E/CONF 62/3

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

Tokyo, 15–27 October 1973

Vol. I.–Report of the Conference

UNITED NATIONS

E/CONF.62/3

Department of Economic and Social Affairs

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

Tokyo, 15–27 October 1973

Vol. I.–Report of the Conference

UNITED NATIONS
New York, 1974

NOTE

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

The proceedings of the Seventh United Nations Regional Cartographic Conference for Asia and the Far East, held at Tokyo from 15 to 27 October 1973, are being issued in two volumes, as follows:

Volume I. Report of the Conference

Volume II. Technical papers

The proceedings of the previous United Nations regional cartographic conferences for Asia and the Far East were issued under the following symbols and Sales codes: 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; 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; E/CONF.57/2 (Sales No. E.71.I.15) and E/CONF.57/3 (Sales No. E.72.I.20) for the Sixth Conference.

E/CONF.62/3

UNITED NATIONS PUBLICATION

Sales No. E.74.I.7

Price: $U.S. 3.00

(or equivalent in other currencies)

CONTENTS

CONTENTS (continued)

I. ORGANIZATION OF THE CONFERENCE

Opening and duration of the Conference

1. The Seventh United Nations Regional Cartographic Conference for Asia and the Far East was held at Tokyo from 15 to 27 October 1973 at the invitation of the Government of Japan, who provided host facilities. The Conference was held in accordance with resolution 1570 (L) adopted by the Economic and Social Council on 13 May 1971.

Attendance

2. The Conference was attended by 168 representatives and observers from 40 countries, one specialized agency, two intergovernmental organizations and seven international scientific organizations.

Official addresses

3. The representative of the Secretary-General of the United Nations opened the Conference. His Excellency, Mr. Shin Kanemaru, Minister of Construction, delivered an address of welcome on behalf of the Government of Japan. The observer of the International Cartographic Association (ICA) presented a copy of the newly issued Multilingual Dictionary of Technical Terms in Cartography 1/ to the United Nations.

Adoption of the rules of procedure

4. The Conference adopted its rules of procedure (E/CONF.62/2).

Agenda

5. The Conference, at its opening meeting, adopted the following agenda:

1. Adoption of the rules of procedure
2. Election of officers
3. Adoption of the agenda

1/ Wiesbaden, Germany, Franz Steiner Verlag GMBH, 1973. This dictionary is the outcome of eight years of work carried out by Commission II of the ICA Commission for the Definition, Classification and Standardization of Technical Terms in Cartography which was set up in 1964 under the Chairmanship of E. Meynen.

4. Report on credentials

5. Establishment of technical committees

6. Country reports and progress made in cartography, by countries, in matters that formed the basis of the resolutions of the last Conference

7. Geodesy and ground control

8. Aerial photography and photogrammetry

9. Medium-scale and large-scale surveying and mapping

   (a) Topographic mapping

   (b) Cadastral surveying and mapping

   (c) Urban mapping

10. Small-scale mapping

11. Thematic cartography (including national atlases) and photo-interpretation

12. Hydrography and oceanography

13. Remote sensing, mapping methods for environmental research and control*

14. Earth resources satellites for surveying, mapping and earth resources studies*

15. Geographical names

16. Adoption of the report of the Conference

Technical committees

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

Committee I	Item 7
Committee II	Items 8 and 9
Committee III	Items 10, 11 and 15
Committee IV	Item 12

---

* These substantive items were considered in plenary sessions.

Election of officers

7. The Conference elected the following officers:

President: Akira Watanabe (Japan)

Vice-Presidents: Brigadier Pranoto Asmoro (Indonesia)
Major General Chumphon Kulkasem (Thailand)

Rapporteur: Ian Stirling (New Zealand)

8. The Conference elected the following officers for the technical committees:

Committee I

Chairman: Bruce Lambert (Australia)
Vice-Chairman: Arjun Bahadur Basnyat (Nepal)
Rapporteur: Yuen See Wah (Singapore)

Committee II

Chairman: Kok Swee Tuck (Malaysia)
Vice-Chairman: Choi Jae-Hwa (Republic of Korea)
Rapporteur: Tiavola Pogai (Western Samoa)

Committee III

Chairman: Chamsomone Voravong (Laos)
Vice-Chairman: Lt. Col. Dang-Vu-Ruyen (Republic of Viet-Nam)
Rapporteur: Mohammad Hassan Gangi (Iran)

Committee IV

Chairman: Daitaro Shoji (Japan)
Vice-Chairman: Oscar A. De Castro (Philippines)
Rapporteur: Commodore F. L. Fraser (India)
Ad interim rapporteur: Siew Chong Goh (Malaysia)

9. Chris N. Christopher, United Nations Secretariat, served as Executive Secretary of the Conference.

Report on credentials

10. The Conference received a report that the credentials of all participants had been submitted to the Credentials Committee and found to be in order.

Vote of thanks

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

II. SUMMARY OF PLENARY SESSIONS

12. The Conference considered agenda items 13 and 14 in plenary session and, in all, reviewed 12 papers directed to those items. In addition, the Conference examined the relevant paragraphs of the report of the Ad Hoc Group of Experts on Projections and Planning in Cartography for the Second United Nations Development Decade (E/CONF.62/L.5). The report was the subject of much favourable comment and its content led to some proposed resolutions which were adopted by the Conference as resolutions 2 to 11. 2/

Items 1-6

13. The view was expressed that, in the light of the objectives of the Second United Nations Development Decade, assistance by developed countries and the United Nations and the specialized agencies was urgently needed for accelerating advancement of cartographic technology in developing countries and also that, while highly evaluating the exchange of information through the current Conference, the Conference should place greater emphasis on experiences encountered in both bilateral and multilateral technical co-operation projects, as well as on future programmes and projects, with a view to strengthening international co-operation in cartography. In that regard, some representatives felt that, in view of the importance of prior study of the substance to be discussed, due attention should be given to the modalities of preparation for the Eighth Conference, and proposed that (a) the United Nations should prepare an integrated provisional agenda to strongly stimulate the debate on technical co-operation and should annotate the agenda to indicate briefly the background information on each item, including the available documentation, and the substance of the matter to be discussed and, in addition, (b) the United Nations should prepare a report scrutinizing the implementation of the resolutions adopted by the Seventh Conference. A draft resolution was proposed and adopted as resolution 26. 3/

14. At the final plenary session, an offer from the Government of Indonesia to host the Eighth United Nations Regional Cartographic Conference for Asia and the Far East was warmly received. The Conference resolved to recommend acceptance to the Economic and Social Council (resolution 1). 4/

Remote sensing, mapping methods for environmental research and control (item 13)

15. A paper entitled "Remote-sensing methods for environmental control" (E/CONF.62/L.10), presented by the Federal Republic of Germany, listed all the

---

2/ For the text of the resolutions, see chapter VII.

3/ For the text of the resolution, see chapter VII.

4/ Ibid.

different methods of remote sensing and it was pointed out that aerial photography was still the most important. Specific examples of applications to environmental control were described in the paper and a co-ordinated approach to the problem and closer liaison with authorities responsible for environmental control was advocated.

16. In a paper presented by Japan entitled "Estimation of the probability of slope disasters along national highways" (E/CONF.62/L.12), the work being done in Japan towards identification of incipient landslides that could be hazardous to national highways was described and the importance was stressed of new aerial photography of critical areas every five or 10 years with a preference for colour.

17. In another paper presented by Japan, entitled "Basic survey of the coastal area - topographical map and land condition map of coastal area" (E/CONF.62/L.47), the importance to Japan of the land, both above and below water, adjacent to the coast line, and the mapping used in research and control were discussed. The procedures and methods used to obtain and to illustrate the data necessary for effective control were set out and the paper concluded with a discussion of the problems still to be overcome.

18. In its paper entitled "Natural environmental maps in South and South-East Asia" (E/CONF.62/L.48), Japan discussed the need for regional environmental data and the steps that are to be taken to correct such deficiency. 5/

19. In the paper entitled "Side-looking airborne radar survey" (E/CONF.62/L.68), presented by Australia, a project was described in which the data from a radar survey was compared with aerial photographs, topographical maps and geological maps. From the results it was concluded that SLAR could be a useful tool in remote areas without maps, in areas subject to cloud, and when used in conjunction with aerial photography.

20. The Union of Soviet Socialist Republics presented a paper entitled "Radar survey" (E/CONF.62/L.78), in which it detailed the principles of radar survey. The all-weather survey system "TOROS" which had been used with much success in artic areas where the radar imagery had provided a great deal of information about the sea ice was described in the paper. The system had been used to advantage in mapping remote areas with particularly successful application in the field of geology and geomorphology. Wider use in various scientific fields was envisaged and it was concluded that the development of radar survey would bring worth-while reductions in mapping costs.

21. In a comprehensive paper entitled "Operational study of radar mapping", 6/ which was well supported by charts and diagrams, the United States provided an outline of all facets of radar mapping. In the paper which was distributed for information only, a background to the development of radar survey was given and the physical geometry of radar, imagery acquisition, anomalies, radargrammetric concepts, material preparation, generation of data, mensuration methods and data

---

5/ The paper was also discussed by Committee III.

6/ Available upon request from the U. S. Defense Mapping Agency, Topographic Center, Washington, D.C. 20315.

reduction was covered. Also included were compilation procedures to produce 1:250,000 scale topographic maps as well as radar mosaics and the paper ended with the conclusion that radar had the ability to obtain mapping data in inaccessible areas during any weather, day or night. Research had proved that radar survey had production potential and it was reported that a production system would be introduced shortly.

22. The Conference noted that remote-sensing techniques not only widened the field of data coverage but that acquisition was not limited by weather or darkness. It was felt that the new developments in radar survey would lead to significant improvements in medium-scale and small-scale mapping throughout the region with particular impact in remote areas. The Conference also noted the potential of remote sensing to identify surface texture, geological features and vegetation as well as the hydrography and topography of a region. The potential of remote-sensing techniques for use in environmental control and the benefits of a multidisciplinary approach to interpretation were acknowledged. A draft resolution submitted to the Conference was adopted as resolution 20. 7/

Earth resources satellites for surveying mapping and earth resources studies (item 14)

23. The paper presented by the United States of America, "Autographic theme extraction system" (E/CONF.62/L.60), dealt with the style of the information from the Earth Resources Observation System Programme (EROS). Why emphasis was given to photo imagery rather than data in digital form was discussed and comment was made on the multiple sensor imagery from the Earth Resources Technology Satellite (ERTS) and Skylab space flights with each spectral band portraying a selected theme. A synopsis was given of the processes and the form of selected themes was shown in the annex to the paper. The point was made that with so much data becoming available the best results would come from the study of each theme by experts in that particular field.

24. The Philippines presented a paper entitled "Philippine Earth Resources Survey Program" (E/CONF.62/L.92), in which it outlined the proposals to take advantage of satellite imagery to support the plans for economic development. The programme was devised in order to co-ordinate scattered efforts on natural resources surveys and to utilize satellite remote sensing effectively. The paper indicated the scope of the proposal, the phasing of it, and detailed the various activities that would be undertaken.

