



**SIXTH UNITED NATIONS
REGIONAL
CARTOGRAPHIC CONFERENCE
FOR ASIA AND THE FAR EAST**

24 October - 7 November 1970, Tehran, Iran

Vol. I. Report of the Conference

UNITED NATIONS

Department of Economic and Social Affairs



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NOTE

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FOREWORD

The report of the Sixth United Nations Regional Cartographic Conference for Asia and the Far East, held at Tehran, Iran, from 24 October to 7 November 1970, is being issued in the same form as that of the reports of the five previous Conferences. Volume I, the Report of the Conference, contains an account of the organization of the Conference, summary reports of the work of the technical committees, and the resolutions adopted by the Conference. Volume II, Technical Papers, will contain all the technical background papers which were 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; E/CONF.50/4 (Sales No.: 65.I.16) and E/CONF.50/5 (Sales No.: 66.I.3) for the Fourth Conference; and E/CONF.52/4 (Sales No.: E.68.I.2) and E/CONF.52/5 (Sales No.: E.68.I.14) for the Fifth Conference.

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I. ORGANIZATION OF THE CONFERENCE

OPENING AND DURATION OF THE CONFERENCE

1. The Sixth United Nations Regional Cartographic Conference for Asia and the Far East was held at Tehran, Iran, from 24 October to 7 November 1970, in accordance with resolution 1313 (XLIV) adopted by the Economic and Social Council on 31 May 1968. The Government of Iran made all the physical arrangements and provided the meeting facilities.

ATTENDANCE

2. A full list of representatives, advisers and observers from participating countries and observers from international organizations is given in annex I.

OFFICIAL ADDRESSES

3. Mr. Erik O. Dahle, Executive Secretary, opened the Conference on behalf of the Secretary-General of the United Nations. His Excellency Mr. Khodadad Farman Farmaian, Managing Director of the Plan Organization, delivered an address of welcome on behalf of the Government of Iran.

ADOPTION OF THE RULES OF PROCEDURE

4. The Conference adopted its rules of procedure by a unanimous vote.¹

AGENDA

5. The Conference had before it a provisional agenda (E/CONF.57/1) prepared by the United Nations Secretariat on the basis of proposals received from Governments. The final agenda adopted by the Conference was 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 previous Conference
7. Reports on progress in matters forming the basis of resolutions adopted by the previous Conference
8. Geodesy and ground control
9. Medium-scale and large-scale surveying and mapping :
 - (a) Air photography and photogrammetry

- (b) Topographic mapping
- (c) Cadastral and urban surveying and mapping
- (d) Maps and surveys for integrated planning and development of urban and regional areas
10. Earth-oriented satellites for geodesy, cartography and earth resources studies and inventory
11. Photo-interpretation; topical maps and national atlases
12. Small-scale mapping :
 - (a) Aeronautical charts
 - (b) International Map of the World on the Millionth Scale (IMW)
13. Hydrographic surveying and bathymetric charting; oceanography
Report of the corresponding committee on the oceanographic survey of a portion of the South China Sea
14. Geographical names
15. Adoption of the report of the Conference

TECHNICAL COMMITTEES

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

- Committee I : item 8
Committee II : item 9
Committee III : items 10 and 11
Committee IV : items 12 and 14
Committee V : item 13

ELECTION OF OFFICERS

7. The Conference elected the following officers :

President :

Gholam-Ali Basseri (Iran)

Vice-Presidents :

Yoshimichi Harada (Japan)

M. D. Yaqubi (Afghanistan)

Rapporteur :

Jacob Rais (Indonesia)

8. The five committees elected their own officers, as follows :

Committee I

Chairman : B. P. Lambert (Australia)

Vice-Chairman : Z. Sultan (Lebanon)

Rapporteur : Colonel Ali Danechvar (Iran)

¹ *Fourth United Nations Regional Cartographic Conference for Asia and the Far East*, vol. I, *Report of the Conference* (United Nations publication, Sales No.: 65.116), pp. 20-22.

Committee II

Chairman : M. S. Tabin (Philippines)
Vice-Chairman : Kwah Kheng Swee (Singapore)
Rapporteur : M. Pour Kamal (Iran)

Committee III

Chairman : Major-General Chumphon Kulkasem
(Thailand)
Vice-Chairman : I. Shams-Molkara (Iran)
Rapporteur : Colonel C. M. Sahni (India)

Committee IV

Chairman : Kok Swee Tuck (Malaysia)
Vice-Chairman : Colonel Banlang Khamasundara
(Thailand)
Rapporteur : D. G. Francis (New Zealand)

Committee V

Chairman : Minoru Nagatani (Japan)

Vice-Chairman : Captain Tanom Nakaton (Thailand)
Rapporteur : Captain J. H. S. Osborn (Australia)

REPORT ON CREDENTIALS

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

10. Summaries of the work of the technical committees are given in chapters II to VI below, and the resolutions adopted by the Conference are reproduced in chapter VII. A complete list of documents issued for the Conference, including background, technical and information papers submitted by the participants in connexion with the various agenda items, is given in annex II.

VOICE OF THANKS

11. At its closing meeting, the Conference adopted by acclamation a vote of thanks to the Government of Iran for its hospitality and for the excellent facilities provided at Tehran.

II. GEODESY AND CONTROL SURVEYS: WORK OF COMMITTEE I

SATELLITE GEODESY

12. The United States of America presented a paper entitled "A world survey control system and its implications for national control networks" (E/CONF.57/L.16) drawing attention to the recent improvement in the accuracy of survey measurement and to the geodetic developments resulting from satellite surveys. The paper emphasized that these improvements set the stage for the redevelopment of geodetic control on a world-wide basis. It suggested that in the field of satellite geodesy the best answer would probably come from a combination of the dynamic and geometric approaches. The paper suggested a subsequent densification of the world-wide net. It also mentioned the geoid possibilities arising out of satellite altimetry and forecast a world-wide survey and widening scope for geodesy as a means of monitoring a dynamic earth possibly referenced to extra-terrestrial control points.

13. This was followed by another United States paper entitled "Progress report on the national geodetic satellite programme" (E/CONF.57/L.17) which gave an account of progress on the world-wide geometric satellite triangulation programme, which now comprises forty-five control stations for which a co-ordinate accuracy of ± 5 to ± 10 metres is expected. Final co-ordinates are expected to be available in 1972.

14. On the basis of a paper entitled "Impact of a new world-wide geodetic system" (E/CONF.57/L.18), also submitted by the United States of America, the Committee discussed the effect that such a geodetic system would produce and stressed the ultimate trend of geodesy towards a homogenous world-wide network of survey control. It pointed out that measurements of high accuracy can be made simply these days and stressed that national geodesy networks must be improved and transformed to meet these new factors.

15. In the paper entitled "Constructing a geodetic datum that fits a continent" (E/CONF.57/L.24), the United States of America pointed to a possible distinction between the scientific need for a model of the planet earth and the practical need for a partial ellipsoid that is a good fit to a particular area. In an addendum it gave some values for datum shifts of the North American, European and Australian Geodetic Datums, in order to fit a modified Mercury Datum.

16. Indonesia's paper "An idea of a national fundamental network as a densification to the world-wide satellite triangulation system" (E/CONF.57/L.74) briefly reviewed the history of the Indonesian geodetic survey, stressed the difficulties of inter-island connexions and sought international assistance in a densification

of the world-wide geometric control triangulation programme in order to provide these connexions and also to provide a connexion to the World Geodetic Datum.

17. A paper submitted by Japan, entitled "Geodetic positioning of an island in the Pacific by ECHO II" (E/CONF.57/L.52), described the geodetic positioning of a Pacific island by means of the Echo II Satellite.

18. Iran presented a general paper on the application of sensor satellites to environmental investigations (E/CONF.57/L.124).

GEODETIC SURVEY

19. In its paper "Precision distance measurement by laser geodimeter" (E/CONF.57/L.31), Japan gave details of first-order geodetic measurement using the Geodimeter Model 8 and its application to earth crustal movement surveys. Another report by Japan entitled "Mt. Etna tunnel survey" (E/CONF.57/L.56), described the technical details involved in planning what will be the second largest road tunnel in the world.

20. The United States paper "Report on the completion, of the 12th Parallel Survey : Africa" (E/CONF.57/L.41) reported on the co-operative effort being made by France, Nigeria and the United States of America to provide an accurate base line along the 12th degree North parallel for the world-wide geometric satellite triangulation programme.

21. A report on geodetic surveying in Australia (E/CONF.57/L.49) described technical developments in that country since 1967 and mentioned progress on two high precision traverses for the world-wide geometric control triangulation programme. The accuracy of astronomical observations was reported, together with progress on geoid determination and on Australia's national levelling survey.

22. A paper by the Republic of Viet-Nam on geodetic surveys in the Mekong Delta (E/CONF.57/L.82) described first-order traverses in a flat difficult terrain, using electronic distance measuring equipment atop Bilby towers.

23. Hungary presented three papers, entitled "Surveying in Hungary" (E/CONF.57/L.86), "Experiences in the acceleration of surveying in Hungary through the help of physical rangers" (E/CONF.57/L.87) and "Horizontal and vertical ground control networks in Hungary" (E/CONF.57/L.88). The first report described the work of the National Office of Lands and Mapping and stated that the nation was now completely covered by a modern geodetic survey network and that progress was being made on lower order surveys;

the second described experiences in the acceleration of surveying with the aid of optical-telemetric equipment, and the third gave technical details of the national horizontal and vertical ground control networks.

