



Approved For Release 2005/02/17 : CIA-RDP74B00681R000100150004-2

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
WASHINGTON, D.C. 20546

DD/ST# 3188-71

NOV 2

1971

adm-12.4

REPLY TO  
ATTN OF: WX

MEMORANDUM

TO: CIA/Dr. Donald Steininger  
Assistant Deputy Director for Science and Technology

FROM: WX/Technical Coordinator, Office of DOD and Interagency  
Affairs

SUBJECT: US/USSR Space Agreement

Attached is the press release and text of the recommendations of three joint US/USSR working groups which met in Moscow, August 2-6, 1971.

Please destroy the advance copy previously sent you since the Soviets have accepted our suggested revision in the text; namely, redesignation of "Joint Coordination Group on Natural Resources" to "Joint Coordination Group on the Natural Environment (pp. 9-11, 13 and 15) and on pp. 14 "natural resources" has been changed to read "natural environment features."

Note especially pp. 9-16 re Joint Working Group II - Natural Environment.

Myron W. Krueger

Attachment  
as stated

NASA review completed

DD/S&T  
FILE COPY

NEWS



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (202) 755-8370  
WASHINGTON, D.C. 20546 TELS: (202) 755-8347

**FOR RELEASE: UPON RECEIPT**

Richard Friedman  
(Phone: 202/755-3897)

RELEASE NO: 71-210

US/USSR SPACE AGREEMENT

The National Aeronautics and Space Administration and the Soviet Academy of Sciences have agreed to rapid exchange of findings of special interest by the U.S. and Soviet probes now approaching Mars.

This exchange is one of a wide range of recommendations by Joint Working Groups under a space agreement negotiated last January by teams led by Dr. George M. Low, Deputy Administrator of NASA, and Academician Mstislav V. Keldysh, President of the Soviet Academy of Sciences. All the recommendations have been approved.

Other approved recommendations by a Working Group on Near-Earth Space, the Moon, and the Planets include the continued exchange of lunar samples; working seminars to consider scientific objectives, strategy, and results, and cross-calibration of instruments; and expert consideration of the principles of constructing a common lunar coordinate system.

- 2 -

The recommendations of a second Joint Working Group on the Natural Environment include experiments in remote sensing of the environment at sites in the U.S. and the USSR, with each country carrying out the research at its own sites, and joint efforts in remote sensing of the ocean to relate satellite measurements to sea surface measurements.

The recommendations of a third Working Group on Space Meteorology include a review of the existing methods of temperature sounding from satellites; a joint experiment in methods of microwave measurement; assurance that ground stations for receiving cloud cover data from satellites (APT receivers)\*of both countries will be as nearly identical as possible; and coordinated meteorological rocket soundings along selected meridional zones in Eastern and Western Hemispheres.

The U.S.-Soviet agreement under which the recommendations were made and approved is one of two major bilateral space accords negotiated in the past year. The other provides for joint determination of compatible space rendezvous and docking capabilities.

- end -

\* APT - Automatic Picture Transmission system.

RECOMMENDATIONS BY THE JOINT WORKING GROUPS  
ESTABLISHED UNDER THE SUMMARY OF RESULTS  
of Discussions on Space Cooperation  
Between

THE US NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
AND THE ACADEMY OF SCIENCES OF THE USSR  
Held In Moscow, January 18-21, 1971

The Joint Working Groups I, II, and III\* provided for in the Summary of Results of January 1971 have met in Moscow, August 2-6, 1971, and have developed the following recommendations.

The Joint Working Groups suggest that the Principals approve these recommendations in whole or in part within 60 days from this date, after which those recommendations which are approved shall enter into force.