25. In its paper entitled "An Account of the Thailand National Program of the Earth Resources Technology Satellite" (E/CONF.62/L.97), Thailand set out in detail the background and objectives of the proposal to establish an ERTS Co-ordination Research Center in Thailand. Included also was an assessment of expected benefits in the fields of agriculture, forestry, oceanography, geography, demography, cartography, geology, hydrology and meteorology. Training for the programme was covered and plans for the future were discussed.

26. A paper entitled "Progress in cartography, EROS program" 8/ was presented by the United States of America for information. The imagery currently available

---

7/ For the text of the resolution, see chapter VII.

8/ Available upon request from U.S. Geological Survey, Topographic Division, Washington, D.C. 20244.

was detailed and the cartographic applications being investigated were listed. Although revision of line maps was one of the more important experiments, others concentrated on using the image itself as a base for mapping. Perceptional considerations were discussed in detail and a table set out relative image quality as well as maximum printing scales. An informative account of investigations into gemoetrical aspects and analyses was included in the paper where the mapping problem was analysed. After a discussion of the alternatives for final form of the imagery, the paper concluded on an optimistic note as to the small-scale map that would develop from ERTS.

27. A paper entitled "On the use of space photography for earth resources exploration" (E/CONF.62/L.108), presented by the Union of Soviet Socialist Republics, introduced the object with the comment that space photography would enable many of the problems encountered in earth resources studies to be solved in a new way. Starting with the first earth observations in 1961, a summary of experiments in the Soviet Union was given in the paper. Particular value had been obtained in geological studies where by manipulation of the imagery many interesting features were exposed. The experiments continued to bring new knowledge. One of the remote sensing methods used was super-high-frequency radiometry, which provides soil temperature measurements in any weather conditions, including ice and snow. The ability to take such measurements without hindrance opens the field for control by monitoring. It was concluded that even better results could be expected when surveys utilizing spectrozonal, infra-red and radar methods were co-ordinated into operations where aircraft complement satellites for imagery.

28. A paper prepared by the United Nations Division of Outer Space on Cartographic Applications of Remote Sensing of the Earth by Satellites was distributed for information only.

29. The Conference noted that satellite imagery, although broadly similar to that from aircraft, could provide much greater coverage of territory, was nearly orthographic, and was consistently reliable. The imagery could indicate gross patterns of land use, distribution of snow, levels of lakes, and geological forms of significance. It appeared to have particular value in areas of high relief and it should prove most useful in the revision and improvement of small-scale maps. The Conference agreed that effective interpretation needed a multidisciplinary approach and that research into use of the imagery should be continued. A draft resolution submitted to the Conference was adopted as resolution 21. 9/

9/ For the text of the resolution, see chapter VII.

III. GEODESY AND GROUND CONTROL: WORK OF COMMITTEE I

Satellite geodesy

30. The United States of America presented a paper entitled "Surveying the moon: photogrammetric geodesy from Apollo" (E/CONF.62/L.61), which gave an account of the camera and data sensors installed in Apollo 15, 16 and 17 for the purpose of mapping the moon. Details of the data reduction from the three Apollo missions were given. The paper also included a mathematical discussion on the strip and block triangulations from which a mathematical reference surface for the moon could be determined.

31. In the paper entitled "Some remarks on the future role of geometric satellite geodesy" (E/CONF.62/L.31), the Federal Republic of Germany commented on the future role of satellite geodesy, stating that recent developments had indicated that in the foreseeable future, the main effort of satellite geodesy would be concentrated on geodynamical problems. Ground instruments required for fundamental investigation and for local investigation were discussed. The paper also included a numerical illustration on the merits of combining range, range-rate (Doppler) and directional observations, and it was concluded that by the use of combined observations a reference system of continental or even global extent with point positional accuracies of one to two metres could be achieved.

32. In the paper entitled "Determination of the positions of off-lying islands by satellite geodesy" (E/CONF.62/L.25), Japan reported joint operations of the Tokyo Astronomical Observatory, the Geographical Survey Institute and the Hydrographic Department in satellite geodesy and gave indications of its intentions to position off-lying islands by instantaneous photographic observations of Passive Geodetic Earth Orbiting Satellite (PAGEOS) and other less bright satellites and by Doppler observations of Navy Navigational Satellite System (NNSS). Notice was given of a proposal to develop a balloon satellite.

33. A paper presented by the United States of America, entitled "A single datum for Asia and the Far East" (E/CONF.62/L.58), described the Doppler system of satellite geodesy and strongly recommended its use for the strengthening, densification and unification of the control networks of the countries of Asia and the Far East.

Geodetic survey

34. In its paper entitled "Topography, geodesy and cartography in the USSR (1970-1972)" (E/CONF.62/L.76), the Union of Soviet Socialist Republics discussed the geodetic activities carried out in the USSR in the period under review. An optical distance-measuring instrument which permits high precision linear measurements to be made at any time of the day was also mentioned.

35. In the paper entitled "Geodetic activities in Australia to 1973" (E/CONF.62/L.37), Australia traced the history of geodetic surveying and levelling

in that country leading to the adoption of the Australian Geodetic Datum and the Australian Height Datum. The work of the positional Astronomy Section and crustal movement surveys in Papua New Guinea were also mentioned.

36. In its paper entitled "Notes on airborne control surveys (1970-1973)" (E/CONF.62/L.38), Australia described the development and application of Laser Terrain Profiling Equipment, aerial spot photography of control stations, and Aerodist measurements for the extension of horizontal and vertical control from the National Geodetic Survey and National Levelling Survey respectively.

Geodetic contribution to the study of crustal movements

37. In the paper entitled "Survey of ground subsidence" (E/CONF.62/L.16), Japan mentioned the use of precision levelling to measure the extent of subsidence caused by overpumping of underground water.

38. This was followed by another paper by Japan entitled "Crustal deformation in the South Kanto District" (E/CONF.62/L.28) which gave an account of how precise levelling and first order triangulation revealed vertical deformation and horizontal displacement respectively in the South Kanto District.

39. In a paper entitled "Elaboration of the map of the recent vertical crustal movements at the scale 1:2,500,000 for Eastern Europe" (E/CONF.62/L.109), the Union of Soviet Socialist Republics described the compilation of the above map by using a combination of relevelling data, long-term registrations of the tide guages as well as geological and geomorphological investigations of levelling areas and bench marks. The map was developed in close co-operation with the countries concerned within the framework of the International Union of Geodesy and Geophysics (IUGG).

Gravity

40. In the paper entitled "Recent advances in gravimetry for physical geodesy in Australia" (E/CONF.62/L.36), Australia described the work done in extending gravity coverage and the improvement in accuracy of gravity surveys. The assistance of overseas institutions such as the US Air Force, the Geographical Survey Institute of Japan and the Soviet Geophysical Committee of the Academy of Science of the USSR in making valuable international gravity ties to Australia was also mentioned.

Resolutions

41. Following the general discussion in the Committee, the more important items under consideration were referred to a drafting committee on resolutions. The drafting committee considered the comments on geodesy and control surveys submitted by the Ad Hoc Group of Experts on Projections and Planning in cartography for the Second United Nations Development Decade in its report (E/CONF.62/L.5).

42. Two draft resolutions, one on satellite geodesy and the other on levelling, were proposed and subsequently adopted as resolutions 15 and 16. 10/

10/ Ibid.

IV. AERIAL PHOTOGRAPHY AND PHOTOGRAMMETRY AND MEDIUM-SCALE AND LARGE-SCALE SURVEYING AND MAPPING: WORK OF COMMITTEE II

43. The Committee considered items 8 and 9 of the agenda, aerial photography and photogrammetry; medium-scale and large-scale surveying and mapping: (a) topographic mapping, (b) cadastral surveying and mapping and (c) urban mapping.

Aerial photography and photogrammetry

44. Country reports and progress made in cartography, by countries, in matters that formed the basis of the resolutions of the Sixth Conference, predicted that the decade of the 1970s would see the widespread use of aerial triangulation to supplement ground control for mapping. Super wide-angle photography would be preferred. Orthophotomaps and photomaps would provide a valuable interim and sometimes permanent solution to the more pressing needs of development. A draft resolution was submitted to the Conference and was subsequently adopted as resolution 25. 11/

45. In the paper entitled "Planning of photogrammetric mapping systems" (E/CONF.62/L.7), the Federal Republic of Germany summarized the various possibilities in the planning of photogrammetric systems, including those associated with automated processes, and showed how a system might be developed to meet the special needs of a particular country.

46. The Federal Republic of Germany, in its paper entitled "Experience with the production of photomaps 1:5,000 in Nordrhein-Westphalia" (E/CONF.62/L.9), outlined procedures used in Germany to produce orthophotomaps at 1:5,000 to fill in the gaps in its line map series. Owing to the urgency and magnitude of the task, off-line methods of orthophotomapping had been adopted but accuracy had not suffered as a result. Where relief was insignificant, single picture rectification was applied.

47. Australia, in its paper entitled "Some aspects of photogrammetry" (E/CONF.62/L.39), referred to aspects of photogrammetry in the Division of National Mapping, Australia, for mapping at scales of 1:100,000 and smaller, and particularly mentioned semi-analytical block triangulation for planimetry, orthophotomapping with the Stereomat, and the derivation of contours from digitized profiles.

48. The paper entitled "Block adjustment in Australia (1973)" (E/CONF.62/L.40), presented by Australia, reviewed methods of block adjustment used by mapping agencies in Australia, both governmental and private.

49. In its paper entitled "Block adjustment of independent models for 1:50,000 mapping in Canada" (E/CONF.62/L.99), Canada described how very large blocks of aerial triangulation were handled in the sparsely populated northern regions of Canada. Extensive use was made of Aerodist and Air Profile Recorder (APR) for

---

11/ Ibid.

control and use was made of the independent pairs method. The article concluded with a justification when dealing with very large blocks on grounds of economy. The subject of analytical block methods was discussed at some length by delegates and it was agreed that, with few exceptions, they had been proved and would continue to prove economical for the breakdown of field control for mapping.

50. The United States of America, in its paper entitled "The progress of photogrammetry as a means of geodetic point positioning" (E/CONF.62/L.57), provided a rapid review of the progress of aerial triangulation as an accurate method of point positioning over the past 25 years. It showed how superior technology in camera-design, aerial photography, computers and auxiliary equipment had led to the use of photography at scales smaller than 1:100,000 and the fixation of points on the earth's surface with three-dimensional co-ordinates at accuracies of 19 feet or better.

Topographic mapping

51. A good proportion of the papers presented to the Conference dealt with some aspect of topographic mapping. All disciplines were covered thoroughly. The comprehensive reports submitted, including the report of the Ad Hoc Group of Experts on Cadastral Surveying and Mapping (E/CONF.62/L.1) provided an enlightening introduction to the topic.

