0.1    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0         | -40.7  |

| Quantity      | Undistributed | Prior | FY2011 | FY2012 | FY2013 | FY2014 | FY2015 | FY2016 | To Complete | Total |
|---------------|---------------|-------|--------|--------|--------|--------|--------|--------|-------------|-------|
| Development   | 7             | 0     | 0      | 0      | 0      | 0      | 0      | 0      | 0           | 7     |
| Production    | 0             | 13    | 0      | 0      | 0      | 0      | 0      | 0      | 0           | 13    |
| PB 2012 Total | 7             | 13    | 0      | 0      | 0      | 0      | 0      | 0      | 0           | 20    |
| PB 2011 Total | 7             | 13    | 0      | 0      | 0      | 0      | 0      | 0      | 0           | 20    |
| 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 |
|-----------------|----------|-----------------------------------|---------------------------------------|------------------------------|----------------------|----------------------|----------------------|
| 2005            | --       | --                                | --                                    | --                           | --                   | --                   | 170.7                |
| 2006            | --       | --                                | --                                    | --                           | --                   | --                   | 200.4                |
| 2007            | --       | --                                | --                                    | --                           | --                   | --                   | 93.2                 |
| 2008            | --       | --                                | --                                    | --                           | --                   | --                   | 112.4                |
| 2009            | --       | --                                | --                                    | --                           | --                   | --                   | 69.6                 |
| 2010            | --       | --                                | --                                    | --                           | --                   | --                   | 1.0                  |
| 2011            | --       | --                                | --                                    | --                           | --                   | --                   | 1.2                  |
| <b>Subtotal</b> | <b>7</b> | --                                | --                                    | --                           | --                   | --                   | <b>648.5</b>         |

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

| <b>Fiscal Year</b> | <b>Quantity</b> | <b>End Item Recurring Flyaway BY 2008 \$M</b> | <b>Non End Item Recurring Flyaway BY 2008 \$M</b> | <b>Non Recurring Flyaway BY 2008 \$M</b> | <b>Total Flyaway BY 2008 \$M</b> | <b>Total Support BY 2008 \$M</b> | <b>Total Program BY 2008 \$M</b> |
|--------------------|-----------------|---|---|--|----------------------------------|----------------------------------|----------------------------------|
| 2005               | --              | --  | --  | --                                       | --                               | --                               | 182.6                            |
| 2006               | --              | --  | --  | --                                       | --                               | --                               | 208.1                            |
| 2007               | --              | --  | --  | --                                       | --                               | --                               | 94.3                             |
| 2008               | --              | --  | --  | --                                       | --                               | --                               | 111.5                            |
| 2009               | --              | --  | --  | --                                       | --                               | --                               | 68.2                             |
| 2010               | --              | --  | --  | --                                       | --                               | --                               | 1.0                              |
| 2011               | --              | --  | --  | --                                       | --                               | --                               | 1.1                              |
| <b>Subtotal</b>    | <b>7</b>        | --  | --  | --                                       | --                               | --                               | <b>666.8</b>                     |



## Annual Funding TY\$

## 3010 | Procurement | Aircraft 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 |
|-----------------|-----------|-----------------------------------|---------------------------------------|------------------------------|----------------------|----------------------|----------------------|
| 2008            | --        | 57.9                              | --                                    | 0.5                          | 58.4                 | 1.6                  | 60.0                 |
| 2009            | 6         | 246.7                             | 1.1                                   | 26.4                         | 274.2                | 6.1                  | 280.3                |
| 2010            | 7         | 164.6                             | 1.3                                   | 21.1                         | 187.0                | 3.1                  | 190.1                |
| 2011            | --        | --                                | 4.9                                   | 1.0                          | 5.9                  | 17.2                 | 23.1                 |
| 2012            | --        | --                                | 1.6                                   | --                           | 1.6                  | 11.6                 | 13.2                 |
| <b>Subtotal</b> | <b>13</b> | <b>469.2</b>                      | <b>8.9</b>                            | <b>49.0</b>                  | <b>527.1</b>         | <b>39.6</b>          | <b>566.7</b>         |

