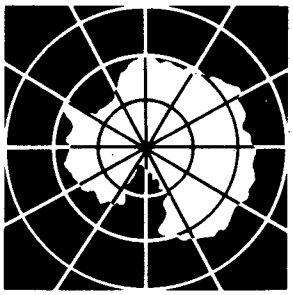
ANTARCTIC TREATY
TENTH CONSULTATIVE MEETING

ДОГОВОР ОБ АНТАРКТИКЕ
ДЕСЯТОЕ КОНСУЛЬТАТИВНОЕ СОВЕЩАНИЕ



TRAITÉ SUR L'ANTARCTIQUE
DIXIEME REUNION CONSULTATIVE

TRATADO ANTARTICO
DECIMA REUNION CONSULTIVA

Washington, D.C.

ANT/X/2
September 10, 1979

AGENDA ITEM 7

ORIGINAL: English

FINAL REPORT

OF

THE THIRD ANTARCTIC TREATY MEETING ON TELECOMMUNICATIONS

WASHINGTON, D.C.

SEPTEMBER 11 - 15, 1978

FINAL REPORT OF THE THIRD ANTARCTIC TREATY MEETING ON TELECOMMUNICATIONS

WASHINGTON, D.C., SEPTEMBER 11-15, 1978

1. In accordance with Recommendation IX-3 adopted at the Ninth Antarctic Treaty Consultative Meeting, experts from Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Poland, the Republic of South Africa, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America met in Washington on 11 September 1978 for the purpose of discussing the matters included in the Agenda transcribed below. The Meeting was attended by an observer of the World Meteorological Organization (WMO).

2. The Meeting was opened by Dr. Edward P. Todd, Director of the Division of Polar Programs (and of the U.S. Antarctic Program) of the National Science Foundation, as the temporary Chairman. Mr. Alfred N. Fowler, Deputy Director of the Division of Polar Programs was unanimously elected to Chair the Meeting. Mr. Fowler announced that Miss Nadene Kennedy and Mrs. Helen Gerasimou would provide administrative support for the Chairman and were available to assist representatives.

3. Following discussion of a provisional draft the Meeting adopted the following Agenda:

A. Opening of the Meeting

B. Election of Chairman

C. Adoption of Agenda

D. Description of telecommunication operations and analysis of information exchanged pursuant to Recommendation IX-3 of the Ninth Consultative Meeting.

E. Identification of Problems

F. Discussion of Possible Solutions

G. Proposals for Improvements

H. Findings and Conclusions

I. Adoption of Final Report

J. Closing of the Meeting

4. The Meeting considered in Plenary Session all the items on the Agenda. A Working Group chaired by Mr. I. H. Lloyd was appointed to study the transmission of antarctic meteorological data to the Global Telecommunication System (GTS) of the World Weather Watch (WWW).

5. The proceedings and conclusions of the Meeting were as set out below.

Agenda Item D

6. While it was recognized that antarctic telecommunications are required for operational, administrative and scientific purposes, in addition to the transmission

of meteorological data, the analysis of information provided by governments was carried out on the understanding that its objective was primarily to describe telecommunication operations as they were used for the international transmission of meteorological data.

7. It was considered desirable to set out such a description in diagrammatic form and Annexes 1, 2 and 3 to this report were prepared by the Working Group. These Annexes set out:

ANNEX 1 - the existing links for the daily international exchange of meteorological data within the Antarctic;

ANNEX 2 - the principal intra-antarctic international routes by which antarctic meteorological data leaves the Antarctic;

ANNEX 3 - the principal routes by which antarctic data enters the Global Telecommunication System.

These diagrams represent the links and routes existing in September 1978.

8. Since the Second Antarctic Treaty Meeting on Telecommunications held in Beunos Aires in 1969, all nations have undertaken extensive programs of equipment replacement and organization with a view to improving the circuit efficiencies of their telecommunication systems.

Agenda Item E

9. Informal discussion of various aspects of antarctic telecommunications identified problems and difficulties in a number of areas. In recent years changes in meteorological observation, data collection, processing and dissemination techniques had given rise to special problems for antarctic stations which depended on the timely receipt of all available relevant data for the preparation of forecasts. Some of these problems were of a temporary nature but others were more persistent. It was recognized that some of these difficulties arose from differing national perceptions of their requirements and scientific priorities, and these were best addressed in bilateral discussions, and useful progress was made in this respect.