24. Finland presented a paper on stellar triangulation and its application in Finland (E/CONF.57/L.104). The system, which became effective in 1959, now covers most of the country.

25. A paper by Indonesia, entitled "Methods for computing the best fitting reference ellipsoid" (E/CONF.57/L.75), reported on the practical application of the projective and development methods of transformation in respect of United States deflection data, and on the deduction of a best-fit ellipsoid for the continental area of that country. Indonesia also presented a paper entitled "A FORTRAN programme for the computation of co-ordinates on the U.T.M. reference system" (E/CONF.57/L.73)

26. Iraq reported on the recomputation of geodetic data for first and second order network systems in Iraq (E/CONF.57/L.127).

GEODETIC CONTRIBUTIONS TO THE STUDY OF CRUSTAL MOVEMENTS

27. In its paper on geodetic methods of studying the contemporary movements of the earth-crust (E/CONF.57/L.107), the Union of Soviet Socialist Republics described the application of precision surveys, in conjunction with geology and geophysics, to the prediction of earthquakes.

28. The United States paper entitled "Horizontal movement along the San Andreas Fault system" (E/CONF.57/L.15) described high precision surveys to detect earth movement in that area and concluded that regular surveys of that nature could indicate the imminence of earthquakes. The Japanese paper E/CONF.57/L.31, previously discussed in connexion with geodetic survey, was also considered under this topic.

GEODETIC INSTRUMENTS

29. In a paper entitled "Hungarian geodetic instruments used in mapping" (E/CONF.57/L.89) Hungary gave a description of these instruments with particular emphasis on developments in gyro-theodolites.

30. In document E/CONF.57/L.105 the Union of Soviet Socialist Republics reported on the use of the Soviet "Quartz" optical distance-measuring instrument in precision surveys. In the paper entitled "Standard theodolites in the USSR" (E/CONF.57/L.106) it also reported on the various types of theodolites in use.

GRAVITY

31. In a paper entitled "Helicopter gravity measuring system" (E/CONF.57/L.27), the United States of America described an integrated helicopter-borne gravity measuring system developed by TOPOCOM and stated that gravity survey procedures could give accurate results. It stated what is was anticipated that gravity observations sufficient for geodetic purposes would become routinely available as a result of the system.

RESOLUTIONS

32. Following the general discussion in the Committee, the more important items under consideration were referred to a working group on resolutions. This working group considered the applications of satellite geodesy to the establishment of a unified world-wide geodetic datum and to the extension of control surveys. These considerations led to the conclusion that appropriate United Nations backing should be sought for the establishment of such a World Datum, that individual nations should make use of satellite geodetic techniques in order to relate their national geodetic systems to the World Datum, and that an appropriate combination of available modern techniques should be used for the establishment of new and the extension of existing national geodetic networks, with due and balanced regard being given both to the scientific requirements of geodesy and to the actual accuracy requirements of a primary national survey.

33. Consideration was also given to the amplification of a previous resolution on crustal movement adopted by the Fifth United Nations Regional Cartographic Conference for Asia and the Far East, in keeping with the Committee's discussions on that topic. Three draft resolutions were submitted to the Conference and were adopted subsequently as resolutions 5, 6 and 7.¹

¹ For the text of these resolutions, see chapter VII.

III. MEDIUM-SCALE AND LARGE-SCALE SURVEYING AND MAPPING: WORK OF COMMITTEE II

34. At its four working meetings, the Committee, dealt with thirty-four technical papers covering a variety of different subjects as set out under items 9(a), 9(b), 9(c) and 9(d) of the agenda. The papers presented and the discussions that followed were the basis for the establishment by the Committee of four working groups :

Working Group No. 1 : Topographic mapping

Working Group No. 2 : Orthophoto mapping

Working Group No. 3 : Cadastral mapping, graphical cadastre and cadastral survey

Working Group No. 4 : Base maps for resources inventory

TOPOGRAPHIC MAPPING

35. A report was made by the United Kingdom on the experience gained through aerial triangulation by independent models, in a paper entitled "AIM in production" (E/CONF/57/L.9). The accuracy gained had been high and satisfactory.

36. The United States of America presented two papers, "Automation in topographic mapping" (E/CONF/57/L.23) and "Automated cartography development in the Department of Defense" (E/CONF.57/L.28), on the introduction of the new automatic techniques into map compilation and topographic mapping. The United States reported that since the last Conference automation had developed considerably, and with relative success. It was noted that automation had opened up new prospects in the different fields of general cartography, for not only could it cope with the speeds needed in space technology but it also promised quicker and more reliable results, and minimized human error. The Committee examined the progress made by the United States of America and also gave close attention to remarks by the Federal Republic of Germany and the Union of Soviet Socialist Republics.

37. The representative of the Federal Republic of Germany gave an account of six different projects, on different scales using different methods. The times required for digitizing, generalization data preparation, input, and automatic plotting were given in hours and minutes. The accuracies obtained were also reported to the Conference and interested delegates were asked to refer to the publications of the *Institut für Angewandte Geodäsie*, Frankfurt a/Main, Federal Republic of Germany, Nos. 0/401, 1969; 0/46, 1970 and 0/49, 1970.

A draft resolution was submitted to the Conference and was subsequently adopted as resolution 12.¹

ORTHOPHOTO MAPPING

38. Eight papers were presented to the Committee on different technical aspects of orthophoto mapping, and its progress since the last Conference. The advantages of the new technique with regard to accuracies in planimetry and heights, economy, speed, type of terrain, and other entries were fully discussed. The experiences of Australia, the Federal Republic of Germany, France, the Netherlands, the Union of Soviet Socialist Republics, the United Kingdom and the United States of America were brought to the attention of the participants, and it was conceded that for most users the amount of information contained in orthophoto maps was appreciable. It was noted that more investigation was needed for a final conclusion regarding the economic advantages of orthophoto mapping over conventional line maps, owing to differences in technical approach by different countries. The matter of scale was also discussed. The experience of the Federal Republic of Germany and the United States of America in covering large areas by orthophotographs was extremely promising, since vast areas had been mapped successfully. The delegation of Canada drew the Committee's attention to the importance of orthophoto maps for areas not covered by maps in large countries such as Canada and to the instrumentation required for the new method. The experiences of the United States of America in urban areas and marshy and swampy areas had been very successful. The Federal Republic of Germany reported on the extensive use of orthophoto maps on different scales. The Netherlands compared work in the Republic of Korea and in Saudi Arabia in respect of scale, type of terrain, economy, and discrepancies. The Committee noted that for desert areas orthophoto maps were far superior to conventional line maps, provided the height differences were tolerable. A question by the representative of India regarding a comparison between digitization and orthophoto mapping was considered by the Committee but no firm answer was possible until additional experience had been gained by the countries of the region. The Netherlands compared the cost of orthophoto maps in large scale (France) and small scale (Republic of Korea and Saudi Arabia). The Federal Republic of Germany described a technique for automatic contouring in orthophoto mapping. A draft resolution was submitted to the Conference and was subsequently adopted as resolution 9.²

¹ For the text of this resolution, see chapter VII.

² *Idem*.

CADASTRAL MAPPING,
GRAPHICAL CADASTRE AND CADASTRAL SURVEYS

39. Six papers were presented on this subject. The paper "Basic urban mapping" (E/CONF.57/L.22), submitted by the United States of America, pointed to the urgent need for up-to-date maps at several scales, suitable in content and legibility for general planning studies in rapidly expanding urban areas. It stressed the need for urban mapping co-ordination and noted in that connexion that a body known as the Urban Mapping Co-ordination Group had been established. The paper "Summary of the urban survey of Taipei City, 1967-1969" (E/CONF.57/L.39), submitted by the Republic of China, described the survey that had been carried out on the basis of aerial photography on the scale 1 : 3,000, in order to meet the need for large-scale mapping required for urban development. In Thailand's paper "Investigation for the issuance of title deeds in Thailand" (E/CONF.57/L.70), a brief account was given of the experience encountered in the issuance of title deeds in Thailand, for which there were at present four methods in use. Indonesia submitted a paper entitled "Report on cadastral activities in Indonesia" (E/CONF.57/L.80) which gave a brief historical survey of the land registration system in that country as well as a report on cadastral activities. The paper "The maximum utilization of photo-maps for land patent survey" (E/CONF.57/L.97), submitted by the Philippines, described the utilization of photomaps as an aid in the expediting of patent surveys. The Union of Soviet Socialist Republics submitted a paper entitled "Basic directions for large-scale (urban and cadastral) topographical surveys in the USSR" (E/CONF.57/L.108), which gave an account of urban and cadastral mapping at large scales of 1 : 5,000, 1 : 2,000, 1 : 1,000 and 1 : 500. The paper noted among other things that the required contour intervals were 0.5 m, 1.0 m, 2.0 m and 5.0 m, depending on the scale of the map and the topography of the terrain. In the paper "Iloilo tax mapping project" (E/CONF.57/L.99), the Philippines gave an account of work on a research project in the province of Iloilo, Central Philippines, for the purpose of preparing tax assessment photomaps by photo-interpretation from photographs and photomo-

saics of the area. The two phases of the work that had been completed were preparation of rectified sketch enlargements and the construction of photomosaics. The other two uncompleted phases were photo-interpretation for land appraisal and for property evaluation. A draft resolution was submitted to the Conference and was subsequently adopted as resolution 10.³

BASE MAPS FOR RESOURCES INVENTORY

40. The paper "Resources inventory for development planning of city-regions in the Philippines" (E/CONF.57/L.98), submitted by the Philippines, dealt with the conditions existing in that country and of the need for the effective husbanding and allocation of resources for the planning and development of the Philippines. Twenty-four centres of population outside Metropolitan Manila had been recognized as potential nuclei for growth and adequate base maps needed to be provided for the inventory of resources for each city region.