- 
- \*Joint Working Group I: Exploration of Near-Earth Space, the Moon and the Planets  
Joint Working Group II: Natural Environment  
Joint Working Group III: Space Meteorology

I. Recommendations of the Joint Working Group  
on Near-Earth Space, the Moon and the Planets.

A. Near-Earth Space.

1. Joint Working Seminars

The Joint Working Group recommends procedures for Joint Working Seminars to facilitate joint analysis of data, coordination of programs of measurement, and discussions of topical problems of programmatic value in the field of magnetospheric investigations.

The recommended procedures follow:

Concrete proposals for Joint Working Seminars meeting the above objectives will be made as appropriate by either side through coordinators (Dr. John Naugle for NASA, Academician Boris N. Petrov for the Academy) whose approval shall be required in each case. Such approval shall include

- a. topic and scope
- b. time and duration
- c. location
- d. attendance

The coordinators shall name co-chairmen (one from each side) who together will work out details, issue invitations for attendees and papers, and establish the general format. Each side may invite scientists of other countries already engaged in relevant joint research.

Without intent to limit the list of desirable Working Seminars, it is recommended that the following topics be given early consideration:

- (1) Controlled injection experiments.
- (2) UV and X-ray solar radiation in relation
- (3) Calibration of instruments.

(4) ~~Correlated measurements between ground~~ stations and satellites.

(5) Specific solar-terrestrial events (such as the 8 March 1970 geomagnetic storm).

(6) Coordinated satellite measurements.

## 2. Correlation of Magnetic Observations

Recognizing the value of correlating magnetic variations in space with those observed on the ground, the Joint Working Group recommends that designated points of contact on each side (Dr. Erwin R. Schmerling for NASA and Dr. I. Zhulin for the Academy), explore and report by 31 December 1971 the feasibility of a project whereby magnetometer data from USSR ground-based observing stations would be transmitted in real time to the U.S. geostationary satellite, ATS-F, assuming its successful functioning, and re-transmitted to the ground together with data from an on-board magnetometer. The combined data of magnetic variations, referring to the same time, will then be made jointly available. If the project is reported to be feasible, it shall proceed.

B. Planetary Exploration

1. The Working Group recommends that as an adjunct to appropriate international colloquia both parties hold bilateral discussions on the scientific results, objectives and strategy for planetary exploration.

It is understood that in connection with such international colloquia, the parties will, if necessary for completeness, organize special sessions of invited papers in which scientists of countries directly engaged in relevant research could participate. A working session of designated US and USSR scientists will then prepare a report which should review the principal scientific problems and objectives in the exploration of the planets discussed at the meeting and recommend experiments to be considered by the two sides in planning their respective research programs. The report may also propose complementary activity by one party during planetary investigations conducted by the other, as well as recommendations concerning the exchange of information from planetary experiments.

We suggest that the discussions of selected planetary subjects be held in conjunction with the following colloquia:

- a. Planetary Sciences Meeting of American Astronomical Society in Kona, Hawaii, during March 1972; terrestrial planets, including preliminary 1971 Mars results.
- b. Annual meeting of COSPAR in Madrid, Spain, during May 1972; outer planets.

Approved For Release 2005/02/17 : CIA-RDP74B00681R000100150004-2  
c. Proposed Lunar meeting in Moscow in February

March 1973; Mars, including an in-depth review of the 1971 mission results and their effect on future Mars objectives in the physical and biological sciences.

Final approval of the colloquia and the topics of subsequent discussions shall be confirmed by 31 December 1971.

2. Considering it feasible and mutually beneficial, the Joint Working Group recommends a bilateral exchange of messages on findings of special interest in as near real-time as possible during the execution of the experiments on Mariner 9 and Mars 2 and 3. Such exchanges promise to be especially valuable for the mutual study of dynamic phenomena in the atmosphere and on the surface of Mars. On this basis, we recommend the bilateral exchange of suggestions for desirable measurements, based on the preliminary analysis of the most significant experimental data, such suggestions to be accompanied by an appropriate explanation of the nature, time (GMT), and location of the measurements.

The names of the responsible representatives and the Telex numbers for such exchange shall be communicated by mail before 1 October 1971.

