

# **MEMORANDUM OF AGREEMENT**

between the

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
OFFICE OF SPACE SCIENCE**

and the

**NATIONAL SCIENCE FOUNDATION  
OFFICE OF POLAR PROGRAMS**

**Concerning Cooperation on Matters Related to  
Balloon Flight Operations in Antarctica**

## **I. PURPOSE**

The purpose of this Memorandum of Agreement (MOA) is to: 1) identify the roles and responsibilities of the National Aeronautics and Space Administration, Office of Space Science (NASA/OSS) and the National Science Foundation, Office of Polar Programs (NSF/OPP) related to the support of balloon flight preparation and operations in Antarctica, and 2) outline a general agreement to develop a new support concept for balloon operations in Antarctica to include replacement of launch and related support facilities at McMurdo Station, Antarctica, to provide for continued annual support of large scientific balloon flights.

## **II. BACKGROUND**

This Memorandum of Agreement (MOA) is for the preparation, launch, support of communication, flight termination, and recovery of large scientific balloon flights in Antarctica.

Large scientific balloon payloads launched near McMurdo Station, Antarctica, provide high altitude flights, which sustain outstanding scientific opportunities in several fields. Large scientific balloon flights with payloads of approximately 2500 kg are possible at altitudes above 99.5% of the Earth's atmosphere for up to 30 days. These flights support various scientific investigations pursued in an environment nearly equal to that available in space flights.

Because of the seasonally near-circular pattern of the upper atmosphere winds over Antarctica and the lack of international boundaries, balloons launched near McMurdo can maintain long-duration high-altitude flight by circling the entire continent, and when the flight is terminated the payload can parachute to the surface for recovery. The capability to monitor and select areas of the continent over which to terminate a flight facilitates safe balloon and payload recovery.

Science return over the last ten years has resulted in a higher launch frequency than was anticipated in the original Memorandum of Understanding (MOU) Regarding Balloon Flight Operations in Antarctica between the Space Physics Division of the Office of Space Science and Applications of NASA and the Division of Polar Programs of the NSF signed on 22 August 1988. The demand for Antarctic launches has resulted in a backlog of funded payloads that would extend through the duration of this new MOA and that are beyond the scope of the

original MOU. In particular, support for the current commitment of payloads will require the replacement of the ground based telemetry, payload assembly, and ground support infrastructure. For these reasons, this MOA supercedes the MOU signed between NASA and NSF in 1988.

Through this agreement, NSF and NASA will address these requirements by developing and implementing an operational support concept that will relocate the majority of balloon operations to McMurdo Station, providing for a temporary staging facility at Williams Field to be used for holding a fully-assembled payload immediately prior to launch. This MOA identifies the responsibilities of the two agencies.

### **III. AUTHORITY**

NASA/OSS is authorized to enter into this MOA pursuant to Sections 203(c)(5) and (6) of the National Aeronautics and Space Act of 1958, as amended, 42 U.S.C. § 2473(c)(5) and (6).

NSF/OPP is authorized to enter into this MOA pursuant to the National Science Foundation Act of 1950, 42 U.S.C. § 1861 et. seq.

### **IV. AGENCY RESPONSIBILITIES**

#### Joint Responsibilities:

NASA and NSF will hold annual Project Initiation Conferences (PICs) to assess mission requirements and to select primary and/or alternate payloads for launch in Antarctica during the forthcoming austral summer of the following calendar year. The PIC will be scheduled no later than the last quarter of the calendar year that precedes the calendar year in which the "campaign" commences. A campaign is defined as the sum of operations carried out during any given austral summer to conduct one or more individual flights or "missions." A PIC will be held nominally twelve months prior to the start of each Antarctic campaign.

NASA and NSF will work together to develop a mutually agreed-upon *Annual Implementation Plan* for each campaign that will define the roles and responsibilities of each agency as they relate to the support of the campaign. Support requirements that are unique to NSF or to NASA will be specifically identified within the *Annual Implementation Plan*. Roles, responsibilities, and responsibilities for additional costs stemming from such unique requirements will be negotiated and mutually agreed upon.

No later than the end of the first quarter of the calendar year for which the campaign is planned, NASA and NSF will review the status of campaign and mission preparations. This review is intended to be used to update any information required to finalize the *Annual Implementation Plan*.

For each campaign, NASA is responsible for conducting Mission Readiness Reviews prior to shipment of equipment and personnel to Antarctica. NSF will have the option to participate in these reviews, which are normally scheduled one month prior to shipment of the equipment.

For purposes of this MOA it is assumed that there will be two launches per year supported in Antarctica, which is consistent with the previous level of activity supported by both NSF and NASA. However, it is recognized that the redesign of the support concept and facilities may allow for additional launches without a significant increase in operational impact. The number of launches may be increased at a future date upon mutual agreement between NSF and NASA through the *Annual Implementation Plan*.

This MOA may be modified upon the mutual agreement of both parties. Modifications must be in writing, and signed by the authorized representatives of each of the parties.

Each party has the right to terminate this MOA, upon written notice from one party to the other, at least 180 days prior to the termination date. The termination notice will include a statement of the reasons for termination.

All activities under or pursuant to this MOA are subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or provision of funds or the performance of work in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341. This MOA is not a funding document, but sets forth the obligations and responsibilities of the parties.

This MOA is signed in two originals.

National Science Foundation

Karl A. Erb 9/4/03

Karl A. Erb Date

Director

Office of Polar Programs

National Science Foundation

National Aeronautics and Space Administration

Anne L. Kinney 9-5-03

Anne L. Kinney Date

Director

Astronomy and Physics Division

Office of Space Science

National Aeronautics and Space Administration