

G.002
Issue 1 - Revision 1
January 1998

MEMORANDUM OF UNDERSTANDING
AMONG THE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES COAST GUARD
UNITED STATES AIR FORCE
AND
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
REGARDING
U.S. RESPONSIBILITIES FOR THE
COSPAS-SARSAT SYSTEM

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Issue #	Revision	Date	Revised Page(s)	Comments
1	0	Sep 1991	n/a	n/a
1	1	Jul 1997	1, 2, 3, 4, 10, 11, 12	inclusion of agencies' legal basis for Joint Project Authority; inclusion of cost-sharing agreement as Annex B; modification of termination clause; editorial changes

INTRODUCTION

Recognizing the importance of search and rescue (SAR) in saving lives and property, and the potential benefits of applying satellite technology to improving the effectiveness and efficiency of SAR operations,

Wishing to support the objectives of the National Search and Rescue Plan and the President's National Space policy, and of such organizations as the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO),

Considering the obligations of the U.S. under the 1988 International Cospas-Sarsat Program Agreement (ICSPA) and the 1995 Sarsat Memorandum of Agreement,

Noting the unique, special and related responsibilities and capabilities of the Parties, and

Desiring to cooperate with each other to further develop and use satellite technology for SAR,

The Parties to this Memorandum of Understanding (MOU), as member agencies of the Interagency Committee on Search and Rescue (ICSAR),

HAVE AGREED AS FOLLOWS:

ARTICLE I

Background

Cospas-Sarsat is an international program which utilizes satellites and a worldwide network of ground stations to detect and relay distress signals from maritime, aviation, and land-based users. Cospas-Sarsat supports the search and rescue goals of the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO). Numerous foreign countries are associated with Cospas-Sarsat as ground segment providers and user states.

ARTICLE II

Purpose of the MOU:

The purpose of this MOU is to set forth the roles and responsibilities of each Party in the conduct U.S. involvement the Cospas-Sarsat (C-S) Program.

ARTICLE III

Parties:

The Parties and their affiliation with the U.S. C-S Program are identified as follows:

The National Oceanic and Atmospheric Administration (NOAA) is the lead federal agency for the U.S. C-S, international Sarsat and international C-S programs and operates satellites equipped with SAR hardware. NOAA's legal authority to enter into this agreement is provided by 15 USC §313, 49 USC 44720, and, for joint project authority, 15 USC 1525.

The National Aeronautics and Space Administration (NASA) is responsible for research and development (R&D) of aerospace technology which improves SAR. NASA's legal authority to enter into this agreement is provided by the National Aeronautics and Space Act of 1958 as amended, 42 USC 2451 *et seq.*

The United States Coast Guard (USCG) manages safety and SAR programs, sets standards for Emergency Position-Indicating Radio Beacons (EPIRBs), uses C-S data and chairs the U.S. Interagency Committee on Search and Rescue (ICSAR). USCG's legal authority to enter into this agreement is provided by 14 USC 2 and 141.

The United States Air Force (USAF), in accordance with the National Search and Rescue Plan, coordinates SAR for the Inland Region of the United States. Accordingly, in support of its

own operations, the USAF provides SAR facilities which may be used to meet civil SAR needs on a basis of non-interference with military missions. USAF's legal authority to enter into this agreement is provided by CJCSI #3270.01.

The MOU is on a subject of mutual interest to all parties, and costs are equitably distributed. The Parties' implementation of this MOU is subject to the availability of appropriated funds.

ARTICLE IV

Implementation:

- A. The Primary body for coordinating and managing the responsibilities of the Parties in accordance with the MOU is the Program Steering Group (PSG). Each Party shall designate one representative to serve as its member on the PSG. The NOAA representative shall chair the PSG and ensure that any policy or procedural matters of concern to the Parties are raised within the PSG.
- B. The following working groups are established under the PSG to coordinate the responsibilities of the Parties:
- Joint Working Group (JWG)
 - Operations Working Group (OWG)
 - Technical Working Group (TWG)

The JWG shall coordinate the work of the other working groups and report to the PSG. An outline of the organizational structure of the PSG is provided in Annex A.

