PAIRS CASE 2022-C-0314

WEATHER SYSTEM FOLLOW-ON (WSF)

Selected Acquisition Report (SAR)

AS OF FY 2023 PRESIDENT'S BUDGET

U.S. AIR FORCE

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Mission and Description

Weather System Follow-on (WSF) is a Low-Earth Orbit microwave imaging system developed and delivered by the United States Space Force's Space Systems Command. WSF is the next generation of space-based passive microwave sensing technology. It will provide U.S. and Allied warfighters with essential weather data, including the measurement of ocean surface wind speed and direction, ice thickness, snow depth, soil moisture, and local spacecraft Energetic Charged Particle environment. The ocean surface wind speed measurement enables tropical cyclone intensity determination by the Joint Typhoon Warning Center. The data gathered by WSF will be provided to meteorologists in support of the generation of a wide variety of weather products necessary to conduct mission planning and operations globally.

WSF is an Acquisition Category IB program comprised of two Space Vehicles and their associated command, control, and data dissemination network. Global environmental monitoring data is gathered, stored, and down-linked through the Satellite Control Network and disseminated to Air Force and Navy weather centers. Additionally, data is broadcast real time by the satellite for utilization by heritage Direct Readout Terminals that use the data for local weather forecasting.

Executive Summary

Program Highlights Since Last Report

The FY 2022 $8.1M budget reduction and the FY 2023 PB reduction of $10.7M from the FY 2023 budget eliminates WSF's ability to exercise the pre-negotiated Firm Fixed Priced (FFP) contract option to build Space Vehicle-2 (SV)-2. Renegotiating SV-2 is expected to cost significantly more than the current priced option with an associated delivery slip of 2-3 years. A schedule breach against the SV-2 Acquisition Program Baseline (APB) milestone is likely, as is a breach against the APB total program acquisition cost. Accordingly, WSF cannot be certified to meet its cost, schedule, and performance objectives at this time.

On February 19, 2020 the WSF Capabilities Development Document was validated by the Joint Requirements Oversight Council. The WSF Critical Design Review (CDR) was successfully conducted virtually from March 31, 2020 to April 17, 2020. The Air Force Service Acquisition Executive (SAE) certified WSF in accordance with 10 U.S.C. § 4252 (formerly 2366b) and approved Milestone B on May 15, 2020. Subsequently, the WSF APB was approved by the SAE on June 17, 2020.

The WSF team made significant progress during this reporting period. Notable accomplishments include completion of a delta Interoperability Analysis Exercise (IAE), OSD approval of the program's Test and Evaluation Master Plan (TEMP), and completion of a Mission Assurance Technical Interchange Meeting. The delta IAE was held on August 19, 2020. The final report, delivered September 23, 2020, identified 15 very low-to-low interoperability risks and recommendations. The report will feed into the program's next Cyber Table Top war game exercise to support further cyber risk assessments. The TEMP was approved by the Director, Operational Test & Evaluation, OSD on October 23, 2020, baselining the program's planned Test and Evaluation activities.

WSF SV-1 continues to be on track for a September 2023 Availability for Launch. The program resolved the seven remaining open CDR entrance/exit criteria at the Mission Assurance Technical Interchange Meeting held in December 2020. Additionally, production of SV-1 and its associated ground segments continues to progress in unit and subsystem production and testing. Development of the Microwave Sensor Data Processing Software (MWSDPS), which converts data from the SV to useful data for user consumption, successfully completed in June 2021. MWSDPS was then delivered to users for early integration and test. Further, WSF began Development Testing in December 2020 and successfully completed its first cyber test in August 2021. The Microwave Imager began Integration and Test in May 2021 with major subsystems being delivered and integrated throughout the year.

