



UNITED NATIONS ECONOMIC AND SOCIAL COMMISSION

FOR ASIA AND THE PACIFIC

AND

WORLD METEOROLOGICAL ORGANIZATION

REPORT OF THE TYPHOON COMMITTEE

ON ITS SIXTH SESSION

**Bangkok, Thailand
19 - 26 November 1973**

FOR PARTICIPANTS ONLY

WRD/TC.6/1
9 August 1973

ORIGINAL : ENGLISH

UNITED NATIONS ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth session
19-26 November 1973
Bangkok, Thailand

PROVISIONAL AGENDA

1. Opening of the session
2. Election of the chairman and vice-chairman
3. Adoption of the agenda
4. The Committee's activities during 1973:
 - (a) Meteorological component
 - (b) Hydrological component
 - (c) Community preparedness and disaster prevention
 - ✓ (d) Training and research
- ✓ 5. Programme for 1974
6. Request to UNDP for assistance in support of the Typhoon Committee
7. Community preparedness and disaster prevention
8. Co-ordination with WMO Tropical Cyclone Project and other regional projects
9. Amendments to the Statute of the Typhoon Committee
10. Date and place of the seventh session
11. Closure of the session

.

UNITED NATIONS ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth Session
19-26 November 1973
Bangkok, Thailand

ANNOTATED PROVISIONAL AGENDA

1. Opening of the session

The sixth session of the Typhoon Committee will be held at Sala Santitham, headquarters of the United Nations Economic Commission for Asia and the Far East in Bangkok, Thailand, from 19 to 26 November 1973.

2. Election of the chairman and vice-chairman

Rule 6 of the Rules of Procedure of the Typhoon Committee states: "The Committee shall, at its first meeting of the year, elect from its representatives a chairman and vice-chairman who shall hold office until their successors are elected. They shall be eligible for re-election".

3. Adoption of the agenda

The provisional agenda has been prepared by ECAFE and WMO, due consideration being given to the advice of the Typhoon Committee secretariat and the views of participating Governments. Representatives of participating Governments may propose additions to or changes in the agenda if they so desire.

4. Committee's activities during 1973

A tentative action programme was endorsed by the Committee at its first session in December 1968. The activities of the Committee and its secretariat since then were reviewed annually at subsequent sessions. A similar review covering the activities undertaken in 1973 will be made under this item on the basis of a report prepared by the secretariat (WRD/TC.6/4).

The activities of the Committee will be reviewed in relation to the four components of the action programme, namely: (1) meteorological component; (2) hydrological component; (3) community preparedness and disaster prevention; and (4) training and research. The Committee will thus be in a position to assess the progress made since its fifth session. Representatives may wish to comment on the activities undertaken in 1973, offer suggestions for accelerating those not completed, and draw attention to those items calling for priority action. Representatives may report on the establishment in their countries during 1973 of any relevant facilities not covered by the report.

5. Programme for 1974

While the action programme approved at the first session continues to provide general guidance for future activities, the Committee may wish to concentrate on specific items of work to be undertaken during 1974. Under agenda item 6, the Committee will consider a revised draft request to UNDP for additional financial assistance, which includes a proposed work plan covering the period 1974-76. Based on this plan, a tentative programme of work for 1974 is presented for the Committee's consideration in document WRD/TC.6/5.

6. Request to UNDP for assistance in support of the Typhoon Committee

At its fifth session, the Committee considered a draft request to UNDP for assistance in support of the typhoon programme. In accordance with the Committee's decision, the request was revised by the TCS and circulated to the Directors of the Meteorological and Hydrological Services of member countries for their concurrence prior to submission to UNDP. Replies were received from five members supporting the revised request. During subsequent consultations between WMO and UNDP concerning the request, the UNDP made several stipulations calling for further revision of the request. It is

/proposed

proposed to circulate the revised version incorporating the amendments required by the UNDP to member countries before the Committee meets. The Committee will consider the latest developments and take such further action as is necessary.

7. Community preparedness and disaster prevention

At its fifth session, the Committee supported a proposal for a Joint LRCS/WMO/ECAFE Mission on Community Preparedness and Disaster Prevention to visit three member countries (Hong Kong, the Republic of Korea and Thailand), with the object of strengthening national co-ordination of community preparedness and disaster prevention measures in those countries. The report of the mission mounted in March-April 1973 in response to this decision (WRD/TC.6/7) will be submitted for the consideration of the Committee. Representatives of the three countries visited by the mission will be invited to make statements on the action taken to follow up the recommendations agreed upon during the visit of the mission.

Proposals will be submitted to the session for a continuation of the activities initiated by the joint mission. Further details of these proposals are contained in document WRD/TC.6/8.

8. Co-ordination with the WMO Tropical Cyclone Project and other regional programmes

There have been a number of developments in the WMO Tropical Cyclone Project and its associated regional programmes since the last session of the Committee. Progress has been made in the execution of the plan of action and the RAI Tropical Cyclone Committee for the South-West Indian Ocean held its first session in May 1973. The WMO/ECAFE Panel on Tropical Cyclones covering the Bay of Bengal and Arabian Sea areas is scheduled to hold its inaugural session at Bangkok immediately after the sixth session of the Typhoon Committee.

The document prepared for the sixth session (WRD/TC.6/9) contains further information on the foregoing activities. In the light of these developments, the Committee may wish to review the effectiveness of present arrangements for the co-ordination of related activities.

9. Amendments to the Statute of the Typhoon Committee

The fifth session of the Typhoon Committee requested ECAFE and WMO to submit to member Governments several proposed amendments to the Committee's Statute for comment and for eventual adoption in accordance with Article 11 of its Statute. The general intent of the proposed amendments is to widen the scope of the Committee's activities in the promotion of community preparedness and disaster prevention, to permit wider participation by interested organizations and to remove obsolete provisions.

The proposed amendments have been submitted to member Governments and it is expected that they will make their decisions known before the Committee meets.

10. Date and place of the seventh session

Rule 1 of the Rules of Procedure of the Committee states: "The Committee shall hold at least one session annually. The venues and dates of its sessions shall be decided by the Committee".

FOR PARTICIPANTS ONLY

WRD/TC.6/3

28 August 1973

ORIGINAL : ENGLISH

ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST

WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth Session
19-26 November 1973
Bangkok, Thailand

NOTES FOR INFORMATION OF PARTICIPANTS

Schedule of meetings

1. The sixth session of the Typhoon Committee will be opened at 10:00 hours on Monday, 19 November 1973, in the Committee Room 4, on the first floor of Sala Santitham, headquarters of The Economic Commission for Asia and the Far East, where all subsequent sessions will also be held.
2. Subject to confirmation by the meeting, the daily schedule, except for the opening session, will be as follows:

Monday through Friday	0930 to 1230 hours
	1430 to 1700 hours
Saturday	0930 to 1300 hours

Registration

3. A registration desk will be located outside the committee room. Participants are requested to be at the lobby outside the committee room between 0900 and 0945 hours on the opening day, in order to allow time for registration.

/Badges

Badges

4. On obtaining their identification badges after registration, participants are requested to wear them at all meetings and official functions.

OFFICERS CONCERNED WITH THE MEETING

5. The substantive Division concerned with the meeting is the Division of Natural Resources. Mr. Alan D. Benham is the Chief; his office is located in Room No. 601, sixth floor, R.S. Hotel, Telephone No. 811394.

6. The Division of Administration is responsible for the physical arrangements for the meetings. Mr. Joseph F. El Haj is the Chief of Division (Room No. 250), first floor, Sala Santitham, telephone No. 813544, extension 294.

RECEPTION ON ARRIVAL

7. Provided that advance notice is given, participants will be met on arrival at the Bangkok Airport by a staff member of ECAFE, who will assist them in going through the customs and immigration formalities. Arrangements will also be made for transportation to their respective hotels.

8. To facilitate reservation of hotel accommodation and to arrange for reception on arrival, participants are requested to furnish the following particulars at least seven days in advance to Mr. Joseph F. El Haj, Chief, Division of Administration, ECAFE, Sala Santitham, Bangkok.

(Cable Address: ECAFE, BANGKOK):-

/(a) date and time of

- (a) date and time of arrival,
- (b) airline and flight number,
- (c) hotel accommodation requirements,
- (d) whether entry visa required on arrival.

HOTEL ACCOMMODATION

9. Accommodation will be reserved at the request of participants at the Majestic Hotel, Royal Hotel, Thai Hotel, R.S. Hotel or Viengtai Hotel, which are located close to Sala Santitham.

Tariffs of room rents at these hotels are furnished below:-

Majestic Hotel: All rooms with air-conditioning

Rates per day:	Single	Bht 120.00 (net)
	Double	Bht 160.00 (net)

Royal Hotel: All rooms with air-conditioning

Rates per day:	Single	Bht 120.00 (net)
	Double	Bht 160.00 (net)

Thai Hotel: All rooms with air-conditioning

Rates per day:	Single	Bht 120.00 (net)
	Double	Bht 160.00 (net)

R.S. Hotel: All rooms with air-conditioning

Rates per day:	Single	Bht 120 + 10%
	Double	Bht 190 + 10%

Viengtai Hotel: All rooms with air-conditioning

Rates per day:	Single	Bht 100.00 (net)
	Double	Bht 140.00 (net)

/Charges for all

Charges for all meals, including breakfast, will be extra and may amount to about Baht 100.00 per day. Room rents and meal charges are subject to a 10 per cent service charge. The hotel room rents are subject to alteration without prior notice.

IMMIGRATION REQUIREMENTS

10. Participants are required to possess a valid passport and an entry visa for Thailand, obtainable at any Thai diplomatic or consular mission. Arrangements can be made to issue visas on arrival at the airport to those who come from countries where Thailand has no mission. In such cases, particulars as to name, nationality, passport number, and nature of passport (namely, diplomatic, special, official or ordinary) should be furnished at least seven days in advance of the arrival date.

HEALTH REQUIREMENTS

11. Participants are required to obtain a certificate of vaccination against small-pox and inoculation against cholera at least ten days before their departure from their respective countries. They are, however, advised to consult travel agents in their own countries at least two weeks in advance of their departure, in order to obtain up-to-date information on these requirements.

LOCAL TRANSPORTATION

12. Transportation will be provided by ECAFE to participants between the hotels for attending the meetings and for social functions. ECAFE transport will call for them at their hotels on the opening of the meeting

/between 0845 and

between 0845 and 0855 hours, and half an hour in advance of the meeting time on other days. For other private transportation requirements, taxis are available at the rates of Bht 3.00 for the first kilometre and Bht 1.00 for each additional kilometre thereafter. If taxi meters are not used, it is advisable to fix the fare beforehand.

FOREIGN EXCHANGE

13. Participants may bring with them pound sterling or US dollar traveller's cheques or bank drafts, which can be exchanged for Thai currency at the prevailing bank rates. The exchange rates, which fluctuate from time to time, are approximately as follows:

US\$ 1.00 = Bht 20.15

£ 1.00 = Bht 50.00

Exchange facilities are available at the hotels as well as at the Sala Santitham Branch of the Siam Commercial Bank Ltd., which is open from 0900 to 1200 hours and 1300 to 1500 hours from Monday through Friday, except on official holidays.

WEATHER

14. The climate of Bangkok during November is usually humid and warm with occasional showers. A daily mean temperature of about 26.9°C (80.4°F) can be expected. The average daily maximum will be about 31°C (87°F), the average daily minimum 23°C (73°F). The mean monthly rainfall is 40 mm (1.9 inches).

/COMMUNICATIONS

COMMUNICATIONS

15. Mail intended for participants should be addressed as follows:-

Mr.
c/o Natural Resources Division
ECAFE Secretariat
Sala Santitham
Bangkok-2, Thailand

Cable address: ECAFE BANGKOK.

POSTAL FACILITIES

16. A post office is located on the ground floor of Sala Santitham. Its working hours are from 0830 to 1630 hours (without lunch break) from Monday through Friday, and 0900 to 1100 hours on Saturday, except on official holidays.

FIRST-AID FACILITIES

17. The ECAFE first-aid room is located in Room No. 205 on the first floor of the main building of Sala Santitham. The nurse, Miss Surabhi Kandranakamala, can be contacted by telephone No. 813544, extension 293.

LUNCH AND REFRESHMENTS

18. Tea, coffee, soft drinks and other light refreshments are available in the Delegates Lounge at Sala Santitham. The ECAFE Cafeteria may be used for refreshments and lunch. It is open from 0900 to 1500 hours Monday through Friday, except on official holidays and is located in the wooden building behind the main building of Sala Santitham.

/WORKING LANGUAGE

WORKING LANGUAGE

19. The working languages of the meeting will be English and French.

DOCUMENTS

20. Some of the documents for the meeting will be supplied to participants in advance. Others will be distributed as they are issued during the meeting. In view of the limited number of copies available, it will be appreciated if participants bring with them the sets of documents supplied in advance.

LIBRARY FACILITIES

21. The facilities of the ECAFE library are available to participants. Publications can be consulted in the library but may not be taken out of Sala Santitham. The Library is located in the Assembly Hall Area. The Librarian, Miss Kathleen Badger, can be reached by telephone No. 813544, extension 201.

WORKING HOURS OF THE ECAFE SECRETARIAT

22. The working hours of the ECAFE secretariat are from 0730 to 1545 hours with a break of 45 minutes for lunch at midday - Monday through Friday. The servicing staff connected with the conference will, however, be available during meeting hours.

MICROPHONES

23. Sound equipment is provided in the Conference Room. All microphones on the table are controlled by the operator at the control desk. Before making speeches, participants are requested to push the button on their microphones until the red signal light glows.

/AIRLINES

AIRLINES

24. As a number of international airlines operate regular services to Bangkok, participants should have no difficulty in booking their return air passages soon after arrival. They are advised to make firm bookings well in advance whenever possible.

UNITED NATIONS
ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST
AND
WORLD METEOROLOGICAL ORGANIZATION
SIXTH SESSION OF THE TYPHOON COMMITTEE
19-26 November 1973
Bangkok, Thailand

Address replies to:

Mr. Joseph F. El Haj
Chief
Division of Administration
ECAFE, Sala Santitham
Bangkok-2, Thailand

Cable address:

ECAFE BANGKOK

ATTENDANCE INFORMATION
(Please type or print)

Copies of this form should be completed by or on behalf of each participant who will attend the sixth session of the Typhoon Committee and returned promptly to the above address.

1. NAME _____
(As it should appear in official listings)
2. TITLE OF PRESENT OFFICIAL POSITION _____
(In home country or official duty station)
3. PERMANENT MAILING ADDRESS _____
4. COUNTRY/ORGANIZATION REPRESENTED _____
- /5. WILL ATTEND

5. WILL ATTEND THE WORKING GROUP SESSION AS:

REPRESENTATIVE _____

ALTERNATE _____

ADVISER _____

OTHER _____

6. ACCOMPANIED BY FOLLOWING MEMBERS OF FAMILY

<u>Name</u>	<u>Relationship</u>	<u>Age if under 18</u>
_____	_____	_____
_____	_____	_____

7. DATE OF ARRIVAL IN BANGKOK, CARRIER AND FLIGHT NUMBER:

8. PLEASE RESERVE LIVING ACCOMMODATION IN BANGKOK AS INDICATED BELOW:

(All rooms and suites will be assigned according to information furnished herewith and on a first-come first-served basis)

ROOMS: Single _____ Double _____

SUITES: _____

NAME OF HOTEL: _____

CHECK-IN DATE: _____

CHECK-OUT DATE: _____

Note: It is essential that any change in plans, i.e., arrival date, accommodation required, etc., be communicated to Mr. Joseph F. El Haj, Chief, Division of Administration, ECAFE, at the address shown above. Rooms not occupied in accordance with latest advice to him will be held 24 hours at participant's expense and then released.

/9. IF MAKING OWN

9. IF MAKING OWN LIVING ARRANGEMENTS IN BANGKOK, PLEASE INDICATE ADDRESS IN BANGKOK AND DATES OF ARRIVAL AND DEPARTURE:

19-
8-
(Date)

(To be signed by participant)

FOR PARTICIPANTS ONLY

WRD/TC.6/4
10 October 1973

ORIGINAL : ENGLISH

UNITED NATIONS ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST

AND

WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee

Sixth session

19-26 November 1973

Bangkok

THE COMMITTEE'S ACTIVITIES DURING 1973

(Item 4 of the provisional agenda)

Preceded by a brief account of the fifth session

Note by the Typhoon Committee secretariat

Contents

	Paragraphs	Page
I. Fifth session of the Typhoon Committee	1-7	3
II. Activities during 1973	8-89	4
A. Meteorological component	13-45	6
1. Status of meteorological observing and telecommuni- cation systems	13-15	6
2. Other meteorological activities	16-30	6
3. Action on decisions of the fifth session	31-44	9
4. Further action proposed	45	13
B. Hydrological component	46-68	13
1. General activities	46-66	13
2. Action on decisions of the fifth session	67	17
3. Further action proposed	68	18
C. Community preparedness and disaster prevention	69-77	18
1. General activities	69-75	18
2. Action on decisions of the fifth session	76	19
3. Further action proposed	77	20
D. Training and research	78-89	20
1. Training of personnel	78-80	20
2. Co-ordination of research activities	81-85	20
3. Action on decisions of the fifth session	86-88	20
4. Further action proposed	89	20

Annexes

I. WW Global Observing System - Upper-air stations	20
II. WW Global Observing System - Other facilities not yet implemented	20
III. WW Global Telecommunication System (GTS)	20
IV. Priorities established by the fifth session of the Typhoon Committee	20

I. FIFTH SESSION OF THE TYPHOON COMMITTEE

1. The fifth session of the Typhoon Committee was held at Bangkok from 15 to 21 November 1972. The meeting was attended by representatives of all seven member countries. Representatives of Australia, France, the Federal Republic of Germany, the Union of Soviet Socialist Republics (USSR) and the United States of America attended as observers. A representative of the United Nations Development Programme (UNDP) and observers from the United Nations Disaster Relief Office (UNDRO), the International Civil Aviation Organization (ICAO), the International Telecommunication Union (ITU), the League of Red Cross Societies (LRCS) and the Committee for Co-ordination of Investigations of the Lower Mekong Basin were also present.

2. The Committee reviewed the progress that had been made since its last session, and took stock of the current state of implementation of the meteorological, telecommunication, hydrological and other facilities required for an efficient system for the mitigation of typhoon damage. A revised priority list of observing and telecommunication facilities still required in the typhoon area was drawn up, and the programme of work for 1973 was agreed upon.

3. The Committee reviewed the bilateral assistance received during 1972 and welcomed fresh offers of assistance in support of the typhoon programme. It recorded its gratitude to the USSR for continuing and expanding the valuable aid by operation of Soviet research vessels in the typhoon areas. The Government of Japan's decision to donate equipment for the implementation of a pilot flood forecasting system in the Philippines and its offer of assistance in organizing training courses on flood forecasting in 1973 were noted with appreciation. The Committee also expressed its thanks to the Government of Australia for providing telecommunication equipment to the Philippines and to Thailand.

4. Preparation of a revised draft request to UNDP for further technical support to the Typhoon Committee was one of the major topics discussed. The Committee approved the guidelines for revision of the draft request, as recommended by a working group set up during the session and in the light of information presented by the UNDP representative. The Typhoon Committee secretariat (TCS) was requested to modify the request accordingly and to take necessary steps for its early submission.

5. Another important topic discussed by the Committee was the steps to be taken to follow up the survey of disaster-preparedness planning, carried out in late 1971 by a consultant obtained through LRCS. A proposal was approved for a joint LRCS/WMO/ECAFE mission to selected countries with the objective of improving co-ordination between the national agencies concerned and the preparation of an agreed programme to improve disaster-prevention activities.

6. Reference was made to the proposed transfer to the Pacific of Project Stormfury. The Committee was informed by the United States representative that, owing to a shortage of instrumented aircraft and to additional commitments to the WMO/GARP Atlantic tropical experiment, it was unlikely that the transfer could take place in 1973 or 1974. The representative of the Philippines reported that his Government had recently approved establishment of a national project for typhoon moderation and flood-control research.

7. The Committee was informed of a survey conducted by the ECAFE secretariat on typhoon and flood damage. The study revealed that 22 countries of the ECAFE region had sustained damage amounting to US\$9,885 million during the first United Nations Development Decade (1961-1970), of which US\$6,710 million related to the seven countries in the typhoon zone of the western Pacific.