**Annual Funding BY\$****3010 | Procurement | Aircraft Procurement, Air Force**

| <b>Fiscal Year</b> | <b>Quantity</b> | <b>End Item Recurring Flyaway BY 2008 \$M</b> | <b>Non End Item Recurring Flyaway BY 2008 \$M</b> | <b>Non Recurring Flyaway BY 2008 \$M</b> | <b>Total Flyaway BY 2008 \$M</b> | <b>Total Support BY 2008 \$M</b> | <b>Total Program BY 2008 \$M</b> |
|--------------------|-----------------|---|---|--|----------------------------------|----------------------------------|----------------------------------|
| 2008               | --              | 56.8  | --  | 0.5                                      | 57.3                             | 1.6                              | 58.9                             |
| 2009               | 6               | 238.6   | 1.1   | 25.5                                     | 265.2                            | 5.9                              | 271.1                            |
| 2010               | 7               | 156.8   | 1.2   | 20.1                                     | 178.1                            | 3.0                              | 181.1                            |
| 2011               | --              | --  | 4.6   | 0.9                                      | 5.5                              | 16.2                             | 21.7                             |
| 2012               | --              | --  | 1.5   | --                                       | 1.5                              | 10.7                             | 12.2                             |
| <b>Subtotal</b>    | <b>13</b>       | <b>452.2</b>                                  | <b>8.4</b>  | <b>47.0</b>                              | <b>507.6</b>                     | <b>37.4</b>                      | <b>545.0</b>                     |

**Cost Quantity Information****3010 | Procurement | Aircraft Procurement, Air Force**

| <b>Fiscal Year</b> | <b>Quantity</b> | <b>End Item Recurring Flyaway (Aligned with Quantity) BY 2008 \$M</b> |
|--------------------|-----------------|---|
| 2008               | --              | --  |
| 2009               | 6               | 236.3   |
| 2010               | 7               | 215.9   |
| 2011               | --              | --  |
| 2012               | --              | --  |
| <b>Subtotal</b>    | <b>13</b>       | <b>452.2</b>  |

**Low Rate Initial Production**

|                          | <b>Initial LRIP Decision</b> | <b>Current Total LRIP</b> |
|--------------------------|------------------------------|---------------------------|
| <b>Approval Date</b>     | 8/17/2004                    | 9/4/2008                  |
| <b>Approved Quantity</b> | 4                            | 6                         |
| <b>Reference</b>         | Milestone B                  | Milestone C               |
| <b>Start Year</b>        | 2007                         | 2008                      |
| <b>End Year</b>          | 2007                         | 2009                      |

RMP Milestone C Decision was accomplished in September 2008. The Air Force aligned funding in FY 2009 President's Budget (PB) to support the purchase of six Low Rate Initial Production (LRIP) ship sets in FY 2009 and seven Full Rate Production (FRP) ship sets in FY 2010. The LRIP quantity is greater than 10% due to the small fleet size.