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
October 2012	Obtained authorization to enter into Materiel Solution Analysis phase and designated as a pre-Major Defense Acquisition Program with the Air Force (AF) as the lead component.
September 2014	JROC reviewed the Space Based Environmental Monitoring (SBEM) Analysis of Alternative (AoA) results and supported recommendation of a materiel solution to address Gaps 3, 8, and 11.
March 2015	SECAF policy memo directed each pre-Milestone B (MS B) United States Air Force satellite program to integrate an Energetic Charged Particles (ECP) sensor for anomaly attribution.
December 2015	The Program Office released a Request for Information requesting industry's intent and ability to develop, launch, and operate space-based commercial services that could meet the 12 SBEM AoA weather gaps.
January 2017	The Principal Deputy Assistant Secretary of the Air Force (Acquisition and Logistics) signed ADM authorizing MS B entrance criteria. Determined the streamlined Weather System Follow-on - Microwave (WSF-M) Draft Capability Development Document (CDD) in AF initial staffing exhibited sufficient requirements maturity to release the WSF-M for Proposal.
June 2017	Chief of Staff of the AF approved WSF-M Draft CDD and validated Key Performance Parameters.
November 2017	The Program Office awarded a FFP contract to Ball Aerospace and Technologies Corporation.
May 2018	Spacecraft and Payload System Readiness Review (SRR) completed.
July 2018	Ground System SRR completed.
August 2018	Compact Environment Anomaly Sensor (CEASE III) ECP Engineering Design Unit completed.
October 2018	Spacecraft Preliminary Design Review (PDR) completed.
November 2018	System PDR completed.
July 2019	Microwave Imager CDR completed.
August 2019	Delta Ground PDR completed.
September 2019	Air Force Review Board meeting with SAE for MS B, completion pending the Joint Requirements Oversight Council (JROC) validation of the CDD.
September 2019	Ground Initial Design Review and CEASE III ECP sensor Delta CDR completed.
October 2019	Cyber Table Top Mission-Based Cyber Risk Assessment completed.
December 2019	Spacecraft CDR completed.
December 2019	Ground Final Design Review completed.
January 2020	Ground CDR completed.
February 2020	CDD validation by the JROC.
April 2020	System CDR completed.
May 2020	SAE certified WSF prior to Milestone B, per 10 U.S.C. § 2366b, and approved Milestone B.
June 2020	SAF/AQ approved the WSF APB.
August 2020	Delta Interoperability Analysis Exercise completed.
October 2020	Director, Operational Test and Evaluation approved the WSF-M TEMP.
December 2020	Mission Assurance Technical Interchange Meeting completed.

April 2021	ECP Engineering Design Unit USSF completed testing.
May 2021	Microwave Imager (MWI) entered Integration and Test (I&T).
June 2021	Ground System Microwave Sensor Data Processing Software completed.
August 2021	Primary Bus Structure completed.
August 2021	Cyber Vulnerability Test 1 completed.
November 2021	MWI Reflector Deployment Assembly delivered to I&T.

Schedule

Schedule Events

Schedule Events					
Events	Development APB Objective	Current APB Development Objective/Threshold		Current Estimate/Actual	Deviations
CDR	Mar 2020	Mar 2020	Sep 2020	April 24, 2020	
SV-1 Available for Launch	Sep 2023	Sep 2023	Mar 2024	Sep 2023	
SV-1 IOC	Mar 2024	Mar 2024	Sep 2024	Mar 2024	
SV-1 FOC	Mar 2025	Mar 2025	Sep 2025	Mar 2025	
SV-2 Available for Launch	Jul 2027	Jul 2027	Jan 2028	Jul 2027	

Schedule Notes

The CDR milestone completion date changed from March 2020 to April 2020 to correct an administrative error.

WSF and WSF-M are one and the same, used interchangeably throughout programmatic and contractual documentation. The APB schedule milestones for the second Space Vehicle in not expected to be met within the funding profile of the FY 2023+ budget.

Significant Schedule Risks

Significant Schedule Risks	
Milestone B (May 2020)	
1.	Designation of a Continuity of Operations (COOP) location by United States Space Force (USSF). A COOP designation is needed if the capability is expected by USSF for initial operations of Space Vehicle-1. The designation includes the site location, manning, and associated resources and must be designated in time to prepare and field the capability.
2.	Selection and assignment of a Launch Vehicle. Sufficient schedule is necessary to complete the launch vehicle mission design and associated spacecraft interface compliance activities for this first-of-flight mission.
Current Estimate (December 2021)	
1.	Risks identified for the Current Estimate align with the Milestone B APB Risks listed above.
2.	The FY 2022 $8.1M budget reduction and the FY 2023 PB reduction of $10.7M from the FY 2023 budget eliminates WSF's ability to exercise the pre-negotiated FFP contract option to build SV-2. Renegotiating SV-2 to start in 4th Quarter FY 2023 is expected to cost significantly more than the current priced option with an associated delivery slip of 2-3 years. A schedule breach against the SV-2 APB milestone is likely, as is a breach against the APB total program acquisition cost.