52. A number of papers dealt specifically with orthophotomapping. Statistics as to the instruments in use, time and the economy of production were incorporated in several papers and the ensuing discussion enabled comparisons to be provided by other delegates. Varying opinions were expressed as to the value of orthophotomaps. Emphasis was placed on their value for revision purposes and for the rapid provision of maps in developing countries where maps had not existed previously. Mention was made of their use for a variety of purposes such as engineering design for roads, water supply and sewerage purposes, town planning, vegetation mapping and so on. Their value in providing maps in sparsely settled and arid regions was amplified on several occasions. Whilst there was agreement that orthophotomaps were assuming an increasingly important role, the opinion was expressed that large-scale orthophotomaps should be regarded as supplementary to conventional line maps and not as a replacement.

53. The introduction of automated cartographic practices and digital equipment for the production and revision of topographic maps, including the development and utilization of data banks, was referred to in several papers and resulted in considerable discussion. It was generally agreed that the use of those techniques should be dictated by an assessment of the economy of that type of production as compared to the more conventional approach.

54. Throughout the Conference delegates continually referred to the economics of map production and it was reported that a Map Sales Benefit Study in the United States of America had been completed and that the use of maps in that country provided benefits estimated at $US 900 million per annum.

55. The importance of regional co-operation was reflected by the acknowledgement by delegates of some developing countries of major assistance afforded by other countries with greater resources at their disposal. That matter was highlighted in

an Australian paper (E/CONF.62/L.79) which outlined a co-operative mapping project in Indonesia which enabled early action to be undertaken when facilities were not readily available in the host country. The response by delegates to that paper resulted in the subsequent draft resolution which was submitted to the Conference and subsequently adopted as resolution 22. 12/

Cadastral surveying and mapping

56. A report by the Ad Hoc Group of Experts on Cadastral Surveying and Mapping was submitted and discussed. The report (E/CONF.62/L.1) was requested by the Sixth United Nations Regional Cartographic Conference for Asia and the Far East in its resolution 10, 13/ in which it recommended, inter alia, that:

> "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".

The matters examined by the Group included: the definition of a cadastre; the general role of a cadastre; factors to be considered before establishing a cadastral system; methods of establishing a cadastre; principles for the selection of survey methods; institutional aspects and training; continuing review of cadastral activities.

57. For the purpose of the report, cadastre was defined as including "not only the record which gives legal force to rights ... but also all other forms of cadastral record ...". 14/

58. The Group reached a number of conclusions which are detailed in the report. Additionally, it recommended that "an advisory panel be established to advise on the initial action to be taken and to evaluate periodically whether further aspects should be added" (E/CONF.62/L.1, para. 62).

59. The report received considerable support in the discussion and gave rise to two draft resolutions which were subsequently adopted by the Conference as resolutions 23 and 24. 15/

60. Reports were presented by the representatives of Japan (E/CONF.62/L.18), Australia (E/CONF.62/L.42 and L.69) and the Philippines (E/CONF.62/L.90) on the cadastral survey programmes in their countries. Japan, in its paper entitled "Method of cadastral survey in Japan - orthophoto method", reported that the cadastral survey was being carried out using conventional field methods in the urban and relatively closely settled rural areas. The orthophoto method was also applied

---

12/ Ibid.

13/ Sixth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference (United Nations publication, Sales No. E.71.I.15), chap. VII.

14/ For the full text of the definition, see E/CONF.62/L.1, para. 11.

15/ For the text of the resolutions, see chapter VII.

with some parcel corners, which could not be identified on aerial photographs, being surveyed by conventional methods. Australia, in its first report, outlined the history of the country's cadastral survey system and briefly commented on the methods being used at present. The Australian cadastre was numerical and required a high standard of accuracy in the survey. Consequently, little use had been made of photogrammetry and orthophotography in the cadastral surveys of the various states. The likely development of land data banks was forecast in the report. In the second paper, Australia described the integration of cadastral surveys and topographic mapping in Western Australia. The "Philippine Cadastral Survey Program" was presented and discussed by the Committee. This programme makes extensive use of large-scale aerial photographs from which digital co-ordinates are obtained in the case of rectified photographs or measured in the case of photography observed in a comparator. This information is used to determine measurements and areas of parcels of land.

61. A paper entitled "Parcellary mapping activities in support of the Land Reform Program" (E/CONF.62/L.93) was presented by the Philippines. The report described the development of the Land Reform Program and the methods used by the Bureau of Lands to produce parcellary maps which are the basis of land transfers.

62. The United Kingdom presented a paper entitled "The desk-top programmable calculator and its application within the smaller organization, with particular reference to cadastral requirements" (E/CONF.62/L.32) in which it described the features of a desk-top programmable calculator system developed by the United Kingdom Directorate of Overseas Surveys and illustrated how cadastral and other work could be processed using those systems. It was concluded that the use of desk-top progammmable calculators was particularly applicable to smaller organizations whose resources were limited.

Urban mapping

63. Maps and records compiled for a multipurpose cadastre may be used for many other purposes, as was indicated in the report of the Ad Hoc Group of Experts on Cadastral Surveying and Mapping (E/CONF.62/L.1). However, many developing countries do not have a complete and up-to-date cadastre. The Ad Hoc Group of Experts on Projections and Planning in Cartography for the Second United Nations Development Decade in its report (E/CONF.62/L.5) considered that all urban surveys and mapping should provide the basic reference system and graphics so that all data might be placed on a single three-dimensional system. The need for urban planning was of greatest importance and had to keep pace with population increase.

64. In the paper entitled "Experiences with the production of photomaps 1:5,000 in Nordrhein-Westphalia" (E/CONF.62/L.9), the Federal Republic of Germany outlined the need for and the use of orthophotomaps at 1:5,000 scale within the shortest possible time. Planning authorities use orthophotomaps with advantage to determine, among other things, land use and subdivision.

65. Japan, in a paper entitled "Method of cadastral survey in Japan - orthophoto method" (E/CONF.62/L.18), reported the introduction of the orthophoto method of production of a cadastre which also results in large-scale maps used for land administration, land development and preservation and for other purposes. In the paper entitled "Design of urban land-use maps: case studies" (E/CONF.62/L.20),

Japan related the patterns of characteristics, classifications and categories in three case studies of densely inhabited districts. Conclusions drawn referred to the maximum number of classifications for discernibility and comprehension of urban land-use maps, the minimum area to be depicted at 1:25,000 scale, representation of three-dimensional effects for high buildings, chronological patterns as well as technical problems of production and problems of revision.

66. In the paper, "Depiction of multilevel complex structures on ordnance survey large-scale maps" (E/CONF.62/L.34), the United Kingdom set out its approach to the depiction, in monochrome at 1:1,250 scale, of various levels of overhead and underground structural divisions and referred to an "upper level of through public communication" as an aid to map users.

67. In the paper, "Large-scale mapping in New South Wales" (E/CONF.62/L.41), Australia concluded that orthophotomaps at 1:4,000 and 1:2,000 scales were an ideal map product, excepting the 1:2,000 scale, which was not suitable in areas having high-rise buildings where conventional line maps were preferred.

68. The United States of America, in its paper entitled "Urban mapping research" (E/CONF.62/L.65), considered a family of base maps in scales ranging from 1:500 should be provided for usage in various levels of government and various purposes of planning. Research was needed to identify existing and potential map users and uses in urban areas.

69. In Australia, maps at about 1:10,000 were required for strategic planning and development of urban areas, as presented in document E/CONF.62/L.69 entitled "Cadastral surveying and mapping in Australia". For more detailed engineering studies, 1:2,500 maps were required, whilst a scale of 1:500 was used for final studies in greater detail.

70. In paper E/CONF.62/L.72, "Orthophoto mapping - introduction of technique in India", presented by India, it was pointed out that orthophotomaps at 1:5,000 and 1:10,000 over an extensive project area were urgently required by local engineers, soil scientists, agriculture experts and revenue officials to avoid any delay in their planning processes. The techniques and procedures to achieve the objectives were carefully described in the paper.

71. The Philippines, in a paper entitled "Philippine Cadastral Survey Program" (E/CONF.62/L.90), described a proposed project, by photomapping and conventional ground survey techniques, for a multipurpose cadastre which would not only provide legal and technical identification of land parcels but also information for land inventory and development purposes. The project would involve the co-ordination of many techniques and disciplines.

72. In paper E/CONF.62/L.118, entitled "Report on the preparation of maps in scale 1:500 for cities in Iran", Iran described the techniques of preparation and the need for urban maps, at scales of 1:500 and 1:1,000, to be used for urban planning and engineering works.

73. Many countries in their reports emphasized that it would be more economical to provide multipurpose maps for cadastre, topographic, engineering and planning purposes. The potential use of data bank systems should lead to further economies in multipurpose urban mapping.

V. SMALL-SCALE MAPPING - THEMATIC CARTOGRAPHY (INCLUDING NATIONAL ATLASES) AND PHOTO-INTERPRETATION - GEOGRAPHICAL NAMES: WORK OF COMMITTEE III

Geographical names

74. Australia presented the document entitled "A gazetteer for the Australian 1:250,000 map series" (E/CONF.62/L.45) in which it was stated that a national gazetteer of Australia was expected to be prepared from the various state gazetteers when available. However, as an interim solution the Division of National Mapping was preparing a gazetteer of all names on the existing 1:250,000 map series of Australia, a format of which was appended to the document. The gazetteer contained 125,000 names and was considered a valuable name bank for the automatic type-setting for the next edition of the 1:250,000 map series.

75. The Republic of Viet-Nam, in its paper entitled "The preparation of gazetteers of provincial geographical names in the Republic of Viet-Nam" (E/CONF.62/L.67), outlined in detail a programme started in 1971, involving a comprehensive field compilation of geographical names and a thorough study of the method of transcribing and describing the names collected and catalogued. The paper outlined the operational stages involved in the execution of name compilation projects which would result in the collection of an enormous amount of information not only on names of geographical places and features but also on population, ethnic groups, religion, economy etc.

76. In that connexion the representative of Hungary presented work done by him in connexion with the transliteration of East Asiatic languages, including Chinese, Mongolian and Korean, into the Roman alphabet.

77. The Committee noted with satisfaction the progress made since the sixth United Nations Regional Cartographic Conference on Asia and the Far East and took note and recognition of the resolutions of the Second United Nations Conference on the Standardization of Geographical Names, held in London in May 1972 (E/CONF.61/3, chapter III), and the work of the United Nations Group of Experts on Geographical Names (ESA/RT/C/GN/1, 2 and 3). A draft resolution was submitted to the Conference on the subject urging the countries of the region to implement the recommendations especially relevant to the region, and was subsequently adopted as resolution 12. 16/

Small-scale mapping

78. Japan's paper on training and certification of cartographic engineers (E/CONF.62/L.21) surveyed the requirements demanded of the applicant together with the period and curricula of his training, as well as the grading used while in the service of various organizations engaged in cartographical activities.

16/ Ibid.