II. ACTIVITIES DURING 1973

8. The twenty-ninth session of ECAFE, held at Tokyo in April 1973, considered the report of the Typhoon Committee. The Commission expressed appreciation of the progress made by the Typhoon Committee in the improvement of the meteorological and hydrological facilities and, by extension, of its activities in the realm of community preparedness and disaster prevention. It also supported the request to be submitted to UNDP for technical support to the regional typhoon programme.

9. In accordance with the decision of the fifth session of the Committee, a revised draft request to UNDP for assistance was prepared by TCS. After consultations with the WMO and ECAFE secretariats, the draft request was distributed to the member countries. Replies were received from five members, indicating their concurrence. It was then submitted to UNDP headquarters,

/which subsequently

which subsequently informed WMO of its willingness to consider a proposal, subject to the draft project document being further revised along certain specified lines. The project document was accordingly revised for re-submission to member countries and to UNDP. The subject will be discussed under agenda item 6 at the sixth session, on the basis of the latest developments. A separate document (WRD/TC.6/6) provides relevant background information.

10. Since the fifth session TCS experts made the following visits to member countries:

(a) Mr. Sen : Tokyo, Seoul, 6-24 March; Bangkok 27-29 June; Bangkok, 15-27 July; Bangkok, Hong Kong, 13-23 August 1973.

(b) Mr. Tang : Phnom-Penh, 23-27 November; Seoul, Tokyo, Hong Kong, 13 July - 9 August; Bangkok, Vientiane, 19-30 August 1973.

(c) Mr. Hamamori : Bangkok, 14-21 March; Seoul, Tokyo, 9-26 May; Bangkok, Vientiane, 26 August - 4 September 1973.

11. The Chief of TCS attended the second meeting of the Association for Science Co-operation in Asia (ASCA), at Tokyo in March, and the WMO/ECAFE Conference on the "Role of meteorological services in the economic development of Asia and the southwest Pacific" at Bangkok in August 1973. At the latter conference, he presented a background paper on the application of meteorology to mitigation of natural disasters. Participants from most of the Typhoon Committee countries attended.

12. Details of the progress made or action taken since the fifth session under each component of the action programme are reported in the following sections. Points on which the Committee may wish to consider further action are listed at the end of each of the sections.

/A.

A. METEOROLOGICAL COMPONENT

1. Status of meteorological observing
and telecommunication systems

13. As at its previous sessions, the Committee will examine the degree to which the meteorological and telecommunication facilities essential to an efficient typhoon warning service have been implemented in the member countries. The review will be based essentially on facilities forming part of the World Weather Watch (WWW) and with reference to the priorities established at the fifth session.

14. The information presented in annexes I-IV is intended to assist the Committee in reviewing this part of the programme. It consists mainly of lists of those facilities which are not yet in operation, together with brief remarks on the outlook for their implementation over the next few years. Information relating to facilities forming part of WWW has been summarized in annexes I-III.

15. Annex IV briefly shows the state of implementation and further plans for those facilities included in the latest priority list established by the Committee. It will be noted that progress is slow in some cases. The Committee may wish to give further attention to means of speeding up action where appropriate. Notification at the session of any correction, addition or changes will be appreciated.

2. Other meteorological activities

16. Further developments since the fifth session regarding radiosonde/radiowind (RS/RW), radar and APT stations are reported below, in paragraphs 17-19.

17. The RS/RW station at Vientiane in Laos, which was installed in October 1972 under the WMO Voluntary Assistance Programme (VAP), commenced regular observation from February 1973. The data are being transmitted by SSB communication to Bangkok RTH for further dissemination through regional circuits. Understanding that RS/RW data of Vientiane had been received at Manila and Hong Kong only on very few occasions till June 1973, TCS requested the Meteorological Services of Laos and Thailand to examine the matter and to take such action as appropriate.

18. Following suspension of RS/RW observations at Laoag (Philippines) in November 1971 because of a defective power generator, the station was connected with commercial power-supply and observations recommenced in November 1972. A building for the radiowind station at Puerto Princessa was constructed in April 1973.

19. The RS/RW stations in the Philippines (Laoag, Cebu and Legaspi) have recorded only a limited number of observations during 1973. Lack of hydrogen generators and spare parts caused periodical suspension of the RS/RW observations. However, the Weather Bureau was expecting a fresh supply of hydrogen generators, cylinders and spare parts and it was hoped that the situation would improve in the near future.

20. In view of the continuing difficulties experienced in regular operation of the RS/RW stations in the Philippines, TCS made a review of the current situation in consultation with the Weather Bureau officials. TCS reiterated its earlier suggestion that efforts be concentrated at fewer RS/RW stations, to ensure regular observations. Considering the availability of RS/RW observations from Clark Air Base (near Manila), it was suggested that regular observations be ensured at Laoag and Cebu so as to provide a minimum upper-air network for the Philippines and that the other upper-air stations be operated when sufficient facilities became available. The suggestion was accepted by the Weather Bureau in principle and appropriate action was initiated.

21. Japan Meteorological Agency began rawindsonde observations (00 and 12Z) from 1 January and rawind observations (06 and 18Z) from 1 March 1973, at Naha.

22. Three new 10-cm radars installed at Cebu, Daet and Baguio (Philippines) have been brought into regular operation - Cebu and Daet in late 1972 and Baguio in May 1973. A new 10-cm radar had already been despatched to Basco, where site selection and road construction were completed and a new building was being planned. The radar at Basco, which was included in the priority list established by the Typhoon Committee, is scheduled to be installed in 1974. The existing 10-cm radar at Virac has recently been repaired, while repairs to the radar at Guian will be undertaken on receipt of additional spare parts. The 5.6-cm radar at Manila continued to be operational.

23. In view of the large increase in the number of radar and other electronics equipment, the Philippine Weather Bureau has planned to establish an electronics workshop to ensure proper maintenance and repairs of the equipment. TCS was requested to assist in the planning and in the formulation of the maintenance procedures.

24. The APT equipment at Vientiane, which was procured through bilateral assistance from France, was expected to be installed by October 1973. Information was received from the Meteorological Service of the Khmer Republic that the United States had offered to provide assistance for setting up an APT station at Phnom-Penh.

25. The satellite NOAA-2 carrying the new APT system was launched by the United States towards the end of 1972. The need for modifying the existing APT receivers for reception of cloud photographs from NOAA-2 during day and night was notified to the member countries. The Meteorological Service of the Republic of Korea procured a new set of APT receivers at Seoul for reception of NOAA-2 broadcasts. At Bangkok, the APT receiver was modified with necessary kit provided by the United States (NOAA). A new ground equipment which could receive High Resolution Picture Transmission (HRPT) from NOAA type satellite is being manufactured in Japan and should be in operation in 1974.

26. TCS completed a survey of the meteorological telecommunication facilities in the Philippines with reference to (i) national data collection at Manila and (ii) dissemination of typhoon warnings. A detailed report on this survey with recommendations for improvement was sent to the Director of the Philippine Weather Bureau for necessary action. Copies of this report were also sent to the directors of the other meteorological services for

information as well as for facility of similar examination where appropriate. The survey revealed that there was some noticeable improvement in the national data collection at Manila following installation of some of the equipment received through Australian aid, and that further improvement could be expected in the near future.

27. As regards strengthening of Bangkok RTH, equipment worth US\$80,000 arranged through VAP(F) was received at Bangkok. A WMO expert was assigned to Bangkok for a period of three months from July 1973, for installation of

/the VAP(F)

VAP 22,000 from France. for Thailand. RTH.

the VAP(F) equipment. As reported at the fifth session, another consignment of telecommunication equipment worth US\$80,000^{40,000} was obtained through bilateral aid from Australia and had already been installed in 1972. Further aid in the form of telecommunication equipment, mainly for facsimile transmission and reception, is expected in 1974 from the Federal Republic of Germany. The revised VAP request which included the remaining equipment required for strengthening of the RTH was under consideration of WMO. ^{100,000}

28. The Bangkok-Kuala Lumpur point-to-point circuit commenced operation on 1 April 1973. As regards establishment of the Bangkok-Saigon circuit, the Meteorological Department at Bangkok was awaiting the concurrence of Saigon.

29. In pursuance of a request from the Director of the Meteorological Service of Laos, TCS explored the possibility of procuring SSB equipment and spare parts through bilateral assistance from Japan. Following discussions with the Japanese officials, Laos was advised to submit a formal request for assistance to the Government of Japan. It is understood that such a request has recently been submitted by Laos through the local Japanese Embassy.

30. The Telecommunication and Electronics expert of the TCS visited Phnom-Penh soon after the fifth session and made a survey of the equipment currently in use by the meteorological and hydrological services of the Khmer Republic and the requirements of additional equipment. On the basis of these discussions, the requirement of equipment at Phnom-Penh for establishing a Phnom-Penh-Bangkok point-to-point circuit was estimated and included in the draft request to UNDP.

3. Action on decisions of the fifth session

(a) Typhoon reconnaissance flights (paragraphs 8, 18 and 37)^{1/}

31. The fifth session of the Typhoon Committee recorded its appreciation of the contribution made to its activities by satellite observations and typhoon reconnaissance flights carried out by the United States. The fact was conveyed to the Permanent Representative of that country with WMO, who was asked by WMO whether any indication could be given regarding the probable

/continuation

1/ This and subsequent references to paragraphs relate to the report of the Committee on its fifth session (E/CN.11/1064).

For work
T.C. obs.

< 30 kts
< 250 NH

continuation of the typhoon reconnaissance flights in and after 1974. It was replied that, at the sixth session of the Typhoon Committee, the United States delegation would present some details of its Governments plans in that regard.

32. Hong Kong reported that reconnaissance a flight had been made into Typhoon Dot in July 1973 and that gales associated with the storm 100 mi south of Hong Kong had been recorded. The observed wind had been transmitted as AIREP observation over the meteorological telecommunication circuits. It was understood that Hong Kong proposed to make more reconnaissance flights into future typhoons.

(b) Ocean weather ships in the southwest Pacific
(paragraphs 10, 13-15)

33. Soon after the fifth session, the USSR authorities informed WMO that USSR weather ships would be on station at 15°N and 135°E from February to December 1973 and that the observational programme would continue, as before, to include daily eight surface synoptic observations and two upper-air rawindsonde observations. WMO requested Japan to extend its co-operation in the free reception of observations and appropriate port facilities and notified the directors of meteorological services of those arrangements. TCS also requested member countries to alert the forecast centres so that reports received from the Soviet weather ships would be fully utilized for typhoon warning purposes. A report obtained from Hong Kong for the period ~~May-June~~ ^{JULY} 1973 showed that data from those ships were received there through Tokyo on most of the days.

34. The Japanese ocean weather ship "Keifu Maru" recorded observations at 20°N 130°E during selected periods, viz: April-May and ~~July-September~~ ^{Aug and Sept.} 1973.

(c) Bangkok-Vientiane point-to-point link (paragraph 20)

35. Further efforts have been made to complete this project for which the USSR provided the major items of equipment under VAP. In mid-1973 information was received from Laos that the antennae required for Vientiane had been provided by France as bilateral aid. At the time of preparing this note, different ways in which the services of an expert might be obtained to complete the installation of the USSR equipment are being studied in the WMO secretariat. The Telecommunication and Electronics expert of TCS gathered from his recent visit to

/Vientiane

USSR expert will arrive at Vientiane at end of 1973 for 3 months (WMO)

Vientiane that Laos had procured four transmitters on loan from France which could also be used for operation of the Vientiane-Bangkok circuit. It is hoped that it will be possible to give more definite information at the session.

(d) Manila-Tokyo point-to-point link (paragraph 21)

36. Following the recommendation of RA II Working Group on Telecommunications to replace the former Manila-Bangkok point-to-point circuit by a new link from Manila to Tokyo, the meteorological services of the Philippines and Japan agreed to establish this. The third session of RA V Working Group on Telecommunications, held in June-July 1973, also agreed that the circuit would adequately meet requirements. Subsequently, TCS was informed that the Japan meteorological agency had proposed to establish a Manila-Tokyo 75 baud circuit by October 1974 and that test operations would commence in April 1974. Philippine Weather Bureau also expressed their readiness for operation of the circuit as proposed.

(e) Priorities for the implementation of observing and telecommunication facilities (paragraphs 25, 26 and 27)

37. The revised priority list has been distributed by WMO to all Members of WMO. In forwarding the list, WMO expressed the hope that other countries might find it possible to assist the Typhoon Committee countries in their efforts to speed up full implementation of the adopted programme.

38. TCS has maintained close contacts with countries, by both correspondence and visits, with a view to expediting implementation of the recommended facilities. Where bilateral or VAP assistance was offered or there was a possibility of fresh assistance to be explored, representatives of the prospective donor countries or the WMO secretariat were consulted, and the receiving country advised on further action.

(f) Exchange of radar fix messages (paragraph 29 and 30)

39. TCS suggested that systematic records of outgoing and incoming radar fix messages be maintained in appropriate form to permit evaluation of the system of exchanges, as was done last year, and countries were requested to communicate findings to TCS and to present any additional information to the sixth session of the Committee. The need for exchanging radar fix messages by point-to-point communication circuits instead of through synoptic broadcast was also emphasized.

40. Detailed specifications of the radars in operation in the typhoon area were collected in response to a questionnaire sent to the meteorological services, and copies of their replies were circulated among the countries.

(g) Observations from mobile ships (paragraphs 32)

41. At the previous session it was reported that WMO had approached member countries with suggestions for improvement of the arrangements for collection and exchange of ship observations and had requested to be notified of any special difficulties. This year WMO undertook a special survey of the reception and dissemination of ships reports during 3-5 May 1973 for areas south of 20°N.

42. TCS collected statistics of ships observations received by Hong Kong and Manila during July 1972 from the data-sparse sea area between latitude 20°N, west of longitude 140°E. Whereas Hong Kong received a total of 345 ships reports, only 243 reached Manila, which points to the importance of improving the system of international exchanges as distinct from the need for more reports.

(h) Marine type automatic weather station (paragraph 37 (iii))

43. Japan established a new buoy system at 30°N, 135° 30'E, which would operate for one year from 10 August 1973. The observations recorded include wind, atmospheric pressure, air and sea temperatures and wave height. It appears that Japan also plans to set up a similar type of buoy at 20°N, 128°E, a step that would be of great value to the Typhoon Committee countries. It may be recalled that the preparatory mission on typhoons recommended the establishment of a marine automatic weather station near 18°N, 128°E, in consideration of the sparseness of data in the area which is frequently traversed by typhoons.

(i) Dissemination of typhoon warnings (paragraph 37 (v))

44. As stated in paragraph 27, TCS made a survey of facilities in the Philippines for disseminating typhoon warnings. Radio and TV stations in the provinces are already linked to parent stations at Manila by reliable communication such as UHF or RF channels. The establishment of reliable communication between Central Weather Bureau and the parent radio and TV stations at Manila was recommended with a view to ensuring a more effective dissemination of typhoon warnings, and a tentative scheme for the purpose, together with cost estimates, was submitted for consideration.

TKY ↔ H.K. ↔ P.K. New point-to-point circuit.

4. Further action proposed

45. It is suggested that the Typhoon Committee may wish:

- (a) to examine the information contained in the annexes, especially in regard to the progress made in implementing the facilities to which priority was assigned at the fifth session;
- (b) to revise the list of priorities;
- (c) to recommend further measures to expedite implementation of meteorological and telecommunication facilities;
- (d) to recommend continuance of the exchange of radar fix messages and to consider, in the light of the countries' latest experience, measures to ensure the regularity and promptness of such exchanges;
- (e) to reiterate the importance of typhoon reconnaissance flights, to express the hope that the United States would continue its valuable contribution and to encourage Hong Kong in their efforts in this direction;
- (f) to thank the Government of USSR for continuing and expanding their programme of ocean weather ships;
- (g) to welcome the news that Japan might establish another buoy at 20°N, 128°E, and to consider the possibility of setting up other buoys in the typhoon area.

B. HYDROLOGICAL COMPONENT

1. General activities

46. Further progress has been made in developing comprehensive plans for and establishment of pilot flood forecasting and warning systems in the key river basins selected for this purpose in Laos, the Philippines, the Republic of Korea and Thailand. Fresh developments during 1973 are summarized below:

(a) Republic of Korea

47. A team of Japanese experts conducted a survey of the Han river basin and collected relevant data for subsequent analysis in Japan. In December 1972, the team submitted a preliminary report in which the necessity for a second survey was suggested with a view to verifying the adequacy of the result of the flood analysis by taking into account the data of the 1972 August flood that caused unprecedented damage in the Han River basin.

48. The Government submitted a request for the second survey and for financial assistance in the establishment of the flood forecasting network in the Han River. The request was favourably considered by the Japanese Government and appropriation of a US\$1,500,000 loan was approved in April 1973. The second survey, including transmission tests between the stations, was conducted by a team of 11 Japanese experts for the period of one month starting 10 May 1973. TCS's hydrologist and flood forecasting expert participated in the first part of this survey.

49. In view of the pressing need for establishing a forecasting system in the Han River basin before the 1973 flood season, a temporary system with full utilization of the existing network was proposed by the Japanese team. An electronic computer worth US\$8,000 was brought by the team and donated for the purpose to the Government.

50. The Japanese team also made a preliminary study of the flood forecasting in other rivers, namely, the Keum and the Nakdong. The study was to be developed and completed by officials of the Republic of Korea. For this purpose and for the future operation of a flood forecasting centre to be established in due course, the team proposed that five officials of the Ministry of Construction, be trained in Japan.

51. The study undertaken by the Japanese team on the flood forecasting and warning in the Han River was to be completed in August 1973. It was expected that equipment would then be purchased and the forecasting system established before the 1974 flood season. The Ministry of Construction allocated 160 million won in counterpart expenditure.

52. TCS suggested last year that the 10-cm radar at Seoul be utilized for trial measurement of precipitation and thus eventually help in flood forecasting for the Han River basin. In accordance with the proposal sent to the Central Meteorological Office, communication links were established between Seoul and a few selected rain-gauge stations for calibration purposes. The TCS's telecommunication and electronics expert visited Seoul in July 1973 and gave on-the-job training in rainfall estimation by radar.

/(b)

(b) Laos

53. A draft note on flood forecasting in the Se Bang Hieng River basin, prepared by TCS, was received by the Government of Laos with appreciation. The WMO secretariat commented favourably on the draft, supporting the idea of starting discharge or stage observations at the sites suggested. It was proposed to prepare a second draft upon receipt of additional information from Laos.

54. Although progress has been hampered by unfavourable security conditions in the area, an initial step has been agreed upon of establishing gauging stations in an accessible portion of the lower reaches. At the time of writing, TCS's hydrologist is at Vientiane, where, together with government officials, he is to make a reconnaissance tour for site selection and draw up plans for the collection and study of observational data.

(c) Philippines

55. The unprecedented damage caused by the 1972 flood that ravaged the Pampanga River basin and other parts of central Luzon brought out the special urgency of implementing the flood forecasting and warning system. The consequent hydrological and flood forecasting studies undertaken last year were continued and a note was prepared by TCS, incorporating the results. Analysis showed the possibility of extending the forecast period beyond 24 h.

56. In November 1972, the final report of the Japanese team on the second survey of the establishment of the flood forecasting system in the Pampanga River basin was received by the Philippine Government. The report contains a detailed design of the network and other facilities, together with specifications of equipment required. Understanding that requested assistance from Japan, in the form of equipment worth US\$260,000, would be forthcoming in the early part of 1973, the Weather Bureau and the Bureau of Public Works initiated the provision of counterpart facilities for the establishment of the forecasting system.

57. In accordance with an agreement reached with Japan Radio Co., Ltd. (JRC), the equipment was received from Japan in May-June 1973, by which time a major part of the station housing, antenna towers, stilling wells and other counterpart facilities was completed by the Bureau of Public Works.

/Installation

Installation by JRC engineers proceeded during July and August 1973, with the co-operation of local officials. It was anticipated that additional equipment worth US\$20,000 comprising a vehicle equipped with wireless communication, a motor-boat, electronic table computers and various testing machines, would be donated by Japan as part of its technical assistance programme.

58. The Government of Japan sent three experts, one hydrologist and two telecommunication experts, to supervise the installation and to provide technical advice and on-the-job training in operation and maintenance. The hydrologist is to stay at Manila for five months and one of the telecommunication experts for two years.

59. The installation work is progressing and the Flood Forecasting Centre, manned jointly by the Weather Bureau and the Bureau of Public Works, is actively engaged in the preparation of operational procedures for flood forecasting, with technical assistance from the Japanese hydrologist. TCS has provided active support at all stages of installation and operational procedure. The method of runoff calculation used in the TCS study of the 1972 flood is to be adopted by the Forecasting Centre for the system's initial operation.