The parties would designate the location of the measurements in <sup>agreed</sup> ~~IAI-approved~~ Mars coordinates. Prior to 1 November 1971, each party would deliver to the other an explanation of how it is relating its Mars coordinate system to celestial coordinates.

3. The Joint Working Group recommends that both parties exchange planetary radar ephemeris data ~~on Mars and Venus~~.  
Such data will be provided in printed form with



Approved For Release 2005/02/17 : CIA-RDP74B00681R000100150004-2  
adequate explanation. The USSR will provide approximately 700 time-of-flight data points for Venus and the US will provide approximately 900 post-1965 independent time-of-flight data points on Mars. Designated points of contact on each side (Dr. William Brunk for NASA and Dr. E. L. Akim for the Academy) will assure that the exchange is completed by December 31, 1971.

C. Lunar Exploration

1. Lunar Conferences.

The Joint Working Group recommends that a lunar conference be held in the USSR in February or March, 1973, in order to exchange views on the results, scientific objectives, and future programs of lunar exploration.

Representatives of the USSR will attend and present scientific papers at the Lunar Science Conference in January 1972 in Houston, Texas, USA. At that time preliminary plans for the USSR conference will be discussed.

2. Lunar Photography.

The Joint Working Group recommends that information on all photography taken on past and future lunar missions be communicated through an exchange of detailed index charts, lists, catalogs, or similar means, the first exchange to be completed by 31 March 1972. This does not exclude the possibility of exchanging lunar photographs prior to March 1972. Requests for photographs shall be made by reference to such indices, shall be made in reasonable quantities with due regard for possible reciprocation, and shall be fulfilled at reproduction cost. Requests shall be

Center, and if to the USSR, to INTERCOSMOS. Descriptions of supporting data will be the subject of future correspondence.

Each party may indicate to the other, regions of the lunar surface which in its view are of particular interest for photographing. The other party will then attempt to take this into account in planning future missions.

### 3. Lunar Cartography.

The Joint Working Group recommends that each party provide for the other by 31 December 1971 copies of all lunar maps that have been prepared at a scale of 1:250,000 or smaller. An index of larger scale maps will also be provided and copies of such maps furnished on request.

Where either party wishes to specify a location on the lunar surface, it will do so by reference to coordinates on a specified map available to both parties.

A group of experts, to be designated by 31 December 1971 by Dr. John E. Naugle for NASA and Academician Boris N. Petrov for the USSR Academy of Sciences, will meet to discuss the techniques by which the maps have been prepared, the principles of construction of a common lunar coordinate system, the compilation of a list of control points of varying order and common methods for future lunar cartography. The first meeting of this group will be held by 1 April 1972. The participants, location, date and program of this meeting will be established by correspondence.

### 4. Exchange of Lunar Samples.

The Joint Working Group recommends that samples returned from lunar missions by either party will be provided

to the other party in a manner similar to that already used with Apollo 11 and Apollo 12 lunar samples and Luna 16 lunar samples. The amount and kind of samples will be negotiated and agreed in each case by designated representatives of NASA and the USSR Academy of Sciences. Each sample will be appropriately documented for its place of origin, methods of handling, and other necessary data.

Such exchanges will be implemented as soon as possible following the completion of preliminary examination and characterization of the material, but at a time and in a manner convenient to both parties.

For the purpose of exchanging experience in the techniques of lunar sample investigation, the cross-calibration of instruments, or the interpretation of results, the Joint Working Group recommends an exchange of one or two appropriate specialists. The names of the specialists, duration and the institutions where they will be in residence, will be established through correspondence.

5. Complementary Lunar Exploration.

The Joint Working Group recommends continued discussion between designated representatives on the possibilities of complementary lunar exploration activities.

Co-Chairmen:

*B. N. Petrov*

B. N. Petrov

*John E. Naugle*

John E. Naugle

Date: 6 abryca 1971.

