SPACE BASED INFRARED SYSTEMS (SBIRS) HIGH COMPONENT SINGLE ACQUISITION MANAGEMENT PLAN

30 June 2002

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SPACE BASED INFRARED SYSTEMS HIGH COMPONENT

SINGLE ACQUISITION MANAGEMENT PLAN (SAMP)
30 June 2002

This Single Acquisition Management Plan (SAMP) for the Space Based Infrared Systems (SBIRS) High Component was prepared in accordance with the SAF/AQXA document, dated 16 May 2001, Subject: *Air Force Single Acquisition Management Plan Guide*. This SBIRS High SAMP supersedes all previous SBIRS System of Systems SAMPs.

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The Acquisition Strategy is approved. The acquisition should proceed as described.

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TABLE OF CONTENTS

SPACE BASED INFRARED SYSTEMS HIGH COMPONENT i

1. EXECUTIVE SUMMARY 1-1

1.1 SBIRS Requirement 1-1

1.2 Background / Situation 1-1

1.3 SAMP Synopsis 1-2

1.4 Waivers / Deviations / Certifications 1-2
1.4.1 SBIRS Compliance with the Joint Technical Architecture 1-3
1.4.2 SBIRS High Compliance with the ABM Treaty 1-3
1.4.3 SBIRS High Compliance with H.R. Report 106-371 1-3
1.4.4 10 U.S.C. 2433 Certification 1-3
1.4.5 ITW/AA Certification 1-3

2. SBIRS MISSION AND REQUIREMENTS 2-1

2.1 Introduction 2-1

2.2 Source Documents 2-1
2.2.1 Mission Need Statement 2-1
2.2.2 Capstone Requirements Document 2-1
2.2.3 Operational Requirements Document 2-1
2.2.4 Threat Assessment 2-1
2.2.5 Independent Cost Assessment/Estimate (ICA/E) 2-1
2.2.6 Manpower Estimate Report (MER) 2-1
2.2.7 Cost Analysis Requirements Description (CARD) 2-1
2.2.8 Command, Control, Communications, Computers, Intelligence (C4I) Support Plan 2-2
2.2.9 Acquisition Program Baseline 2-2
2.2.10 Test and Evaluation Master Plan 2-2

2.3 Operational Mission Description 2-2
2.3.1 Missile Warning 2-2
2.3.2 Missile Defense 2-3
2.3.3 Technical Intelligence 2-3
2.3.4 Battlespace Characterization 2-3

2.4 Systems Engineering Strategy 2-3
2.4.1 SBIRS Requirements Evolution 2-3
2.4.2 Requirements Allocation Process 2-4

2.5 Requirements & Performance Parameters 2-4

2.6 System Description 2-5

2.7 Concept of Operations 2-6

2.8 Support Concept 2-6

2.9 SBIRS Test Strategy *2-7*

3. PROGRAM SUMMARY **3-1**

3.1 History *3-1*
3.1.1 RESERVED 3-1
3.1.2 Analysis of Alternatives 3-1

3.2 Acquisition Life Cycle Phase *3-2*

3.3 Schedule *3-2*

3.4 Meeting the User's Needs *3-2*
3.4.1 Integrated Product Team 3-3

3.5 Joint Program Management *3-3*

3.6 Host Participation *3-4*

3.7 Allied Participation *3-4*
3.7.1 International Considerations 3-4

4. PROGRAM MANAGEMENT **4-1**

4.1 Management Philosophy *4-1*
4.1.1 Applying Total System Performance Responsibility 4-1
4.1.2 Management Insight 4-1
4.1.3 Acquisition Reform Initiatives 4-2

4.2 Management Oversight *4-2*
4.2.1 Oversight Boards 4-2
4.2.1.3 SBIRS PEO Review 4-3
4.2.2 Chain of Command 4-3
4.2.3 Execution Reviews 4-4

4.3 Management Processes *4-4*

4.4 Management Reports *4-4*

5. BUSINESS STRATEGY **5-1**

5.1 Evolution Of Acquisition Approach *5-1*

5.2 General Considerations For The Acquisition Strategy *5-1*
5.2.1 Funding 5-1
5.2.2 Program Office Staffing and Support Contractors 5-1
5.2.3 Information Sharing and DoD Oversight 5-2
5.2.4 Government Property in the Possession of Contractors (GPPC) 5-3
5.2.5 Tailoring and Streamlining Plans 5-3
5.2.6 Planning for Simulation-Based Acquisition (SBA) and Modeling and Simulation (M&S) 5-3
5.2.7 Independent Expert Review of ACAT I-III Software Intensive Programs 5-3
5.2.8 Open Systems 5-4

5.2.9 Information Technology Supportability 5-4

5.3 Business Strategy *5-4*
5.3.1 Competition 5-4
5.3.2 Contract 5-5

6. RISK MANAGEMENT 6-1

6.1 SBIRS High Risk Management Program *6-1*
6.1.1 Risk Identification. 6-1
6.1.2 Risk Assessment 6-1
6.1.3 Risk Handling 6-1
6.1.4 Risk Monitoring and Reporting 6-1

6.2 SBIRS High Risk Assessment *6-2*
6.2.1 Cost Risks 6-2
6.2.2 Schedule Risks 6-3
6.2.3 Technical Risks 6-3
6.2.4 Technology and Manufacturing Risks 6-3

7. COST AND PERFORMANCE MANAGEMENT 7-1

7.1 Acquisition Program Baseline Summary *7-1*

7.2 SBIRS Budget *7-1*

7.3 Program Office Estimate (POE) *7-1*
7.3.1 Cost as An Independent Variable 7-2

7.4 Manpower Estimates *7-2*

7.5 Cost Management *7-2*

8. SUPPORT CONCEPT 8-1

8.1 Life Cycle Support Strategy *8-1*
8.1.1 Support Documentation 8-1
8.1.2 SBIRS Integrated Logistics Support (ILS) 8-1

8.2 Human Systems Integration *8-2*

8.3 Environmental Safety and Occupational Health (ESOH) *8-2*
8.3.1 ESOH Strategy 8-2
8.3.2 Environmental Analysis Summary 8-2

8.4 SBIRS Operational Safety, Suitability and Effectiveness (OSS&E) Plan *8-3*

8.5 Demilitarization and Disposal Planning *8-3*

8.6 SBIRS Intelligence Support Plan *8-3*

8.7 Training *8-4*

8.8 Warranties *8-4*
8.8.1 SBIRS High Warranties 8-4

9. TEST APPROACH **9-1**

9.1 Test and Evaluation Master Plan (TEMP) *9-1*

9.2 Integrated Test and Evaluation Plan (ITEP) *9-1*

9.3 SBIRS Test Strategy *9-1*

Appendix A, Bibliography **A-1**

Documents incorporated by reference into this SAMP

Annex A Budget Profile for SBIRS High

Annex B Acquisition Program Baseline for SBIRS High

Annex C Test and Evaluation Master Plan

1. EXECUTIVE SUMMARY

1.1 SBIRS Requirement

The Commander, United States Space Command requires survivable and endurable space and missile warning/defense resources to support the North American Aerospace Defense Command (NORAD) Integrated Tactical Warning and Attack Assessment (ITW/AA) system and Theater Event System (TES) mission and responsibilities. The Commander, United States Space Command also needs to provide the President, the Secretary of Defense, other unified commanders, and allied commands worldwide with missile warning and missile defense information through all levels of conflict. In addition, the Commander, United States Space Command is required to support Technical Intelligence (TI) and Battlespace Characterization (BSC) users with data to make assessments and recommendations that allow warfighters to accomplish their combatant roles and missions. The Mission Needs Statement (MNS) for an Advanced Tactical Warning /Attack Assessment Sensor was validated by the Joint Requirements Oversight Council (JROC) and documented in JROC Memorandum 015-89.

The Space Based Infrared Systems (SBIRS) program satisfies the requirements delineated in the SBIRS Operational Requirements Document (ORD), dated 15 August 1996, with Annex, dated 16 March 2001. The baseline architecture for SBIRS includes space elements in Highly Elliptical Orbit (HEO), Geosynchronous Earth Orbit (GEO), and Low Earth Orbit (LEO), ground facilities at CONUS and overseas locations, and associated communication links. The SBIRS High and Low component programs are complementary but not interdependent. Each program meets a set of stand-alone mission needs; each contributes to satisfaction of the overall SBIRS ORD. The SBIRS High Requirements Allocation Document (RAD) identifies specific requirements allocated to the High program and serves as the "test to" document for Initial Operational Test and Evaluation (IOT&E).

The High Component consists of four GEO satellites (plus one spare), two hosted HEO payloads (platforms provided by another organization), and associated ground elements. A fifth GEO satellite will be acquired as a spare, and launched when needed. The SBIRS High Component Program is an Acquisition Category IC program.

1.2 Background / Situation

The Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) approved the SBIRS High Milestone II decision in an Acquisition Decision Memorandum (ADM), dated 03 October 1996. SBIRS High is in the Engineering and Manufacturing Development (EMD) phase of the program which includes the development and launch of five GEO satellites and two HEO payloads. Since contract award, the program has encountered technical difficulties, schedule delays and cost increases. While significant technical progress has been made, as evidenced by Increment 1 Initial Operational Capability (IOC) declaration and sensor payload test results, the ability to achieve the program's approved Acquisition Program Baseline (APB) cost and schedule parameters became questionable during the Spring / Summer 2001. As a result, the SBIRS Program Office conducted a preliminary Estimate at Complete (EAC) analysis in the Fall of 2001. This analysis was the first step in the process to capture a realistic estimate of the total program costs. The findings suggested a potential RDT&E cost growth in excess of $2B and schedule delays of 18-24 months. The System Program Director

(SPD) briefed the results to the Secretary of the Air Force (SECAF), Chief of Staff Air Force (CSAF), and USD(AT&L) during the week of November 5, 2001. On November 16, 2001, the SPD reported a likely Nunn-McCurdy breach, which was subsequently reported to Congress in December 2001.

USD(AT&L) conducted program reviews during the period December 2001 through April 2002, to review program options, and cost, schedule and technical performance. Since the breach involved a Program Acquisition Unit Cost above the 25% threshold, in order to complete the High program, the Defense Acquisition Executive (DAE) was required to certify to Congress that: 1) the program is essential to national security; 2) there are no alternatives to the program that provide the same military capability at less cost; 3) the new cost estimates are reasonable; and 4) program management is adequate to control costs. A program review on April 26, 2002 provided the Defense Acquisition Executive (DAE) with sufficient information to complete the Nunn-McCurdy certification activities. The Acquisition Decision Memorandum (ADM) documenting his certification also directed that a revised acquisition strategy be approved by the end of August 2002.

Since the identification of the cost and schedule issues, several programmatic changes have been implemented. New program schedules have been developed. Ground software development has been replanned to deliver capability in an incremental approach. Changes in personnel, organizational structures and management processes, both within the contractor and system program office, have been implemented.

1.3 SAMP Synopsis

This SAMP documents the revised acquisition strategy, management philosophy and structure. In addition, it addresses, at the strategic level: the program requirements; the development / deployment strategy; cost, performance and risk management; the logistics concept; and the test approach. It generally follows the SAMP format prescribed in the Air Force Single Acquisition Management Plan Guide, dated May 16, 2001. The elements of the acquisition strategy, as outlined in DoD500.2-R, dated June 2001, can be found in the applicable sections of this document. Because the program is in the EMD phase, some portions of the SAMP guidelines do not apply and will not be addressed in this revision. The SBIRS SAMP, dated October 1, 1996 reflects the original source selection strategy.

The baseline SBIRS program, as described in this document, includes HEO 1 payload delivery to the host in February 2003 for satellite integration. The first GEO satellite will be available for launch processing in March 2006 with planned first launch in October 2006. Ground functionality will be delivered in increments. The program includes two major contract options planned to be exercised in FY 2004: 1) the procurement of GEO satellites 3-5; and 2) the equipment, fit-up, and certification of the Mission Control Station Backup (MCSB) facility planned for Schriever AFB.

1.4 Waivers / Deviations / Certifications

No waivers or deviations are required to conduct this program. Certifications are listed below.

1.4.1 SBIRS Compliance with the Joint Technical Architecture

The SBIRS High program was not awarded with contractual or ORD requirements to comply with the Joint Technical Architecture (JTA) and therefore is only partially compliant. The SBIRS High Call for Improvements (7 May 1996) and SBIRS ORD (15 Aug 1996) were developed and released prior to the effective date of the JTA implementation memorandum (22 Aug 1996). Subsequent to contract award, at the request of SAF/AQ, SBIRS conducted a preliminary internal compliance assessment against JTA profiles. The preliminary assessment was forwarded to SAF/AQ, SAF/AQII, and AFPEO/SP during October 1997.

1.4.2 SBIRS High Compliance with the ABM Treaty

On 16 September 1999, the Under Secretary of Defense for Acquisition and Technology certified that the SBIRS High Program is compliant with the ABM Treaty. The United States withdrew from the ABM Treaty, effective 13 June 2002.

1.4.3 SBIRS High Compliance with H.R. Report 106-371

On 18 January 2000, the Secretary of Defense certified to Congress that that the SBIRS High production program complies with all DoD full funding policies (including the policy against funding more than 20% of the end-item cost using advance procurement). Subsequently, advanced procurement planned for FY 02 was eliminated by Congressional action. Current plans call for advance procurement in FY 04 and full funding in FY 05. This strategy continues to comply with DoD full funding policies.

