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**SOLOMON ISLANDS GOVERNMENT**



**NATIONAL DISASTER COUNCIL**

**REPORT ON**

**CYCLONE NAMU**

**MINISTRY OF HOME AFFAIRS & PROVINCIAL GOVERNMENT**

**HONIARA**

**SOLOMON ISLANDS**

**DECEMBER 1986**



MEMBERS OF THE NATIONAL DISASTER COUNCIL

Standing: L. Maenu'u; P. Funifaka; F. Soaki  
Sitting : Hon. A. Nori (Minister for Home Affairs &  
Provincial Government; M. Tozaka (Chairman, NDC)  
Absent : W. Tion; B. Saua

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## F O R E W O R D

It is with great pleasure that the National Disaster Council presents its report covering disaster operations action during the Emergency Phase operations from 19 May through July 1986.

The principal tasks assigned to the NDC were:

- + to deal with the immediate problems caused by Cyclone Namu in a co-ordinated and effective manner;
- + to save lives and to minimise casualties caused by the cyclone;
- + to assist as necessary in the rehabilitation of devastated communities.

These tasks are challenging and timely and would not have been effectively managed without the assistance and co-operation of the many generous people, both here at home and abroad.

In its organisation and operation, the National Disaster Council has followed closely the guidelines of the National Disaster Plan 1982; but because of the magnitude of the damage, with widespread and urgent action required, the Council has had to amend the Plan by establishing additional Operation Sections to attend to specific tasks. One of these is the Technical Advisory Team (TAT) which was charged with the responsibility for carrying out surveys of the total damage caused by Namu for rehabilitation purposes.

In addition, the Ministry of Economic Planning was also given the responsibility for co-ordinating the long term rehabilitation programme.

The Council would not have been able to carry out its tasks without the assistance of the Provincial Disaster Committees and Non Governmental Organisations which, through their contacts, gave general support in the relief work.

On behalf of the National Disaster Council, I express sincere appreciation and thanks to all those who participated in so many different ways during the Namu operation.

In the same manner, I wish to thank all those Donors who, are so many to name, have generously provided the assistance in different forms to our needs.



M. Tozaka  
Chairman  
NATIONAL DISASTER COUNCIL

2 December 1986



SOLOMON ISLANDS GOVERNMENT

NATIONAL DISASTER COUNCIL

REPORT ON CYCLONE NAMU

1. INTRODUCTION

1.1 Cyclone Namu will always be remembered by Solomon Islanders because it represented the first natural disaster in the country that caused such a heavy loss of life and property. It will also be remembered for the many generous acts performed by the people of the country as well as by overseas friends in terms of donations and relief supplies. The effects of Cyclone Namu cannot be overestimated as it shattered not only the economic plans of the Government but also the dreams and livelihood of many individuals. The physical scars on the land will take time to obliterate while the psychological shocks may take longer and devious ways to dissipate.

1.2 The burden to lessen the miseries and the hardships caused by the cyclone fell on the Government, Non Government Organisations, International Assistance Agencies and other authorities, as well as private individuals and groups. The National Disaster Council had the important task of co-ordinating assistance and programming activities during the emergency and rehabilitation periods. The scope of the task to recovery is very considerable, and will depend greatly on the resilience and hard work of the people of Solomon Islands to succeed.

1.3 During the time of operations by the National Disaster Council there had been a considerable amount of activity generated and a great deal of official and unofficial information compiled. There is a need, therefore, to provide a broad picture of the impact of Cyclone Namu for presentation to Government and to other interested parties for purposes of information, acknowledgement and rehabilitation guidelines.

2. CYCLONE NAMU IN BRIEF

2.1 Cyclone Namu began as a tropical depression on Friday, 16 May 1986, and ended four days later, on 20 May 1986 with about 103' dead, 90,000 people homeless and million dollars worth of damage\*\* to its name.

