

National Oceanic and Atmospheric Administration (NOAA)
National Environmental Satellite, Data, and Information Service (NESDIS)
Search and Rescue Satellite Aided Tracking (SARSAT)
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Operational Analysis
2006

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Executive Summary

The Search and Rescue Satellite Aided Tracking (SARSAT) program uses NOAA’s polar-orbiting and geostationary satellites, as well as those provided by other countries, to detect and locate emergency beacons carried by mariners, aviators and land-based users. The distress alerts are then relayed to Rescue Coordination Centers (RCCs) operated by the U.S. Air Force (USAF) and U.S. Coast Guard (USCG) or to search and rescue services in other countries. This operational analysis (OA) is an annual, in-depth review of the program’s performance based on the following:

- Customer Results
- Strategic and Business Results
- Financial Performance
- Innovation

This report focuses on the operational state of the program as of December 31, 2006, and is based on guidance developed by the Department of Commerce. The SARSAT program directly facilitates NOAA’s Strategic Goal to "Support the Nation’s Commerce with Information for Safe, Efficient and Environmentally Sound Transportation." The current program meets established cost, schedule and performance parameters.

1.0 Customer Results

The SARSAT program is fully meeting the customer’s needs and the program is delivering the services that it is intended to deliver. In 2006 the program contributed to the rescue of 272 persons in and around the United States and more than 1,000 persons worldwide. Figure 1 describes the logic model employed by the program to determine its outputs and outcomes. The program provides all required outputs and continues to reach the required customer focused outcomes.