- C. A Policy Group is established and may be convened as necessary to provide policy guidance to the PSG. The Policy Group, chaired by NOAA, is comprised of a senior manager from each of the Parties with programmatic responsibility for SAR activities within his/her respective agency. Represented on this group are the following or their representative:

NOAA	Assistant Administrator for Satellite and Information Services
NASA	Associate Administrator for Space Flight
USCG	Director, Operations Policy
USAF	Director, Air Force National Security Preparedness

ARTICLE V

General Responsibilities:

- A. The PSG is responsible for setting and approving policy that drives the prosecution of the U.S. Sarsat and C-S programs and U.S. participation in the international Sarsat and C-S programs.
- B. The Parties should endeavor to appropriately support scheduled PSG meetings and support working groups established by the PSG. The members of all four parties, or their designated alternates are required for a PSG quorum.
- C. The PSG establishes guidance for and, with support from the JWG, coordinates U.S. representation at U.S. C-S and international Sarsat and C-S program meetings. Each Party should be responsible for determining its own representatives in light of guidance from the PSG, available funding, actual needs and agency or Department of State guidance.
- D. The Parties agree to promote mutual cooperation and collaborate by various means, including:
 - 1. Mutual visits among system managers, project managers and operational personnel;
 - 2. Participation in national and international meetings and drafting and reviewing U.S. position and information papers;
 - 3. Conduct of joint exercises among the Parties or in cooperation with international efforts;
 - 4. Development of U.S. C-S procedures, techniques, equipment and facilities;
 - 5. Provision of appropriate services in support of U.S. C-S needs (e.g., providing secretariat services, sponsoring or hosting user conferences, etc.);
 - 6. Continuous evaluation of the effectiveness of the C-S system to determine the need for system improvements and new applications;
 - 7. Participation in effective joint public affairs efforts for user education and information.

- E. To help meet national SAR requirements and satisfy applicable international obligations, NOAA will provide or arrange, subject to availability of funding, for the following: procurement, implementation, testing, communications, and operation and maintenance (O&M) for the U.S. C-S space and ground segments; contracted project technical support other than R&D; and, C-S related administration and liaison. However, each agency should normally fund its own travel as necessary, except that NASA travel for non-R&D technical support agreed upon by the PSG should be provided on a reimbursable basis. Each agency should fund initiatives not sponsored by the PSG.
- F. The Parties will coordinate their efforts on budget, regulatory or legislative initiatives relating to responsibilities under this MOU. Since it is normally difficult to provide funds for unscheduled and non-budgeted initiatives, a U.S. C-S Program Plan should be used and updated not later than October of each year. The U.S. C-S Program Plan should, to the extent practicable, project major areas of work for at least the following five years in terms of goals, objectives, tasks and responsibilities of the Parties and milestone schedules.
- G. The C-S Program Plan will be supported by an annual cost-sharing agreement (Annex B) among NOAA, USCG, and USAF. Cost figures are shown as planning estimates. NOAA, USCG, and USAF Program Managers will review and update the costs shown in Annex B as required. Adjustments to Annex B will be approved by NOAA, USCG, and USAF Program Managers and documented in an exchange of letters.
- H. System development and R&D should be carried out as prescribed and further defined in the U.S. C-S Program Plan. That work which is R&D shall be clearly designated as such in the U.S. C-S Program Plan.

ARTICLE VI

Agency Responsibilities

- A. NOAA shall:
 - 1. Serve as the lead agency within the U.S. and as the primary U.S. contact and representative internationally on matters relating to the Sarsat and C-S programs and coordinate PSG efforts with other national and international organizations, as appropriate.
 - 2. Provide, manage, operate, maintain and control the U.S. C-S space and ground segments and communications system, including appropriate data processing and communications support for the U.S. Rescue Coordination Centers (RCCs).

3. Provide for the construction, integration and launch of spaceborne SAR hardware to be flown on NOAA satellites as agreed upon by NASA and NOAA and in cooperation with other countries as appropriate.
4. Manage the procurement, acceptance and installation of ground system equipment in accordance with arrangements established by the Parties.
5. Coordinate the establishment of regulatory and certification requirements for 406 MHz distress beacons.
6. Maintain the national register for 406 MHz emergency beacons.
7. Provide timely processed beacon registry data and satellite-provided beacon location data to the U.S. RCCs, international MCCs and SAR Points of Contact (SPOCs) via mutually accepted arrangements made with the USCG, USAF and other countries.
8. Provide Cospas and Sarsat spacecraft ephemeris, Sarsat spacecraft telemetry or other non-alert data to appropriate ground segment providers.
9. Provide satellite and ground segment equipment as required to receive and process 406 MHz signals from the NOAA Geostationary Operational Environmental Satellite (GOES) system satellites and from satellites of other countries and distribute data as appropriate.
10. In close coordination with the other Parties, develop and maintain the U.S. C-S Program Plan, including development and coordination of the budget, and designate associated task priorities required for the plan's implementation.
11. Support national and international objectives to improve the performance and reliability of distress beacons transmitting to SAR satellites, to limit spurious signals that may degrade system performance and to overcome false signal problems.
12. Establish and operate a Space Segment Quality Assurance System, including appropriate monitoring, evaluation and mitigation capabilities, to support operation and ensure technical integrity of the space and ground system and to help provide for operator training.
13. Provide administrative support for the implementation of the responsibilities outlined in the MOU, including financial support for the U.S. share of the C-S