1.4.4 10 U.S.C. 2433 Certification

The SBIRS High program reported a likely Nunn-McCurdy Program Acquisition Unit Cost (PAUC) breach in November 2001. Following Air Force coordination, Congress was notified of the breach on December 31, 2001. Subsequently, the program was determined to also have an Average Procurement Unit Cost (APUC) breach and the Congress was notified of this on 26 April 2002. The Under Secretary of Defense for Acquisition, Technology, and Logistics complied with the statutory requirements and submitted a written certification to Congress on May 3, 2002.

1.4.5 ITW/AA Certification

The Commander, United States Space Command is responsible for the integrity of the ITW/AA System and the TES. The certification requirements and processes are specified in the NORAD/USSPACE Instruction 10-12. SBIRS High Increment 1 capability was certified by HQ USSPACECOM/J6C on December 6, 2001. The Interim Mission Control Station Backup (IMCSB-1), Multi-mission Mobile Processors (M3Ps), and Increment 2 capabilities will be certified at a later date. The SBIRS Test and Master Plan (TEMP) contains additional information on future certification activities for SBIRS High.

2. SBIRS MISSION AND REQUIREMENTS

2.1 Introduction

SBIRS is a consolidated, cost-effective, flexible system designed to meet United States' non-imaging, infrared (IR) global surveillance needs through the next several decades. It satisfies the requirement to provide the DoD and the Intelligence Community with a single non-imaging space based infrared program that will meet the needs of four broad mission areas: missile warning, missile defense, technical intelligence and battlespace characterization.

2.2 Source Documents

The authoritative source documents for SBIRS are listed below.

2.2.1 Mission Need Statement

Tactical Warning/Attack Assessment Mission Need Statement (JROCM 015-89) dated 04 April 1989.

2.2.2 Capstone Requirements Document

SBIRS Capstone Requirements Document (CRD) dated 22 April 1996.

2.2.3 Operational Requirements Document

The SBIRS High requirements baseline flow from the SBIRS ORD dated 15 Aug 1996. The SBIRS ORD was revalidated by the JROC in January 2002. An updated SBIRS System of Systems ORD reflecting SBIRS Low PDRR trade studies was published in April 2002. Potential "smart upgrades" for SBIRS High were identified in the April 2002 ORD, but are currently unfunded.

2.2.4 Threat Assessment

The SBIRS System Threat Assessment Report (STAR), first validated in September 1996, addresses threats for all IR space based surveillance systems. The STAR has since been updated and revalidated in July 1998 and June 2000. The STAR will continue to be updated as the threat evolves. Specific descriptions of the target classes/types and system specific threats are found in the ORD. SBIRS threats include nuclear and jamming environments.

2.2.5 Independent Cost Assessment/Estimate (ICA/E)

The original SBIRS High ICE is dated 10 Sep 1996. In support of the Nunn-McCurdy certification process, the SPO in conjunction with the Air Force Cost Agency developed a revised Service Cost Position (SCP). Additionally, the OSD CAIG conducted an independent cost assessment to support the April 2002 DAE Review. By ADM direction, the OSD CAIG assessment forms the basis for AF budgeting and the APB.

2.2.6 Manpower Estimate Report (MER)

The SBIRS MER estimates SBIRS manpower requirements. A recent SBIRS Manpower Assessment was developed and it was determined that adequate personnel resources exist in the Future Years Defense Program (FYDP). Therefore no update to the SBIRS MER is required.

2.2.7 Cost Analysis Requirements Description (CARD)

The CARD contains a baseline system description for cost analysis and estimating purposes. The SBIRS High CARD was updated in February 2002. This update reflects the baseline

approved in January 2002 by the SPO Program Management Board (PMB). The SPO will maintain the currency of the CARD with yearly updates.

2.2.8 Command, Control, Communications, Computers, Intelligence (C4I) Support Plan
The SBIRS SPO prepared a C4I Support Plan which identifies, describes, and plans the support necessary to ensure successful SBIRS C4I interfaces. This plan was prepared in accordance with DoD 5000.2-R and OSD/C3ISR guidance. In accordance with CJCSI 3170.01, the SBIRS C4I Support Plan shall be reviewed and updated, as necessary, at every SBIRS milestone decision or in response to changes to the SBIRS concept of operations or intelligence requirements.

2.2.9 Acquisition Program Baseline
The SBIRS High APB was revised to incorporate current cost and schedule projections developed during the 2001 – 2002 rebaselining activity. In compliance with the ADM, dated May 02, 2002, an updated APB was submitted through the Air Force Program Executive Officer for Space to the Under Secretary of the Air Force for approval. The APB, which is classified, is incorporated by reference as Annex B to this SAMP.

2.2.10 Test and Evaluation Master Plan
The SBIRS TEMP identifies, describes, and plans the overall structure and objectives of the SBIRS test and evaluation program. It identifies developmental and operational test activities, as well as ITW/AA and interoperability certification activities. The TEMP was prepared in accordance with DoD 5000.2-R guidance. The TEMP focuses on the overall structure, major elements, and objectives of the test and evaluation program and is consistent with the SBIRS acquisition strategy. It provides a roadmap for integrated simulation, test and evaluation plans, schedules, and resource requirements necessary to accomplish the test and evaluation program. The TEMP, which is unclassified, is incorporated by reference as Annex C to this SAMP. This plan was last updated March 22, 2001. Coordination was held up by BMDO, now Missile Defense Agency (MDA), pending their program restructure. The TEMP revision is scheduled for early FY2003 and will reflect the current program structure and schedule.

2.3 Operational Mission Description
SBIRS contributes to four mission areas: Missile Warning (MW), Missile Defense (MD), Technical Intelligence (TI), and Battlespace Characterization (BSC). SBIRS information is used to satisfy not only the immediate near real-time needs of the warfighters, but also for the longer term capability to protect against an evolving threat. The primary customer is Air Force Space Command who acts as the agent for all users / stakeholders.

2.3.1 Missile Warning
SBIRS provides reliable, unambiguous*, timely, and accurate missile warning information to the President of the United States, the Secretary of Defense, Unified Combatant Commanders, and other users. This mission includes both global and theater requirements to provide strategic and theater ballistic missile warning in support of passive defense and force posturing.

*Note: Unambiguous warning is a valid mission level requirement which to date has been accomplished primarily through dual phenomenology and human-in-the-loop concepts of operations. SBIRS will contribute to but will not, by itself, provide unambiguous warning.

2.3.2 Missile Defense
SBIRS provides reliable, accurate, and timely information to defensive systems. This mission includes both strategic and theater functional requirements to enable active missile defense and attack operations against hostile forces.

2.3.3 Technical Intelligence
SBIRS provides reliable, accurate, and timely IR target signature and threat performance data to warfighters, the intelligence community, weapon system developers, and other users. This data may be used for target classification and identification templates and algorithm development for SBIRS operational missions. SBIRS also monitors activities and provides information to policy makers and other users on observed military tactics, new foreign technology development, arms control compliance, and proliferation activities.

2.3.4 Battlespace Characterization
SBIRS provides reliable, accurate, and timely data to enhance situational awareness, non-ballistic missile threat warning, decision support, battle damage assessment and intelligence information (for land, sea, air, and space) for the Unified Combatant Commanders, Joint Task Force (JTF) Commanders, and other users. Battlespace Characterization (BSC) applies the SBIRS product to the immediate need of the warfighters.

2.4 Systems Engineering Strategy
The strategy is predicated on a government/contractor team functioning under a unified systems engineering approach. This approach is centered on 1) performance-based contracting where government requirements are stated in terms of operational needs, 2) a prime contractor who has responsibility for system integration, and 3) SPO responsibility for total systems performance. The SBIRS High prime contractor is responsible for management, integration, and oversight of SBIRS High performance, either through direct acquisition of system components or management of allocated requirements and interfaces with other government-acquired components. System performance depends on components complying with their allocated performance requirements and interface definitions.

The SBIRS Program Office maintains oversight of the entire systems engineering life cycle. This includes oversight of requirements analysis, test and evaluation (T&E), configuration management, human factors, system security, safety, logistics, reliability and maintainability (R&M), open systems concept, producibility assessment, and mitigation of health hazards and environmental impacts. This is achieved by accessing contractor data, information, plans, and reports that the contractor would generate in the normal course of conducting the program. The intent is not to require Government-specific information or formats, but to rely on the contractor's management system. The use of IPTs exposes contractor information to the Government and assures the necessary insight into contractor performance, including risk assessment information and data for Government decision-makers.

2.4.1 SBIRS Requirements Evolution
The SBIRS top-level performance requirements were developed during the 1994 Summer Study and captured in the USSPACECOM SBIRS Capstone Requirements Document (CRD) that was JROC-validated in January 1995. From this CRD, a draft System of Systems SBIRS ORD was developed by Air Force Space Command for use by the competing SBIRS High contractors as a starting point for conducting cost/performance trade studies during Pre-EMD. Throughout Pre-

EMD, Requirements Review Group (RRG) meetings with representatives from the user community, AFSPC, AFOTEC, and the program office were held to review the results of the contractor cost/performance trade results and to come to closure on a set of balanced and affordable performance requirements. Consensus was reached, and the resulting revised requirements were presented and accepted at a Senior Warfighters Forum (SWarF) in late January 1996, incorporated in an updated CRD, and approved by the JROC in April 1996. The associated 15 Aug 1996 SBIRS ORD was then prepared by AFSPC, validated by the JROC, and used as the basis for the SBIRS High Component EMD phase. This ORD was subsequently re-validated by the JROC in January 2002 and republished in April 2002.

2.4.2 Requirements Allocation Process

The 1996 SBIRS ORD, Attachment C, allocated operational requirements to the SBIRS High Component. Furthermore, allocations to Increments 1 and 2 and additions/modifications/clarifications to SBIRS High requirements were documented in the SBIRS High Technical Requirements Document (TRD), April 1996. The SBIRS High Technical Requirements Document (TRD) is a Government-developed requirements roadmap that collected and clarified the various 1996 ORD requirements, as well as the DSP and ALERT ORDs. The TRD provided requirements clarifications, as well as requirements applicability for the SBIRS/DSP/ALERT ORDs, as they relate to Increments 1 and 2. In the TRD, DSP and ALERT-derived requirements are applicable only to Increment 1.

2.4.3 Requirements Allocation Document (RAD)

The TRD, combined with the SBIRS/DSP/ALERT ORDs and subsequent AFSPC/DR requirements clarifications, form the basis of the RAD. For Increments 1 and 2, the RAD is developed in an IPT environment with participation by AFSPC, the SBIRS Program Office, the test community, and the High prime contractor. AFOTEC uses the RAD as the operational requirements baseline for Increment 1 and Increment 2 OT&E. Since the RAD serves as a "test-to" document for Increments 1 and 2, it is signed by the SBIRS Program Director, HQ AFSPC/DR, and HQ AFOTEC/TS. The Increment 1 RAD is complete; the Increment 2 RAD will be consistent with CDR closeout activities in September 2002. Subsequent updates are scheduled through 2005 to resolve remaining issues. Once approved by the government, the SBIRS High contractor is tasked to maintain the document.

2.5 Requirements & Performance Parameters

The table below identifies the major functional requirements in support of the mission areas. The Key Performance Parameters (KPP) values are classified, but the table highlights the relationship between the KPPs, requirements, and missions.

Mission	Description of Requirement (1996 ORD)	**ORD Key Performance Parameters,** Other High Utility Parameters
Missile Warning – North Am	*Continuous Coverage*	**Coverage**
	Detect and provide on time Report of worst case Strategic Missile launched from anywhere	**Coverage**
		Min Threat
		Report Time
		Probability Of Warning
National Missile Defense	*Detect Strategic Threats from Apriori Locations with very High Confidence*	Probability of Warn
		Probability of Not Missing a Launch
	Track Strategic Boosters accurately to Burnout	State Vector
Missile Warning / Defense – Theater	*Detect and provide on time Report of worst case Theater Missile launched from designated Theater(s)*	**Coverage**
		Min Threat
		Report Time
		Probability Of Warning
	Determine Theater Missile launch Point	Launch Point
	Predict Theater Missile Impact Point	Impact Point
	Estimate Theater Missile State Vector at Burnout	State Vector
	Direct Satellite Downlink to Theater Users	**Data Availability**
Technical Intelligence	*Detect and provide Reports of worst case Intel Targets Globally and in Focus Areas*	**Coverage**
		Min Threat
		# of Focus Areas
		Probability Of Collect
	Provide Raw sensor data to TI analysts	**Data Availability**
Battle Space Characterization	*Provide data on real time events to Theater users*	**Data Availability**
Mission Simultaneity		

2.6 System Description

SBIRS is comprised of peacetime, survivable, and endurable space and ground elements. The SBIRS High component offers the opportunity for synergy between related, but largely independent Overhead Non-imaging Infrared (ONIR) satellite systems. It provides timely and accurate missile warning and missile defense information to the President, Secretary of Defense, other unified commands, and allied commands. Additionally, SBIRS supports technical intelligence (TI) and battlespace characterization (BSC) users with data to make assessments and recommendations to assist warfighters in their combatant roles and missions. SBIRS High will be developed and become operational in two increments, see Figure 2-1:

Increment 1 -- Consolidates and replaces Defense Support Program (DSP) ground assets to support continuing space operations of the remaining DSP satellites and provide an infrastructure for new SBIRS space assets. Increment 1 reached its Initial Operational Capability in December 2001. The SBIRS Increment 1 Ground Segment consolidates multiple DSP processing stations and Attack and Launch Early Reporting to Theater (ALERT) assets into a single CONUS Mission Control Station (MCS) (includes the Relay Ground Station- MCS (RGS-M1) equipment). The Increment 1 architecture includes an Interim MCS Backup (IMCSB), along with a Survivable Mission Control Station (SMCS-1) and its associated Survivable Relay Ground Station (SRGS-1). It also includes overseas relay ground stations—the European Relay Station (ERS) and Relay Ground Station-Pacific 1 (RGS-P1)—providing connectivity between the MCS and the DSP satellites that are not in view of the MCS.