**Foreign Military Sales**

None

**Nuclear Cost**

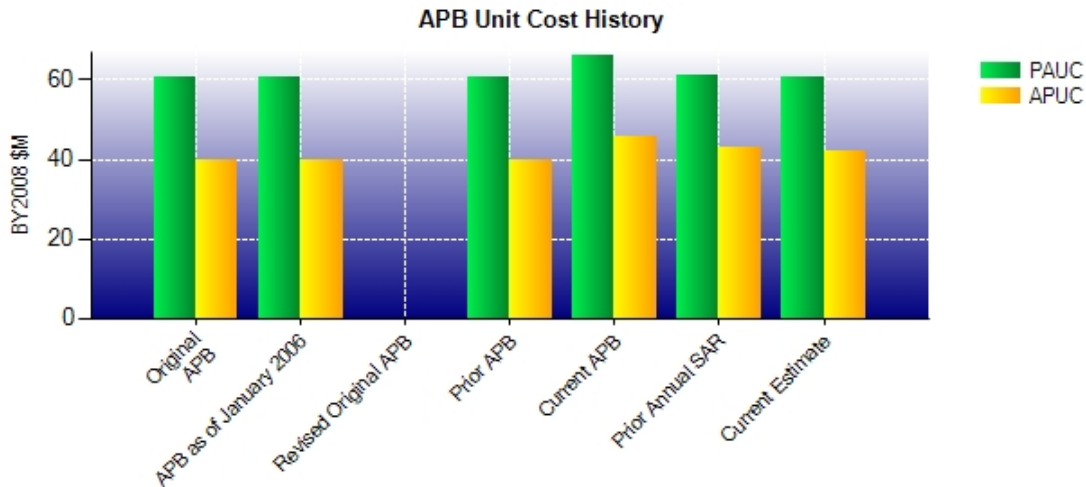
None

**Unit Cost****Unit Cost Report**

|                                      | BY2008 \$M                                | BY2008 \$M                         |                |
|--------------------------------------|---|------------------------------------|----------------|
| Unit Cost                            | Current UCR<br>Baseline<br>(JAN 2009 APB) | Current Estimate<br>(SEP 2011 SAR) | BY<br>% Change |
| Program Acquisition Unit Cost (PAUC) |   |                                    |                |
| Cost                                 | 1324.5                                    | 1211.8                             |                |
| Quantity                             | 20  | 20                                 |                |
| Unit Cost                            | 66.225                                    | 60.590                             | -8.51          |
| Average Procurement Unit Cost (APUC) |   |                                    |                |
| Cost                                 | 593.6                                     | 545.0                              |                |
| Quantity                             | 13  | 13                                 |                |
| Unit Cost                            | 45.662                                    | 41.923                             | -8.19          |

|                                      | BY2008 \$M                                 | BY2008 \$M                         |                |
|--------------------------------------|--|------------------------------------|----------------|
| Unit Cost                            | Original UCR<br>Baseline<br>(AUG 2004 APB) | Current Estimate<br>(SEP 2011 SAR) | BY<br>% Change |
| Program Acquisition Unit Cost (PAUC) |  |                                    |                |
| Cost                                 | 1273.8                                     | 1211.8                             |                |
| Quantity                             | 21   | 20                                 |                |
| Unit Cost                            | 60.657                                     | 60.590                             | -0.11          |
| Average Procurement Unit Cost (APUC) |  |                                    |                |
| Cost                                 | 559.0                                      | 545.0                              |                |
| Quantity                             | 14   | 13                                 |                |
| Unit Cost                            | 39.929                                     | 41.923                             | +4.99          |

### Unit Cost History



|                        | Date     | BY2008 \$M |        | TY \$M |        |
|------------------------|----------|------------|--------|--------|--------|
|                        |          | PAUC       | APUC   | PAUC   | APUC   |
| Original APB           | AUG 2004 | 60.657     | 39.929 | 58.095 | 39.150 |
| APB as of January 2006 | AUG 2004 | 60.657     | 39.929 | 58.095 | 39.150 |
| Revised Original APB   | N/A      | N/A        | N/A    | N/A    | N/A    |
| Prior APB              | AUG 2004 | 60.657     | 39.929 | 58.095 | 39.150 |
| Current APB            | JAN 2009 | 66.225     | 45.662 | 67.420 | 48.408 |
| Prior Annual SAR       | DEC 2010 | 61.065     | 42.723 | 61.255 | 44.431 |
| Current Estimate       | SEP 2011 | 60.590     | 41.923 | 60.760 | 43.592 |

### SAR Unit Cost History

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

| Initial PAUC<br>Dev Est | Changes |       |       |       |        |       |        |       | PAUC<br>Prod Est |
|-------------------------|---------|-------|-------|-------|--------|-------|--------|-------|------------------|
|                         | Econ    | Qty   | Sch   | Eng   | Est    | Oth   | Spt    | Total |                  |
| 58.095                  | 1.795   | 1.040 | 5.845 | 2.110 | -5.515 | 0.000 | -0.080 | 5.195 | 67.420           |

#### Current SAR Baseline to Current Estimate (TY \$M)

| PAUC<br>Prod Est | Changes |       |       |       |        |       |        |        | PAUC<br>Current Est |
|------------------|---------|-------|-------|-------|--------|-------|--------|--------|---------------------|
|                  | Econ    | Qty   | Sch   | Eng   | Est    | Oth   | Spt    | Total  |                     |
| 67.420           | -0.795  | 0.000 | 0.000 | 0.000 | -1.930 | 0.000 | -3.935 | -6.660 | 60.760              |

