

No. 9914

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**UNITED STATES OF AMERICA**  
**and**  
**CANADA**

**Exchange of notes constituting an agreement regarding  
a cooperative study of the polar cap ionosphere  
(with attachment). Ottawa, 9 and 11 August 1967**

*Authentic text: English.*

*Registered by the United States of America on 1 October 1969.*

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**ÉTATS-UNIS D'AMÉRIQUE**  
**et**  
**CANADA**

**Échange de notes constituant un accord relatif à une  
étude conjointe de l'ionosphère de la calotte polaire  
(avec pièce jointe). Ottawa, 9 et 11 août 1967**

*Texte authentique : anglais.*

*Enregistré par les États-Unis d'Amérique le 1<sup>er</sup> octobre 1969.*

EXCHANGE OF NOTES CONSTITUTING AN AGREEMENT<sup>1</sup>  
BETWEEN THE UNITED STATES OF AMERICA AND  
CANADA REGARDING A COOPERATIVE STUDY OF  
THE POLAR CAP IONOSPHERE

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## I

No. 44

The Embassy of the United States of America presents its compliments to the Department of External Affairs and refers to discussions which have been held between personnel of the United States National Aeronautics and Space Administration and the Canadian National Research Council looking toward a cooperative effort to study, during the proximate years of solar activity, the polar cap ionosphere. To fulfill this objective, a series of 6 to 12 sounding rockets would be launched to an altitude of 100 km at Resolute Bay, Canada, commencing in the fall of 1967 and continuing at an approximate rate of three per year until the fall of 1969. The experiments to be flown would study polar cap absorption events and the polar ionosphere "D" region as well as measure the height profile of high energy protons.

The studies of the polar ionospheric "D" region will be directed at assessing the importance of mesospheric circulation effects which may be partly responsible for the maintenance of the lower ionosphere during the quiet polar night. The experiments will utilize a groundbased transmission of RF energy to rocket-borne receivers (Faraday — Rotation Experiment), and the rockets will be fired to a peak altitude of 90-100 km, utilizing a minimum launch elevation of 85 degrees.

This program is expected to start during the summer of 1967, and continue until the summer of 1969, with rockets launched at a rate of approximately two to four per year. As presently conceived, the program would be initiated with the launching of up to four rockets in September or October 1967. These launches will be coordinated with a Canadian NRC expedition that is currently scheduled for this period. The second series of launchings is planned for June or July of 1968, followed by a third series in the winter of 1968-1969. The fourth launch series is planned for summer 1969.

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<sup>1</sup> Came into force on 11 August 1967 by the exchange of the said notes.

The Government of Canada will have access to the data obtained subject only to the normal publication and proprietary rights granted to scientists engaged in scientific experimentation.

There is attached a list giving the details of equipment which the Goddard Space Flight Center will ship to Montreal during the summer of 1967, for transshipment to Resolute Bay, as well as the services and facilities which it is understood the Government of Canada will provide on a reimbursable basis.

The Embassy requests the agreement of the Government of Canada in the proposed program and its approval for the National Aeronautics and Space Administration of the United States and the Canadian National Research Council to conclude such arrangements on details as might be necessary.

Enclosure :

List of equipment

EMBASSY OF THE UNITED STATES OF AMERICA

Ottawa, August 9, 1967

Goddard Space Flight Center will ship to Montreal in the summer of 1967, pending further transshipment to Resolute Bay :

- (a) A ground station trailer housing transmitters, telemetry station and, for shipping and storage purposes, launch support equipment.
- (b) An Arcas launcher.
- (c) Rocket motors, boosters and payloads. As is currently planned, up to four boosted Arcases with payloads will be shipped for the September-October 1967 launches.
- (d) Seven telescoping antenna masts which extend from 25 feet to a maximum length of 80 feet.

With the exception of the rockets, all of the above equipment will remain on site until the project is completed.

Services and/or facilities to be provided by the Government of Canada on a reimbursable basis :

- (a) Transportation from Montreal of the items listed above to the Resolute Bay launch site.
- (b) A generator or power source for the trailer, capable of 60 cycle, 3 phase, 4 wire, 100 amp. current. This will be required only while NASA personnel are on site.
- (c) Trailer site, to be occupied by trailer until project completed.

- (d) A concrete pad for the rocket launcher, to be prepared prior to NASA personnel arriving on site for the initial launches.
- (e) An accessible heated, enclosed equipment storage area of approximately 600 square feet, required only while NASA personnel are on site.
- (f) An enclosed heated rocket buildup area of approximately 600 square feet, required only while NASA personnel are on site.
- (g) A backup telemetry station, if available.
- (h) Range communications. (Phone hook-up between trailer and launch control area.)
- (i) Quarters and subsistence for NASA personnel. It is anticipated that seven NASA personnel will be on site for a maximum of four weeks for the 1967 launches.
- (j) A rocket firing panel and associative cables, if available.
- (k) Transportation on site for NASA personnel.
- (l) Assistance in erecting the towers.
- (m) Personnel for preparation and launching of rockets throughout the project. It is expected that these personnel would provide range safety.

## II

MINISTÈRE DES AFFAIRES EXTÉRIEURES  
CANADA

No. E-2694

The Department of External Affairs presents its compliments to the Embassy of the United States of America and has the honour to refer to the Embassy's Note No. 44 of August 9, 1967 relating to the launching of 6 to 12 sounding rockets at Resolute Bay beginning in the fall of 1967 and continuing until the fall of 1969 in connection with a co-operative effort by the National Research Council of Canada and the United States National Aeronautics and Space Administration to study the polar cap ionosphere.

The Department of External Affairs is pleased to inform the Embassy of the United States of America that the Government of Canada is agreeable to the proposed co-operative programme, including the launching of the sounding rockets.

Approval is also given for the National Research Council of Canada and the National Aeronautics and Space Administration of the United States to conclude such arrangements on the details of this programme as might be necessary.

Ottawa, August 11, 1967