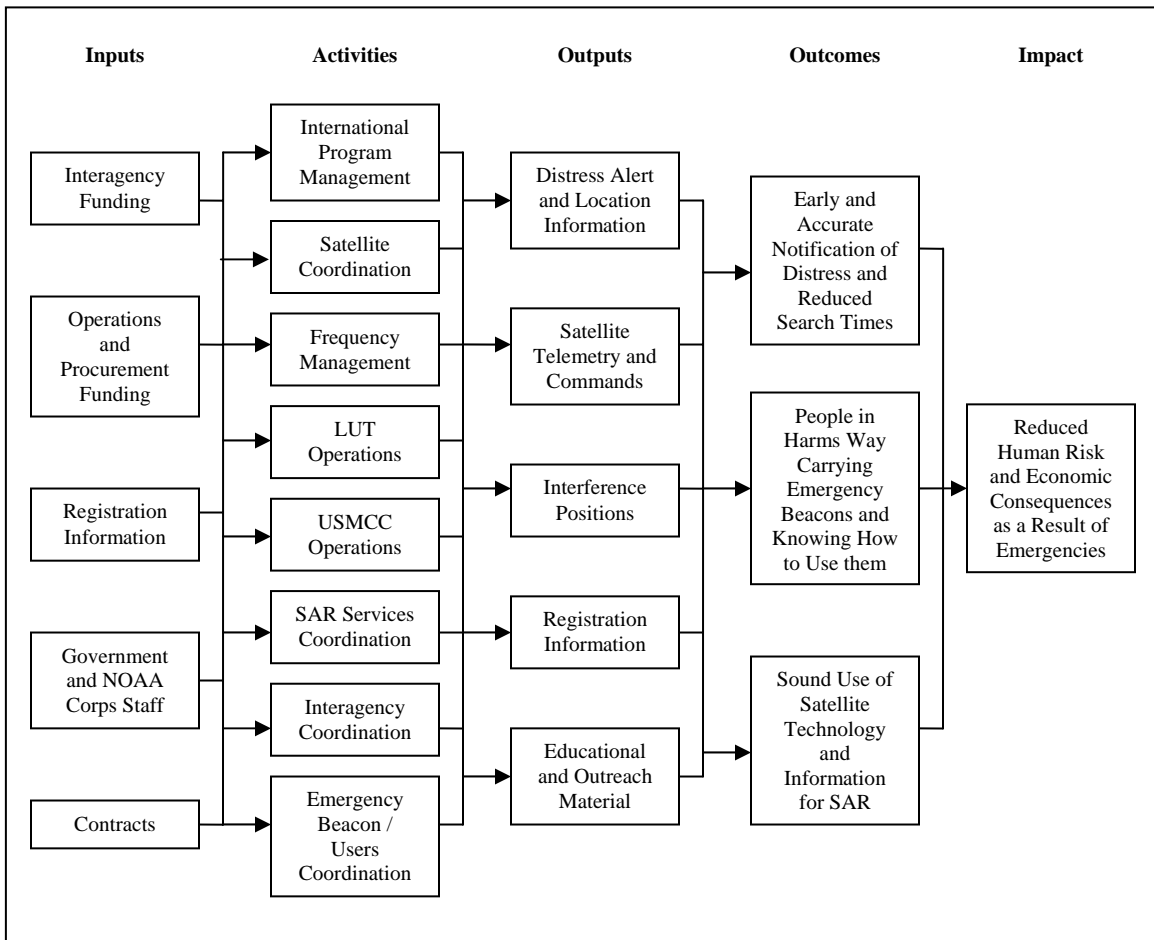


Figure 1: SARSAT Logic Model

The program completed a cost benefit analysis in 2006. The results revealed that the interagency program delivers in excess of \$250M in net benefits on an annual basis. The costs include not only

those incurred by NOAA but also the search and rescue costs of the USAF and the USCG. Benefits were calculated based on lives saved and property protected. Other drivers for this program include the fact that:

- Commercial fishing is ranked one of the most hazardous occupations in the United States according to the Bureau of Labor Statistics with 150 deaths per 100,000 workers – commercial vessels are required to carry emergency beacons.
- Approximately 600 lives are lost annually prior to the U.S. Coast Guard being notified about the distress – the use of emergency beacons could help to reduce that number.
- General aviation has a large user community with more than 200,000 aircraft, 600,000 pilots and 31M hours flown annually – almost all of these aircraft are equipped with emergency beacons.

The value of this program in terms of lives saved, the risk factors listed above and the net benefit mandates a continued need for this investment.

1.1 Customer Requirements and Costs

The primary customers for the SARSAT program are the USAF and the USCG who have responsibility for inland and maritime search and rescue coordination respectively. The customer's needs are summarized in the SARSAT Operational Requirements document which is generated by an interagency Joint Working Group (JWG), endorsed by the SARSAT Program Steering Group (PSG), and validated by the National Search and Rescue Committee (NSARC). The JWG and PSG are established by an interagency Memorandum of Understanding and the NSARC is a standing, inter-Departmental committee established to set search and rescue policies for the United States.

The current SARSAT program supports the customer's requirements and based on current analysis the cost to the customer is as low as it could be for the results delivered. Two sets of performance measures track the SARSAT program's performance in this area: (1) performance measures from the customer's perspective are shown below in section 1.2 and (2) performance measures that track the customer's requirements (e.g., accuracy, timing, and availability) are discussed in section 2.

1.2 Performance Measures

There was one new performance measure introduced in 2006. The measure, "False Alert Rate" tracks the percentage of distress beacons which are activated in a non-distress situation as compared to the total beacon population. The measure is important to the customers as false alerts have a negative financial impact on the USAF and USCG, they could divert resources from actual distress cases and needlessly place search and rescue responders in harms way. Other measures being developed or planned include "RCC Satisfaction Index," and "Public Satisfaction Index." These measures align with the "Customer Results Measurement Area" of the Performance Reference Model developed by the Federal Enterprise Architecture Program Management Office (FEA-PMO). Table 1 summarizes the performance measures – note that as the "False Alert Rate" measure was new there was no 2005 baseline.

Table 1: Customer Results Performance Measure

Measurement Area	Indicator	2005 Baseline	2006 Actual Result	Comments
Customer Requirements	Percent of Beacons Registered	76%	75.8%	Baseline performance not met due to low registration rate for aviation beacons. The USAF, USCG and NOAA are working with the FAA to improve this rate.
	Accuracy of Registration Data	76%	80.6%	
	Usefulness of Registration Data	64%	68.5%	Usefulness measures the percentage of distress cases where the use of the registration information allowed the rescue coordination center to resolve the distress case without launching rescue assets
	False Alert Rate	3%	1.25%	New Measure in 2006

2.0 Strategic and Business Results

The SARSAT program is meeting its own goals and objectives as well as those of the agency. Program management and controls are in place to ensure the program continues to meet its goals and objectives and monitor how well the SARSAT program performs.

2.1 SARSAT Helps to Achieve Strategic Goals

The SARSAT program directly facilitates NOAA's Strategic Goal to "Support the Nation's Commerce with Information for Safe, Efficient and Environmentally Sound Transportation." Specifically, the SARSAT program meet's NOAA performance objective of reducing human risk, environmental and economic consequences resulting from emergencies.

