

No. 19458

MULTILATERAL

Memorandum of Understanding for a transatlantic balloon programme. Signed at Washington on 21 and 22 July 1976

Agreement amending the above-mentioned Memorandum of Understanding and providing for the participation of France and the Federal Republic of Germany in the programme. Signed at Washington on 9, 10, 12 and 13 August 1976

Authentic text: English.

Registered by the United States of America on 9 December 1980.

MULTILATÉRAL

Mémorandum d'accord pour un programme de vols transatlantiques par ballon. Signé à Washington les 21 et 22 juillet 1976

Accord modifiant le Mémorandum d'accord susmentionné et prévoyant la participation de la France et de la République fédérale d'Allemagne au programme. Signé à Washington les 9, 10, 12 et 13 août 1976

Textes authentiques : anglais.

Enregistrés par les États-Unis d'Amérique le 9 décembre 1980.

MEMORANDUM OF UNDERSTANDING¹ BETWEEN THE SCIENCE RESEARCH COUNCIL AND THE CONSIGLIO NAZIONALE DELLE RICERCHE AND THE NATIONAL SCIENCE FOUNDATION FOR A TRANSATLANTIC BALLOON PROGRAM

1. INTRODUCTION

1.1. This Memorandum of Understanding sets forth the conditions under which the Science Research Council (SRC), the Consiglio Nazionale delle Ricerche (CNR), and the National Science Foundation (NSF) will collaborate in a joint program whereby experimenters from the UK, Italy, and the USA who are approved by SRC, CNR, or NSF respectively, may conduct long-duration scientific balloon flights.

1.2. The joint program provides for the necessary launch area, payload preparation buildings and launch site services, the provision of flight and ground equipment to control and maintain communications with the balloon; and operational support for launch of the balloon from Sicily and recovery of the payload.

1.3. Experimenters from other countries may participate in this program, subject to agreement in each case by all of the Parties to this Memorandum and to the agencies funding these other experimenters becoming, by means of an exchange of letters, additional Parties to this Memorandum in respect of each specific flight on behalf of these experimenters.

2. FLIGHT PLANS

Operational flights will be conducted with balloons of 21 MCF volume carrying payloads of approximately 1800 kgs. They will be launched during the period 1 June to 31 August 1976 from Trapani-Milo, Sicily, and are expected to float in a westerly direction at an altitude of about 140,000 ft. across Spain, Portugal, the Atlantic Ocean and the southern United States of America at about 38 degrees north latitude and be remotely commanded to descend by parachute at a convenient and safe location within the USA approximately four to eight days after launch. The flights will be controlled by HF and VHF telecommand systems and position information accurate to within ± 5 miles will be obtained throughout flights using the Omega Navigation system and this will be supplemented over the Mediterranean and USA by information obtained by normal tracking techniques.

3. RESPONSIBILITIES

3.1. Science Research Council:

3.1.1. SRC, acting through the Appleton Laboratory, will manage the program, allocate flights and:

- (a) Provide flight service modules equipped with HF telemetry and telecommand; automatic ballast control; Omega navigation; and power supply systems.
- (b) Procure the balloons.

¹ Came into force on 22 July 1976 by signature, in accordance with paragraph 11.

<i>State</i>	<i>Date of signature</i>
United States of America	21 July 1976
Italy	22 July 1976
United Kingdom of Great Britain and Northern Ireland	22 July 1976

- (c) Provide a ground station and data retrieval system in Sicily.
 - (d) Provide the personnel necessary to man the Sicily ground station and advise USA staff manning the Naval Research Laboratory (NRL) ground station (ref. clause 3.3.2 (c)).
 - (e) Assume control of the flights after completion of the ascent phase and prior to transfer of control to the NRL ground station when the balloon reaches 30° west longitude.
 - (f) Arrange for the return to experimenters of their equipment, after its delivery to the Appleton Laboratory (ref. clause 3.3.2 (d)).
- 3.1.2. SRC will allocate one flight to CNR. In the allocation of other flights, proposals submitted by any of the Parties to this Memorandum will be given preferential consideration.
- 3.1.3. SRC, acting through the Appleton Laboratory, will endeavour to:
- (a) Process experimental data on to computer compatible magnetic tape.
 - (b) Develop a high bit rate communication system.
- 3.2. Consiglio Nazionale delle Ricerche:
- 3.2.1. CNR, acting through its Servizio Attività Spaziale (SAS), will:
- (a) Provide a launch area and payload preparation facilities at Trapani-Milo, Sicily.
 - (b) Provide communication links and services at the launch site.
 - (c) Arrange for duty-free entry and exit into and out of Italy of equipment related to operation of the program.
 - (d) Arrange for liaison with Air Traffic Control while the balloons are within Mediterranean airspace.
 - (e) Arrange for radar surveillance while the balloons are within Mediterranean airspace.
 - (f) Arrange for liaison with the Air Defense networks of countries bordering the Mediterranean Sea.
 - (g) Arrange for clearance to overfly nations bordering the Mediterranean Sea and Portugal subject to prior consent of the US State Department.
 - (h) Arrange for the international allocation of radio transmission frequencies used during the flights.
- 3.2.2. CNR, acting through SAS, will endeavour to obtain satellite infrared cloud cover photographs of the flight path to assist in controlling the float height of the balloon.
- 3.3. National Science Foundation:
- 3.3.1. NSF, acting through its contractor namely the University Corporation for Atmospheric Research (UCAR), which operates the National Center for Atmospheric Research (NCAR) and the National Scientific Balloon Facility (NSBF), will:
- (a) Provide operational support for launching the balloons from Trapani-Milo, Sicily, including a launch team and launch equipment and launch the balloons.
 - (b) Provide standard airborne equipment for each flight including parachute and flight train, radar reflector, flashing light, beacon, barocoder, air-

borne VHF telecommand and telemetry package and cut-down mechanisms.