41. The representative of the Philippines gave a brief summary of another paper, "Surveying and mapping through aerial photogrammetry and photo-interpretation for inventory of resources, delineation of boundaries and graphical cadastre" (E/CONF.57/L.100), in which it was stated that the Philippines had available aerial photographs covering 40 per cent of the country at a scale 1 : 15,000, which could be used in making large-scale topographical maps and in photo-interpretation for resources inventory and the delineation of political boundaries. The paper "Exploration of the earth's natural resources by aerial methods" (E/CONF.57/L.122), submitted by the Union of Soviet Socialist Republics, dealt with the exploration of the earth's natural resources and gave an account of the employment of various methods, such as aerial photographs, synchronous air surveys of the same areas during flights of "Soyuz" space-ships, thermal and radar air surveys, and other new techniques. A draft resolution was submitted to the Conference and was subsequently adopted as resolution 8.⁴

³ *Idem.*

⁴ *Idem.*

IV. EARTH-ORIENTED SATELLITES FOR GEODESY, CARTOGRAPHY AND EARTH RESOURCES STUDIES AND INVENTORY, AND PHOTO-INTERPRETATION, TOPICAL MAPS AND NATIONAL ATLASES: WORK OF COMMITTEE III

EARTH-ORIENTED SATELLITES

42. In all, seventeen technical papers were presented to Committee III. The Committee considered first the report of the Secretary-General to the Economic and Social Council, "Natural resources satellites" (E/4779). This document dealt with the potential impetus of earth resources satellites for economic and social development. It outlined the fundamental concepts of remote sensing, and described possible uses for remote sensing data obtained from satellites for mapping and resources inventories. It also dealt with the potential benefits to be derived from aerospace surveys, stressed the importance of data processing and data management, and in conclusion discussed the international aspects of natural resources satellite survey systems, including the possible role of the United Nations.

43. The paper E/CONF.57/L.17, presented by the United States of America, which was also considered in Committee I, dealt with earth-oriented satellites for geodesy, cartography and earth resources study. The paper reported on the world-wide network of forty-five control stations which could be used to provide a reference network to which all geodetic, topographic and navigational data could be related. That reference network would augment conventional methods of determining the shape of the earth for scientific purposes and establish the necessary geometric fidelity for a world-wide system of satellite tracking suited to the analysis of gravimetric and related geographical parameters. Note was also taken of the paper E/CONF.57/L.18, previously discussed in Committee I.

44. The paper "Uses of space observations of the earth: the EROS programme of the Department of the Interior" (E/CONF.57/L.20), submitted by the United States of America, dealt with an earth resources observation satellite programme for acquiring, processing, utilizing and disseminating remote sensing data. The data were collected by both aircraft and spacecraft.

45. Japan's paper "Geodetic positioning of an island in the Pacific by ECHO II" (E/CONF.57/L.52) dealt with the fixing of the position of the island of Titi Sinea in the Pacific Ocean using the artificial satellite.

46. The paper "Contributions of space technology to geodesy and cartography" (E/CONF.57/L.114), submitted by Iran, reported on the utilization of satellites for accurate position fixing and the measurement of long distances to a very high degree of accuracy.

47. Another paper presented by Iran, "The application of sensor satellites to environmental investigations"

(E/CONF.57/L.124), emphasized the advantages of astrogeodetic measurements over past methods and the application of those measurements to daily environmental, technical and engineering problems having economic and social implications. The representative of the Committee on Space Research stated that the use of such satellites would open up new and modified approaches to various disciplines. The claim made in the paper that satellite position fixing could provide the position of ships at sea to an accuracy of 10 to 150 metres was the subject of lengthy discussion; participants from those countries which had conducted close and accurate studies of satellite navigation and position fixing disagreed with the figures and with the claim that such measurements had a good potential for large-scale mapping.

48. The paper "Exploration of the earth's natural resources by aerial methods" (E/CONF.57/L.122), submitted by the Union of Soviet Socialist Republics, dealt with the use of aerial methods for natural resources exploration, particularly mineral and geological research. On the basis of simultaneous photographs taken over Soviet territories from "Soyuz" satellites and from aircraft, as well as radar, infra-red and spetrazonal air surveys, the conclusion was drawn that a combination of space and aerial methods would be the most efficient. The use of any particular method depended on the nature of the objects studied, as well as on the dimensions of the territories being surveyed.

49. It was recognized by the Committee that the newly developing space sciences would assist greatly in the investigation of problems in geodesy, cartography, geology, geography, oceanography, hydrology and agriculture, as well as contribute liberally to work in meteorology, telecommunications, navigation, education and earth resources and environmental investigations. The Committee also noted that while much progress had been achieved in a relatively short time, some of the cartographic claims put forward still had to be proved. A draft resolution was presented to the Conference and was subsequently adopted as resolution 14.¹

PHOTO-INTERPRETATION

50. Three papers on photo-interpretation were considered by the Committee. The paper "A study of the standard method of photo-interpretation used in research for planning and construction" (E/CONF.57/L.33),

¹ For the text of this resolution, see chapter VII.

submitted by Japan, described the advances made in research techniques which had broadened the scope of the application of photographic interpretation to engineering geology, to debris control surveys in steep mountains and to snow surveys. The paper "Provincial land capability map of Thailand" (E/CONF.57/L.69), submitted by Thailand, described in detail the uses of the map for the broad planning of agricultural development projects in the ten provinces of North Thailand and explained the system used for grouping soils within the land capability classification. The paper "Agfacontour film as a tool for photo-interpretation" (E/CONF.57/L.46), submitted by the Federal Republic of Germany, reported the results of research carried out with that film in connexion with equidensity processes. The difficulty encountered when using conventional black and white film in the differentiation of the tonal values of images on a photograph was now greatly reduced. A draft resolution on the subject was submitted to the Conference and was subsequently adopted as resolution 16.²

TOPICAL MAPS

51. Three papers were submitted on topical mapping. The paper "Base map types for thematic maps" (E/CONF.57/L.43), submitted by Switzerland, reported that the thematic map, which is a graphic representation of a selected number of components, either directly or indirectly related to the topographic surface, permitted an immediate and efficient presentation of facts, plans or hypotheses for a restricted field of study. Specifications suitable for users and the problems that related to them were analyzed in the paper. It also stressed the importance of depicting the data collected on accurate well-prepared base maps, and indicated that copies meant for field use should be on waterproof and stable polyester materials. A paper submitted by the Philippines, entitled "Iloilo tax mapping project" (E/CONF.57/L.99), gave details of the production of economically and expeditiously as-

² *Idem*

sembled map-substitutes in areas of relatively low values where no maps were available at all, through the use of a technique of photo-mosaics and photo-interpretation. The paper "Resources inventory for development planning of city-regions in the Philippines" (E/CONF.57/L.98), presented by the Philippines, dealt with a study of the problems relating to the migration of population from rural areas to urban areas and brought out the usefulness of preparing base maps to be used in the compilation of data obtained by photo-interpretation. Both of these papers submitted by the Philippines were also considered in Committee II.

NATIONAL ATLASES

52. Several papers dealt with the subject of national atlases: one, submitted by Thailand, "Report on the progress of the work undertaken by Thailand to prepare the Regional Economic Atlas for Asia and the Far East" (E/CONF.57/L.67), indicated the difficulties that were being encountered and the co-operation that was being received from other countries. The Republic of China submitted a paper, "Report on the publication of the economic atlases of the Republic of China" (E/CONF.57/L.40), which commented briefly on work being done in connexion with the compilation of national economic atlases. A draft resolution was submitted to the Conference and was subsequently adopted as resolution 15.³ The paper "Documentation on the cartographic literature: an aid to map design and map production" (E/CONF.57/L.6), submitted by the Federal Republic of Germany, also considered in Committee IV, brought into focus the usefulness of the centre established by the German Society for Cartography for the purpose of compiling a bibliography of cartographic literature, which was termed an essential tool for any scientific work. The paper recommended that a centre for cartographic literature should also be established in the ECAFE region to support the preparation of atlases.

³ *Idem*.

V. SMALL-SCALE MAPPING AND GEOGRAPHICAL NAMES: WORK OF COMMITTEE IV

SMALL-SCALE MAPPING

53. The Federal Republic of Germany submitted a paper on small-scale mapping entitled "Documentation on cartographic literature: an aid to map design and map production" (E/CONF.57/L.6). This paper proposed that a Centre for Cartographic Literature should be established in the region of the Economic Commission for Asia and the Far East and also invited interested persons to submit titles and other details of cartographic literature to a working group which was publishing a bibliography of cartographic literature. A draft resolution was submitted to the Conference for adoption, in collaboration with Committee III. It was subsequently adopted as resolution 2.¹

54. The United States' paper "Isognic charts of the United States of America and of Central and South America for 1970" (E/CONF.57/L.12) reported on an interesting new technique for compiling isognic charts.

55. The paper "Redesign of world aeronautical charts for remote areas of Australia" (E/CONF.57/L.48), drew attention to weaknesses in the ICAO specifications for that type of territory and of the way in which those weaknesses were being overcome by Australia.

