

No. 7572

**UNITED STATES OF AMERICA
and
CANADA**

**Exchange of notes (with Memorandum of Understanding)
constituting an agreement relating to ionospheric re-
search by means of satellites. Ottawa, 6 May 1964**

Official text: English.

Registered by the United States of America on 3 February 1965.

**ÉTATS-UNIS D'AMÉRIQUE
et
CANADA**

**Échange de notes (avec Mémorandum d'accord) constituant
un accord relatif aux recherches par satellites sur
l'ionosphère. Ottawa, 6 mai 1964**

Texte officiel anglais.

Enregistré par les États-Unis d'Amérique le 3 février 1965.

No. 7572. EXCHANGE OF NOTES CONSTITUTING AN AGREEMENT¹ BETWEEN THE UNITED STATES OF AMERICA AND CANADA RELATING TO IONOSPHERIC RESEARCH BY MEANS OF SATELLITES. OTTAWA, 6 MAY 1964

I

The Ambassador of the United States of America to the Canadian Secretary of State for External Affairs

EMBASSY OF THE UNITED STATES OF AMERICA

No. 324

Ottawa, May 6, 1964

Sir :

I have the honor to refer to discussions between representatives of the United States National Aeronautics and Space Administration and the Canadian Defence Research Board regarding proposals for cooperation in a joint program of ionospheric research by means of satellites. The objectives of the proposed joint program are the conduct of comprehensive studies of the ionosphere from the approaching minimum through the next maximum of the present solar cycle and to make the resulting scientific data freely available to the world scientific community.

The program agreed upon and the details for its proposed implementation have been incorporated in the attached Memorandum of Understanding² between the United States National Aeronautics and Space Administration and the Canadian Defence Research Board which was signed on December 23, 1963. The Memorandum of Understanding has been approved by the Government of the United States of America. It is understood that implementation and direction of the United States participation in the proposed program shall be the responsibility of the United States National Aeronautics and Space Administration and that implementation and direction of Canadian participation shall be the responsibility of the Canadian Defence Research Board.

If the foregoing meets with the approval of the Canadian Government, I have the honor to propose that this Note together with the attached Memo-

¹ Came into force on 6 May 1964 by the exchange of the said notes.

² See p. 176 of this volume.

randum of Understanding and your reply, shall constitute an Agreement between our two Governments for cooperation in a joint program of ionospheric research by means of satellites to be effective from the date of your reply. This agreement may be terminated by agreement between the two governments prior to 1970 and thereafter, by either government upon six months notice.

Accept, Sir, the renewed assurances of my highest consideration.

W. W. BUTTERWORTH

Enclosure :

Memorandum of Understanding

The Honorable Paul Martin
Secretary of State for External Affairs
Ottawa

MEMORANDUM OF UNDERSTANDING BETWEEN THE CANADIAN DEFENCE RESEARCH BOARD AND THE UNITED STATES NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

1. The Canadian Defence Research Board (DRB) and the United States National Aeronautics and Space Administration (NASA) affirm a mutual desire to undertake a joint program of ionospheric research by means of satellites. The objectives are to conduct comprehensive studies of the ionosphere from the approaching minimum through the next maximum of the present solar cycle and to make the resulting scientific data freely available.

2. This joint ionospheric monitoring program is planned to consist of a series of four satellites to be launched at appropriate intervals between 1965 and 1970.

(a) The first of these, to be known as *Alouette II*, will consist of the spare *Alouette* flight unit with such agreed modifications to the sounder, telemetry, and electronics as engineering feasibility and schedule permit. In order to perform coordinated direct measurements, NASA will launch a satellite of its *Explorer* series in conjunction with *Alouette II*.

(b) The remaining three satellites will bear the name *Isis* (International Satellite for Ionospheric Studies). It is expected that two of the *Isis* series will carry as the principal experiment a topside sounder of the swept frequency type (or a combination of swept and fixed frequency sounders) and such supporting experiments as may be determined in the manner described in paragraph 3 (c) of this memorandum. It is understood that these two spacecraft and *Alouette II* will be launched into orbits with apogees of at least 2000 kilometers and with inclinations high enough to obtain auroral zone data. A decision on the character and orbit of the third *Isis* will be made during the course of the program.

Sounding rocket flights may be necessary to test components and experiments and to conduct correlated experiments.

3. It is intended that this project proceed by mutual agreement between DRB and NASA.

(a) The body responsible for implementing the agreed program will be a Joint (DRB/NASA) Working Group. The Chairman of the Working Group will be appointed by NASA and will have overall responsibility for the success of the project. It is intended that other parties sharing in data acquisition and reduction or participating as supporting experimenters may, as appropriate, attend meetings of the Joint Working Group.

(b) DRB and NASA will name project managers to serve as contacts for technical coordination.