Performance

Performance Characteristics					
Development APB Objective	**Current APB Development Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**	**Deviation**
OSVW Measurement Uncertainty, Speed & Direction					
Range 1					
Actual Wind Speed 5-7 m/s, Speed Uncertainty ≤ 1.5 m/s, Direction Uncertainty ≤ 30 degrees	Actual Wind Speed 5-7 m/s, Speed Uncertainty ≤ 1.5 m/s, Direction Uncertainty ≤ 30 degrees	(T=O) Actual Wind Speed 5-7 m/s, Speed Uncertainty ≤ 1.5 m/s, Direction Uncertainty ≤ 30 degrees	TBD	Actual Wind Speed 5-7 m/s, Speed Uncertainty ≤ 1.5 m/s, Direction Uncertainty ≤ 30 degrees	
Range 2					
Actual Wind Speed >7-10 m/s, Speed Uncertainty ≤ 1.5 m/s, Direction Uncertainty ≤ 20 degrees	Actual Wind Speed >7-10 m/s, Speed Uncertainty ≤ 1.5 m/s, Direction Uncertainty ≤ 20 degrees	(T=O) Actual Wind Speed >7-10 m/s, Speed Uncertainty ≤ 1.5 m/s, Direction Uncertainty ≤ 20 degrees	TBD	Actual Wind Speed >7-10 m/s, Speed Uncertainty ≤ 1.5 m/s, Direction Uncertainty ≤ 20 degrees	
Range 3					
Actual Wind Speed >10-25 m/s, Speed Uncertainty ≤ 2 m/s, Direction Uncertainty ≤ 15 degrees	Actual Wind Speed >10-25 m/s, Speed Uncertainty ≤ 2 m/s, Direction Uncertainty ≤ 15 degrees	(T=O) Actual Wind Speed >10-25 m/s, Speed Uncertainty ≤ 2 m/s, Direction Uncertainty ≤ 15 degrees	TBD	Actual Wind Speed >10-25 m/s, Speed Uncertainty ≤ 2 m/s, Direction Uncertainty ≤ 15 degrees	
Range 4					
Actual Wind Speed >25 m/s, Speed Uncertainty N/A; expected to be accurate, Direction Uncertainty N/A; expected to be accurate	Actual Wind Speed >25 m/s, Speed Uncertainty N/A; expected to be accurate, Direction Uncertainty N/A; expected to be accurate	(T=O) Actual Wind Speed >25 m/s, Speed Uncertainty N/A; expected to be accurate, Direction Uncertainty N/A; expected to be accurate	TBD	Actual Wind Speed >25 m/s, Speed Uncertainty N/A; expected to be accurate, Direction Uncertainty N/A; expected to be accurate	
OSVW and TCI Latency					
Stored Mission Data - Latency					
Latency threshold for SMD is ≤ 2 hours, at least 95% of the time as	Latency threshold for SMD is ≤ 2 hours, at least 95% of the time as	(T=O) Latency threshold for SMD is ≤ 2 hours, at least 95% of the	TBD	Latency threshold for SMD is ≤ 2 hours, at least 95% of the time as measured over a 30 day period and is	