\* See Table 1

\*\* See Figures 2, 5, 6, 7 & 8

- 2.2 An early warning by the Marine Division placed the Friday's depression at seven degrees South and 161 degrees East. It appeared to have weakened over Saturday, but subsequently developed into a tropical cyclone on Sunday, 13 May 1986, moving generally on a south-westerly direction in a very slow and erratic path that took three days to traverse the Solomons' waters. (See Section 18 & Appendix 8).
- 2.3 Winds of up to approximately 50-60 knots were associated with the cyclone, causing the most damage on Malaita, Sikaiana and Bellona. Defoliation and uprooting of trees were widespread and intensive on these islands. The central highlands of Malaita mainland were scarred by hundreds of landslides, caused as trees were uprooted from the rain-soaked mountain sides.
- 2.4 On Guadalcanal the most damage were caused by the effects of an extraordinarily heavy rainfall. On Monday morning, 19 May 1986, Cyclone Namu seemed to just hang for hours over Guadalcanal causing a deluge of rain that was estimated to be more than 635 mm. Even before the cyclone, there had been exceptionally heavy rains for a number of days. The combined results were multiple with massive landslides and flooding. Flood waters carrying huge trees and discarded logs and loaded with silt, caused devastation to villages, properties and gardens, infrastructure, as well as loss of life, on the Guadalcanal Plains. In upper land areas, huge landslides and mudslides covered kilometres of terrain. The village of Valebaibai which was covered by massive mudslides, and the site of approximately 38 dead, is only one example of landslides on the east end of the mountains on Guadalcanal. About three-quarters of the deaths occurred on Guadalcanal. The reinforcement of the embankment and the enlargement of Lee's Lake proved to be of another magnitude. The coastal areas of both Malaita and Guadalcanal were not exempted from devastation. Coastal villages suffered severe destruction from wave actions as well as from flooding and winds.

### 3. NATIONAL DISASTER COUNCIL STRUCTURE AND ORGANISATION

- 3.1 The National Disaster Council\*, given authority by approval of the Cabinet on 12 June 1980, functions under the general aegis of the Ministry of Home Affairs and Provincial Government. Its role and terms of reference is as stated in the National Disaster

\* See Front Page

Plan 1982 as the central co-ordinating authority in disaster operations, making appropriate decisions and recommendations to ensure co-ordinated action.

- 3.2 The National Disaster Plan (NDP) was brought into effect on the afternoon of Sunday, 18 May 1986 when the Council was first convened to deal with the situation created by Cyclone Namu. It was opened at the National Disaster Operations Centre (NDOC), Police Headquarters, Rove.
- 3.3 However, there arose initially some significant problems in activating the NDOC, and in setting up, manning and operating the necessary action desks within it. This was brought about mainly by the magnitude of the tasks presented by Cyclone Namu. The result was a decision to adjust the structure of the National Disaster Council (NDC). Consequently the organisation was amended to include a Technical Advisory Team Section, under the auspices of the NDC and on a par with the Operations Committee, for the purpose of identifying and advising upon longer term problem areas. Besides, the Disaster Operations Co-ordinator (DOC) was superseded by the NDC Operations' desk, chaired by a member of the NDC rather than by the Commissioner of Police as prescribed in the National Disaster Plan (NDP). Under these two semi-permanent organisations, the NDC took steps to carry out a comprehensive survey of the affected areas, assessing the full extent of the damage and establishing an effective relief distribution network.

#### 4. THE IMMEDIATE AND LONGER TERM TASKS

- 4.1 Cyclone Namu was probably the biggest single natural disaster experienced in Solomon Islands during recorded times. Certainly it was the biggest disaster that the National Disaster Council was ever faced with.
- 4.2 To deal with the immediate and longer term needs and problems caused by Cyclone Namu the National Disaster Council was given blanket cover approval by the Cabinet to exercise authority over all aspects of disaster related issues as it saw fit and necessary, paying no regard to costs and normal administrative procedures.
- 4.3 The NDC, fully realising the importance of orderly planning, produced a two-pronged approach in dealing with the disaster, namely the Emergency Phase and the Recovery Phase. These operations were closely identified with the NDC Operations Group and the

Action Group - Technical Advisory Team respectively, though not necessarily exclusive. Each of these groups had a Chairman who was responsible to the Council for directing and co-ordinating the operations of the group. (See Figure 1).

#### 4.4 The Emergency Phase

The aim of the Emergency Phase was to deal with the immediate problems caused by the cyclone in a coordinated and effective manner. The period that was originally set for this phase was 19 May-31 May 1986. It was then subsequently extended for another week to 7 June 1986. However, emergency operations have continued as they merged into the Recovery Phase.

#### 4.5 Emergency Rescue Operations

Thanks to the efficient mobilisation of road transports and with the help of canoes in emergency evacuation of the Selwyn College's students, Solomon Islands Plantation Limited's employees and other victims from the massive destructive flooding on Guadalcanal Plains which had been made possible by the generous, and in some cases, very daring and brave rescue operations, provided by numerous Ministerial and other privately owned vehicles, boats and canoes as given in Annex 1.