56. The Committee noted with interest the paper "Radar mapping for earth resources exploration in Indonesia" (E/CONF.57/L.78) base maps which reported that side-angled radar was being used to produce source material for on the scales 1 : 98,000 to 1 : 225,000, in areas having a dense cloud cover. It was also noted that the paper explained that the data gathered were not suitable for topographic mapping.

57. Hungary's paper "Hungary's participation in the establishment of the World Map at the scale of 1 : 2,500,000" (E/CONF.57/L.92) gave details of the specifications and production of that series of world maps.

58. The paper "School cartography" (E/CONF.57/L.110) presented by the Union of Soviet Socialist Republics summarized the extensive contribution being made by that country in the field.

59. The representative of Australia reported on the maintenance of up-to-date small-scale maps of Australia at 1 : 5,000,000 and 1 : 2,500,000 scale, and similar maps of Papua and New Guinea. Maps of Antarctica at 1 : 10,000,000 scale had also been produced, while a series of maps closely related to the specifications for the International Map of the World on the Millionth Scale (IMW) were at present in production.

60. Canada noted that, in addition to the information presented in its progress report (E/CONF.57/L.113), the information on that country's northern areas contained in the recently completed 1 : 250,000 series was of value to users of the 1 : 500,000 chart.

61. The Republic of China announced the completion of forty-two of the seventy-two sheets of the International Map of the World. Iran stated that maps on the scale 1 : 1,000,000 had been published and were on sale to the general public in that country.

62. Iraq reported that no maps on the scale 1 : 1,000,000 using the IMW specifications had yet been published, but that maps were now in preparation covering the entire country.

63. Japan announced that it had already published IMW sheets covering the whole country and had since revised them.

64. The representative of the Philippines stated that his country had complied with the ICAO requirements for 1 : 1,000,000 charts by publishing the sheets covering the Philippines and with the IMW specifications on the same scale by publishing a coverage in six sheets. He added that Approach and Landing Charts for the Manila International Airport had also been published, as required. He noted that there had been only a few delegates from the region at the last Conference on Aeronautical Charts held in Montreal in 1966 and expressed the hope that more would attend the next meeting.

65. The Republic of Viet-Nam informed the Committee that it was responsible for four sheets of the International Map of the World on the Millionth Scale and that maps complying with the specification had been published.

66. The United Republic of Tanzania reported that a full coverage of maps on the millionth scale had been produced to the international specification by the Directorate of Overseas Survey of the United Kingdom working in co-operation with Tanzania. Whereas, in the past, agencies outside the country had undertaken the small-scale charts required by ICAO, at the request of the United Nations those charts were now being compiled and brought up to date inside Tanzania.

67. In connexion with its progress report on cartographic activities from 1967 to 1970 (E/CONF.57/L.11), the United States of America described the position in regard to the preparation of small-scale maps covering the country. Apart from six maps in the International Map of the World on the Millionth Scale series covering the region along the United States-Canadian border, which it had been agreed would be produced by Canada,

¹ For the text of this resolution, see chapter VII.

only five maps in the series covering the continental area of the United States remained to be published. Six maps in the series covering a portion of Alaska had already been published and the remaining four, together with maps covering Hawaii, were now in production and should be published in the next two to three years.

68. In amplification of that section of its report relating to aeronautical charts, the United States reported that the increase in aircraft operation and the resulting congestion had brought about a review of all aeronautical charts and flight information produced in that country.

69. The representative of the Federal Republic of Germany, referring to a recommendation of the 1962 Bonn Conference that the International Map of the World should be derived from the ICAO series on the millionth scale so that initially only one set of base material would be required for both series, asked whether any country had tried to do that and if so, what experience had been obtained. No instances of the adoption of the recommendation were reported to the Committee, although the representative of the United Kingdom noted that the projection used in the maps on the millionth scale produced for the United Republic of Tanzania was that recommended by the Bonn Conference. The representative of the United Republic of Tanzania told the Committee that although the International Map of the World on the Millionth Scale had been used to produce the ICAO/WAC charts at the same scale, it had been necessary to depart from the IMW specifications in order to produce the aeronautical charts since there was too much data in the IMW series to permit their being used as aeronautical charts without some reduction in the amount of detail. Two draft resolutions were submitted to the Conference and were subsequently adopted as resolutions 20 and 21.²

GEOGRAPHICAL NAMES

70. The paper "United Nations support of geographic names" (E/CONF.57/L.25), prepared by Dr. M. F. Burrill, Chairman of the United Nations *Ad Hoc* Group of Experts on Geographical Names, summarized recent activity relating to the standardization of place names and drew attention to the report of the Second Session of the *Ad Hoc* Group of Experts on Geographical Names (ESA/RT/C/GN/1) which had also been distributed to the participants. The paper stressed the need for countries where there was no designated recipient for information on names and other material from the Group of Experts to provide the name and address of an agency or individual who could receive it, and also gave details of preliminary meetings and arrangements relating to the second United Nations Conference on the Standardization of Geographical Names, which was to be held in London, United Kingdom, in the early part of 1972.

71. The paper "Geographic names" (E/CONF.57/L.45), submitted by the Secretariat of the United

Nations, summarized developments since the first United Nations Conference on the Standardization of Geographical Names, held in 1967 in Geneva, Switzerland. Reference was made to the first two sessions of the *Ad Hoc* Group of Experts on Geographical Names and the provisional agenda for the third session of the Group of Experts was included as an annex to the paper. In outlining the paper, the Deputy Executive Secretary also drew attention to the report of the Second Session of the *Ad Hoc* Group of Experts on Geographical Names (ESA/RT/C/GN/1) and invited participants to present comments on the paper at a later meeting of the Conference.

72. Indonesia's paper "Geographic names for maps of Indonesia" (E/CONF.57/L.76) reviewed and summarized problems that had arisen in that country and presented a policy that had been worked out for the future.

73. The Republic of Viet-Nam presented the paper "Problems of geographical names in the Republic of Viet-Nam" (E/CONF.57/L.85), outlining the problems of nomenclature that had been experienced and giving specific examples.

74. The Committee listened with interest to a paper entitled "Report on the standardization of the usage of geographical names in Hungary" (E/CONF.57/L.93) which gave an account of the activities of a National Committee on Geographical Names that had been established in Hungary in 1964.

75. In its paper "Concerning experience in the domestic standardization of geographical names in the USSR" (E/CONF.57/L.111), the Union of Soviet Socialist Republics described some of the problems that had been overcome in the standardization of place names for the many national languages within the Soviet Union.

76. In the discussion that followed the presentation of the papers on geographical names, the Chairman noted that action on the matter had gained momentum since the United Nations had established the *Ad Hoc* Group of Experts on Geographical Names. He expressed the hope that countries which had not previously taken an active interest in the subject would find their interest aroused by recent international experience and the papers that had been presented to the Conference, as well as the discussions that had taken place in the Committee.

77. The representative of India outlined two criteria used in the spelling of place names in his country.

78. Thailand referred to the report of the first Conference in Geneva and gave details of the action taken to romanize place names in Thailand and to compile a national gazetteer.

79. The representative of the United Kingdom expressed the hope that as many as possible of the countries represented at the Conference would send delegates to the second United Nations Conference on Geographical Names, to be held in London.

80. The representative of Afghanistan reported on a system of transliteration that had been developed

² *Idem.*

in his country for forty letters and all kinds of sounds. An account of it had been distributed as annex 2 to his country's progress report (E/CONF.57/L.61). In addition, a glossary of Dari and Pushtu names had been distributed as annex 1 to that report. Malaysia stated that it had set up a geographical names committee in each of its thirteen states and that similar problems to those found in other countries were being experienced, particularly in regard to the duplication of place names.

81. The Federal Republic of Germany expressed its appreciation of the action taken by the United Nations in taking up the problem of geographical names.

82. The representative of Thailand regretted that in many of the maps displayed at the Map Exhibition associated with the Conference other countries had used incorrect names for Thai provinces and other features.

83. The representative of Cyprus held the Committee that the problems experienced by his country were similar to those experienced by other countries where more than one language was used. In the case of Cyprus the problem had been overcome by issuing three separate

series of maps, each series having geographical names in a different language.

84. Reference was made by the representative of Iraq to the difficulty that was experienced, particularly by Europeans, in pronouncing names from maps of Iraq. In his country, the problem of the standardization of geographical names had not yet been solved, but agreement had been reached in some sectors, for instance in the universities, on the spellings to be used in textbooks and atlases.

85. The representative of India suggested that the problem referred to above could be overcome in part by the exchange of tape recordings.

86. Japan advised the Conference that the Geographical Survey Institute and the Hydrographic Office had agreed to unify the presentation of names on the IMW 1 : 1,000,000 maps and other series. A draft resolution was submitted to the Conference and was subsequently adopted as resolution 19.³

³ *Idem.*

VI. HYDROGRAPHIC SURVEYING AND BATHYMETRIC CHARTING, AND OCEANOGRAPHY: WORK OF COMMITTEE V

87. The Committee took up first the report of the *Ad Hoc* group of experts on hydrographic surveying and bathymetric charting (E/CONF.57/L.1). The group had met in New York in April 1970 to consider the world-wide state of hydrography. The report drew attention to the unsatisfactory situation in some areas and the lack of hydrographic capability in a number of developing countries. The steps that should be taken as temporary measures and for a permanent solution were the subject of eight recommendations which were attached to the report. The report suggested the formation of regional hydrographic commissions to solve common problems in a number of geographical areas. The report was discussed thoroughly by a select working group. The group introduced a draft resolution which was subsequently adopted by the Conference as resolution 25.¹

88. Two papers, "Training in hydrography" (E/CONF.57/L.2), presented by the United Nations Secretariat, and "Technical personnel in hydrographic surveying" (E/CONF.57/L.3), presented by Brazil, summarized the training in hydrography available in a number of countries. It was clear that other training facilities existed and participants in the Conference were invited to inform both the International Hydrographic Bureau (IHB) and the Cartography Section of the United Nations of any additions that could be made to the papers presented. Both papers drew attention to the shortage of training facilities in South East Asia and the Far East.