10. The Meeting also identified other allied difficulties of more general significance. These were:

(i) Difficulties of radio wave propagation across the auroral belt;

(ii) Difficulties of circulating antarctic meteorological data to, and possibly within, the GTS;

(iii) Difficulties of assuring compatibility of systems for intra-antarctic communications while taking advantage of new technological developments;

(iv) Difficulties in providing radio links between stations having different capabilities at different times of the year.

11. With respect to radio wave propagation problems, a useful exchange of information on ways and means of predicting propagation path disturbance was held, with South Africa, Chile and the United States describing systems presently in use or planned. It was agreed that these problems would benefit from the exchange of research results and the operational use of frequency prediction techniques.

FINAL REPORT OF THE THIRD ANTARCTIC TREATY MEETING ON TELECOMMUNICATIONS

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12. With respect to difficulties of circulating antarctic meteorological data to, and possibly within the GTS, the Working Group noted that some deficiencies exist in injection and switching of antarctic data in some GTS centers as a result of the duplication of allocation of the CLLLL group. The report of the Working Group is at Annex 4. The Meeting recognized that resolution of these difficulties within the GTS will ultimately require some action by the WMO in consultation with the affected Member countries.

Agenda Item F

13. With respect to the potential problems associated with the adoption of new technology, the representatives outlined their future plans for improvement. It appears that a number of advances in HF equipment and error-correction devices operating on a standard received signal, planned for installation by various nations, will be totally compatible with existing systems and will serve to improve intra-antarctic communications.

Agenda Item G

14. It appeared that possibilities associated with use of geostationary and polar-orbiting communication satellites offer a real potential for communication improvements without detriment to the intra-antarctic network. Other alternative means of communications within Antarctic, such as the meteor-burst system, appeared to be very promising for use during periods of HF blackouts resulting from increased solar flare activity. Such alternative systems would depend upon the acquisition of the necessary equipment.

Agenda Item H

15. The Meeting recongized that technological developments in telecommunications are likely to lead in the future to greater diversity in the methods adopted by national antarctic activities for their telecommunications purposes. These developments will be stimulated by differing requirements but may offer possibilities of improved cost-effectiveness in international antarctic communications. There is no reason to discourage such developments away from conventional HF systems. It should be borne in mind, however, that there will remain a need for a common system for operational, scientific, administrative and emergency purposes.

Agenda Item I

16. The Meeting reviewed items 1 through 15 of this text together with Annexes 1 through 4 hereto and unanomously adopted these as the Meetings Final Report.

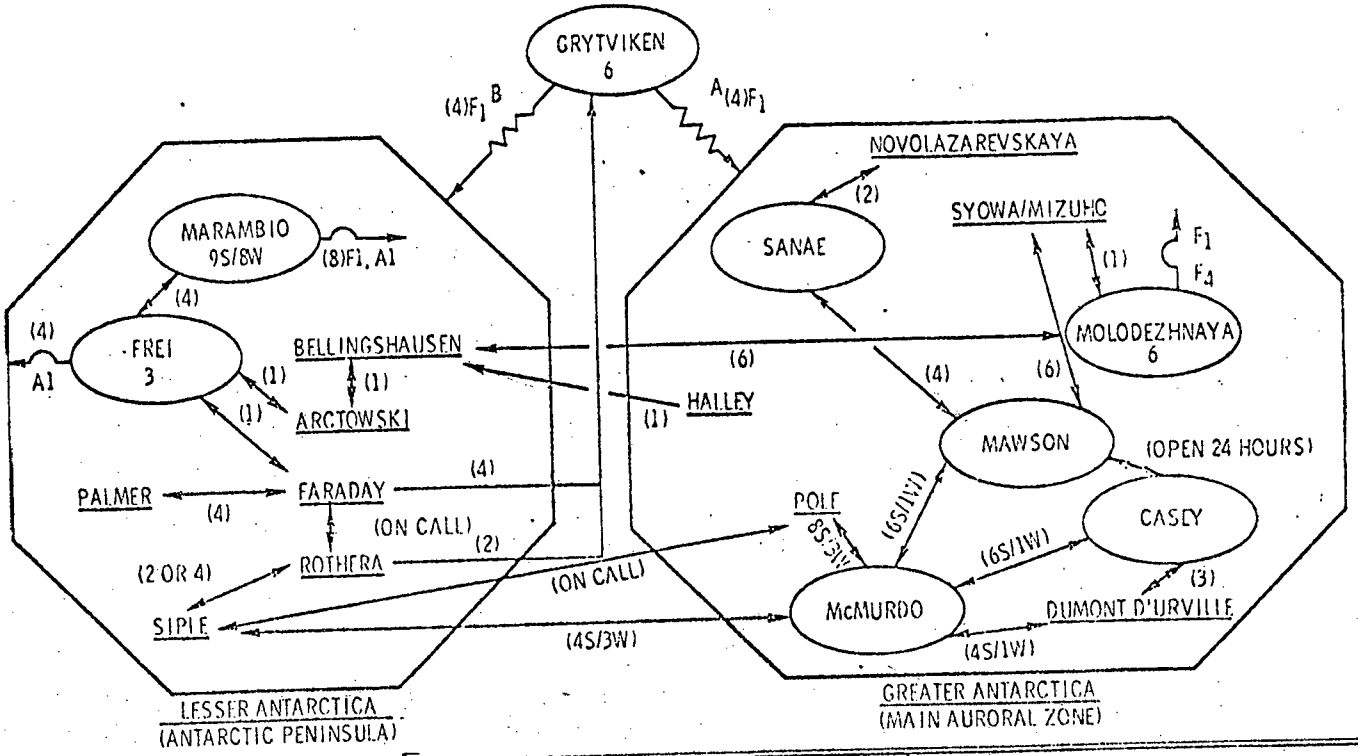
17. Participants in the Meeting expressed their appreciation to the Chairman, to Mrs. Gerasimou and to Miss Kennedy, and their thanks to Dr. Todd, to the United States National Science Foundation and to the United States Government for the facilities and support made available for the Meeting. The Chairman and Dr. Todd reciprocated for the United States and presented to each delegation a copy of the film "Antarctic Sea Ice Growth and Decay 1973-1974."

