E/CONF.52/4

FIFTH UNITED NATIONS REGIONAL CARTOGRAPHIC CONFERENCE FOR ASIA AND THE FAR EAST

8 - 22 March 1967, Canberra, Australia

Vol. I. Report of the Conference

UNITED NATIONS

Department of Economic and Social Affairs

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New York, 1967

NOTE

Symbols of United Nations documents are composed of capital letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

E/CONF.52/4

UNITED NATIONS PUBLICATION

Sales No.: E.68.I.2

Price: $U.S. 0.75
(or equivalent in other currencies)

FOREWORD

In accordance with the procedure followed for the four previous Conferences, the official records of the Fifth United Nations Regional Cartographic Conference for Asia and the Far East, held in Canberra, Australia, from 8 to 22 March 1967, are being issued in two volumes. Volume 1, the present publication, is the *Report of the Conference*, which includes an account of the organization of the Conference as well as the resolutions adopted by it. Volume 2, entitled *Proceedings of the Conference and Technical Papers* (E/CONF.52/5), will contain, in addition to the summary records of the plenary meetings, the technical and background papers presented to the Conference by the participants.

The official records of the previous United Nations Regional Cartographic Conferences for Asia and the Far East have been published as E/CONF.18/6 (Sales No.: 55.I.29) and E/CONF.18/7 (Sales No.: 56.I.23) for the First Conference; E/CONF.25/3 (Sales No.: 59.I.9) and E/CONF.25/4 (Sales No.: 61.I.8) for the Second Conference; E/CONF.36/2 (Sales No.: 62.I.14) and E/CONF.36/3 (Sales No.: 64.I.17) for the Third Conference; and E/CONF.50/4 (Sales No.: 65.I.16) and E/CONF.50/5 Sales No.: 66.I.3) for the Fourth Conference.

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Chapter I

ORGANIZATION OF THE CONFERENCE

TERMS OF REFERENCE

1. The Fifth United Nations Regional Cartographic Conference for Asia and the Far East was held in Canberra, Australia, from 8 to 22 March 1967, in pursuance of resolution 1070 (XXXIX) adopted by the Economic and Social Council on 16 July 1965. The Government of Australia made all the physical arrangements and provided the meeting facilities.

ATTENDANCE

2. The following is the list of representatives and observers of participating countries and observers from international organizations.

A. GOVERNMENTS

Australia

Representatives:

Mr. Robert William Boswell
Secretary, Department of National Development
(Chairman of the Delegation)

Mr. Bruce Philip Lambert
Director, Division of National Mapping
Department of National Development
(Vice-Chairman of the Delegation)

Alternates:

Mr. Robert F. Thyer
Assistant Director, Operations, Bureau of Mineral Resources
Department of National Development

Captain David William Haslam, R.N.
Hydrographer, Royal Australian Navy

Brigadier Donald Macdonald
Director of Military Survey

Mr. John Boyle
Commonwealth Surveyor General
Department of Interior

Mr. George Alan Stewart
Chief, Division of Land Research
Commonwealth Scientific and Industrial Research Organisation

Mr. Alexander Barr Yeates
Surveyor General
Queensland Survey Office

Mr. Noel L. Fletcher
Surveyor General and Director of Mapping
New South Wales Department of Lands

Mr. Frank William Arter
Surveyor General, Victoria

Mr. Harry A. Bailey
Surveyor General, South Australia

Mr. Harold Camm
Surveyor General
Western Australia Department of Lands and Surveys

Mr. Frank Miles
Surveyor General
Tasmania Department of Lands and Surveys

Advisers:

Mr. Hugh Sam Rassaby
Assistant Director of Mapping
New South Wales Department of Lands

Mr. Colin Edward Middleton
Chief Photogrammetrist
Victoria Department of Crown Lands and Survey

Mr. Allan Nichol Mercer
Superintending Engineer
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Melbourne

Mr. Vernon Clifford Henderson
Superintending Draughtsman
Forests Commission
Melbourne

Mr. Roland Glyn Roberts
Supervising Photogrammetrist
Department of Lands
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Mr. Charles Christopher A. Butler
Deputy Surveyor General
Tasmania Department of Lands and Surveys

Mr. Angus Rutherford Love
Survey and Mapping Officer
Tasmania Department of Lands and Surveys

Colonel Frank D. Buckland
Assistant Director of Military Survey
Department of the Army

Major Wilfrid Child
Technical Officer
Directorate of Military Survey

Mr. James Innes Brett
Chief Surveyor
Department of Interior

Mr. John Keith Taylor
Supervising Surveyor
Department of Interior

Mr. Bruce J. Lee
Surveyor in Charge of Photogrammetry
Department of Interior

Mr. Bryan Paul Ruxton
Leader of Geomorphology Group
Natural Resources Group, Commonwealth Scientific and Industrial Research Organisation

Mr. Robert W. Galloway
Senior Research Officer
Commonwealth Scientific and Industrial Research Organisation

Mr. John Dunstan Lines
Assistant Director, Division of National Mapping
Department of National Development

Mr. Anthony Gerald Bomford
Geodetic Surveyor
Division of National Mapping
Department of National Development

Mr. Leonard George Turner
Topographic Surveyor
Division of National Mapping
Department of National Development

Mr. Byrne Ernest Goodrick
Chief Cartographer
Division of National Mapping
Department of National Development

Mr. David Roy Hocking
Cartographer
Division of National Mapping
Department of National Development

Mr. Trevor William Plumb
Officer-in-Charge, Geographic Section
Department of National Development

Mr. Laurance K. Hazlewood
Geographer
Geographic Section
Department of National Development

Mr. Vaclav Jaromir Ceplecha
Senior Research Officer
Geographic Section
Department of National Development

Mr. Norman Henry Fisher
Assistant Director, Geology
Bureau of Mineral Resources

Mr. John Harrington Quilty
Supervising Geophysicist
Bureau of Mineral Resources

Mr. Martin Lachlan Benson
Forestry Officer
Forest Research Institute

Mr. Kenneth James Stokes
Senior Photogrammetrist
New South Wales Department of Lands

Major Edward Underwood Anderson
Army Headquarters Survey Regiment

Mr. Malcolm Grant Butler
Chief Surveyor (Topographical)
Department of Lands
Adelaide

Lieutenant-Colonel Harvey McKenzie Hall
School of Military Survey
Bonegilla, Victoria

Mr. John Robert Hutchison
Senior Computer
New South Wales Department of Lands

Observers:

Mr. Kenneth Archie Bell
Senior Drafting Officer
Lands and Survey Branch
Northern Territory Administration
Darwin

Wing Commander Ernest Frederick Bernan
Royal Australian Air Force
Department of Air

Mr. Ronald Baldock
Assistant Chief Cartographer
Survey Office
Brisbane

Mr. James Cavill
Surveyor
Department of Lands, Surveys and Mines
Port Moresby

Mr. Leonard Dawe
Chief Draftsman
Department of Lands, Surveys and Mines
Port Moresby

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Chief Drafting Officer (Geophysical Branch)
Bureau of Mineral Resources

Mr. H. A. Johnson
Supervising Geodetic Surveyor
Division of National Mapping
Department of National Development

Squadron-Leader Eric John Kluukeri
Operational Requirements Reconnaissance, and Photography
Department of Air

Mr. Lindsay John Lavers
Surveyor
Department of Interior

Miss Margaret Jean McLennan
Senior Research Officer
Department of National Development

Mr. J. E. Mitchell
Senior Surveyor
Department of Crown Lands and Surveys
Melbourne

Mr. E. H. Morgan
Chief Drafting Officer (Geological Branch)
Bureau of Mineral Resources

Mr. Geoffrey William Parkinson
Research Officer
Geographic Section
Department of National Development

Mr. W. B. R. Smith
Investigation Engineer
Department of Main Roads
Sydney

Mr. Hermann R. H. Voss
Senior Drafting Officer
National Capital Development Commission

Mr. W. Wassermann
Chief Surveyor
Snowy Mountains Hydroelectric Authority
Coma North, New South Wales

Mr. Kevin Henry Wellspring
Surveyor
Department of Interior

Conference secretariat

Mr. George R. L. Rimington
Deputy Director
Division of National Mapping

Mr. Klaus Leppert
Chief, Levelling Section
Division of National Mapping

Mr. Norman L. G. Williams
Assistant Chief, Cartography Section
Division of National Mapping

Mr. Keith U. Holtsbaum
Officer
Department of National Development

Mr. Richard P. O'Brien
Officer
Department of National Development

Cambodia

Representatives:

Major Teao Sunthan
Chief of Map Service
Cambodian Map Service

Lieutenant Thach Chote
Officer of FARK
Cambodian Map Service

Canada

Representative:

Mr. Arthur C. Tuttle
Chief Topographical Engineer
Topographical Survey
Ottawa

China

Representatives:

Mr. Mo Tsao
Advisor to the Ministry of the Interior and Professor of China Research Institute of Land Economics
(Chairman of the Delegation)

Mr. Yunting Chou
Counsellor, Chinese Embassy
Canberra

General Chi-Chi Chow
Director, Topography Service, Chinese Service Forces

Adviser:

Mr. Chun-Yuan Yang,
Chief, Section of Geography

Democratic Republic of the Congo

Representatives:

Mr. Augustin Kengebele
Director, Institute of Geography

Mr. Emmanuel Nzungu
Section Chief, Photogrammetry

Federal Republic of Germany

Representatives:

Mr. Herbert Knorr
Director, Institute für Angewandte Geodäsie

Mr. Hans R. Ermel
Regierungs Direktor, German Hydrographic Institute

France

Representative:

General Georges R. Laclavère
Chief Engineer
National Geographic Institute

Holy See

Representative:

Mr. Patrik Alfred Moran
Institute of Advanced Studies
Australian National University
Canberra

India

Representative:

Colonel D. N. Sharma Atri Harnal
Director, Deccan Circle
Survey of India

Indonesia

Representative:

Colonel Pranoto Asmoro
Director of Army Topography

Alternate:

Mr. Mozes Weror
Third Secretary, Embassy of Indonesia
Canberra

Iran

Representative:

Mr. Badredin Marashi
Director, Iranian Cartographic Organization

Israel

Representative:

Mr. Joseph Elster
Director, Survey Department
Ministry of Labour

Japan

Representative:

Mr. Eiji Inoue
Chief, Topographic Division
Geographic Survey Institute
Ministry of Construction
(Chairman of the Delegation)

Alternates:

Mr. Minoru Nagatani
Chief, Nautical Chart Section
Hydrographic Office

Mr. Shinzo Nakase
First Secretary, Embassy of Japan
Canberra

Advisers:

Mr. Masamoto Nishimura
Director, Husshu Surveying Co., Ltd.