60. Two hydrologist of the Flood Forecasting Centre received training during September-December 1972 and three telecommunication engineers during March-June 1973. Actively engaged in the installation work and other preparations for the Pampanga flood forecasting system, they are expected to continue in this branch.

61. The Pampanga flood forecasting system is to be inaugurated on 13 September 1973, for full operation. Further developments will be reported at the session.

(d) Thailand

62. The Meteorological Department and the Royal Irrigation Department continued case studies of past floods, on the basis of the method developed by TCS. Comparative studies were made by revising certain criteria and coefficients. The network of stations originally selected for computing basin rainfall was considered to be inadequate.

63. The Royal Irrigation Department made a detailed analysis for flood forecasting on the Khwae Noi, by using average basin rainfall (above K10) based on eight stations as against only 3 in the previous study. By introducing a few other revisions in the criteria and coefficients the Department obtained more consistent results for 1967-1972.

64. The Meteorological Department computed the Khwae Yai River's discharge at station K6, the Khwae Noi's at K10 and the Mae Klong's at K8 for the 1971 and 1972 floods, on the basis of the original method and with changes suggested by TCS. Since operation of the K8 river-gauging station, near Kanchanaburi, was discontinued during 1971/72, the discharge at that point was estimated by correlation with discharges at K11. The studies indicated the need for further improvement of the method and, in particular, of the network.

65. Arrangements were made in early 1973 for the daily collection of data on rainfall and river stages, for trial flood forecasting. However, there has so far been no flood situation this year.

66. In view of the varying results of case studies completed by the Meteorological Department and the Royal Irrigation Department, TCS suggested that a systematic analysis of these results be undertaken with a view to deriving the most appropriate combination of criteria for further trials. The TCS's hydrologist visited Bangkok in August and discussed the matters with the officials concerned. It is expected that the representatives of Thailand will provide further information at the meeting.

2. Action on decision of the fifth session

67. The action taken on the decisions contained in paragraphs 40-45 (assistance for establishment of pilot flood forecasting in Laos, the Philippines, the Republic of Korea and Thailand) has been described in the preceding section.

3. Further action proposed

68. It is suggested that the Typhoon Committee may wish:

- (a) to record its appreciation of the valuable assistance provided by the Government of Japan in:
 - (i) sending a second survey team to the Republic of Korea and in granting a loan of US\$1,500,000 to establish a comprehensive flood forecasting system in the Han River basin;
 - (ii) sending experts and a complete set of equipment to establish the pilot flood forecasting system in the Pampanga River basin;
- (b) to consider the steps so far taken towards the implementation of pilot flood forecasting in each of the countries and to suggest means of expediting action.

C. COMMUNITY PREPAREDNESS AND DISASTER PREVENTION

1. General activities

69. In the past two years, activities in this component of the Committee's programme have expanded considerably, with the fuller realization that efficient disaster preparedness measures are crucial to the typhoon warning system. An important step was taken in 1971, when an expert was appointed for the last four months of the year to survey the current arrangements in the Typhoon Committee countries.

(a) Joint LRCS/WMO/ECAFE mission

70. The expert's survey highlighted a number of problems and pointed the way to further steps the Committee could take to improve disaster preparedness. It led to a proposal being made to the Committee at its fifth session for a joint LRCS/WMO/ECAFE mission on community preparedness and disaster prevention. With the approval of the Committee and the countries concerned, the mission visited Hong Kong, the Republic of Korea and Thailand in March/April 1973. Its main objectives were to bring together, in each country, the national authorities concerned to promote co-operation in the design and operation of an effective system of community preparedness and disaster prevention, and to prepare a programme for increasing the present system's safety of life and property.

71. The mission's recommendations were accepted by the government authorities concerned, and its report and recommendations are given in document WRD/TC.6/7, to be discussed under agenda item 7.

(b) Follow-up to the joint mission

72. The mission's general recommendations on the Committee's further activities in community preparedness and disaster prevention have been closely considered in consultation with LRCS, WMO and ECAFE. As a result, it is proposed that the mission should visit to other Typhoon Committee countries, commencing in 1974 with Japan and the Philippines (see document WRD/TC.6/8).

73. The joint mission recommended that the three countries visited in 1973 should request their representatives at the sixth session to report on the action taken in pursuance of the mission's recommendations. It is hoped that this will be possible.

74. As the Committee's forthcoming session is to be held in Bangkok, it has been proposed to the Government of Thailand that the opportunity be taken to hold a short meeting of the task force recommended by the mission as part of the National Committee for Disaster Preparedness (NCDP). This meeting, which is to be held on 6-7 December 1973, will be attended by the five national agencies represented on the task force and by the three members of the mission team and will review the progress made in Thailand in implementing the mission's recommendations.

(c) Publications distributed

75. Copies of the following publications have been distributed by TCS to the member countries:

- (i) United States publication on "Disaster preparedness - a report to the Congress", received through NOAA, United States Department of Commerce.
- (ii) Proceedings of the regional seminar on "Disaster preparedness and relief", organized by the Philippine National Red Cross in May 1972.

2. Action on decisions of the fifth session

76. The action taken on the decisions contained in paragraphs 74-76 of the report of the fifth session has been recorded in the preceding section.

3. Further action proposed

77. It is suggested that the Typhoon Committee may wish:

(1) to examine the report of the joint LRCS/WMO/ECAFE mission on community preparedness and disaster prevention, in the light of the statements made by the representatives of Hong Kong, the Republic of Korea and Thailand on the measures taken in pursuance of the mission's recommendations;

(2) to consider the proposal made in document WRD/TC.6/8 for continuance of activities initiated by the joint mission.

D. TRAINING AND RESEARCH

1. Training of personnel

78. In pursuance of the offer made at the fifth session, the Government of Japan decided to organize during 1973, as part of its technical co-operation schemes for developing countries, two training courses on flood forecasting and warning. A course on hydrology will last six months, commencing 16 September 1973; and one on meteorology, four months, commencing 1 October 1973. Both will be conducted in English. Invitations for the nomination of trainees have been sent to the Governments of the Khmer Republic, Laos, the Philippines, the Republic of Korea and Thailand, and the meteorological and hydrological services have been requested to ensure timely nomination.

79. A circular letter has been sent to member countries, drawing their attention to earlier offers of assistance in the provision of training facilities, made by Australia, France, the Federal Republic of Germany and the United States of America. It is understood that both the Philippines and Thailand have obtained a training fellowship for a one-year course on meteorology in Australia during 1973. Furthermore, France has agreed to provide Laos with two fellowships for training on APT operation and APT maintenance, each for a period of nine months.

80. TCS's telecommunication and electronics expert has given on-the-job training in operation and maintenance of the 10-cm radar at Seoul, with special reference to its application to measurement of precipitation.

/2.

2. Co-ordination of research activities

81. The twelfth report on research work in tropical meteorology was distributed by WMO in March 1973, the permanent representatives being entrusted with the distribution to their institutes.

82. Hong Kong reported at the fifth session that computerization was in progress of operational meteorological data for tropical cyclone forecasting by objective methods. An IBM 1130/S-7 computer system ordered in January 1973 will be installed at the Royal Observatory towards the end of the year and will be in regular operation in 1974. Hong Kong also reported that detailed studies of rainfall patterns associated with tropical cyclones were carried out and an investigation on the characteristics of sea waves recorded at Waglan island during cyclone conditions was completed.

83. The Philippine Weather Bureau has undertaken implementation of a five-year integrated typhoon research project, with financial assistance of the National Science Development Board. The research programmes include typhoon structure, development and movement, typhoon moderation, flood forecasting, storm surges and microseisms.

84. The Philippine Government's typhoon moderation programme, about which some information was given at the fifth session, was officially started in January 1973. Its initial phase included continuation of the installation and development of conventional observational facilities and training of personnel.

85. The results of a study made by TCS in 1971 in collaboration with the Meteorological Department at Bangkok, on the synoptic situations associated with past floods in the Mae Klong River, were explained to officials of the Central Meteorological Office at Seoul. A similar study for the Han River basin has been undertaken by the Meteorological Office of the Republic of Korea.

3. Actions on decisions of the fifth session

(a) Offers of assistance by Australia, France, the Federal Republic of Germany and Japan (paragraphs 50-53)

86. Follow-up action has been recorded in the preceding section.

/(b)

(b) Seminar on tropical cyclone forecasting techniques and warning systems in Asia and the southwest Pacific (paragraph 54)

87. The Seminar was held at the University of Queensland, Brisbane, Australia, from 14 to 26 May 1973. Mr. R. Cecil Gentry (United States) acted as seminar director. Two of the five lecturers were from Typhoon Committee countries, namely, Mr. M. Miyazaki (Japan) and Mr. C.F. Tapia (Philippines). The number of participants from member countries were: Hong Kong, 3; Khmer Republic, 2; Laos, 1; Philippines, 1; Republic of Korea, 2; and Thailand, 1.

(c) Possibility of joint collaboration in typhoon research (paragraph 63)

88. As instructed at the fifth session, TCS examined this matter further, in consultation with the member countries. The main suggestions emerging from the consultations are summarized below:

(1) Hong Kong pointed out the need for diffusion of information, standardization of data, survey of facilities and selection of priority. Suggesting the nomination by member countries of an advisory group of research scientists which would maintain close liaison with TCS, it proposed an outline of the responsibilities that might be assigned to such a Group.

(2) Japan put forward a list of subjects into which research is considered very important and on which research could be readily initiated even with limited research facilities. It proposed that the subjects concerning which member countries express their interest or need could be taken up in a joint research programme. Japan supported the establishment of a group of research scientists as proposed by Hong Kong and indicated its readiness to participate in such a group. A copy of JMA's letter together with its list of research subjects has been circulated to all member countries.

(3) Thailand pointed out difficulties arising from the limitation of data resources, shortage of qualified staff and of research facilities. It supported the establishment of a group of research scientists as proposed by Hong Kong.

/(4)

(4) The Central Meteorological Office of the Republic of Korea envisaged the need for a group of scientists to initiate joint collaboration, and indicated its readiness to carry out special observations and to supply relevant data and results of computations.

(5) The Philippines suggested the circulation of an annotated list of selected research problems, showing the research papers available, and requested TCS to ascertain the type and extent of possible collaboration. A small group of research workers could act as consultants or co-ordinators. This country also suggested that young researchers be trained in advanced countries and pointed out the desirability of having a regional training centre with adequate research facilities.

(6) The WMO secretariat considered that a number of useful functions could be performed by a Typhoon Committee research group with TCS serving in a co-ordinating capacity. It pointed out, however, that if the research group should need to hold a meeting at any time, the countries might have to bear the cost.

(7) The ECAFE secretariat, drawing attention to the Commission's general concern about the proliferation of its subsidiary bodies and to the possibility of reducing the number of committees and sub-committees, considered that it might not be appropriate to constitute a special working group or sub-committee of the Typhoon Committee.

/4.

4. Further action proposed

89. The Typhoon Committee may wish:

- (a) to record its appreciation of the valuable assistance provided by the Government of Japan in organizing, during 1973, two training courses for the benefit of member countries;
- (b) to examine the proposals summarized under paragraph 88, on joint collaboration in typhoon research, and to decide whether a Typhoon Committee research group should be constituted with TCS serving in a co-ordinating capacity, and, in the case of an affirmative decision, to define the terms and conditions under which the group might work. Should this approach not be considered necessary at this stage, the Committee might wish to ask TCS to pursue the matter further, in consultation with member countries, with a view to initiating a programme of joint collaboration.

/Annex I

Annex I

WWW GLOBAL OBSERVING SYSTEM - UPPER-AIR STATIONS

(a) Level of implementation (1 July 1973)

Country	Number of stations from which obser are requested		Number of observations made					
			Radiowind (W)				Radiosonde (R)	
			00	06	12	18	00	12
Hong Kong	1		1	1	1	1	1	1
Japan	17		17	15	17	15	17	17
Khmer Republic	1		1	0	1	0	0	0
Korea, Republic of	3		3	1	3	1	3	3
Laos	1		1	0	0	0	1	0
Philippines	7(W)	4(R)	4	1	1	1	4	1
Thailand	4		4	1	4	0	4	4
Total	34(W)	31(R)	31	19	27	18	30	26

/(b)

(b) Deficiencies and further plans

Country and station	Radiowind (W)				Radiosonde (R)		Plans and remarks
	00	06	12	18	00	12	
<u>Japan</u>							
47971 Chichijima	0		0				
991 Minamiterishima	0		0				
<u>Khmer Republic</u>							
48991 Phnom-Penh/ Pechentong ^{b/}	0		0		v	v	VAP Project 08/1/1/ circulated in 1971, no offer to date.
<u>Korea, Republic of</u>							
47138 Pohang	0		0				
187 Mosulpo AB	0		0				
<u>Laos</u>							
48940 Vientiane ^{b/}		N	N	N		N	
		1973	1974	1973		1974	
<u>Philippines</u>							
98223 Laoag ^{b/}		0	0	0		0	
444 Legaspi		0	0	0			
618 Puerto Princesa	N	1973	0	0	0		
645 Cebu		0	0	0		0	
755 Davao	N	1973	0	0	0		
836 Zamboanga ^{b/}		0	0	0	0	0	
<u>Thailand</u>							
48327 Chiangmai		0		0			
407 Ubon Ratchathani		0		0			
455 Bangkok				0			No plans
568 Songkhla		0		0			
Burden							

Note: v = VAP request;
N = indicates implementation from national resources;
^{b/} = Typhoon Committee priority station.

/Annex II

Annex II

WWW GLOBAL OBSERVING SYSTEM - OTHER FACILITIES NOT YET IMPLEMENTED

(a) Storm-warning radar stations

Korea, Republic of	Cheju	Implementation is planned for 1976 from national resources
Philippines	Guian	Implementation is planned for 1973
	Basco	Implementation is planned for 1974
	San Mateo (20 Km. NE of Manila)	Implementation is planned for 1974
	Cuye	Implementation is planned for 1975
Thailand	Bangkok	Bilateral or national project

(b) Automatic picture transmission (APT) stations

Khmer Republic	Phnom-Penh	VAP Project - implementation in 1973
Laos	Vientiane	Bilateral project - implementation in 1973.

/Annex III

Annex III

WWW GLOBAL TELECOMMUNICATION SYSTEM (GTS)

(a) National collection facilities

It is understood that some shortcomings subsist in the national collection facilities of Laos and the Philippines. See section II., A., 2. of the present paper.

(b) Regional telecommunication links not yet implemented

Country	Link	Remarks
Laos	Vientiane - Bangkok	VAP project - implementation in 1973/1974
Philippines	Manila - Tokyo	National project 1974
Thailand	Bangkok - Phnom-Penh	National project 1974
	Bangkok - Saigon	National project 1973/74
	Bangkok - Vientiane	National project 1973/74

/Annex IV

Annex IV

PRIORITIES ESTABLISHED BY THE FIFTH SESSION OF THE TYPHOON COMMITTEE

Summary of the state of implementation and further plans

Surviving facilities

i) Upper-air stations

No plans: 48991 Phnom-Penh (Khmer Rep.) - W observation implemented at 00 and 12 GMT. No further plans.

Already planned: 98836 Zamboanga (Philippines) - No known plans
98223 Laoag (Philippines) - 12 GMT radiosonde/radiowind National project 1973

i) Weather radar

No plans: existing 5.6 cm Radar is planned to transfer to (Chunpon) after new 10cm radar installed at BK.
Bangkok (Thailand)
Cheju (Republic of Korea) or other selected site) No known plans
Vientiane (Laos)

Already planned: Basco (Philippines) - National project 1974

i) APT stations

Already planned: Phnom-Penh (Khmer Republic) - VAP project 1973
Vientiane (Laos) - Bilateral project 1973

i) Ocean weather stations

Already planned: Ship at 16°N, 135°E - USSR is continuing to provide support from its research vessels in 1973.

Communication facilities

i) National collection facilities

Already planned: Laos - National project
Philippines - National/bilateral project (partly implemented)

i) Regional telecommunication

Establishment of the following point-to-point links:

Already planned: Bangkok-Phnom-Penh - National project (assistance for Phnom-Penh included in draft request to UNDP)
Bangkok-Saigon - National project 1974
Bangkok-Vientiane - National/VAP project 1973

i) Other telecommunication facilities

Already planned: strengthening of RTH, Bangkok - Partially implemented with VAP/bilateral help and national resources.

.....

WRD/TC.6/5
28 September 1973

ORIGINAL : ENGLISH

UNITED NATIONS ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST

AND

WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth session
19-26 November 1973
Bangkok

PROGRAMME FOR 1974

(Item 5 of the provisional agenda)

Note by the Typhoon Committee secretariat

1. The action programme approved by the Typhoon Committee at its first session continues to provide the general guidelines for its future activities. The functions of the Committee as given under Article 6 of its Statutes, and the functions and duties of the Typhoon Committee secretariat as approved by the second session are also relevant in this connexion.
2. Under agenda item 6, the Committee is invited to consider the revised request to UNDP for assistance covering a period of three years, 1974-1976. The proposed work plan for this period, including individual project activities, their starting dates and proposed duration, are shown in chapter III of the revised request. The anticipated programme for 1974 is therefore related to this work plan.
3. Assuming that the requested UNDP assistance for the period 1974-1976 is approved in time, the Committee may wish to consider the items of work on which it will concentrate during 1974. For this purpose, the progress made so far and the items on which work has already begun should also be taken into account. The following items are accordingly suggested for special attention during 1974:

- (a) with the posting of counterpart personnel, to re-organize the TCS and ensure its efficient functioning;
- (b) to procure equipment to be provided by UNDP and by other sources as included in the project;
- (c) to assist member countries in the provision of meteorological and telecommunication facilities included in the priority list established by the Committee, but not included in the project;
- (d) to study the deficiencies in the existing system of dissemination of typhoon warnings and to suggest remedial measures, where appropriate;
- (e) to assist in the installation of flood forecasting equipment in the Republic of Korea and Thailand;
- (f) to assist the Philippines in improving the flood forecasting system in the Pampanga river basin with further assistance from Japan;
- (g) to assist Laos in the planning and preparation for flood forecasting in Se Bang Hieng river basin;
- (h) to assist in procurement of training fellowships, and to provide on-the-job training in operation and maintenance of meteorological and hydrological facilities, where appropriate;
- (i) to assist in the improvement of community preparedness and disaster prevention organization, such as by following up recommendations of the joint LRCS/WMO/ECAFE mission;
- (j) to stimulate research activities by advisory services, exchanges of information and by promoting joint collaboration in research studies.

Action proposed

Action proposed

4. It is suggested that the Committee may wish:

- (a) to consider the anticipated work programme for 1974 and to urge member countries to take all possible measures, with the assistance of the Typhoon Committee secretariat, to accelerate implementation of the Committee's programme;
- (b) to approve in principle or suggest amendments to the items of work on which it is suggested that the Committee may wish to concentrate during 1974.

.....

The draft request

1. In accordance with the decision of the Committee at its session, the request for the establishment of a working group after incorporation of the recommendations of the members (Hong Kong) for their consideration.

Comments by UNDP

- 2.1. Subsequent to the meeting of the Committee, it would be willing to consider the request for the document's being further.
- (1) Duration of the working group from 1974 to 1975.
- (2) UNDP to provide the working group with the necessary resources to give recommendations to be carried out.

ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST

WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth session
19-26 November 1973
Bangkok, Thailand

REQUEST TO UNDP FOR INSTITUTIONAL SUPPORT
TO THE TYPHOON COMMITTEE

(Item 6 of the provisional agenda)

Note by the Typhoon Committee secretariat

The draft request to UNDP

1. In accordance with the Committee's decision at its fifth session, the draft request to UNDP was revised by the TCS on the basis approved by the session. The revised text was reviewed by the WMO and ECAFE secretariats and, after incorporation of their suggested amendments, forwarded to member countries for their concurrence. Affirmative replies were received from five members (Hong Kong, Japan, the Philippines, the Republic of Korea and Thailand). The draft request was then forwarded to UNDP Headquarters.

Comments by UNDP

2. Subsequent consultations between WMO and UNDP revealed that UNDP would be willing to consider a proposal subject to the draft project document's being further revised along the following lines:

- (1) Duration of the project should be reduced to three years, 1974 to 1976;
- (2) UNDP to provide three international experts for three years to give technical support. The related administrative duties to be carried out by counterpart personnel at the secretariat;

(3) UNDP to provide equipment to a value of US\$ 350,000 subject to a like amount being obtained from other sources;

(4) UNDP to provide five international fellowships of one year's duration each.