79. Australia, in its paper entitled "Application of techniques in automated cartography" (E/CONF.62/L.44), included new ideas in automation, outlined below, and covered three stages:

(a) Digitizing procedures and time saving. The aim of automation in thematic mapping is no doubt to compile suitable information required for fair drawing. To attain this aim it is possible to marry the data already stored in the computer (e.g. census return data) to such computer files containing geographical features as location of the relevant census areas. The procedure involved is simply to design the input system around a map area, with well-defined boundaries, about the size of digitizer's working area. An operator can then digitize the number of boundaries and the programme allows the operator to obtain visual rectification of his input at any stage on the plotted or graphic display. (It has been proved that by use of a computer for the above purpose a saving in time of about 90 per cent can be obtained although draftsmen may still have to verify or edit certain aspects of the machine "output");

(b) Scanning technique and map projection changes. The manual technique in transforming an existing map to a new projection is a slow process and requires great care of the precision if the original map is to be maintained. The mathematical formulae involved are well known. An automated system has been evolved which uses a digital computer to transform detail from one projection to another. The procedure involves (i) scanning the input material, (ii) storing the location of black points and (iii) plotting these points on the new projection which then serves as a guide image for scribing. (A number of sheets of the International Map of the World (IMW) series, on the Lambert Conformal projection at the scale of 1:1,000,000 have been successfully transformed by Australia into maps of Australia on Simple Conic Projection at the scale of 1:2,500,000, these being a longitudinal distortion of up to 8 per cent and a latitudinal one of less than 1 per cent. The time saved by application of this system is quite comparable to that economized in the use of digitizers);

(c) Automatic type-setting. This is no doubt the most complicated and burdensome part of the work in automated cartography as it involves numerous classifications of physical and man-made features to be shown on the map as well as a variety of names with their own peculiarities. (In the case of Australia it is indicated that each master file used at this stage contained no less than 26,000 entries that had to be grouped in a pre-planned classification system.) However, thanks to the computer's miracle, at the compilation stage of a map the draftsman nominates the geographical co-ordinates bounding the area of choice and the programmes retrieve all names falling within the area, select the appropriate fount, point size and case and provide simultaneously an alphabetical print-out and magnetic tape for the map area. This tape is then fed directly on an automatic type-setting machine which provides film copy of the names on the basis of which the overlay is prepared in the usual manner.

80. Australia also presented the document, "Some aspects of small-scale mapping in the Division of National Mapping (1970-1973)" (E/CONF.62/L.80 and Add.1), in which it described quality control during printing, catering to the needs of map users and maintaining the accuracy of basic mapping. It also made reference to the Division's aerial chart inspection activity, in conjunction with the Australian Department of Civil Aviation, in the production of aeronautical charts which have made a major contribution in clarifying representation and ensuring safety of flight.

81. Hungary presented the paper, "Cartactual, publication informing about changes of small-scale cartographic concern" (E/CONF.62/L.89). The aim of the publication, which was first published in 1965 as a quarterly and, since 1969, has appeared as a bi-monthly two-colour form in English and French, is to keep map makers informed about new maps and all changes made to small-scale maps between two different printings. Hungary asked participating countries to become correspondents of Cartactual to permit broader dissemination of cartographic information on a world-wide scale.

Thematic maps

82. Japan, in its paper entitled "Technical co-operation by the geological survey of Japan" (E/CONF.62/L.17), explained the philosophy of co-operation and outlined in detail the training facilities provided under co-operative programmes. Reference was also made to the joint efforts between Indonesia and Japan in the preparation of the geological survey of Indonesia. Views were expressed that similar joint efforts could expedite similar work in other countries of the region. The assistance already extended by UNESCO was acknowledged. The representative of Iran observed that in view of good results obtained from the co-operative activities outlined in the document it would be beneficial to the developing countries of the region if a resolution for the extension of the scheme to other areas was prepared. The representatives of Indonesia and the Philippines offered their appreciation of the assitance rendered by Japan in this connexion. A draft resolution was submitted and adopted as resolution 13. 17/

83. In the document entitled "Training and certification of cartographic engineers" (E/CONF.62/L.21), Japan outlined the training course facilities provided to the trainees from other countries.

84. Hungary gave a report on the training of cartographers at Budapest University (E/CONF.62/L.96) and pointed out also that the university was open to students from Asia and the Far East.

85. In its paper entitled "1:50,000 water-use maps in Japan" (E/CONF.62/L.29), Japan reviewed the main objectives of the survey and its bearing on water resources and water-use classification. The impact on agriculture, irrigation, water reservoirs, wells, erosion etc., were discussed and finally processes of map making under this project as well as specifications of the survey areas were given in outline. In the document "Land classification survey of national land survey" (E/CONF.62/L.19), Japan gave a brief history of the project on the subject which began in 1951 and short accounts of the specification and uses of various scale maps, as well as the stage of their implementation under this project.

86. Japan's paper entitled "Natural environmental maps in South and South-East Asia" (E/CONF.62/L.48) briefly reviewed the preparation and costs of such maps. The document entitled "A scheme for preparation of 1:25,000 land-use maps in Japan" (E/CONF.62/L.49), presented by Japan, surveyed the brief history of the land-use survey which began in 1946. It was reported that 70 per cent of Japan will be

---

17/ Ibid.

covered by 1:25,000 land-use maps within the next 10 years. Special reference was made to the fact that these maps are used in land development and disaster prevention activities which are very essential to the economy of Japan.

87. In its paper entitled "Vegetation map preparation project for preservation of vegetation and plant and animal species" (E/CONF.62/L.83), Japan explained that the prefectures act locally, but under well-designed guidelines, to present vegetation on the 1:50,000 topographical base maps. Such maps are of particular historical importance in view of the fact that agricultural land and vegetation are gradually disappearing in the face of rapid urbanization in Japan.

88. In the document entitled "On a geomorphological survey map of the river basin indicating areas subject to flooding" (E/CONF.62/L.84), Japan emphasized the vital necessity of preserving rice fields from flooding in view of the fact that rice was the staple food of the major part of the population of Japan. The areas subject to flooding, as well as the erosional consequences were explained with due regard to geomorphological aspects. Finally reference was made to the valuable part played by such maps over the past 20 years in flood prevention projects.

89. In the paper entitled "Utilization of the 1:2,500,000 world map as thematical base map in cartography" (E/CONF.62/L.88), Hungary surveyed the international efforts of the past 100 years in connexion with the preparation of a world map. It underlined the tremendous importance of thematic maps in the present day and pointed out the failure on the part of some countries to prepare the 1:1,000,000 International Map of the World. The paper concluded that the World Map on the scale 1:2,500,000 would meet the usual geographic requirements, as well as the needs of border sciences interested in preparing thematic maps of the world at small scale. The representative of the United States of America observed that the scale proposed would be too small for some of the purposes indicated, for example aeronautical charting other than for long-range navigation. He added that in his country the scales 1:500,000 and even 1:250,000 were considered the best suited for visual aeronautical charts. The observer of the International Hydrographic Organization (IHO) also observed that the scale 1:2,500,000 would not satisfy navigational requirements.

National atlases

90. In connexion with national atlases the representative of Thailand presented his country's paper entitled "Progress report on cartographic activities in Thailand" (E/CONF.62/L.100), prepared by the adviser on the Regional Atlas of Asia. The report referred to climatic maps showing main climatic elements as well as the climatic classification on the basis of the Koppen system. In addition, reference was made to geophysical, land use, economic etc. maps included in the atlas. It was also indicated that the new base map compiled by Thailand should be considered the best for the ECAFE region.

91. In the document entitled "Report on the national atlas project in Japan" (E/CONF.62/L.30), Japan outlined the organization for the work which started in 1971 on the atlas and the present stage of implementation. It was stated that 19 sheets had been published to 1972 and about 50 sheets were planned for completion and printing before the end of 1973. The observer from the International Cartographic Association (ICA) emphasized the very importance of national atlases.

He also underlined the necessity of observing certain basic standards in the preparation of atlases and mentioned the recommendations in this field of the Standing Commission on National Atlases of the International Geographical Union. He stressed the threefold functions of national atlases as:

(a) Graphic inventory of physical and human resources for regional and national planners;

(b) A stimulus for the development of national carography;

(c) A prestige publication for newborn nations.

As national atlases required a great deal of capital investment and also an enormous amount of production capacity, he requested experts other than cartographers, e.g. surveyors and photogrammetrists, to express their views on the phenomenon of national atlases. Further, he would like to know the experience of countries who produced national atlases. The representative of France reported that a French national atlas had been published some decades ago but did not meet with great success because the publication of individual sheets was spread over a long period of time. After the Second World War the question of publishing a new edition of the atlas arose, but, taking into account the regionalization policy of the Government, it was decided to compile regional atlases rather than a national atlas of high cartographic quality. The representative of Hungary observed that, in his country, where the economic importance of atlases was well appreciated, national and regional atlases had been published in both the Hungarian and English languages. The representative of the Federal Republic of Germany reported that some sections of the German national atlas had remained unsold. National atlases should be designed in such a way that only needed and useful maps were included.

92. In its paper entitled "Some features of Australia's National Atlas of Resources" (E/CONF.62/L.46), Australia traced the history behind the atlas and mentioned the fact that each sheet was accompanied by an explanatory booklet. Recent calculations had shown that the proposed third edition would involve heavy expenses that could not be fully covered by sales and the major portion of the cost would have to be covered departmentally. It also reported formation of a committee to advise on standardized guidelines for the preparation of national atlases.

93. In the paper "The National Atlas of the United States of America: impact of binding" (E/CONF.62/L.75), the United States representative outlined the history of the United States national atlas and the problems faced by the publishing authority in regard to the form of printing and binding for atlas pages in the future. The revision of the national atlas would take place once every 10 years and the format in each revision would be decided with due regard to the needs and requirements of the users.

94. The Philippines, in its paper "The Philippine National Economic Atlas, scale 1:4,000,000" (E/CONF.62/L.94), surveyed the change of authority in the administrative bodies responsible for the publication of the national economic atlas and the present situation. The base map characteristics and the contents of the atlas as well as the various processes involved up to the final printing were outlined. A draft resolution was proposed and was subsequently adopted by the Conference as resolution 14. 18/

18/ Ibid.

VI. HYDROGRAPHY AND OCEANOGRAPHY: WORK OF COMMITTEE IV

95. During the course of its two meetings, Committee IV considered 17 papers. The first, presented by Japan, was entitled "Recent development of hydrographic survey instruments in Japan" (E/CONF.62/L.22). Development of some of the instruments was outlined and a list of the past, present and future trends made. Instruments that evoked the special interest of the Committee were the Sonar Beacon Type Position Fixing System, Side Scan Sonar and the Data Accumulation System. The representative of Japan mentioned that some of the newly developed instruments had already been pressed into service and adopted for routine work. He recommended duplication of instrument systems so that alternative ones could be put into operation in the event of breakdowns and so avoid loss of survey time.

96. Japan, in presenting its paper entitled "Group training courses for hydrographic and physical oceanographic surveys by the Government of Japan" (E/CONF.62/L.23), mentioned that its hydrographic training programme was an outcome of the resolutions adopted by the fourth 19/ and sixth 20/ regional conferences and that it had already conducted co-operative group-training courses.

97. In its paper entitled "Preparation of the basic maps of the sea on various scales" (E/CONF.62/L.24). Japan explained that the project was divided into three groups, namely Ocean, Continental Margin and Coast on progressively larger scales, and the purpose of those basic maps was to provide the geophysical data necessary for the exploration and exploitation of the sea-bed resources, ocean engineering and other allied activities. The types of maps that would be made were the bathymetric chart, submarine structural chart, total magnetic intensity chart and gravity anomaly chart.