The SARSAT program helps achieve NOAA's goals by collecting and relaying reliable and accurate distress signals via NOAA and non-NOAA satellites in a timely manner, coordinating on national and international matters relating to satellites, spectrum management, and search and rescue, maintaining a national 406 MHz beacon registry, and serving as the lead for the SARSAT program in the United States.

The SARSAT program also supports the Department's priority mission essential function of "Providing control and timely access to global data from satellites and other sources to promote, protect, and enhance the Nation's economy, security, environment and quality of life."

2.2 Business Results

2.2.1 Program Management and Controls

The SARSAT program is currently guided by a series of international and interagency agreements which serve as the program management documentation and describe the relationship between the performance of the system and overarching guidance. Annex A provides a brief summary of agreements which serve as drivers for the SARSAT program. Detailed national and international level management controls are documented at Annex B.

The SARSAT program is managed at the NOAA, national and international levels using a combination of matrix management, standing committees and working groups. Within NOAA, the SARSAT program is part of the Emergency Response matrix program (a part of the Commerce and Transportation Goal). The overall Emergency Response program manager is responsible for developing funding plans, approving all program expenditures at a high level and managing the program's cost, schedule and performance. The Commerce and Transportation Goal is responsible for developing an Annual Program Plan which follows NOAA program guidance and ensures that the investment continues to be aligned with the agency's strategic goals.

The SARSAT Program Plan was approved by the Office of Satellite Data Processing and Distribution (OSDPD) which is responsible for the execution of the program and the Office of Response and Restoration (ORR) which is responsible for program management. The SARSAT Program Plan outlines NOAA's national and international agreements responsibilities and is approved at the agency and interagency level.

A detailed baseline of annual activity is contained in the Annual Operating Plan (AOP) which is approved by NESDIS and the Program, Planning and Integration (PPI) office. A 2007 draft AOP has been developed for the program and will be finalized when fiscal year 2007 funds are appropriated.

2.2.2 Monitoring Cost, Schedule and Performance

Cost - Monthly budget reviews are held with the program manager, Contracting Officer's Representatives (CORs) and contract managers to ensure contracts are within cost and on schedule. Monthly reports containing financial information such as estimated and actual costs, contract ceilings, and estimated cost to complete are required from the contractors. This information ensures that the Government has the information it needs to evaluate cost performance. Microsoft Excel is used to track budget/spending information. Current costs are reported in section 3.1.

Schedule – The AOP is used to track key milestones. A milestone that was not met is related to the move of the backup U.S. Mission Control Center (USMCC) from the vendor's premises to a NOAA Critical Infrastructure Protection (CIP) site at Wallops Island, Virginia. The milestone delay is a result of power and required communication lines not being available. The required infrastructure is expected to be installed by the 3rd quarter of FY07 at which time the backup USMCC will be moved.

Performance – A formal SARSAT performance management plan is being reviewed. The current version contains an evaluation of all the performance metrics, rationale for why the measure is important, the persons held accountable for the measure, and the collection and reporting methods associated with each measure. The performance measures are reported through the SARSAT Operations Lead on a monthly basis and circulated to management and customers.

In addition, a quarterly quad chart summarizing cost, schedule, and performance for the NOAA's Emergency Response program is submitted to PPI.

2.3 Reviews

As part of the NOAA program structure, the SARSAT program is reviewed on an annual basis. The last review took place as part of the FY09 budget cycle and was completed in August 2006. A program operating plan for the Emergency Response program (of which SARSAT is a component) was reviewed by NOAA's Office of Program Analysis and Evaluation and the PPI office. The SARSAT program continues to align with NOAA's strategic goal of supporting the Nation's commerce with information for safe, efficient and environmentally sound transportation. Specifically, the SARSAT program meets the NOAA performance objective of reducing human risk, environmental and economic consequences resulting from natural or human-induced emergencies by saving lives and property.

The architecture of the SARSAT system was reviewed in 2006 to determine if any efficiency could be realized by merging the system and the operations with the Environmental Satellite Processing Center (ESPC). The review revealed that there was very little duplication between the SARSAT system and the environmental processing of ESPC. Therefore, there were no clear benefits to be derived from merging the systems.

2.4 Security

The SARSAT system is accredited under requirements spelled out in NOA 212-13 (08/06/90) and NESDIS Information Technology Security Policy (September 17, 2001) that are based on OMB and NIST guidance. System Security Plans, Risk Assessments, and Contingency Plans were certified and approved for SARSAT in July 2005. The system will be accredited in 2007 to reflect changes to the operating system and the move to a new facility. Management, operational, and technical security controls are adequate to ensure the confidentiality, integrity and availability of information. In response to a report issued by the Inspector General (IG) the program is updating its E-authentication risk assessment to ensure that emergency beacon registration information is properly protected.