Increment 2 -- Replaces the DSP space segment with a new SBIRS High constellation, (i.e. GEO Satellites and HEO payloads on hosted satellites), and its associated ground software/hardware modifications. The SBIRS High Component comprises a space segment, a ground segment, and the interfaces and support services, including the space launches (provided GFE), required to complete its mission. The current Space Segment consists of multiple DSP satellites. The High Component Space Segment, when fully constituted (at completion of Increment 2), will consist of four satellites in GEO, IR sensors on two satellites in HEO, and any residual on-orbit DSP satellites. This new space segment provides all the DSP functionality while improving radiometric sensitivity and metric performance and adding new missile defense, technical intelligence, and battlespace characterization capabilities. The Increment 2 ground segment will add ground capabilities to support transition, launch and mission operations of GEO satellites and HEO IR sensors. The Increment 2 ground stations are the MCS, MCSB, RGS-H, RGS-M2 (and its backup RGS-B), RGS-Europe (RGS-E), RGS-P2, and the Multi-Mission Mobile Processors (M3P). The M3Ps will replace the Army's legacy Joint Tactical Ground Stations (JTAGS) in support of theater operations, as well as the Air Force's Mobile Ground Terminals (MGT) for survivable and endurable command and control capability.

2.7 Concept of Operations

Air Force Space Command (AFSPC) operates and maintains the SBIRS system from the MCS at Buckley Air Force Base, CO. The Commander, United States Space Command retains Combatant Command (COCOM) authority. Operations Control (OPCON) is delegated to the 14th Air Force (SPACEAF) for Continental United States (CONUS) based assets. SPACEAF delegates responsibility for routine day-to-day operations and status monitoring of the SBIRS to the 21st Space Wing (21 SW). OPCON for time-sensitive operations is delegated to the Missile Warning Center (MWC) in Cheyenne Mountain Air Force Base. For time-sensitive operations, the MWC simultaneously directs the MCS and notifies SPACEAF of the directed action. The MWC also provides a coordinated implementation of the SBIRS contribution to the Tactical Event System (TES) to meet supported theater combatant commander tasks. OPCON of assets deployed to an Outside Continental United States (OCONUS) theater (e.g., theater mobiles) may be delegated to the supported theater combatant commander.

2.8 Support Concept

The objective of the SBIRS support concept and policy is to provide responsive and cost-effective logistics support to maintain the SBIRS missions. Standard DoD, Air Force and Army logistic support concepts are employed to the maximum extent possible. Specialized logistic

support procedures will be employed where they are cost beneficial and more responsive to the needs and priorities of the SBIRS program. The Ground Segment Sustainment Plan defines the system support requirements and the logistic support methodology. Additionally, an individual sustainment plan has been prepared to outline the specific logistic and sustainment concept for each segment of the SBIRS High ground system. Details of the support concept are found in Section 8 of this document.

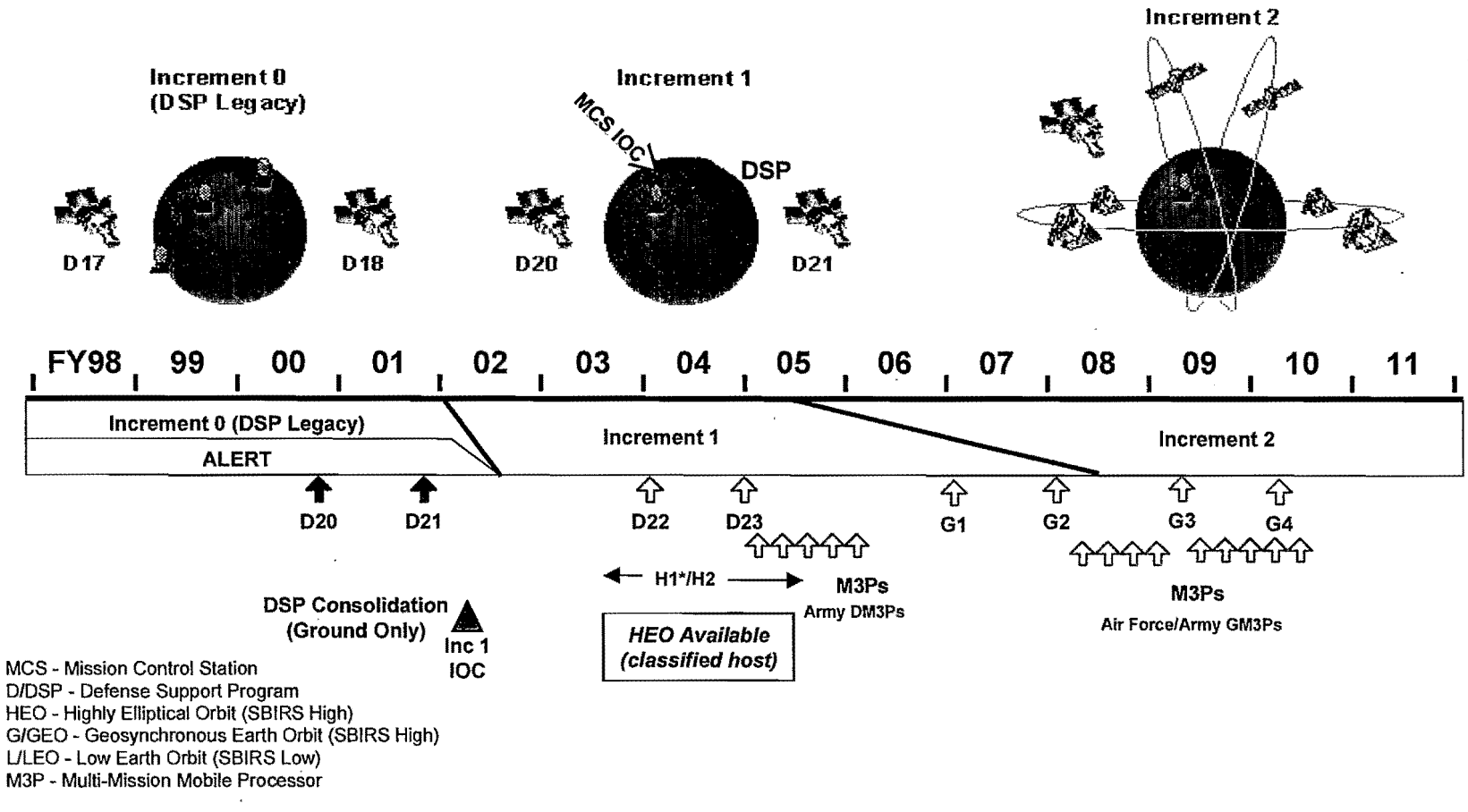
2.9 SBIRS Test Strategy

The test concept for Increments 1 and 2 will include both contractor-led and government-led efforts. The SBIRS High contractor is responsible for the conduct of Developmental Testing spanning component through system level. The Government is responsible for the conduct of Operational Testing (including joint testing for M3Ps) to include Operational Assessments (OAs), Operational Utility Evaluations (OUEs), and other operational test and evaluation events. The Government will also conduct Trial Periods (TPs) and other test activities, as necessary, to support United States Space Command mission certifications and interoperability certifications. Prior to the start of Operational Testing, the Government and the contractor will conduct combined Developmental Test/Operational Test (DT/OT). Testing will be conducted whenever the contractor delivers incremental capabilities to the operational system.

Functionally, the test concept for Increment 2 will mirror the "Evolutionary Acquisition" approach of the program as a whole. This evolutionary idea incorporates a streamlined strategy that fields a core capability with a modular architecture, and provides for additional future increments in capability upgrades. To be consistent with this modular framework, the Integrated Management Plan has been revised to identify selected events as effectivities, which are defined as points in time at which a new system capability is provided to the user. These effectivities are, in turn, supported by a series of defined lower level activities. The timeliness and completeness of these effectivities as well as other related program events will provide key indicators of contractor performance. Incremental system verification reviews or Effectivity Verification Reviews (EVRs) will be completed satisfactorily prior to acceptance of individual effectivities. These EVRs will verify sufficiency of the design, operational threads, and interfaces.

In addition to the standard product teams and working groups, SBIRS established a Combined Task Force (CTF) at the contractor's facility. The CTF is part of the SBIRS SPO and is responsible to thoroughly test and operate new capabilities prior to turnover to the operational environment. For ground system deliveries, the CTF staff will support both the developmental tests conducted by the contractor and the Operational Utility Evaluations (OUEs) conducted by AFOTEC (formal IOT&E events are accomplished using operational crews from the AFSPC 2nd Space Warning Squadron). For spacecraft, the CTF staff will operate the ground systems to accomplish the launch and early on-orbit checkout activities. In short, the CTF will bridge the gap between research and development activities and operations to ensure both are successfully executed.

Figure 2-1. SBIRS Incremental Deployment Strategy



MCS - Mission Control Station
D/DSP - Defense Support Program
HEO - Highly Elliptical Orbit (SBIRS High)
G/GEO - Geosynchronous Earth Orbit (SBIRS High)
L/LEO - Low Earth Orbit (SBIRS Low)
M3P - Multi-Mission Mobile Processor

SBIRS Adds New Satellites & Sensors to an Evolving Ground Segment

3. PROGRAM SUMMARY

3.1 History

The initiation of the SBIRS program followed several other programs (Advanced Warning System, Boost Surveillance and Tracking System, Follow-on Early Warning System) aimed at replacing the DSP legacy system. Two SBIRS pre-EMD contracts were awarded in August 1995, and a single award for the EMD contract occurred in November 1996.

The SBIRS High program has been restructured several times. Most notably, in 1998, the Air Force directed the delay of the GEO launches by two years. A Joint Estimating Team (JET) was chartered to develop a program restructure to implement the launch delay. This restructure was ultimately approved in January 2000. During this period, the Increment 1 ground consolidation was under development and the ground software entered test. Due to software immaturity and other concerns, testing was stopped in October 1999, ultimately resulting in a breach of the Increment 1 IOC APB date. A management assessment team was chartered to determine the reasons for the breach and identify and implement corrective actions.

The contractor initiated an Over Target Baseline (OTB) in August 2000, which implemented the Increment 1 recovery plan, lessons learned, and other risk reduction initiatives. Additionally, a new GEO spacecraft design and concept of operations was implemented into the technical baseline to recover Key Performance Parameter shortfalls. The baseline incorporated technical, cost, and schedule challenges as well as opportunities. A DAE program review was held on November 9, 2000 to: review SBIRS program schedules; approve the program initiatives to reduce schedule risk, (i.e. Interim HEO and the Combined Task Force); validate new cost projections and associated funding strategy; and obtain approval of revised APB thresholds. The overall program strategy and management initiatives were supported; however, there were remaining issues associated with cost growth and test strategy. As a result, the proposed APB was not approved because of the uncertainty associated with the SBIRS cost.

In early 2001 growing cost and schedule variances were experienced with an associated decrease in contractor management reserve. Technical issues with the HEO payload subsystems, coupled with test failures, were the primary variance drivers, but each IPT experienced cost growth. Many of the technical risks inherent in the OTB were realized, and few opportunities materialized.

The Increment 2 System Critical Design Review was held in August 2001 and formed the technical basis for a preliminary, "quick look" EAC in October 2001. Initial findings indicated substantial cost growth and schedule delays. In November 2001, the SPD projected and reported a Nunn McCurdy cost breach. Subsequently, in December 2001, the Air Force notified Congress. After reviewing the SBIRS cost growth and program status, the USD(AT&L) directed the program to support a DAE review in April 2002. This review was held on April 26, 2002 and USD(AT&L) certified the SBIRS High program against the Nunn-McCurdy criteria.

3.1.1 RESERVED

3.1.2 Analysis of Alternatives

3.1.2.1 1994 Summer Study

The Space Based Infrared Architecture Study, chartered by the Deputy Assistant Secretary of Defense for Intelligence and Security (DASD(I&S)), conducted the analysis of alternatives. The various working groups were formed in June 1994 and briefed their results to the Defense Resources Board (DRB) on 09 September 1994. The group started with 88 options, evaluated 8 options for performance and estimated the cost of 5 of those options. The selected architecture and program phasing, i.e. "High now, Low later" resulted from this analysis. This study is also called the "1994 Summer Study."