98. In the paper presented by Japan entitled "Compilation of the GEBCO plotting sheets by the Hydrographic Department of Japan" (E/CONF.62/L.26), it was pointed out that a special feature of the paper was the paragraph regarding "contouring", based on geomorphological criterion. The representative of the Federal Republic of Germany enquired as to how incorrect soundings were eliminated. The representative of Japan explained that that was done by checking with cross lines of soundings and comparison of depth against geophysical data. The representative of the International Hydrographic Office (IHO) was highly appreciative of the General Bathymetric Chart of the Oceans (GEBCO) sheets prepared by Japan.

99. A further paper presented by Japan, entitled "Hydrographic survey of sandwave areas" (E/CONF.62/L.27), was based upon surveys conducted in Japanese waters and in the Malacca Straits and described some useful findings.

19/ 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), chap. II.

20/ Sixth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. VII.

100. The paper entitled "Marine boundaries and positions" (E/CONF.62/L.54), presented by the United States of America, emphasized the importance of accuracy standards of navigational charts and position location at sea in relation to the law of the sea.

101. The United States of America also introduced its paper entitled "Ocean mapping, or who draws the isobaths for NOAA's bottom contours?" (E/CONF.62/L.55). The representative of the United States of America explained the importance of geophysical surveys to petroleum exploration, mining and ocean engineering as well as problems of pollution, waste disposal and other matters. He added that they have two basic sub-programmes for surveys of the continental shelves and margins and of deeper waters. The data collected at this time are bathymetry, gravity, seismic and geomagnetic.

102. The next paper introduced by the United States of America was entitled "The automation of large-scale coastal hydrography" (E/CONF.62/L.56). Reference was made to the installation of computerized data logging and plotting systems, HYDROPLOT and HYDROLOG, in a survey ship and boat respectively and a computer-supported survey data processing system ashore. Various survey parameters could be interfaced with the system besides the echo sounder and position location devices. The automated data acquisition and processing system, the representative stated, had increased the speed and efficiency with which a completely verified hydrographic survey could be produced.

103. The United Kingdom, in presenting its paper entitled "The international chart, dwarf or giant?" (E/CONF.62/L.64), highlighted the importance of international co-operation in hydrography. The representative illustrated this co-operation by referring to the concept of the International Chart, evolved under the auspices of IHO. He drew attention, however, to the present progress made, which, so far, was limited to agreement upon two world series of small-scale charts only, and stated that the problem of duplication in the larger scales among the Hydrographic Offices continued to remain unsolved and that its magnitude was of a massive nature. The representative referred to charting arrangements between countries for the reproduction of each other's charts in facsimile to partially solve the problem. He favoured general participation by the chart-producing nations to join together to avoid duplication by reaching agreement on a world series of charts. The representative of IHO pointed out that the North Sea Hydrographic Commission was already studying the specifications for international charts on medium and large scales and felt that that study should first be completed.

104. The representative of the United Kingdom next presented the paper entitled "The past and continuing role of the surveying service of the Royal Navy in Far Eastern and Asian waters since 1946" (E/CONF.62/L.73). He gave a brief review of the United Kingdom's hydrographic surveying activities throughout the world since 1945 to update their navigational charts and locate and survey deep-water channels to cater for the growing needs of the increasing number of deep-drought ships. Considerable attention had been focused on surveying in the Persian Gulf and the Malacca Straits, he added, and the British hydrographer was always ready to consider requests from other nations for assistance in surveying their waters.

105. The representative of the United Kingdom then introduced the paper entitled "Autocarta one consequence of radio navigation" (E/CONF.62/L.74). He pointed out that the Autocarta had been designed for ease of operation by hydrographic

surveyors, thereby eliminating the need for operation by computer technicians. In a brief description of the system, he explained that a self-contained system designed for ship installation - the Autocarta X - was capable of all on and off-line work for collecting positional and depth data and plotting them on a track plotter. That was done in two phases in much the same way as conventional sounding was done, the tide being applied to the depth collected at the end of the day's work. Autocarta was also adapted to boat work and harbour surveys by port authorities using the parent ship's Autocarta X in the former mode and shore-computer facilities in the latter mode. The advantages to be gained by increased output, speed and accuracy were considerable, he added. He further clarified that the Autocarta could also be interfaced with various types of oceanographic censuses.

106. The representative of the Philippines in presenting a paper entitled "Tide and current predicitions by electronic computer IBM-S/360 E-30" (E/CONF.62/L.95), outlined the methods and procedures evolved by the Philippine Bureau of Coast and Geodetic Survey in the prediction of tides by means of IBM computer S/360 E-30.

107. The representative of Australia, in presenting the paper entitled "Bathymetric mapping of the Australian Continental Shelf" (E/CONF.62/L.114), agreed with Japan (see E/CONF.62/L.22) regarding sophisticated equipment on the advisability of duplicating such systems in case of malfunction of equipment.

108. The representative of the International Hydrographic Organization (IHO), in presenting his paper entitled "The role of the IHO in fostering international co-operation in hydrography" (E/CONF.62/L.120), outlined the progress that had been achieved in standardization of nautical charts. He also informed the Committee of the technical advice available from IHO to developing countries for establishing or strengthening their hydrographic capabilities. The representative of India urged countries of the region to give consideration to joining IHO and this also had the support of Germany and Japan. The representative of India also explained that developing countries whose hydrographic departments formed part of their respective navies, were not precluded from receiving United Nations assistance for activities connected with national development projects and safety of navigation. Indonesia, the Federal Republic of Germany, Malaysia and Thailand supported the suggestion of the representative of India that a suitable resolution be adopted by the Conference on the subject of United Nations assistance for hydrography.

109. The Committee considered the relevant resolution on bathymetric mapping contained in document E/CONF.62/RES.1 and, after discussion decided to form a drafting group consisting of the representatives of Australia, India, Union of Soviet Socialist Republics, United Kingdom, and IHO. Three draft resolutions were submitted to the Conference and were subsequently adopted as resolutions 17, 18 and 19. 21/

21/ For the text of the resolutions, see chapter VII.

VII. RESOLUTIONS ADOPTED BY THE CONFERENCE

A. LIST OF RESOLUTIONS

1. Eighth United Nations Regional Cartographic Conference for Asis and the Far East
2. Value of cartographic activity
3. Cartography Section, Department of Economic and Social Affairs
4. United Nations regional cartographic conferences and interregional seminars
5. Technical assistance
6. Expansion of bilateral and multilateral assistance
7. Special natural resources advisory services
8. Assessment and evaluation of assistance projects
9. Co-ordination of cartographic activities amongst the United Nations and the specialized agencies
10. Periodic review of world status
11. Training
12. Geographical names
13. Thematic mapping
14. Thematic maps and national atlases
15. Satellite geodesy
16. Levelling surveys
17. National seaward boundary limits
18. Financing of hydrographic assistance
19. Membership in the International Hydrographic Organization
20. Remote sensing
21. Satellite imagery
22. Topographic mapping
23. Urban mapping
24. Cadastral surveying and mapping
25. Aerial photography and photogrammetry
26. Co-operation in future United Nations cartographic conferences
27. Vote of thanks

B. TEXTS OF RESOLUTIONS

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

The Conference,

Appreciating the offer of the Government of Indonesia to act as host country for the Eighth United Nations Regional Cartographic Conference for Asia and the Far East,

Recommends to the Economic and Social Council that the Eighth United Nations Regional Cartographic Conference for Asia and the Far East should be convened in Indonesia in October/November 1976.

27 October 1973

2. Value of cartographic activity

The Conference,

Noting that:

(a) The United Nations Economic and Social Council has continually supported the advancement of surveying and mapping in developing countries and the promotion and strengthening of international co-operation in cartography,

(b) Experience has shown that the resources of a country cannot be revealed and assessed except by co-ordinated survey and that the potential characteristics of the earth's surface and subsurface can only be depicted through a proper cartographic presentation,

(c) In modern society topographic and thematic mapping are an indispensable public service,

Urges high level policy makers to appreciate that, for efficiency in planning and carrying out all kinds of economic and social development projects, the one common, vital instrument for co-ordinating all phases of development is the early provision of adequate maps and charts.

27 October 1973

3. Cartography Section, Department of Economic and Social Affairs

The Conference,

Considering the future work of the Cartography Section of the Resources and Transport Division, Department of Economic and Social Affairs,

Recommends that:

(a) The Cartography Section should continue, in accordance with

resolutions 131 (VI), 261 (IX) et al. of the Economic and Social Council, its clearing-house functions in all phases of international cartographic work;

(b) In order that it may more effectively perform these clearing-house functions the Cartography Section should, on a reciprocal basis, be an active participant in the meetings of international organizations and societies connected with cartography;

(c) To continue more effective co-ordination with the Section, the United Nations should consider the establishment of cartographic liaison offices in the regional commissions where no cartographic unit exists;

(d) In view of the wide range of subjects involved in cartography and in view of the unprecedented rapid development in cartographic techniques and allied fields, it is essential that a panel of consultants should be rostered by the Cartography Section of the United Nations for advisory services as required;

(e) The publication entitled World Cartography 22/ should appear as a periodical with wide distribution; articles, reports and provided abstracts should cover not only recent developments in the various fields of cartography but also the modern requirements for and new methods of use of techniques and maps produced; administrative aspects and economic implications should receive special attention;

(f) The annual report entitled International Map of the World on the Millionth Scale (IMW), 23/ which contains essential information for map users, should be continued; new presentation may be envisaged to meet future needs.

27 October 1973

4. United Nations regional cartographic conferences and interregional seminars

A

The Conference,

Considering the Economic and Social Council request to the Secretary-General to implement the resolutions of the fifth 24/ and sixth United Nations regional cartographic conferences for Asia and the Far East 25/ appropriate,

---

22/ See Volume XII (United Nations publication, Sales No. E.72.I.9) and previous issues.

23/ See Report for 1969 (United Nations publication, Sales No. E/F.70.I.19) and previous issues.

24/ 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), chap. II.

25/ Sixth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. VII.

Emphasizing that speedy follow-up action by Governments should also be taken,

1. Recommends that:

(a) Regional cartographic conferences should continue in both the Economic Commission for Africa and the Economic Commission for Asia and the Far East at three-year intervals;

(b) Yearly reports of follow-up action after each conference be published by the Governments concerned and that these reports be distributed widely in their respective regions, as well as in the United Nations;

(c) In order for all developing countries to be able to host such a regional cartographic conference, it is desirable that costs to a host country should be kept to a practical minimum;

2. Further recommends, emphasizing the fact these are technical conferences, that local facilities be used to the maximum and that the level of United Nations assistance be at about the level which applied to the Fifth United Nations Regional Cartographic Conference for Asia and the Far East.

B

The Conference,

Noting that interregional cartographic seminars have proven to be an efficient means to facilitate the exchange of technical information and experience as well as to foster international understanding and co-operation among national mapping agencies,

1. Recommends that such seminars be given strong support;

2. Further recommends that countries having excellent surveying and mapping capacity and experience should make available to the United Nations their assistance in the organization and conduct of such seminars, including the provisions of technical experts and host facilities, as required.