89. The United States of America, in a paper, entitled "Coastal boundary surveys" (E/CONF.57/L.13), stated that the increasing interest in shore and near shore areas and the increasing commercial value of shores had led to a demand for large-scale maps showing sea-land boundaries in detail. This in turn had raised a number of problems in regard to the delineation of the various water lines. It was intended to show that information on a special series of maps. Navigational charts should continue to be tailored to meet the needs of the mariner. The Australian representative pointed out that by international convention the low-water line required for determining offshore jurisdiction was that shown on a country's large-scale charts and should approximate closely to Mean Low Water springs.

90. A paper entitled "Oceanographic mapping" (E/CONF.57/L.14), presented by the United States of America, noted that the bathymetric data that existed were variable in quantity and accuracy and had been collected chiefly in order to meet the needs of surface navigation. More information was required in most

areas for the compilation of charts showing detailed sea-bed topography. The paper also discussed the geophysical data required for such maps.

91. Two other papers presented by the United States of America were "Bathymetric charts, their development and use" (E/CONF.57/L.26), which discussed the use of bathymetric contour charts for position fixing and also indicated certain reservations regarding the accuracy of some of the soundings included in the charts, and "The future development of Navy Hydrographic Survey Systems" (E/CONF.57/L.29), which outlined the requirements of the United States Department of Defense for the collection of hydrographic data and highlighted the shortcomings of present systems. An examination was made of current technology that could be applied to the problem and a number of solutions presented, based on the development of integrated systems.

92. The paper entitled "Report on the conclusion of the Corresponding Working Group on the Co-operative Oceanographic Survey of a portion of the South China Sea" (E/CONF.57/L.50) was a compilation of all the information available from the Working Group, which considered that much of the southern portion of the South China Sea could be entered with safety by oceanographic vessels. During the discussions on the paper it was recognized that a survey of the area to full IHB specifications would require many years of ship time and that none of the countries bordering the area had the capacity to make offshore surveys. The United Kingdom had the capability and had in the past done much work in that area but in a time of budget restrictions for surveying it was unlikely that it could devote much effort to that activity in the immediate future without financial assistance. The consensus was that a hydrographic commission should be formed comprised of the hydrographers of the countries bordering the South China Sea and that one of those countries should take the initiative for its formation. There would be many problems to be considered by such a commission in the future including the techniques to be used in the determination of offshore boundaries. The discussion on the paper gave rise to two draft resolutions which were presented to the Conference and were subsequently adopted as resolutions 24 and 28.²

93. The paper "Up dating of time zone charts" (E/CONF.57/L.53), presented by Japan, was considered by a working group and formed the basis of resolution 22.³

² *Idem.*

³ *Idem.*

¹ For the text of this resolution, see chapter VII.

94. The planning of a scheme of maps of the waters surrounding Japan on the scale 1 : 200,000 was described in the paper "Basic map of the sea around Japan" (E/CONF.57/L.54). Different versions of each map would show the bathymetry, submarine structure, total magnetic intensity, and gravity anomaly.

95. The activities of the Naval Hydrographic Office

of Indonesia were described in the paper entitled "Hydrographic activities in Indonesia, 1967-1970" (E/CONF.57/L.72). The paper indicated the increasing need for modern surveys of that country's territorial waters. Three hundred and fifty eight charts of Indonesian waters had been published and sixty had already been revised during the period in question. Difficulties were being experienced, however, in the printing of the charts.

VII. RESOLUTIONS ADOPTED BY THE CONFERENCE

A. LIST OF RESOLUTIONS

1. Seventh United Nations Regional Cartographic Conference for Asia and the Far East
2. Bibliography of cartographic literature
3. Technical assistance
4. Co-operation in future United Nations Cartographic Conferences
5. Extension of geodetic and mapping control
6. Satellite geodesy
7. Geodetic contributions to the study of crustal movements
8. Maps and surveys for integrated planning and development of urban and regional areas
9. Orthophoto maps
10. Cadastral and urban surveying and mapping
11. Application of mapping techniques
12. Map compilation techniques
13. Training facilities
14. Earth resources observation satellites
15. Topical maps and national atlases
16. Photo-interpretation
17. Regional economic atlas for Asia and the Far East
18. Training in photo-interpretation
19. Geographical names
20. Aeronautical charting
21. International Map of the World on the Millionth Scale (IMW)
22. Time zone charts
23. Financing of hydrographic assistance
24. Intergovernmental Oceanographic Commission programme for the South China Sea
25. Report of the *Ad Hoc* group of experts on hydrographic surveying and bathymetric charting
26. Marine geophysical surveys
27. Pacific Tsunami warning system
28. South China Sea Hydrographic Commission
29. Vote of thanks to the Government of Iran

B. TEXTS OF RESOLUTIONS

1. SEVENTH UNITED NATIONS REGIONAL CARTOGRAPHIC CONFERENCE FOR ASIA AND THE FAR EAST

The Conference,

Appreciating the offer of the Government of Japan to act as host country for the Seventh United Nations

Regional Cartographic Conference for Asia and the Far East,

Recommends to the Economic and Social Council that the Seventh United Nations Regional Cartographic Conference for Asia and the Far East should be convened in Japan in October/November 1973.

7 November 1970.

2. BIBLIOGRAPHY OF CARTOGRAPHIC LITERATURE

The Conference,

Noting that the Federal Republic of Germany has established a *Bibliography of Cartographic Literature* (*Biblioteca cartographica*) with chapter headings in English, French, Russian and German,

Further noting that fifty-six experts from thirty-four nations and nine organizations (national and international, including the United Nations) are involved in the recording of all relevant titles and that the production of the bibliography, which is controlled by a working group established by the German Society of Cartography, has international support from the International Cartographic Association (ICA), the International Association of Geodesy (IAG), the International Society of Photogrammetry (ISP) and the International Federation of Surveyors (FIG),

Recommends that nations with cartographic literature of interest should submit titles to the Chairman of the International Working Group¹ twice a year, in March and September, in the form detailed in appendix III of the document entitled "Documentation on the cartographic literature: An aid to map design and map reproduction" (E/CONF.57/L.6).²

7 November 1970.

3. TECHNICAL ASSISTANCE

A

The Conference,

Noting that a number of basic cartographic activities require to be completed within the region as urgent preliminaries to the effective investigation, development and management of resources,

Recommends that countries of the region should take immediate and continuing steps to accelerate

¹ The current chairman is Dr. K. H. Meine, D-534 Rhoendorf on Rhine, Rhoendorfer Str.40.

² See *Sixth United Nations Regional Cartographic Conference for Asia and the Far East*, vol. 2, *Technical Papers* (to be issued as a United Nations publication).

these activities within their respective territories, either by undertaking the work themselves or by seeking assistance available from the United Nations, or by directly arranging for bilateral or multilateral assistance from other sources, or by a nationally co-ordinated combination of any of these approaches;

Further recommends that, upon request from any developing country, those countries able and willing to assist with basic cartographic activities should render such assistance as they can conveniently undertake.

B

The Conference,

Noting that there will be a continuing need for cartographic activity throughout the region,

Reaffirms resolution 1 of the third United Nations Regional Cartographic Conference for Asia and the Far East³ concerning United Nations technical assistance;

Recommends that developing countries should make full use of the training centres that have been established in the region for the technical training of cartographic personnel;

Requests those countries in a position to do so to render additional assistance in the training of cartographic personnel from developing countries of the region, and to give favourable consideration to any requests received from those developing countries for assistance in the strengthening of national cartographic services.

7 November 1970.

4. CO-OPERATION IN FUTURE UNITED NATIONS CARTOGRAPHIC CONFERENCES

The Conference,

Recognizing the great efforts made by the United Nations Cartography Section in the technical organization of this Conference, especially in connexion with its document E/CONF.57/INF.2, entitled "Documentation for the Conference",

Noting that some saving of time and effort could result both for the Secretariat and for the participants, particularly during the preliminary and opening stages of the Conference, from the adoption of and adherence to certain procedures followed by other international conferences and symposia,

Realizing the value to the participants and to the Conference as a whole of prior study (including consultation with local experts) of the papers submitted to the Conference, and of a clear division of the papers into major subjects for discussion,

Recommends that :

(a) Appointed representatives should request their Governments to permit more direct contact on an informal and technical basis between the cartographic

agencies and the United Nations Cartography Section for the exchange of technical papers and correspondence relating to the next Conference;

(b) Participants should urge their agencies or Governments to agree to abide by the procedures and dates set by the United Nations for the submission of papers for the next Conference, with a view to the prior circulation of these papers to the participants before the next Conference;

(c) As far as possible, the technical items of the agenda and the topics of the different committees should be unified and agreed upon well in advance of the Conference so that all papers submitted will fall naturally under one of those headings without any overlapping or misunderstanding;

(d) Only in exceptional circumstances should technical papers, other than resolutions or reports of its meetings, be accepted by the Conference and circulated after the Conference has begun its meetings.