3.1.2.2 Nunn-McCurdy Certification

To support the Nunn-McCurdy certification decision process, the DAE directed the National Reconnaissance Office (NRO) to lead a study of alternatives to the SBIRS High program. The study concluded there were no alternatives to SBIRS High that would provide equal or greater capability at less cost. All alternatives were also assessed as having greater technical and schedule risk. The study results were reported at the April 2002 DAE review.

3.2 Acquisition Life Cycle Phase

The SBIRS High Component program was approved to enter into the pre-EMD phase on 8 February 1995. Two contracts were awarded on 4 August 1995 for pre-EMD competition. Approval to proceed into the EMD phase, Milestone II, was granted on October 3, 1996. A down selection was completed on November 8, 1996 with the award of the EMD contract to Lockheed Martin Missiles and Space Company (now Lockheed Martin Space Systems Company). The SBIRS High Component program is in the EMD phase with approval to procure five GEO satellites, two HEO payloads, and the associated ground command and control infrastructure and mission processing capability.

3.3 Schedule

The SBIRS High top-level schedule is shown in Figure 3-1. Detailed schedule data is contained in the Integrated Master Schedule (IMS).

3.4 Meeting the User's Needs

The SBIRS Program measures progress against the user's need through a variety of mechanisms such as design reviews, program management meetings, demonstrations and tests held throughout the development cycle. The user is integrated into all aspects of the acquisition. From a technical perspective, the Key Performance Parameters (KPP) and Technical Performance Measurements (TPM), derived from the Operational Requirement Document, are tracked throughout the system design and development effort. Technical designs or solutions that do not satisfy the user's mission requirements are reviewed for alternatives. Cost / performance trades considering military utility are addressed prior to making final design decisions.

Requirements satisfaction is demonstrated through analysis, demonstrations and test with realistic scenarios. Dedicated operational tests will evaluate operational effectiveness and suitability by resolving Critical Operational Issues (COI) derived from SBIRS operational requirements. These COIs address the user-identified critical tasks and areas of operational risk that most significantly affect mission accomplishment. The operating command develops the COIs with the Air Force Operational Test and Evaluation Center (AFOTEC) assistance and coordination. The Test and Evaluation Master Plan (TEMP) lists the COI for each increment of

the SBIRS program. Test planning details concerning these issues will be documented in the operational test plans.

3.4.1 Integrated Product Team

User expectations are addressed at different levels via the series of Integrated Product Teams (IPTs). IPTs are composed of inter-disciplinary personnel with a common goal. Membership is drawn from the SPO, the host organization, the user/operator/tester communities, OSD/Joint/Service staffs, and the contractors. The mission of all IPT members is to ensure program success. Some functional area IPTs operate on a continual basis. These include: Management; Systems Engineering, Integration and Test (SEIT); Ground; High Orbit Space Vehicle; Payload; and Cost / Financial Management IPTs. Other IPTs form and disband according to the needs of the program and the execution responsibilities during program phases.

3.4.1.1 Product and Functional Area IPT

SBIRS IPTs function in the spirit of teamwork with participants empowered and authorized, to the maximum possible extent, to make commitments for the organization or the product/functional area they represent. IPT members have the authority to make decisions concerning their areas of responsibility unless proscribed by law or regulation. Any recommendations or guidance provided by Government personnel on joint Government/contractor IPTs does not change contract requirements. The contract will require the contractor to address any perceived contract changes resulting from IPT guidance to the Contracting Officer before implementation. The contracting officer retains sole authority to change the contract.

3.4.1.2 Integrating Integrated Product Team

Procedures for the Integrating Integrated Product Team (IIPT) are contained in DoD 5000.2-R. The SBIRS IIPT is co-chaired by the SBIRS SPD and a staff member of the Office of the Assistant Secretary of Defense for C3I, with administrative support from DASD (C4ISR and Space Programs). The IIPT assures that WIPT (Working Integrated Product Team) efforts are integrated across SBIRS, and that products required by the Overarching Integrated Product Team (OIPT) or Defense Acquisition Board (DAB) are complete and coordinated. The IIPT also acts as a forum for resolving WIPT issues prior to elevating them to the OIPT. IIPT members are generally the action officers for the OIPT membership.

3.4.1.3 Overarching Integrated Product Team

The SBIRS Overarching IPT (OIPT) is conducted in accordance with DoD 5000.2-R and is chaired by the Director, Program Analysis and Integration in the Office of the DASD (C3ISR and Space Systems). The OIPT is composed of the SBIRS SPD, AFPEO/SP, appropriate Air, Navy, and Army Staff representatives, Joint Staff, DOT&E Staff, USD(AT&L) Staff, BMDO, AFSPC, CMO, Classified Host, and other appropriate OSD staff.
NOTE: With the consolidation of space under the USecAF, the IIPTs and OIPTs will be incorporated into the new DoD 5000-series documents for space acquisition programs. This transition is expected to be complete in early calendar year 2003.

3.5 Joint Program Management

The SBIRS program has not been designated a joint program, per se. However, an integral part of the SBIRS system is the development and deployment of the Multi-Mission Mobile Processors (M3Ps), which fulfill in-theater requirements of the Army Joint Tactical Ground

Station (JTAGS) ORD and the strategic, endurable requirements of the SBIRS ORD. The Army JTAGS Product Office and the Air Force SBIRS Program Office have concluded that the most cost-effective solution to satisfying both the Army in-theater processing requirements and the Air Force endurable strategic processing requirements is through a joint-interest development and acquisition of the M3P.

A Memorandum of Agreement (MOA) (13 Sep 1996) between the Air Force and the Army, signed by the Service Acquisition Executives, established a relationship to allow for exploration of joint SBIRS and JTAGS systems development, acquisition and sustainment for a common M3P to meet Air Force strategic and Army in-theater mission processing requirements. This MOA satisfied the requirements of DoD 5000.2-R, Paragraph C7.10 Joint Program Management. The objectives of this integrated approach are to ensure interoperability, achieve cost effective solutions, and minimize duplication of effort. A subordinate MOA (08 Dec 1997) between the SBIRS Program Office and JTAGS Product Office establishes a seamless relationship for coordination between SBIRS and JTAGS program offices for the development, funding, acquisition and sustainment of the M3P. It specifies responsibilities and facilitates continuing coordination between the programs for development of a common M3P.

3.6 Host Participation

The SBIRS High architecture requires involvement of classified organizations for hosting certain SBIRS elements. The acquisition approach being implemented by the SBIRS program office and the classified organizations is structured to maintain a clearly defined technical and programmatic interface with the SBIRS prime contractor. A Ground Segment Interface Control Document (ICD) and a Space Segment ICD define the critical interface requirements. A Memorandum Of Agreement (MOA), titled "Acquisition of a National Space-Based Infrared Sensor System," between the Classified Host and SAF/AQ, dated 16 Mar 95, defines responsibilities of the two organizations.

An Interface Control Working Group (ICWG) was established to facilitate the definition of a clear interface between SBIRS High and the classified host organizations. The ICWG is co-chaired by the SBIRS program office and the classified host and includes in its membership the SBIRS SPO, host representatives, HQ AFSPC, additional government members as required, and interfacing contractors as appropriate. The ICWG meets periodically as agreed by the co-chairs. The ICWG: (1) coordinates definition of the interface between the two organizations in space and ground Interface Requirements Documents (IRDs); (2) facilitates discussions between RGS hosts and AFSPC; (3) facilitates the Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E) implementation for the interface; (4) develops a classified annex to the SBIRS classification guide; (5) facilitates the acquisition of hardware and software that will be hosted by the classified host organization; and (6) develops cost estimates. The ICWG facilitates all configuration management between the SBIRS program and the classified host organization.

3.7 Allied Participation

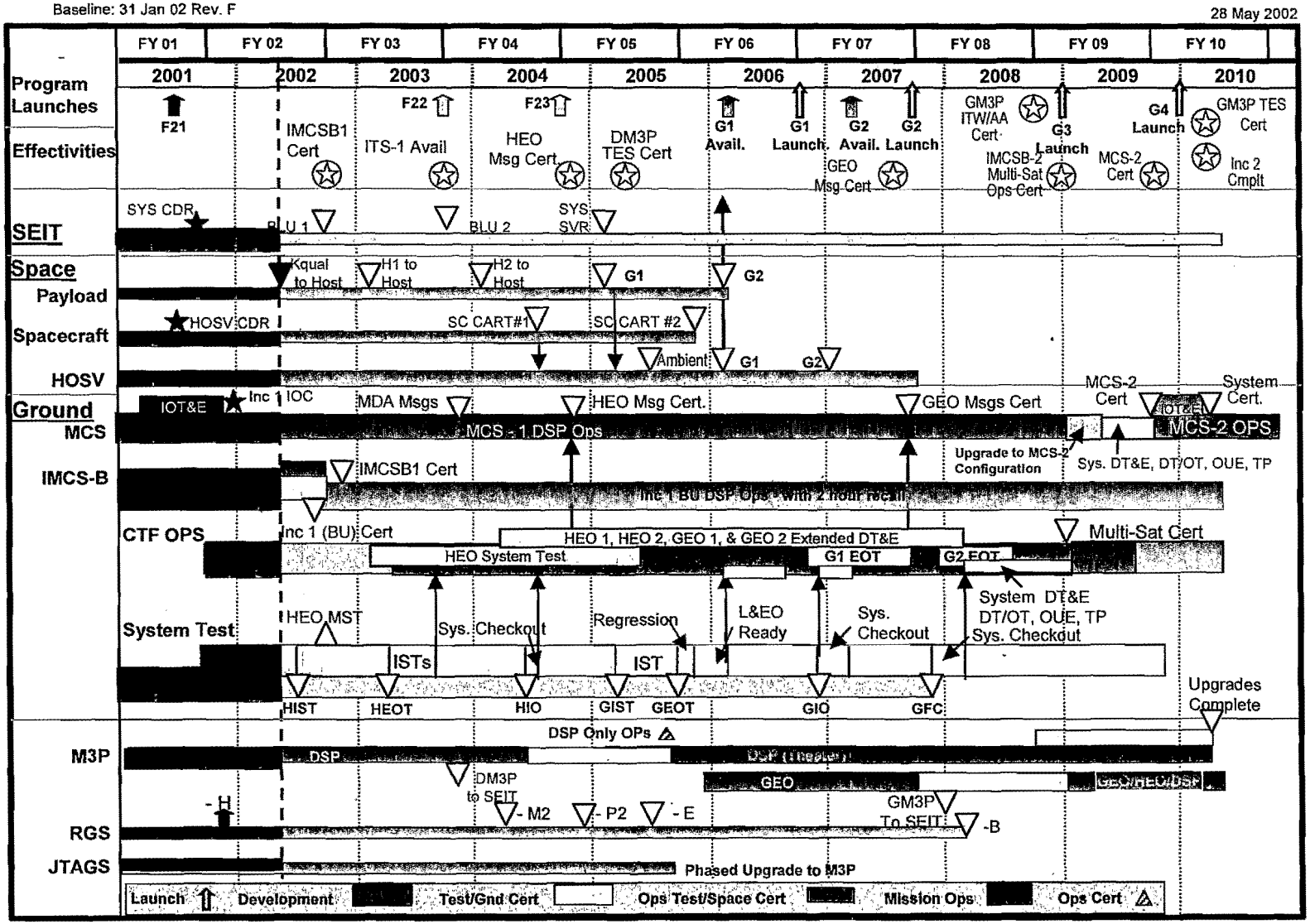
3.7.1 International Considerations

Cooperative development was considered for SBIRS High in accordance with Title 10, United States Code, Section 2350a(g), Cooperative Opportunities Document. No North Atlantic Treaty

Organization (NATO) allies or other United States of America allied countries currently field or plan to field a space based IR missile warning system. Allied efforts in acquiring space based IR systems have been limited to astronomy and environmental satellites, whose sensor and ground support systems technology do not provide a suitable industrial basis for cooperative acquisition of SBIRS. Furthermore, current Department of Defense (DoD) Foreign Disclosure Policy prevents release of the SBIRS Capstone Requirements Document and/or ORD to foreign countries in order to protect essential missile warning capabilities. However, some performance parameters and other data has been released on a case by case basis, with special regard having been given to the sensitivity of the information released. The program office has supported the release of requested information once cleared through SAF/IA. In general, large-scale cooperative development for SBIRS will not be pursued. However, small, specialized areas of cooperative research and development may be pursued, as appropriate, with allied Governments.

3.7.2 RESERVED

Figure 3-1. SBIRS Program Master Schedule



4. PROGRAM MANAGEMENT

4.1 Management Philosophy

The basis of the SBIRS management philosophy is that the government is ultimately responsible for delivering a SBIRS High system that meets the user's requirement within specified cost and schedule constraints. The SBIRS High contract is the SPO's primary mechanism for achieving program requirements. The contract implements a performance-based contracting philosophy where government requirements are stated in terms of operational performance and broad statements of objectives. This provides the contractor maximum flexibility to define the program plan content and develop a design that meets operational needs. It also gives the contractor responsibility for delivering an integrated system – as opposed to individual components.