#### 4.6 Emergency Requirements

The immediate needs and problems arising from the effects of the passage of Cyclone Namu were identified as the requirements for the Emergency Phase. These were:

- + Emergency feeding;
- + Provision of temporary shelter;
- + Maintenance of emergency medical and health measures to safeguard against the outbreaks of post-disaster illness and disease;
- + Provision of safe water supply;
- + Restoration of essential services, such as communications, power supply, transport and movement of facilities, etc; and
- + The need for evacuation where applicable.

4.7 In disaster operations, identifying the problems does not necessarily lend itself to solving them. The number and or magnitude of obstacles to encounter may depend on how severe the disaster, and on the size of the area concerned. In the Cyclone Namu disaster, the NDC found the following to be the main associated problems:

- + The difficulty in obtaining accurate and adequate information on genuine immediate needs;
- + The difficulty of access to disaster areas due to disruption of transport links and facilities (e.g. bridges, roads, airfields, etc.).
- + The limited availability of relief supplies and equipments for distribution to disaster areas;
- + The limited availability of administrative manpower and energy;
- + The limited distribution capability (air, sea and land transportation).

## 5. OPERATIONS GROUP (NDC)

5.1 In the Emergency Phase, it was the Operations that functioned as the executive arm of the National Disaster Council (NDC), providing the emergency requirements to all stricken areas. This service was facilitated under several Divisions in the Operations, which in some cases not only conveyed relief supplies but also carried out surveys and assessments of needs and requirements in their respective areas of concern. These were supplies, shipping, air transport, health and road transport. Officers of relevant Ministries were seconded to head these Divisions.

## 6. SUPPLIES

### 6.1 Procurement of Relief Supplies

Supplies were directly under the supervision of the Chairman of Operations. All relief supplies from overseas and locally were stored and distributed by the NDC's Finance and Supplies Warehouse. This division also has a sub-branch which controls the collection and spending of money donations.

6.2 Initially supply items were purchased from the NDC's "own" funds; that is from funds transferred to the National Disaster Council by the Government and

from local and overseas donations. However, in response to requests, generous assistance were quickly offered and received from our traditional friends from Australia and New Zealand in plane loads of foodstuffs and other relief goods. Help from these two countries continued to flow in with each ship that arrived from them. Australia's contribution, alone, in goods, ships\*, aircrafts and technical expertise is inestimable, amounting to several million dollars.

6.3 Other countries and organisations further afield were quick to provide assistance with bulk supplies for distribution. Of particular significance were the following:

- + the European Economic Community\*\* (EEC) was first on the scene, with an offer of fund for the purchase of some 1,800 tonnes of rice;
- + the World Food Programme (WFP), quickly followed with a donation of 1,080 tonnes of rice; plus tinned fish and a plane load of tea, sugar and biscuits;
- + the United States gave 900 tonnes of rice; several plane loads of tarpaulins and sent a "Seabee"\*\*\* Naval Detachment on a 3 months civil rehabilitation attachment;
- + the French Government sent 20 tonnes of milk powder from Noumea;
- + Japan contributed a plane load of medical supplies; two medical teams and US\$100,000 to the World Food Programme to purchase tinned fish;
- + the United Kingdom contributed a team of Royal Signal Corps Communicators; a team of Royal Engineers and Civil Engineers expertise; as well as material and logistic support for the Lee's Lake exercise (See Figure 10);
- + the Samoan Government also donated 960 beautifully decorated mats;
- + the New Zealand Government donated NZ\$30,000 worth of frozen lamb legs and lamb shanks.

6.4 Besides contributions in kind and in technical personnel and equipment many of the friendly Governments mentioned above also contributed cash (up to 15 November 1986):

\* See Figure 3      \*\* See Figure 4      \*\*\* See Figure 9

	SI\$	SI\$
PNG	211,153.60	
Japan	167,110.00	
Australia	154,000.00	
United Kingdom	122,000.00	
Fiji	99,713.35	
ROC (Taiwan)	83,333.33	
USA	50,874.00	
Canada	40,677.09	
South Korea	32,433.14	
Nauru	23,278.00	
Indonesia	18,219.57	
Tuvalu	2,990.50	
	-----	1,005,782.58
		=====

Latest figures confirmed that a total of SI\$1,515,772.62 cash contributions were received from overseas. (See Appendix 2 for further breakdown).

## 7. DISTRIBUTION OF RELIEF SUPPLIES

7.1 Internal communications and transportation are a constant headache in the Solomons, even in normal times. In the aftermath of the cyclone, they were almost catastrophic. Even the plain areas of Guadalcanal, within a few miles of Honiara were inaccessible during the first few weeks following Namu, except by ship or helicopter and the movement of our small ships were hampered by the enormous amount of logs washed down into the sea by the floods; ships could only move by day.