Revision of the draft request

3. The present UNDP support to the typhoon project expires at the end of 1973. In view of the short time remaining, WMO and ECAFE felt that urgent action was needed to redraft the draft request to meet the UNDP requirements, and also to seek ways and means of financing the remainder of the equipment component and providing counterpart staff. Representatives of ECAFE, WMO and the Typhoon Committee secretariat met in Bangkok in the latter part of July 1973 to discuss these matters and to initiate necessary action. As a result of these discussions, a revised project document was prepared, taking into account the stated UNDP position regarding the assistance it was prepared to provide.

4. Since the UNDP input for equipment was to be reduced from US\$ 679,000 to US\$ 350,000, it was agreed to exclude the equipment originally proposed for pilot flood forecasting systems in Laos, the Republic of Korea and Thailand amounting to US\$ 300,000. It was recently learnt that Japan had agreed to install a complete flood forecasting system in the Han river basin (Korea) at a cost of \$1.5 million. The representatives of ECAFE, WMO and TCS thereupon held informal consultations with the officers of the Embassy of Japan in Bangkok and explored the possibility of obtaining the equipment needed for pilot flood forecasting systems in Laos and Thailand (US\$ 100,000 for each) through bilateral aid.

5. As regards the counterpart staff needed for the Typhoon Committee secretariat, it is the intention of ECAFE and WMO to invite Typhoon Committee member countries to consider seconding national staff to the TCS. The three posts to be filled by counterpart professional staff are those of a synoptic meteorologist, a telecommunication and electronics engineer and a hydrologist. Preliminary consultations with some of the member countries indicated that it should be possible to obtain the required counterpart staff in 1974 as shown in the project document.

6. The revised document was submitted to UNDP Headquarters in August 1973 on an informal basis to obtain UNDP's preliminary concurrence. It was proposed to circulate the project document to the member countries on receipt of UNDP's reply in the hope that approval of the participating countries could be obtained before the sixth session of the Committee.

Action proposed

7. The Committee is invited to consider the latest developments and to take such further action as may be necessary.

.

FOR PARTICIPANTS ONLY

WRD/TC.6/7
8 October 1973

ORIGINAL : ENGLISH

Original

2259

ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth session
19-26 November 1973
Bangkok

REPORT OF THE JOINT LRCS/WMO/ECAFE MISSION ON COMMUNITY
PREPAREDNESS AND DISASTER PREVENTION
(March-April 1973)

Contents

	Page
I. Background to the Mission	3
Origins	3
The Typhoon Committee	3
The Hickey Survey	4
The Joint Mission	4
Preparatory activities for the Mission	5
II. Thailand	6
Report on the Mission's activities	6
Recommendations	7
III. Hong Kong	15
Report on the Mission's activities	15
Observations	15
Recommendations	17
IV. Republic of Korea	19
Report on the Mission's activities	19
Observations	20
Recommendations	23
V. Other general conclusions and recommendations	26

Annexes

I. Programme of the Mission	29
II. List of persons contacted	38
III. Note on community preparedness and disaster prevention activities in the Typhoon Committee countries	44

I. BACKGROUND TO THE MISSION

Origins

1. Throughout the ages, tropical cyclones have ravaged countries in many parts of the world, killing millions of people and causing damage and suffering of a magnitude which can only be described as catastrophic. Efforts to protect people and property have been only partially successful, though they have improved immeasurably with man's ability to predict the arrival of tropical cyclones and to warn the population of impending danger so that the other necessary safety measures can be taken. The degree to which protection can be afforded depends upon a variety of considerations, not the least of which is the need for information from areas beyond national boundaries. International co-operation, therefore, has long been, and remains an essential feature of any system to reduce the disastrous consequences of tropical cyclones.

2. While such co-operation has provided a means of saving many lives, experience almost everywhere has shown that the cost of damage to national economies continues to rise at an alarming rate. In southeast Asia, growing concern at the impact of typhoons on the economies of developing countries provoked a desire for improved regional co-operation to combat this trend.

The Typhoon Committee

3. In 1968, a seven-country intergovernmental Typhoon Committee was established under the aegis of the Economic Commission for Asia and the Far East (ECAFE) and the World Meteorological Organization (WMO). Its functions are to promote and co-ordinate the planning and implementation of measures required for minimizing typhoon damage in the ECAFE region. Its programme encompasses meteorological and hydrological activities, community preparedness and disaster prevention, together with training and research.

4. The early years of the Typhoon Committees's work placed most emphasis on the improvement of the meteorological and hydrological facilities which permit the prediction of typhoons and floods. Training and research also received attention, but little action was undertaken on a regional basis to ensure that warnings are received by all in the threatened

areas and that the vitally important protective measures are taken. For this reason, WMO, through the League of Red Cross Societies (LRCS), engaged a consultant in 1971 to survey the community preparedness and disaster prevention arrangements in the typhoon area.

The Hickey Survey

5. During the last four months of 1971, Mr. James R. Hickey, a senior official of the American National Red Cross, with long experience in disaster planning and community preparedness, visited all the Typhoon Committee member countries and prepared a report on his findings with recommendations for further action. One of his most significant findings was that, in most countries, there is a serious lack of contact between the meteorological/hydrological agencies and those responsible for community preparedness/disaster prevention. He felt that there was an insufficient understanding of the complementary nature of the functions of the two sides, and of the extent to which the responsibilities of the one impinge upon the other. The survey thereby revealed a state of affairs not previously recognized and one which has alarming implications for the safety of human life and property in these countries.

6. In 1972, a series of consultations were therefore held between LRCS, WMO and ECAFE to chart out a course of action which it was hoped would remedy this situation. The outcome of these consultations was a proposal for a joint LRCS/WMO/ECAFE Mission to visit selected Typhoon Committee member countries to investigate how the technical and welfare agencies could be brought together. This proposal was submitted to the Typhoon Committee at its fifth session in Bangkok in November 1972 and approved for execution in early 1973.

The Joint Mission

7. The proposal approved by the Typhoon Committee was for a joint Mission to conduct pilot visits to three member countries, namely Hong Kong, the Republic of Korea and Thailand. Formal approval of each of the Governments concerned was accordingly sought and obtained. A plan for the Mission to be carried out in the period between 5 March and 2 April 1973 was agreed.

8. The main purposes of the Mission were:

- (a) to explain to the governmental authorities and to the community preparedness and disaster relief agencies how they could contribute

/to the

to the total system for the protection of human life and property. This, it was felt would involve the physical bringing together of representatives of the two sides with the object of getting all the national agencies concerned to play a broader role in the design and operation of a system ensuring the maximum degree of preparedness;

- (b) the drawing up of an agreed programme of action to be implemented in each country to improve community preparedness and disaster prevention, thus ensuring the safety of human life and property.

9. Advance arrangements were accordingly made with each of the three selected member countries and a carefully scheduled programme of meetings and discussions submitted for consideration prior to the arrival of the Mission team. The following visits were planned:

5 - 15 March 1973 Thailand (Bangkok)

15 - 22 March 1973 Hong Kong

22 March - 2 April 1973 Republic of Korea (Seoul)

10. The Mission team was composed of:

LRCS - Dr. Kingsley Seevaratnam, Regional Officer for Asia (Leader)

WMO - Mr. P. Rogers, Special Projects Officer

ECAFE - Mr. M. Kawamura, Economic Affairs Officer

11. It was also planned that, at the end of these visits, the Mission team would spend the period of 2-9 April 1973 in Tokyo, Japan, in completing its report. Facilities for this purpose were kindly provided by the Japan Meteorological Agency.

Preparatory activities for the Mission

12. Immediately after the approval of the proposal by the Typhoon Committee, a preliminary meeting was held between the three agencies participating in the Mission. This was followed by a series of meetings in Geneva between LRCS and WMO, consultations with ECAFE being held by correspondence. These preparations took place under the guidance of Mr. Robert M. Pierpont, Under Secretary General (LRCS); Dr. Arnold H. Glaser, Director of the World Weather Watch Department (WMO); and Mr. Alan D. Benham, Chief of the Division of Natural Resources (ECAFE).

/A tentative

A tentative programme was then drawn up and sent to each of the three countries, approval in principle was obtained.

13. The team met at ECAFE headquarters in Bangkok at the beginning of March to co-ordinate the preparations and to finalize arrangements based on comments received from the countries to be visited.

14. The general format proposed for the visits included preliminary discussions with the major national agencies involved, both in the technical and welfare aspects of prediction, relief and rehabilitation, as well as joint meetings with all the agencies directly or indirectly involved in these activities. These meetings were closely interwoven with group visits to the agencies to learn at first hand and on a practical level of the work accomplished, as well as of future plans.

II. THAILAND

Report on the Mission's activities

15. After consultations with the interested national agencies, an amplified programme was agreed upon (annex I). It was felt that all the agencies directly or indirectly involved in community preparedness and disaster prevention should participate in each of the meetings. Similarly, it was agreed that all should take part in the visits planned to the different agencies. The joint meetings were held in the Conference Hall of the Thai Red Cross Society (TRCS).

16. At the first joint meeting, which was inaugurated by Dr. Charoen Charoen-rajabark, Chairman of the Typhoon Committee, and attended by Mr. Alan D. Benham, Chief, Natural Resources Division, ECAFE; Dr. Tawan S. Bunnag, Director, Relief Division of the TRCS, was unanimously elected Chairman for the entire series of meetings held in Thailand.

17. The purposes of the Mission, its major objectives and the methods of attaining them were described in introductory statements made by members of the team. The inputs required from the national agencies were outlined. The roles of the various agencies and their contributions to an integrated national disaster warning system were then, closely examined. This examination involved detailed explanations by staff of the Meteorological Department and Royal Irrigation Department of the processes leading to the issue of typhoon and

flood forecasts and warnings, during which the potential of current techniques, coupled with an improved understanding of their possibilities and limitations, was demonstrated.

18. The study of the work of the technical agencies was followed by an examination of the roles of the other governmental and non-governmental agencies contributing to the national community preparedness and disaster prevention efforts. In so doing, the agencies' achievements as well as their limitations and related problems were brought to light and studied carefully.

19. To permit a better understanding of the work done by the principal national agencies (governmental and non-governmental) in forecasting, relief and rehabilitation, visits were made to the headquarters of the agencies concerned. These visits greatly facilitated an appraisal of the present degree of co-ordinated action in Thailand.

20. An analysis of the shortcomings in the present system was then made and suggestions for the further measures desirable, including those contained in paragraph 8 of the "Note" distributed to the Government of Thailand in October 1972 (annex III), were put forward. These steps resulted in a number of decisions being made in full agreement with the representatives of the participating national agencies.

Recommendations

21. The recommendations made by the Mission are given below in two parts, firstly the decisions themselves and, secondly, a list of points suggested for inclusion in a programme of action.

22. Decisions taken during the Joint LRCS/WMO/ECAFE Mission on Community Preparedness and Disaster Prevention in agreement with the representatives of interested national agencies

1. That a body for the co-ordination of national disaster preparedness activities, to be known as the "National Committee for Disaster Preparedness (NCDP)", be established without delay.

/2.(a)

2.(a) That the composition of the NCDP be as follows:

Chairman: Deputy Minister of Interior
Deputy-Chairman: Under-Secretary of State, Ministry of Interior
Committee: Representatives of:
Ministry of Interior
Department of Local Administration
Police Department
Department of Public Welfare
Ministry of Agriculture and Co-operative
Royal Irrigation Department
Ministry of Communications
Highway Department
Meteorological Department
Railway Department
Ministry of Defence
Supreme Command Headquarters
Ministry of Education
Ministry of Finance
Ministry of Health
Public Health Department
Office of the Prime Minister
Budget Bureau
National Energy Administration
Public Relations Department
Rajaprajanukroh Foundation
Thai Red Cross Society
Committee for Co-ordination of
Investigations of the Lower Mekong
Basin

(b) For the purpose of expediting the preparation of national plans for pre-disaster preparedness, it is recommended that a task force composed of the following agencies directly involved and having experience in pre-disaster preparedness plans and relief services be constituted as soon as possible:

Department of Local Administration
Department of Public Welfare
Meteorological Department
Rajaprajanukroh Foundation
Thai Red Cross Society

3. That the objectives of the NCDP be as follows:

- (a) To oversee, co-ordinate and direct disaster preparedness relief and rehabilitation operations.
- (b) To provide administration, direction and co-ordination.
- (c) To provide guidance in programme direction and management for disaster preparedness and relief to all interested agencies.

4. That the functions of the NCDP be as follows:

- (a) The formulation of plans and policies on matters related to disaster preparedness and relief for various natural disasters and the periodic review of such plans and policies.
- (b) The co-ordination of the disaster preparedness, relief and rehabilitation activities of all government agencies, private volunteer agencies and foreign and international assistance groups.
- (c) The co-ordination of governmental and other agencies, including the retrieval and printing of relevant data and information on demography, resources, transportation and communication facilities, administrative structure for managerial and operational purposes and for studies of vulnerability to disaster.
- (d) The establishment of operational schemes involving disaster preparedness and relief for various forms of natural disaster throughout the country.
- (e) The provision of co-ordination points for rescue and evacuation, relief and rehabilitation activities in the various regions and isolated areas.
- (f) The monitoring of pre-disaster situations, their subsequent evolution and the progress of operations in disaster areas.

- (g) The preparation of reports and other material for appropriate agencies, including the information media, giving special attention to public education.
 - (h) The development of a disaster preparedness centre as a point for the distribution of processed information to interested agencies, both governmental and non-governmental.
 - (i) The co-ordination of the centre's activities with those forming part of the Typhoon Committee's programme in community preparedness and disaster planning.
 - (j) Participation in sessions of the Typhoon Committee with appropriate representation for both technical and disaster preparedness matters.
5. That the structure of the NCDP and its subsidiary bodies be as follows:
- (a) The NCDP as the central authority for the co-ordination of pre-disaster planning and disaster relief;
 - (b) Regional bodies for the co-ordination of pre-disaster planning and the organization of relief at the regional level (composition reflecting that of the NCDP);
 - (c) Provincial bodies for the co-ordination of pre-disaster planning and the organization of relief at the provincial level (composition reflecting that of the NCDP);
 - (d) Local bodies for the co-ordination of pre-disaster planning and the organization of relief at the local level (composition reflecting that of the NCDP).

23. Points suggested for inclusion in a programme of action

1. Regular meetings at the national level for the discussion of common problems

In most respects, the creation of a national co-ordinating body will fulfil this requirement. However, there may well be a need for additional

/meetings

meetings having wider representation of agency staff at the operational level. Such meetings should be of an informal nature, designed to maintain close contact between operational staff. They should take place at regular intervals throughout the year and not solely during the typhoon season. It may be desirable to appoint a convenor; if so, this function could rotate annually amongst the national agencies.

2. Visits of community preparedness/disaster prevention personnel to meteorological/hydrological services and vice versa

A realistic understanding of the problems faced by the various agencies participating in the warning system cannot be achieved unless each has a broad knowledge of the functions of the others and the ways in which they endeavour to execute their functions. One way to achieve this may be by regular visits of community preparedness/disaster prevention personnel to meteorological/hydrological services, and vice versa. Such visits will promote the confidence of personnel in their colleagues in other agencies. They should be of sufficient frequency to ensure that contacts are maintained in spite of the normal rotation of agency staff and that the introduction of new methods becomes known rapidly to all concerned.

It is not suggested that the period between visits of this type be laid down, but the need for continued close contact between agencies suggests that they should become a regular feature of the national system.

3. A special annual conference

4. Joint exercises to test preparedness

These two items may be dealt with together because they concern activities that should take place before the time of year in which disasters most commonly occur and they are, in addition, closely related. The purposes of such a conference are several. By bringing together all the national agencies having responsibilities for warning the public, a timely check can be made of their state of readiness. For example, lessons learned from previous disasters can be reviewed and new or improved measures can be instituted to combat the tendency for damage to increase with economic development. Moreover, the conference can serve to dispel any feeling of complacency that might otherwise be encountered by the occurrence of one or more seasons without serious disasters.

/It may

It may also be desirable, at such a conference, to arrange for a series of similar meetings, perhaps on a regional, provincial or local level, to inform the public and local services of the dangers to which they are exposed and the steps they should take.

Closely allied to these conferences is the need for exercises to test preparedness in a practical way. No matter how well thought-out a plan may be, in practice it may have flaws which create serious consequences and vitiate the careful preparation that has gone into it. These flaws might otherwise go undetected until disaster strikes and they may cause heavy, unnecessary loss of life and damage running into millions of dollars. Exercises to test the disaster plan under simulated conditions as close as possible to those that may actually be experienced are, therefore, a vital aspect of pre-disaster planning.

5. Setting up of direct communication links between the agencies involved to ensure complete and continuous co-ordination of efforts in pre-disaster and disaster situations

Any effective warning system must inevitably depend upon close co-ordination of the efforts of all involved. Immediately before, and during disasters, it will often be vital for consultations and discussions between national agencies to take place with great rapidity. There will seldom be enough time to call formal meetings, and it may not be possible to use the public telephone service which may easily be overwhelmed with calls. The installation of direct links with provision for bringing a number of agencies into contact simultaneously would facilitate the taking of urgent decisions on which human lives may depend. The same links would ensure that all concerned are kept abreast of the situation as it develops in the pre-disaster period.

6. Appointment of liaison officers to provide regular contact between the agencies

It is suggested that each national agency should appoint a liaison officer whose task it would be to maintain close and regular contact with his counterparts in the other agencies. Personal contacts of this nature promote understanding and an appreciation of the importance of each part of the total warning system. Meetings of liaison officers throughout the

/year,

year, preferably of an informal type, would permit exchanges of views, suggestions for closer and more effective concerted efforts and, in addition, would ensure that each agency is fully aware of the related activities of the others.

7. Participation of all national authorities concerned in the activities of the Typhoon Committee, including its sessions

Although community preparedness and disaster prevention activities have formed part of the Typhoon Committee programme since its inception in 1968, relatively little has been accomplished in this field so far, the accent being placed on the improvement of meteorological, hydrological and telecommunication systems. The Committee has always recognized, however, that the success of its activities depends in no small degree upon a vigorous programme of preventive measures.

Each member country represented on the Typhoon Committee may designate one or more participants to the annual session of the Committee. The Statute imposes no restriction on the number of participants designated. So far, disaster prevention agencies have seldom been represented at meetings. The rapidly increasing importance attached to community preparedness and disaster prevention now makes it essential that these agencies play their full role in the Committee's activities, including its sessions. Each member country should therefore make every effort to ensure full representation of all concerned at every session of the Typhoon Committee. Whenever possible the NCDP should be represented.

8. Preparation of public information material by bodies responsible for disaster prevention so that members of the public are fully conscious of risks to which they are exposed and how to minimize them

However accurate a forecasting and warning system may be, it is useless if no action is subsequently taken by the public to act upon warnings given. The response of individuals to disaster warnings is complex and varies greatly, depending upon many factors. There is therefore a need in every country to educate the public to a realistic understanding of the dangers induced by typhoons and similar phenomena and for the provision of advice on how to minimize these dangers. It is well established that a

/vigorous

vigorous approach to this problem will save many lives. Full use should be made of press, radio, television, films and lectures for this purpose, and suitable brochures, posters and leaflets should be distributed widely from time to time. The provision of such material in local languages merits close attention. Schools may also be one of the means used for educating the young population.

It is unlikely that a proper campaign to inform the public will be successful unless it is mounted jointly by the national agencies concerned. A piecemeal approach may easily result in duplication of effort or gaps in the information made available. It is suggested that the formation of small groups of national experts in public information matters, with appropriate technical advice, could usefully perform this task. Whatever national arrangements are made, proper consideration should be given to the views of all concerned.

9. Training programmes

Many aspects of an integrated system of disaster preparedness and relief depend to a considerable degree upon the availability of thoroughly trained staff. Consequently, there is a need for a sound training programme covering all staff involved in planning and relief. The NCDP should therefore give urgent attention to this need, planning and arranging suitable courses where the facilities required do not already exist.

10. Earmarking of funds to support community preparedness and disaster prevention activities

Some of the foregoing activities may require separate funding. It is desirable that arrangements be made at the national level to ensure that, where necessary, such activities are financed regularly. In most cases, the amount of money required for the co-ordination of community preparedness and disaster prevention will be small.

/III.