7 November 1970.

5. EXTENSION OF GEODETIC AND MAPPING CONTROL

The Conference,

Noting the recent developments in satellite geodesy as a method of fixing major control frameworks,

Further noting the economies which could result from the fixing of intermediate control inside these frameworks by modern ground and airborne methods,

Recommends that the possibility of using the Doppler method of satellite observations in a differential mode should be considered for the extension of geodetic and mapping control, in addition to the distance measurement techniques using airborne equipment mentioned in resolution 3 of the Fifth United Nations Regional Cartographic Conference for Asia and the Far East.⁴

7 November 1970.

6. SATELLITE GEODESY

The Conference,

Noting the progress made in the World-Wide Geometric Satellite Programme,

Further noting the proven ease and capability of determining the co-ordinates of supplementary stations by the Doppler method of satellite observations, using readily available equipment and techniques,

Recommends that the appropriate United Nations body should consider favourably the question of the establishment of a Unified World Geodetic Datum for solving a number of world-wide problems, for example, navigation and extensive crustal movement;

Further recommends that each country of the region should study the problems involved and should take

³ *Third United Nations Regional Cartographic Conference for Asia and the Far East*, vol. 1, *Report of the Conference* (United Nations publication, Sales No.: 62.I.14), p. 8.

⁴ *Fifth United Nations Regional Cartographic Conference for Asia and the Far East*, vol. 1 (United Nations publication, Sales No.: E 68.I.2), page 9.

any necessary steps to connect its national network to the Unified World Geodetic Datum and thereby further the solution of the above world-wide problems;

Reaffirms Resolution No. 5⁵ of the Fifth United Nations Regional Cartographic Conference for Asia and the Far East.

7 November 1970.

7. GEODETIC CONTRIBUTIONS TO THE STUDY OF CRUSTAL MOVEMENTS

The Conference,

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

Further recognizing the importance of supporting the disciplines of geology, seismology and other related geo-sciences by geodetic operations, in order to detect crustal movements,

Recommends that serious consideration should be given by geodetic and geophysical agencies in the various countries of the region to the provision of the necessary technical budgetary resources for the execution of gravity, horizontal and vertical measurements which will, in conjunction with magnetic, geologic and seismic observations, provide adequate records for the detection and interpretation of variations in topography, especially in areas known to be affected by crustal movements.

7 November 1970.

8. MAPS AND SURVEYS FOR INTEGRATED PLANNING AND DEVELOPMENT OF URBAN AND REGIONAL AREAS

The Conference,

Noting the need for adequate cultural resources and social survey data as a basis for development planning, in particular in fast-growing urban regions,

Recognizing the multidisciplinary aspects of the problems to be solved,

Recommends that, as a basis for development planning of urban areas, the procedure of integrated surveys should be carefully considered;

Further recommends that the results of these integrated surveys should be presented amongst others on a set of maps the scale and contents of which are adequate for the purpose, and that countries and specialized agencies with experience of such integrated surveys should make their knowledge available to all interested countries.

7 November 1970.

9. ORTHOPHOTO MAPS

The Conference,

Noting the urgent need for maps at various scales and the importance of providing them for purposes of economic and social development in the countries of the region,

⁵ *Ibid.*, p. 9.

Drawing attention to the wealth and completeness of the information presented by orthophoto maps, especially for the planning and execution of natural resources development projects,

Noting further that in appropriate cases modern orthophoto-techniques can be used to economic advantage in the production and revision of maps,

Recommends that increased use should be made of orthophotos for map production and revision in order to save time, expense and highly skilled manpower, and that map users in general should be educated in the practical application of orthophotos and orthophoto maps;

Further recommends that assistance should be made available to the countries of the region by those countries which have already gained experience in the practical application and production of orthophoto maps and in map revision using orthophotos, and that close co-operation should be encouraged between the different disciplines using maps in the countries of the region in order to obtain the maximum benefit from orthophoto maps;

Urges all Governments to encourage the training of map users in the use of air photographs and orthophotos.

7 November 1970.

10. CADASTRAL AND URBAN SURVEYING AND MAPPING

The Conference,

Noting that relatively little attention seems to have been paid hitherto by previous meetings of this Conference to the importance of cadastral activities,

Recognizing that while some countries in the region have relatively advanced cadastral systems, others have extensive problems of land occupancy without any adequate system of records,

Further recognizing that in such countries the lack of such a system severely hampers development,

Recommends that:

(a) In countries where the rights of ownership are recognized, such ownership should be protected by law and by an adequate system of survey and registration;

(b) In developing countries where the policy of registering ownership of land is relatively new, the legal and survey aspects of the cadastral system should be based upon a thorough investigation of the human and environmental circumstances, and of the existing and potential use of the land;

(c) Where such a cadastral system is being introduced, adequate steps should be taken to create a permanent organization for the development and maintenance of the survey, cartographic and legal aspects of the system;

(d) While all such cadastral survey systems should be based as far as practical on an accurate control framework such as a national plan and co-ordinate

13. TRAINING FACILITIES

system, the survey methods used and the accuracy required for fixing the boundaries of individual plots should be related to the precision of identification of these boundaries, to the value of the land, and to the urgency of the work;

(e) An *ad hoc* group of experts should be convened by the United Nations as soon as possible to study in depth the problems of cadastral survey and to consider the setting up of a permanent committee to keep developments in this field under constant review.

7 November 1970.

11. APPLICATION OF MAPPING TECHNIQUES

The Conference,

Noting that there has been little co-operation by countries of the region, of the Economic Commission for Asia and the Far East in sending information to the Map Information Office of the Royal Thai Survey Department in Bangkok,

Recognizing that, because of this, the Royal Thai Survey Department has been unable to distribute information satisfactorily to the region,

Recommends that all countries should make increased efforts to provide this information, sending it through the United Nations Cartographic Section, Department of Economic and Social Affairs, New York, for proper dissemination;

Re-affirms the continued importance of the subject covered by resolution 8⁶ of the Fifth United Nations Regional Cartographic Conference for Asia and the Far East.

7 November 1970.

12. MAP COMPILATION TECHNIQUES

The Conference,

Noting with interest that automatic procedures in the field of topographical map compilation are under development in various countries,

Noting further that the first results of the tests are very encouraging,

Recommends that all countries should observe the progress being made in automated map compilation and revision, and should apply these modern techniques as far as is economically and socially justifiable;

Re-affirms resolution 10⁷ of the Fifth United Nations Regional Cartographic Conference for Asia and the Far East.

7 November 1970.

⁶ *Fifth United Nations Regional Cartographic Conference for Asia and the Far East*, vol. 1, *Report of the Conference*, (United Nations publication, Sales No.: E 68.I.2), p. 10.

⁷ *Ibid.*, p. 10.

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 courses, the diplomas or degrees offered, the curriculum, etc., in order to facilitate the evaluation of those possibilities by the interested countries and their authorities,

Recommends that all countries should 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;

Further recommends that the above-mentioned authorities should continue to maintain 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;

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

7 November 1970.

14. EARTH RESOURCES OBSERVATION SATELLITES

The Conference,

Considering the report of the Secretary-General on natural resources satellites (E/4779 and Add.1), and other relevant United Nations documents,

Noting the United States project to launch an earth resources observation satellite for the study of the United States and other interested countries,

Realizing the need to focus attention on and obtain a realistic appreciation of this potential,

Recognizing the potential of remote sensing by satellites for certain types of natural resources surveys,

Welcomes the proposal of the United States to make data from the earth resources observation satellites available to other countries for study;

Recommends that cartographic agencies should study the data;

Further recommends that a United Nations inter-regional seminar on the possible cartographic uses of satellite photography and other forms of remote sensing should be convened as soon as some of the results obtained from the earth resources observation satellites have been studied.

7 November 1970.

15. TOPICAL MAPS AND NATIONAL ATLASES

The Conference,

Noting with satisfaction the progress made by all member countries of the region in the preparation of topical maps and national atlases,

Re-affirms resolution 14 of the Fourth,⁸ and resolutions 14 and 17 of the Fifth United Nations Regional Cartographic Conference for Asia and the Far East,⁹

Recommends that the Cartography Section of the United Nations should activate the corresponding working group, described as a committee, mentioned in resolution 14 of the fifth Conference;

Urges that this corresponding working group should present a report on its progress to the seventh United Nations Regional Cartographic Conference for Asia and the Far East.

7 November 1970.

16. PHOTO-INTERPRETATION

The Conference,

Noting the proven usefulness of colour and infra-red photography and other sensors, including radar, for photo-interpretation and the procurement of other data necessary for the preparation of topical maps for use in the survey and development of natural resources, such as forestry, minerals, water, soils, agriculture and other disciplines,

Re-affirms resolution 12 of the Fifth United Nations Regional Cartographic Conference for Asia and the Far East;¹⁰

Further notes the recent development of equidensity process films as an aid to photo-interpretation;

Recommends that the countries of the region should pay special attention to the possible application of these techniques to the preparation of topical maps;

Draws the attention of the countries of the region to the work of the Commission for Photo-Interpretation of the International Society for Photogrammetry.

7 November 1970.

17. REGIONAL ECONOMIC ATLAS FOR ASIA AND THE FAR EAST

The Conference,

Noting the initial work on the Regional Economic Atlas for Asia and the Far East undertaken by Thailand in accordance with resolution 15 of the Fourth United

⁸ *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), p. 12.