measured over a 30 day period and is defined as the maximum time from data acquisition until delivery of the collected SMD to the Weather Centers' enterprise security boundaries.	measured over a 30 day period and is defined as the maximum time from data acquisition until delivery of the collected SMD to the Weather Centers' enterprise security boundaries.	time as measured over a 30 day period and is defined as the maximum time from data acquisition until delivery of the collected SMD to the Weather Centers' enterprise security boundaries.		defined as the maximum time from data acquisition until delivery of the collected SMD to the Weather Centers' enterprise security boundaries.	
Real-Time Data - Latency					
RTD threshold latency is ≤ 15 minutes, at least 95% of the time, for afloat operations when WSF-M satellite is in line of sight of tactical users.	RTD threshold latency is ≤ 15 minutes, at least 95% of the time, for afloat operations when WSF-M satellite is in line of sight of tactical users.	(T=O) RTD threshold latency is ≤ 15 minutes, at least 95% of the time, for afloat operations when WSF-M satellite is in line of sight of tactical users.	TBD	RTD threshold latency is ≤ 15 minutes, at least 95% of the time, for afloat operations when WSF-M satellite is in line of sight of tactical users.	
OSVW and TCI Refresh Rate					
≤ 6 hours	≤ 6 hours	≤ 22 hours at a point of interest + 100 km in all directions from the point	TBD	≤ 22 hours at a point of interest + 100 km in all directions from the point.	
OSVW and TCI Coverage					
Global over ice-free oceans, during the stated refresh period	Global over ice-free oceans, during the stated refresh period	(T=O) Global over ice-free oceans, during the stated refresh period	TBD	Global over ice-free oceans, during the stated refresh period	
OSVW and TCI HSR					
OSVW					
OSVW ≤ 25 km	OSVW ≤ 25 km	OSVW ≤ 30 km	TBD	OSVW ≤ 30 km	
TCI					
TCI is defined as the measure of the maximum 1-minute averaged sustained wind speed, the associated maximum instantaneous gusts, the	TCI is defined as the measure of the maximum 1-minute averaged sustained wind speed, the associated maximum instantaneous gusts, the	(T=O) TCI is defined as the measure of the maximum 1-minute averaged sustained wind speed, the associated maximum instantaneous	TBD	TCI is defined as the measure of the maximum 1-minute averaged sustained wind speed, the associated maximum instantaneous gusts, the associated minimum sea-level pressure, and the radii of the 34-knot, 50-knot and 64-knot winds	

associated minimum sea-level pressure, and the radii of the 34-knot, 50-knot and 64-knot winds around a tropical cyclone. WSF-M will provide mission data to support TCI assessment to ≤ 15 km in the Ka and W band propagation windows.	associated minimum sea-level pressure, and the radii of the 34-knot, 50-knot and 64-knot winds around a tropical cyclone. WSF-M will provide mission data to support TCI assessment to ≤ 15 km in the Ka and W band propagation windows.	gusts, the associated minimum sea-level pressure, and the radii of the 34-knot, 50-knot and 64-knot winds around a tropical cyclone. WSF-M will provide mission data to support TCI assessment to ≤ 15 km in the Ka and W band propagation windows.		around a tropical cyclone. WSF-M will provide mission data to support TCI assessment to ≤ 15 km in the Ka and W band propagation windows.	
Survivability					
Autonomous Operations - 60 days; Protect against and mitigate cyber domain attacks	Autonomous Operations - 60 days; Protect against and mitigate cyber domain attacks	(T=O) Autonomous Operations - 60 days; Protect against and mitigate cyber domain attacks	TBD	Autonomous Operations - 60 days; Protect against and mitigate cyber domain attacks	
Sustainment					
System Ao - 0.92; Space Vehicle Ao - 0.99	System Ao - 0.92; Space Vehicle Ao - 0.99	(T=O) System Ao - 0.92; Space Vehicle Ao - 0.99	TBD	System Ao - 0.92; Space Vehicle Ao - 0.99	

Requirements Source

CDD dated February 19, 2020

Performance Notes

The performance characteristics of the WSF-M program are defined by the CDD for WSF-M, reviewed and validated by the JROC Joint Capabilities Board on February 19, 2020.

1/ Ocean Surface Vector Wind (OSVW) measurement uncertainty (speed & direction) are validated through on orbit- testing and truth data comparison. Truth data is derived from quality-controlled buoy data and model predictions.

2/ OSVW and Tropical Cyclone Intensity (TCI) Latency are verified via on-orbit testing during the Initial Operational Capability phase.

3/ OSVW and TCI Refresh Rates are verified via analysis using orbital parameters and off-nadir angles and validated post orbital insertion.

4/ OSVW and TCI Coverage are verified via analysis using orbital parameters and validated post orbital insertion.

5/ OSVW and TCI HSR are verified by combining ground-measured antenna beam patterns with analysis incorporating spin speed, instrument geometry, and integration time.

6/ Survivability is validated via a combination of flight vehicle demonstration and simulation on the FVTB.