III. HONG KONG

Report on the Mission's activities

24. The programme proposed for Hong Kong was revised in conformity with the wishes of the Defence Secretariat - the body responsible for the co-ordination of the programme for the Mission. The pattern was set by a preliminary meeting with the Defence Secretary, the Assistant Secretary (Social Services) and the Principal Assistant Colonial Secretary (General), followed by discussions on the alert and warning system with officials of the Royal Observatory in which representatives of the Marine Department and Radio Hong Kong also took part.

25. Further discussions were held with officers of the Public Works Department, the Fire Services Department, the Police and the Civil Aid Services on emergency operations; with the Social Welfare Department, Health Department, Agriculture and Fisheries Department, Resettlement Department, the Auxiliary Medical Service, the City District Office and the Hong Kong Red Cross (Branch of the British Red Cross) on relief work and the aftermath of disasters; and with the Information Services Department on public information activities.

26. Towards the end of the Mission's visit, a meeting was held with the voluntary agencies engaged in disaster relief work. Besides the Hong Kong Red Cross, representatives of C.A.R.E., Caritas, Catholic Relief Services, Lutheran Work Service and the Salvation Army were present.

27. Arrangements were made by the authorities for the Mission to make an aerial survey of the typhoon shelters in several sections of the territory.

28. At the conclusion of the Mission's visit, discussions were again held with the Defence Secretary, the Principal Assistant Colonial Secretary (Social) and the Principal Assistant Colonial Secretary (General), during which the Mission's observations and recommendations were formulated for consideration. These were endorsed by the authorities concerned.

Observations

29. The Mission was given every facility by the Government of Hong Kong to carry out the purposes of its visit. A well-planned series of meetings

/with

with all the national agencies involved, including voluntary agencies, was arranged in advance of the Mission's visit.

30. It is with considerable satisfaction that the Mission is able to record that Hong Kong has set up a comprehensive system for the protection of people and property from the effects of typhoons which could well serve as a model for other Typhoon Committee member countries. Although not always formalized, a sound system of co-operation between the national bodies concerned has been achieved. No formal disaster plan exists, but the circular distributed each year by the Government setting out departmental responsibilities is supplemented by detailed departmental instructions that effectively achieve the purpose of a disaster plan. The result is a plan, flexible in form, which leaves no doubt where responsibility for essential functions lies and which is subject to annual review. The Mission was shown the Civil Co-ordination Centre (CCC) which comes into operation when needed, and which ensures full co-ordination of operations in times of disaster. The Centre has the added advantage of having qualified technicians from interested agencies during times of disaster which no doubt facilitates co-ordination.

31. The Mission noted that a most successful campaign of public education had been carried out by Government authorities, particularly the Royal Observatory, and that the level of awareness of the dangers of typhoons and the action to be taken by the public is unusually high.

32. The relatively small size of Hong Kong undoubtedly facilitates the building up of a closely-knit system of disaster preparedness. It is nonetheless the view of the Mission that the present efficient system in Hong Kong constitutes a very real tribute to the energy, imagination and realism of all those who have contributed to its design and operation.

33. Despite the nature of the above remarks, and as frequently mentioned during discussions both by Government officials and the Mission, complacency has no place in any system of disaster preparedness. The Mission therefore ventures a number of suggestions which it believes the Government of Hong Kong will study attentively.

/Recommendations

Recommendations

34. Meteorological broadcasts

During emergency periods, such as typhoons or heavy rainstorms, there is a greatly increased demand for meteorological information of a more detailed nature than is provided through the normal information media (press, radio, television). Requests for information may amount to 400 per hour or more. An automatic telephone reply system is unable to handle this number of inquiries. It is therefore suggested that one radio channel be dedicated to the broadcasting of meteorological information on a 24-hour basis throughout the year. In addition to providing the public with information on the approach of typhoons and heavy rainstorms, it could also serve as a valuable source of more detailed information for a variety of users outside emergency periods, especially the shipping interests which play a vital role in Hong Kong's economy. During periods of heavy thunderstorms, it would also provide a means of informing all concerned of the expected variation of rainfall in different parts of the territory forming Hong Kong. At present, there is no means by which this can be done.

35. Land use control

Recent natural disasters in Hong Kong have shown that present legislation does not cover all aspects of land use control. There is a need to ensure not only that buildings meet adequate construction regulations, but also that the available land is used for development purposes with a full knowledge of the risks involved. In granting development permits, account should be taken of the topographical conditions, geological structure and soil mechanics as well as of the degree of resistance to flash floods and landslides. It is accordingly suggested that in-depth studies of these factors be undertaken for all new development sites before construction begins.

36. Strengthening of the staff of government departments

Discussions with government representatives revealed that disaster situations call for additional support from technical staff which is not at present available. The problems are not budgetary but concern the

availability of trained professional officers. This situation affects particularly the Highways Department, but may also be of importance to other departments. It is accordingly suggested that the staffing of all relevant government departments be examined to see to what extent further strengthening of the staffing at the professional level is needed to meet the additional requirements imposed by the regular occurrence of natural disasters in Hong Kong.

37. Voluntary agencies

It was the feeling of the Mission that greater use could be made of the potential resources available to the Hong Kong authorities through voluntary agencies. While the prime strength of such agencies lies in the provision of disaster relief, they can usefully assist in the pre-disaster planning phase. It is desirable that government departments investigate how the voluntary agencies can play a broader role in the disaster preparedness system and advise them accordingly.

38. Manning of the Civil Control Centre

It was the feeling of the Mission that some government departments were concerned that the Civil Control Centre (CCC) was manned only during emergency periods. If the Mission has interpreted the views expressed correctly, there is a desire for an arrangement that would bring the CCC into greater use. It may therefore be worth considering the possible manning of the Centre on a permanent basis with a skeleton staff. This possibility should be investigated, including the likely functions of the CCC. One of these might be to entrust it with responsibility for an improved formalized co-ordination of pre-disaster activities and evaluation between emergency periods.

39. Training

The Mission believes that there are two points worthy of mention under this heading:

- (a) The very high standards already exercised by Hong Kong in its disaster-preparedness programme and operations make it particularly suitable for providing aid to Typhoon Committee

/member

member countries in which disaster-preparedness is less advanced. It is accordingly suggested that the experience and expertise available in Hong Kong be made available to countries requesting assistance. This could be done either by the provision of training courses in Hong Kong or by sending experts to countries seeking assistance. In consultation with the Typhoon Committee, Hong Kong should examine the extent of these needs and ways in which it might help to meet them.

- (b) It is the present practice of government departments to hold separate, frequent and regular test exercises to test their readiness to meet disaster. This practice is to be commended in all respects. However, there are additional advantages to be gained from the joint simultaneous testing of the disaster-preparedness system by all departments involved. It is suggested that Hong Kong should examine the feasibility of holding joint exercises of this type every year, preferably just before the typhoon season begins.

IV. REPUBLIC OF KOREA

Report on the Mission's activities

40. The proposed programme was slightly recast following consultations with the interested major national agencies (annex II). The rearranged programme provided for a series of preliminary discussions, which were held at the Central Meteorological Office, followed by joint meetings with all the national agencies involved in forecasting, relief and rehabilitation. The joint meetings took place under the chairmanship of Dr. I.K. Yang, Director of the Central Meteorological Office and Vice-Chairman of the Typhoon Committee, and were held at the Ministry of Construction at the invitation of Mr. Lee Il Sun, Director of the Bureau of Water Resources.

41. At the first joint meeting, the objectives of the Mission and the methods of attaining them were described in introductory statements made by the Mission. The inputs required from the national agencies were outlined. The roles of the various agencies and their contributions to an integrated

/national

national warning system were then closely examined. This examination involved detailed explanations by staff of the Central Meteorological Office and the Bureau of Water Resources (Ministry of Construction) of the processes leading to the issue of typhoon and flood forecasts and warnings, during which the potential of current techniques, coupled with an improved understanding of their possibilities and limitations, was demonstrated.

42. The study of the work of the technical agencies was followed by an examination of the roles of the other governmental and non-governmental agencies contributing to national community preparedness and disaster prevention efforts, in the course of which the agencies' achievements as well as their limitations and related problems were brought to light and studied carefully.

43. The ensuing discussions provided ample opportunity for all participants to learn of the work and future plans of each agency and, consequently, to investigate methods of achieving closer co-operation and co-ordination. Visits to the national technical and welfare agencies further contributed to a greater understanding of the work of each and of the problems they had encountered. These visits facilitated consideration of the measures desirable to achieve a better and more integrated national programme of disaster preparedness.

44. At the final joint meeting, the Mission put forward a number of observations and recommendations for consideration, which were accepted by the participating agencies.

Observations

45. The Mission was cordially received by the Government of the Republic of Korea which had planned a comprehensive programme of activities for the period of the visit based on the provisional programme proposed by the Mission. Careful thought had been given to this programme, thereby enabling the Mission to complete its task in the time available.

46. It is the view of the Mission that the forethought and planning that has gone into the national disaster plan, coupled with a wealth of practical experience, has resulted in an effective system of disaster preparedness. The Mission noted, in particular, the following factors contributing substantially to the present state of affairs:

/(a)

(a) The legal enactment of the "Storm and Flood Control Law" (Law No. 1714), promulgated on 28 February 1967. Two other publications, "Disaster Control Activity System" and "Basic Guidelines for the Operation of Disaster Prevention Headquarters", both based on the above law, strongly reinforce its objectives and provide further details of the organization for disaster prevention and the duties and responsibilities of those involved. These prescriptions are further supplemented by more detailed departmental instructions.

(b) The establishment of a Central Disaster Control Committee, under the Chairmanship of the Prime Minister, on which all involved ministries and the Republic of Korea National Red Cross are represented.

(c) The establishment of a Disaster Prevention Headquarters which comes into operation when a disaster threatens or has occurred. This organization provides for good co-operation between government departments under the co-ordination of the Director of the Bureau of Water Resources in the Ministry of Construction.

(d) The existence of parallel arrangements for disaster control at the different levels throughout the country (i.e. provincial, city, etc.) and a Flood Control Corps.

(e) The "Sae-ma-eul" (New Community Movement) through which the spirit of self-help and popular participation is propagated to the people as a means of fostering disaster prevention measures.

47. In addition, the Mission wishes to record the following observations stemming from its visits and discussions:

(a) Central Meteorological Office

The Central Meteorological Office is well equipped with modern methods of carrying out its functions as the national agency responsible for prediction and warning of typhoons. Although some staffing problems remain, it is in progress of further expansion and modernization. The UNDP/WMO large-scale

/project

project for a Meteorological Research and Training Institute, which is to begin shortly, will materially assist in this respect.

(b) Bureau of Water Resources (Ministry of Construction)

The Bureau of Water Resources plays an important role, particularly when the Disaster Prevention Headquarters comes into operation. Responsible disaster control officials are rushed to the Headquarters from the ministries and agencies concerned and co-ordinate their respective agencies' activities on emergency relief and post-disaster rehabilitation. The magnitude of the disaster is constantly charted and can be seen at a glance on boards and maps. Telecommunication networks, teletype and facsimile printers are used extensively to transmit and disseminate information pertaining to disasters. Multi-purpose dams that have the control of floods as one of their functions are being built under a long-term project due to terminate in 1981.

(c) The Republic of Korea National Red Cross

The responsibilities of the Republic of Korea National Red Cross in the field of planning and disaster relief are clearly defined in the Law of Incorporation of the Society. The National Red Cross role is reflected primarily in the emergency phase of both natural and man-made disasters, and remains one of its cardinal functions. The experience of the National Red Cross in disaster-relief preparedness and operation is available to the Central Disaster Control Committee through the participation of its Secretary General and the structure of the National Red Cross ensures its participation in disaster activities at all levels and throughout the country.

(d) A number of other national bodies are involved in the system, but time precluded individual visits to them. The Mission had the benefit of listening to statements and discussing their work with some of them during the joint meetings.

/(e)

(e) There was some indication that the resources of voluntary agencies are not totally harnessed. Some further remarks on this subject appear in the next section.

(f) The items listed in paragraph 8 of the "Note" distributed to the Mission by LRCS/WMO/ECAFE as proposals for further action were reviewed in detail with the interested agencies. It was noted that most of these proposals are already part of the system in force in the Republic of Korea; the others are further referred to under the Mission's recommendations.

(g) The vital topic of public education is dealt with in the Republic of Korea primarily through a month-long campaign in May of each year before the beginning of the disaster season. Mass media give adequate coverage throughout the remainder of the year. This matter is also referred to under the Mission's recommendations.

Recommendations

48. The information supplied to the Mission by the national authorities gives ample evidence of an energetic approach to disaster preparedness activities in the Republic of Korea. As stated earlier, the present system has been planned in considerable detail and operates smoothly and effectively, with a praiseworthy degree of co-operation and co-ordination. Nevertheless, it is the opinion of the Mission that, in common with the authorities of the other countries it has visited, the Government of the Republic of Korea will welcome any suggestions which may contribute towards the improvement of an already efficient system. The Mission therefore wishes to make the following proposals which it believes the Government will study attentively.

49. Regular meetings at the national level for discussion of common problems

Although such meetings between governmental bodies already take place from time to time, the voluntary agencies that have experience in disaster preparedness and relief, as well as the resources at their disposal, have unfortunately been overlooked. The Mission was pleased to note the agreement reached during its visit that the National Red Cross should also participate in such activities and recommends that this agreement be formalized.

/50.

50. Visits of community preparedness/disaster prevention personnel to meteorological/hydrological services and vice versa.

Provision for visits of this type, which strengthen understanding of the problems of each agency and promote a professional interchange of knowledge and ideas, have not so far taken place in the Republic of Korea. A useful beginning was made during the visit of the Mission. It is recommended that they become a regular feature of the national disaster preparedness system to ensure the close contact essential between all concerned.

51. Setting up of direct communication links between the agencies involved to ensure complete and continuous co-ordination of efforts in pre-disaster and disaster situations.

The present system of communication is excellent. The only proposal the Mission wishes to make in this regard is to extend the present communication link-up to include the National Red Cross to ensure fuller effectiveness.

52. Full participation of all national authorities concerned in the activities of the Typhoon Committee, including its sessions.

In keeping with the recommendations of the Typhoon Committee, it is the view of the Mission that representation be broadened to include representatives of both technical and community preparedness agencies active in disaster relief. The expert advice that can be obtained for the Committee through the presence of those actively engaged in disaster preparedness and relief measures is of particular importance if the expanding programme of work in this field is to be meaningful. At the same time, the Republic of Korea would make a valuable and significant contribution to the Committee by putting its national experience at the disposal of the Committee.

53. Preparation of public information material so that all members of the public are fully conscious of risks and how to minimize them. This material to be prepared jointly by all responsible bodies in each country.

The Republic of Korea has already taken many useful steps in this direction. The Mission learnt of the various kinds of material available, ranging from a voluminous document to posters and films. It is felt, however, that public education must be a constant process through simple

texts setting forth in a graphic way the rules the public should follow in times of alert and disaster and which could be prominently displayed and/or kept at hand for ready reference. It is suggested that public education be promoted through schools and the National Red Cross. Educational material from other countries will be made available to the Republic of Korea for guidance through the medium of the WMO Tropical Cyclone Project.

54. Training programmes

Some national bodies, e.g. the Police and the National Red Cross, already have training courses for personnel engaged in disaster preparedness and relief. The Mission considers that it may be desirable to enhance the value of these courses by including staff from other agencies involved in disaster work and instituting, in due course, a more integrated national training system for this purpose.

55. Voluntary agencies

The Mission felt that the resources available through voluntary agencies had not been tapped to the fullest extent. It is suggested that this avenue be investigated with a view to obtaining additional support and integrating the voluntary agencies that are involved in disaster work more fully into the over-all disaster preparedness and relief system.

56. Availability of disaster relief

Notwithstanding the increased efforts on the part of the national authorities involved in disaster preparedness and relief to mitigate the loss of human lives and property, the annual toll of lives lost and the extent of typhoon and flood damage continues to run at a high level. Experience in other parts of the world indicates that, although the number of deaths tends to decline as a result of an efficient warning system and other measures, the amount of damage tends to continue to increase. Greater damage generally means more people are victims; even though their lives may be saved. It may be judicious for the Government to consider at an early stage the probable impact of these facts on the requisites for relief.

V. OTHER GENERAL CONCLUSIONS AND RECOMMENDATIONS

57. The Mission was planned and carried out as a pilot project to explore a facet of the Typhoon Committee's programme not previously studied in depth. From the outset, valuable background advice was available to the Mission through the survey carried out by Mr. James R. Hickey of the American National Red Cross in late 1971 and from the review of the existing disaster prevention organization completed by the Typhoon Committee secretariat in August 1972.

58. It is the view of the Mission that the selection of Thailand, Hong Kong and the Republic of Korea for the project was felicitous in several ways. The threat posed by typhoons and floods varies substantially from one country to the next and the organizations and methods are appreciably different. Local considerations of topography and geography increase the need for an approach geared to the specific problems of individual countries. It seems likely, therefore, that the conditions encountered reflect in many respects the disparate levels of preparedness attained by member countries of the Typhoon Committee.

59. The Mission's task could not have been carried out without the whole-hearted and enthusiastic support provided by all those involved in activities related to community preparedness and disaster prevention.

60. The benefits accruing to members of the Mission from participation in the visits to the three countries were substantial. They were afforded the possibility of learning at first hand and in detail of the arrangements made in each country, consequently acquiring a wealth of experience and knowledge that could not have been obtained in any other way. Formal and informal discussions with national officials bearing responsibility for day-to-day operations at a variety of levels provided the Mission with a clear insight into local problems. Much of the experience accumulated will be applied in furthering the activities of the Typhoon Committee and similar organizations operating in other parts of the world, generally at a less advanced level.

61. It is clear that it will only be possible to assess the long-term results of the Mission in the light of the action taken by the three Governments concerned in following up the recommendations mutually agreed upon. The Governments alone have the authority to implement the decisions made and the means of implementing them. Nevertheless, the Mission believes that the visits effected have generated an increased awareness that disaster prevention activities can make a solid contribution to national economies. At the end of each visit, the Mission was conscious of a degree of enthusiasm for a more active approach to national efforts in disaster preparedness which it believes augurs well for the future. The enthusiasm manifest, together with the evident improvement in personal relationships engendered by the visits and discussions, must effectively contribute to the ultimate objective of reducing loss of life and damage to property.

62. In the light of the experience it has acquired, the Mission believes that a number of general recommendations should be made to consolidate the work undertaken and to ensure that the decisions taken constitute a sound basis for continued progress in community preparedness and disaster prevention activities as part of the Typhoon Committee's programme. The Mission's recommendations are set forth below.

General recommendations

1. That, as a follow-up to the Mission's work in Thailand and in conjunction with the sixth session of the Typhoon Committee, which will be held at Bangkok in November 1973, discussions be held between members of the Mission and representatives of the national agencies constituting the proposed task force to review the progress made.

2. That the representatives of each of the three countries visited be requested to make statements at the sixth session of the Typhoon Committee on the action taken on the recommendations of the Mission.

3. That the experience acquired by the Mission be systematically extended to all Typhoon Committee member countries through periodic visits arranged to keep under constant review the progress made in disaster preparedness.

4. That the Typhoon Committee make suitable arrangements to ensure the regular exchange of ideas and experience between member countries on all aspects of community preparedness and disaster prevention, paying particular attention to visual public information material for use after adaptation to local needs.^{1/}

5. That the participation of the League of Red Cross Societies in all aspects of the community preparedness and disaster prevention programme of the Typhoon Committee be continued and strengthened.

/Annex I

^{1/} A wealth of such material is already available in several member countries, including Japan, but cannot be used elsewhere until translated into local languages.

Annex I

PROGRAMME OF THE MISSION

THAILAND (5-15 March 1973)

Monday, 5 March

9.00 a.m./p.m. Preliminary Discussions 1 and 2 (PD/1, PD/2)

Objective

- Pre-mission discussions.
- Review of main objectives of mission, working methods, arrangements in each country.
- Completion of final programme.
- Consideration of report, contents, format, etc.

Participants

- LRCS/WMO/ECAFE team members, and other ECAFE officers concerned, Meteorological Department and Thai Red Cross Society.

Tuesday, 6 March

9.00 a.m. Preliminary Discussion 3 (PD/3)

Objective

- Description of mission programme in Thailand.
- Major objectives and methods of attaining. Inputs required from the under-mentioned local agencies.

Procedure

- Main introductory statement by LRCS. Supporting statements by WMO and ECAFE. Presentations by national agencies.

- General discussion.