2.5 Performance Measures

The performance measures in Table 2 show the SARSAT program's performance with respect to Strategic and Business Results. These measures align with the "Mission and Business Results Measurement Area," "Processes and Activities Measurement Area" and the "Technology Measurement Area" of the Performance Reference Model developed by the FEA-PMO.

Table 2: Business Results Performance Measures

Measurement Area	Indicator	2006 Baseline	2006 Actual Result	Comments
Strategic and Business Results	Timeliness of Distress Alerts	91%	94.9%	
	Accuracy of Distress Alerts	91%	94.3%	
	Availability of System	98%	99.72%	
	Currency of Registration Database	75%	72.2%	The performance baseline will be reviewed to determine if enough resources are available, or can be obtained, to significantly affect this measure
	Use of On-line Registration Database	37%	54.4%	

2.6 Other Satellite Alerting Source Organizations

There are no other organizations capable of doing this work better, more efficiently or at lower cost. As an international organization Inmarsat was providing a distress alerting function for vessels under the Global Maritime Distress and Safety System (GMDSS). However, its coverage was limited and the number of users low due to the high cost of the service. Inmarsat was privatized in 1999 and in 2004 it decided to stop the relay of distress signals as it was not economically viable. Inmarsat, which stopped providing the distress alerting service in 2006, has decided to replace their emergency beacons with ones that work with the SARSAT system. Because the relay of distress signals is customarily free under international law, and by national policy, there is no market for the service and it is not economically viable as a commercial venture.

3.0 Financial Performance

3.1 Current Performance vs. Baseline

The current SARSAT financial performance, as shown in Figures 2 and 3, compares actual cost of the program compared to a pre-established cost baseline (i.e., annual spend plan). Program costs consist of labor and benefits for full time permanent staff dedicated to SARSAT, travel, communications, supplies and equipment, contracts, and corporate overhead. NOAA funds are supplemented by reimbursable funds from the USAF and USCG to support contracts. Financial performance information is provided for fiscal year 2006 (Figure 2) and the first quarter of fiscal year 2007 (Figure 3). Actual costs for fiscal year 2006 were 2.3% less than budgeted costs. The actual costs for the first quarter of fiscal year are 6.8% less than budgeted costs with the difference primarily due to vacancies in the government staffing.