7/ Sustainment: SV reliability and system availability are verified through analysis.

Acquisition Budget Estimate

Total Acquisition Cost

		Development APB	Current APB		Budget Estimate PB 2023		
Category	Base Year	Objective (BY$)	Objective (BY$)	Threshold (BY$)	BY$	TY$	Deviation
RDT&E	2019	982.7	982.7	1,081.0	896.7	943.8	
Procurement							
MILCON							
Acq. O&M							
Total	2019	982.7	982.7	1,081.0	896.7	943.8	
PAUC	2019	491.350	491.350		448.35		
APUC		--	--	--	--	--	

Total End Item Quantity

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development	2	2
Procurement		

Budget Notes

Funding requirements past FY 2027 are from approved 2021 Program Office Estimate.

Decrease in FY 2019 RDT&E due to Small Business Innovative Research (SBIR) and Below Threshold Reprogramming (BTR).

Decrease in FY 2020 RDT&E due to SBIR, BTR, and Congressional mark.

Decrease in FY 2021 RDT&E due to BTR.

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Baseline Estimate (June 2020)	
1.	Risks identified in the Current Baseline Estimate (June 2020) is the same as the Original Baseline Estimate.
Original Baseline Estimate (June 2020)	
1.	Total Acquisition Cost (BY 2019) - $982.7M (Quantity 2); PAUC - $491.350M (Quantity 2); Risks - A mathematically derived confidence level was not computed for this Life Cycle Cost Estimate (LCCE). The LCCE does however represent the expected value, or mean, of the cost estimate distribution, typically between the 50 and 65% confidence levels. This LCCE takes into consideration relevant risks, including ordinary levels of external and unforeseen events. It aims to provide sufficient resources to execute the program under normal conditions encountering average levels of technical, schedule, and programmatic risk and external influence.
Revised Original Estimate (N/A)	
None	
Current Procurement Cost (December 2021)	
1.	Total Acquisition Cost (BY 2019) - $896.7M (Quantity 2); PAUC - $448.350M (Quantity 2). The Current Procurement Cost risks identified are the same as the Original Baseline Estimate (June 2020) listed above. The FY 2022 $8.1M budget reduction and the FY 2023 PB reduction of $10.7M from the FY 2023 budget eliminates WSF's ability to exercise the pre-negotiated FFP contract option to build SV-2. Renegotiating SV-2 to start in 4th Quarter FY 2023 is expected to cost significantly more than the current priced option with an associated delivery slip of 2-3 years. A schedule breach against the SV-2 APB milestone is likely, as is a breach against the APB total program acquisition cost.

Unit Cost

Current Baseline Compared with Current Estimate

Category (BY19$M)	Current APB	Current Estimate	% Change	NMC Breach
PAUC				
Cost	982.7	896.7	-8.75%	-
Quantity	2	2	-	-
Unit Cost	491.350	448.350	-8.75%	
APUC				
Cost	-	-	-	-
Quantity	-	-	-	-
Unit Cost	-	-		

Original Baseline Compared with Current Estimate

Category (BY19$M)	Original APB	Current Estimate	% Change	NMC Breach
PAUC				
Cost	982.7	896.7	-8.75%	-
Quantity	2	2	-	-
Unit Cost	491.350	448.350	-8.75%	
APUC				
Cost	-	-	-	-
Quantity	-	-	-	-
Unit Cost	-	-		

Contracts

Contract Data ($TYM)		
Contract Number	FA8810-18-C-0002	
Effort Number		
Modification Number		
Contract Type	FFP	
Award Date	11/17/2017	
Definitization Date	11/17/2017	
Order Number		
CAGE Code/CAGE Legal Name	13993/Ball Aerospace & Technologies Corp	
Contract Title	Weather System Follow-on-Microwave	
Contract Address	1600 Commerce Street Boulder, CO 80301	
Contracts/Effort Price, Quantity, and Performance ($M)		
Initial Target Price	Current Target Price	
93.7	399.8	
Initial Ceiling Price	Current Ceiling Price	
N/A	N/A	
Contract's EAC	PM's EAC	
399.8	399.8	
Initial Quantity	Current Quantity	Delivered Quantity
1	1	0
BAC	BCWP	ACWP
N/A	N/A	N/A
BCWS	Cost Variance	Schedule Variance
N/A	N/A	N/A