Participants

- LRCS/WMO/ECAFE - All national agencies concerned.

11.00 a.m.
2.00 p.m.
(cont.)

First Joint Meeting (JM/1)

Objective

- Examination of roles different agencies present and their contribution to an integrated national typhoon warning system. More detailed explanation of processes leading to issue of typhoon and flood forecasts and warnings, with purpose of illustrating warning potential of current techniques and giving further understanding of their possibilities and limitations.

/Procedure

Procedure

- 1. Introductory statement (LRCS/WMO/ECAFE, as necessary).
2. Lecture (30 minutes) outlining typhoon forecasting methods.
3. Lecture (30 minutes) outlining flood forecasting methods. (Both lectures to be directed towards informing the non-scientific staff of disaster prevention agencies of methods used, problems and difficulties countered). The first lecture should be given by a senior member of the Thai Meteorological Department, and the second lecture should be given by the Royal Irrigation Department.
4. General discussion on above lecture with accent on ways in which those responsible for initiating warnings can collaborate more fully and effectively with those on whom responsibility for subsequent action rests.

Participants

- LRCS/WMO/ECAFE - All national agencies concerned.

Wednesday, 7 March

9.30 a.m.

First Meeting with the Authority concerned (M/1)

Objective

- Examination of roles different agencies present and their contribution to the national community preparedness and disaster prevention.

Procedure

- Description by members of disaster prevention/community preparedness agency of their main responsibilities and the methods used to take action upon receipt of a warning. What problems confront them in meeting these responsibilities? What additional technical advice is required to improve their capabilities to save lives and reduce damage? etc.
- Suggestions for closer and more effective collaboration etc.

Participants

- LRCS/WMO/ECAFE - Thai Red Cross Society, Rajaprajant Foundation

2.00 p.m.

Second Meeting (M/2)

Objective

- Same as above

Procedure

- Same as above

Participants

- LRCS/WMO/ECAFE - Department of Local Administration

/Thursday,

Thursday, 8 March

9.30 a.m./p.m.

Third and Fourth Meeting (M/3 and M/4)

Objective

- Same as above

Procedure

- Same as above

Participants

- (a.m.) LRCS/WMO/ECAFE - Department of Public Welfare.
- (p.m.) LRCS/WMO/ECAFE - Police Department.

Friday, 9 March

9.30 a.m./p.m.

Fifth and Sixth Meeting (M/5 and M/6)

Objective

- Same as above

Procedure

- Same as above

Participants

- (a.m.) LRCS/WMO/ECAFE - Royal Irrigation Department
- National Energy Administration
- Committee for Co-Ordination and Investigations of Lower Mekong Basin

(p.m.) LRCS/WMO/ECAFE - Meteorological Department

Representatives of disaster prevention/community preparedness agencies to visit Meteorological Department (and possibly Royal Irrigation Department). Department officers to conduct guided tour to back up lecture of the previous day. Arrangement could be made to simulate the steps leading to the issue of a typhoon warning by the use of a suitable chart sequence. Main effort to be given to imparting a realistic understanding of the forecast problem, and thereby to the creation of a credible image of the meteorological role in the warning system.

Monday, 12 March

9.30 a.m.

Second Joint Meeting (JM/2)

/Objective

Objective

- Stocktaking of present degree of co-ordinated action in Thailand. In what ways does system fall short of that necessary? Initial views on new measures desirable. Proposals for early action (those in paragraph 8 of "Note" distributed in October 1972 should be examined one by one). Steps that can be taken during remainder of mission.

- Drawing-up of longer term programme.

Procedure

- 1. Introductory statement by LRCS.
- 2. Proposals in "Note" introduced by WMO.
- 3. Contributory remarks from participants.

Participants

- LRCS/WMO/ECAFE - All national agencies concerned.

2.00 p.m.

Third Joint Meeting (JM/3)

Continuation of morning programme. Emphasis on preparation of long-term programme. Specific consideration should be given to the preparation of a national disaster plan.

Participants

- Same as above

Tuesday, 13 March

9.30 a.m./p.m.

Fourth Joint Meeting (JM/4)

Objective

- Discussions on outcome of previous activities. Assignment of responsibilities under new measures proposed. Executive level action to implement new programme. Funding of programme.

Procedure

- Same as above

Participants

- Same as above

Wednesday, 14 March

10.00 a.m./p.m.

Final Joint Meeting (JM/5)

Objective

- Briefing of agencies on outcome of mission with special reference to decisions made and national acceptance of programme proposals.

Procedure

- Presentation of programme of action.
- Final comments.
- Approval of programme of action.

/Participants

Participants

- LRCS/WMO/ECAFE - All national agencies concerned.

Thursday, 15 March

Departure

HONG KONG (15-22 March 1973)

Thursday, 15 March

15.00

Arrive at Kaitak Airport

Friday, 16 March

10.00

Mission studies Departmental Instructions, Orders, Circulars and Emergency Organisation (Natural Disasters) Charts.

12.35

Mission meets:

Mr. D.S. Whitelegge
Mr. M.D. Cartland

Defence Secretary
Assistant Secretary
(Social Services)
Principal Assistant
Colonial Secretary
(General).

Mr. H.M.A. Bristow

14.00 - 15.00

- discussion -

15.30 - 18.00

Royal Observatory.

Royal Observatory
Marine Department
Radio Hong Kong

Discussion on Preliminary
(Weather).

Warnings

Monday, 19 March

09.45 - 12.30

Discussion re Emergency
Operations.

Police Department
Fire Service Department
Civil Aid Service
Building Service
Water Works Office
Highway Office

14.30

Fire Services
Department Headquarters

14.45 - 16.45

Discussion re Emergency
Operations.

/Tuesday,

Tuesday, 20 March

09.30 Social Welfare Dept.
09.45 - 12.30 Discussion re relief work and aftermath of disaster.
14.30 - 15.30 Visit City District Office (Eastern)
16.00 Visit Information Services Department Headquarters.

Social Welfare Department
Medical Department
Resettlement Department
Agriculture and Fisheries Department
Hong Kong Red Cross

Escorted by Mr. T. H. Barma, City District Officer

Wednesday, 21 March

8.00 - 9.00 Surveying Typhoon Shelters by helicopter.
09.30 - 12.30 Colonial Secretariat discussion re visit, Mission's recommendations, any associated problems
14.00 - 17.00 Hong Kong Red Cross for discussion on the activities of voluntary agencies.

Defence Secretary
Principal Assistant Colonial Secretary (Social)
Principal Assistant Colonial Secretary (General)

Hong Kong Red Cross
Lutheran World Service
American Baptist Mission
CARE Inc.
H.K. Christian Service
Caritas
Catholic Relief Service
Salvation Army

Thursday, 22 March

Depart Hong Kong.

/REPUBLIC OF KOREA

REPUBLIC OF KOREA (22 March - 2 April)

Thursday, 22 March

15.00 Arrival at Kimpo Airport.

Friday, 23 March

10.00 - 12.00 Annual celebration of World Meteorological Day at CMO.

13.00 - 17.30 Panmunjeom tour by KNRC.

Saturday, 24 March

10.00 - 12.00 Preliminary Discussion (PD/1) at CMO

Objective

- Description of mission programme in the Republic of Korea. Major objectives and methods of attaining. Inputs required from the undermentioned local agencies.

Procedure

- Main introductory statement by LRCS. Supporting statement by WMO and ECAFE Presentations by national agencies General discussion

Participants

- LRCS/WMO/ECAFE
CMO
MOC (Water Control Division)
KRCS

Monday, 26 March

10.00 - 11.00 Visiting MOC

11.00 - 12.00 Visiting KNRC

14.00 - 16.00 Preliminary Discussion (PD/2) at CMO

Tuesday, 27 March

10.00 - 12.00

First Joint Meeting (JM/1) at MOC

Objective

- Examination of roles of different agencies present and their contribution to an integrated national typhoon warning system. More detailed explanation of processes leading to issue of typhoon and flood forecasts and warnings, with purpose of illustrating warning potential of current techniques and giving further understanding of their possibilities and limitations.

/Procedure

Procedure

- 1. Welcome address by MOC, CMO and KNRC.
2. Introductory statement LRCS/WMO/ECAFE.
3. Lecture outlining typhoon forecasting methods by CMO.
4. Lecture outlining flood forecasting methods by MOC (Water Control Div.).
5. Short briefing by KNRC and other agencies concerned.
6. Discuss more fully and effectively on above lectures and briefings.

Participants

- LRCS/WMO/ECAFE
- CMO
- MOC (Water Control Division)
- KNRC
- Ministry of Transportation
- Ministry of Home Affairs
- Ministry of Health and Social Affairs
- Ministry of National Defence
- Ministry of Culture and Information
- Ministry of Agriculture and Fishery

14.00 - 16.00

Second Joint Meeting (JM/2)

Objective

- Stocktaking of present degree of co-ordinated action in the Republic of Korea. Initial views on new measures desirable.

Proposals for early action (those in paragraph 8 of "Note" distributed in October 1972 should be examined one by one).

Drawing-up of longer-term programme.

Procedure

- 1. Proposals in "Note" introduced by WMO.
2. Contributory remarks from participants.
3. Strengthening of the national co-ordination body to be considered.

Participants

- The same as JM/1

Wednesday, 28 March

10.00 - 12.00

Visiting CMO

CMO officers to conduct guided tour to back up lecture of JM/1.

/Participant

Participants

- The same as JM/1

14.00 - 16.00

Extra Joint Meeting

Participants

- LRCS/WMO/ECAFE
- MOC
- CMO
- KNRC

Thursday, 29 March

10.00 - 12.00

Visiting KNRC

Participants

- The same as JM/1

14.00 - 16.00

Visiting MOC

Participants

- The same as JM/1

Friday, 30 March

10.00

- Survey of the facilities for disaster prevention by MOC (KOWACO) - Soyang-gang Dam.

Saturday, 31 March

10.00 - 12.00

Third Joint Meeting (JM/3) at MOC

Objective

- Discussion on outcome of earlier meetings.

Assignment of responsibilities under new measures proposed.

Executive level action to implement new programme.

Funding programme.

Briefing of agencies on outcome of mission with special reference to decisions made and national acceptance of programme proposals.

Procedure

1. Discussion
2. Presentation of programme of action
3. Final comments
4. Approval of programme of action

Participants

- The same as JM/1

Monday, 2 April

Departure for Tokyo.

Annex II

LIST OF PERSONS CONTACTED

THAILAND

Ministry of Interior

- Mr. Chamlong Paladesh, Chief of Division of Civil Defence, Department of Local Administration
- Mr. Mentree Surarangsarn, Technical Officer, Technical Services Division, Department of Local Administration
- Pol. Col. Boonchitt Phanthumachina, Deputy Chief of Staff, Provincial Police Headquarters, Police Department
- Pol. Lt. Col. Voravadhana Kunjara, Superintendent, Third Sub Division, Police Fire Brigade, Police Department
- Mr. Prawit Harnnarong, Chief of Disaster Relief Division, Department of Public Welfare
- Mr. Sayom Ratanawichit, Chief, Social Studies and Planning Division, Department of Public Welfare
- Mrs. Pimonjan Namwat, Department of Public Welfare

Ministry of Agriculture and Co-operatives

- Mr. Damrong Jaraswathana, Chief of Hydrology Section, Royal Irrigation Department
- Mr. Tongterm Yuktanuntana, First Grade Engineer, Hydrology Section, Royal Irrigation Department

Ministry of Communication

- Dr. Charoen Charoen-rajapark, Director General, Meteorological Department
- Capt. Prasert Soontarotok, Deputy Director, Meteorological Department
- Dr. W. Sangvaree, Chief, Hydrometeorology Division, Meteorological Department
- Mr. Patpat Patrivatsiri, Senior Meteorologist, Central Weather Forecast, Meteorological Department
- Mr. Tawatchai Brikshavana, Hydrometeorologist, Meteorological Department

/Office of

Office of the Prime Minister

- Mr. Nitipat Jalichan, Secretary General, National Energy Administration
- Dr. Prathet Sutabutr, First Grade Engineer, Technical Division, National Energy Administration
- Mr. Suvat Saguanwongse, Hydrologist, National Energy Administration

Rajaprajanukroh Foundation

- Pol. Major General Chare Sudasna, Deputy Secretary General
- Vice Admiral Sanit Vesa-rajana, Adviser

Thai Red Cross Society

- Prof. Dr. Tawan S. Bunnag (M.D.), Director of Relief Div.
- Dr. Atirek Nathalang (M.D.), Assistant Director, Relief Div.
- Dr. Surin Chaiachwong (M.D.), Relief Division
- Mr. Udom Subhatrai, Director, School of Nursing
- Mrs. Srisombut Rerksanand
- Miss Rabiab Punthupag
- Mr. Somlaks Hutinda
- Mr. Sernchit Kanjanapokin, Director of Nursing Service

Committee for Co-ordination of Investigations of the Lower Mekong Basin

- Mr. J.W. Vander Oord, Executive Agent
- Mr. Louis Cohen, Acting Chief, Engineering Division
- Mr. Surin Sangsnit, Chief Hydrometeorologist

HONG KONG

Defence Secretariat

- Mr. D.S. Whitelegge, Defence Secretary
- Mr. H.M.A. Bristow, Principal Assistant Colonial Secretary (General)
- Mr. P.B. Williams, Principal Assistant Colonial Secretary (Social)

/Mr. A.K. Mason,

Mr. A.K. Mason, Deputy Defence Secretary

Mr. M. Cartland, Assistant Secretary (SD)

Miss S. Hamilton, Defence Assistant

Miss S. Stephenson, Assistant Government Security Officer

Royal Observatory

Mr. G.J. Bell, J.P., Director

Mr. J.E. Peacock, Deputy Director

Mr. P. Peterson, Senior Scientific Officer

Dr. Chin Ping-Chuen, Senior Scientific Officer

Public Works Department

Mr. G.F. Hegg, Chief Building Surveyor (Works)

Mr. T.H. Tomlinson, Government Water Engineer (S & D)

Mr. Wong Mang-ki, Government Highway Engineer

Police

Mr. H.V. Brown, Staff Officer (Operations)

Marine Department

Mr. A.J.S. Lack, Principal Marine Officer

Fire Service Department

Mr. J.G. Murray, Senior Staff Officer

Social Welfare Department

Mr. T.S. Heppell, Assistant Director (General)

Mr. Tsau Tsor-yan

Mr. Lu Ya-ha

Medical and Health Department

Dr. G.I. Forbes, Principal Medical and Health Officer

/Agriculture

Agriculture and Fisheries Department

Mr. J.E. Gordon

Resettlement Department

Mr. Michael Sze Cho-cheung

Mr. Keith Robinson

Secretariat for Home Affairs

Mr. J.M. Rowlands, Deputy Secretary for Home Affairs

Mr. Peter Ng, City District Commissioner

Mr. T.H. Barma, City District Officer (Eastern)

Mr. P. Moss, Information Division

Information Service Department

Mr. J.B. Hawthorne, Acting Director of Broadcasting

Mr. G. Blundell

Mr. R.A. Winyard, Radio Hong Kong

Auxiliary Services

Mr. G.F. Doggett, MC, Medical Defence Staff Officer, Auxiliary Medical Service

Mr. C.Y. Chen, Acting Chief Staff Officer, Civil Aid Services

Mr. J.A. Higgins, Commissioner, Essential Services Corps

Hong Kong Red Cross

Mrs. F.K. Li

Miss S. Clarke

Mr. T. Sin

C.A.R.E.

Mr. Leo A. Pastore

Caritas

Miss Betty Chen

/Catholic

Catholic Relief Services

Miss Pauline McGuire

Lutheran World Service

Mr. Carl Nielsen

Salvation Army

Major Griffiths

REPUBLIC OF KOREA

Ministry of Construction

Mr. Lee, Il Sun, Director, Water Resources Bureau

Mr. Yu, Tae Yong, Chief, Water Resources Division

Mr. Kim, Yong Whan, Sub-Section Chief, Disaster Prevention Division

Mr. Lee, Yun Sik, Sub-Section Chief, Disaster Prevention Division

Central Meteorological Office

Dr. Yang, In Ki, Director

Mr. Park, Yong Dae, Chief, Observation Section

Mr. Hong, Sung Gill, Sub-Section Chief, International Affairs

The Republic of Korea National Red Cross

Mr. Suh, Young Hoon, Secretary General

Mrs. So, Yoon Yeohoon, Director, International Relations

Mr. Oh, Bong Yul, Director, Relief and Social Service

Ministry of Home Affairs

Mr. Kang, Min Sik, Senior Police Officer, Police Fire Department

Ministry of Health and Social Affairs

Mr. Cho, Kyung Ho, Chief, Protection Division

Ministry of Defence

Colonel Oh, Sun Kwen, Chief, Military Logistics Section

/Ministry

Ministry of Culture and Informations

Mr. Yoon Tak, Chief, Public Relations Division

Ministry of Transportation

Mr. Lee, Jum Youns, Chief, Multi-transportation Section

Ministry of Agriculture

Mr. Ro, Tae Rae, Chief, Land Improvement Section.

/Annex III

Annex III

NOTE ON COMMUNITY PREPAREDNESS AND DISASTER PREVENTION
ACTIVITIES IN THE TYPHOON COMMITTEE COUNTRIES

Introduction

1. In 1971, WMO engaged a high-level consultant (Mr. James R. Hickey), through the League of Red Cross Societies, to make a survey of community preparedness and disaster prevention arrangements in the typhoon area. The consultant visited all Typhoon Committee member countries and prepared a valuable report with recommendations for further action.
2. One of his most significant findings was that, in most countries, there is a serious lack of contact between the meteorological/hydrological agencies and those responsible for community preparedness. There seems to be insufficient understanding of the complementary nature of the functions of the two sides, and of the extent to which the responsibilities of the one impinge upon the other. The survey thereby revealed a state of affairs not previously recognized and one that has alarming implications for the safety of human life and property in these countries.
3. It is now important to follow up the survey with action designed to rectify a potentially dangerous situation and thus build upon the foundations already laid. It is also important to move ahead whilst the survey is still fresh in the minds of those concerned in the member countries. A proposed course of action is therefore outlined below.

Proposed course of action

4. This problem has been discussed at a series of meetings with the LRCS in Geneva, and by correspondence with ECAFE. A number of ideas aimed at bringing the two communities together have been examined. The one most favoured by LRCS, because it was felt to have the best chance of success, proposed that a LRCS/WMO/ECAFE team should visit the countries mainly concerned.
5. The purpose of the joint mission would be to visit, in the selected countries, the Meteorological/Hydrological Services and the community preparedness/disaster prevention agencies, in order to explain to them the

/ways in

ways in which both can, and should, contribute to the total system for the protection of human life and property. Whilst this statement is evidently an over-simplification, it is felt that progress towards these general objectives can be accelerated by arranging for detailed discussions and explanations to the two communities, both separately and collectively. No approach of this type has previously been made.

6. An essential feature of the joint mission would be the physical bringing together of representatives of the two communities. Thus it is suggested that the individual members of the team would first have separate discussions with their counterpart services, in order to explain fully the purpose of the mission and the ways in which they believe this purpose could best be achieved. The next step would be to arrange joint meetings at suitable executive levels between the two sides. These meetings would provide opportunities to expound in greater detail the theme of an integrated programme of protection against typhoons and the respective roles of each of the national agencies involved. Careful attention should be given to ensuring that all have a full understanding of the capabilities and the limitations of present methods, not only of prediction and warning, but also of preventive measures.
7. One of the most important objects of the mission would be to draw up an agreed programme of the action that should be taken in each country over the next few years to improve community preparedness. If possible, and if time permits, further meetings and discussion groups should be organized between operational staff from both communities during the course of the mission.
8. Amongst the steps which might be recommended to foster closer contacts and a more effective level of collaboration, the following are suggested:

- (a) Establishment of national disaster prevention plans, where they do not already exist;
- (b) Creation of national committees representing all agencies concerned to apply and review, as required, the plan under (a) above;

/(c)

- (c) Regular meetings at the national level for discussion of common problems;
- (d) Visits of community preparedness/disaster prevention personnel to Meteorological/Hydrological Services, and vice versa;
- (e) A special annual pre-typhoon season conference;
- (f) Joint exercises before the typhoon season to test preparedness;
- (g) Setting up of direct communication links between the agencies involved to ensure complete and continuous co-ordination of efforts in pre-disaster and disaster situations;
- (h) Appointment of "liaison officers" to provide regular contact between the agencies;
- (i) Full participation of all national authorities concerned in the activities of the Typhoon Committee, including its sessions;
- (j) Preparation of public information material so that all members of the public are fully conscious of risks and how to minimize them. This material to be prepared jointly by all responsible bodies in each country.