A recent change in SPO philosophy, is the recognition that ultimate responsibility lies with the government and not the contractor. The SPO has eliminated the Total System Performance Responsibility (TSPR) clause from the contract and has created and implemented control mechanisms to manage changes to the program baseline. The restructured program plan also incorporates an incremental development approach for the ground system with evolving capability delivered to operations. This approach significantly reduces the risk of the previous plan to deliver a single turnkey solution to the warfighter at the end of the development.

The Program Management Board (PMB) is the SPD's tool to control the SBIRS baseline and to adjudicate issues requiring tradeoffs between content, cost, and schedule. Government oversight will ensure successful completion of the program, using metrics based on performance (cost, schedule, and technical). The contractors' earned value reporting and cost projections are used to meet Government oversight needs. Special emphasis is placed on requirements validation and technical content baseline control to ensure cost and schedule executability. Electronic Data Interchange (EDI) enables all team members to have electronic access to pertinent program data. Use of contractor data formats avoids imposing Government-specific reports where feasible.

4.1.1 Applying Total System Performance Responsibility

The EMD contract was awarded with a TSPR clause. However the TSPR concept has not achieved the desired result. Consequently, the clause has been removed from the contract and the program office has strengthened its role in the day-to-day management of program activities. Significant focus has been placed on defining and now maintaining a contract baseline that integrates program content, technical requirements, cost, and schedule. This approach will focus on joint government/contractor system integration responsibility, with the program office maintaining ultimate responsibility for successful program execution.

4.1.2 Management Insight

The SBIRS Program Office will maintain insight throughout the entire development process. This includes insight into requirements analysis, test and evaluation (T&E), configuration management, human factors, system security, safety, logistics, reliability and maintainability (R&M), producibility assessment, environmental impacts, and launch and early orbit test. The SBIRS management philosophy is predicated on integrated government/contractor teams functioning under a unified systems engineering approach. The Integrated Master Plan (IMP) has been restructured to provide a cross-product emphasis. Effectivities have been defined

which provide time phased operationally capabilities. Lower tiered milestones from every IPT are now tied to these effectivities. Contract management oversight and incentives will be tied to effectivity accomplishment.

The Government will use contractor data, information, plans, and reports to manage the program. The intent is minimize Government-specific information or formats, and rely on the contractor's management system. However, if the contractor's system proves ineffective the government will establish alternative processes. The use of IPTs exposes contractor information to the Government and assures the necessary insight into contractor cost, schedule, and technical performance, as well as risk assessments.

Finally, the Defense Contracts Management Agency (DCMA) supports the SPO by providing on-site plant management. DCMA ensures that the contractor systems (accounting, estimating, property, EVM, etc.) meet established standards as well as monitoring specific contract performance. The latter includes participation in CCBs, EVMS monitoring, quality assurance functions, cost proposal reviews, and government property administration. DCMA has initiated a number of improvements to increase contract oversight including increased surveillance, re-evaluation of current assessment criteria, new metrics development, and trend analysis.

4.1.3 Acquisition Reform Initiatives

At program initiation, the SBIRS SPO implemented several Acquisition Reform Initiatives; most notably, the Request For Proposal (RFP) support team to scrub requests for proposal and contract modifications; a streamlined RFP process, Integrated Product Teams and Cost as an Independent Variable (CAIV).

The SPO has most recently initiated a PMB to control the program baseline. Unique to this effort will be boarding of any future cost and schedule variances.

4.2 Management Oversight

4.2.1 Oversight Boards

A tiered oversight structure, Figure 4-1, has been established to focus senior management attention on program progress and resolution of critical program issues. The objective of these reviews is to assure management effectiveness; cost, schedule, and technical performance; and rapid program decision making. The reviews include quarterly CEO / President's meeting, bi-monthly Executive Committee meetings and monthly program reviews. Specific membership on the boards varies, but always includes senior leadership from the acquisition and operational communities, as well as industry.

4.2.1.1 Presidents Meeting

The quarterly President's Meeting provides strategic oversight. Membership includes USecAF, AFSPC/CC, and contractor's business unit presidents. Senior level representatives from other organizations are invited as dictated by the agenda topics and discussion items.

4.2.1.2 SBIRS Executive Committee

The bi-monthly executive committee provides program execution oversight, stakeholder participation and management of requirements. Performance metrics are reviewed and future program activities are discussed. Issues are prioritized and resolved. The membership is

composed of the PEO for Space, contractor's business unit president's, and senior level representatives from HQ AF Space Command, USSPACECOM, SAF/AQS, SAF/XO, CMO, NRO, STRATCOM, MDA, HQ AFMC and SPO representatives.

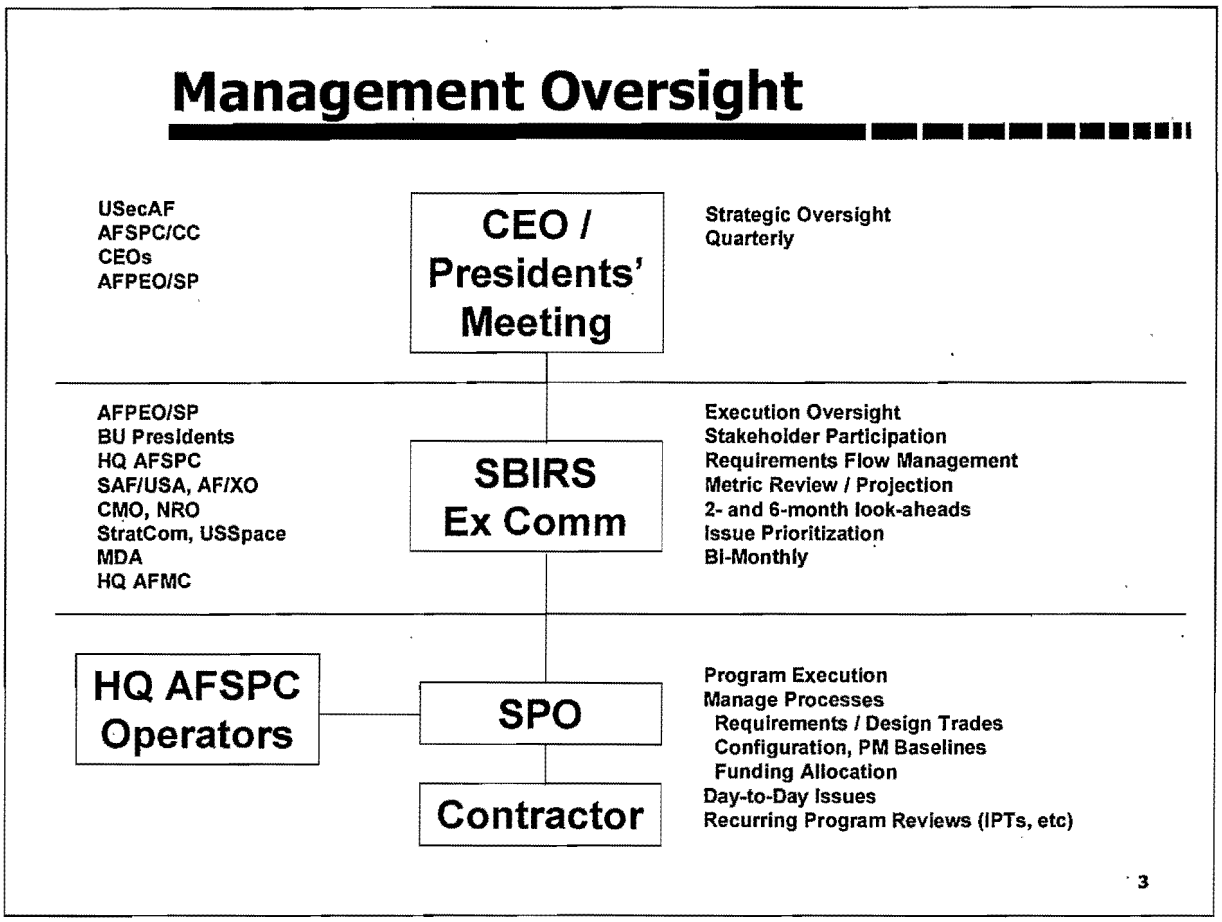


Figure 4-1. Management Oversight Structure

4.2.1.3 SBIRS PEO Review

Monthly, the PEO for Space formally reviews the funding, schedule and technical execution status of the SBIRS program with industry leaders.

4.2.2 Chain of Command

The SBIRS management structure is a single System Program Director reporting through a streamlined reporting chain with responsibility, authority, and accountability necessary for program execution. The role of the Space Based Infrared Systems Program Office is to manage the program to procure SBIRS according to the agreed-upon schedule and delivery dates, and within budget and staffing resources allocated to the program. The SBIRS SPD has authority to make decisions and allocate those resources according to the needs of the program. The SPD is responsible for communicating the program status and issues to the Program Executive Officer for Space and the Under Secretary of the Air Force. Regularly scheduled communications are supplemented by "quick-reaction" reports of major difficulties or achievements.

The Air Force management required to execute the program include the System Program Director (SPD), the Air Force Program Executive Officer for Space (AFPEO/SP), and the USecAF. The SPD manages day-to-day activities of SBIRS. AFPEO/SP oversees the overall execution of the program. The USecAF has Milestone Decision Authority (MDA) for the SBIRS High Component program.

4.2.3 Execution Reviews
The following review is in addition to the oversight reviews described in paragraph 4.2.1.

4.2.3.1 DAE Program Review
As requested, the SPD briefs the DAE on program status and issues. To prepare the OSD staff for the review, the SPD briefs the Overarching Integrated Product Team (OIPT). The SBIRS OIPT is chaired by a member from DASD (C3ISR and space programs). Membership includes representatives from the OSD staff, the Joint staff, the users and other interested agencies.

4.2.3.2 RESERVED

4.3 Management Processes
Government control of a disciplined process has been re-established. The SPO implemented a Program Management Board (PMB) that addresses content changes as well as disposition of cost and schedule variances. Emphasis is on maintaining an integrated program baseline that includes cost, schedule and technical components. Alternatives will be fully evaluated to ensure best value to the government and consideration of military utility against any potential cost increases. New requirements will be controlled to avoid cost growth without associated budget. Government decisions will be motivated toward objective of successful completion of the program within cost, schedule, and technical constraints. Deviations in any of these areas will be proactively managed with the contractor and user communities to determine best course of action consistent with overall program objectives.

4.4 Management Reports
Monthly Acquisition Report (MAR). Monthly, the SPD submits an acquisition report containing cost, schedule, and technical performance status. The AFPEO/SP provides his assessment of the program and forwards it and a PEO portfolio summary roll-up chart to the USecAF. This concise program assessment provides topical information to alert the USecAF to potential program issues

Defense Acquisition Executive Summary (DAES) Report. Quarterly, the SPD submits the DAES report, through the AFPEO/SP to the OSD staff. The DAES is both a report and a program review process. The DAES provides information to DoD Acquisition Officials on program execution, policy decisions, and potential / actual issues.

Selected Acquisition Report (SAR). Annually, the SPD submits a Selected Acquisition Report (SAR) to Congress, through channels. The SAR provides a comprehensive summary of technical, schedule, and cost information, in a standardized format, to the Congress.

Statement of Assurance. Annually, as required under the Federal Managers' Financial Integrity Act (FMFIA) of 1982, the SPD submits a Statement of Assurance to Congress, through channels. The statement details how the program has taken the necessary measures to ensure that the evaluation of management controls has been conducted in a conscientious and thorough manner.

5. BUSINESS STRATEGY

5.1 Evolution Of Acquisition Approach

The original acquisition strategy for SBIRS High was approved by the Milestone II ADM, dated 03 Oct 1996. Due to changing policies and fiscal realities, the satellite procurement strategy has undergone several changes in appropriations strategy, block buy definition, and timing. The current strategy develops the first two GEO satellites with RDT&E funds. The strategy also includes a block buy of GEO satellites 3-5 with advanced procurement for long lead items in FY2004 and full funding in FY2005. The advance buy will be within 20 percent of the total production cost.

Increment 1 consolidated several existing ground stations into a single mission control station for primary operations and provided increased capability to the user. Increment 1 IOC was declared in December 2001. Based on the Increment 1 development experience and mission imperatives, the Increment 2 ground approach incorporates software block development and transition to field smaller units of functionality. This minimizes the turbulence to the operational mission and yet provides capability coincident with the space asset availability and mission needs. Each delivery will be thoroughly exercised by the Combined Task Force (CTF) before undergoing the established operational site testing process, which involves regression testing, software 'soaks', operator training, etc.

The SBIRS High Component will meet all KPPs for Increment 2 as identified in the 15 Aug 1996 ORD and the APB. SBIRS Increment 2 completion is projected for 2010.

5.2 General Considerations For The Acquisition Strategy

5.2.1 Funding

In December 2001, PBD 172C2 increased program funding in FY 03-07. To support FY02 funding requirements, the Air Force solicited Congressional support for an RDT&E funding increase. The Conference Committee provided an additional $40M in FY02. Furthermore, the Congress approved a FY02 Above Threshold Reprogramming (ATR) of $88.2M. The ADM dated May 2, 2002 directed the Air Force to fully fund the SBIRS High program to the OSD cost estimates.

5.2.2 Program Office Staffing and Support Contractors

5.2.2.1 SPO

The revised management philosophy and increased involvement in day-to-day contractor activities will increase the workload and tempo of the SPO members. Currently the SPO staffing consists of military, civilian, FFRDC and SETA resources at several locations. Recent reallocation of military and civilian positions within SMC to the SPO will provide adequate resources to manage the SBIRS acquisition and provide the necessary oversight of the contractor.