Secretariat and, when necessary, for Sarsat and C-S program meetings.

14. Coordinate development projects and contracts undertaken by the PSG, either directly or through NASA or other appropriate sources.
 15. Provide timely development and distribution through the PSG of national and international positions, papers, agendas, minutes, etc. of interest to the Parties.
 16. Assume the lead role in U.S. educational and promotional efforts relating to the C-S system.
 17. Work with the Federal Communications Commission (FCC) and other national and international organizations, as appropriate, to minimize interference with and delay of C-S distress alert messages and to ensure proper frequency management.
 18. Provide facility support for C-S equipment installed at NOAA facilities.
 19. Maintain the mobile Local User Terminal (LUT) ground station.
- B. NASA shall:
1. Fund and perform R&D in accordance with the U.S. C-S Program Plan with the objective of applying aerospace technology to meet SAR needs.
 2. Provide technical support for the national and international working groups described in the MOU, on a cost-reimbursable basis.
 3. As capabilities permit, provide agency-specific R&D and technical support to the Parties on a cost-reimbursable basis.
 4. Provide integration, test, post-launch evaluation and performance monitoring of the Sarsat spacecraft, on a cost-reimbursable basis, in accordance with NASA and NOAA agreements.
 5. Per letter of agreement, provide facility support for C-S equipment installed at NASA facilities.
- C. USCG shall:
1. Use data from SAR satellites to help carry out operational SAR responsibilities within the framework of the national SAR system and in accordance with

international law.

2. Identify SAR operational requirements as they relate to the C-S system, or other satellite systems used for SAR, and help in developing functional and environmental specifications for these systems, as well as the interfaces between these systems and the SAR system.
3. Provide guidance and advice on problems with the C-S system, or other satellite systems used for SAR, and ensure USCG operational personnel are properly informed on their use.
4. Help identify, prioritize, support, fund and oversee R&D efforts specific to USCG needs.
5. Participate as appropriate in C-S system exercises and evaluations and assist in planning for potential follow-on satellite systems.
6. Provide facility support for C-S equipment installed at USCG facilities.
7. Coordinate carriage requirements and certification procedures for 406 MHz EPIRBs.
8. Continue to document beacon false alerts and participate in joint efforts to minimize detrimental effects of false alerts on the C-S system.
9. Report known beacon problems (operational, technical and radio frequency interference [RFI]) to appropriate authorities and help support suitable corrective actions.
10. Continue to evaluate the effectiveness of the C-S system to determine the need for system improvements and potential new applications.

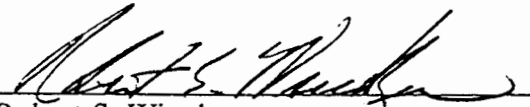
D. USAF shall:

1. Use data from SAR satellites to help carry out operational SAR responsibilities within the framework of the national SAR system and in accordance with international law.
2. Identify SAR operational requirements as they relate to the C-S system, or other satellite systems used for SAR, and help in developing functional and environmental specifications for these systems, as well as interfaces between these systems and the SAR system.
3. Provide guidance and advice on problems with the C-S system, or other satellite systems, or other satellite systems used for SAR, and ensure USAF operational personnel are properly informed on their use.
4. Help identify, prioritize, support, fund and oversee R&D efforts specific to USAF needs.
5. Participate as appropriate in C-S system exercises and evaluations and assist in planning for potential follow-on satellite systems.
6. Provide facility support for C-S equipment installed at USAF facilities.
7. As appropriate, operate a Mobile LUT and deploy it in support of SAR operations.
8. Continue to document beacon false alerts and participate in joint efforts to minimize the detrimental effects of false alerts on the C-S system.
9. Report known beacon problems (operational, technical and RFI), to appropriate authorities and help support suitable corrective actions.
10. Continue to evaluate the effectiveness of the C-S system to determine the need for system improvements and potential new applications.