9. It would be necessary to make advance arrangements with each of the countries concerned to avoid loss of time upon arrival of the mission. A carefully scheduled programme of meetings and discussions should be planned and submitted to each Government well in advance (see also paragraph 12 below).

Countries to be visited

10. The following Typhoon Committee member countries should be included in the mission: Hong Kong, the Republic of Korea and Thailand. These three countries have been selected as a pilot follow-up to the survey made by the consultant in 1971. It is hoped that the visits to these countries will show how further action to follow up the Hickey report can best be taken in the Typhoon Committee countries in general. A stay of 7-10 days in each country would be necessary. The total time involved would thus be of the order of 3-4 weeks.

/Timing

Timing

11. The period suggested for the mission is March 1973. This is based upon LRCS arrangements for a seminar in Bangkok from 6-27 February 1973 and the consequent availability of a staff member in the area immediately thereafter.

Further immediate action

12. LRCS is of the opinion that a mission of this type is a necessary prelude to further work in this component of the Typhoon Committee programme and wishes to go ahead as speedily as possible. The mission also has the support of the Office of the United Nations Disaster Relief Co-ordinator. A detailed plan for the joint mission should therefore now be drawn up. This plan should include a schedule for the visit to each country with dates, persons and authorities to be contacted, suggestions for discussion groups, etc. The plan should be submitted to each country with the proposal for the joint mission. Prior acceptance by each country should be obtained, together with agreement to make the internal arrangements needed. The preliminary contact with each country will, therefore, need to be at a sufficiently high level for there to be a reasonably good assurance that full and effective arrangements will be made to receive the mission, and that its work can be productive.

Concluding remarks

13. The importance of the community preparedness aspects of the Typhoon Committee programme have been fully recognized only in the last year or so. It is true to say that the success of the programme will ultimately depend principally on the action taken to improve community preparedness and disaster prevention measures. Unless real progress is made in this respect, the hopes of achieving any worthwhile reduction in damage must remain small.

14. No opportunity should therefore be missed to further this side of the programme, both for the results that can be obtained in the typhoon area and also because it provides what is, in effect, a pilot project which can show where most efforts should be placed in carrying through the community preparedness part of the WMO Tropical Cyclone Project.

/Mr. Hickey's

Mr. Hickey's report contains many recommendations that will require attention at both the international and national levels. Before anything much can be done at the international level, the present gap between the scientific and social welfare agencies in the countries must be bridged. The proposed mission offers a reasonable prospect of substantial progress towards this first objective.

ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth session
19-26 November 1973
Bangkok, Thailand

COMMUNITY PREPAREDNESS AND DISASTER PREVENTION

(Item 7 of the provisional agenda)

Note by the ECAFE and WMO secretariats

Introduction

1. The report of the Joint LRCS/WMO/ECAFE Mission on Community Preparedness and Disaster Prevention makes a number of general recommendations in addition to those specific to the three countries visited by the Mission. These general recommendations were made to consolidate the work undertaken and to ensure a sound basis for continued progress in community preparedness and disaster prevention activities as part of the Typhoon Committee's programme.

2. One of these recommendations is:

"That the experience acquired by the Mission be systematically extended to all Typhoon Committee member countries through periodic visits arranged to keep under constant review the progress made in disaster preparedness." (see p. 42 of report).

The means of implementing this recommendation has been given thorough consideration by LRCS, WMO and ECAFE during the course of discussions and consultations between the three organizations. The outcome of these consultations is a proposal for further action along the lines of the 1973 Mission and which is submitted for the consideration of the Committee at its sixth session. The main features of this proposal are given below.

Outline of proposal

3. In the light of the above recommendation, the possibility of carrying out a mission with broadly similar objectives to other Typhoon Committee member countries has been examined. The member countries not visited by the 1973 mission are the China, Japan, Khmer Republic, Laos and the Philippines. While the eventual usefulness of visits to all these countries is not doubted it is considered that, in the light of prevailing conditions, a mission encompassing China, the Khmer Republic and Laos would not be so profitable as one to Japan and the Philippines. Visits to these member countries should therefore be deferred for the time being.

4. The reasons for which it is believed that Japan and the Philippines should be visited by a joint mission are outlined below, the Philippines first because of its greater similarity to the countries visited in 1973.

Philippines

The Philippines suffers more tropical storms than any country in the world. This fact has obliged the Government to set up a National Committee on Disaster Operations to co-ordinate action in times of natural disaster. In addition, a National Disaster Control Centre (NDCC) has been established. The experience gained in the past few years since the new system has been in operation merits close study. Doubtless, lessons have been learned that could be readily applied in other member countries. It would be useful to appraise the methods adopted and the degree of co-ordination reached with a view to seeing in what way further improvement in community preparedness could be achieved. This appraisal would follow closely the lines of action taken by the 1973 mission to Hong Kong and the Republic of Korea, in both of which similar national arrangements to those in the Philippines exist.

The principal objectives of the mission would therefore be:

- (a) to bring together all the national authorities concerned to promote co-operation in the design and operation of an effective community preparedness/disaster prevention system;
- (b) to prepare an agreed programme to improve community preparedness disaster prevention for the safety of life and property.

Japan

Japan, alone of member countries, is a highly developed nation. Nevertheless it suffers, in financial terms, by far the highest losses of any member country. The Government's considerable experience in coping with losses from typhoons and other natural disasters has led it to develop a protective system unparalleled elsewhere in the world. Although a great deal of information on this system has been made available, no in-depth study of the complete system has been made and consequently its detailed structure is unknown to other nations. This is, to some extent at least, the result of the official laws and procedures being promulgated only in the Japanese language. Any thorough investigation of the system can accordingly be made only by a mission with at least one Japanese-speaking member.

It is felt that the Typhoon Committee programme in community preparedness and disaster prevention can never be complete unless it takes full account of the potential benefit to all concerned of the best organized system in any of its member countries. In many respects, the organization and success of the system in Japan represents the ideal at which other member countries should aim.

The principal objective of the mission would therefore be to make a thorough investigation of the detailed structure and provisions of the national disaster preparedness system. These investigations should be mainly directed towards obtaining information which could readily be applied in other member countries.

General considerations

5. The friendly and willing help accorded to the 1973 Joint LRCS/WMO/ECAFE Mission by the countries concerned, and their ready acceptance of mutually agreed recommendations, fully justifies a continuation of this new effort to stimulate better community preparedness and disaster prevention in member countries. It is proposed, therefore, that a second mission be mounted to visit Japan and the Philippines at a convenient time in the early months of 1974.

/Japan

6. In each country consultations would be held with all Governmental and non-Governmental agencies bearing responsibility under the national disaster preparedness system. Experience in 1973 shows that a period of about 10 working days per country is required to probe deeply into the system. A detailed programme of the proposed activities in Japan and the Philippines will be prepared in consultation with each country if agreement in principle is given to the idea of a continuation of the work begun in 1973 under this part of the Typhoon Committee's programme.

Action proposed

7. The Typhoon Committee is invited to consider the proposal made in this document and, if it supports the proposal,

- (a) to record its decision that a second Joint LRCS/WMO/ECAFE Mission on Community Preparedness and Disaster Prevention be mounted at a suitable time in early 1974 to visit Japan and the Philippines;
- (b) to request LRCS, WMO and ECAFE, in close consultation with the countries concerned, to prepare a detailed programme for the execution of the mission; and
- (c) to request the three organizations concerned, in co-operation with the TCS, to explore ways of continuing and expanding its programme of community preparedness and disaster prevention making further proposals to its seventh session.

UNITED NATIONS ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee

Sixth session
19-26 November 1973
Bangkok

CO-ORDINATION WITH WMO TROPICAL CYCLONE PROJECT
AND OTHER REGIONAL PROGRAMMES

(Item 8 of the provisional agenda)

Note by the WMO secretariat

Introduction

1. Under its Tropical Cyclone Project WMO is conducting a number of activities of considerable interest to the Typhoon Committee. The initial stages of these activities have been described at the fourth and fifth sessions of the Committee. The purpose of this note is to describe the developments that have taken place in 1973, both under the Tropical Cyclone Project itself and in the related regional programmes.

WMO Tropical Cyclone Project

2. At its fifth session the Committee was informed of the steps taken to publish the plan of action for the WMO Tropical Cyclone project and to distribute it to all members of WMO. It will be recalled that Members were urged to indicate what assistance they could offer in carrying out the studies and development work called for by the plan. As might be expected Members' replies arrived gradually, time being needed before decisions could be taken to make offers of support. Some of the replies offering considerable support for the project reached the WMO Secretariat only in the early months of 1973. Analysis of the response from Members revealed a small number of countries willing to undertake a substantial amount of work for the implementation of the plan of action.

/3. Consideration

3. Consideration was next given to the best means of taking up these offers bearing in mind that a large amount of preparatory work was required to ensure co-ordination between the different parts of the implementation programme. It was decided to recruit a consultant with long experience in tropical cyclone warning systems for a period of three months to expedite this work. The consultant was in the WMO Secretariat from mid-April to mid-July 1973. During this period he made a thorough review of the plan of action, drawing up a more detailed implementation programme in the light of the offers of support received from Members.

4. At the time of preparing this document it was planned to submit the consultant's report to the twenty-fifth session of the WMO Executive Committee, scheduled to take place in September 1973. In the meanwhile many of the individual projects prepared by the consultant have been sent to those WMO Members which had notified the Secretariat of their readiness to help asking them to begin implementation. It is expected that further information on the reaction of Members to the requests made to them, as well as on any further action taken by the Executive Committee, will be available to the Committee at its sixth session.

Regional tropical cyclone programmes

5. The principal developments in 1973 concern the two new regional cyclone bodies which, as reported to the Typhoon Committee last year, were formally constituted in 1972. These developments are summarized below.

WMO/ECAFE Panel on Tropical Cyclones

6. This panel, set up to promote regional co-operation in reducing tropical cyclone damage in the Bay of Bengal and Arabian Sea areas, is at present composed of representatives of Burma, India, Pakistan, Sri Lanka and Thailand. It will hold its first session in Bangkok from 27 November to 4 December 1973. On that occasion it will define its functions and objectives more clearly and endeavour to set forth a programme of activities designed to meet these objectives. The programme is expected to be based on a technical plan comprising meteorological and hydrological components, community preparedness and disaster prevention, training and research. The planned arrangement of its activities in this way, if approved by the panel, facilitate co-ordination with the programme being carried out by the Typhoon Committee.

/RA I

1 Tropical Cyclone Committee for the South-West Indian Ocean

The Tropical Cyclone Committee for the South-West Indian Ocean was established as a working group of Regional Association I (Africa) by Resolution (72-RA I) in 1972. The first session of the Committee took place in Antananarivo, Madagascar, in May 1973 and was preceded by detailed surveys of the present cyclone warning system throughout the area. They were carried out by a meteorological consultant recruited by WMO and by an expert in disaster preparedness provided through the good offices of the League of Red Cross Societies. As a consequence of these surveys, the first session of the Committee was able to prepare a comprehensive technical plan for further action.

The plan covers long-term requirements for observing facilities such as automatic weather stations, radar and air reconnaissance flights, as well as for equipment to make full use of the polar orbiting and geostationary satellites expected to cover the South-West Indian Ocean in the next few years. Telecommunications, research and training, and community preparedness and disaster prevention measures are also given an important place in the plan.

The report of the session will be considered by the sixth session of A I (Geneva, August 1973). The action taken by the Association will thus be known by the time the Typhoon Committee discusses this item. It is expected that VI-RA I will re-establish the Tropical Cyclone Committee so that it may pursue the valuable work it has initiated in this area.

Arrangements for co-ordination

7. The Committee, at its fifth session, confirmed the arrangement it had made at its fourth session whereby the representative of Thailand acts as rapporteur on the activities carried out by the WMO/ECAFE Panel on Tropical Cyclones. This arrangement had been made because Thailand is a member of both the Typhoon Committee and the panel. With regard to the activities carried out under the WMO Tropical Cyclone Project, as well as under other regional programmes, the Committee was of the opinion that the TCS should serve as the co-ordinating unit, with such assistance of the WMO Secretariat as might be necessary.

/11. Taking

11. Taking into account the relatively early stage of the programmes carried out by the other two regional cyclone bodies, the Committee may feel that it would be premature to change the arrangements it has made for co-ordination. Similarly, the arrangements for co-ordination with the WMO Tropical Cyclone Project appear to be satisfactory.

Action proposed

12. The Typhoon Committee is invited to review the arrangements it has already made for co-ordination with the WMO Tropical Cyclone Project and other regional programmes. It will wish either to confirm these arrangements or to suggest new measures to improve co-ordination.

FOR PARTICIPANTS ONLY

WRD/TC.6/10
2 October 1973

ORIGINAL : ENGLISH

ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST

WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth Session
19-26 November 1973
Bangkok, Thailand

AMENDMENTS TO THE STATUTE OF THE TYPHOON COMMITTEE

(Item 9 of the provisional agenda)

Note by the ECAFE and WMO secretariats

The fifth session of the Typhoon Committee, held at Bangkok from 15 to 21 November 1972, requested ECAFE and WMO to submit for comment to the Governments of member countries several amendments to the Committee's Statute proposed at the session with a view to their adoption in accordance with Article 11 of the Statute, on the understanding that, if Governments wished to make no comment, the proposed amendments would take effect without further action. The general intent of the amendments is to widen the scope of the Committee's activities in the promotion of community preparedness and disaster prevention, to permit wider participation by interested organizations and to remove obsolete provisions.

In the latter part of July 1973, the Executive Secretary of ECAFE, with the agreement of the Secretary General of WMO, submitted for consideration the proposed amendments to the Committee's Statute together with the accompanying Rules of Procedure and Functions and Duties of the Typhoon Committee secretariat. When the Committee meets in November, the ECAFE secretariat will report on the reactions of member countries to the proposal. The Committee may then consider the matter in the light of the latest developments and take such further action as is deemed appropriate.

.....

FOR PARTICIPANTS ONLY

WRD/TC.6/11
10 August 1973

ORIGINAL : ENGLISH

ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth session
19-26 November 1973
Bangkok, Thailand

PROVISIONAL LIST OF DOCUMENTS

<u>Title</u>	<u>Document No.</u>
1. Provisional agenda	WRD/TC.6/1
2. Annotated provisional agenda	WRD/TC.6/2
3. Note on the session	WRD/TC.6/3
4. Activities of the Typhoon Committee during 1973	WRD/TC.6/4
5. Programme for 1974	WRD/TC.6/5
6. Request to UNDP for institutional support to the Typhoon Committee	WRD/TC.6/6
7. Report of the Joint LRCS/WMO/ECAFE Mission on Community Preparedness and Disaster Prevention (March-April 1973)	WRD/TC.6/7
8. Community preparedness and disaster prevention	WRD/TC.6/8
9. Co-ordination with WMO Tropical Cyclone Project and other regional programmes	WRD/TC.6/9
10. Amendments to the Statute of the Typhoon Committee	WRD/TC.6/10
11. Provisional list of documents	WRD/TC.6/11
12. Provisional list of participants	WRD/TC.6/12
13. Tentative programme	WRD/TC.6/13

.....

FOR PARTICIPANTS ONLY

20 November 1973

ORIGINAL : ENGLISH

ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth session
19-26 November 1973
Bangkok, Thailand

LIST OF PARTICIPANTS

MEMBERS OF THE TYPHOON COMMITTEE

HONG KONG

Representative: Mr. G.J. Bell, Director, Royal Observatory

Alternates: Dr. P.C. Chin, Senior Scientific Officer, Royal
Observatory

Mr. Y.H. Lu, Principal Social Welfare Officer,
Social Welfare Department

JAPAN

Representative: Mr. Suketada Ohishi, Head of Planning Division, Kinki
Regional Construction Bureau, Ministry of Construction,
Tokyo

Alternates: Mr. Eiichi Terauchi, Head of Meteorological Satellite
Planning Division, Administration Department, Japan
Meteorological Agency, Tokyo

Mr. Yasuo Tokuoka, First Secretary, Embassy of Japan,
Bangkok

Mr. Takayuki Kimura, First Secretary and Alternate
Permanent Representative of Japan to ECAFE, Embassy
of Japan, Bangkok

Mr. Hiroomi Sakai, Second Secretary and Deputy Permanent
Representative of Japan to ECAFE, Embassy of Japan,
Bangkok

KHMER REPUBLIC

Representative: Mr. Tang Litte, Chief, Meteorological Service,
Phnom-Penh

KOREA, REPUBLIC OF

Representative: Dr. In Ki Yang, Director-General, Central Meteorological
Office, Ministry of Science and Technology, Seoul

Alternates: Mr. Il Sun Lee, Director, Bureau of Water Resources,
Ministry of Construction, Seoul

Mr. Chul Jin Kim, Second Secretary and Alternate
Permanent Representative of Korea to ECAFE, Embassy
of the Republic of Korea, Bangkok

Mr. Sang Hak Ro, Chief, Relief Division, Korean Red
Cross Societies, Seoul

LAOS

Representative: M. Khamtanh Kanhalikham, Directeur du Service de la
Météorologie et de l'Hydrométéorologie, Vientiane

Alternates: M. Issara K. Sasorith, Directeur du Service de
l'Hydraulique et de la Navigation, Vientiane

M. Khamthong Soukhathammavong, Chef du Centre de la
Prévision Générale, Vientiane

PHILIPPINES

Representative: Dr. Roman L. Kintanar, Administrator, PAGASA (Weather
Bureau), Quezon City

Alternate: Mr. Leopoldo Kagahastian, Chief, Water Resources Div.
Bureau of Public Works, Manila

THAILAND

Representative: Dr. Charoen Charoen-rajapark, Director-General,
Meteorological Department, Ministry of Communications,
Bangkok

Alternates: Capt. Prasert Soontarotok, R.T.N., Deputy Director-General,
Meteorological Department, Ministry of Communications,
Bangkok

Dr. Wiroj Sangvaree, Chief, Hydrometeorology Division,
Meteorological Department, Ministry of Communications,
Bangkok

Mr. Tawatchai Brikshavana, Meteorologist, Hydrometeorology
Division, Meteorological Department, Ministry of
Communications, Bangkok

Mr. Damrong Jaraswathana, Director, Hydrology Division,
Royal Irrigation Department, Ministry of Agriculture and
Co-operatives, Bangkok

Mr. Thongterm Yuktanuntana, First Grade Engineer, Hydrology
Division, Royal Irrigation Department, Ministry of
Agriculture and Co-operatives, Bangkok

Mr. Suvat Saguanwongse, Hydrologist, Investigation and
Planning Division, National Energy Authority, Bangkok

Mr. Wirote Amarat, Chief, Civil Defence Division, Department
of Local Administration, Ministry of Interior, Bangkok

Mr. Yuvarut Kamonvej, Chief, Technical Services Division,
Department of Local Administration, Ministry of Interior,
Bangkok

Mr. Tubkaew Bhiboolnakrin, Assistant Chief, Social Studies
and Planning Division, Department of Public Welfare,
Ministry of Interior, Bangkok

Mr. Manas Srisomboon, Chief, Planning and Co-ordinating
Section, Disaster Relief Division, Department of Public
Welfare, Ministry of Interior, Bangkok

Pol.Col. Boonchitt Phanthumachinda, Deputy Chief of Staff,
Provincial Police Headquarters, Police Department,
Ministry of Interior, Bangkok

Pol. Lt.Col. Voravadhana Kunjara, Superintendent, Third Sub-
Division, Police Fire Brigade, Police Department, Ministry
of Interior, Bangkok

Dr. Tawan S. Bunnag (M.D.), Director, Relief Division,
Thai Red Cross Society, Bangkok

Dr. Chiamsak Suthapak (M.D.), Chief of Relief Section,
Relief Division, Thai Red Cross Society, Bangkok

OTHER ECAFE MEMBER COUNTRIES

FRANCE

Representative: M. Du Chaxel Raoul, Conseiller Technique du Représentant Permanent de la France auprès de l'OMM, 73-77 Rue de Serves, 92100-Boulogne, France

NETHERLANDS

Representative: Mr. Bastiaan R. Korner, Third Secretary and Assistant Permanent Representative of the Netherlands to ECAFE, Royal Netherlands Embassy, Bangkok

UNITED STATES OF AMERICA

Representative: Mr. Grover D. Hughes, Chief, Environmental Division, National Oceanic and Atmospheric Administration, Department of Commerce, Washington, D.C.