Mr. Yoshito Kinoshita
President Toa Survey Co., Ltd.

Mr. Katsuichi Naohara
Director, Survey Department
Kokusai Aerial Surveys Co., Ltd.

Mr. Kenji Oga
Manager, Planning and Development
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Mr. Ryoichi Oura
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Kimoto Shokai Co., Ltd.

Lebanon

Representatives:

Major Yusef G. Bitar
Director of Geographic Affairs in Lebanon

Mr. Roger E. Selwan,
Vice-Chairman of Cartographic Surveys
Directorate of Geographic Affairs

Malaysia

Representative:

Mr. Ahmad Daud
Assistant Director of National Mapping

Observer:

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Sabah

Malta

Representative:

Mr. Anthony Alfred Pullicino
High Commissioner to Australia
Malta High Commission
Canberra

Alternate:

Mr. Eucharist Barbara
Attaché, Malta High Commission
Canberra

Netherlands

Representative:

Mr. Antonie Jan van der Weele
Director, International Training Centre for Aerial Survey

New Zealand

Representatives:

Mr. William Seaton Boyes
Assistant Surveyor General
Department of Lands and Survey

Mr. Douglas George Francis
Chief Cartographer
Department of Lands and Survey

Norway

Representative:

Mr. Kristian Gleditsch
Director, Geographical Surveys

Peru

Observer:

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Minister, Legation of Peru
Canberra

Philippines

Representative:

Commander Marcelino S. Tabin
Vice-Chairman and Executive Director, Board of Technical Surveys and Maps
Office of the President

Portugal

Representative:

Mr. Fernando Teixeria Botelho
Geographical Engineer
Overseas Ministry

Republic of Viet-Nam

Representatives:

Major Nguyen Van Khai
Chief, Cartographic and Reproduction Division
National Geographic Service
(Chairman of the Delegation)

Major Dang Vu Ruyen
Chief, Geodetic and Photogrammetric Division
National Geographic Service

Syria

Representative:

Mr. Ibrahim Kerzom
Engineer
Army Geographic Service

Alternate:

Mr. Ahmed Kadri
Engineer
Army Geographic Service

Switzerland

Representative:

Mr. Robert Louis Scholl
Wild Heerbrugg, Ltd.

Thailand

Representative:

Lieutenant-General Somboon Vichitranuja
Chief of Survey
Royal Thai Survey Department
(Chairman of the Delegation)

Alternates:

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Soil Scientist
Rice Department

Captain Rojana Hongprasith, RTN
Cartographic Division
Hydrographic Department

Colonel Swasdi Pachimkul
Technical Officer
Royal Thai Survey Department

Mr. Chumni Boonyobhas
Chief of Forest Inventory Section
Royal Forest Department

Colonel Prachuap Niamloy
Chief, Photogrammetric Division
Royal Thai Survey Department

Mr. Avudh Phimpand
Senior Agronomist
Land Development Department

Colonel Vira Suvannus
Deputy Commandant, Survey School
Royal Thai Survey Department

Colonel Banlang Khamasundara
Chief, Atlas Division
Royal Thai Survey Department

Colonel Burin Uppalakalin
Chief, Division of Geodesy

Colonel Chumphon Kulkasem
Assistant Director, Royal Thai Survey Department

Observers:

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Deputy Director-General, Royal Irrigation Department

Mr. Kaset Pitakpaivan
Chief, Geological Survey Division
Department of Mineral Resources

Union of Soviet Socialist Republics

Representative:

Mr. A. Kashin
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Ministry of Geology
(Chairman of the Delegation)

Alternates:

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Chief, Technical Department
Principal Cartographic Directorate
Ministry of Geology

Rear-Admiral Konstantin K. Musatov
Deputy Chief, Department of Hydrography

Mr. Nicolai S. Padurets
Senior Engineering Cartographer
Principal Cartographic Directorate

Mr. V. I. Koulikov
First Secretary, Foreign Ministry

Mr. Igor A. Volkov
First Secretary, Cultural and Scientific Affairs
Embassy of the USSR
Canberra

Mr. Yuri Borisovich Kazmin
Expert on State Committee on Science and Technology

Mrs. T. A. Ovchinnikova
First Secretary, Foreign Ministry

United Kingdom

Representative:

Mr. William D. C. Wiggins
Director of Overseas Surveys
(Chairman of the Delegation)

Alternates:

Lieutenant-Colonel Thomas Rubin Burrows,
Survey Branch
H.Q., FARELF
Singapore

Lieutenant-Colonel George Alfred Hardy
Survey Directorate
Ministry of Defence

United States of America

Representative:

Colonel Robert E. Herndon, Jr.
Chief of Mapping, Charting and Geodesy
Department of Defense
(Chairman of the Delegation)

Alternates:

Mr. G. Etzel Pearcy
Geographer
Department of State

Mr. John A. Bradley
Geographical Attaché
American Embassy
Bangkok

Mr. Meredith Frederic Burrill
Executive Secretary, United States Board on Geographic Names
Office of Geography
Department of the Interior

Captain Robert C. Darling
Coast and Geodetic Survey
Environmental Science Services Administration

Mr. Frank A. Clemens
Assistant to Director, Operations
Aeronautical Chart and Information Center
United States Air Force

Mr. A. Edward Craig
Deputy Director, Hydrographic Surveys Department
United States Naval Oceanographic Office

Mr. Hellmut Schmid
Director, Institute of Earth Sciences
Environmental Science Services Administration
Department of Commerce

Mr. Arthur F. Striker
Chief, Branch of Cartography
United States Geological Survey
Department of Interior

Mr. Archer M. Wilson
Chief Topographer
Corps of Engineers
United States Army

Mr. William A. Radlinski
Assistant Chief Topographic Engineer
United States Geological Survey

Western Samoa

Representative:

Mr. Ofisa Tomane
Senior Cartographic Draftsman
Lands and Survey Department
(Chairman of the Delegation)

Alternate:

Mr. E. Frederick Sa'aga
Survey Assistant
Lands and Survey Department

B. UNITED NATIONS SPECIALIZED AGENCY

United Nations Educational, Scientific and Cultural Organization

Observers:

Mr. Robert J. Hurley,
Deputy Director,
UNESCO Office of Oceanography

Mr. C. S. Christian
Member of Executive Committee
Commonwealth Scientific and Industrial Research Organisation
Canberra

C. INTERGOVERNMENTAL ORGANIZATIONS

International Hydrographic Bureau

Vice-Admiral Alfredo Viglieri
President of Directing Committee

Intergovernmental Oceanographic Commission

Mr. Robert J. Hurley
Deputy Director

Pan American Institute of Geography and History

Dr. Meredith F. Burrill
Chairman, Committee on Geographic Terms

D. INTERNATIONAL SCIENTIFIC ORGANIZATIONS

International Geographical Union

Mr. Joseph Newell Jennings

International Society of Photogrammetry

Mr. Robert Louis Scholl

International Federation of Surveyors

Brigadier D. Macdonald

E. UNITED NATIONS SECRETARIAT

Mr. Horacio Ureta
Chief, Cartography Section
Department of Economic and Social Affairs
(Executive Secretary)

Mr. Chris N. Christopher
Cartography Section
Department of Economic and Social Affairs
(Deputy Executive Secretary)

Mr. Hideho Sawata,
Secretariat, Economic Commission for Asia and the Far East
(Technical Secretary)

Mr. Arthur Tyrrell
Director, United Nations Information Centre for Australia and New Zealand

OFFICIAL ADDRESSES

3. Mr. Horacio Ureta, Executive Secretary, opened the Conference on behalf of the Secretary-General of the United Nations. The Right Honourable David Fairbairn, Minister for National Development of the Commonwealth of Australia, delivered the welcoming address for Australia.

VOTE OF THANKS

4. The Conference adopted by acclamation a vote of thanks to the Australian Government for its hospitality and the excellent facilities provided in Canberra.

ADOPTION OF THE RULES OF PROCEDURE

5. The Conference unanimously adopted its rules of procedure.[1]

[1] *Fourth United Nations Regional Cartographic Conference for Asia and the Far East; Vol. 1, Report of the Conference* (United Nations publication, Sales No.: 65.I.16), pp. 20-22.

OFFICERS OF THE CONFERENCE

6. The Conference elected the following officers:

President:

Mr. Robert W. Boswell (*Australia*)

Vice-Presidents:

Mr. Badredin Marashi (*Iran*)
Colonel Pranoto Asmoro (*Indonesia*)

Rapporteur:

Commander Marcelino S. Tabin (*Philippines*)

AGENDA

7. The Conference had before it a provisional agenda (E/CONF.52/1) prepared by the United Nations Secretariat on the basis of proposals received from Governments. The final agenda adopted by the Conference is as follows:

1. Adoption of the rules of procedure
2. Election of officers
3. Adoption of the agenda
4. Report on credentials
5. Establishment of technical committees
6. Progress reports by countries on their respective cartographic activities since the last Conference
7. Reports on progress in matters which formed the basis of the resolutions or recommendations at the last Conference
8. Review of techniques and recent developments in surveying and mapping:
   (*a*) Control surveys
   (*b*) Preparation and reproduction of basic maps
9. Practical application of cartographic techniques to:
   (*a*) Location and development of mineral resources
   (*b*) Regional land use surveys
   (*c*) Forest development and management
   (*d*) Agricultural planning and development
   (*e*) Assessment and use of water resources
   (*f*) Civil engineering projects
   (*g*) Land settlement and land tenure
   (*h*) City development
10. Topical maps and national atlases
11. Aeronautical charts
12. International Map of the World on the Millionth Scale (IMW)
13. Review of techniques and recent developments in the processes of converting cartographic manuscripts into published maps
14. Automatic extraction, recording and processing of cartographic data
15. Geographical names, including matters for reference to the United Nations Conference on the Standardization of Geographical Names
16. Hydrography and oceanography
17. Adaptation of the report of the Conference