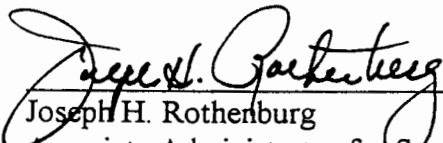
ARTICLE VII

Entry Into Force and Duration:

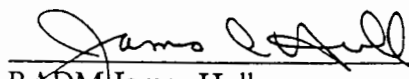
- A. This MOU enters into force on the date of signature, at which time it will extend the MOU of 21 October 1991 among the same Parties. The MOU may be extended every five years through an exchange of letters.
- B. This MOU may be terminated by any Party six months after written notice to the other Parties. Termination of this MOU shall not affect any Party's continuing obligations under other international or interagency agreements pertaining to the Cospas-Sarsat system.
- C. This MOU may be modified upon the written consent of the Parties.


Robert S. Winokur
Assistant Administrator for Satellite and Information Services
For NOAA

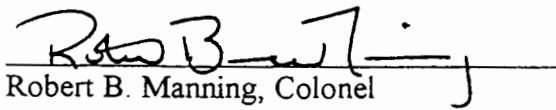
MARCH 5, 1998
Date


Joseph H. Rothenburg
Associate Administrator for Space Flight
For NASA

March 31, 1998
Date

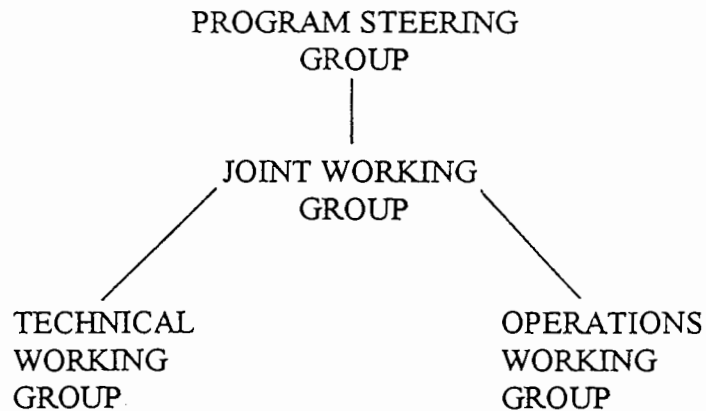

RADM James Hull
Director, Operations Policy
For USCG

March 12 1998
Date


Robert B. Manning, Colonel
Director, Air Force National Security Preparedness
For USAF

April 22, 1998
Date

ANNEX A
Program Steering Group
Working Group Structure



1. The Program Steering Group (PSG) shall normally meet in conjunction with regular meetings of the ICSAR Executive Committee. Other working groups may be formed as necessary to help the PSG execute projects and to keep the Parties informed of the status of the program.
2. The PSG working groups are the Joint Working Group (JWG), the Operations Working Group (OWG), and the Technical Working Group (TWG). The JWG coordinates the efforts of the OWG and the TWG and resolves problem areas that overlap each group's area of responsibility. The JWG chairperson keeps the PSG informed of working group activities and ensures that directions from the PSG are carried out. However, the other working group chairpersons should interface directly with the PSG and national regulatory bodies (e.g., the Federal Communications Commission and Federal Aviation Administration) as required to carry out working group business.
3. Membership in these working groups is comprised of designated representatives from the USAF, USCG, NOAA and NASA. NASA chairs the TWG and NOAA chairs the JWG and OWG.
4. All significant positions developed within the working groups will be cleared with the PSG before presentation in any international forum.

ANNEX B
Cost-Sharing Agreement
for Support of
the U.S. Cospas-Sarsat Program

The following items are functions that are necessary to maintain the operations of the Sarsat System. Due to budget constraints, it is necessary for NOAA, USCG, and USAF to equally share in the following funding:

	Annual Cost (as of FY97)
U.S. Mission Control Center Operations and Maintenance	\$ 1,300,000
U.S. Mission Control Center Software Maintenance	200,000
Local User Terminal Maintenance	200,000
International Telecommunications (MCI)	280,000
Domestic Telecommunications (AT&T FTS2000)	60,000
Cospas-Sarsat Secretariat	160,000
Engineering Support (CSC)	650,000
TOTAL	2,850,000

This figure, divided equally into thirds, equals \$950,000 per agency. These figures do not include NOAA salaries, travel, training, and routine unit expenses, nor any costs for the spacecraft antennas and instrument integration.