II. Recommendations of the Joint Working

Group on the Natural Environment

A. Investigations Over Land

The Joint Working Group recommends:

- The conduct of multi-purpose aerospace and field experiments on the environment, using similar methods and sensors, in a number of sites in the US and the USSR. Two of these sites in the USSR are similar to sites in the US. They are referred to as the analogous sites. The remaining sites are complementary in the two countries. Each country will carry out research in its own sites;
- That the results of these experiments be exchanged in the form of technical reports containing conclusions, analysis methods and original data with sufficient completeness that the analyses could be repeated or accomplished by alternative methods by other investigators.
- That close cooperation and coordination be maintained throughout the conduct of the experiments. The subjects of cooperation and coordination shall include: general methods employed in the experiments and methods of instrument calibration including, where necessary, exchange of calibration standards.
- That within 90 days of the acceptance of these recommendations, the Academy of Sciences of the USSR and the US National Aeronautics and Space Administration each designate a group of scientists as members of a Joint Coordination Group on the Natural Environment to be responsible for carrying

out the recommended coordination and cooperation on the working level. The first meeting of the Joint Coordination Group on the Natural Environment should take place not more than 90 days after establishment of the group. At their first meeting the Joint Coordination Group on the Natural Environment should establish a schedule for exchange of information and data concerning the projects (described later in this document) in the analogous area. At the same meeting they should establish a schedule for the selection of the research projects in the complementary areas for which information and data will be exchanged and the program for the exchange of reports. As individual results become available the Joint Coordination Group on the Natural Environment should carry out specific exchanges of data and results for related and complementary projects as soon as possible during and after the acquisition of data. The Joint Coordination Group on the Natural Environment should also be responsible for carrying out the cooperation and coordination regarding experiment methods and calibration methods and standards.

The sites recommended for cooperative study follow:

#### Analogous Sites

##### USSR

1. Tsimlanski (46°40'-47°40' n.lat., 43° to 44°30' e.long.) a flat steppe plain, cultivated in the main, composed of friable deposits.
2. Ustyurtski, corner coordinates: Point A (43°N-54°E), Point B (43°40'N-57°30'E), Point C (41°N-60°E), Point D (40°N-56°E) - a desert plateau, some grazing and below sea level depressions.

USA

1. South Dakota (44° to 45°30' n.lat., 97° to 99° w.long.) a relatively flat, dry land agricultural area.
2. Arizona ecological site (32° to 35° n.lat., 103° to 112° w.long.) - a desert area that includes rapidly growing urban centers and an eastward addition to this site that is underlain by gently folded sedimentary rocks.

Complementary Sites

USSR

1. Caucasus,
2. Balkhash,
3. Chatkalski,
4. Sikhote-Alin.

USA

1. Southern Appalachian,
2. Cascade Mountains,
3. Chesapeake Bay,
4. Gulf Coast,
5. South Florida,
6. Bucks Lake,
7. California.

-- It is recommended that the Joint Coordination Group on the Natural Environment, in an early meeting, review the complementary sites and related investigation topics and recommend definite projects for selected sites for additional study and exchange of results.

-- Aerial and space surveys and supporting ground observations and measurements of and within the analogous sites are recommended. These should include:

1. Aerial and manned and unmanned space: spectro-photometric, photographic, multi-spectral, thermal, and microwave surveys.
2. Related ground-based geophysical, spectrometric, meteorological, geological, soil, and geobotanic observations and measurements.

-- The basic physical problems of atmospheric transmission, absorption, scattering, emission and refraction as well as questions of spectral reflectivities, emissivities and penetration radiation into solid materials must be addressed.

-- The Joint Working Group on Natural Environment recommends that the following research topics be pursued cooperatively in the analogous sites:

At Tsimlanski, USSR, and South Dakota, US:

1. Water and snow inventories,
2. Hydrogeology,
3. Structural geology,
4. Agricultural crop inventory and productivity estimates,
5. Microclimatology (shelter belts),
6. Soil mapping, and soil moisture and conservation studies.