5.2.2.2 Combined Task Force

In addition to the standard product teams and working groups, SBIRS established a Combined Task Force (CTF) at the contractor's facility. The CTF is part of the SBIRS SPO and is responsible to thoroughly test and operate new capabilities prior to turnover to the operational

environment. For ground system deliveries, the CTF staff will support both the developmental tests conducted by the contractor and the Operational Utility Evaluations (OUEs) conducted by AFOTEC (formal IOT&E events are accomplished using operational crews from the AFSPC 2nd Space Warning Squadron). For spacecraft, the CTF staff will operate the ground systems to accomplish the launch and early on-orbit checkout activities. In short, the CTF will bridge the gap between research and development activities and operations to ensure both are successfully executed.

5.2.2.3 Detachment 11 (Det 11)

The Det 11 staff are located in Colorado Springs with the user. They provide direct support to the SPD for planning and executing sustainment management of SBIRS. They employ acquisition logistics management to influence new system designs and focus on reliability, maintainability, and availability to achieve lower life cycle costs. Their ability to directly interface with the system operators ensures proactive engineering management to fielded systems to achieve cost effective sustainment and readiness improvements.

5.2.2.4 SATAF / Buckley Support Team

The Site Activation Task Force (SATAF) /Buckley Support Team provides support to MCS operations at Buckley AFB and the MCS-B at Schriever AFB. The staff supports the activation of new SBIRS facilities and acts as the SPO's on site test director for hardware and software upgrades to the SBIRS MCS operations. They assist in the coordination of test plans, approval of entry into the Trial Period, and the certification of software releases.

5.2.3 Information Sharing and DoD Oversight

The Government approach to achieving the required oversight is to rely on contractor data, information, plans, and reports that the contractor would generate in the normal course of conducting the program. The intent is not to require Government-specific information or formats, but to rely on the contractor's management system. The use of IPTs exposes contractor information to the Government and assures the necessary insight into contractor performance, including risk assessment information and data for Government decision-makers.

5.2.3.1 Integrated Digital Environment (IDE)

The SBIRS High contractor has established and maintains a web-based communications and data system to improve the storage and retrieval of program documentation. Government and contractor organizations involved in acquisition, test, deployment, and operation of SBIRS are interconnected for rapid communications and easy, enterprise-wide access to electronic data. The Electronic Data And Management System (EDAMS) provides flexible data interchange methods and powerful web page user interfaces for document checking and search engine retrieval of information in user configured formats. A collaborative electronic environment provides across-the-enterprise design review capabilities for the working teams. This system is critical to accomplish the data management function, including: development, transfer, storage of all documents; management of CDRLs for quality and timeliness; and support documentation handling activities.

5.2.3.2 Technical Representatives at Contractor Facilities

Contract administration duties as defined in FAR 42 and in the SPO/DCMA MOA have been delegated to the local Defense Contract Management Agency (DCMA) office in Sunnyvale, CA. The personnel at DCMA are part of the SPO IPTs and participate in the program daily. In

addition, the DCMA office is responsible for all system and process level monitoring of the contractor.

5.2.4 Government Property in the Possession of Contractors (GPPC)

The SBIRS High EMD contract has authorized the contractor to use government furnished property (GFP) and has given the contractor responsibility for managing this property. The DCMA property administrators are continually monitoring the contractor's compliance with their internal property control system. In addition, the SPO monitors the contractor's utilization of GFP.

5.2.5 Tailoring and Streamlining Plans

The Acquisition Reform Mandate from the Secretary of Defense, dated 9 Feb 1994, directs the Air Force to use commercial practices and streamlining to the maximum extent possible. In keeping with that direction, SBIRS uses an Overarching Integrated Product Team (OIPT) for program review briefings. Other coordination is the responsibility of staff personnel who are part of the Working Groups and Integrated Product Teams (IPTs).

5.2.5.1 Request for Relief or Exemption

The SBIRS Program Office has not identified acquisition process requirements that fail to add value, are not essential, or are not cost effective. No requests for relief or exemption are pending.

5.2.6 Planning for Simulation-Based Acquisition (SBA) and Modeling and Simulation (M&S)

The SBIRS High program implements models and simulations (M&S) at each level from component through subsystem and system-level to determine performance. As SBIRS matures, M&S are required to assess designs, verify requirements, evaluate system performance against measures of performance (MOPs) and validate on-orbit performance.

For Increment 1, a primary tool is Welterweight Simulator (WWSIM), a simulator developed over the life of the DSP constellation to assess mission performance. Simulation over Recorded Data (SORD) will be developed to perform a WWSIM-like function for the Increment 2 system. LinkSim (LKSIM) and the Online Generic Adaptive Simulator (OLGASIM) will be used during mission manager development to validate performance. HEO Simulator (HSIM) will be developed for TT&C validation. GEO Simulation (GSIM) will play a similar role in TT&C validation for the geosynchronous satellites.

The initial phase of Integrated Training Suite (ITS) is nearing completion to allow user-friendly setup and training for Increment 1 both for individual crewmembers and for integrated training among all crew positions. The ITS simulates system operations and responses and is considered by the user to be an essential part of the acquisition.

5.2.7 Independent Expert Review of ACAT I-III Software Intensive Programs

The Independent Expert Program Review Implementation Plan lists several types of IEPR-equivalent independent reviews, including Independent Technical Assessments (ITAs), Technical Risk Evaluations (TREs), contractor capability evaluations (SCEs and SDCEs), red teams, and graybeard teams. During the development of Increment 1, the SBIRS SPD conducted independent reviews using the Technical Risk Evaluation and graybeard team approaches. During the current development of Increment 2, the SPD chartered a Technical Risk Evaluation

and plans to continue the proactive use of independent reviews. These reviews will be used to provide insight into the program, both from an acquisition and a systems engineering viewpoint, to increase program stability and reduce risk. These independent reviews can be used to quickly identify and resolve problems and keep the program on track.

5.2.8 Open Systems

To discourage the use of proprietary or system-unique interfaces, the SBIRS Program Office will incentivize an open systems approach. This approach will be to encourage the SBIRS contractors to implement an architecture that defines internal SBIRS ground system interfaces by open standards adopted by industry and defined through a consensus process (e.g., industry standard bodies such as the Institute of Electrical and Electronics Engineers (IEEE)). The intent of the open systems approach is to implement a system design/architecture that facilitates integration and use of commercial products available from multiple sources consistent with the Government's SBIRS configuration management and support concepts.

5.2.8.1 Commonality

The SBIRS approach makes optimal use of cost-effective commonality in the space and ground elements, shares government assets, and takes advantage of the existing infrared mission infrastructure. The central theme for SBIRS acquisition is to obtain the best value to the Government for procuring the entire SBIRS System of Systems, including constellations of space based assets and the use of common ground operations assets (Mission Control Station (MCS), MCS-Backup (MCSB), Relay Ground Stations, etc.) to the maximum extent possible.

5.2.8.2 Continuous Acquisition and Life-Cycle Support (CALS)—Acquisition Program Integrated Digital Environment (IDE)

The Government will have unlimited rights to application-specific designs developed under the SBIRS contracts and obtain full design disclosure. Any newly-designed products with less than full design disclosure, less than unlimited data rights, and/or patent restrictions will be handled in accordance with FAR and DFARS regulations. Electronic Data Interchange (EDI) enables all team members to have electronic access to all pertinent program data from their desktop. Use of contractor formats is encouraged to avoid imposing Government-specific reports, provided the formats meet management needs.

5.2.9 Information Technology Supportability

SBIRS will be integrated into an existing C4I architecture. SBIRS does not represent a major impact on the current C4ISR as that infrastructure and its supportability plans are already in place for DSP and Increment 1 Command/Control and data products. SBIRS will evolve with C4ISR infrastructure changes/upgrades through a standard vertical release process. Planned semi-annual maintenance changes (i.e., vertical releases) as well as block upgrades to incrementally add new capabilities are part of the SBIRS program plan.

5.3 Business Strategy

5.3.1 Competition

The program office used full and open competition to award the two pre-EMD contracts. The current contract, which resulted from a planned down select, covers the entire EMD phase of the SBIRS High program. No additional competition is anticipated however there is a clause in the contract that provides for data rights in the event of poor contractor logistics support

performance. The Block II GEO strategy, to procure additional satellites for constellation replenishment, is anticipated to follow the Defense Support Program procurement model. This sole source strategy provides for a block buy of satellites with significant legacy design. The specific strategy will be dependent on demonstrated on-orbit performance of the initial satellites and updated threat assessments that could drive increased capabilities making a Block II competition potentially more effective.

5.3.2 Contract

Initially the SBIRS High EMD contract type was a Cost Plus Award Fee (CPAF). As part of the restructuring activities, the SPO is planning to implement both incentive fee and award fee components to the contract. Through a mixed incentive and award fee structure, the Government will incentivize effective and efficient cost control and program management for programmatic events defined in the Integrated Master Plan (IMP). The IMP is an attachment to the contract. The restructured RDT&E contract cost is approximately $4.3B, excluding fee. Options for GEO 3-5 and the MCS-B production will be established in FY03.

5.3.2.1 Contract Incentives

The government controls cost through a Cost Plus Incentive Fee (CPIF) feature; evaluates schedule and technical management through award fee tied to program execution, and determines Mission Success Initiative (MSI) payments at completion of specified events defined in the IMP. CPIF will feature a target cost, with established minimum fee and maximum fee parameters. CPAF will feature a pool allocated to program execution and accomplishment of specified program effectivities.

5.3.2.2 Special Contract Terms and Conditions

The following special clauses and provisions are included in the EMD contract.

(a) Contractor Logistics Support Commitment, which requires the contractor to provide maintenance documentation to support a CLS competition if specified cost limitations, are exceeded.

(b) IR&D and Capital Investment Agreement which requires the contractor to use corporate IR&D resources to build specific products to support the SBIRS development activities.

(c) Product Development Investment Agreement which requires the contractor to invest their own money to develop products that are not charged to the contract, but will have utility to the SBIRS activity.

(d) DFAR 252.249-7000 Special Termination Costs clause allows the contractor to expend their incremental funding during the fiscal year and not maintain a reserve for termination liability.

5.3.2.3 Make or Buy

The SBIRS High contractor has the responsibility to conduct the make/buy assessment. Industrial capabilities to develop and deploy SBIRS are assessed as adequate. Capabilities to field SBIRS spacecraft functions in nominal environments are similar to those for commercial satellite programs. SBIRS is heavily leveraging commercial satellite programs and existing capabilities for general functions, including on-board electrical power, communications, navigation, attitude determination and control, propulsion, and launch services (provided by Evolved Expendable Launch Vehicle). Ground Segment industrial capabilities are also assessed as adequate; challenges in developing and deploying SBIRS ground elements are generally resource management challenges. Software productivity and processes will continue to receive significant attention.

5.3.2.4 RESERVED

5.3.2.5 Federal Procurement Policy on Contracting with Small and Disadvantaged Sources

The SBIRS High contract has a Subcontracting Plan that is incorporated into the contract. This plan has set goals for small, woman-owned small, and small disadvantaged companies. These goals are in compliance with national policies. The contractor's performance in the attainment of these goals is monitored and the contractors report on their performance.

6. RISK MANAGEMENT

6.1 SBIRS High Risk Management Program

The SBIRS risk management program is an organized approach for identifying, assessing, handling, monitoring, and reporting risks and issues. These risk activities are accomplished continuously throughout the program, and the risk processes are improved based on lessons learned. The risk activities are handled as a normal part of program management through the IPT structure and coordinated with IPT counterparts at each level. The contractor maintains the risk database at all levels. Ground, HOSV, and payload IPTs maintain and manage individual IPT risks and issues. They also raise all risks they are unable to address within their cost/schedule/technical constraints to a systems-level risk board, which consists of government and contractor representation. Medium and high priority risks and issues are discussed with senior management. (Reference: LM SBIRS Risk Management Plan—EM 00103)

6.1.1 Risk Identification.

Risk and issue identification is the first step in the risk management process. Risks and issues are identified during working-level IPT meetings and at program reviews, including PDRs and CDRs. Any IPT member can submit a risk/issue. In addition, risks maybe identified through the use of Independent Expert Program Reviews (see paragraph 5.2.7). All aspects of the program are considered for potential risk areas, e.g., insufficient resources, immature development processes, negative cost/schedule trends, test failures, quality of interim technical products, lessons learned, metrics, etc. The identified risks/issues are documented, including the cause for the adverse condition, the likely consequences, and potential activities that could be accomplished to reduce the possibility of this adverse condition from occurring.

6.1.2 Risk Assessment

Risk/issue assessment includes the assignment of probability of occurrence and consequence of impact, which results in a risk score. This is done using the scales depicted in Figure 6- 1. To establish an impact level, the assessor establishes the technical, cost, and schedule levels and selects the highest of these ratings. Probability of occurrence and consequence of impact are multiplied to produce a High-Medium-Low rating for each risk/issue. This results in a prioritized risk and issue list. Risks/issues are logged into a database that is maintained by the contractor.