NASA will be responsible for funding Sarsat-related research and development.

**AMENDMENT TO THE MEMORANDUM OF UNDERSTANDING AMONG THE NATIONAL
OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), THE UNITED STATES
COAST GUARD (USCG), THE UNITED STATES AIR FORCE (USAF), AND THE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA) REGARDING U.S.
RESPONSIBILITIES FOR THE COSPAS-SARSAT SYSTEM
(ISSUE 1/REVISION 2)**

Under Article VII, SubPara. A. ("Entry Into Force and Duration") of the above captioned Memorandum of Understanding (the MOU), the MOU "may be extended every five years through an exchange of letters." Issue 1/Revision 1 of the MOU dated January 1998 was executed on April 22, 1998, and thus, by its terms, the MOU will terminate on April 21, 2003, unless the Parties extend the MOU's effective term, prior to the date of termination.

The Parties hereby agree that this Amendment constitutes "an exchange of letters" by the Parties, pursuant to Article VII, SubPara. A. of the MOU, which extends the MOU's effective term for an additional five (5) years from the last date appearing below. Consequently, the MOU shall now terminate five (5) years from the last date appearing below unless it is otherwise terminated pursuant to Article VII, SubPara. B.

All other Articles of the MOU remain unchanged.

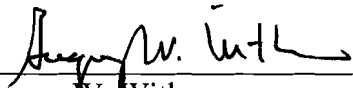
**AMENDMENT TO THE MEMORANDUM OF UNDERSTANDING AMONG THE NATIONAL
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All other Articles of the MOU remain unchanged.

Accepted and agreed:



Gregory W. Withee
Assistant Administrator for Satellite and
Information Services
For NOAA

28 April 03

Date

Robert E. Spearing
Assistant Associate Administrator
Office of Space Flight
For NASA

Date

Rear Admiral Jeffrey J. Hathaway
Director of Operations Policy
For USCG

Date

Joseph Stein
Major General, USAF
Director of Aerospace Operations
For USAF

Date

Page Two of Three

Amendment to the MOU (Issue 1/Revision 2)
April 20, 2003

Accepted and agreed:

Gregory S. Withee
Assistant Administrator for Satellite and
Information Services
For NOAA

Date

William Raddy
Associate Administrator for Space Flight
For NASA

December 3, 2003
Date

Director, Operations Policy
For USCG

Date

Director, Air Force National Security Preparedness
For USAF

Date

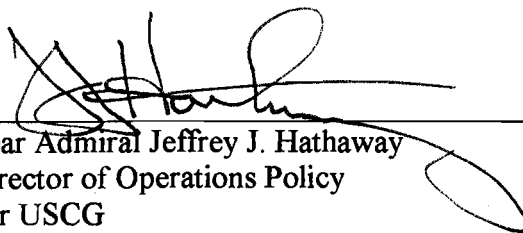
Accepted and agreed:

Gregory S. Withee
Assistant Administrator for Satellite and
Information Services
For NOAA

Date

William F. Readdy
Associate Administrator
Office of Space Flight
For NASA

Date



Rear Admiral Jeffrey J. Hathaway
Director of Operations Policy
For USCG

4/21/03
Date

Joseph P. Stein
Major General
Director of Aerospace Operations
For USAF

Date

Page Two of Three

Amendment to the MOU (Issue 1/Revision 2)

April 20, 2003

Accepted and agreed:

Gregory S. Withee
Assistant Administrator for Satellite and
Information Services
For NOAA


Date

William F. Readdy
Associate Administrator
Office of Space Flight
For NASA

Date

Rear Admiral Jeffrey J. Hathaway
Director of Operations Policy
For USCG

Date



Joseph P. Stein
Major General
Director of Aerospace Operations
For USAF

19 May 03

Date

Page Three of Three
Amendment to the MOU (Issue 1/Revision 2)
April 20, 2003

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1	0	Sept 1991	N/A	N/A
1	1	July 1997	1, 2, 3, 4, 10, 11, 12	Inclusion of agencies' legal basis for Joint Project Authority; Inclusion of cost-sharing agreement as Annex B; modification of termination clause; editorial changes
1	2 (Amendment)	July 2002	N/A	Extension of effective term, constituting "exchange of letters"