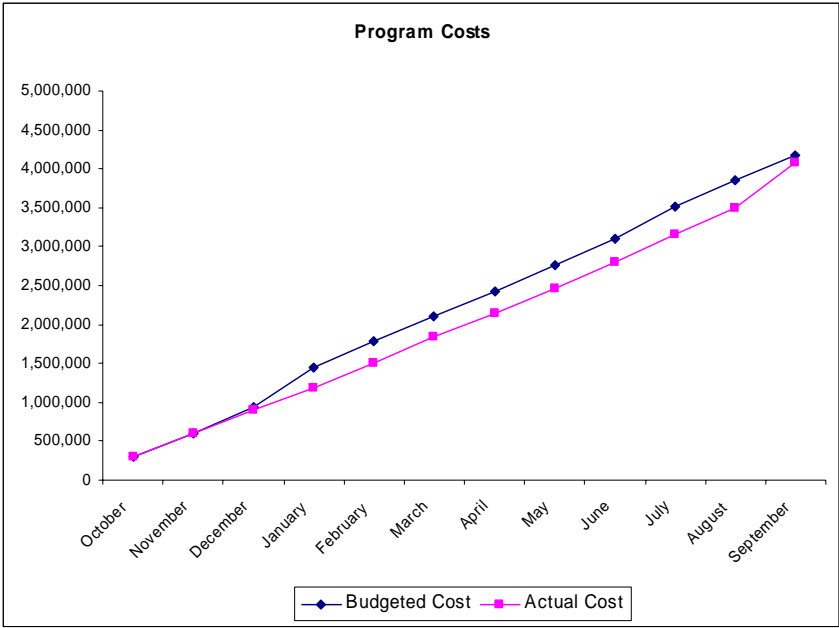


Figure 2: FY06 Budget vs. Actual Costs

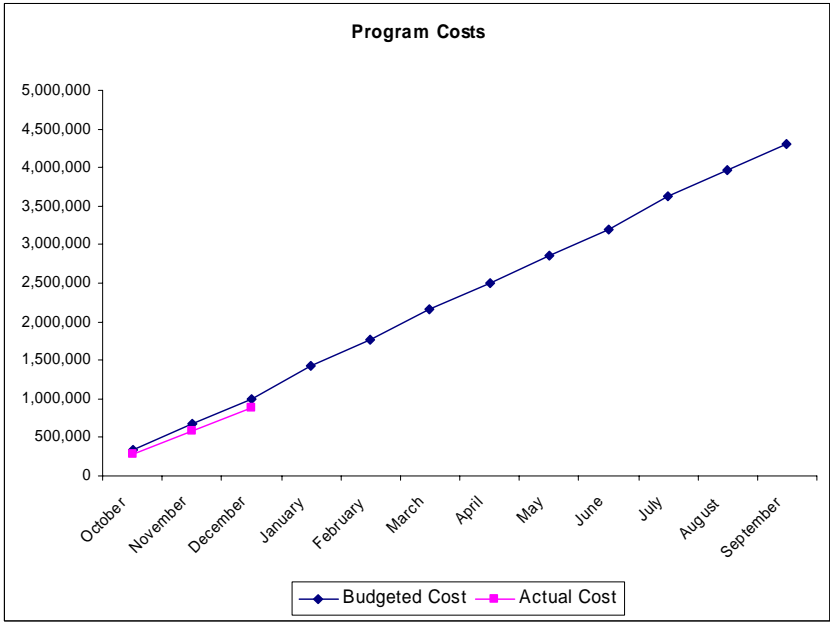


Figure 3: FY07 (1st Quarter) Budget vs. Actual Costs

3.2 Performance Measures

Financial Performance Measures being developed include “Program Cost Index,” and “Registration Cost Index.” In addition to these performance measures, the SARSAT program is developing a high-level, long term corporate performance measure. The baseline and targets are expected to be developed by the 4th quarter of FY07, depending on feedback from the USAF and USCG. This measure will evaluate the extent to which the program achieves its outcome-oriented objectives and its effectiveness. The measure will evaluate the overhead cost of the program and system for each

life rescued as a result of the system. A baseline using 2004 and 2005 data is currently being developed with the USAF and the USCG.

3.3 Cost Benefit Analysis

An analysis of the socio-economic benefits, or the cost-benefit analysis, of the SARSAT program has been completed in 2006. The analysis provides an economic perspective and helps determine present and future impacts of SARSAT activities as well as help identify beneficiaries of the system. The cost-benefit analysis also helps develop the documentation necessary to support future decisions on the program. The analysis concluded that for every Federal dollar spent on the program the Nation derived more than 11 dollars in benefit, and the net benefit was in excess of \$250M.

3.4 Financial Performance Review

Financial performance is typically subjected to a periodic review for reasonableness and cost efficiency. Monthly budget reviews are held with the program manager, CORs and contract managers to ensure contracts are within cost and on schedule. Monthly reports from contractors are required to ensure the Government has the information it needs to evaluate cost performance. A detailed review of work and priorities is undertaken if cost is significantly above base lined values. Also, any necessary corrective actions are also identified and implemented.

4.0 Innovation to Meet Future Customer Needs

The following projects have been implemented in 2006 to address future challenges, better meet customer needs, make better use of technology, and lower operating costs.

4.1 Number and Types of Users

The number and types of users continue to rise at both the national and international levels. Current projections call for more than 1M international users by the year 2011 with more than 300K in the United States alone. The increase in number of users is the increase in applications for emergency beacons. Personal locator beacons (PLBs) are being used in all environments (aviation, marine, and land) and various government and military organizations have begun using emergency beacons. While the projected number of beacons will not significantly impact system capacity, the following issues have to be addressed:

- How will NOAA handle the increase in number of registrations?
- How to increase compliance for registration so that impact of false alerts is minimized?
- How to handle security requirements for military registrations?
- How to specify and type approval beacons used in a variety of environments?

Project to Address Challenge: *Implement electronic filing of beacon registrations.*

A Center for Digital Government report states that 72% of American households were online. Having 70% (target for 2010) of the SARSAT beacon transactions conducted online will allow the program to accommodate the increase in number of users and divert resources to improve the quality of the registration information – thereby, reducing search costs and the impact of false alerts. Providing the public an electronic choice will also help improve the compliance level of registration. While the percentage of transactions conducted on-line continues to increase, the program is actively working with beacon manufacturers and the retail industry to direct beacon owners to NOAA's web-based capability.