Establishment of technical committees

8. The Conference established five technical committees and allocated certain agenda items to them as shown below:

Committee I	
Geodesy and control surveys	Item 8(*a*)
Committee II	
Topographical cartography	Item 8(*b*)
Committee III	
Topical cartography	Item 9 and item 10 (topical maps)
Committee IV	
General cartography	Item 10 (national atlases) and items 11-15, inclusive
Committee V	
Hydrography and oceanography	Item 16

Officers of the technical committees

9. The five committees elected their officers as follows:

Committee I

Chairman: Major Teao Sunthan (*Cambodia*)

Vice-Chairman: Brigadier Donald Macdonald (*Australia*)

Rapporteur: Mr. Roger E. Selwan (*Lebanon*)

Committee II

Chairman: Mr. William Seaton Boyes (*New Zealand*)

Vice-Chairman: Major Nguyen Van Khai (*Republic of Viet-Nam*)

Rapporteur: Mr. Ahmad Daud (*Malaysia*)

Committee III

Chairman: Mr. Sarot Montrakun (*Thailand*)

Vice-Chairman: Mr. Mo Tsao (*China*)

Rapporteur: Mr. E. Frederick Sa'aga (*Western Samoa*)

Committee IV

Chairman: Colonel D. N. Sharma Atri Harnal (*India*)

Vice-Chairman: Colonel Banlang Khamasundara (*Thailand*)

Rapporteur: Mr. Byrne Ernest Goodrick (*Australia*)

Committee V

Chairman: Mr. Minoru Nagatani (*Japan*)

Vice-Chairman: Captain Rojana Hongprasith (*Thailand*)

Rapporteur: Captain David William Haslam (*Australia*)

Credentials

10. The President of the Conference reported that the credentials of all delegates had been submitted to the Credentials Committee and were found to be in order.

Chapter II

RESOLUTIONS ADOPTED BY THE CONFERENCE

11. The resolutions adopted by the Conference are reproduced below together with summaries of the work of the technical committees which are given in annexes I to V. A check list of the documents issued for the Conference can be found in annex VI. The check list includes background, technical and information papers submitted by the participants in connexion with the various items of the agenda.

1. Sixth United Nations Regional Cartographic Conference for Asia and the Far East

The Conference,

Appreciating the offer of the Government of Iran to be the host country for the Sixth United Nations Regional Cartographic Conference for Asia and the Far East,

Recommends to the Economic and Social Council that the Sixth United Nations Regional Cartographic Conference for Asia and the Far East be convened in Iran in October 1970.

22 March 1967.

2. Regional geodetic, gravity and magnetic surveys

The Conference,

Noting the importance of each country developing and extending its geodetic, gravity and magnetic surveys,

Urges that all countries in the region take all possible action to ensure that such surveys are continued and extended.

22 March 1967.

3. Distance measurement using airborne equipment

The Conference,

Conscious of the need for adequate geodetic and mapping control in many areas difficult of access by conventional methods or where large water surfaces interfere,

Recognizing that such control can now be established to suitable standards of accuracy by use of an airborne electronic measuring system such as that known as Aerodist,

Further recognizing that such a system can be applied in either a relatively simple or more complex form,

Recommends that countries of the region faced with problems of control in difficult areas should given careful consideration to the possible use of such a system as a means of solving these problems.

22 March 1967.

4. Integrated large-scale surveys

The Conference,

Realizing the advantages of a simple integrated plane co-ordinate system for large-scale surveys of a country,

Recognizing the need for an early application of such a system in order to forestall problems that might develop later from lack of co-ordination,

Noting the necessity of such a system for the future development of an effective method for the storage and retrieval of survey control data,

Recommends that each country of the region adopt a national system of plane co-ordinates based on a projection best suited to the shape of the country as well as to its geographic location.

22 March 1967.

5. Satellite geodesy

The Conference,

Noting the already proven capability of dynamic and geometric satellite geodesy to provide a uniform world-wide reference system,

Recognizing that these methods equally provide a means for establishing or readjusting the basic three-dimensional geodetic frames in the areas of individual datums,

Further recognizing the potential of the methods used specifically to provide the means of connecting ocean-separated locations,

Recommends that the application of satellite geodesy, particularly the method of geometric satellite triangulation, be considered for use in the region for the purpose of establishing, where applicable, geodetic reference datums to which all geodetic information can be related and for the purpose of mutually strengthening existing international geodetic connexions and for establishing such connexions where they do not at present exist, and that all countries in the region co-operate to this end.

22 March 1967.

6. Crustal movements

The Conference,

Recognizing the social and economic consequences of catastrophic events, particularly earthquakes,

Further recognizing the importance of supporting the discipline of seismology by geodetic operations in order to detect crustal movements,

Recommends that serious consideration be given by geodetic agencies in the various countries of the region to the provision of the necessary technical and budgetary resources for the execution of both horizontal and vertical measurements in order to obtain adequate records for the detection and interpretation of variations in the topography especially in areas known to be affected by crustal movements.

22 March 1967.

7. Electronic computing

The Conference,

Considering the increasing value of electronic computing equipment in the adjustment, storage and retrieval of geodetic, cadastral, gravimetric and other types of field survey data,

Recognizing that a great deal of work is required in the preparation of such data for electronic computing,

Recommends:

1. That each cartographic agency review existing data with a view to preparing such data for electronic computing;

2. That all future work be prepared in such a form as to be readily adaptable to electronic computing;

3. That all countries of the region co-operate in the development of computer programmes where their problems of data reduction are the same or similar;

4. That all countries provide information about their computer equipment, computer programmes and availability of equipment for use by other countries to the Map Information Office, Royal Thai Survey Department, Bangkok, and on request to other interested countries.

22 March 1967.

8. Application of mapping techniques

The Conference,

Noting with interest the various important papers presented on techniques and instrumentation such as direct scribing from photogrammetric instruments; use of colour, high-altitude and super-wide-angle photography; analytical and analogue block aerotriangulation; new photogrammetric plotters and ancillary equipment,

Noting further that techniques for terrain sensing through cloud cover and in densely forested areas would be of the utmost value to many countries,

1. *Recommends* that the application of such techniques and instrumentation be considered in all cases where the conditions are favourable;

2. *Further recommends* that any new or additional information on these or similar techniques and instrumentation be sent to the Map Information Office, Royal Thai Survey Department at Bangkok, for distribution to all countries of the region and other interested countries.

22 March 1967.

9. Mapping of areas adjoining international boundaries

The Conference,

Recognizing the problems frequently attendant upon the mapping of areas on either side of international boundaries,

Realizing that source materials must be as complete in such areas as elsewhere in order to provide consistent map coverage,

1. *Recommends* that agreements be reached between countries of the region on either side of international boundaries to facilitate the exchange of maps and mapping data and otherwise encourage co-operation between the countries concerned;

2. *Further recommends* that such agreements apply to sufficiently broad areas to allow an adequate margin for peripheral data and field work on both sides of the boundary, including provision for air space in which to take aerial photography.

22 March 1967.

10. Map production techniques

The Conference,

Recognizing the urgent need for a greatly increased map production capacity to support the rapidly increasing emphasis on national resources surveys and the subsequent projects which develop from these surveys,

Noting that map-making technology tends to become increasingly sophisticated and requires heavy capital outlays and demands for highly skilled and trained operational and maintenance personnel,

Recommends that all countries of the region not lose sight of the established simpler methods of map production by much less sophisticated equipment and techniques so as to maintain continuing map production while advancing in training and continuing investigations for the improvement of equipment and techniques.

22 March 1967.

11. Membership in international societies encompassing surveying, photogrammetry and cartography

The Conference,

Appreciating the value of the contributions of the international societies such as the International Carto-

graphic Association, the International Federation of Surveyors, the International Geographical Union, the International Society of Photogrammetry, the International Union of Geodesy and Geophysics, and their several commissions and working groups, to the sciences of surveying, photogrammetry and cartography, which in turn contribute so largely to the development of national resources,

Recommends that all countries of the region and other interested countries should participate as members in the work of these international bodies.

22 March 1967.

12. Colour and infra-red photography

The Conference,

Recognizing the value of colour and infra-red photography and other sensors for photo-interpretation in the preparation of topical maps for use in the survey and development of natural resources, such as forestry, minerals, water, soils and other programmes,

1. *Recommends* that countries of the region pay special attention to the possible applications of colour and infra-red photography and other sensors for the preparation of topical maps;

2. *Further recommends* that all countries which have had experience in the use of colour and infra-red photography and other sensors should report on their techniques and results to the Map Information Office, Royal Thai Survey Department, Bangkok, for dissemination to countries of the region.

22 March 1967.

13. Regional economic atlas for Asia and the Far East

The Conference,

Noting that, in accordance with resolution 15 [1] of the Fourth United Nations Regional Cartographic Conference for Asia and the Far East, Thailand has undertaken the preparation of a regional economic atlas for Asia and the Far East, and that this project requires the co-operation of member countries in the supply of source material and technical advice,

1. *Recommends* that an advisory committee be established of corresponding members from the following countries: Australia, Federal Republic of Germany, Israel, Japan, Philippines, Thailand (Chairman), Union of Soviet Socialist Republics and United States of America;

2. *Further recommends* that this committee be required to consider and advise on problems related to this project as they arise.

22 March 1967.

[1] *Fourth United Nations Regional Cartographic Conference for Asia and the Far East; Vol. I, Report of the Conference* (United Nations publication, Sales No.: 65.I.16), p. 12.

14. Topical maps and national atlases

The Conference,

Noting resolution 14 [2] of the Fourth United Nations Regional Cartographic Conference for Asia and the Far East,

1. *Recommends* that a committee on topical maps and national atlases be established consisting of corresponding members from the following countries: Australia, Federal Republic of Germany, India, Israel, Japan, Philippines, Thailand (Chairman), Union of Soviet Socialist Republics and United States of America;

2. *Further recommends* that this committee be required to consider the work of the International Geographical Union in this field and suggest standards for these types of maps and to submit the suggestions to the Map Information Office, Royal Thai Survey Department, Bangkok, for dissemination to the countries of the region.

22 March 1967.

15. Standardization of forest mapping

The Conference,

Recognizing the importance of the need for the correlation and exchange of forest cover information through the medium of cartography,

1. *Recommends* that countries of the region adopt the use of the metric system and appropriate representative fractions in all forest mapping;

2. *Further recommends* the consideration of the standardization of nomenclature and presentation of forest information within the region.