6.1.3 Risk Handling

Risks/issues are handled by one of four methods: avoidance, control, transfer, and assumption. The IPT that assessed the risk is responsible for evaluating and recommending the method that is best suited, and this is typically based on senior engineering judgment. For the selected risk handling method, tasks are established to address the risk, and risk burn-down charts are created to predict/plan the final risk priority.

6.1.4 Risk Monitoring and Reporting.

Risks/issues are monitored and reported at the system level during weekly risk management meetings and are briefed at the Systems Engineering Review Board. The current priority of each risk/issue is discussed, as is the risk/issue burn-down chart. At monthly Program Management Reviews, risks are discussed with government and contractor senior management. At the IPT

levels, risks are monitored during monthly IPT meetings and include contractor and government IPT management.

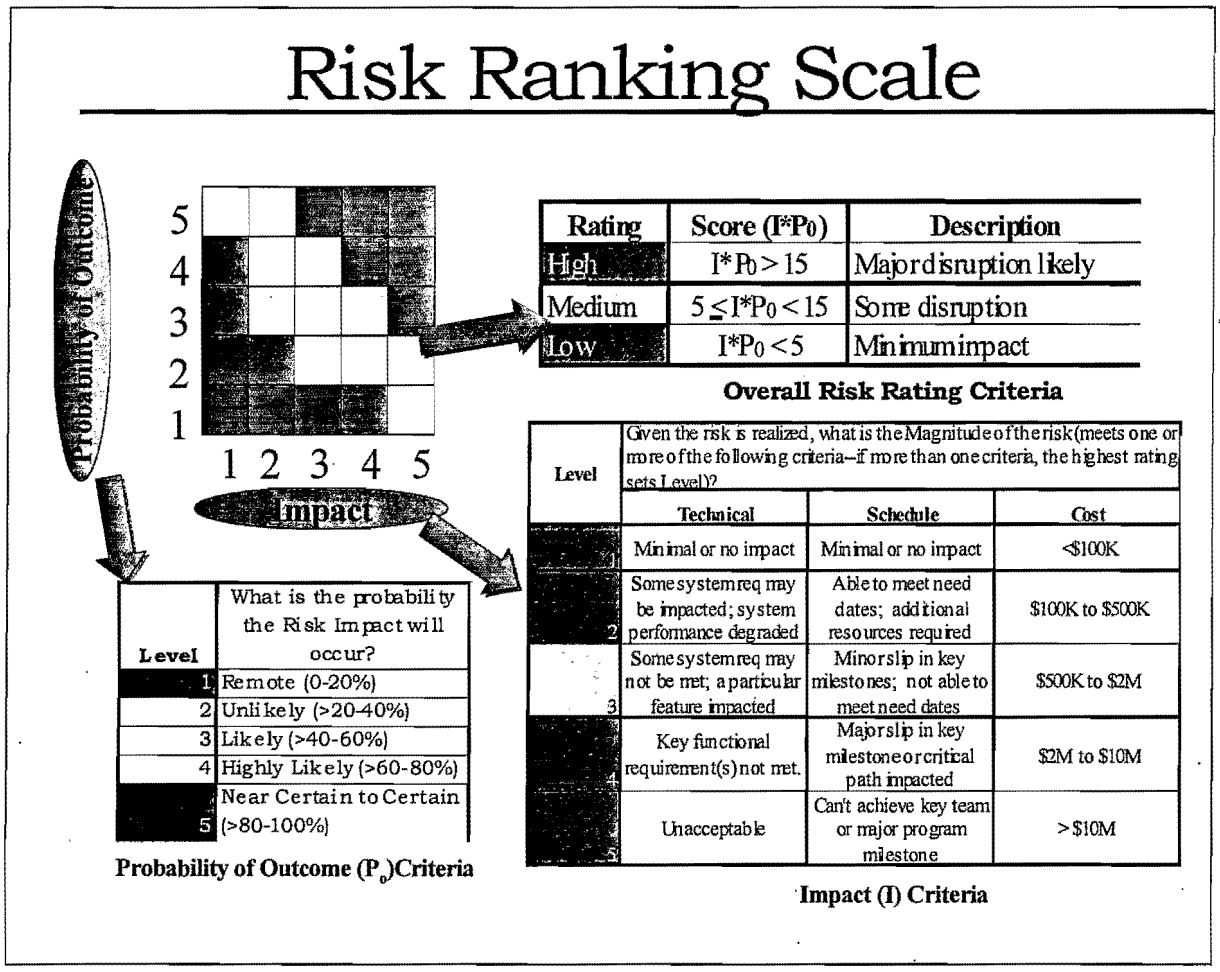


Figure 6-1. Risk Ranking Scale

6.2 SBIRS High Risk Assessment

The investment-to-date on the program has retired significant development and operational risk. The focus of the to go effort is on tracking and managing product implementation and integration risks.

6.2.1 Cost Risks

The SBIRS High cost risk to meet the proposed APB cost elements is medium. The Program Office conducted an intensive cost estimating exercise resulting in a new service cost position (SCP) in support of the April 2002 Defense Acquisition Executive (DAE) review. The costs of all identified risks and opportunities, that were deemed to have a 75% or greater probability of occurrence, were included in the SCP. The current POE is based on reasonable assumptions and basis of estimates, as well as achievable schedules. However, the SBIRS High program is complex and includes a large software development effort, hence the medium rating.

6.2.2 Schedule Risks

Schedule risk for delivering the Ground Segment is medium. Ground software development has been recently replanned with an incremental development and delivery structure. This replan has significantly reduced development concurrency and the number of different baselines under configuration control. Schedule risk for the Space Segment is medium. The schedule has been replanned to reduce development/production concurrency and to allow for longer development, test and integration time spans. GEO payload schedule risk is medium. There is significant development commonality between GEO and HEO payload hardware, and HEO qualification testing is nearing completion, so a majority of the major risks have been retired. GEO Payload software development is the critical path for the space segment. The schedule risk is being actively managed and is mitigated by accelerated staffing and incremental deliveries.

6.2.3 Technical Risks

Technical risks associated with the Increment 2 Ground Segment development are assessed as low to medium. The replanned Ground Segment risk reduction approach reduces the amount of software prior to the last two development blocks by phasing automation and objective performance levels. The approach also fully utilizes the Combined Task Force (CTF) to checkout SBIRS and support interim operations earlier in the development cycle.

Technical risks associated with the GEO Space Vehicle development are assessed as low to medium. The spacecraft is rated low risk, has heritage in all subsystems, and is based on commercial spacecraft structure and propulsion subsystems. Structural dimensions have been modified for items such as the propellant tanks, and heat pipes. Components such as the earth sensor, sun sensor, solar array and thrusters are off-the-shelf as part of the contractor's commercial product line. Modifications have increased the space vehicle weight beyond the advertised capability of one of the two launch vehicles, and in order to preserve dual EELV compatibility the program has rebaselined to the intermediate class Delta IV booster. This change is rated as low risk based on accelerated Coupled Loads Analysis being conducted by the booster contractor. The GEO payload is rated as low to medium risk. The payload design primarily uses standard components and does not push the state-of-the-art. However, the rigorous requirements, unique packaging of the subsystems, and the complexity of integration substantially increase the risk level of the payload. The complex operational aspects of using both scanner and starer sensors increase the risk of achieving line of sight requirements. Significant on-board processing for line-of-sight control and signal processing also impacts payload risk. Progress to date lends confidence in the contractor's ability to develop a space vehicle that meets requirements. Current technical risks associated with the HEO payload are assessed as low, as we have made considerable progress in payload integration and test over the past year.

6.2.4 Technology and Manufacturing Risks

Technology and manufacturing risks associated with SBIRS High GEO and HEO space elements are assessed as medium. This assessment is based on a two-year delay in the advanced procurement budget for GEO 3-5 satellites. Parts obsolescence, especially in the area of radiation hardened electronics, will likely require some redesign and requalification for GEO 3-5. While it is impossible to predict or prevent all future obsolescence issues, this risk is being mitigated by the actively monitoring the vendor base and selectively exercising life-time buy opportunities for critical components. The risks associated with ground technology and

manufacturing are assessed as medium to low. Software productivity and growth in code were assessed as a medium risk based on the relative immaturity of the ground segment and subsequent reliance on estimates. Memory margin and central processing unit (CPU) throughput are assessed as low risk items as the system is based on commercial-off-the-shelf (COTS) hardware and common industry standards.

7. COST AND PERFORMANCE MANAGEMENT

7.1 Acquisition Program Baseline Summary

The SBIRS APB is a stand-alone annex to this SAMP and is prepared in accordance with DoD 5000.2-R, Appendix I. The APB documents the cost, schedule, and performance objectives and thresholds of the SBIRS program. The APB contains the parameters which, if not met, may prompt the Milestone Decision Authority to reevaluate alternative concepts or design approaches. The specificity and number of parameters in the APB may evolve as SBIRS matures. The minimum set of parameters necessary are those needed to characterize the major drivers of operational effectiveness and suitability, schedule, technical progress, and cost. These minimum performance parameters include the key performance parameters described in the ORD and validated by the JROC.

Cost parameters in the APB are research, development, test and evaluation (RDT&E) costs; procurement costs; military construction costs; the costs of acquisition items procured/activated with operations and maintenance funds; total quantity (to include both fully configured development and production units); average unit procurement cost (defined as the total procurement cost divided by total procurement quantity); program acquisition unit cost (defined as the total of all acquisition related appropriations divided by the total quantity of fully configured end items).

The schedule parameters in the SBIRS APB include events such as program initiation, major milestone decision points, initial operating capability, deliveries and other critical system events. The SBIRS program is in the process of restructuring the contract baseline. The Integrated Master Plan, incorporated in the contract, documents periodic accomplishments, i.e., events and effectivities, which will provide tangible measures of technical, schedule, and cost performance. An event delineates the initiation or conclusion of an interval of major program activity. It represents a decision point relating system maturity to continued system development. Certain selected events, that define the completion of a major system capability and availability for operational use, are termed effectivities. The revised APB thresholds include selected events and effectivities which identify key program milestones.

7.2 SBIRS Budget

The approved budget profile and proposed budget adjustments reflecting USD(AT&L) ADM direction, dated May 2, 2002 are incorporated by reference at Annex A.

7.3 Program Office Estimate (POE)

The SPO developed a SBIRS POE during January – March 2002. The SBIRS cost analysis requirements document (CARD), which is the technical description of the SBIRS system and is used to develop the POE was updated in February 2002 and submitted to the OSD CAIG. The contractor developed an EAC to field the system described by the CARD. The EAC included actual contract costs through December 31, 2001 and projected costs through the end of the contract, i.e. 2010. The costs of identified risks and opportunities, that were deemed to have a 75% or greater probability of occurrence, were included in the EAC.

Supporting documentation included a Basis of Estimate (BOE), which identifies the rationale and the methodology used to derive the cost growth. The BOE discussed past performance, stated the cost of the work remaining, provided a detailed schedule of the work remaining, and provided staffing profiles for the projected work. The contractor presented this information to the SPO, members of the Air Force Cost Analysis Agency (AFCAA) and OSD CAIG during the shoulder-to-shoulder (STS) meetings held through March 2002. The SPO evaluated the BOEs and schedules and adjusted the cost and schedule to increase confidence that the program is executable. A risk assessment technique was used to capture the risk for technical, schedule, and cost uncertainty.

Concurrent with the SPO activities, the AFCAA and OSD CAIG staff developed independent estimates. The AFCAA estimate was reconciled with the SBIRS POE and resulted in the Service Cost Position (SCP), which was presented to the Air Force Cost Analysis Improvements Group (AF CAIG). The SCP and the OSD CAIG's independent assessment were submitted to the DAE to support the Nunn-McCurdy certification requirements.

7.3.1 Cost as An Independent Variable

Cost as An Independent Variable (CAIV) concepts are applied throughout the spectrum of SBIRS development from initial requirements definition through full system deployment and implementation, including operations and maintenance support, and eventually satellite replenishment planning. The Government and contractor team will continually evaluate performance and schedule tradeoffs to maintain an affordable life cycle cost baseline.

7.4 Manpower Estimates

The initial estimate for total Government personnel needed to operate, maintain, and sustain the SBIRS program when fully fielded is reported in the SBIRS Manpower Estimate Report (MER). Manpower requirements were determined as part of the SBIRS High Pre-EMD, however, these were adjusted based on the delay to Increment 1 IOC. A recent SBIRS Manpower Assessment was developed and it was determined that adequate personnel resources exist in the Future Years Defense Program (FYDP). Therefore no update to the SBIRS MER is required.