18. The Meeting unanimously supported a proposal, and the Chairman agreed to transmit a suitable message to all antarctic stations. A copy of that message is shown at Annex 6.

19. There being no further business on the Agenda, the Chairman closed the Meeting at 1700 on September 15, 1978.

20. A list of participants is shown at Annex 5. A list of documents submitted is shown at Annex 7.

EXISTING LINKS FOR THE DAILY INTERNATIONAL EXCHANGE OF METEOROLOGICAL DATA WITHIN THE ANTARCTIC AS OF SEPTEMBER 1978



NAME
(S/W)

MAIN CENTERS WITH THE NUMBER OF STATIONS FROM WHICH DATA ARE COLLECTED AND BROADCAST BY (CQ)

TELECOMMUNICATION METHOD
(CONTACTS PER DAY, S/W)

S = SUMMER
W = WINTER

(S/W) POINT TO POINT LINKS

(S/W) BROADCAST BULLETINS APPROXIMATELY OMNIDIRECTIONAL (NOMINALLY CQ)

(S/W) OMNIDIRECTIONAL (CQ) BROADCAST BULLETINS

BROADCAST TIMES
(MODE)

FREI
(CW) A1 : H + 05 (SYNOP)

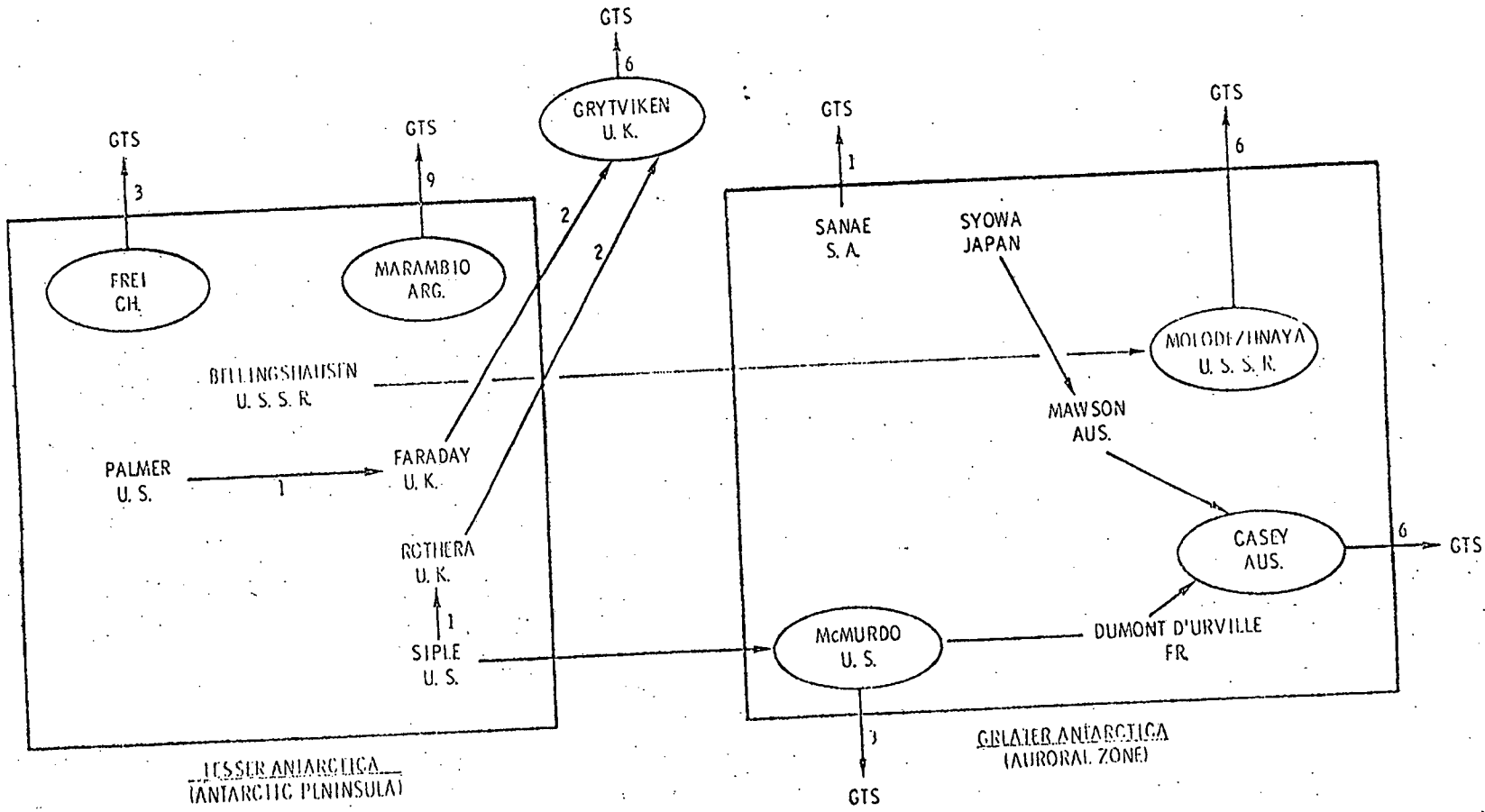
MARAMBIO
(CW/FSK) A1, F1 : H + 30 (SYNOP), H + 160 (TEMP)

GRYTVIKEN
(FSK) F1 : (A) H + 30 (SYNOP), H + 180 (TEMP)
(B) H + 45 (SYNOP), H + 175 (TEMP)

MOLODEZHNAYA
(FAX, FSK) F4, F1 : H + 45 (SYNOP), H + 150 (TEMP)