22 March 1967.

16. Seminar on aerial surveys and equipment

The Conference,

Recognizing the application of photogrammetric methods and photo-interpretation techniques to the execution of the expeditious and efficient aerial surveys for compiling and producing maps vitally needed for economic development,

Noting the training centres established by several countries of the region for aerial survey studies,

Realizing the need to focus attention on these training centres and to give impetus to the study of photogrammetry and photo-interpretation so that the acquired knowledge may be capably applied to these sciences in all countries of the region,

Recommends that a second seminar on aerial survey methods and equipment be convened as soon as possible, and that it be similar to the one held at Bangkok, from 4 January to 5 February 1960.[3]

22 March 1967.

[2] *Ibid.*

[3] See *Proceedings of the United Nations Seminar on Aerial Survey Methods and Equipment* (United Nations publication, Sales No.: 60.II.F.5).

17. National atlases

The Conference,

Recognizing that a number of national atlases have been published, and that knowledge and availability should be disseminated as widely as possible,

1. *Recommends* that all countries which have published national atlases send information about their atlases to the Map Information Office, Royal Thai Survey Department at Bangkok, for dissemination to all countries of the region;

2. *Urges* that countries in so far as possible distribute copies of national atlases free to all countries of the region.

22 March 1967.

18. Geographical names

A

The Conference,

Noting that the United Nations Conference on the Standardization of Geographical Names will be held at Geneva from 4 to 22 September 1967,

1. *Recommends* to the Conference that it should not concern itself unduly with problems of individual names but should focus on the recognition and understanding of general problems and on ways of facilitating increased co-operative activity;

2. *Draws the attention* of the forthcoming Conference (*a*) to the problem of the need for Roman alphabet forms for international cartographic use, (*b*) to the problem of formulating principles applying to the transfer of names from one writing system to another.

B

The Conference,

Recognizing that geographical name phenomena present some regularities that may approach universality and at the same time some phenomena of limited geographical distribution,

Recommends that each country look for examples of both regularities and variations in its own names to contribute to the common fund of knowledge at the United Nations Conference on the Standardization of Geographical Names.

C

The Conference,

Recognizing the great importance of geographical names, the wide applicability of the experience of countries that have active programmes of research and standardization, and the need for information on names and name phenomena from countries where such programmes are not far advanced,

Noting the rapidly growing international interest in greater uniformity in the writing of geographical names,

Noting further that a United Nations Conference on Standardization of Geographical Names will convene in Geneva from 4 to 22 September 1967,

Having considered the United Nations documents presented to this Conference which are relevant to that meeting,

Recommends to the Governments of the States Members of the United Nations and members of the United Nations specialized agencies that they send representatives to the Conference.

22 March 1967.

19. International Map of the World on the Millionth Scale (IMW)

The Conference,

Noting that large areas remain to be covered by the International Map of the World on the Millionth Scale (IMW),

Urges that all countries endeavour to publish this Map in the very near future.

22 March 1967.

20. Training facilities

The Conference,

Considering that many countries of the region frequently send students to foreign countries within and outside the region for study in one or more of the subjects in the field of cartography, including hydrography,

Recognizing that it may be of interest to disseminate detailed information about the various training possibilities, including data about entrance requirements, the level of the courses and their diplomas or degrees, the curriculum, etc., in order to facilitate the evaluation of those possibilities by the interested countries and their authorities,

1. *Recommends* that all countries be invited to present detailed information about their educational facilities in cartography and hydrography, in so far as they are or can be made available to foreign students, and to send this information to the Cartography Section of the Department of Economic and Social Affairs, United Nations, for dissemination to all countries, and to the International Hydrographic Bureau in respect of training in hydrography;

2. *Further recommends* that the above-mentioned authorities establish a contact with Commission I of the International Cartographic Association, which is dealing with the same subject, in order to avoid duplication of effort and to complete the material obtained;

3. *Urges* that the countries of the region take all necessary steps to establish their own training programmes.

22 March 1967.

21. Creation of hydrographic services in newly independent countries

The Conference,

Noting the necessity for co-ordination of hydrographic effort with a view to standardization of nautical charts and publications,

Noting further the lead which has been established by the International Hydrographic Bureau in this regard in order to make navigation safer,

1. *Invites* those countries which do not already possess hydrographic services to take early steps to create such services and to consult with the International Hydrographic Bureau as well as with international scientific organizations and other bodies;

2. *Urges* those countries with established hydrographic services to render, where feasible, assistance in technical methods and personnel matters.

22 March 1967.

22. The Co-operative Study of the *Kuroshio* (Japan Current)

The Conference,

Noting with pleasure the excellent progress of the Co-operative Study of the *Kuroshio* (CSK),

1. *Invites* interested countries to continue giving encouragement and support to this project;

2. *Recommends* that the working group [4] formed during the Fourth United Nations Regional Cartographic Conference for Asia and the Far East continue its activities as established by resolution 20 [5] of the aforementioned Conference in co-operation with CSK.

22 March 1967.

23. An international tsunami warning system and information centre

The Conference,

Noting that an international tsunami warning system is continuing to operate in the Pacific Ocean area, with the participation of many Governments around the Pacific,

Noting further that the warning services are available to those countries agreeing to exchange seismic and tidal data with all recognized participants and including provisions for adequate dissemination services to their population,

Recognizing the needs for the establishment of additional tide gauges in the area, for improved communications and for improved dissemination of available information,

Further recognizing the activity and experience of the Intergovernmental Oceanographic Commission through co-ordination of oceanographic programmes,

1. *Recommends* the increasing participation of countries at this Conference in communication, administration, establishment and operation of seismic and tidal stations;

2. *Invites* interested countries to become members of the warning system and to make necessary arrangements to attend future meetings of the working group on the international tsunami warning system and the tsunami information centre held by the Intergovernmental Oceanographic Commission (IOC) [6].

22 March 1967.

24. Provision for bathymetric charts

The Conference,

Noting that most maritime States possess oceanographic sounding data and are utilizing this for their own navigational charts,

Realizing that existing navigational charts do not adequately show the features of the ocean bed,

Recognizing that bathymetric charts as general maps for the ocean have become indispensable owing to the advances in various fields of the study of the oceans,

Further recognizing that bathymetric charts on a scale larger than the 1:10,000,000 General Bathymetric Chart of the Oceans would be of great value not only scientific work but also for such services as prediction of earthquakes, tsunami warnings, submarine cable-laying operations, exploration of sea bed ressources etc.,

1. *Recommends* that oceanographic data should be exchanged on request among interested countries;

2. *Further recommends* that such data should be used to publish coloured, contoured bathymetric charts.

22 March 1967.

25. Development of oceanographic cartography

The Conference,

Noting that exploration of ocean areas lags well behind that of land areas,

Recognizing the urgent need for more adequate charting of ocean areas in order to prepare thematic ocean charts, such as those portraying currents, physical and chemical properties of sea-water, bottom sedimentation, gravimetric and magnetic fields, sea state, ice distribution etc., for securing the safety of navigation, improving fishery activities and for more profound knowledge of the ocean as a whole,

[4] The group is composed of delegates from the cartographic agencies of the following countries: Canada, China, Japan, Philippines, Republic of Viet-Nam, Union of Soviet Socialist Republics and United States of America, the delegate from Japan acting as Secretary.

[5] *Fourth United Nations Regional Cartographic Conference for Asia and the Far East, Vol. I, Report of the Conference*, p. 13.

[6] The next meeting of the Intergovernmental Oceanographic Commission is to be held in Honolulu early in 1968.

1. *Recommends* that countries of the region should devote maximum effort to the exploration of continental shelf and ocean areas, including the training of personnel in related activities;

2. *Further recommends* that the Sixth United Nations Regional Cartographic Conference should devote more time to the general cartography of the ocean areas and that countries should report at that Conference ways of developing basic bathymetric charts to show the exploitation of marine resources.

22 March 1967.

26. Co-operative regional oceanographic survey of a portion of the South China Sea

The Conference,

Noting the need for added impetus in the implementation of resolution 21 of the last Conference concerning regional hydrographic and oceanographic surveys of a portion of the South China Sea extending westward from the territorial waters of the Philippines along latitude 12° N to longitude 114° E, thence in a south-westerly direction to a position latitude 8° N, longitude 109° E, thence in a south-south-easterly direction towards the territorial waters of Malaysia off Tanjong Sirik, exclusive of territorial waters,

Realizing the need for adequate surveys for safe navigation in the region and also for data on the potential for fishing and development of natural resources,

Recognizing the activity and experience of the Intergovernmental Oceanographic Commission in developing co-operation and in the co-ordination of oceanographic, geological, geophysical, biological and bathymetric investigations conducted during several international expeditions,

1. *Invites* the Intergovernmental Oceanographic Commission to consider undertaking the co-ordination of the necessary investigations in the region with the assistance, as necessary, of the United Nations, the United Nations Educational, Scientific and Cultural Organization and other interested United Nations specialized agencies as well as of the International Hydrographic Bureau for hydrographic activities;

2. *Recommends* that the corresponding working group [7] maintain close liaison with, and provide assistance and information to, the Intergovernmental Oceanographic Commission in this work.

22 March 1967

27. Vote of thanks to the Government of the Commonwealth of Australia

The Conference,

Expresses its heartfelt thanks to the Government of the Commonwealth of Australia for the excellent arrangements it has been good enough to provide for the organization of the Fifth United Nations Regional Cartographic Conference for Asia and the Far East and for the warm hospitality afforded to each and every participant.

22 March 1967.

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[7] The corresponding working group is composed of representatives of the following countries: Australia, China, Indonesia, Japan, Malaysia, Philippines, Republic of Viet-Nam, Thailand, Union of Soviet Socialist Republics, United Kingdom and United States of America, with observers from the International Hydrographic Bureau and the Intergovernmental Oceanographic Commission. The representative of Japan is the Chairman and the representative of the Philippines is the Corresponding Secretary.

Annex I

SUMMARY OF WORK OF COMMITTEE I ON GEODESY AND CONTROL SURVEYS

Geodetic surveys

The Government of Australia described in its paper "The geodetic survey of Australia" (E/CONF.52/L.51), the status of its geodetic datum, the adoption of the spheroidal dimensions accepted by the International Astronomical Union and the use as the point of origin for the survey of a point in the central region based on the analysis of 275 astro-geodetic comparisons. An adjustment of the whole survey was carried out using an electronic computer. There was good evidence that the Australian national geodetic survey was of high accuracy in respect of horizontal co-ordinates and that the national levelling survey, now in progress, would improve the vertical accuracy. The report expressed interest in a comparison between the present results and those to be observed by geodetic satellite in the foreseeable future.