Project to Address Challenge: *Remove military beacon registrations from NOAA database.*

NOAA is assisting DOD in the implementation of an electronic database which could be used for all military application beacons. This will lessen the burden on NOAA to register and meet the security requirements for military applications. During 2005 NOAA assisted the Department of Defense in developing policy for the coding and registration of military beacons and in 2006 the U.S. Air Force Rescue Coordination Center was able to secure funding for maintaining the Joint SARSAT Equipment Tracking System (JSETS). The JSETS is currently housing all U.S. Navy beacon registrations and in the future will house all military beacon registrations.

Project to Address Challenge: *New national and international type approval processes.*

As new applications for emergency beacons are developed and new PLBs are used in a variety of situations, type approval procedures must be updated to ensure the process is streamlined to reduce the financial burden on manufacturers yet ensure that the public is protected and beacons work as they should in distress situations. To this end, the international Cospas-Sarsat program, working with NOAA's SARSAT program, adopted new stream-lined type approval procedures in 2006 which addressed multi-environment applications for PLBs.

Project to Address Challenge: *New class of aviation beacons*

The current cost of 406 MHz emergency beacons designed for aviation use is too high for most aircraft owners/operators to absorb. Therefore, the number of aircraft equipped with 406 MHz beacons is very small although 406 MHz aviation beacons have been in existence for more than 15 years. Of the more than 250,000 general aviation aircraft in the United States less than 10,000 have a 406 MHz emergency beacon. The SARSAT program has urged the Radio Technical Commission for Aeronautics (RTCA) to develop new standards for 406 MHz aviation beacons that would reduce the cost of not only the beacon but the installation costs as well which would encourage aircraft owners/operators to use 406 MHz beacons. In 2006, the SARSAT program has coordinated with the FAA and RTCA to include this work on the agenda of RTCA's Special Committee-204 (responsible for developing standards for 406 MHz aviation beacons) and has actively participated on this committee to identify alternatives to the current high cost beacon.

4.2 Changing Space Segment

The European Union (EU), Russia and the United States are all investigating the use of search and rescue instruments on medium-altitude earth orbiting satellites which have the potential to significantly reduce waiting time and improve location accuracy. However, the following challenges will have to be resolved:

- How will we coordinate with the European Union and Russia on future space segments?
- How will we integrate this new data into the existing system?
- What will be the structure of the program after the new systems are operational?

Project to Address Challenge: *Planning for new space segment capabilities.*

Since the United States, Russia and the European Union are all planning for a search and rescue capability on future global navigation satellite systems (GNSS), coordination is required to ensure compatibility with the existing Cospas-Sarsat system and interoperability among the various systems. The United States has entered into an agreement with all the EU member states which calls for discussions on interoperability at the Cospas-Sarsat Council meetings and has established working groups to address bi-lateral coordination with Russia.

Cospas-Sarsat concluded a “*Declaration of Intent to Cooperate*” with the European Galileo Joint Undertaking (GJU) in 2006 that outlines the responsibilities of the two parties and modalities associated with the planning, proof-of-concept and demonstration and evaluation of the future medium-altitude orbiting search and rescue (MEOSAR) systems. In 2006, NOAA’s SARSAT program co-chaired two meetings with the Russian Space Agency dealing with interoperability between the future GPS-based and Glonass-based search and rescue systems. Also in 2006, the program worked with the USAF to develop the requirement for a search and rescue instrument on future GPS satellites. The result was the development of the first draft of a Capability Description Document (CDD). The CDD is required to be approved by DOD before detailed planning on the capability can be initiated.

In preparation for these new systems the SARSAT program initiated a project in 2006 to develop a system that could process data from GNSS satellites. The risk reduction activity will use data from NASA antennas and those provided by Canada to process signals from existing Global Positioning System (GPS) satellites and derive locations. The information from this risk reduction activity will be used to develop key performance parameters and key system attributed for an operational ground MEOSAR ground segment. These activities are expected to shorten the timeline and reduce the risk of introducing new satellites in the Cospas-Sarsat system.

4.3 Phase out of 121.5 MHz Satellite Alerting

The current capability to relay 121.5/243 MHz distress signals will be terminated on February 1, 2009. This means that the approximately 240,000 121.5 MHz users will have to transition to 406 MHz if they want to continue having satellite coverage. This effort will require outreach as well as coordination on regulatory and legislative changes.