- (c) Provide ground VHF telecommand and telemetry equipment at Trapani-Milo, Sicily, and assume control of the flights during the ascent phase, subject to overriding command by an Italian Air Force range safety officer while the balloons are within Italian airspace.
- (d) Provide the facilities necessary for and be responsible for terminating the flights and recovering the payloads over Spanish territory, should the controlling ground station require the flights to be prematurely terminated for safety or technical reasons, provided that it shall be the responsibility of the CNR to obtain the necessary permission to terminate flights over Spanish territory, and NSF shall not be responsible for recovery operations in Spanish territory if the Spanish Government does not grant any necessary visas and other permits.
- (e) Arrange for the shipment of balloons and NSBF equipment to and from Trapani-Milo, Sicily, and Spain.
- (f) Obtain insurance cover in accordance with clause 7 of this Memorandum.
- (g) Assume responsibility for control of the flights when the balloon reaches 30 degrees west longitude.
- (h) Arrange for liaison with Air Traffic Control while the balloons are within American airspace.
- (i) Arrange for duty-free entry and exit into and out of the USA of equipment related to operation of the program.
- (j) Arrange for termination of the flight and payload recovery within the USA.
- (k) Coordinate all aspects of all the flights.

3.3.2. NSF acting through UCAR will endeavour to:

- (a) Arrange for hire, in Sicily, of a ten-ton mobile crane and flat bed truck.
- (b) Arrange for supplies of hydrogen gas to be available as required.
- (c) Arrange for operation of the NRL receiving station at Chesapeake Bay, Maryland, in cooperation with the SRC.
- (d) Arrange for return shipment of the recovered payloads to the Appleton Laboratory, except in the case of items which have been provided by NSBF or when service modules are required to be returned to Sicily for reflight in the same campaign.

4. COSTS

4.1. SRC and CNR will provide the requisite funds for the implementation of those parts of the programme for which they are respectively responsible as detailed in clauses 3.1 and 3.2.

4.2. SRC will reimburse NSF's contractor (UCAR) for all expenses incurred in implementation of that part of the programme for which NSF is responsible as detailed in clause 3.3, except in the case of 3.3.1 (g), (h), (i). These costs will include, but not necessarily be limited to: transportation of equipment and personnel, per diem, vehicle rental, extended field program reimbursement and costs incurred in the use of the Naval Research Laboratory's HF receiving station.

4.3. In addition to costs detailed in 4.2 above, SRC will pay NSF's contractor (UCAR) a flight service fee of \$11,000 U.S. per flight.

4.4. NSF will provide the requisite funds for any costs associated with the activities detailed in clause 3.3.1 (g), (h), (i).

5. CHARGES FOR FLIGHTS OF NON-UK EXPERIMENTS

5.1. The SRC will be reimbursed for the actual costs of the balloons, hydrogen and return of the experimenters' equipment from the Appleton Laboratory, and processing of experimental data, together with any consumable items including ballast and service module batteries, used for all flights allocated to other Parties to this Memorandum. In the event of a flight of a joint payload involving a UK and a non-UK experimenter, these costs will be shared between SRC and the other Party in proportions to be agreed in advance.

5.2.) In addition to charges falling within the scope of clause 5.1 and subject to the exception in clause 5.3, SRC will levy a charge on the experimenter, to be fixed in advance, for the use of equipment and services to be provided by SRC. This charge will be based on full economic costings but will take account of any contribution to the operating costs of the program being met by the other Party.

5.3. For one CNR flight in the 1976 program, the SRC will not levy any charge other than those falling within the scope of the first sentence of clause 5.1.

5.4. In the event of an unsuccessful flight in which the operational requirements agreed by the SRC and the experimenter are not met due to an identifiable failure for which SRC accepts responsibility, the charge referred to in clause 5.2 would be reviewed.

6. TITLE TO PROPERTY

Title to all equipment and other property furnished by any Party to this Memorandum will remain vested in that Party.

7. INSURANCE

Pursuant to 3.3.1 (f), insurance will be obtained to cover liability for damage to property or death or injury to persons in the amount of twenty million U.S. dollars (\$ US 20,000,000) per flight where the liability arises during the flight, and in the amount of five million U.S. dollars (\$ US 5,000,000) per flight where the liability arises during ground operations associated with the flight.