ANNEX 1

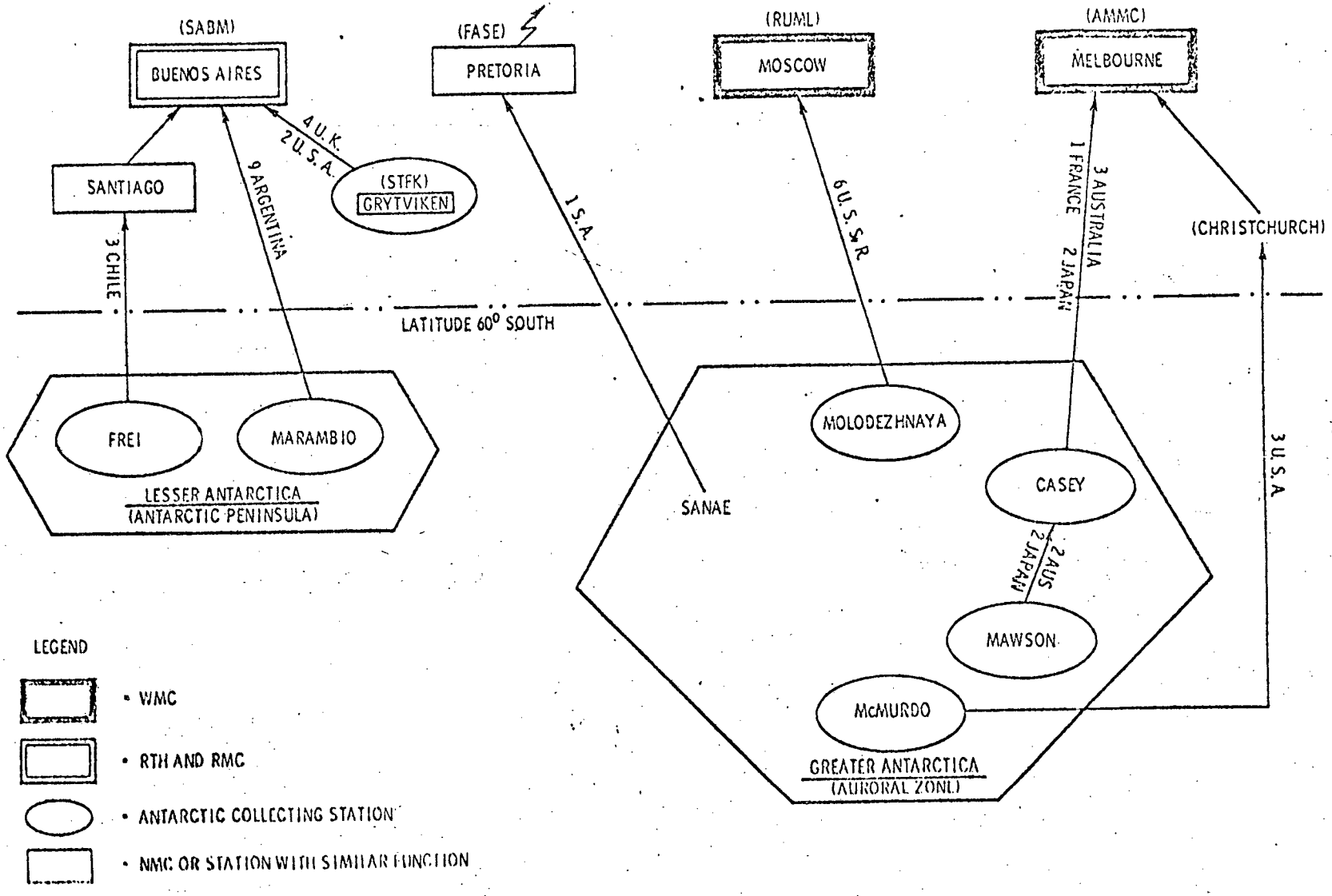
PRINCIPAL INTRA-ANTARCTIC INTERNATIONAL ROUTES BY WHICH ANTARCTIC METEOROLOGICAL DATA LEAVES THE ANTARCTIC AS OF SEPTEMBER 1978



STATIONS TRANSMITTING DATA COLLECTED FROM MORE THAN ONE STATION DIRECTLY TO THE GTS

ANNEX 2

PRINCIPAL ROUTES BY WHICH ANTARCTIC DATA ENTERS THE GLOBAL TELECOMMUNICATION SYSTEM AS OF SEPTEMBER 1978



SOUTH AFRICA

89001 Sanae) ——→ Pretoria ——→ Broadcast

POLAND

----- Arctowski)*

SOVIET UNION

89050 Bellingshausen)
89512 Novolazarevskaya)
89542 Molodezhnaya)
89592 Mirny) →Molodezhnaya ——→ Moscow
89606 Vostok)
89657 Leningradskaya)

FRANCE

95502 Dumont D'Urville)

JAPAN

89532 Syowa)
89544 Mizuho) →Mawson

AUSTRALIA

89571 Davis)
94986 Mawson) →Casey ——→ Melbourne
89611 Casey)

* inclusion of Arctowski data in the GTS is under consideration

List of Antarctic Stations and the Routing of their Meteorological Data to the G

CHILE

85984 Pdte. Eduardo Frei
85986 Arturo Prat
85988 Bernardo O'Higgins

→ Frei → Santiago → Buenos Aires

ARGENTINA

88946 Corbeta Uruguay
88963 Esperanza
88907 Belgrano
88968 Orcadas
88971 Almirante Brown
89055 Marambio
89060 Primavera
89066 San Martin
89404 Sobral (temp. out of order)
88970 Matienzo

(Summer only)

→ Marambio → Buenos Aires

UNITED KINGDOM

88903 Grytviken
88952 Faraday
89022 Halley
89062 Rothera

→ Grytviken → Buenos Aires

UNITED STATES

89061 Palmer
89083 Siple

→ Grytviken → Buenos Aires

89009 Amundsen-Scott
89564 McMurdo

→ McMurdo → Melbourne

ANNEX 4

REPORT OF THE G.T.S. WORKING GROUP

In discussion it became apparent that problems existed in both the intra and inter antarctic telecommunication circuits. On more detailed researching of this problem, it was found that from data monitoring studies condudted, not all the antarctic data placed on the GTS arrived at designated centers.