27 October 1973

5. Technical assistance

The Conference,

Noting the success of the current operational programme of the Cartography Section of the Resources and Transport Division, Department of Economic and Social Affairs, under the technical assistance activities of the United Nations,

Recommends that assistance continue in the form of expertise as required in all phases of cartographic activities, including the management of national mapping activities.

27 October 1973

6. Expansion of bilateral and multilateral assistance

The Conference,

Noting the success achieved by the existing bilateral and multilateral schemes for cartographic assistance,

1. Recommends that:

(a) Such assistance be expanded by the United Nations and other bodies;

(b) Developing countries seek out this assistance, in addition to the United Nations assistance, taking great care to work out co-ordinated programmes in order to avoid possible duplication;

2. Expects that such co-ordinated programmes be the function of national mapping organizations.

27 October 1973

7. Special natural resources advisory services

The Conference,

Noting the establishment by the United Nations of special natural resources advisory services 26/ involving short-term tasks and with objectives of widening the range of technical services to developing nations, reducing problems of recruitment and costs, transferring expertise between countries with similar problems, broadening the experience of the United Nations experts and creating further opportunities for technical co-operation,

Recognizing the desirability of making this scheme succeed in the cartographic field,

Recommends that countries through their cartographic services give full co-operation to this concept.

27 October 1973

8. Assessment and evaluation of assistance projects

The Conference,

Recognizing the desirability of ensuring the effectiveness of United Nations cartographic assistance programmes,

1. Recommends that United Nations inspections of cartographic assistance projects should be carried out annually by highly qualified experts who can make a

---

26/ General Assembly resolution 1572 B (L).

thorough assessment of the technical and managerial aspects on the implementation of the project and make appropriate recommendations for post-project technical evaluations;

2. Further recommends that when preparing plans for United Nations cartographic assistance projects, both the Government concerned and the United Nations should make provision for follow-up technical field evaluations with a view to assessing the continuing effectiveness of the projects.

27 October 1973

9. Co-ordination of cartographic activities amongst the United Nations and the specialized agencies

The Conference,

Recognizing that a wide variety of development projects sponsored by the United Nations and its specialized agencies require cartographic services, it is inevitable that duplication of effort and waste of scarce resources in this field can occur,

Recommends that regular meetings of United Nations and the specialized agencies be scheduled in order to improve the economy and efficiency of future technical assistance in cartography, including air photography.

27 October 1973

10. Periodic review of world status

The Conference,

Recognizing the value of up-to-date statistics on world cartography to the Cartography Section of the Resources and Transport Division, Department of Economic and Social Affairs, to developed countries desirous of rendering assistance to developing countries and to developing countries in assessing their national mapping progress,

Recommends that:

(a) A periodic review (every five years) should be made by the United Nations on the status of topographic mapping and published in World Cartography; 27/

(b) Periodic reviews be made for other subjects in cartography, such as geodesy, cadastral surveying and mapping and other related fields, in succeeding years.

27 October 1973

27/ See foot-note 22.

11. Training

The Conference,

Considering the pressing and increasing need for the training in cartography (including hydrography) of personnel from developing countries, at all levels, including management personnel,

Recalling resolution 13 28/ of the Sixth United Nations Regional Cartographic Conference for Asia and the Far East on the subject of training facilities,

Noting that some of these countries have insufficient facilities for this purpose themselves,

Further noting the report on the availability of training facilities to foreign trainees in surveying and mapping, 29/ prepared by the Secretariat in pursuance of resolution 13 28/ for submission to the Seventh Conference,

1. Recommends that this survey continue to completion;

2. Further recommends that information obtained in the survey be used to facilitate appropriate conclusions in studies for the establishment of regional and subregional centres in terms of resolution 13 30/ of the Fourth Conference and resolution 18 31/ of the Sixth Conference.

27 October 1973

12. Geographical names

The Conference,

Noting the report of the Second United Nations Conference on the Standardization of Geographical Names held at London in 1972 32/ and that of the United Nations Group of Experts on Geographical Names at its fifth session, held at United Nations Headquarters in March 1973, 33/

Further noting that the Third United Nations Conference on the Standardization of Geographical Names will be held at Athens, Greece, in 1977,

---

28/ Sixth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. VII.

29/ E/CONF.62/L.2 and Add.1.

30/ Fourth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. II.

31/ Sixth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. VII.

32/ E/CONF.61/3.

33/ ESA/RT/C/GN/3.

1. Recognizes the necessity of standardizing geographical names for both national and international use;

2. Urges all States members of the Economic Commission for Asia and the Far East that have not yet established a national geographical names authority to do so;

3. Recommends:

(a) That the National Names Authority in each country should start and/or continue compiling lists and national gazetteers of standardized names for national and international use, and that initial field work should, as far as possible, be done on standardized questionnaires;

(b) That the linguistic/geographical divisions representing Asia and the Far East, as listed below:

Arabic Division

Asia, South-west Division other than Arabic

Indian Division

Asia, South-east Division 34/

Asia, East Division

including all the countries belonging to it, should commence and continue regional meetings and should enable their experts to attend these meetings;

4. Strongly recommends the organization of a Pilot Training Course in Toponymy for four weeks in 1975 in the Netherlands, as provided for in the report of the United Nations Group of Experts on Geographical Names at its fifth session, 35/

5. Invites countries of the region to appoint representatives to attend the sixth session of the United Nations Group of Experts on Geographical Names.

27 October 1973

13. Thematic mapping

The Conference,

Noting with satisfaction the progress made by the member countries of the region in the preparation of thematic maps, and

---

34/ In the South Eastern Linguistic Division of Asia for which until now, Thailand acted as Division Representative, the Members of the Division present at this Conference unanimously elected Malaysia as the Division Representative. Malaysia will, therefore, be responsible for convening such regional meetings as and when necessary somewhere in Malaysia at which other members of the region will present their views in order to enable the regional representative to take a consolidated stand in the United Nations Group of Experts on Geographical Names.

35/ ESA/RT/C/GN/3, annex V, para. 2.

Noting, furthermore, the systematic surveys on land use, vegetation, geomorphology etc., undertaken by the Japanese earth scientists and cartographers,

1. Recommends that countries of the region may take advantage of the methods and technologies developed in Japan and apply them to the compilation of their various thematic mapping operations, at medium scale;

2. Invites the Government of Japan, through its Geographical Survey Institute, to make available to member countries of the region detailed information about thematic mapping methods and technology.

27 October 1973

14. Thematic maps and national atlases

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 36/ of the Fourth United Nations Regional Cartographic Conference for Asia and the Far East, resolution 13 37/ of the Fifth Conference and resolution 17 38/ of the Sixth Conference,

Further noting 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,

Recommends:

(a) The promotion of national atlases by each nation of its own territory and that each nation render technical assistance wherever needed, in co-operation with international scientific organizations, such as the International Cartographic Association (ICA), the International Geographical Union (IGU) etc.;

(b) The promotion of international co-operation in the field of atlas production in order to achieve a regional economic atlas for Asia and the Far East;

(c) That this international co-operation begin with the compilation of a population distribution map of Asia and the Far East, scale 1:5,000,000, to be executed by the Royal Thai Survey Department on the new six-sheet, rectangular format including latitude 10° South to 50° North and longitude 40° to 160° East;

36/ Fourth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. II.

37/ Fifth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. II.

38/ Sixth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. VII.

(d) That all nations in the region be invited to submit gratis to the Royal Thai Survey Department without delay appropriate source maps together with the newest and most detailed available population data;

(e) That the countries of the region seek financial assistance from the United Nations for this atlas project.

27 October 1973

15. Satellite geodesy

The Conference,

Noting the recent developments in satellite geodesy, the progress made in world-wide geodetic satellite programmes and the proven ease and capability of determining the co-ordinates of geodetic stations by the Doppler method of satellite observations,

1. Recommends that:

(a) The United Nations consider favourably the acceptance of a Unified World Geodetic Datum to which national datums may be referenced for the purpose of solving a number of world-wide problems, for example, navigation, seaward boundaries and coastal zone developments;

(b) Geodetic and mapping control be extended from these datums by modern ground and air survey methods supplemented by satellite observations;

(c) States Members of the United Nations and members of its specialized agencies, as well as the United Nations and its specialized agencies, encourage the continuation of the present Doppler satellite system and take action to ensure that the development and monitoring of geodetic and navigational satellite systems be continued and extended and that the resultant information be made available for all users;

2. Further recommends, recognizing that position determination by these techniques can be undertaken by small mobile and suitably equipped parties supported by local provision of transportation and other logistic support, that those countries and agencies that can do so render assistance to the developing nations in the form of satellite Doppler observations for geodetic positioning;

3. Urges that in the intervening period between this and the next cartographic conference for the region, the participating nations make a determined effort to apply geodetic satellite techniques as recommended in this resolution and as previously recommended in resolution 5 39/ of the Fifth United Nations Regional Cartographic Conference for Asia and the Far East and resolution 6 40/ of the Sixth Conference.

27 October 1973

39/ Fifth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, Chap. II.

40/ Sixth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. VII.

16. Levelling surveys

The Conference,

Noting that levelling surveys require relatively simple and inexpensive equipment and procedures,

Recognizing the desirability and the certain long-term benefits of integrating all survey data into homogeneous national systems,

1. Recommends that developing nations seek technical assistance, acquire equipment, develop the necessary expertise and undertake national levelling surveys based on good permanent marking and related to local mean sea-level determinations;

2. Urges that these national levelling surveys be completed as soon as practicable in order to provide control for mapping operations and thereafter repeated to appropriate standards of accuracy and at appropriate intervals for the purpose of providing data on crustal movements as recommended in resolution 7 41/ of the Sixth United Nations Regional Cartographic Conference for Asia and the Far East;

3. Further recommends that the countries from which technical assistance in levelling surveys is sought make every effort to provide this assistance as rapidly and freely as practicable.

27 October 1973

17. National seaward boundary limits

The Conference,

Recognizing the importance of providing the technical survey data for clearly delineating national seaward boundary limits,

Recommends that the countries of the region investigate the possibility of relating these data to a world geodetic datum.

27 October 1973

18. Financing of hydrographic assistance

The Conference,

Noting the provisions contained in resolution 23 42/ adopted by the Sixth United Nations Regional Cartographic Conference for Asia and the Far East,

---

41/ Ibid.

42/ Ibid.

Recognizing that hydrographic departments of developing countries within the region require strengthening,

Further recognizing that considerable hydrographic surveying work is necessary to update and modernize charting within the region,

Strongly urges that developing countries give urgent consideration to expanding their hydrographic capabilities, if necessary by applying for assistance which is available through the United Nations.