(c) It is the desire of DRB and NASA to give other investigators the opportunity to compete for the space assigned to supporting experiments. Accordingly, DRB will solicit proposals in Canada, and NASA will solicit them in the United States and other countries in conformance with its current practices. When the proposals have been received, DRB and NASA will exchange them so that each agency can review and evaluate all proposals. A Joint DRB/NASA panel will make the final selections. In case of disagreement, the issues in question will be resolved by the Chief Scientist, DRB, and the Associate Administrator for Space Science and Applications, NASA, or their delegated representatives. In general, responsibility for seeing that the supporting experiments are fabricated, tested, and followed through to countdown will rest with the national agency sponsoring the experiment.

4. DRB will have specific responsibility for the following :

(a) Designing, constructing, and testing the several spacecraft, their subsystems, and the topside sounders, except as noted in paragraph 5 (d) and 5 (e), and integrating supporting experiments into the spacecraft. The spacecraft will be designed to be compatible with the *Delta* vehicle.

(b) Providing payloads for such sounding rocket tests of spacecraft components, sounders, new experiments, and agreed correlated rocket experiments as are recommended by the Joint Working Group and are approved by DRB and NASA.

(c) Controlling the satellites in accord with schedules approved by the Joint Working Group.

(d) Operating at least one telemetry station in Canada capable of supplying information on spacecraft operation.

5. NASA will have specific responsibility for the following :

(a) Providing four launch vehicles with at least the capability of the *Delta*, payload support hardware and separation mechanisms, and integration of payloads and launch vehicles.

(b) Launching the spacecraft into the agreed orbits.

(c) Providing and launching up to five sounding rockets no larger than the *Javelin/Journeyman* class for such tests of spacecraft components, sounders, new experiments, and agreed correlated experiments as are recommended by the Joint Working Group and are approved by DRB and NASA.

(d) Providing spacecraft power, command, and telemetry subsystems which DRB and NASA agree cannot feasibly be manufactured in or procured by Canada.

(e) Establishing specifications and providing facilities for final spacecraft environmental and flight acceptance tests.

(f) Providing tracking and data acquisition which can be accomplished by existing NASA facilities.

6. Data processing and reduction will be a joint responsibility of the agencies participating in the program and will be shared among them by mutual agreement.

7. DRB and NASA intend that processed data be distributed expeditiously among the participating investigators, who will define their current areas of interest, meet regularly to keep each other informed of their progress and problems, make recommendations for the conduct of the program, and publish results. DRB and NASA may invite other interested parties to their meetings and authorize the distribution of reduced data to other investigators who can make useful contributions. No longer than one year after the data has been obtained, it will be made available to the scientific community through the World Data Centers. Specifically, a complete set of world ionograms and a tabulation of data from supporting experiments will be placed in the World Data Center at Boulder, Colorado; other World Data Centers will receive a catalogue of all available data.

8. DRB and NASA agree to grant each other royalty free licenses to use inventions which are necessary to carry out their respective responsibilities under this program to the extent that their respective Governments own or have the right to grant such licenses.

9. DRB and NASA will use their best efforts to arrange with their respective authorities for free entry of equipment into each country as required by the program.

10. DRB and NASA will each bear the cost of discharging its respective responsibilities including the cost of travel by its personnel and transportation charges on all equipment for which it is responsible.

11. It is understood that the ability of both DRB and NASA to carry their obligations into effect is subject to the availability of appropriated funds.

12. This Memorandum of Understanding may only be terminated prior to 1970 by mutual agreement.

13. This Memorandum of Understanding will be subject to the approval of the Governments of the United States and Canada to be expressed by an exchange of notes between them.

Dec. 23, 1963

For the Defence Research Board :

A. Hartley ZIMMERMAN

For the National Aeronautics and Space Administration :

Hugh L. DRYDEN

II

The Canadian Secretary of State for External Affairs to the Ambassador of the United States of America

DEPARTMENT OF EXTERNAL AFFAIRS
CANADA

No. 72

Ottawa, May 6, 1964

Excellency,

I have the honour to refer to your Note No. 324 of May 6, 1964, with its attached Memorandum of Understanding between the Canadian Defence Research Board and the United States National Aeronautics and Space Administration, regarding co-operation in a joint programme of ionospheric research by means of satellites.

The Canadian Government approves the Memorandum of Understanding and it therefore concurs in your proposal that your Note and the attached Memorandum of Understanding together with this reply, shall constitute an Agreement between the Government of Canada and the Government of the United States for co-operation in a joint programme of ionospheric research by means of satellites, to be effective from the date of this reply. This Agreement may be terminated by Agreement between the two governments prior to 1970, and thereafter by either party upon six months notice.

Accept, Excellency, the renewed assurances of my highest consideration.

Paul MARTIN
Secretary of State for External Affairs

His Excellency W. Walton Butterworth
Ambassador of the United States of America
Ottawa