Thailand's paper "Triangulation operations from 1964 to 1966" (E/CONF.52/L.6) reported on establishing a first-order triangulation network connecting the eastern and western regions of Thailand. The work was done with the aid of Bilby steel towers and contributed to the engineering and development projects already in progress in the region.

The Australian paper "Some Australian developments in airborne survey control" (E/CONF.52/L.52) reported on the application of helicopters to signal visible ground points. The method devised by the United States Geological Survey had been improved by increasing the useful flying height of the helicopters to 4,000 feet, with the assistance of vertically trained television cameras, located on ground stations, transmitting to receivers in the aircraft.

In a paper entitled "Progress and results of high-precision traverse surveys" (E/CONF.52/L.46), submitted by the United States of America, a progress report indicated that an accuracy of one part in a million could be attained, thus providing a technique to improve the national horizontal datum and at the same time provide accurate scale for the execution of geometrical satellite triangulation.

The Committee noted that the comprehensive adjustment of large blocks of geodetic measurements had become possible with the availability of electronic computers. The approach taken in Australia was documented by the paper "The adjustment of horizontal control surveys" (E/CONF.52/L.30). It was pointed out that details of this computer programme could be made available to other survey organizations. The Division of National Mapping also offered to assist other survey organizations by running adjustments for them. In a paper related to the subject and submitted by Australia under the title "Adjustment of survey observations" (E/CONF.52/L.54), the problem of the adjustment of surveys of lower orders of accuracy was discussed, attention being drawn the problems caused by the presence of numerous systematic errors.

A resolution [a] was submitted to the Conference for adoption on this item.

[a] Adopted as resolution 2, "Regional geodetic, gravity and magnetic surveys".

Modern techniques

A paper entitled "Investigations on geodesy and topography in the USSR (1964-1966)" (E/CONF.52/L.102) was submitted by the delegation of the Union of Soviet Socialist Republics. It described briefly a national standard for use in the classification of different types of theodolites now in production. Similar standards had been developed for levelling instruments and optical double-image range finders.

This paper also discussed the designing of electro-optical and microwave distance-measuring devices. Pendulum gravity meters for both land and sea use were briefly mentioned. A somewhat more detailed description was given of photogrammetric instruments and analytical methods used to reduce the number of control points required to be surveyed on the ground.

Research into the use of small-scale photography for the compilation of large-scale maps was mentioned briefly.

Distance measurement using airborne equipment

Establishment of first-order and second-order geodetic control by means of airborne electronic distance-measuring instruments such as the Aerodist system was described in some detail in three papers, "Aerodist operations in Australia" (E/CONF.52/L.44) and "Operation of Aerodist distance-measuring equipment in Papua-New Guinea" (E/CONF.52/L.53), submitted by Australia, and "Aerodist in geodetic surveying in Canada" (E/CONF.52/L.95 and Add.1), submitted by Canada. Although climatic and terrain differences necessitated some variation in techniques, it was evident that this method of control extension had received firm acceptance in both these large countries where substantial areas of both geodetic and mapping control had been established in the past two or three years. Analysis of the results according to geodetic specifications indicated that accuracies in the order of 5 parts per million were feasible. A resolution [b] was proposed to the effect that the method should be considered by other countries where conventional control by triangulation or traverse was impracticable.

Integrated large-scale surveys

Two concepts of integrated surveys were presented to the Conference. The Philippines, in its paper E/CONF.52/L.11, entitled "The plane co-ordinate system on land surveys in the Philippines", detailed the characteristics of its national co-ordinate system. It explained that the plane co-ordinate system was implemented on 26 May 1965 and all local surveys had since been connected through their own local origins to a common datum.

Switzerland, in its paper entitled "Topometer data-processing systems for photogrammetry and geodesy" (E/CONF.52/L.120), treated the integration of independent, relatively oriented stereomodels into a three-dimensional co-ordinate system, block adjusted

[b] Adopted as resolution 3, "Distance measurement using airborne equipment".

by least squares, that could be applied to cadastral surveys. Likewise, it treated the adjustment of independent traverse survey observations into a common system.

A resolution [c] was submitted for adoption by the Conference on this item.

Levelling

Australia, in its paper "The levelling survey of Australia" (E/CONF.52/L.43), gave a short history of its control levelling, pointing out that the major part of the levelling was observed to third-order standards. Information was given on the system of contract levelling by private surveyors. The paper also showed the amount of levelling work achieved. In the discussion it was indicated that a national adjustment based on the available levelling and the results from thirty-one tidal gauging stations would be completed in 1970.

Satellite geodesy

The Committee noted an increasing awareness of the potential of geodetic satellite triangulation, as evidenced by remarks in reports presented among others by Australia, France and the United States of America. The paper entitled "A concept for an updated three-dimensional world-wide geodetic reference system" (E/CONF.52/L.47), submitted by the United States of America, carried the approach one step further by suggesting the possibility of a strictly geometrical determination of the geoid by measuring the clearance between a satellite orbit and the ocean surface. Reference was made in this report to a completed satellite triangulation scheme covering a large part of the North American continent with an accuracy of 1 to 2 parts per million for the horizontal and 3 parts per million for the vertical co-ordinates. Furthermore, the use of the PAGEOS satellite for the execution of a world-wide triangulation was mentioned.

A resolution [d] was submitted to the Conference for adoption.

Crustal movement

On the subject of crustal movements accompanying earthquakes, papers were presented by the United States of America and Japan. "Horizontal and vertical crustal movement in the Prince William Sound, Alaska, earthquake of 1964" (E/CONF.52/L.88), presented by the United States of America, pointed out that the interpretation of the resurvey results was somewhat impaired, more particularly in the horizontal components because the old surveys were of lower accuracy and were made long ago. The deviations computed therefore presented not only the changes caused by the earthquake but equally those accumulated during the period between the surveys and the earthquake. The papers "Anomalous land deformation in the Niigata area before the Niigata earthquake and in the Matsushiro area revealed by precise levelling" and "Geodetic surveys in the area of Matsushiro earthquake swarms" (E/CONF.52/L.121), presented by Japan, pointed out that crustal movements and earthquakes seemed to have a close relationship, but that this relationship had not been fully defined. If a definite relationship could be clearly established, and if preseismic crustal movements could be detected by precise levelling and other geodetic studies, then it might prove useful for investigating the mechanics of earthquakes as well as for predicting earthquakes. Detection of seismic phenomena and studies of the earth's structure might also be supported by geodetically monitoring variations in the topography of the crust.

The Committee considered that these problems were interesting and important in the region, and submitted a draft resolution [e] on this subject to the Conference.

Electronic computing

The Committee considered the paper "Some aspects of electronic computing and plotting" (E/CONF.52/L.14) submitted by Israel. The considerable savings in time and cost afforded by the utilization of an automated plotter driven by the output from an electronic computer were noted with interest. The paper served to emphasize the similar findings of other countries, both as to the advantages being realized through the introduction of electronic computers and as to the problems encountered in attaining maximum efficiency. Computer programmes for the reduction of specialized survey problems could often be rewritten for a cost less than that for the modification of existing programmes that had been designed for a different type of computer. On the other hand, it was recognized that the exchange of more generalized computer programmes between countries, particularly when prepared in a universal language such as Fortran IV, could often result in considerable cost savings. A resolution [f] reflecting these findings was submitted to the Conference for adoption.

[c] Adopted as resolution 4, "Integrated large-scale surveys".

[d] Adopted as resolution 5, "Satellite geodesy".

[e] Adopted as resolution 6, "Crustal movements".

[f] Adopted as resolution 7, "Electronic computing".

Annex II

SUMMARY OF WORK OF COMMITTEE II ON TOPOGRAPHICAL CARTOGRAPHY

Regional mapping projects and programmes

The co-ordination of the national mapping programme in Australia was described in the paper "Air photography and topographic mapping in Australia" (E/CONF.52/L.1).

Regional mapping responsibilities were divided among the various state and commonwealth agencies which comprised the Departments of National Development, the Interior, Army, Navy and the Departments of Lands in each state. All mapping programmes were co-ordinated by the National Mapping Council on which the above agencies were represented, and mapping data were forwarded to the Division of National Mapping, Department of National Development, Canberra, from where it was made available to other agencies as required.

For the state of New South Wales, the paper submitted by Australia, "Photogrammetry applied to topographic mapping at 1:31,680 scale in New South Wales" (E/CONF.52/L.32), described how this mapping was accomplished by the Department of Lands of that state to satisfy the needs for maps required for development. Medium-scale maps were virtually non-existent before 1952. A paper on similar lines, "South Australia's topographical mapping system" (E/CONF.52/L.57), described the organization and mapping programmes of the Department of Lands in South Australia. This paper provided a detailed account of map production techniques used, from the planning of air photography to the final map compilation.

In Papua-New Guinea preliminary maps were prepared showing cultural detail and relief shading, without contours, from various

scales of photography and with a minimum of control. The Committee considered that this technique, as set out in the paper "Preliminary detail plots in Papua-New Guinea" (E/CONF.52/L.55) submitted by Australia, could be of value in developing countries of the region.

Experience in the Federal Republic of Germany pointed out the importance of direct coat scribing for the preparation of topographic plans which might be important for developing countries, particularly those with inadequate facilities for producing plans by subsequent cartographic treatment. Black-and-white prints made from direct coat scribed sheets at 1:25,000 and 1:50,000 scales would be adequate for planning and execution of development projects in many instances. The Committee noted that this technique, described in the paper entitled "The preparation of topographic plans for large-area developing projects and their use as provisional maps" (E/CONF.52/L.82), could have a wide application and could lead to economies in mapping in those areas where the terrain favoured its use.

The Union of Soviet Socialist Republics had made extensive use of super-wide-angle photography for large-scale mapping, especially of flat areas. In the paper entitled "Large-scale surveys in the USSR" (E/CONF.52/L.101), it listed accuracy requirements for large-scale mapping and pointed out the needs for improvement in aerial photography; in methods of plotting and aerotriangulation to reduce the need for geodetic control; and in stereoplotters to increase productivity and accuracy. It also called attention to the need for instruments to accomplish differential restitution (orthophotography), recognizing the importance of such a product for work in built-up areas and in areas where complex engineering investigations were to be conducted.