### 7.2 Channel of Distribution

The National Disaster Council (NDC) made a firm decision from the start to use the Provincial Disaster Committees (PDCs) as far as possible, as the channels for the distribution of relief supplies. This seemed to have worked very well for Guadalcanal Province where a viable distribution system was quickly established. However, because of the breakdown of communication, Malaita posed some initial problems, but the system now appears to be working after a change of the Disaster Committee's Chairman. Due to their geographical remoteness, Sikaiana, Rennell and Bellona have been treated as special cases from the outset and were continued to be supplied direct from Honiara.

7.3 To establish and maintain such a distribution system has been an extremely costly exercise. If it was not for the enormous assistance given by the Australian Forces in their help with ships, aircrafts and helicopters, that task would have been prohibitive, and the effects of the cyclone would have been even more disastrous than they were. Even so, distribution costs will undoubtedly prove to be the biggest single cost item.

## 8. SHIPPING

8.1 It was very fortunate that the local fleet (vessels) did not suffer much damage in the course of Cyclone Namu. Seen in the light of damages caused in other areas, this was a blessing indeed. Except for the MV Raja, the MV Solomon Princess and the MV Regina M aground in Honiara, all other ships were safe. This comfortably left about 99% of the ships available (operative) for possible disaster relief work. Accordingly, all shipping operators were alerted to standby, and without hesitation put their ships on readiness. The National Disaster Council (NDC) was therefore able to make use of the services of the following ships in its relief operations. (See Appendix 3 for detail).

(a) Government Vessels  
Marine Division

- MV Belama
- MV Lanalau
- MV Wainoni
- MV Wango
- MV Wataro
- MV Bulawa
- MV Waisisi

(b) Ministry of Natural Resources

- National Fisheries Development
- FV Solomon Kariqa
  - FV Solomon Atu
  - FV Ufi-Na-Tasi

(c) Private Shipping Operators

1. Church of Melanesia - MV Southern Cross
2. Coral Seas Shipping Co. - MV Compass Rose
3. SI Navigation Service - MV Solomon Princess
4. Land Link Shipping - MV Atawa
5. UCDF Shipping - LC Kotu
6. Marine Salvage (SELCO) - MST Salvacheer
7. South New Georgia Corp. - LC Ulusaghe
8. Sun King Enterprises - FV Sun King
9. Isabel Development Co. - LC Ligomo III



8.2 Some shipping operators gave their boats on charter basis to the National Disaster Council (NDC) while others were free of charge on scheduled runs. Invariably, however, the NDC had to provide fuel for all operations except in very few cases.

## 9. EMERGENCY FEEDING

9.1 Emergency feeding of disaster victims was based on foods commonly available locally and which could be procured easily in large bulk, either locally or from overseas. The Council also planned that the ration be also nutritious, besides being acceptable. In this respect the normal ration would comprise of the following:

- + Rice
- + Biscuit
- + Canned Fish
- + Canned Meat
- + Sugar and tea/milo

9.2 Distribution by sea and air in the first two weeks absorbed all rice, fish and biscuits procured locally. This amounted to 350 tonnes of rice, 5,650 cases of tinned fish, and 10,000 cartons of biscuits. In addition another 200 tonnes of rice, plus small quantities of meat, biscuits, sugar, tea and milo from overseas were distributed.

Cooking utensils and other domestic accessories, both supplied locally and overseas were distributed mainly by the Red Cross, working in close liaison with the National Disaster Council.

9.3 In general, it could be stated that feeding needs were met during the emergency period. However, there were some problems of unequal distribution reported to have occurred at the Provincial level. These problems mainly resulted from difficulty of access to and from inland bush areas, as supplies from coastal distribution points failed to be collected or forwarded to inland villages.

## 10. PROVISION OF SHELTER

10.1 During the Emergency Phase, the National Disaster Council (NDC) worked on the cursory figure of 90,000 for both the homeless and the hungry. But unlike food, provision of materials for shelter was not easy. Building materials, both temporary and permanent were not readily available nor accessible in

bulk. Even if they were available, the problems of transport and distribution would have held up delivery to a degree that would only bring about conflicts. It was fortunate that the Council concentrated most of its concern on feeding at the Emergency Phase, and left housing to Rehabilitation or Recovery Phase.