7.5 Cost Management

A disciplined financial management process is in place. It includes estimate at completion updates, a revised award fee structure, and new, meaningful metrics that measure program performance against a realistic cost and schedule baseline. The Program Office receives the Cost Performance Report (CPR) monthly and the Contract Funds Status Report (CFSR) quarterly. The SPO receives specific product data, and variance analysis as part of the CPR submission. This detail provides insight into cost and schedule drivers at a meaningful working level. The financial management IPT analyzes the data and prepares a financial review and earned value update to the Program Directors and the System Program Director. If funding or cost performance issues are identified, the program requirements are prioritized and reviewed at the SPO PMB to ensure content, schedules, and costs are managed as an integrated baseline. The management control system used at LMSSC to implement the DoD 5000.2-R Cost/ Schedule Control Systems Criteria is the Earned Value Management (EVM) processes and system. The EVM system provides for integration of the technical work scope with the schedule and cost elements. The LMSSC EVM implementation is accomplished at the start-up of the contract and continued over the life of the contract in a 12-month rolling wave. The 'rolling

wave' is a method in which earned value work packages are planned incrementally. Only near-term work is planned in detail. The remaining effort resides in planning packages. For SBIRS, detailed planning occurs in one year increments. The remaining work resides in annual planning packages. It begins with the organization of the work scope, schedule, key milestone definitions, assignments of responsibility for performing the authorized work. Resources are authorized to the organizations responsible for planning the work in sufficient detail to assess performance against the plan. The EVM system integrates this planning detail and provides EVM metrics for management cost performance reporting.

8. SUPPORT CONCEPT

8.1 Life Cycle Support Strategy

The SBIRS High contractor is tasked to develop, field, and sustain the SBIRS High support system. This arrangement is potentially for the life of the system predicated on satisfactory performance. SBIRS High support strategy is based on contractor logistics support. Outyear sustainment costs are controlled through an ongoing Contractor Logistics Support (CLS) commitment arrangement. If the SBIRS High contractor can demonstrate a capability to meet CLS costs and performance goals, the Program Office intends, within the constraints and requirements of the Competition in Contracting Act and FAR Part 6, as supplemented, to continue the effort as a sole-source acquisition. In the case of specified non-performance of sustainment responsibilities, the Air Force can direct the contractor, at contractor expense, to deliver a complete data package to support a competition contract for SBIRS High organizational and depot level support.

Transition from development and production to sustainment of the SBIRS increments will be addressed by logistics support analyses accomplished in parallel with the system design activity. Associated ILS products will be compatible with the SBIRS High system architecture. The Government will validate contractor sustainment processes and maintain insight into logistics activities. The contractor has developed and maintains a logistics database and performs trending to identify areas for improvement. The SBIRS Contractor Logistics Support Commitment (Section H-16 of contract) and jointly established cost and performance metrics will be used to evaluate contractor performance.

A Source of Repair (SOR) Study, scheduled for completion in October 2002, addresses the best mix for long term support of SBIRS. All ILS requirements have been addressed and flowed down into the program specifications.

8.1.1 Support Documentation

SBIRS High logistics planning has been documented and coordinated through all organic Air Force testing, operating, and sustainment organizations. The plans will undergo review, revision, and re-coordination at least annually. The SBIRS High support strategy addresses: affordability improvements; sources of support; human systems integration; environmental, safety, and occupational health; and post deployment evaluation.

8.1.1.1 Product Support

The SBIRS Program Office produced a detailed Product Support Plan dated September 14, 1999. The plan addresses separate functional areas and includes organic Air Force depot support for parts of the legacy Defense Support Program during the Increment 1 phase of the SBIRS System. The plan will be updated as required.

8.1.2 SBIRS Integrated Logistics Support (ILS)

The major objectives of Integrated Logistics Support (ILS) are to ensure development of a viable, cost-effective logistics system and to reduce risks associated with transition from development and production into sustaining engineering, operations, and support. ILS management planning is baselined to the contractor sustainment strategy. The contractor has both organizational level and depot support responsibility, potentially for the life of the SBIRS

High system. All SBIRS upgrades will be included in the SBIRS High sustainment baseline effort.

An Integrated Product Team (IPT) environment has been implemented to establish close working relationships between the operator and the development/support team. Successful IPT efforts include the mutual identification and resolution of SBIRS issues to provide an agile and robust combat support function.

8.1.2.1 Data Rights

Under the CLS concept the SBIRS High ground support systems and logistics infrastructure were neither prescribed by nor delivered to the Government. The Government does retain ownership rights to the logistic support technical data package and participates in the development, design, deployment, and maintenance of the infrastructure as well as monitors contractor sustainment performance. The Government has cognizance of the status of documentation and data through routine access to the contractor's management information systems. In lieu of any formal delivery of a technical data package, the Government has unlimited access to the SBIRS technical library via the Contractor's Integrated Technical Information System (CITIS).

8.2 Human Systems Integration

The Operational Requirements Document (ORD) flowdown activities have identified Human System Integration (HSI) domains of manpower, training, safety, personnel, and human factors engineering. Appropriate contractor System Engineering databases are populated with HSI requirements and are addressed during the design phases. No significant or unique HSI challenges have been identified within the Risk Management Process.

8.3 Environmental Safety and Occupational Health (ESOH)

8.3.1 ESOH Strategy

The SPD is responsible for ensuring that all ESOH issues are considered and addressed throughout the life cycle of the system and that all contractor designs are consistent with applicable ESOH laws and regulations, policy directives, and international agreements. The SPD will accomplish these activities within the constraints of program cost (environmental life cycle cost is part of program cost), and schedule throughout the system life cycle. The SBIRS High EMD contractor is also responsible for implementing all SBIRS High ESOH requirements. The contractor's ESOH plan is included in the IMP which the SBIRS program office has placed on contract.

8.3.2 Environmental Analysis Summary

The SBIRS Overview Environmental Assessment (OEA), completed January 1997, supported the SBIRS High Milestone II DAB and addressed the overall actions proposed for the SBIRS High ground and space elements. At that time, locations and characteristics of the facilities that would involve the Ground Segment had not been determined. Therefore, the OEA described the probable characteristics of these facilities and associated personnel.

Subsequently, an Environmental Impact Analysis (EIA) was accomplished for the Mission Control Station and its associated support activities in April 1996. A supplemental EIA, which examined the impact to the surrounding ecosystem and included an extensive RGS antenna

radiation study, was completed in March 2001 with a Finding of No Significant Impact (FONSI). The MCSB EIA process was initiated at Schreiver AFB on March 2001. Its focus was nearly identical to the MCS EIA, and it included the impact study of the co-located RGS-B. It also resulted in a FONSI in January 2002.

The environmental impacts of launch vehicles used to support the program are considered independent actions in the Air Force acquisition system and are addressed as separate environmental analysis actions by the respective Launch Vehicle Program Offices. Similarly, the environmental impacts of missile defense systems are conducted by the Missile Defense Agency (MDA).

8.4 SBIRS Operational Safety, Suitability and Effectiveness (OSS&E) Plan

The SBIRS OSS&E Plan is being developed to meet the requirements of AFI 63-1201 (Assurance of Operation Safety, Suitability and Effectiveness). This plan will provide the appropriate level of verification required to assure the SBIRS system meets the process established by the Space and Missile Systems Center (SMC). It will describe the proposed OSS&E assurance process as well as scope, budget, and schedule. Integral to this process are the specific reporting requirements governing Environmental Protection Agency (EPA) - 17 hazardous materials and Class II Ozone Depleting Substances. The program office is responsible for ensuring the acquisition complies with Public Law 102-484, Section 326 (Elimination of Use of Class I Ozone Depleting Substances). Additionally, the SPO will employ pollution prevention concepts and justify the use of hazardous materials.

8.5 Demilitarization and Disposal Planning

SBIRS material items, including all the fixed ground operational equipment, depot equipment, and production assets will be disposed of through normal Defense Contract Management plant clearance procedures. This equipment is almost entirely "commercial-off-the-shelf " and will not require demilitarization. The Multi-mission Mobile Processors (M3P's) will be disposed in the same manner as the current DSP Mobile Ground System as documented in the DSP/SBIRS Integrated Weapon System Management (IWSM) Plan.

8.6 SBIRS Intelligence Support Plan

The SBIRS Intelligence Support Plan (ISP) ensures that the intelligence community is ready and able to support SBIRS, from the acquisition stages through full operational capability and beyond, by specifically addressing and documenting available intelligence needs and assets. The SBIRS ISP identifies the support the intelligence community must be prepared to provide in accordance with AFI 14-208. The current SBIRS Baseline-Increment 1 ISP was developed by applying strategy-to-task methodology to the Concept of Operations, ensuring that specific intelligence support activities derive directly from operational mission requirements. It identifies the current intelligence assets available that best accomplish these activities, including intelligence manpower (by grade and Air Force Specialty Code), systems (hardware, software, connectivity, etc.), and training. The ISP is provided as information so that the contractor is aware of the intelligence support that will be available. Under the performance contracting concept, the contractor can integrate any or all of these assets into their design if their evaluation indicates a performance advantage. Furthermore, specific intelligence needs which are identified can influence specific designs, capabilities, and schematics in the SBIRS architecture. Those assets or capabilities not directly integrated into the contractor design may be provided as stand-

alone systems by the Government. The Increment 1 ISP will be superseded and replaced by the Command, Control, Communications, Computers & Intelligence Support Plan (C4ISP) for the entire system, which will include the above information, and incorporate relevant intelligence support information for SBIRS Increments 2 and 3. The C4ISP is currently in coordination with Hq USAF.

8.7 Training

As a mission enhancement after Increment 1 IOC, the training suites at the Mission Control Station and the Vandenberg AFB Training Facility will receive upgraded software and hardware to provide an integrated, interactive, automated individual and crew training capability, called the Integrated Training Suite (ITS). The first phase will support Increment 1 and will deliver an integrated, interactive DSP Mission and Telemetry, Tracking and Control (TT&C) training capability. A phase 2 enhancement (currently unfunded) is anticipated to support Increment 2 with a fully integrated, automated, interactive HEO and GEO training capability including external interface emulation needed for Mission Management.

8.8 Warranties

The requirement for contractor guarantees on major weapon systems under Title 10, United States Code, Section 2403 was repealed by Section 847, Public Law 105-85, the National Defense Authorization Act for Fiscal Year 1998.

8.8.1 SBIRS High Warranties

A warranty provision is not appropriate for SBIRS High EMD. EMD is funded on a cost-reimbursement basis. The contractor is motivated to achieve the Government's stated objectives and requirements through award fee incentives.

9. TEST APPROACH

9.1 Test and Evaluation Master Plan (TEMP)

The SBIRS TEMP documents the overall structure and objectives of the SBIRS test and evaluation (T&E) program. It provides the framework within which to generate detailed T&E plans and it documents schedule and resources associated with the T&E program. The TEMP identifies developmental test and evaluation, operational test and evaluation, and certification activities. The TEMP also documents the relationships between program schedule, test management strategy, and required test resources. The TEMP is incorporated by reference as Annex C to this SAMP.

The SBIRS TEMP was revised in 2001 and coordinated with, AFPEO/Space, Air and Missile Defense PEO, Air Force Space Command, Air Force Operational Test and Evaluation Center, and Army Test and Evaluation Command. The TEMP was being staffed within BMDO when the decisions affecting SBIRS Low funding / program structure and the management consolidation of missile defense programs occurred. Consequently, the TEMP will be separated into two separate TEMPs, one for SBIRS High and one for SBIRS Low. The FY 03 revision will also be modified to reflect a series of test and verification activities to support the current incremental ground delivery approach.

9.2 Integrated Test and Evaluation Plan (ITEP)

The ITEP is developed and maintained by the SBIRS prime contractor. It describes SBIRS Test and Evaluation (T&E) activities to be conducted during the SBIRS High contract period of performance. The ITEP addresses preparation and support of associated Operational Test and Evaluation (OT&E) activities conducted by the Air Force Operational Test and Evaluation Center (AFOTEC) and the U.S. Army Test and Evaluation Command (ATEC). The ITEP also addresses preparation and support of U.S. Space Command mission certifications, and Commander, United States Space Command and Joint Interoperability Test Command (JITC) interoperability certification.

9.3 SBIRS Test Strategy

The test concept for Increments 1 and 2 will include both contractor-led and government-led efforts. The SBIRS High contractor is responsible for the conduct of Developmental Testing spanning component through system level. The Government is responsible for the conduct of Operational Testing (including joint testing for M3Ps) to include Operational Assessments (OAs), Operational Utility Evaluations (OUEs), and other operational test and evaluation events. The Government will also conduct Trial Periods (TPs) and other test activities, as necessary, to support United States Space Command mission certifications and interoperability certifications. Prior to the start of Operational Testing, the Government and the contractor will conduct combined Developmental Test/Operational Test (DT/OT). Testing will be conducted whenever the contractor delivers incremental capabilities to the operational system.

Functionally, the test concept for Increment 2 will mirror the "Evolutionary Acquisition" approach of the program as a whole. This evolutionary idea incorporates a streamlined strategy that fields a core capability with a modular architecture, and provides for additional future increments in capability upgrades. To be consistent with this modular framework, the Integrated

Management Plan has been revised to identify selected events as effectivities, which are defined as points in time at which a new system capability is provided to the user. (See Figure 3-1 for specific events) These effectivities are, in turn, supported by a series of defined lower level activities. The timeliness and completeness of these effectivities as well as other related program events will provide key indicators of contractor performance. Incremental system verification reviews or Effectivity Verification Reviews (EVRs) will be completed satisfactorily prior to acceptance of individual effectivities. These EVRs will verify sufficiency of the design, operational threads, and interfaces.

Appendix A, Bibliography

This bibliography lists documents important to the management of the SBIRS Program. A reference number is listed where there is an unclassified electronic copy stored in the SPO's Document Organization and Control System (DOCS).

Reference documents for SAMP **Section 1 Executive Summary**

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