8. LIABILITIES

8.1. Because of the numerous inherent risks involved with balloon launches, UCAR and the Government of the United States shall not be responsible for any loss or damage to the balloon or scientific equipment that may occur during the course of activities under this Memorandum, except as indicated below. Accordingly, the Parties will not bring any claims against UCAR, the Government of the United States, or their employees for loss or damage to balloons or scientific equipment except where the claim is based on damages or loss occurring either (i) prior to launch operations or (ii) after the completion of the flight and any recovery operations and, in both cases, resulting from the willful misconduct or gross negligence of UCAR employees.

8.2. Except as provided for in clause 8.1, the Party or Parties providing the scientific payload for a particular flight will assume all liability for that flight and hold the remaining Parties harmless with respect to any claim arising out of such flight not covered by the insurance for that flight provided for in clause 7.

8.3. In the event of an experiment by a Signatory Party (whether a Party under the present Memorandum or an additional Party under the terms of clause 1.3) involving collaboration with an experimenter supported by another funding agency which is

not a Party to this Memorandum, the Signatory Party will assume liability to the extent required by clause 8.2 as if it alone had been responsible for the experiment.

9. PUBLICITY

Each Party may publish information regarding its own part in the setting up or operation of the program.

10. AMENDMENT

This Memorandum may be amended or be extended anytime upon the written common consent of SRC, CNR, and NSF, and of any additional Party in so far as such amendment or extension relates to the terms and conditions for a specific flight on behalf of an experimenter from another country in accordance with clause 1.3.

11. ENTRY INTO OPERATION

This Memorandum will come into operation upon signature by SRC, CNR, and NSF, and will remain effective until 31 December 1976.

SIGNED at Washington, D.C., on 22 July 1976, in triplicate by T. M. Moynehan for the Science Research Council.

SIGNED at Washington, D.C., on 22 July 1976, in triplicate by Giulio Tamagnini, Chargé d'affaires a.i. of Italy, for the Consiglio Nazionale delle Ricerche.

SIGNED at Washington, D.C., on July 21, 1976, in triplicate by E. Creutz for the National Science Foundation.

AMENDMENT No. 1¹: MEMORANDUM OF UNDERSTANDING BETWEEN THE SCIENCE RESEARCH COUNCIL AND THE CONSIGLIO NAZIONALE DELLE RICERCHE AND THE NATIONAL SCIENCE FOUNDATION FOR A TRANSATLANTIC BALLOON PROGRAM

1. As provided for by clause 1.3 of the Memorandum of Understanding (MOU) signed on 21 and 22 July 1976² on behalf of the Science Research Council (SRC), the Consiglio Nazionale delle Ricerche (CNR) and the National Science Foundation (NSF) governing a program of transatlantic balloon flights to be launched during the period 1 June to 31 August 1976, the parties signing below, namely SRC, CNR, NSF, the Centre National d'Etudes Spatiales (CNES) and the Max-Planck Institut fuer Physik und Astrophysik (MPI), hereby agree as follows with reference solely to the planned flights of a payload which comprises experiments provided or sponsored by CNR, CNES and MPI.

2. SRC, CNR, and NSF agree to CNES and MPI becoming parties to the MOU.

3. CNES and MPI each agree to become parties to the MOU and to abide by its terms and conditions.

4. Notwithstanding clause 8.2 of the MOU which provides that the party or parties providing the scientific payload for a particular flight will assume all liability for that flight and hold the remaining parties harmless with respect to any claims arising out of such flights not covered by insurance for that flight provided for in clause 7, CNR agrees to assume all such liability as if the payload specified in paragraph one of this Amendment had been provided or sponsored by CNR alone.

¹ Came into force on 13 August 1976 upon signature by all the Parties. The signatures were affixed as follows:

<i>State</i>	<i>Date of signature</i>	<i>State</i>	<i>Date of signature</i>
United States of America	9 August 1976	France	12 August 1976
United Kingdom of Great Britain and Northern Ireland	10 August 1976	Germany, Federal Republic of	13 August 1976
		Italy	13 August 1976

² See p. 88 of this volume.

SIGNED at Washington, D.C., on August 10, 1976, in quintuplicate by [*Signed — Signé*]¹ for the Science Research Council.

SIGNED at Washington, D.C., on August 13, 1976, in quintuplicate by [*Signed — Signé*]² for the Consiglio Nazionale delle Ricerche.

SIGNED at Washington, D.C., on August 9, 1976, in quintuplicate by [*Signed — Signé*]³ for the National Science Foundation.

SIGNED at Washington, D.C., on August 12, 1976, in quintuplicate by [*Signed — Signé*]⁴ for the Centre National d'Etudes Spatiales.

SIGNED at Washington, D.C., on August 13, 1976, in quintuplicate by [*Signed — Signé*]⁵ for the Max-Planck Institut fuer Physik und Astrophysik.

¹ Signed by Alan Smith — Signé par Alan Smith.

² Signed by Giulio Tamagnini — Signé par Giulio Tamagnini.

³ Signed by Guyford Stever — Signé par Guyford Stever.

⁴ Signed by J. J. Sussel — Signé par J. J. Sussel.

⁵ Signed by Christian Patermann — Signé par Christian Patermann.