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

| Initial APUC<br>Dev Est | Changes |       |       |       |       |       |        |       | APUC<br>Prod Est |
|-------------------------|---------|-------|-------|-------|-------|-------|--------|-------|------------------|
|                         | Econ    | Qty   | Sch   | Eng   | Est   | Oth   | Spt    | Total |                  |
| 39.150                  | 1.408   | 0.142 | 1.377 | 1.715 | 2.323 | 0.000 | -0.123 | 6.842 | 48.408           |

**Current SAR Baseline to Current Estimate (TY \$M)**

| APUC<br>Prod Est | Changes |       |       |       |       |       |        |        | APUC<br>Current Est |
|------------------|---------|-------|-------|-------|-------|-------|--------|--------|---------------------|
|                  | Econ    | Qty   | Sch   | Eng   | Est   | Oth   | Spt    | Total  |                     |
| 48.408           | -0.869  | 0.000 | 0.000 | 0.000 | 2.108 | 0.000 | -6.054 | -4.815 | 43.592              |

**SAR Baseline History**

| Item/Event                  | SAR<br>Planning<br>Estimate (PE) | SAR<br>Development<br>Estimate (DE) | SAR<br>Production<br>Estimate (PdE) | Current<br>Estimate |
|-----------------------------|----------------------------------|-------------------------------------|-------------------------------------|---------------------|
| Milestone A                 | N/A                              | N/A                                 | N/A                                 | N/A                 |
| Milestone B                 | N/A                              | JUL 2004                            | SEP 2004                            | AUG 2004            |
| Milestone C                 | N/A                              | FEB 2007                            | SEP 2008                            | DEC 2008            |
| IOC                         | N/A                              | OCT 2007                            | DEC 2009                            | MAR 2010            |
| Total Cost (TY \$M)         | N/A                              | 1220.0                              | 1348.4                              | 1215.2              |
| Total Quantity              | N/A                              | 21                                  | 20                                  | 20                  |
| Prog. Acq. Unit Cost (PAUC) | N/A                              | 58.095                              | 67.420                              | 60.760              |

Required Assets Available (RAA) is used in place of Initial Operational Capability (IOC) date in the table above. RAA is defined as sufficient support equipment, spares, hardware, and fully qualified Mode Set 1 software to support five operational aircraft at Whiteman Air Force Base.

**Cost Variance****Cost Variance Summary**

| <b>Summary Then Year \$M</b> |                  |             |               |              |
|------------------------------|------------------|-------------|---------------|--------------|
|                              | <b>RDT&amp;E</b> | <b>Proc</b> | <b>MILCON</b> | <b>Total</b> |
| SAR Baseline (Prod Est)      | 719.1            | 629.3       | --            | 1348.4       |
| Previous Changes             |                  |             |               |              |
| Economic                     | -4.6             | -11.3       | --            | -15.9        |
| Quantity                     | --               | --          | --            | --           |
| Schedule                     | --               | --          | --            | --           |
| Engineering                  | --               | --          | --            | --           |
| Estimating                   | -67.0            | +35.3       | --            | -31.7        |
| Other                        | --               | --          | --            | --           |
| Support                      | --               | -75.7       | --            | -75.7        |
| Subtotal                     | -71.6            | -51.7       | --            | -123.3       |
| Current Changes              |                  |             |               |              |
| Economic                     | --               | --          | --            | --           |
| Quantity                     | --               | --          | --            | --           |
| Schedule                     | --               | --          | --            | --           |
| Engineering                  | --               | --          | --            | --           |
| Estimating                   | +1.0             | -7.9        | --            | -6.9         |
| Other                        | --               | --          | --            | --           |
| Support                      | --               | -3.0        | --            | -3.0         |
| Subtotal                     | +1.0             | -10.9       | --            | -9.9         |
| Total Changes                | -70.6            | -62.6       | --            | -133.2       |
| CE - Cost Variance           | 648.5            | 566.7       | --            | 1215.2       |
| CE - Cost & Funding          | 648.5            | 566.7       | --            | 1215.2       |