At Ustyurtski, USSR, and Arizona ecological site, US:

1. Structural geology,
2. Forage grass and shrub inventory,

4. Archeology,

5. Soil mapping, and soil moisture and conservation studies.

Each research topic will require specific types of remote sensor data collected at specified intervals. To illustrate these data requirements, the data required to undertake snow inventories, with the aim of evolving a model for predicting water runoff, are given in the following table:

<u>Task</u>	<u>Sensors</u>	<u>Platform</u>	<u>Frequency</u>	<u>Ground Truth</u>
Develop model for predicting water runoff from melting snow	Infrared photography, thermal imagery, passive microwave, radiometers, and gamma ray detectors	Aircraft or spacecraft	Weekly in snow accumulation and melt periods	Measurements of water content of snow, hydrologic history, climatological history

-- It is recommended that the Joint Coordination Group on the Natural Environment define similar specific data requirements for each of the other research topics early in the planning process.

#### B. Investigation over the Ocean

1. The Joint Working Group on Natural Environment, in considering oceanography, notes the following:

(a) The USSR has a national program to deploy several research ships in the eastern tropical Atlantic in 1972 primarily for meteorological purposes. They will also continue to have in 1972 and following years operational meteorological satellites (Meteor) in orbit equipped with infrared radiometers. In 1973, the USSR proposes to send one oceanographic research vessel to one of two sites in the North Atlantic where large horizontal temperature gradients prevail: (1) the Gulf Stream east of Cape



Hatteras, or (2) the polar front between Iceland and Canada. They will deploy many research vessels and several aircraft and spacecraft in support of the international GARP/GATE tropical meteorological experiment in the Atlantic in 1974.

(b) The US has a national program involving aircraft to develop remote sensing technology for all natural environmental features, including those of the oceans. They will continue to have in 1972 and following years operational meteorological satellites (ITOS/NOAA) in orbit equipped with infrared radiometers. In 1972 they will also have an experimental earth resources satellite (ERTS A) to measure reflectances in several bands of the visible. In 1973 the US may launch an ERTS B satellite (multispectral visible and IR), Nimbus E (IR and microwave) and Skylab (multispectral visible, IR, Passive and active microwave). In 1974, the US plans also to participate in the international meteorological tropical experiment (GARP/GATE) in the Atlantic with several research vessels and several aircraft.

2. The Joint Working Group on Natural Environment recommends the following US/USSR joint efforts in remote sensing of the ocean in the interests of better management of fisheries, safer and more efficient marine transport, and improved prediction of weather and roughness of the sea.

-- NASA and the Academy will exchange satellite and surface data accumulated during the USSR program deploying ships in the eastern tropical Atlantic in 1972. The purpose would be to compare satellite infrared temperature measurements

evaluate the utility of infrared and visual images to describe sea surface conditions. NASA and the Academy will name, within 90 days of the date of this agreement, experts to the Joint Coordination Group on the Natural Environment to plan and execute this effort.

- The aforementioned experts will plan implementation of all agreed-upon joint efforts, will schedule and carry out exchanges of information on techniques, methods of data processing and analysis, and results of experiments. Reports on the results will contain sufficient original data to permit evaluation of the results or to permit analysis by other techniques.
- NASA and the Academy will also charge the aforementioned experts to study the opportunities for expansion of the above mentioned national efforts to further the objectives stated below, and within six months of the date of this agreement to recommend cooperative efforts as necessary.

#### Objectives

##### 1. Sea Surface Temperature

- To: (a) Relate satellite and aircraft microwave and infrared measurements to direct surface temperature measurements.
- (b) Develop understanding of the effects of surface conditions (i.e., spray, foam, and surface films) on the above.

2. Sea Surface Roughness

To: (a) Determine the ability of visual and IR images and passive and active microwave instruments from satellites to measure sea surface conditions, including roughness.