⁹ *Fifth United Nations Regional Cartographic Conference for Asia and the Far East*, vol. 1, *Report of the Conference* (United Nations publication, Sales No.: E.68.I.2), pp. 11 and 12.

¹⁰ *Ibid.*, p. 11.

Nations Regional Cartographic Conference for Asia and the Far East¹¹ and resolution 13 of the Fifth Conference,¹²

Noting furthermore the technical co-operation afforded by the Government of the Federal Republic of Germany,

Recognizing the value of this atlas for social and economic development,

Considering that this project requires co-operation in the supply of source material and technical advice,

Recommends that the States Members of the United Nations and the members of the specialized agencies should assist Thailand with the free supply of source material so that the project can be completed.

7 November 1970.

18. TRAINING IN PHOTO-INTERPRETATION

The Conference,

Noting with satisfaction that in accordance with resolution 13 of the Fourth United Nations Regional Cartographic Conference for Asia and the Far East,¹³ training centres have been established in India and in the Philippines for imparting training in the discipline of photo-interpretation.

Recommends that all countries in the region should take advantage of these facilities by sending personnel to these centres for training;

Urges that similar centres should be established in other countries of the region.

7 November 1970.

19. GEOGRAPHICAL NAMES

A

The Conference,

Noting the resolutions of the United Nations Conference on Standardization of Geographical Names held at Geneva in 1967,¹⁴

Further noting that the Second United Nations Conference on the Standardization of Geographical Names will be held in London early in 1972,

Recognizes the necessity of standardizing geographical names for both national and international use and the importance of a continuing effort by the Member States

¹¹ *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), p. 12.

¹² *Fifth United Nations Regional Cartographic Conference for Asia and the Far East*, vol. 1, *Report of the Conference* (United Nations publication, Sales No.: E.68.I.2), p. 11.

¹³ *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), p. 11.

¹⁴ *United Nations Conference on the Standardization of Geographical Names*, vol. 1, *Report of the Conference*, (United Nations publication, Sales No.: E.68.I.9), pp. 9-15.

of the United Nations and members of the specialized agencies and other interested international organizations to advance the standardization of geographical names;

Endorses resolution 4 of the Geneva Conference¹⁵ that each country should establish a national geographical names authority consisting of a continuing body or co-ordinated group of bodies having clearly stated authority and instructions for the standardization of geographical names and the determination of names standardization policy within the country;

Further endorses the proposal of the Geneva Conference to form linguistic/geographical divisions;¹⁶

Recommends that the linguistic/geographical divisions representing Asia should commence regional meetings and should appoint representatives to the United Nations Group of Experts;

Recommends further that lists and national gazetteers should be compiled of standardized names for international use and that a communication network should be formed for exchanging experiences in names standardization, glossaries of regularities of geographical names phenomena, gazetteers of standardized names and other related material, in accordance with the aims, functions and *modus operandi* of the Group of Experts, as contained in the report of its second session, held in New York in March 1970;

Urges all States Members of the United Nations and members of the specialized agencies, and interested international organizations, to send representatives to the forthcoming Conference in London in 1972

B

The Conference,

Noting the activities of the Group of Experts on Geographical Names established in accordance with Economic and Social Council resolution 1314 (XLIV),

¹⁵ *Ibid.*, pp. 10 and 11.

¹⁶ In support of this resolution, a working group from the ECAFE region recommended that each division should commence regional meetings and appoint representatives to the United Nations Group of Experts:

Thailand was unanimously elected by delegates representing the following countries of the South East Asian division: Republic of Viet-Nam, Thailand, Malaysia, Singapore, Indonesia and Philippines, to represent the South East Asian region at the third session of the *Ad Hoc* Group of Experts on Geographical Names to be held in New York in February 1971.

Thailand will therefore be responsible for convening such regional meetings, as and when necessary, at Bangkok, at which representatives from Burma, Republic of Viet-Nam, Cambodia, Laos, Thailand, Malaysia, Singapore, Indonesia and the Philippines will be invited to present their views in order to enable the regional representative (Thailand) to take a consolidated stand in the Group of Experts. National representation to the second United Nations Conference on Geographical Names is strongly advocated, as it is the opinion of the working group that only a national representative can truly convey the innumerable problems of each of the countries concerned, while the Group of Experts can only provide a solution if it is aware of the existence of such problems in the South East Asian countries, each of which may present the multi-complexities of a conglomeration of multilingual and minority lingual societies

Considering the importance of national and international names standardization, having regard to maps and atlases as tools of international co-operation,

Expresses its strong support for the Group of Experts charged with providing continuous co-ordination and liaison among countries in order to further the standardization of geographical names and to encourage the formation and operation of linguistic/geographical divisions;

Endorses the decision that the Group of Experts should help in the preparation and organization of the Second United Nations Conference on the Standardization of Geographical Names, to be held in London early in 1972;

Further endorses the decision that the three working groups set up at the second session of the Group of Experts, held in New York during March 1970, to study the following topics :

- (a) the naming of undersea features,
- (b) extra-terrestrial topographic names,
- (c) a single system of romanization

should report on those studies to the forthcoming Conference in London in 1972;

Urges the Group of Experts :

- (a) To make recommendations for national standardization;
- (b) To outline the form for national gazetteers of geographical names;
- (c) To investigate the problem of systems of romanization and to recommend suitable solutions to the forthcoming Conference.

C

The Conference,

Noting the initial steps taken by the United Nations Conference on the Standardization of Geographical Names, held in Geneva during September 1967, to deal with the problem of transferring geographical names from non-Roman alphabets into romanized forms,

Further noting the resolutions of the Geneva Conference on the acceptance of the Thai and Iranian official systems of transferring their geographical names to romanized forms,¹⁷

Draws the attention of the forthcoming Second Conference on the Standardization of Geographical Names to the desirability of reaching an agreement on a single system of romanization for each non-Roman alphabet for use in international mapping, despite the fact that, as every language has its own spelling peculiarities, a variety of popular transcriptions will inevitably survive.

7 November 1970.

¹⁷ *United Nations Conference on the Standardization of Geographical Names*, vol. 1, *Report of the Conference*, (United Nations publication, Sales No. : E.68.1.9), p. 13.

20. AERONAUTICAL CHARTING

The Conference,

Noting the importance of aeronautical charting to the safety of air transportation, and the importance of aviation to the economy and general well-being of the countries of Asia and the Far East,

Recognizing that many countries do not engage in aeronautical charting activity,

Recommends that all the countries in the region should take all possible action to establish an aeronautical charting capability;

Further recommends that countries needing assistance in establishing an aeronautical charting activity should seek such assistance from the United Nations and from the International Civil Aviation Organization or from individual countries which are able to assist.

7 November 1970.

21. INTERNATIONAL MAP OF THE WORLD ON THE MILLIONTH SCALE (IMW)

The Conference,

Noting the excellent progress that has been made in the production of maps in this series since the Fifth United Nations Regional Cartographic Conference for Asia and the Far East, held in Canberra, Australia, in 1967,

Further noting that in resolution 19 of the Fifth Conference¹⁸ all countries were urged to endeavour to publish this map in the very near future,

Reaffirms that resolution by again urging all countries to continue in their endeavours to publish the map as soon as practicable.

7 November 1970.

22. TIME ZONE CHARTS

The Conference,

Noting the existence of disagreements among published time zone charts and similar publications,

Recommends that member States of the International Hydrographic Bureau (IHB) as well as non-member States should give all information about standard time zones in their countries to the IHB;

Further recommends that the IHB should publish such information in the IHB bulletin.

7 November 1970.

23. FINANCING OF HYDROGRAPHIC ASSISTANCE

The Conference,

Accepting the Report of the *Ad Hoc* Group of Experts on Hydrographic Surveying and Bathymetric Charting,¹⁹

¹⁸ *Fifth United Nations Regional Cartographic Conference for Asia and the Far East*, vol. 1, *Report of the Conference*, (United Nations publication, Sales No.: E.68.I.2), p. 12.

¹⁹ Presented as document E/CONF.57/L.1.

Endorsing its recommendations;

Noting the ability of certain countries to provide hydrographic and oceanographic assistance to developing countries or regional groups of such countries,

Recognizing the financial constraints on the provision of such assistance,

Further recognizing the economic advantages of arranging such co-operative work on an "opportunity" basis,

Recommends strongly that countries or regional groups of countries in need of such assistance should formulate specific projects in order to solicit United Nations assistance and other aid for the purpose of financing these co-operative efforts.

7 November 1970.

24. INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION PROGRAMME FOR THE SOUTH CHINA SEA

The Conference,

Accepting the report²⁰ of the corresponding Working Group on the Co-operative Regional Oceanographic Survey of a Portion of the South China Sea,²¹

Invites the Intergovernmental Oceanographic Commission (IOC), pending improved charting of that sea, to initiate forthwith the co-operative oceanographic programme in the better-sounded areas delineated by the Working Group.

7 November 1970.

25. REPORT OF THE AD HOC GROUP OF EXPERTS ON HYDROGRAPHIC SURVEYING AND BATHYMETRIC CHARTING

The Conference,

Noting the importance of hydrographic surveying and bathymetric charting to the safety of navigation, the economic benefits to be derived from it, and the necessity for up-to-date charting to assist in the development of the countries concerned,

Recommends that the developing countries of Asia and the Far East should exert every effort to implement the recommendations contained in the report of the group of experts;

Draws the attention of the Economic and Social Council, the specialized agencies of the United Nations and all Member States of the United Nations to the fact that the Conference as a whole strongly supports the recommendations contained in the report of the group of experts;

Strongly urges that the developing nations should be supported in their efforts towards implementing these recommendations.