The unfortunate loss of this data had caused concern to Antarctic Treaty members as it forms part of a continuing bank of recorded information for necessary long term climate study. It was concluded that the data could become lost if its switching format could not be recognized by centers on the GTS.

Reference to the WMO Catalogue of Meteorological Bulletins, dated July 1978, showed in the Antarctic section (ANT 1) a duplication of Catalogue numbers being shared by Moscow, Melbourne, Buenos Aires and Pretoria. The sharing of these numbers appears to have come about as an unforeseen consequence of agreed WMO procedures (Manual on the Global Telecommunication System, Volume 1). This duplication of Catalogue numbers only appears to be a problem if messages are switched using these numbers.

In some cases, the arrival of the first Bulletin is recorded by the switching circuit after it is allowed to pass. On the arrival of a second Bulletin with the same number, from a different source, the second Bulletin is rejected.

Without prejudice to a final solution to this problem, the Working Group asked and the Soviet delegate agreed that his authorities should examine the possibility of changing certain Catalogue numbers as the simplest way of achieving the desired result.

The Working Group suggested that a possible temporary solution of this problem, pending a final consideration by WMO, might lie in the amending of the Catalogue numbers as set out below:

BULLETIN HEADING	PRESENT CATALOGUE NUMBER ASSIGNMENT	PROPOSED CATALOGUE NUMBER
SMAA10 RUML	19900	19906
SMVJ10 RUML	19902	19907
CSAA10 RUML	19990	19991
SIAA10 RUML	29910	29912
USAA10 RUML	39900	39901
UKAA10 RUML	39910	39911
ULAA10 RUML	39920	39921
UEAA10 RUML	39930	39931
CUAA10 RUML	39990	39999

For the Bulletins containing data from ships in the southern parts of WMO Regions I, III, and V (SMVAI0, SMVC10, SMVE10, USVA10, USVC10, USVE10, etc.) it was proposed that catalogue numbers be assigned using a L_1L_2 designator of the Moscow center rather than (99) of Antarctica.

TELECOMMUNICATIONS MEETING OF INTERNATIONAL EXPERTS

September 11-15, 1978

List of Attendees

Temporary Chairman - E. Todd, Director , Division of Polar Programs
Chairman - Alfred Fowler
Recording Secretary - Mrs. Helen Gerasimou
Receptionist - Miss Nadene Kennedy

ARGENTINA

(1) Vicecomodoro Salvador Alaimo
Servicio Meteorológico Nacional
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Buenos Aires, ARGENTINA

(2) Mayor (R) René J. Romero-Cajal
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Buenos Aires, ARGENTINA

(3) Counsellor Ricardo Pedro Quadri
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AUSTRALIA

(1) Mr. Brian Burdekin
Second Secretary
Australian Embassy
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Washington, D.C. 20036

(2) Mr. Richard Lightfoot
Antarctic Division
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568 St. Kilda Road
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BELGIUM

(1) Mr. Louis Groven
Scientific Counselor
Belgium Embassy
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ANNEX 5

CHILE

(1) Mr. Mauricio Araya F.
Departamento de Geodesia
Facultad de Ciencias Fisicas Y Matematicas
Universidad de Chile
Beaucheff 850 Casilla 2777
Santiago, CHILE

(2) Mr. Carlos Crohare
Ministry of Foreign Affairs
Santiago, CHILE

(3) Mr. L. Filippi
Ministry of Foreign Affairs
Santiago, CHILE

(4) Mr. Carlos Krumm
Embassy of Chile
1736 Massachusetts Avenue, N.W.
Washington, D.C. 20036

(5) Mr. Alvaro L. Lavin
Embassy of Chile
1732 Massachusetts Avenue, N.W.
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(6) Mr. Maurio Ormazabal
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FRANCE

(1) Mr. Jean-Paul Bloch
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27 Rue Oudinot
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(2) Mlle. C. Gillet
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47 Av. du Maréchal Fayolle
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JAPAN

(1) Prof. Jakeo Yoshino
University of Electro-Communications
Department of Applied Electronic Engineering
1-5-1 Chofugaoka, Chofushi, Tokyo 182, JAPAN

NEW ZEALAND

(1) Mr. John Larkindale
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(1) Dr. Janusz Molski
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(1) Mr. Ieuan H. Lloyd
Assistant Director
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Private Bag X193
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(2) Mr. P. D. Oelofsen
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Department of Foreign Affairs
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(1) Mr. I. R. Gamayunov
Head, Technical Department
State Committee of the U.S.S.R. on
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Moscow, D-376, Pavlik Morozov Street 12, U.S.S.R.