(b) Relate such measurements to two-dimensional wave spectra theory and surface winds.

3. Ocean Biological Productivity

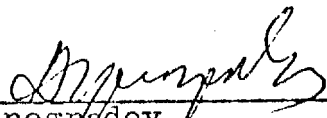
To: (a) Determine the utility of remote visual spectrum for detection of phyto-plankton and its relationship along with surface temperature, to biological productivity of the ocean.

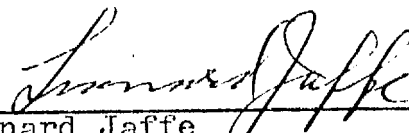
(b) Determine the variability of such measurements in various upwelling area.

4. Sea Ice Conditions

To: (a) Map and describe the ice cover in polar regions of the ocean by means of IR and microwave measurements from aircraft and satellites.

Co-Chairmen:

  
\_\_\_\_\_  
A. P. Vinogradov  
Date: 6/11/71

  
\_\_\_\_\_  
Leonard Jaffe  
Date: 6 August 1971

III. Recommendations of the Joint Working  
Groups on Space Meteorology.

A. Meteorological Satellites.

1. Having discussed the possibilities for cooperation in the development of methods for meteorological measurements from satellites as well as the interpretation, processing and application of the data acquired, the Joint Working Group recommends the following:

(a) Experts from each country would prepare and exchange by 1 June 1972 a "Technical Note" on temperature sounding from satellites with emphasis on: a review of existing methods, analysis of problems to be solved, a list of required experiments, proposed cooperative programs and adequate references. (A recommended format for the "Technical Note" is contained in the Appendix.)

(b) Based on the "Technical Notes" (one from each country) recommended above, experts would convene to develop detailed plans for appropriate cooperative programs.

(c) A joint experiment would be organized in 1973-74 on temperature sounding by satellites of both countries over Western Europe, including the exchange of data on spectral intensities measured during this experiment, and the provision of basic additional information such as orbital data, slit function, resolution, etc. The experts designated under (b) will plan this experiment.

2. Exchange of information on methods of microwave measurement now being developed in both countries indicated the strong interest and capability of both sides in microwave methods which may be applicable to the determination of precipitation zones, ice conditions, and sea surface roughness and temperature.

(a) It is recommended that simultaneous conventional and microwave aircraft observations of these parameters be conducted in conjunction with direct observations from ships (if the latter are available), and that such a program be conducted jointly by both countries in the international waters of the Bering Sea beginning late 1972 or early 1973.

Aircraft would also be used with the ships to observe directly the atmospheric and surface parameters which are needed to interpret the microwave measurements. If microwave observations from both US and USSR satellites are available over the experimental area at the same time, these data should be incorporated into the joint experiment. The end product of this experiment should be the exchange of equivalent observations made by aircraft and ships of each side, the analysis of the microwave observations using the total set of environmental measurements available, and a comparison of these analyses.

(b) It is recommended that each side produce a plan describing its contribution to the joint experiment and that both sides exchange these plans by January 1972. These plans

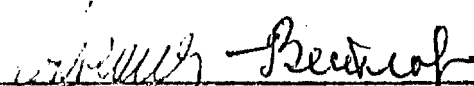
should specify the exact time and location for the experiment, the parameters to be measured by instruments, the accuracy, spatial and spectral resolutions of the measurements, and the format of data to be exchanged.

3. The Joint Working Group, recognizing the importance of remote sensing of temperature and height of cloud tops, and stressing the lack of adequate data on emissivity of clouds, recommends that the existing data on emissivity of clouds of various types in the 8-12 micrometers "window" be exchanged by 1 February 1972, and that future efforts be coordinated by correspondence.

4. (a) The Joint Working Group recommends that Automatic Picture Transmission (APT) signal characteristics of the two countries should be such that requirements for ground receiving equipment be as nearly identical as possible.