7 November 1970.

²⁰ Presented as document E/CONF.57/L.50.

²¹ See resolution 26, *Fifth United Nations Regional Cartographic Conference for Asia and the Far East*, vol. 1, *Report of the Conference*, (United Nations publication, Sales No.: E.68.I.2), p. 14.

26. MARINE GEOPHYSICAL SURVEYS

The Conference,

Noting the importance of geophysical surveys of continental shelf and deep ocean areas to the exploration and exploitation of the resources of these marine areas,

Recognizing that marine geophysical surveys and hydrographic surveys can frequently be accomplished concurrently,

Recommends that all countries of the region should develop a capability for joint marine geophysical surveys and hydrographic surveys.

7 November 1970.

27. PACIFIC TSUNAMI WARNING SYSTEM

The Conference,

Noting that the Pacific Tsunami Warning System continues to operate in the Pacific Ocean area with the participation of many countries of Asia, as well as of North and South America,

Noting further that these warning services are available to those countries which agree to exchange seismic and tidal data with all recognized participants, including provisions for adequate dissemination services to them,

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

Further recognizing the activity and experience of the International Co-ordinating Group for the Pacific Tsunami Warning System which has been formed by the Intergovernmental Oceanographic Commission to provide guidance for the operation of the Warning System,

Recommends that countries in the Pacific Ocean area should increase their participation in the communication, administration, establishment and operation of seismic and tidal stations;

Invites interested countries to become members of this Warning System and to make the necessary arrangements to attend future meetings of the International Co-ordinating Group for the Pacific Tsunami Warning System.

7 November 1970.

28. SOUTH CHINA SEA HYDROGRAPHIC COMMISSION²²

The Conference,

Noting the work done by the corresponding Working Group on the Co-operative Regional Oceanographic Survey of a Portion of the South China Sea,

²² In support of the resolution on the co-operative survey of a portion of the South China Sea, the Republic of China, Indonesia, Malaysia, the Philippines, Thailand and the Republic of Viet-

Further noting the recommendations of the *Ad Hoc* group of experts on hydrographic surveying and bathymetric charting,

Recognizing the problems involved in achieving adequate hydrographic surveys of the South China Sea, as well as the emergence of other hydrographic and related problems affecting the interests of countries bordering the South China Sea,

Further recognizing the movement by some countries towards the solution of similar but wider problems through the formation of an East Asia Hydrographic Commission,

Recommends the formation by the countries concerned of a regional hydrographic commission for regular and continued discussion of the aforesaid problems with a view to solving them by mutual consent and to facilitating the formulation of projects qualifying for United Nations and other assistance;

Urges the Republic of China, Indonesia, Malaysia, the Philippines, Thailand and the Republic of Viet Nam to take early steps to form such a Commission, to be known as the South China Sea Hydrographic Commission (SCSHC).

7 November 1970.

29. VOTE OF THANKS TO THE GOVERNMENT OF IRAN

The Conference,

Expresses its heartfelt thanks to the Government of Iran for the excellent arrangements made by it for the organization of the Sixth United Nations Regional Cartographic Conference for Asia and the Far East and for the warm hospitality extended to each and every participant.

7 November 1970.

Nam were urged to take early steps to form such a Commission, to be known as the South China Sea Hydrographic Commission (SCSHC).

The representative of the Philippines was unanimously elected Corresponding Secretary to work for the formation of such a Commission.

In turn, the representative of the Philippines accepted the responsibility subject to the approval of his Government.

The following representatives appended their signatures in support of the resolution:

Chi-chi Chow
Republic of China
Jacob Rais
Indonesia
Sulaiman Mohd. Amin
Malaysia
Marcelino S. Tabin
Philippines
Chumphon Kulkasem
Thailand
Doan Van Kieu
Republic of Viet-Nam

Annex I

LIST OF PARTICIPANTS

**A. States Members of the United Nations or members
of the specialized agencies**

AFGHANISTAN

Representative

M. D. Yaqubi, President, Afghan Cartographic Institute

AUSTRALIA

Representative

B. P. Lambert, Director of National Mapping, Department of National Development

Alternates

W. D. Kennedy, Commonwealth Surveyor-General, Department of the Interior

Captain J. H. S. Osborn, Hydrographer, Royal Australian Navy

Advisers

H. S. Rassaby, Assistant Director of Mapping, Department of Lands, New South Wales

J. E. Mitchell, Assistant Surveyor-General, Department of Lands and Survey, Victoria

AUSTRIA

Representative

P. Waldhausl, Assistant Professor, University of Technology

CANADA

Representative

J. I. Thompson, Assistant to the Director, Surveys and Mapping Branch, Department of Energy, Mines and Resources

CHINA

Representative

Major-General Chi-chi Chow, Director, Topographic Service, Combined Service Forces, Ministry of National Defence

Alternates

Clement A. K. Tsien, Counsellor, Chinese Embassy, Tehran
Wei-I Chang, Deputy Director, Land Administration Department, Ministry of Interior

CYPRUS

Representative

Andreas Christofi, Senior Land Survey Officer, Department of Lands and Surveys

FEDERAL REPUBLIC OF GERMANY

Representative

J. Nittinger, Minister Counsellor, Head of Section, Ministry of the Interior of Niedersachsen, Hanover

Advisers

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S. Schneider, Scientific Director, *Institut für Landeskunde*, Bonn-Bad Godesberg

W. Blaschke, General Manager Photogramm. Munster/Westfalen

Karl Gerke, University Professor, Technical University, Braunschweig

D. Hobbie, Staff Scientist, Carl Zeiss, Oberkochen

FINLAND

Representative

Unto Korhonen, Director, Photogrammetric Division, National Board of Survey

Alternate

Veikko Nurmi, Director, Topographical Division, National Board of Survey

FRANCE

Representative

Georges Laclavère, Directeur de l'Institut géographique national

HOLY SEE

Representative

Rev. Canon L. Gaston Polspoel, Professor, University of Louvain, President of the Belgian National Committee of Geography, Member of the Class of the Sciences of the Royal Flemish Academy of Belgium, Louvain, Belgium

HUNGARY

Representative

Sandor Rado, Director, National Office for Cartography and Land Affairs

Alternates

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Frigyes Raum, Technical Director, Geodetic and Mapping Company, Secretary-General of the Association on Geodesy and Cartography

INDIA

Representative

Col. C. M. Sahni, Dean, Indian Photo-Interpretation Institute, Dehra Dun

Adviser

J. Khana, Hydrographer, Commander, Indian Navy

INDONESIA

Representative

Jacob Rais, Deputy of Mapping Co-ordination, National Co-ordinating Board for Surveys and Mapping

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M. Soenardi, Counsellor, Indonesian Embassy, Tehran

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Col. Taghi Behnam, Director, Harbours and Navigation Organization
Mohammad Pour Kamal, Lecturer, University of Tehran
Nasser Pourtavaf, Director, Verification and Control Division, N.C.C.
Ezatollah Khonsari, Technical Assistant, N.C.C.
Gen. Hossein Ali Razmara, ex-Director N.G.O.
Mohammad Nassir Sami'i, Manager, Iran Irrigation Co.
Jalaledin Chafi'i, Assistant to the Director, N.C.C.
Iraq Shams-Molkara, Professor, University of Tehran
Hushang Taraz, Geological Survey
Ezatollah Falakchahi, Director, Topographical College, N.C.C.
Manoutchehr Kousha, Iranian Oil Operating Co.
Abdul-Ahad Marefat, Technical Assistant, Ministry of Roads and Communications
Ali Nouri, Surveyor, N.C.C.

Advisers

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Siavosh Bassiti, Ex-Director N.C.C.
Jafar Pouyan, Photogrammetric Department, N.C.C.
Ebrahim Jalali, Adviser, Ministry of Science and Higher Education
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Nasser Ghazali, Director General, Rassad Surveying Co.
Mehdi Ghane, N.C.C.
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Kamal Moazami-Shirazi, N.C.C.

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Maj. Abbass Jafari, N.G.O.
Bahram Moqtaderi, Ministry of Foreign Affairs
Lt. Nezameddine Khorsandi-Ashtiany, Imperial Iranian Navy
Ahmad Dalaki, Ministry of Natural Resources
Ali Rastkar, N.C.C.
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Shafqat Ali Sheikh, Third Secretary, Pakistan Embassy, Tehran

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SWITZERLAND

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R. L. Scholl, Engineer

Manfred Duddek, Engineer

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Chootragool Suwanakate, Director, Bureau of Cadastral Survey, Lands Department

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Samarn Phanichapong, Chief, Soil Survey Division, Land Development Department

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Advisers

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Turkish Mapping Service

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Fouad Abdel Messih, Inspector, Survey Department

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

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Capt. G. P. D. Hall, R.N., Assistant Director, Hydrographic
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UNITED REPUBLIC OF TANZANIA

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B. A. Sikilo, Commissioner for Surveys and Mapping

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Elvyn A. Stoneman, Deputy Director, Office of the Geographer,
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Charting and Geodesy, Department of Defence
A. Edward Craig, Deputy Director, Hydrographic Surveys,
United States Naval Oceanographic Office, Department of
the Navy
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Rear-Admiral Don A. Jones, Director, National Ocean Survey,
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