In "Examination of the national large-scale map" (E/CONF.52/L.121), submitted by Japan, the problem of preparing specifications for mapping carried out by private contractors and the checking of results were discussed. The Committed considered that when final reports were available they would be of interest to other countries of the region. A new medium-scale stereoplotter was also described in this paper. Tests of the instrument were being carried out and the results would be published by Japan.

Surveying and mapping techniques

Various techniques and instruments were described that had proved to be successful for increasing production and improving accuracy of surveying and mapping operations. An automatic stereoplotter, the Stereomat, was described in the paper "Evaluation of Stereomat IV (automatic Stereoplotter)" (E/CONF.52/L.21) submitted by the United States of America. Developed in the United States and based on a design invented in Canada, this was a pioneering effort in the field of automation of the photogrammetric compilation process. The Committee noted that other automated instruments had also been developed and acknowledged that such developments were of great importance.

Analytical methods of aerotriangulation were now in widespread use. While the economics of fully analytical systems were still under study in some countries, semi-analytical methods where co-ordinates were read directly from the stereomodel had proved to be quite successful. A fully analytical method using a Hilger Watts stereocomparator was very effective in the mapping of Tasmania. The paper entitled "Analytical aerotriangulation systems for photogrammetric mapping in the United States Geological Survey" (E/CONF.52/L.22) submitted by the United States of America, and the Australian paper "The application of the stereocomparator to mapping in Tasmania" (E/CONF.52/L.31) dealt with these methods.

Several standard methods in regular use in the United States of America, including the Airborne Control System, truck-mounted surveying towers, orthophotography and scribing, were described in the paper "Modern techniques and instruments for surveying and mapping" (E/CONF.52/L.48). This illustrated modern techniques that were available to produce maps for the orderly evaluation and efficient utilization of a country's resources.

The Committee considered that a new device developed in the United States of America, known as the Stereo Image Alternator (SIA) would prove to be of great value to those countries using double-projection-type plotters such as the Kelsh, Balplex, M-2 and Multiplex. In its paper "The Stereo Image Alternator, potential successor to anaglyphic viewing" (E/CONF.52/L.49), the United States of America pointed out that the SIA eliminated the need for coloured filters, thereby increasing the amount of viewable light in the stereomodel and enhancing its sharpness. It also permitted the use of colour photography in such plotters, which was not possible when coloured anaglyphic filters were used.

The experience of the Australians in the use of super-wide-angle photography for the preparation of its 1:100,000 and 1:50,000-scale mapping confirmed the value of this type of photography. The paper "An approach to 1: 100,000 and 1: 50,000-scale mapping using super-wide-angle photography" (E/CONF.52/L.56) described how obscurement of areas near photograph edges by sharp relief was overcome by exposure with 80 per cent overlap.

Australia also demonstrated the economy of using high-altitude photography as control for large-scale mapping from low-altitude photography in the paper "The use of high-altitude photography to control large-scale mapping in New South Wales" (E/CONF.52/L.58)

Switzerland had conducted experiments comparing various types of colour photography and panchromatic photography in the mapping process. Its paper "Photogrammetric contouring from aerial colour photographs" (E/CONF.52/L.119) demonstrated that contours plotted from the colour film satisfied the requirements for 1:10,000-scale mapping.

The Committee, recognizing the value of the techniques described in the papers, submitted a resolution to the Conference calling for consideration, where applicable, of these techniques on future mapping projects and recommending further exchange of technical information.[a]

Mapping of areas adjoining international boundaries

The technical paper submitted by Thailand, "Mapping of international boundary areas" (E/CONF.52/L.128), pointed to the need for close co-operation between neighbouring countries in the free and full exchange of technical data to permit completion of full may sheets in common border areas. The paper, while in no way intending to encroach on the wider problems of border delineation, set out certain guidelines suggested as a basis for agreements leading to the exchange of this information.

The Committee, aware of the benefits accruing from this co-operation, submitted a draft resolution to the Conference.[b]

The future potentials of surveying and mapping

The Committee noted with interest the information contained in the paper "The challenge of the next decade to surveyors and mappers" (E/CONF.52/L.25) submitted by the United States of America. In view of the fact that about 80 per cent of the earth's surface was still unmapped at scales 1:100,000 or larger, modern techniques had to be sought and applied to speed up the production of adequate maps. Taking this into consideration, but realizing the difficulties connected with the introduction of new sophis-

[a] Adopted as resolution 8, "Application of mapping techniques".

[b] Adopted as resolution 9, "Mapping of areas adjoining international boundaries".

ticated equipment, the Committee submitted to the Conference a draft resolution [c] recommending that the countries not lose sight of the already established simpler methods of map production by less sophisticated equipment. This would maintain production continuity, while allowing training and investigations for the improvement of equipment and techniques to be continued.

[c] Adopted as resolution 10, " Map production techniques ".

Annex III

SUMMARY OF WORK OF COMMITTEE III ON TOPICAL CARTOGRAPHY

The Committee, in its four working sessions, dealt with thirty-nine technical papers submitted by various participating countries on topical cartography.

Six papers dealt with location and development of mineral resources. " Maps for the development of our mineral resources " (E/CONF.52/L.8) and " Photogeological study of Philippine diorites " (E/CONF.52/L.9) submitted by the Philippines, stressed the requirements of aerial photography to resolve many of its mineral problems. " Cartographic techniques in regional mineral exploration " (E/CONF.52/L.33), " Geophysical survey mapping for mineral resources in the Bureau of Mineral Resources, Geology and Geophysics " (E/CONF.52/L.39) and " Application of cartographic techniques to the development of the brown coal resources in Victoria " (E/CONF.52/L.59), submitted by Australia, revealed the experience of this country in the application of cartographic techniques for exploration and development of its mineral resources. China and Japan also submitted papers, " Location and development of mineral resources " (E/CONF.52/L.111 and E/CONF.52/L.121, respectively).

Six papers dealt with land use survey. " Regional land use surveys " (E/CONF.52/L.3), prepared by the Department of Lands and Survey of New Zealand, stressed the long-standing need for more detailed land use survey; " Soil description of Pran River project " (E/CONF.52/L.26), submitted by Thailand, showed the application of land use surveys to the discovery of most of its mineral resources. Australia submitted a paper, " Application of cartographic techniques to the regional survey in Australia " (E/CONF.52/L.60). China also submitted two papers: " Salient features of Taiwan's agricultural land consolidation programme " (E/CONF.52/L.84 and Add.1) and " Land use surveys " (E/CONF.52/L.112). Japan submitted a paper (E/CONF.52/.121), " Progress and utilization of land use maps in Japan ".

Three papers dealt with forest development and management: " The application of cartographic techniques to Australian forest development and management " (E/CONF.52/L.61), " Atmospheric haze penetration in colour air photography " (E/CONF.52/L.62), both submitted by Australia, and " Forest development and management " (E/CONF.52/L.113), submitted by China.

Three papers dealt with agricultural planning and development: " Soil description of Pran River project " (E/CONF.52/L.26), submitted by Thailand, " Cartographic techniques as applied to soil surveys " (E/CONF.52/L.63), submitted by Australia, and " Practical application of cartographic techniques to agricultural planning and development " (E/CONF.52/L.121), presented by Japan.

Four papers dealt with assessment and use of water resources: two of these were submitted by Australia, " A map of underground water of Australia " (E/CONF.52/L34) and " The mapping of surface water resources " (E/CONF.52/L.45 and Add.1). The United States of America and China also submitted papers — " Colour photography for water resources studies " (E/CONF.52/L.50) and " Mapping for water conservancy area " (E/CONF.52/L.114), respectively.

Five papers dealt with civil engineering projects — all were submitted by Australia: " The efficiency and economy of photogrammetric surveys for engineering (principally road) purposes in tropical regions " (E/CONF.52/L.38), " Mapping for tidal power investigation in the Kimberleys " (E/CONF.52/L.64), " Large-scale mapping for engineering requirements, sewerage, highways and open cuts " (E/CONF.52/L.65), " Application of cartographic techniques to the Snowy Mountains Hydroelectric Scheme " (E/CONF.52/L.66) and " Cable way location by photogrammetric methods, Cairns and hinterland television station " (E/CONF.52/L.67).

Five papers dealt with land settlement and land tenure; four of these were submitted by Australia: " The computation of cadastral surveys in New South Wales " (E/CONF.52/L.35), " Cartography and land settlement " (E/CONF.52/L.40), " Land tenure and the cadastral survey system in Western Australia " (E/CONF.52/L.41 and Add.1) " The survey of the South Australian-Northern Territory border " (E/CONF.52/L.68). China submitted a paper, " Tidal land reclamation in Taiwan " (E/CONF.52/L.115).

Two papers dealt with city development and these were submitted by Australia: " Application of cartographic techniques to the planning and development of the city of Canberra " (E/CONF.52/L.69) and " Large-scale mapping for transportation studies of the metropolitan area of Adelaide " (E/CONF.52/L.70).

The United Nations Educational, Scientific and Cultural Organization (UNESCO) presented a paper (E/CONF.52/L.94) covering UNESCO's activities in the field of integrated surveys and scientific maps for natural resources development with particular emphasis on the creation of international training centres leading to the preparation of scientific maps and regional surveys. The United States of America presented a paper, " New horizons for earth studies from space " (E/CONF.52/L.15), which pointed out the potential use of satellites equipped with various types of cameras and sensors to provide data on oceanography, agriculture, environmental geology, hydrology, geography and cartography.

The paper " Thematic cartography and complex scientific reference atlases of the USSR (1964-1966) " (E/CONF.52/L.99) described the many types of thematic maps and atlases that had been produced and others that were in preparation in the Union of Soviet Socialist Republics.

Thailand presented a paper (E/CONF.52/L.105) on the survey and classification of the soil and natural resources. The purpose of the survey was to find out whether 50 per cent of Thailand's land surface could be devoted to forest. From the results of the six-year survey it was found possible to allot about 51 per cent of Thailand's land area to forest. Indonesia presented a similar paper (E/CONF.52/L.125), which was an integrated survey and mapping plan for the regional development of Lampung. The object of the survey was to collect information on the natural resources of an area for appraisal and was the first step in the actual utilization and development of the areas, and for future settlement.

In conclusion, the Committee submitted five draft resolutions to the Conference [a].