Contract Notes

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

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the result of multiple contract modifications to include: 1) exercising the WSF-M SV-1 Development and Fabrication option; 2) adding the Microwave Sounder, Microwave Imager end-to-end, and SV Early Integration special studies; 3) realigning the SV-1 schedule within the Government funding profile and transferring ground operations from Schriever Air Force Base to the Naval Research Laboratory Blossom Point Tracking Facility.Force Base to the Naval Research Laboratory Blossom Point Tracking Facility; 4) Request for Equitable Adjustments due to COVID and KI700 shipment delays.

Technologies and Systems Engineering

Significant Technical Risks

Significant Technical Risks	
Milestone B (May 2020)	
1.	Designation of a COOP location by USSF. A COOP designation is needed if the capability is expected by USSF for initial operations of SV-1. The designation includes the site location, manning, and associated resources and must be designated in time to prepare and field the capability.
2.	Selection and assignment of a Launch Vehicle. Sufficient schedule is necessary to complete the launch vehicle mission design and associated spacecraft interface compliance activities for this first-of-flight mission.
Current Estimate (December 2021)	
1.	Risks identified for the Current Estimate align with the Milestone B APB Risks listed above.

Deliveries and Expenditures

Deliveries

Deliveries				
Delivered to Date	**Planned to Date**	**Actual to Date**	**Total Quantity**	**Percent Delivered**
Development	0	0	2	0.00%
Production	0	0	0	N/A
Total Program Quantity Delivered	0	0	2	0.00%

Expended and Appropriated (TY $M)

Total Acquisition Cost: 943.8
Expended to Date: 580.8
Percent Expended: 61.54%
Total Funding Years: 15
Years Appropriated: 8
Percent Years Appropriated: 53.33%
Appropriated to Date: 719.1
Percent Appropriated: 76.19%

Low Rate Initial Production

There is no LRIP for this program.

Operating and Support Costs

Total Program O&S Cost Compared with Baseline

	Current APB Objective (BY$)	Current APB Threshold (BY$)	Current Estimate (BY$)	Current Estimate (TY$)	Deviation
Total O&S ($Millions)	118.2	130.0	118.2	143.9	

O&S Cost Breakdown

Category (BY$ Million)	WSF
Unit-Level Manpower	35.705
Unit Operations	-
Maintenance	4.17
Sustaining Support	43.835
Continued System Improvements	28.81
Other	5.655
Total O&S	118.175

O&S Cost Notes

Other category includes indirect support costs which is no longer part of the CAPE OS Categories.

O&S costs include unit level manpower, unit operations, maintenance, sustaining support, continuing system improvements and indirect support. O&S cost elements include support cost for the Energetic Charged Particle sensor hosted payload. WSF will be integrated into and flown from the Naval Research Laboratory Blossom Point Tracking Facility, which is an Enterprise Ground Services (EGS) compatible, unclassified operations center. A backup EGS compatible operations center will be installed at a TBD location.

The O&S cost estimate assumes WSF is ready to operate in month end November 2023 and initial O&S activities will start in November 2023. The system has a 5-year service life which will continue to provide coverage until November 2028. If the option for SV-2 is exercised, coverage will extend to 2032. If the option for SV2 is not exercised, the O&S estimate will be revised to account for only one SV.

The estimate also assumes SVs will have Interim Contractor Support (ICS) for 18 months after each launch, which will include factory/reachback support, software updates and 50% onsite satellite operations center support, with an option for an additional 12 months. ICS will reduce costs in FY 2024-2025 and FY 2027-2029.

Unit-Level Manpower assumes a mixture of Air Force and contractors to perform operations, unit-level maintenance, as well as any administrative, security, logistics, safety, engineering, or other mission support functions at the unit level.

Maintenance costs for depot level reparables are estimated based on a factor of the hardware investment costs.

Sustaining Support costs provide for sustaining engineering and program management at both the Program Office and contractor facilities.

Costs of hardware technical refresh and software maintenance post-ICS will be provided through Contractor Logistics Support.

Indirect support activities that cannot be directly attributable to the system (installation support, etc.) are estimated using approved OSD and Air Force Cost Analysis Agency factors.