Alternates: Mr. Arthur Bidner, Chief, Weather Observation Activities, U.S. Mission, Udorn, Thailand

Mr. John D. Newhouse, Chief, Weather Operations Requirements Office, Kailua, Hawaii

Mr. Glen A. Ryan, Weather Operations Officer, U.S. Mission, Don Muang Airport, Bangkok

Mr. Lucian L. Roche, Jr., First Secretary and Deputy Permanent Representative of the United States to ECAFE, American Embassy, Bangkok

Mr. William J. Tonesk, First Secretary and Deputy Permanent Representative of the United States to ECAFE, American Embassy, Bangkok

OTHER STATE^{1/}

GERMANY, FEDERAL REPUBLIC OF

Representative: Dr. Hinrich Voss, Director, German Meteorological Service, Offenbach, Federal Republic of Germany

Alternate: Mr. Jurgen Droge, Third Secretary, Embassy of the Federal Republic of Germany, Bangkok

OTHER UNITED NATIONS BODY

United Nations Development Programme (UNDP)

Mr. Samuel Oglesby, Assistant Regional Representative of UNDP in the Far East, Bangkok

SPECIALIZED AGENCIES

International Civil Aviation Organization (ICAO)

Mr. F.A.L. Oliveira, Technical Officer (Meteorology), ICAO Far East and Pacific Regional Office, Bangkok

International Telecommunication Union (ITU)

Mr. M.M. Kini, ITU Regional Expert, ECAFE/ITU Unit, Bangkok

NON-GOVERNMENTAL ORGANIZATIONCategory I

League of Red Cross Societies (LRCS)

Dr. Kingsley J. Seevaratnam, Regional Officer, The League of Red Cross Societies, Geneva 19, Switzerland

/...

Members of the United Nations, participating in a consultative capacity under paragraph 9 of the Terms of Reference of the Commission.

SECRETARIATECAFE

Mr. A.G. Menon

Deputy Executive Secretary

Mr. Alan D. Benham

Chief, Natural Resources Division

Mr. George T. Finlinson

Acting Chief, Water Resources Section
Natural Resources Division

Mr. M. Kawamura

Economic Affairs Officer, Water Resources
Section, Natural Resources Division

Mr. S. Masood Husain

Officer-in-Charge for the Office of
Special Assistant to the Executive Secretary

Mr. Joseph F. El Haj

Chief, Division of Administration

Mr. H.P.T. Willis

Chief, Conference and General Services
Section, Division of Administration

Mrs. Janette L. McNeill

Chief, Information Service

Mr. Arthur H. Cooke

Information Officer

Mr. Satis Indrakamhaeng

Information Officer

Mr. G. Schmidt

Chief, Language Services

Mr. C. Massaux

Interpreter

Mrs. F. Sala

Interpreter

Mr. F. Siegenthaler

Interpreter

WMO

Mr. Peter Rogers

Special Projects Officer, Operations
Facilities DivisionSECRETARIAT (continued)TYPHOON COMMITTEE SECRETARIAT

Mr. S.N. Sen

Chief, Typhoon Committee Secretariat,
c/o UNDP, Manila

Mr. C.H. Tang

Telecommunication and Electronic Expert

Mr. A. Hamamori

Hydrologist and Flood Forecasting and
Warning ExpertCOMMITTEE FOR CO-ORDINATION OF INVESTIGATIONS OF THE LOWER MEKONG BASIN

Mr. Surin Sangsrit

Hydrometeorologist, Engineering Division

FOR PARTICIPANTS ONLY

WRD/TC.6/13
10 August 1973

ORIGINAL : ENGLISH

ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST
AND
WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
Sixth Session
9-26 November 1973
Bangkok, Thailand

TENTATIVE PROGRAMME

9 November - Monday

09.00 - 09.45 hours

Registration

10.00 - 10.40 hours

Opening session

- (1) Inaugural address
- (2) Statement by the Executive Secretary of ECAFE
- (3) Statement by the Secretary General of WMO

Recess 20 minutes

11.00 - 12.30 hours

- (5) Election of the chairman and vice-chairman
- (6) Adoption of the provisional agenda (WRD/TC.6/1)
- (7) Agenda item 4: Committee's activities during 1973 (WRD/TC.6/4)

14.30 - 17.00 hours

- (8) Continuation of discussion on agenda item 4:
 - (a) Meteorological component
 - (b) Hydrological component

20 November - Tuesday

09.30 - 12.30 hours

- (1) Continuation of discussion on agenda item 4:
 - (c) Community preparedness and disaster prevention
 - (d) Training and research
- (2) Agenda item 5: Programme for 1974 (WRD/TC.6/7)

/21 November -

21 November - Wednesday

09.30 - 12.30 hours

- (1) Agenda item 6: Request to UNDP for institutional support to the Typhoon Committee (WRD/TC.6/6)

14.30 - 17.00 hours

- (2) Agenda item 7: Community preparedness and disaster prevention (WRD/TC.6/7 and WRD/TC.6/8)

22 November - Thursday

09.30 - 12.30 hours

- (1) Continuation of agenda item 7

14.30 - 17.30 hours

- (2) Agenda item 8: Co-ordination with WMO Tropical Cyclone Project and other regional programmes. (WRD/TC.6/9)

- (3) Agenda item 9: Amendments to the Statute of the Typhoon Committee

- (4) Agenda item 10: Date and place of the seventh session

23 November - Friday

14.30 - 17.00 hours

Meeting of the Drafting Committee

24 November - Saturday

Study tour

25 November - Sunday

Free

26 November - Monday

09.30 - 12.30

- (1) Consideration of the draft report
(2) Closure of the session

FOR PARTICIPANTS ONLY

WRD/TC.6/14
9 November 1973

ORIGINAL : ENGLISH

ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST

AND

WORLD METEOROLOGICAL ORGANIZATION

Typhoon Committee
19-26 November 1973
Bangkok, Thailand

ASIAN TELECOMMUNICATIONS NETWORK

(Item 4 of the provisional agenda)

Note by the ITU secretariat^{1/}

1. Introduction

Significant developments are taking place in the improvement and expansion of telecommunication services between countries of the ECAFE region. New inter-country terrestrial broadband telecommunication links will be established in South and South East Asia as a result of a feasibility survey recently completed. The number of satellite earth stations in the region on the Intelsat system is also growing and provides reliable trans-ocean links where terrestrial systems are not possible. Among other users, the meteorological services would also benefit from these new facilities. An outline of the proposed Asian Telecommunication Network and prospects of exploitation for meteorological requirements is presented in this paper for information of the WMO/ECAFE Typhoon Committee and the WMO/ECAFE Panel on Tropical Cyclones.

/2.

^{1/} Reproduced in its original form.

2. Feasibility Survey for Asian Telecommunication Network and Survey Reports

2.1 A feasibility survey for an Asian Telecommunication Network was completed between 1970 and 1972 under UNDP Project REG-164 with the International Telecommunication Union (ITU) as executing agency. Twelve regional countries participated in the survey namely Afghanistan, India, Indonesia, Iran, Khmer Republic, Laos, Malaysia, Nepal, Pakistan, Singapore, Thailand and the Republic of Viet-Nam. These studies were undertaken by an expert team of the ITU, with headquarters at Bangkok, working together with counterparts provided by the participating countries. The whole area was divided into 5 Survey Sub-regions and 5 Technical Reports have been issued successively as studies in each sub-region were completed. After the sub-regional studies were completed, a Regional Seminar on the Project was held in March 1972, the proceedings of which are covered by a sixth report. Governments of participating countries have been approached for approval of derestrict the Technical Reports so that they may be available for general distribution.

2.2 The Technical Reports generally assess and make recommendations on the following subjects:

Internal networks, international services and growth prospects in each country;

Traffic estimates;

Links forming the sub-regional and regional network;

Operation, routing and switching of regional circuits;

Carrier multiplex arrangements;

Over-all transmission considerations;

Economic viability of routes;

Tariff prospects and accounting arrangements;

Telex development;

Maintenance aspects;

Training and fellowships;

Further work required.

Along with statistical data, calculations, diagrams and maps, the annexes of each technical report contain technical specifications for radio systems and the like designed for the regional routes.

2.3 The Survey's principal conclusion is that the regional telecommunication network in South and South East Asia can be established and that such a network could be quite profitable in its own right while at the same time encouraging, assisting and furthering the developments in areas such as trade, tourism, meteorology, aviation, information and many others. The additional investment required to set up the network in the initial phase was estimated to be within US\$30 million.

3. Regional Telecommunication Links

3.1 The map at Annex 1 gives a general picture of the principal transmission routes in the regional network including the new links recommended in the Survey Reports. The regional terrestrial network falls into two parts namely South Asia and South East Asia. The two parts are linked initially by the Indian Ocean Intelsat satellite through the various earth stations existing and planned.

3.2 Most of the countries participating in the feasibility studies had already undertaken programmes for establishment of their own national networks of broadband coaxial cable or microwave radio relay systems. To obtain adequate good quality circuits between the countries, it is necessary in most cases only to provide new systems to link domestic systems already established or planned. A statement of the new links recommended in the Survey is at Annex 2. The specifications of these radio systems are designed so that the circuits derived can meet standards of the International Telephone and Telegraph Consultative Committee (CCITT) and the International Radio Consultative Committee (CCIR). Upgrading of certain domestic systems has also been recommended.

3.3 While the regional network has been planned essentially to meet the requirements of public traffic (telephone, telegraph and telex), the new inter-country transmission systems recommended in the survey will also generally have adequate capacity margin to provide for leased circuits needed by individual users, including, for instance, the meteorological services.

4. Integration of Sri Lanka into the Regional Network

Complying with a recent request from the Government of Sri Lanka, Studies to integrate Sri Lanka into the regional network have begun. A broadband microwave system between Colombo (Sri Lanka) and Madurai (India) is under consideration. From Madurai, circuits could be extended over the domestic broadband coaxial cable and microwave network in India to other cities.

5. Implementation of the Survey Recommendations

5.1 After completion of the feasibility survey in 1972, attention is now concentrated on expeditious implementation of the links recommended. For this purpose, each participating country has nominated a "National Co-ordinator". The Senior Regional Expert ECAFE/ITU has been nominated the "Regional Co-ordinator". A first round of meetings of national co-ordinators and regional ITU experts has been started in 1973 to draw up programmes and time schedules for implementation in the various sub-regions of the Survey area. Further details of these meetings and targets fixed so far are given in Annex 3.

5.2 It is hoped that the first round of Co-ordination meetings which has been dealing primarily with the construction programme for links and associated facilities, will be completed by the 2nd quarter of 1974. Maintenance and operational aspects will also need consideration and co-ordination and will be taken up in later meetings in 1974-75. An important operational aspect concerns the charges for leasing circuits on the new network. Cost studies are being undertaken to propose a new and common basis for such rates taking into account the lower per-channel costs of modern broadband systems.

6. Telecommunication Links in the Pacific

6.1 Implementation of the surveys so far made will extend Asian Telecommunication Network westwards to the Republic of Viet-Nam and to Indonesia. Satellite and submarine cable links already exist which can extend circuits from this network to other countries of the Western Pacific.

Satellite earth stations working to the Intelsat Pacific Ocean Satellite are working in the following countries of this area

China

Japan

Hong Kong

Korea

Philippines

Thailand.

A satellite earth station is also being planned for the Republic of Viet-Nam.

6.2 The existing coaxial type submarine cable in the South China Sea is the SEACOM whose route is Singapore - Kota Kinabalu - Hong Kong - Guam from where the route branches off to Japan, Philippines, North America and Australia. The capacity of the existing cable is however inadequate for the growing requirements.

6.3 A new feasibility survey to cover the telecommunication links required in Pacific and Oceanic areas of the ECAFE region has been proposed. Consultations are in progress with countries concerned so that a regional project may be prepared for submission to the UNDP.

7. Telecommunication Facilities for Meteorological Purposes

7.1 The meteorological services can benefit from the modernization and expansion of the regional telecommunication networks in the following ways:-

- as users of the public telecommunication services, through the improvement and speeding up of public telephone, telegraph and telegraph facilities between the countries of the area.
- through the availability of good quality telephone and telegraph circuits for their exclusive use on a leased basis.

7.2 By and large, telephone circuits through modern terrestrial broadband and satellite systems would be much more stable and of better quality than H.F. Radio circuits. With the use of F.M. Voice Frequency Telegraph equipment (V.F.T.) up to 24 telegraph channels suitable for standard teleprinter operation can be derived from a single telephone channel. FM VFT systems will be provided on most links and would have sufficient spare capacity for leasing telegraph circuits to individual users. Data transmission with speeds of up to 1200 bauds should also become possible over standard telephone channels in due course.

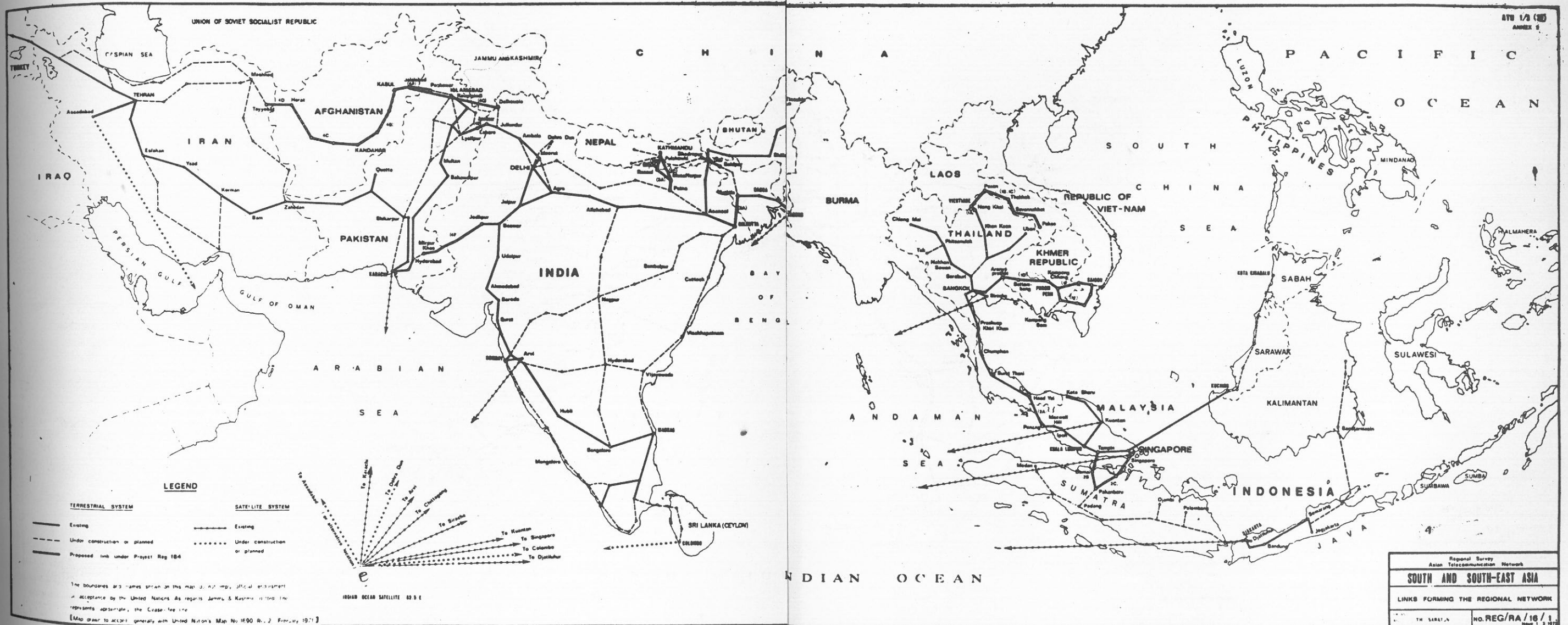
7.3 Although it is a fairly early stage in the implementation of the Asian Telecommunication Network, it is advisable that the circuit needs of the meteorological services are made known to the participating telecommunication administrations well in time so that they are incorporated in the detailed circuit and equipment allocations in the various sections of the network.

/Hopefully,

Hopefully, by mid-1974, on completion of the first round of implementation Co-ordination meetings, targets for completion of the remaining links of the network will become available. At that stage, the possibility of meeting the meteorological circuit needs from the terrestrial broadband network and satellite systems can be jointly examined by the WMO and the ECAFE/ITU Bangkok and a detailed plan circulated to the concerned telecommunication administrations. ECAFE/ITU can also assist in following up the plan through future implementation co-ordination meetings. If necessary, policy decisions or guidance on telecommunications aspects can also be sought through the ECAFE Telecommunications Sub-Committee (next session likely to be held towards the end of 1974).

/Annex I





Annex 2

	Route section (see map)	Radio frequency (GHz)	Telephone channel capacity	Total distance (km)
1A	Vientiane-Nong Khai ^{a/}	6	300	16.1
1B	Vientiane-Pakse (M)	2, 4 or 7	300	596.1
1C	Vientiane-Pakse (V) ^{b/}	VHF	24	571.3
1D	Phnom Penh-Aranyaprathet	2, 4 or 6	120 & 600	400.2
1E	Phnom Penh-Saigon (S)	2, 4 or 6	120 & 600	357.2
1F	Phnom Penh-Saigon (N) ^{c/}	2, 4 or 6	120 & 600	231.7
2A	Haadyai-Penang ^{a/}	6	960	178.3
2B	Pakanbaru-Tampin	2 or 4	300	267.5
2C	Pakanbaru-Singapore ^{d/}	2 or 4	300	387.1
3A	Patna-Raxaul	4	960	176.3
3B	Kathmandu-Birganj	6	960 & 300	97.2
3C	Pulchowkie-Muzaffarpur ^{e/}	2	120	16.1
4A	Peshawar-Kabul	2	120	232.2
4B	Kabul-Kandahar	2	300	457.7
4C	Kandahar-Herat	2	120	517.2
4D	Herat-Tayyebat	2	60	139.6
4E	Amritsar-Lahore	7	300	43.0
4F	Jodhpur-Mirpurkhas	4	300	447.9
4G	Jalalabad-Dalhousie	VHF UHF	24	540.0
5A	Calcutta-Kushtia	7	300	191.1
5B	Saidpur-Bhadrapur ^{f/}	VHF	24	121.3

^{a/} Since completed.

^{b/} An interim alternative to route section 1B.

^{c/} An alternative proposal to route section 1E.

^{d/} At the Co-ordination meeting in April 1973, it was decided to give priority in construction to this route over 2B but slightly modify routing to connect also to Gunong Pulai in Malaysia.

^{e/} An alternative proposal to route section 3A and 3B. Later dropped.

^{f/} Detailed routing of this system is being reexamined in view of changed conditions in the area.

Annex 3

CO-ORDINATION MEETINGS FOR IMPLEMENTATION
OF THE ASIAN TELECOMMUNICATION NETWORK

These meetings are attended by "national co-ordinators" from telecommunication administrations of participating countries as well as the "regional co-ordinator" and other experts of the ECAFE/ITU team at Bangkok. Two meetings already held are as follows:

April 1973 at Singapore : For links between Indonesia, Malaysia, Singapore and Thailand.

August 1973 at New Delhi: For links between Bangladesh, India, Nepal and Sri Lanka.

Two more meetings are needed to cover the area in the first round.

Links between Afghanistan, India, Iran and Pakistan:

- Meeting scheduled at Tehran in December 1973.

Links between Khmer Republic, Laos, Thailand and Republic of Viet-Nam:

- Not yet scheduled. Hopefully in the first quarter 1974.

The prospects for the recommended links as emerging from the Co-ordination meetings so far held are as follows:

South East Asia

- Two of the inter-country links envisaged in the survey reports have already been completed:
- Laos-Thailand: a microwave radio relay system between Vientiane and Nongkhai of 300 channel capacity.
- Malaysia-Thailand: a microwave radio relay system between Penang and Haadyai of 960 channel capacity.

With the completion of these links, it should now be technically feasible to build up circuits through broadband systems from Vientiane down to Singapore.

- It is hoped to complete a new system across the Malacca Strait by about 1976 to link Indonesia with Malaysia and Singapore. In Indonesia, this system will link up through Pakanbaru and Padang with the Indonesian arterial broadband route from Medan through Jakarta to Bali.

/South Asia

South Asia

- The following are expected to be completed by 1976:

- A broadband link between India and Nepal via Patna and Birganj.
- A broadband link between India and Bangladesh via Calcutta and Kushtia.

Programmes for other areas will also be prepared at future meetings.

.