Project to Address Challenge: *121.5 MHz Phase Out Plan*

NOAA, along with the USAF the USCG and other organizations such as the Aircraft Owners and Pilots Association (AOPA) have developed a draft 121.5 MHz Phase Out Plan. The plan outlines educational, regulatory and legislative actions necessary to transition 121.5 MHz emergency beacon users to 406 MHz emergency beacon. To support the plan, NOAA has updated its SARSAT Outreach Plan which includes informing the public about phase out of 121.5 MHz satellite alerting. To support the Outreach Plan the program is already distributing pamphlets to educate users on why the transition is taking place and why the 406 MHz system is better. Also, the interagency SARSAT partners participated at the annual Osh Kosh Air Show which attracts more than 700,000 pilots and aircraft owners. In 2006, the program initiated a partnership with AOPA to reach AOPA's nearly 600,000 members and inform them of the phase-out.

The program is also working with the Federal Aviation Administration to identify opportunities to lower the cost of emergency beacons – thereby facilitating the introduction of regulation to mandate carriage of new digital beacons instead of the older analog 121.5 MHz beacons, and to target pilots and aircraft owners to transition to the new beacons.

4.4 Funding Levels

Recent trends in government spending indicate that agencies should not expect significant increases in their budgets. This, coupled with the requirement to accommodate more users and incorporate evolving technology, will force the program to find efficiencies and to do more with the same amount of resources.

Project to Address Challenge: *Introduction of different and emerging technologies to lower communication costs.*

The introduction of Aeronautical Fixed Telecommunication Network (AFTN) and secure File Transfer Protocol (FTP) will help to reduce recurring costs for international data communications. In 2006, the U.S. Mission Control Center (USMCC) completed a three-year transition away from the use of costly Telex and X.25 services and has completed the implementation of AFTN and secure FTP will all our foreign partners. This has reduced the cost of international data communications.

In 2006, the USMCC also completed its transition to using the USCG data network to deliver distress alerts to USCG rescue coordination centers (RCC). This transition reduced the number and costs of individual ports and lines with each RCC. The total cost avoidance as a result of implementing this new technology is approximately \$50,000 per year. The program has reduced its total communication costs from approximately \$300,000 to \$50,000 since the early 1990s.

Annex A

International Cospas-Sarsat Programme Agreement – 1988

The *International Cospas-Sarsat Programme Agreement* was signed by the Canadian Ambassador to France who signed on behalf of Canada, the Deputy Ambassador to France on behalf of the former USSR, a representative of the French Foreign Ministry on behalf of France and the NOAA Administrator on behalf of the United States. It was developed to:

- assure the long term operation of the Cospas-Sarsat System;
- provide distress alert and location data on a non-discriminatory basis;
- support the objectives of the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO) concerning search and rescue; and
- define the means by which the Cospas-Sarsat System is to be managed.

In addition, the Agreement describes the components of the System, the roles of the Parties to the Agreement, the management structure of the Program, and the roles of other States or organizations involved with the Program.

As part of the agreement the United States, and specifically NOAA as the cooperating agency, is responsible to fulfill the responsibilities as a Party, a Space Segment Provider, and a Ground Segment Provider.

Memorandum of Agreement Concerning the SARSAT Space Segment - 1995

The Memorandum of Agreement Concerning the SARSAT Space Segment was signed by the Deputy Chief of the Canadian Mission to the United States, the French Ambassador to the United States, and the NOAA Administrator. It was developed to establish the means by which the Parties to the Memorandum of Agreement would manage the SARSAT space segment consistent with their obligations under the International Cospas-Sarsat Programme Agreement.

As portions of the SARSAT payload on the United States NOAA spacecraft are provided by the Governments of Canada and France, the agreement identifies the responsibilities and roles of the Parties as it relates to the provision of different components of the SARSAT payload and the platform or spacecraft on which the payload operates.

The SARSAT Project Plan constitutes the main instrument for the implementation of the SARSAT Memorandum of Agreement. It describes in detail the SARSAT payload design, procurement, integration, testing, commissioning and operation.

The SARSAT Telemetry and Command Procedures document contains the detailed procedures involved with exchanging satellite telemetry and instrument commands.

This agreement and the supporting plans and documents identify the responsibilities of NOAA, NESDIS and the DSD in its role as a Space Segment Provider.

United States National Search and Rescue Plan - 1999

The United States National Search and Rescue Plan identifies the roles of the signatory agencies in providing SAR services consistent with national policies and international commitments. The Plan

provides for the coordination of SAR operations, effective use of available resources, mutual assistance, and efforts to improve cooperation.