| <b>Summary Base Year 2008 \$M</b> |                  |              |               |               |
|-----------------------------------|------------------|--------------|---------------|---------------|
|                                   | <b>RDT&amp;E</b> | <b>Proc</b>  | <b>MILCON</b> | <b>Total</b>  |
| SAR Baseline (Prod Est)           | 730.9            | 593.6        | --            | 1324.5        |
| Previous Changes                  |                  |              |               |               |
| Economic                          | --               | --           | --            | --            |
| Quantity                          | --               | --           | --            | --            |
| Schedule                          | --               | --           | --            | --            |
| Engineering                       | --               | --           | --            | --            |
| Estimating                        | -65.0            | +34.1        | --            | -30.9         |
| Other                             | --               | --           | --            | --            |
| Support                           | --               | -72.3        | --            | -72.3         |
| <b>Subtotal</b>                   | <b>-65.0</b>     | <b>-38.2</b> | <b>--</b>     | <b>-103.2</b> |
| Current Changes                   |                  |              |               |               |
| Economic                          | --               | --           | --            | --            |
| Quantity                          | --               | --           | --            | --            |
| Schedule                          | --               | --           | --            | --            |
| Engineering                       | --               | --           | --            | --            |
| Estimating                        | +0.9             | -7.6         | --            | -6.7          |
| Other                             | --               | --           | --            | --            |
| Support                           | --               | -2.8         | --            | -2.8          |
| <b>Subtotal</b>                   | <b>+0.9</b>      | <b>-10.4</b> | <b>--</b>     | <b>-9.5</b>   |
| <b>Total Changes</b>              | <b>-64.1</b>     | <b>-48.6</b> | <b>--</b>     | <b>-112.7</b> |
| CE - Cost Variance                | 666.8            | 545.0        | --            | 1211.8        |
| CE - Cost & Funding               | 666.8            | 545.0        | --            | 1211.8        |

Previous Estimate: December 2010



| <b>RDT&amp;E</b>  | <b>\$M</b>       |                  |
|---|------------------|------------------|
| <b>Current Change Explanations</b>  | <b>Base Year</b> | <b>Then Year</b> |
| Increase to cost estimate based on actuals to complete Engineering Design Model (EDM) antenna work. (Estimating)                                      | +0.9             | +1.0             |
| <b>RDT&amp;E Subtotal</b>   | <b>+0.9</b>      | <b>+1.0</b>      |
| <b>Procurement</b>  | <b>\$M</b>       |                  |
| <b>Current Change Explanations</b>  | <b>Base Year</b> | <b>Then Year</b> |
| Decrease due to Air Force withhold to fund higher priority requirements (Estimating)  | -5.7             | -6.0             |
| Decrease to program office estimate to reflect reduced cost to complete Prime Power Conditioning Unit (PPCU) retrofits and change orders (Estimating) | -1.9             | -1.9             |
| Decrease in Other Support due to reduced costs for Program Management Administration (PMA) costs (Support)  | -0.6             | -0.7             |
| Decrease in Initial Spares based on actual costs (Support)  | -2.2             | -2.3             |
| <b>Procurement Subtotal</b>   | <b>-10.4</b>     | <b>-10.9</b>     |

## Contracts

### Appropriation: Procurement

**Contract Name** B-2 Radar Modernization Program Production Phase  
**Contractor** Northrop Grumman Corporation  
**Contractor Location** El Segundo, CA 90245  
**Contract Number, Type** F33657-99-D-0028/41, FPIF  
**Award Date** December 29, 2008  
**Definitization Date** December 29, 2008

| Initial Contract Price (\$M) |         |     | Current Contract Price (\$M) |         |     | Estimated Price At Completion (\$M) |                 |
|------------------------------|---------|-----|------------------------------|---------|-----|-------------------------------------|-----------------|
| Target                       | Ceiling | Qty | Target                       | Ceiling | Qty | Contractor                          | Program Manager |
| 232.5                        | 241.8   | 13  | 462.6                        | 481.1   | 13  | 463.8                               | 462.6           |

| Variance                                 | Cost Variance | Schedule Variance |
|--|---------------|-------------------|
| Cumulative Variances To Date (9/20/2011) | +14.8         | -7.9              |
| Previous Cumulative Variances            | +18.9         | +1.1              |
| Net Change                               | -4.1          | -9.0              |

### Cost And Schedule Variance Explanations

The unfavorable net change in the cost variance is due to additional costs to complete Environmental Stress Screening and Nearfield antenna test failures that required investigation and rework efforts. In addition, the net change variance was driven by the removal and replacement of non compliant Isolators.