27 October 1973

19. Membership in the International Hydrographic Organization

The Conference,

Noting the importance of international standardization of nautical charts and allied publications,

Recognizing that this standardization can be achieved through the International Hydrographic Organization,

Recommends that maritime nations of the region seek membership in the International Hydrographic Organization. 43/

27 October 1973

20. Remote sensing

The Conference,

Recognizing that remote sensing, from either aircraft or satellite, as well as having a mapping potential, can be used for compilation of resources inventories and for control of the environment,

1. Notes that a combination of ground survey, aerial photography and remote sensing, associated with a multidisciplinary approach, should lead to optimum results;

2. Recommends that countries seeking to take advantage of new development establish procedures that will involve appropriate disciplines and that will co-ordinate remote sensing with other methods.

27 October 1973

43/ Correspondence should be addressed to the President of the Directing Committee, International Hydrographic Organization, Avenue President J. F. Kennedy, Monte-Carlo (Principality of Monaco).

21. Satellite imagery

The Conference,

Recognizing that remote sensing from satellites can provide a wide range of data and, in particular, has the capability for continuous monitoring of the environment,

1. Notes the possibilities for development in this technique and the need for further research into use of the data;

2. Recommends continuation and further development of remote sensing satellite programmes that will benefit the countries of the region.

27 October 1973

22. Topographic mapping

The Conference,

Recognizing that, whilst topographic mapping is an indispensable public service, not all developing countries have the facilities, finance or expertise to take advantage of new technological advances,

Recommends that:

(a) Countries having an established mapping capacity and experience continue to assist, through the United Nations, by providing technical experts and host facilities;

(b) The attention of policy-decision makers and planners should be directed to the need for basic topographic map coverage and the benefits that will accrue from the resultant ability to properly assess and manage the national resources of the country.

27 October 1973

23. Urban mapping

The Conference,

Noting the large increase in urban population in many areas,

Recognizing the critical need for suitable maps to aid the planning and development programmes for urban complexes by administrators, scientists, engineers, and other responsible officials,

Recommends that, over the next decade, cartographic activities of member countries should include programmes of large-scale urban mapping which combines the cadastre with existing land use to provide multipurpose maps suitable for a range of planning disciplines.

27 October 1973

24. Cadastral surveying and mapping

A

The Conference,

Confirming the frequently expressed need for an adequate system of land registration as a basis for economic and social development,

Noting the report of the Ad Hoc Group of Experts on Cadastral Surveying and Mapping, 44/ in which a number of general requirements are formulated relating to the establishment or improvement of land-registration systems (cadastres),

Recognizing that the application of these requirements in any particular country could be improved by studying the experience obtained elsewhere,

Confirming the conclusion of the Ad Hoc Group of Experts that action should be taken with respect to the following aspects:

(a) Establishment of a systematic collection of published and unpublished information on legal, administrative and technical aspects of cadastral systems,

(b) Promotion of a systematic and critical assessment of this information to provide possible answers on particular questions related to the establishment, improvement and/or maintenance of cadastral systems,

(c) Promotion of an adequate distribution of knowledge concerning (a) and (b) by special publications, the organization of seminars etc.,

1. Recommends that:

(a) An advisory panel be established to advise the United Nations on the initial action to be taken in respect of the conclusions of the Ad Hoc Group of Experts and to evaluate periodically whether further aspects should be added;

(b) This advisory panel, in particular, pay attention to effective co-ordination with existing or planned technical assistance activities related to cadastral systems;

2. Further recommends that Member States with adequate resources should assist the advisory panel and other Member States who request the United Nations for advice or assistance on cadastral matters.

B

The Conference,

Recognizing the potential capacity of land and the fact that it is the basis of all future development,

---

44/ E/CONF.62/L.1.

Recommends that:

(a) Cadastral surveying and land registration be given a high priority in the development of a country;

(b) A multipurpose cadastral system be adopted, backed by appropriate legislation and based on a sound but simple survey system.

27 October 1973

25. Aerial photography and photogrammetry

The Conference,

Noting recent operational trends in photogrammetry that have led to substantial improvements at all stages from aerial triangulation to map compilation, especially in developed countries,

Recommends that:

(a) Aerial triangulation be considered a practical means of obtaining model control and geodetic point positioning referenced to national geodetic control;

(b) Where suitable, super-wide angle photography be used for photogrammetric purposes;

(c) Developing countries consider the use of photomaps and orthophotomaps an interim substitute to conventional line maps in order to provide users with a working tool in less time and at lower cost.

27 October 1973

26. Co-operation in future United Nations cartographic conferences

The Conference,

Recalling resolution 4 45/ of the Sixth United Nations Regional Cartographic Conference for Asia and the Far East concerning co-operation in future United Nations cartographic conferences,

Acknowledging the efforts made by the participants attending the Conference to submit their documents to the United Nations in accordance with the paper titled "Documentation for the Conference", 46/

1. Recommends that:

(a) Governments should conform to the procedure and dates set for submission

---

45/ Sixth United Nations Regional Cartographic Conference for Asia and the Far East, vol. 1, Report of the Conference, chap. VII.

46/ E/CONF.62/INF.1.

of their technical papers so as to enable the United Nations to prepare and distribute these papers as official documents in the working languages of the Conference;

(b) Governments should exercise restraint in submitting lengthy and numerous documents;

2. Further recommends that, in the preparation of technical papers to be submitted, due consideration be given to the resolutions of previous conferences to ensure more effective functioning of future conferences and to stimulate useful discussion in furthering international co-operation in cartography.

27 October 1973

27. Vote of thanks

The Conference,

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

2. Further expresses its deep appreciation for the excellent work done by the Secretariat of the United Nations towards the functioning of this Conference with expediency and efficiency.

27 October 1973

Annex

LIST OF DOCUMENTS ISSUED FOR THE CONFERENCE

Series E/CONF.62/...

E/CONF.62/1	Provisional agenda
E/CONF.62/2	Rules of procedure
E/CONF.62/3	Draft report of the Conference

Series E/CONF.62/INF...

E/CONF.62/INF/1	Documentation for the Conference
E/CONF.62/INF/2 and Add.1	Advance information regarding general arrangements of interest to the participants

Series E/CONF.62/L...

E/CONF.62/L.1	Report of the meeting of the Ad Hoc Group of Experts on Cadastral surveying and mapping Item 9 (b) (United Nations Secretariat)
E/CONF.62/L.2	Report on the availability of training facilities to foreign trainees in surveying and mapping Items 9 and 12 (paper prepared by T. L. Tchang, United Nations Consultant)
E/CONF.62/L.2/Add.1	Australian awards to foreign trainees Items 9 and 12 (Australia)
E/CONF.62/L.3 and Add.1	Topographic mapping Item 9 (a) (Federal Republic of Germany)
E/CONF.62/L.4 and Corr.1	On the automatic preparation and revision of topographic maps Item 9 (a) (Federal Republic of Germany)
E/CONF.62/L.5	Report of the United Nations Group of Experts on Projection and Planning in Cartography for the Second United Nations Development Decade Items 7, 8, 9, 10, 11, 12, 13, 14 and 15 (United Nations Secretariat)

Series E/CONF.62/L...

E/CONF.62/L.6 and Add.1	A present day procedure of topographic map revision Item 9 (a) (Federal Republic of (Germany)
E/CONF.62/L.7	Planning of photogrammetric mapping systems Item 8 (Federal Republic of Germany)
E/CONF.62/L.8 and Corr.1 and Add.1 . .	On the cartographic configuration of photomaps Item 9 (Federal Republic of Germany)
E/CONF.62/L.9	Experiences with the production of photomaps 1:5,000 in Nordrhein, Westphalia Items 8 and 9 (Federal Republic of Germany)
E/CONF.62/L.10	Remote-sensing methods for environmental control Item 13 (Federal Republic of Germany)
E/CONF.62/L.11 and Add.1	Experience with automation in thematic mapping Item 11 (Federal Republic of Germany)
E/CONF.62/L.12	Estimation of the probability of slope disasters along national highways Item 13 (Japan)
E/CONF.62/L.13 and Rev.1	Distribution map by landforms, the 1970 population census of Japan Item 11 (Japan)
E/CONF.62/L.14	An approach to rationalized map reproduction process Item 9 (Japan)
E/CONF.62/L.15 and Corr.1	Cartographic works in Japan - the period 1970-1973 Item 6 (Japan)
E/CONF.62/L.16	Survey of ground subsidence Item 7 (Japan)
E/CONF.62/L.17	Technical co-operation by the geological survey of Japan Item 11 (Japan)

Series E/CONF.62/L...

E/CONF.62/L.18	Method of Cadastral survey in Japan - Orthophoto method Item 9 (b) (Japan)
E/CONF.62/L.19 and Corr.1	Land classification survey of national land survey Item 11 (Japan)
E/CONF.62/L.20	Design of urban land-use maps - case studies Item 9 (c) (Japan)
E/CONF.62/L.21	Training and certification of cartographic engineers Items 9, 10 and 11 (Japan)
E/CONF.62/L.22	Recent development of hydrographic survey instruments in Japan Item 12 (Japan)
E/CONF.62/L.23	Group training courses for hydrographic and physical oceanographic surveys by the Government of Japan Item 12 (Japan)
E/CONF.62/L.24	Preparation of the basic maps of the sea on various scales Item 12 (Japan)
E/CONF.62/L.25	Determination of the positions of off-lying islands by satellite geodesy Item 12 (Japan)
E/CONF.62/L.26	Compilation of the GEBCO plotting sheets by the Hydrographic Department of Japan Item 12 (Japan)
E/CONF.62/L.27	Hydrographic survey of sandwave areas Item 12 (Japan)
E/CONF.62/L.28	Crustal deformation in South Kanto District Item 7 (Japan)
E/CONF.62/L.29	1:50,000 water-use maps in Japan Item 11 (Japan)
E/CONF.62/L.30	Report on the national atlas project in Japan Item 11 (Japan)
E/CONF.62/L.31	Some remarks on the future role of geometric satellite geodesy Item 7 (Federal Republic of Germany)

Series E/CONF.62/L...

E/CONF.62/L.32	The desk-top programmable calculator and its application within the smaller organization, with particular reference to cadastral requirements Item 9 (b) (United Kingdom)
E/CONF.62/L.33	Some photographic aids to map production Item 9 (United Kingdom)
E/CONF.62/L.34	Depiction of multilevel complex structures on ordnance survey large-scale maps Item 9 (c) (United Kingdom)
E/CONF.62/L.35 and Add.1	Report on activities during 1970-1973 Item 6 (Australia)
E/CONF.62/L.36	Recent advances in gravimetry for physical geodesy in Australia Item 7 (Australia)
E/CONF.62/L.37	Geodetic activities in Australia to 1973 Item 7 (Australia)
E/CONF.62/L.38	Notes on airborne control surveys (1970-1973) Item 7 (Australia)
E/CONF.62/L.39	Some aspects of photogrammetry Item 8 (Australia)
E/CONF.62/L.40	Block adjustment in Australia (1973) Item 8 (Australia)
E/CONF.62/L.41	Large-scale mapping in New South Wales Item 9 (Australia)
E/CONF.62/L.42	Survey integration in Western Australia Item 9 (Australia)
E/CONF.62/L.43	Map compilation for 1:100,000 scale topographic series Item 9 (a) (Australia)
E/CONF.62/L.44	Application of techniques in automated cartography Item 10 (Australia)
E/CONF.62/L.45	A gazetter for the Australian 1:250,000 map series Item 15 (Australia)
E/CONF.62/L.46	Some features of Australia's National Atlas of Resources Item 11 (Australia)

Series E/CONF.62/L...