[a] Adopted as resolution 12, " Colour and infra-red photography "; resolution 13, " Regional economic atlas for Asia and the Far East "; resolution 14, " Topical maps and national atlases "; resolution 15, " Standardization of forest mapping "; resolution 16, " Seminar on aerial surveys and equipment ".

Annex IV

SUMMARY OF WORK OF COMMITTEE IV ON GENERAL CARTOGRAPHY

Map reproduction

The Committee noted with interest the six papers presented in this group.

"The simulated process printing of aeronautical charts" (E/CONF.52/L.16) was submitted by the United States of America. The discussion on this paper, which explained how press runs could be reduced by using various combinations of colours, centred around a possible alternative method being tested in Australia in which colour-separated half-tone negatives from a coloured original are combined with negative-scribed line work at the plate stage.

The paper "A new concept for the colour-proofing of aeronautical charts" (E/CONF.52/L.17) was presented by the United States of America.

From the paper "A simple silk-screen equipment for limited map reproduction" (E/CONF.52/L.74), submitted by Australia, and from the demonstration of the equipment to participants at the Division of National Mapping, the Committee noted that the process provided a simple and economical solution to the problem of short-run printing and overprinting of maps.

The Committee considered "Map reproduction techniques used for the Atlas of Australian Soils" (E/CONF.52/L.79) and a further paper "Some Australian map production techniques" (E/CONF.52/L.76), both submitted by Australia.

The Committee also had before it the paper "Reproduction of maps and aerial photographs in the Geographical Survey Institute" (E/CONF.52/L.121), submitted by Japan.

National atlases

The Committee took note of the following papers: "Atlas of Australian Resources — aims, planning and progress" (E/CONF.52/L.71), "Review of recent Australian thematic mapping" (E/CONF.52/L.72), "Mapping the resources of the Fitzroy Region, Queensland, Australia" (E/CONF.52/L.73), "Atlas of Australian Soils" (E/CONF.52/L.77), all submitted by Australia; "Thailand — National Resources Atlas, vol. 1" (E/CONF.52/L.96), submitted by Thailand; "The Atlas of the Antartic" (E/CONF.52/L.103), submitted by the Union of Soviet Socialist Republics; "Atlas of Tasmania" (E/CONF.52/L.42), submitted by Australia; "The national resources inventory" (E/CONF.52/L.23), submitted by United States of America; "Thematic cartography and complex scientific reference atlases of the USSR (1964-1966)" (E/CONF.52/L.99), submitted by the Union of Soviet Socialist Republics; "Cartographic technique development" (E/CONF.52/L.116), submitted by China; "Atlas of Switzerland" (E/CONF.52/L.118), submitted by Switzerland, and "Report on the thematic map series and atlases in Japan" (E/CONF.52/L.121), submitted by Japan.

The Union of Soviet Socialist Republics was complimented on the Atlas of the Antarctic, the Committee noting that it was a fine example of work achieved through international co-operation. In answer to questions, the delegate of the Union of Soviet Socialist Republics stated that publication of the Atlas in Roman script would be considered.

In the field of national atlases, the Committee noted that countries had much to learn from each other and that an exchange of atlases would be of mutual benefit.

A resolution was submitted by the Committee to the Conference.[a]

Standardization of geographical names

The Executive Secretary, referring to the paper "United Nations Conference on Standardization of Geographical Names" (E/CONF.52/L.80), informed the Committee that invitations to the Conference on Geographical Names, to be held at Geneva in September 1967, had been issued by the United Nations to all Governments of Member States, and stressed the importance of the Conference.

The Committee noted with interest a paper by Australia entitled "Notes on standardization of geographical names in Australia" (E/CONF.52/L.90).

From the paper "Preparations for the forthcoming United Nations Conference on Standardization of Geographical Names" (E/CONF.52/L.100), submitted by the United States of America, the Committee noted that it was desirable that participants at the Geneva Conference should study E/CONF.52/L.80 and related documents prior to the Conference. The Committee also stressed the desirability of delegates attending the Conference with an open mind, thereby increasing the likelihood of a workable arrangement emerging from the sharing of experiences and problems, and further, of delegates acquiring some experience in local name problems.

From lengthy and valuable discussions, the Committee noted the difficulties and differences in methods of transferring place names from one language to another.

The Committee also noted with interest the rules worked out by the Union of Soviet Socialist Republics for their compilation of dictionaries, especially those relating to Asia, and the desirability of producing a stabilized and uniform spelling of geographical names in all countries of the world.

A resolution on this matter was recommended to the Conference.[b]

Aeronautical charts and International Map of the World on the Millionth Scale (IMW)

The Committee noted with interest a paper entitled "Maintaining current base information for aeronautical charts" (E/CONF.52/L.18), submitted by the United States of America.

From the paper "Development concept for visual air navigation charts" (E/CONF.52/L.19), also submitted by the United States of America, the Committee noted that it was an advantage for cartographers engaged on the production of visual navigation charts to have some experience of air navigation and feature identification from the air. It was further noted by the Committee that the compilation of aeronautical charts was based generally on large-scale topographical mapping and not on high-altitude photography. Current lunar satellite photography was cited as an example of the type of photography which could possibly be used in chart compilation, and later use of this application might prove its value.

The Committee noted with interest the papers "A case study of the application of automation to an aeronautical charting problem" (E/CONF.52/L.27), submitted by the United States of America, "A common approach to IMW and ICAO mapping" (E/CONF.52/L.75), submitted by Australia, and "Preparation of the International Map of the World on the Millionth Scale for Japan" (E/CONF.52/L.121), submitted by Japan.

From the paper "International Map of the World on the Millionth Scale" (E/CONF.52/L.85), submitted by the Secretariat,

[a] Adopted as resolution 17, "National atlases".

[b] Adopted as resolution 18, "Geographical names".

the Committee noted that hypsometric tints agreed upon at the Bonn Conference had also been agreed upon as an at the option Second AIS/MAP Meeting of ICAO held at Montreal in April 1966 and that copies of both hypsometric and bathymetric tints were available from the Secretariat on request.

A resolution on this subject was submitted by the Committee to the Conference.[c]

Miscellaneous and special maps

From the paper " Education in surveying in the Federal Republic of Germany " (E/CONF.52/L.81), submitted by the Federal Republic of Germany, and the subsequent discussion on that paper, the Committee took note (*a*) that while it was desirable that countries should train their own personnel, many countries in the region sent people to other countries for study in the field of cartography, and (*b*) that it was desirable that information on the curricula and status of all courses available be collected and disseminated.

The Committee prepared a draft resolution recommending that the Cartography Section of the United Nations Department of Economic and Social Affairs be responsible for the collection and dissemination of this information.[d]

The Committee noted with interest a paper entitled " A new map: The numerical map " (E/CONF.52/L.20), submitted by the United States of America. Limited application had already been made in the use of such maps and the problem of data storage had yet to be overcome.

Papers entitled " A national cartographic data-handling system " (E/CONF.52/L.37), submitted by the United States of America, " Preparation of relief shading on topographic maps " (E/CONF.52/L.83), submitted by the Federal Republic of Germany, and " The general soil map of Thailand " (E/CONF.52/L.122), submitted by Thailand, were also noted with interest by the Committee.

[c] Adopted as resolution 19, " International Map of the World on the Millionth Scale (IMW) ".

[d] Adopted as resolution 20, " Training facilities ".

Annex V

SUMMARY OF WORK OF COMMITTEE V ON HYDROGRAPHY AND OCEANOGRAPHY

The Committee considered the paper " Concerning the creation of hydrographic services in newly independent countries " (E/CONF.52/L.131), submitted by the International Hydrographic Bureau (IHB). The President of the IHB pointed out that the Bureau was founded in 1921 to encourage co-ordination of the hydrographic work of the services of its member States in order to achieve standardization and to make navigation safer everywhere on the sea; forty-one countries belonged to IHB, which was considering how best to co-operate with the United Nations in order to assist further with training and practical aid. The paper suggested an order of priority for developing hydrographic services. Australia offered copies of notes on the issue of broadcast navigational warning messages. The Committee welcomed the opportunity to hear of the activity of the IHB and prepared a draft resolution for adoption by the Conference.[a]

The delegate of the Federal Republic of Germany, in introducing his paper " Modern problems of chart production " (E/CONF.52/L.134), outlined how modern charts had been developed and how much standardization had been achieved through the efforts of IHB; he also mentioned the various types of charts, including gridded navigational aid charts, fishery and small-boat charts, as well as a proposal which France had submitted to the forthcoming IHB Conference concerning the possible publication of a world outfit of charts by co-operating nations to reduce the present duplication. Australia mentioned the study being made by the United Kingdom of the possibility of modernizing charts and of avoiding unnecessary cartographic effort.

Two papers on the Co-operative Study of the *Kuroshio* (Japan Current) (CSK), from China and Japan, were considered and a draft resolution prepared.[b]

National summaries of their hydrographic and oceanographic activities were presented by Australia, Japan and Indonesia. All highlighted the progress which was being made in the face of rapidly increasing requirements of shipping and marine sciences.

The paper " Cartographic maps in earthquake engineering and the Pacific tsunami warning service " (E/CONF.52/L.28), presented by the United States of America, mentioned that maps were being prepared for Hawaii, showing areas to be evacuated when tsunamis of from 5 to 50 feet were forecast; delegates were pleased to note the action already taken but were anxious that even more activity should be stimulated and a draft resolution was prepared.[c] Another paper presented by the United States of America, " Photogrammetric research work on the Gulf Stream " (E/CONF.52/L.29), gave details of a new technique for determining surface current velocities and direction using photogrammetric methods.

A paper, " General Bathymetric Charts of the Oceans (GEBCO) " (E/CONF.52/L.133), submitted by the Federal Republic of Germany, gave delegates a background history of the voluntary compilation of various editions of the 1:10,000,000 international series of bathymetric charts, which were now being processed, on behalf of IHB in the Institut géographique national (IGN) in Paris; the delegate from France pointed out that his office arranged a further check on the national compilations (undertaken by Dr. Bruce Heezen of the United States of America), and he stressed the value of this series for marine geologists and geophysicists. Japan also described, in " Publication of bathymetric charts " (E/CONF.52/L.91), how non-navigational charts were being produced in Japan, at a scale of 1:3,000,000, using isobaths and blue overlays to indicate water depths of the deeper ocean. All delegates agreed that such charts could be the beginning of several series of charts of great value for scientific and other purposes: two draft resolutions on the matter were prepared.[d]

The delegate of the United States of America presented a paper, " Study of colour aerial cartographic mapping photography for hydrography " (E/CONF.52/L.107), which pointed out how hydrography could benefit from photogrammetric methods, particularly by reconnaissance surveys in remote areas and by filling the gaps between existing conventional surface soundings; results so far

[a] Adopted as resolution 21, " Creation of hydrographic services in newly independent countries ".