The Department of Commerce participates in, or supports SAR operations through NOAA. NOAA has the responsibility to provide satellite services for detecting and locating aircraft, ships or individual in potential or actual distress. The Department of Transportation (subsequently the Department of Homeland Security), through the USCG develops, establishes, maintains and operates rescue facilities for the promotion of safety on, under and over international waters and waters subject to U.S. jurisdiction. The Department of Defense provides facilities and other resources that are used to support civil SAR needs on a not-to-interfere basis. NASA supports SAR objectives through research and development or application of technology to search, rescue, survival, and recovery systems and equipment, such as location tracking systems, transmitters, receivers, and antennas capable of locating aircraft, ships, spacecraft, or individuals in potential or actual distress.

The National Search and Rescue Plan was signed by the Secretaries of Commerce, Transportation, Defense, Interior, the Administrator of the National Aeronautics and Space Administration, and the Chairperson of the Federal Communications Commission.

Memorandum of Understanding regarding responsibilities for the United States Cospas-Sarsat System - 1998 (extended in 2003)

The Memorandum of Understanding (MOU) regarding responsibilities for the United States Cospas-Sarsat System was signed by the Assistant Administrator for Satellite and Information Services of NOAA, the Associate Administrator for Space Flight for NASA, the Director of Operations Policy for the USCG, and the Director of Aerospace Operations for the Air Combat Command for the USAF. The latest version went into effect in 1998 and was extended in 2003. The memorandum defines the roles, responsibilities, and financial obligations of the four United States agencies involved with the implementation of the Cospas-Sarsat Program at a national level.

Annex B

The following management control processes are implemented at a national level:

Operational Monitoring - Automated tools exist to provide real time monitoring for the SARSAT system including the reference beacons, satellites, satellite receiving stations, the mission control center and all communications links. Significant problems are immediately brought to the attention of the management team. Primary focus of operational monitoring is to ensure that the performance baseline is met.

Daily Status Briefing – A daily briefing on the operational status of the SARSAT system is provided to the SARSAT management team. The briefing includes significant activity over the past 24 hours, availability of the system and major enhancements implemented. Primary focus of daily status briefings are to ensure that the performance baseline is met.

Bi-Weekly Status Meetings – Bi-weekly status meetings are held with contractor personnel to develop work plans, to track performance, to ensure work is progressing according to schedule, and to evaluate threats and opportunities.

Monthly SARSAT Staff Meetings – The SARSAT program staff have a meeting every month to ensure work is on schedule, to identify priorities for the program and to report status to management.

Monthly Configuration Control Board – A monthly configuration control board is held to review planned modifications to the SARSAT system and to review system problem reports. The configuration control board addresses aspects of cost, schedule and performance.

Monthly Budget Reviews – Monthly budget reviews are held with the program manager, CORs and contract managers to ensure contracts are within cost and on schedule. Monthly reports from contractors are required to ensure the Government has the information it needs to evaluate cost performance.

Quarterly Joint Working Groups – Interagency Joint Working Groups are held quarterly between the USAF, USCG, NASA, NOAA, FAA and FCC to provide a formal mechanism to forward agency (customer) issues that rise above the operational level. The Joint Working Group allows the development of requirements, coordination of SARSAT technical, operational and programmatic efforts and to coordinate positions for international meetings.

Bi-Annual Program Steering Group (PSG) –The PSG is comprised of the USAF, USCG, NASA and NOAA and monitors the programmatic value of the system to ensure that the work being performed meets NOAA's and partner agency's mission goals. The PSG also set the strategic direction for the program and coordinates major policy issues with other agencies. Lastly, the PSG develops a five-year budget for the program and identifies major system enhancements. The PSG is charged with overall cost and performance of the system.

Quarterly National Search and Rescue Committee (NSARC) – The NSARC is a standing inter-Departmental committee consisting of DOC, DOD, DOT, DHS, DOI, NASA and the FCC to coordinate and set national SAR policy

International management activities for the SARSAT program come under the purview of the Cospas-Sarsat Program and the following bodies:

Joint Committee – The Cospas-Sarsat Joint Committee is responsible for developing technical and operational requirements, coordinating the operations of the system including system configuration, developing and implementing enhancements and developing plans and procedures.

Cospas-Sarsat Council - The Cospas-Sarsat Council, by international agreement, is responsible for overall program management and sets policy for the organization. It also is responsible for implementing the international agreement, administering the Secretariat, managing the finances, and maintaining relations with States and other organizations.