E/CONF.62/L.47	Basic survey of the coastal area - topographical map and land condition map of coastal area Item 13 (Japan)
E/CONF.62/L.48	Natural environmental maps in South and South-East Asia Items 11 and 13 (Japan)
E/CONF.62/L.49	A scheme for preparation of 1:25,000 land-use maps in Japan Item 11 (Japan)
E/CONF.62/L.50	United Kingdom report Item 6 (United Kingdom)
E/CONF.62/L.51	Automated production of high quality thematic maps and map series Item 11 (Israel)
E/CONF.62/L.52	Optimization of cadastral surveys Item 9 (b) (Israel)
E/CONF.62/L.53	National report of Israel for the years 1970-1973 Item 6 (Israel)
E/CONF.62/L.54	Marine boundaries and positions Item 12 (United States of America)
E/CONF.62/L.55	Ocean mapping, or who draws the isobaths for NOAA's bottom contours? Item 12 (United States of America)
E/CONF.62/L.56	The automation of large-scale coastal hydrography Item 12 (United States of America)
E/CONF.62/L.57	The progress of photogrammetry as a means of geodetic point positioning Item 8 (United States of America)
E/CONF.62/L.58	A single datum for Asia and the Far East Item 7 (United States of America)
E/CONF.62/L.59	A system for automated cartographic analysis and map production Item 9 (United States of America)
E/CONF.62/L.60	Autographic theme extraction system Item 14 (United States of America)

Series E/CONF.62/L...

E/CONF.62/L.61	Surveying the moon: photogrammetric geodesy from Apollo Items 7 and 8 (United States of America)
E/CONF.62/L.62	Progress report of cartographic activities 1970-1973 Item 6 (United States of America)
E/CONF.62/L.63	Mapping in Korea Item 6 (Republic of Korea)
E/CONF.62/L.64	The international chart, dwarf or giant? Item 12 (United Kingdom)
E/CONF.62/L.65	Urban mapping research Item 9 (c) (United States of America)
E/CONF.62/L.66	Cartographic activities in the Republic of Viet-Nam, 1970-1973 Item 6 (Republic of Viet-Nam)
E/CONF.62/L.67	The preparation of gazetteers of provincial geographical names in the Republic of Viet-Nam Item 15 (Republic of Viet-Nam)
E/CONF.62/L.68	Side-looking airborne radar survey Item 13 (Australia)
E/CONF.62/L.69	Cadastral surveying and mapping in Australia Item 9 (b) and (c) (Australia)
E/CONF.62/L.70	Photomapping at the Directorate of Overseas Surveys Item 9 (United Kingdom)
E/CONF.62/L.71	A brief report on the survey and mapping of Cyprus in the past three years Item 6 (Cyprus)
E/CONF.62/L.72	Orthophoto mapping - introduction of technique in India Item 9 (India)
E/CONF.62/L.73	The past and continuing role of the surveying service of the Royal Navy in Far Eastern and Asian waters since 1946 Item 12 (United Kingdom)
E/CONF.62/L.74	Autocarta - one consequence of radio navigation Item 12 (United Kingdom)

Series E/CONF.62/L...

E/CONF.62/L.75	The National Atlas of the United States of America: impact of binding Item 11 (United States of America)
E/CONF.62/L.76	Topography, geodesy and cartography in the USSR (1970-1972) Items 6, 7 and 9 (Union of Soviet Socialist Republics)
E/CONF.62/L.77	On the using of airborne radio distancer RDS for 1:50,000 - 1:100,000 map making and revision Item 9 (Union of Soviet Socialist Republics)
E/CONF.62/L.78	Radar survey Item 13 (Union of Soviet Socialist Republics)
E/CONF.62/L.79 and Add.1	Co-operative mapping as part of Australia's aid to Indonesia Item 9 (a) (Australia)
E/CONF.62/L.80 and Add.1	Some aspects of small-scale mapping in the Division of National Mapping (1970-1973) Item 10 (Australia)
E/CONF.62/L.81	Report on Malaysia Item 6 (Malaysia)
E/CONF.62/L.82	Withdrawn
E/CONF.62/L.83	Vegetation map preparation project for preservation of vegetation and plant and animal species Item 11 (Japan)
E/CONF.62/L.84	On a geomorphological survey map of the river basin indicating areas subject to flooding Item 11 (Japan)
E/CONF.62/L.85	Withdrawn
E/CONF.62/L.86	National report for Nepal Item 6 (Nepal)
E/CONF.62/L.87	Cartographic activities in the Republic of Singapore, 1970-1973 Item 6 (Singapore)

Series E/CONF.62/L...

E/CONF.62/L.88	Utilization of the 1:2,500,000 world map as thematical base map in cartography Item 11 (Hungary)
E/CONF.62/L.89	Cartactual - publication informing about changes of small-scale cartographic concern Item 10 (Hungary)
E/CONF.62/L.90	Philippine Cadastral Survey Program Item 9 (b) (Philippines)
E/CONF.62/L.91	Soil classification photo maps of Penaranda and Guimba areas - a research project Item 11 (Philippines)
E/CONF.62/L.92	Philippine Earth Resources Survey Program Item 14 (Philippines)
E/CONF.62/L.93	Parcellary mapping activities in support of the Land Reform Program Item 9 (Philippines)
E/CONF.62/L.94	The Philippine National Economic Atlas, scale 1:4,000,000 Item 11 (Philippines)
E/CONF.62/L.95	Tide and current predictions by electronic computer IBM S/360 E-30 Item 12 (Philippines)
E/CONF.62/L.96	Training of cartographers in Budapest University Item 6 (Hungary)
E/CONF.62/L.97	An account of the Thailand National Program of the Earth Resources Technology Satellite Item 14 (Thailand)
E/CONF.62/L.98	Report of cartographic activities in New Zealand 1970-1973 Item 6 (New Zealand)
E/CONF.62/L.99	Block adjustment of independent models for 1:50,000 mapping in Canada Item 8 (Canada)
E/CONF.62/L.100	Progress report on cartographic activities in Thailand Items 6, 9, 11 (Thailand)

Series E/CONF.62/L...

E/CONF.62/L.101	Cartographic activities in Canada Item 6 (Canada)
E/CONF.62/L.102	National report on cartographic activities in Indonesia (1971-1973) Item 6 (Indonesia)
E/CONF.62/L.103	Iranian national report Item 6 (Iran)
E/CONF.62/L.104	The progress of survey work in the Federal Republic of Germany since the 6th Regional Cartographic Conference Item 6 (Federal Republic of Germany)
E/CONF.62/L.105	Withdrawn
E/CONF.62/L.106	Withdrawn
E/CONF.62/L.107	Surveying-navigational research complex of "Lunokhod-1" and "Lunokhod-2" Items 7 and 8 (Union of Soviet Socialist Republics)
E/CONF.62/L.108	On the use of space photography for earth resources exploration Item 14 (Union of Soviet Socialist Republics)
E/CONF.62/L.109	Elaboration of the map of the recent vertical crustal movements at the scale 1:2,500,000 for Eastern Europe Item 7 (Union of Soviet Socialist Republics)
E/CONF.62/L.110	Progress report on cartographic activities in Philippines Item 6 (Philippines)
E/CONF.62/L.111	Report on cartographic activities in Finland Item 6 (Finland)
E/CONF.62/L.112	UNESCO activities in the field of cartography Item 6 UNESCO
E/CONF.62/L.113	Pan American Institute of Geography and History Item 6 (The Organization of American States)

Series E/CONF.62/L...

E/CONF.62/L.114	Bathymetric mapping of the Australian Continental Shelf Item 12 (Australia)
E/CONF.62/L.115	Report on cartographic activities in Lebanon - Item 6 (Lebanon)
E/CONF.62/L.116	Work between 1970 and 1973 Item 6 (France)
E/CONF.62/L.117	National report on cartographic activities since October 1970 Item 6 (Portugal)
E/CONF.62/L.118	Report on the preparation of maps in scale 1:500 for cities in Iran Item 9 (b) (Iran)
E/CONF.62/L.119 and Add.1	Cartographic activities in Saudi Arabia during 1970-1973 Item 6 (Saudi Arabia)
E/CONF.62/L.120	The role of the International Hydrographic Organization in fostering international co-operation in hydrography Item 12 (International Hydrographic Organization)
E/CONF.62/L.121	Report of the cartographic activities of the Institut géographique of Zaire, 1966 to third quarter of 1973 Item 6 (Zaire)
E/CONF.62/L.122	Report on activities aimed at the standardization of geographical names in Asia and the Far East Item 15 (Hungary)
E/CONF.62/L.123	Report - on special geocartographical works in Hungary in the period 1970-1973 Item 6 (Hungary)
E/CONF.62/L.124	Applications of remote sensing to pollution problems Item 13 (France)

Series E/CONF.62/L...

E/CONF.62/L.125	Aerial photography using long-distance focal length lenses Item 8 (France)
E/CONF.62/L.126	Report on cartographic activities in Switzerland Item 6 (Switzerland)

Series E/CONF.62/RES...

E/CONF.62/RES.1	Draft resolutions

كيفية الحصول على منشورات الامم المتحدة

يمكن الحصول على منشورات الامم المتحدة من المكتبات ودور التوزيع في جميع انحاء العالم . استعلم عنها من المكتبة التي تتعامل معها أو اكتب الى : الامم المتحدة ،قسم البيع في نيويورك او في جنيف .

如何购取联合国出版物

联合国出版物在全世界各地的书店和经售处均有发售。请向书店询问或写信到纽约或日内瓦的联合国销售组。

HOW TO OBTAIN UNITED NATIONS PUBLICATIONS

United Nations publications may be obtained from bookstores and distributors throughout the world. Consult your bookstore or write to: United Nations, Sales Section, New York or Geneva.

COMMENT SE PROCURER LES PUBLICATIONS DES NATIONS UNIES

Les publications des Nations Unies sont en vente dans les librairies et les agences dépositaires du monde entier Informez-vous auprès de votre libraire ou adressez-vous à : Nations Unies, Section des ventes, New York ou Genève.

КАК ПОЛУЧИТЬ ИЗДАНИЯ ОРГАНИЗАЦИИ ОБЪЕДИНЕННЫХ НАЦИЙ

Издания Организации Объединенных Наций можно купить в книжных магазинах и агентствах во всех районах мира. Наводите справки об изданиях в вашем книжном магазине или пишите по адресу: Организация Объединенных Наций, Секция по продаже изданий, Нью-Йорк или Женева.

COMO CONSEGUIR PUBLICACIONES DE LAS NACIONES UNIDAS

Las publicaciones de las Naciones Unidas están en venta en librerías y casas distribuidoras en todas partes del mundo. Consulte a su librero o diríjase a: Naciones Unidas, Sección de Ventas, Nueva York o Ginebra.

Litho in U. S. A.
08247—April 1974—2,750

Price: $U.S. 3.00
(or equivalent in other currencies)

United Nations publication
Sales No. E.74.I.7