[b] Adopted as resolution 22, " The Co-operative Study of the *Kuroshio* (Japan Current) ".

[c] Adopted as resolution 23, " An international tsunami warning system and information centre ".

[d] Adopted as resolution 24, " Provision for bathymetric charts ", and resolution 25, " Development of oceanographic cartography ".

obtained indicated that adequate accuracy could be expected from the shore to the ten-fathom line, provided there existed good water clarity, sea state and sun conditions. In response to questions from Canada, the United States of America stated that other tests were under way to see what advantages, if any, colour photography had over black and white. The representative of the Philippines mentioned the possibility of using this method in the South China Sea and other similarly dangerous areas. In another paper, "Application of automated systems to nautical chart production" (E/CONF.52/L.97), which was an addendum to an earlier paper (E/CONF.50/L.41) presented at the Manila Conference, the United States of America described how a new E.103 automatic cartographic plotter system being installed during 1967 and the completely digitized data acquisition system now being fitted into two new ships would result in almost completely automatic processing from field survey to publication.

The Philippines described discussions which had taken place informally among members of the working party set up at the fourth United Nations Regional Conference for Asia and the Far East to consider resolution 21 of that Conference "Regional oceanographic survey of a portion of the South China Sea". Additional delegates from Australia, Japan and the Union of Soviet Socialist Republics, and observers from IHB, IOC and UNESCO had attended and a draft resolution had been prepared.[e]

[e] Adopted as resolution 26, "Co-operative regional oceanographic survey of a portion of the South China Sea".

Annex VI

LIST OF DOCUMENTS ISSUED FOR THE CONFERENCE

Series E/CONF.52/...

E/CONF.52/1. Provisional agenda

E/CONF.52/2 and Add.1 and Add.1/Corr.1. Annotated provisional agenda

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Series E/CONF.52/C...

E/CONF.52/C.1/1/Rev.1. Provisional list of documents for Committee I

E/CONF.52/C.1/2. Documents in Committee I, listed in groups

E/CONF.52/C.1/3. Draft summary of work of Committee I on geodesy and control surveys

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E/CONF.52/C.2/1/Rev.1. Provisional list of documents for Committee II

E/CONF.52/C.2/2. Draft summary of work of Committee II on topographical cartography

E/CONF.52/C.2/R.1. Draft resolutions of Committee II on topographical cartography

E/CONF.52/C.3/1/Rev.1. Provisional list of documents for Committee III

E/CONF.52/C.3/2. Draft summary of work of Committee III on topical cartography

E/CONF.52/C.3/R.1/Rev.1. Draft resolution of Committee III on colour and infra-red photography

E/CONF.52/C.3/R.2/Rev.1. Draft resolution of Committee III on regional economic atlas for Asia and the Far East

E/CONF.52/C.3/R.3. Draft resolutions of Committee III

E/CONF.52/C.4/1. Provisional list of documents for Committee IV

E/CONF.52/C.4/2/Rev.1. Provisional list of documents for Committee IV, listed in groups

E/CONF.52/C.4/3. Draft summary of work of Committee IV on general cartography

E/CONF.52/C.4/R.1/Rev.1. Draft resolution of Committee IV on training facilities

E/CONF.52/C.4/R.2. Draft resolutions of Committee IV

E/CONF.52/C.5/1/Rev.1. Provisional list of documents for Committee V

E/CONF.52/C.5/2. Draft summary of work of Committee V on hydrography and oceanography

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E/CONF.52/INF.2. Officers and staff of the Conference

E/CONF.52/INF.3 and Add.1. Provisional list of documents

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E/CONF.52/L.2	6	Report on cartographic activities in New Zealand	New Zealand
E/CONF.52/L.3	9 (*b*)	Regional land use surveys	New Zealand
E/CONF.52/L.4	6	United Kingdom report	United Kingdom
E/CONF.52/L.5	6	Progress report on cartographic activities in Thailand	Thailand
E/CONF.52/L.6	6 and 8 (*a*)	Geodetic survey of Thailand: Triangulation operations from 1964 to 1966	Thailand
E/CONF.52/L.7 and Corr.1	7	Reports on progress in matters which formed the basis of the resolutions or recommendations at the last Conference	Thailand
E/CONF.52/L.8 and Add.1	9 (*a*)	Maps for the development of our mineral resources	Philippines
E/CONF.52/L.9	9 (*a*)	Photogeological study of Philippine diorites	Philippines
E/CONF.52/L.10	7	Progress report on the formation of the Thai Map Information Centre	Thailand
E/CONF.52/L.11 and Add.1	8 (*a*)	The plane co-ordinate system on land surveys in the Philippines	Philippines
E/CONF.52/L.12	7	Report on the progress made in compiling the regional economic atlas for Asia and the Far East	Thailand
E/CONF.52/L.13	6	Report on the activities of the Survey of Israel for the period 1964-1966	Israel
E/CONF.52/L.14	14	Automatic extraction recording and processing of cartographic data	Israel
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E/CONF.52/L.19	11	Development concept for visual air navigation charts	United States of America
E/CONF.52/L.20	13	A new map: The numerical map	United States of America
E/CONF.52/L.21	8 and 13	Evaluation of Stereomat IV (automatic stereoplotter)	United States of America
E/CONF.52/L.22	8	Analytical aerotriangulation systems for photogrammetric mapping in the United States Geological Survey	United States of America
E/CONF.52/L.23	9	The national resources inventory	United States of America
E/CONF.52/L.24	6	Work of the National Geographic Institute from 1 January 1965 to 31 December 1966	France
E/CONF.52/L.25	8	The challenge of the next decade to surveyors and mappers	United States of America
E/CONF.52/L.26	9 (*b*) and (*d*)	Soil description of Pran River project	Thailand
E/CONF.52/L.27	11	A case study of the application of automation to an aeronautical charting problem	United States of America
E/CONF.52/L.28	9 and 16	Cartographic maps in earthquake engineering and the Pacific tsunami warning service	United States of America
E/CONF.52/L.29	8 and 16	Photogrammetric research work on the Gulf Stream	United States of America

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E/CONF.52/L.30	8 (*a*)	The adjustment of horizontal control surveys	Australia
E/CONF.52/L.31	8 (*b*)	The application of the stereocomparator to mapping in Tasmania	Australia
E/CONF.52/L.32	8 (*b*)	Photogrammetry applied to topographic mapping at 1:31,680 scale in New South Wales	Australia
E/CONF.52/L.33	9 (*a*)	Cartographic techniques in regional mineral exploration	Australia
E/CONF.52/L.34	9 (*e*)	A map of underground water in Australia	Australia
E/CONF.52/L.35	8 and 9 (*g*)	The computation of cadastral surveys in New South Wales	Australia
E/CONF.52/L.36	16	Hydrographic service, Royal Australian Navy	Australia
E/CONF.52/L.37	14	A national cartographic data-handling system	United States of America
E/CONF.52/L.38	9 (*f*)	The efficiency and economy of photogrammetic surveys for engineering (principally road) purposes in tropical regions	Australia
E/CONF.52/L.39	9 (*a*)	Geophysical survey mapping for mineral resources in the Bureau of Mineral Resources, Geology and Geophysics	Australia
E/CONF.52/L.40	9 (*g*)	Cartography and land settlement	Australia
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E/CONF.52/L.45 and Add.1	9 (*e*)	The mapping of surface water resources	Australia
E/CONF.52/L.46	8 (*a*)	Progress and results of high-precision traverse surveys	United States of America
E/CONF.52/L.47	8 (*a*)	A concept for an updated three-dimensional world-wide geodetic reference system	United States of America
E/CONF.52/L.48	8	Modern techniques and instruments for surveying and mapping	United States of America
E/CONF.52/L.49	8 (*b*)	The Stereo Image Alternator, potential successor to anaglyphic viewing	United States of America
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E/CONF.52/L.61	9 (*c*)	The application of cartographic techniques to Australian forest development and management	Australia
E/CONF.52/L.62	9 (*c*)	Atmospheric haze penetration in colour air photography	Australia
E/CONF.52/L.63	9 (*d*)	Cartographic techniques as applied to soil surveys	Australia
E/CONF.52/L.64	9 (*f*)	Mapping for tidal power investigation in the Kimberleys	Australia
E/CONF.52/L.65	9 (*f*)	Large-scale mapping for engineering requirements, sewerage, highways and open cuts	Australia
E/CONF.52/L.66	9 (*f*)	Application of cartographic techniques to the Snowy Mountains Hydroelectric Scheme	Australia
E/CONF.52/L.67	9 (*f*)	Cableway location by photogrammetric methods, Cairns and hinterland television station	Australia
E/CONF.52/L.68	9 (*g*)	The survey of the South Australian-Northern Territory border	Australia
E/CONF.52/L.69	9 (*h*)	Application of cartographic techniques to the planning and development of the city of Canberra	Australia
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E/CONF.52/L.71	10	Atlas of Australian Resources — aims, planning and progress	Australia
E/CONF.52/L.72	10	Review of recent Australian thematic mapping	Australia
E/CONF.52/L.73	10	Mapping the resources of the Fitzroy Region, Queensland, Australia	Australia
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E/CONF.52/L.80	15	The United Nations Conference on the Standardization of Geographical Names	United Nations Secretariat
E/CONF.52/L.81	8 (*a*)	Education in surveying in the Federal Republic of Germany	Federal Republic of Germany
E/CONF.52/L.82	8 (*b*)	Preparation of topographic plans for large-area developing projects and their use as provisional maps	Federal Republic of Germany
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E/CONF.52/L.86	6	Report on cartographic activities in the Federal Republic of Germany after the United Nations Cartographic Conference in Manila, 1964	Federal Republic of Germany
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E/CONF.52/L.88	8 (*a*)	Horizontal and vertical crustal movement in the Prince William Sound, Alaska, earthquake of 1964	United States of America
E/CONF.52/L.89	6	Cartographic activities of the National Geographic Service of the Republic of Viet-Nam	Republic of Viet-Nam
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E/CONF.52/L.92	16	Problems on precision hydrographic surveying	Japan
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