(2) Mr. V. V. Golitsyn
Legal and Treaty Department
Ministry of Foreign Affairs of U.S.S.R.
Moscow, U.S.S.R.

(3) Mr. Sergei Gurov
Third Secretary
Soviet Embassy
1125 16th Street, N.W.
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UNITED KINGDOM

(1) Dr. John A. Heap
Polar Regions Section
Foreign and Commonwealth Office
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(2) Mr. David W. S. Limbert
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(1) Mr. Santoro R. Barbagallo
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(2) Mr. Joseph E. Bennett
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National Science Foundation
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(4) LTJG Carl H. Heck, USN
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(5) LCDR Glenn U. Long, USN
Communications Officer
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(6) Mr. Max Light
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(7) Mr. James R. Neilon
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NOAA, National Weather Service
8060 13th Street
Silver Spring, Maryland 20910

(8) Dr. Lisle A. Rose
Polar Affairs Officer
Bureau of Oceans, International Environmental,
and Scientific Affairs
Department of State
Washington, D.C. 20520

(9) Mr. Walter R. Seelig
International Coordinator
Division of Polar Programs
National Science Foundation
Washington, D.C. 20550

(1)

BT

RATUIJAZ RUEVDEE0057 2642004-UUZZ--RUEBPAA.

ZNR UUUZZ//////////////////

NSFN

R 212004Z SEP 78 ZDK

FM NSF POLAR WASHINGTON DC

TO RZYXXZE/SOUTH POLE ANTARCTICA

RZYXXZC/PALMER STATION ANTARCTICA

RZYXXZD/SIPLE STATION ANTARCTICA

RZYXXZB/NAVSUPPFORANTARCTICA DET MCMURDO STATION ANTARCTICA

RZYXXZB/BASE SAN MARTIN ANTARCTICA

RZYXXZB/BASE PRIMAVERA ANTARCTICA

RZYXXZB/BASE ORDADAS ANTARCTICA

RZYXXZB/BASE ESPERANZA ANTARCTICA

RZYXXZB/BASE MATIENZO ANTARCTICA

RZYXXZB/BASE GENERAL VELGRANO ANTARCTICA

RZYXXZB/ESTACION CIENTIFICA ALMIRANTE BROWN ANTARCTICA

RZYXXZB/BASE VICECOMODORO MARAMBIO ANTARCTICA

RZYXXZB/CASEY STATION ANTARCTICA

RZYXXZB/FARADAY STATION ANTARCTICA

RZYXXZB/DAVIS STATION ANTARCTICA

ANNEX 6

RZYXXZB/DURZHNAYA STATION ANTARCTICA

RZYXXZB/BASE GENERAL BERNARDO O'HIGGINS ANTARCTICA

RZYXXZB/BASE PRESIDENTE FREI ANTARCTICA

RZYXXZB/BASE CAPITAN ARTURO PRAT ANTARCTICA

RZYXXZB/BASE DUMONT D'URVILLE ANTARCTICA

RZYXXZB/SYOWA STATION ANTARCTICA

RYZXXZB/SCOTT BASE ANTARCTICA

RZYXXZB/MIZUHO STATION ANTARCTICA

RZYXXZB/ARCTOWSKI STATION ANTARCTICA

RZYXXZB/SANAE STATION ANTARCTICA

RZYXXZB/MIRNYY STATION ANTARCTICA

RZYXXZB/MOLODEZHNAYA STATION ANTARCTICA

RZYXXZB/NAVOLAZAREVSKAYA STATION ANTARCTICA

RZYXXZB/VOSTOK STATION ANTARCTICA

RZYXXZB/BELLINGSHAUSEN STATION ANTARCTICA

RZYXXZB/LININGRADSKAYA STATION ANTARCTICA

RZYXXZB/ROTHERA STATION ANTARCTICA

RZYXXZB/HALLEY STATION ANTARCTICA

RZYXXZB/SIGNY ISLAND STATION ANTARCTICA

INFO RUEBPAA/NSF POLAR WASHINGTON DC

RUEHC/SECSTATE WASHINGTON DC

RUEHC/OES/APT/RMP DEPT OF STATE WASHINGTON DC

RUESBA/AMEMBASSY BUENOS AIRES ARG

RUEHBAC/AMEMBASSY CANBERRA AUS

RUESNA/AMEMBASSY SANTIAGO CHILE

RUFNPS/AMEMBASSY PARIS

(5)