(b) It is recommended that both sides, after conducting appropriate experiments, make known the basic parameters of their respective systems under development for the direct broadcast of images from meteorological satellites. It is expected that no significant modification of equipment now being used to receive APT data from US satellites will be required in order to receive the direct broadcast of images expected from USSR meteorological satellites.

Co--Chairmen:

  
L. A. Aleksandrov

  
David S. Johnson

Date: 1 February 1972 Approved For Release 2005/02/17 : CIA-RDP74B00681R000100150004-2

APPENDIX TO METEOROLOGICAL SATELLITES

TEMPERATURE SOUNDING FROM SATELLITES

1. Summary of existing methods of observation and of inversion of radiances to temperature profiles.
2. Problems requiring additional work and status of solutions:
  - a. Influence of clouds
  - b. Influence of aerosols
  - c. CO<sub>2</sub> concentration and its variation
  - d. Transmission functions
  - e. Necessary a priori information
  - f. Optimum form of instruments for operational application
3. Experiments and studies which would contribute to the solution of above problems (e.g., balloon-borne spectrometers, CO<sub>2</sub> measurements, laboratory tests).
4. Proposed cooperative programs (including form, mechanism, schedule).
5. References.

B. Sounding Rockets.

1. The Joint Working Group recommends that the primary scientific aim of meteorological rocket soundings along two selected meridional zones in the Eastern and Western Hemispheres be to investigate the processes characterizing the physical state of the stratosphere and mesosphere.

Accordingly, appropriate research topics are:

(a) the investigation of the cyclic processes in the tropical stratosphere, such as the annual, semi-annual and quasi-biennial changes, and their relation to processes in the extratropical latitudes;

(b) the investigation of the large scale strato-mesospheric meteorological processes in the Northern and Southern Hemispheres;

(c) the investigation of the seasonal transitions of the circulation and intra-seasonal phenomena, such as strato-mesospheric warmings.

Data from the proposed networks could also be applied to the study of solar-terrestrial relationships and high altitude climatological investigations. Additionally, the acquisition of these data is of great importance for the calibration and improvement of temperature sounding by means of meteorological satellites. Together with other existing and future meteorological rocket sounding activities, the two proposed meridional systems could serve as a foundation for the development of an ultimate global meteorological rocket sounding network.

2. The USSR Hydrometeorological Service will be responsible for rocket soundings at the following stations:



Approved For Release 2005/02/17 : CIA-RDP74B00681R000100150004-2

Heisse Island; Volgograd; Molodjejnaya; one or two research ships in the Indian Ocean; and will coordinate with India sounding programs by Soviet meteorological rockets at the international range, TERLS (India). The USSR Hydrometeorological Service will also make necessary arrangements with France concerning the launching of M-100 rockets from Kerguelen Island beginning in 1973. The sounding results, obtained from these stations, will be transmitted to the US side, with the approval of India and France under arrangements to be made by the Soviet side.

NASA will assume the responsibility for the rocket soundings at Wallops Island and will coordinate with Brazil, Argentina (EXAMETNET members) and France for launchings at Natal, Mar Chiquita and Kourou. NASA will also make the necessary arrangements for soundings at Thule (Greenland); Ft. Churchill (Canada); Cape Kennedy; Antigua; and Ft. Sherman.

Both sides will explore the possibility of increasing the number of stations in the meridional networks with particular emphasis on higher latitudes.

It is recommended that the parameters to be measured are temperature and wind.

3. The Soviet side will use the M-100 meteorological rocket with an altitude capability of 100 km, providing temperature and pressure measurements up to altitude of 80-90 km and wind data up to 60 km.

The American side will primarily use the Space Data Loki Motor and Dart equipped with the Space Data instrument and sensors, having an altitude capability of

Approved For Release 2005/02/17 : CIA-RDP74B00681R000100150004-2 23  
70 km. This system will provide temperature and wind

measurements up to 60 km.