The unfavorable net change in the schedule variance is due to Low Rate Initial Production and Full Rate Production antenna test failures, delays in the start of integration and test efforts, delays in final quality inspection tasks and late receipt of material. The schedule variance is based on net change.

### Contract Comments

The difference between the initial contract price target and the current contract price target is due to the exercise of the Full Rate Production option, as well as a contract option for eight kit installs.

Contract performance data is based on the September 20, 2011 Contract Performance Report which includes data as of August 26, 2011.

## Deliveries and Expenditures

| Deliveries To Date                 | Plan To Date | Actual To Date | Total Quantity | Percent Delivered |
|------------------------------------|--------------|----------------|----------------|-------------------|
| Development                        | 7            | 7              | 7              | 100.00%           |
| Production                         | 7            | 7              | 13             | 53.85%            |
| Total Program Quantities Delivered | 14           | 14             | 20             | 70.00%            |

| Expenditures and Appropriations (TY \$M) |        |                            |        |
|--|--------|----------------------------|--------|
| Total Acquisition Cost                   | 1215.2 | Years Appropriated         | 7      |
| Expenditures To Date                     | 1106.3 | Percent Years Appropriated | 87.50% |
| Percent Expended                         | 91.04% | Appropriated to Date       | 1202.0 |
| Total Funding Years                      | 8      | Percent Appropriated       | 98.91% |

The expenditure data is current as of October 26, 2011.

## Operating and Support Cost

### Assumptions And Ground Rules

There are no Operating and Support (O&S) costs for B-2 RMP since it is forecasted to be lower than the legacy radar system, due mostly to the higher expected reliability of the RMP antenna and the deletion of the high-maintenance transmitter.

The maintenance concept for the B-2 RMP will be the same as the legacy radar system, which has two levels (organizational and depot). Organizational maintenance will consist of Air Force maintenance personnel removing and replacing failed items, performing preventative maintenance, and conducting fault isolation actions. All repairs of Line Replaceable Units removed from B-2 aircraft will be accomplished at the depot level.

The supply support concept and the manpower and personnel requirements for the B-2 RMP will remain the same as for the legacy radar system.

The expected B-2 RMP O&S costs by element were analyzed where a delta from legacy requirements is projected. The only element expected to change in the transition from Legacy B-2 to B-2 RMP is Depot Maintenance. The Average Annual costs per Air Vehicle, for Legacy B-2 affected subsystems, is \$0.2 (FY 2004 Constant (Base-Year) Dollars in Millions). The Average Annual costs per Air Vehicle, for B-2 RMP affected subsystems, is \$0.1 (FY 2004 Constant (Base-Year) Dollars in Millions). There is no antecedent system for this modification. Air Force Cost Analysis Full Rate Production Decision O&S estimate has not changed from the Milestone C estimate.

| Costs BY2008 \$M                        |                |                      |
|---|----------------|----------------------|
| Cost Element                            | B-2 RMP<br>N/A | No Antecedent<br>N/A |
| Unit-Level Manpower                     | --             | --                   |
| Unit Operations                         | --             | --                   |
| Maintenance                             | --             | --                   |
| Sustaining Support                      | --             | --                   |
| Continuing System Improvements          | --             | --                   |
| Indirect Support                        | --             | --                   |
| Other                                   | --             | --                   |
| Total Unitized Cost (Base Year 2008 \$) | --             | --                   |

| Total O&S Costs \$M | B-2 RMP | No Antecedent |
|---------------------|---------|---------------|
| Base Year           | --      | --            |
| Then Year           | --      | --            |