RUEHKY/AMEMBASSY TOKYO

RUEHBAZ/AMEMBASSY WELLINGTON

RUDKRW/AMEMBASSY WARSAW

RUENTN/AMEMBASSY CAPETOWN

RUDTC/AMEMBASSY LONDON

RUEHMY/AMEMBASSY MOSCOW

RUEKJCS/SECDEF WASHINGTON DC

RUEKJCS/ASST SECDEF (ISA) WASHINGTON DC

RUENAAA/SECNAV WASHINGTON DC

RUENAAA/ASST SECNAV (R&D) WASHINGTON DC

RUENAAA/CNO WASHINGTON DC

RHHMBRA/CINPACFLT PEARL HARBOR HI

RHHPRAP/COMTHIRDFLT

RUWDSAA/COMNAVAIRPAC SAN DIEGO CA

RUWFAAA/COMASWINGPAC SAN DIEGOCA

RULSSAA/CNR WASHINGTON DC

RULSSAA/OCEANAV WASHINGTON DC

RUWDPAA/COMNAVSUPPFORANTARCTICA

RUWDPAA/ANTARCTICDEVRON SIX

RZYXXZA/NAVSUPPFORANTARCTICA DET CHRICHCHURCH NZ

RZYXXZA/ANTARCTICDEVRONSIX DET CHRISTCHURCH NZ

RZYXXZA/NSF REP NEW ZEALAND CHRISTCHURCH NZ

RZYXXZB/R/V HERO

685515/HOLMES AND NARVER INC ORANGE CA

BT

UNCLAS 20

SUBJ: GREETINGS FROM ANTARCTIC TREATY MEETING OF GROUP OF EXPERTS (4)

A GROUP OF EXPERTS FROM THE CONSULTATIVE PARTIES TO THE ANTARCTIC TRE HAVE JUST CONCLUDED THE THIRD MEETING ON TELECOMMUNICATIONS IN ANTARCTICA. IN THE COURSE OF DISCUSSIONS DURING THE MEETING HELD IN WASHINGTON IT WAS AGAIN MADE CLEAR THAT THE SUCCESSFUL FLOW OF OPERATIONAL ADMINISTRATIVE, SCIENTIFIC AND OBSERVATIONAL INFORMATION REQUIRES DEDICATED EFFORT BY ANTARCTIC STATION PERSONNEL UNDER MOST DIFFICULT AND TRYING CONDITIONS. ACCORDINGLY, THE EXPERTS HAVE RESOLVED THAT TH CHAIRMAN OF THIS MEETING SHOULD COMMUNICATE THEIR ADMIRATION AND SINCERE APPRECIATION TO THE PERSONNEL AT STATIONS IN ANTARCTICA RESPONSIBLE FOR CARRYING OUT THESE IMPORTANT TASKS. AS CHAIRMAN OF THE MEETING, I SEND THESE GREETINGS AND APPRECIATION FOR A JOB WELL DONE ESPECIALLY TO ALL ANTARCTIC WEATHER OBSERVERS, RADIO OPERATORS AND TO THOSE WHO ASSIST AND SUPPORT THEM. A.N. FOWLER.

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ANNEX 7

LIST OF DOCUMENTS PRESENTED AT THE ANTARCTIC TELECOMMUNICATIONS MEETING

September 11-15, 1978

Document No.	Submitted by	Title
1	Argentina Australia Chile France Japan New Zealand South Africa U.S.S.R. U.K. U.S.	Information exchanged in accordance with Recommendation IX-3
2	South Africa	Report on Ham Satellite Communications
3	U.S.	U.S. Summary Statement
4	U.K.	A reassessment of the effectiveness of the Global Telecommunication System (GTS) as a means for communicating antarctic data
5	Poland	Information on Telecommunications Equipment and Schedules for the Year 1978
6	Chile	Study Suggested by the Chilean Delegation for the Meeting of Experts for Antarctic Telecommunications
7	Chile	Main Aspects on Chilean Project to Establish Meteorological Data Collection in the Antarctic by Employing Earth Orbiting Satellites
8	U.K.	United Kingdom Antarctic Telecommunications (Description of Telecommunication Operations)
9	Japan	Mobile Antenna for Low HF Band
10	Chile	A New Method for Predicting the Auroral Absorption of HF Sky Waves
11	U.S.	Information Package