It is recommended that the following technical documentation be exchanged before the end of 1971:

(a) Technical descriptions and specifications of systems to be used, including the flight and ground facilities;

(b) Descriptions of the measurement and processing techniques, including examples of processing;

(c) The description of sensor calibration techniques.

Both sides would schedule their respective launchings, each Wednesday, if possible, the International Day of the Geophysical Calendar.

It is recommended that the two sides exchange alerts of stratospheric warmings and make additional soundings during these periods, as well as during the spring and autumn transitions of circulation. Emphasis will be on those stations located in high latitudes.

4. It is recommended that the exchange of rocket sounding data begin in January 1972. Data of two kinds will be exchanged: (a) for operational use and (b) for scientific use. For the transmission of operational data, the WMO ROCOE code will be used. These data transmissions should be made within seven days after launching. For the exchange of data for scientific purposes, the WDC-A form should be used. Data for scientific use should be dispatched by air mail within 1 - 2 months after launchings.

5. The Working Group recommends rocket system inter-comparison tests, since these are much needed for this program.

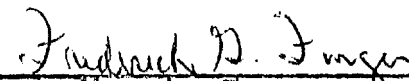
However, the program of exchange should not be delayed until the intercomparison tests can be made since for certain research problems the data now appear to be sufficiently compatible.

The intercomparisons should be conducted within the framework of international cooperation of the WMO, if possible. Other approaches which may be more feasible and convenient for both sides should be explored.

6. Both sides note the necessity to exchange some analyses (i.e., space- and time-cross sections) and to present scientific results in regular scientific seminars and symposia such as COSPAR and IUGG.

Co-chairmen:

  
\_\_\_\_\_  
L. A. Aleksandrov

  
\_\_\_\_\_  
for Morris Tepper

Date: 6 August

US MEMBERS OF JOINT WORKING GROUPS  
participating in meetings August 2-6, 1971

Near-Earth Space, the Moon and the Planets

John E. Naugle -- Chairman  
Henry J. Smith -- Vice-Chairman

Magnetosphere Panel

Erwin R. Schmerling -- Chairman  
Kinsey A. Anderson  
Norman F. Ness  
James I. Vette

Planetary Panel

Henry J. Smith -- Chairman  
Robert S. Kraemer  
Michael B. McElroy  
Donald G. Rea  
Wolf V. Vishniac

Lunar Panel

Lee R. Scherer -- Chairman  
Noel W. Hinners  
Frank Press

Natural Environment

Leonard Jaffe -- Chairman  
William A. Fischer  
Marvin Holter  
E. P. McClain

Meteorological Satellites

David S. Johnson -- Chairman  
Morris Tepper -- Vice-Chairman  
John W. Firor  
Arthur W. Johnson  
William Nordberg

Meteorological Rockets

Morris Tepper -- Chairman  
Frederick G. Finger -- Vice-Chairman  
William W. Kellogg  
John F. Spurling

LIST

of Members of the Soviet Working Groups  
who participated in the Conference

Moscow, 2-6 August 1971

I. Working Group "Exploration of Near-Earth Space,  
the Moon and the Planets"

B. N. Petrov -- leader  
G. I. Petrov  
A. I. Tsarev  
M. Ya. Marov  
I. A. Zhulin  
S. S. Kryukov

II. Working Group "Study of the Natural Environment"

A. P. Vinogradov -- leader  
A. M. Obukhov  
K. Ya. Kondrat'yev  
A. Ye. Basharinov  
Yu. K. Khodarev  
V. B. Komarov

III. Working Group "Space Meteorology"

A. A. Aleksandrov -- leader

I. Subgroup "Meteorological Satellites"

I. P. Vetlov  
N. K. Vinnichenko  
D. P. Zakatov  
V. G. Boldyrev

II. Subgroup "Meteorological Rockets"

L. A. Aleksandrov  
I. S. Moshnikov  
A. V. Fedynskiy  
A. P. Perov

NASA-HQ