#### 10.2 Temporary Shelter

Nevertheless, the NDC did manage to provide temporary shelters for some of the affected people in the form of plastic sheetings to rural village people and by housing others in the so-called "refugee camps". The United States' Government responded quickly by air-freighting plane loads of heavy duty plastic-woven sheetings which proved to be timely and ideal for the purpose.

#### 10.3 Refugee Camps

The so-called "refugee camps" were in fact temporary shelters for evacuees from the Guadalcanal Plains areas. Altogether there were about four (4) such camps, namely:

- + Panatina Campus, SICHE
- + King George VI School
- + YWCA
- + Woodford School

10.4 Some 667 evacuees were cared for in these camps. But they were all sent back to their places of residence by the third week of June, to enable them to return to normal life, and for those who came from villages to start rebuilding their houses where possible. (See Appendix 4).

### 11. MEDICAL AND HEALTH OPERATIONS

11.1 The medical and health aspects of disaster situations are of paramount importance, as these may well mean an outbreak of epidemic and escalation of casualties if urgent action were not taken quickly. The damage caused by Cyclone Namu presented conditions that could have easily and likely developed into major health problems. Both health facilities and sanitary conditions were seriously affected in the areas devastated by the cyclone. It was for monitoring these conditions that a health desk was included in the NDC.

## 11.2 High Risk Areas

Although it was understood that health risks were likely to occur in all cyclone hit areas, it was recognised that greater risks were possible in highly populated areas and on river valley settlements, such areas were:

- + Guadalcanal Plains and Mbambanakira on Guadalcanal;
- + Atori and other river valley areas on Malaita.

Medical teams were therefore sent to these areas to control the situation and to give support and encouragement to health workers there. (See Appendix 5).

## 11.3 International Assistance

Like in other areas, help from overseas in health came in quickly. Both assistance in medical personnel and medical supplies were abundant. In fact what was received was in excess of what was asked for or actually required at the time.

## 11.4 Medical Personnel

Special recognition must be made of the assistance given by the following countries:

- + Australia - four teams of medical personnel comprising of nine Doctors, three Paramedics, six Nurses and one Health Surveyor;
- + New Zealand - one Doctor, two Paramedics and one Health Inspector (See Figure 11);
- + Japan - two groups, the 1st comprising of two Doctors, two Nurses and one Medical Official; 2nd of a Junior Medical Team;
- + France - four Doctors;
- + World Vision - two Nurses.

## 11.5 Medical Supplies

All medical supplies requested from the NDC were based on the "WHO Emergency Kit" that provided a list of standard drugs and clinic equipments for 10,000 persons for three months.

- 11.6 All overseas disaster Medical Teams came with unspecified amounts of medical supplies and equipments for use in the disaster operations. These have been sorted out by the Chief Pharmacist in the Medical Store which were later dispensed off by the respective overseas Medical Teams.

Also some other friendly countries have donated further medical supplies and equipments.

11.7 Water Supplies and Sanitation

As a result of bad water supplies due to damage and pollution, the following have been done to provide good drinking water to people in affected areas.

+ Installation of water filter and purification plants:

(a) Two (2) 3,000 gallons per hour capacity plants (supplied by USA with two Engineers) - one at Mataniko water source, Honiara and one at Ngalimbiu, Guadalcanal Province. Water delivered to households by carrier tanks.

(b) Three (3) 1,000 gallons per hour capacity (supplied by Australia) - one at Totongo, East Guadalcanal, one at Foxwood and one at Mbambanakira, West Guadalcanal.

+ Water Tanks - portable tanks have been provided to many affected villages. Of the 200 tanks proposed by the NDC less than a half have so far been given out.

+ Purification Tablets - (provided by Australia and New Zealand and other assisting countries) - supplied to both urban and rural areas.

+ Water Mains - water mains in Honiara were restored by the Ministry of Transport, Works and Utilities by the end of June 1986.

12. AIR RELIEF OPERATIONS

- 12.1 The Air Operations desk at the National Disaster Centre was manned by Australian military personnel stationed at the Police Headquarters, Rove, until mid-day on 22 May 1986. Thereafter a team, led by the Principal Civil Aviation Officer (PCAO), was recruited from the Public Service to staff the position. Twenty four hours coverage was maintained

until 28 May 1986 when a new roster giving coverage between 5 am and 9 pm was introduced. On Saturday, 7 June 1986, the last day the position was occupied, it was filled during daylight hours only.

12.2 The supervision of aircraft tasking, loading and unloading at Henderson Airport was undertaken by officers of the Australian High Commission.

12.3 Extent of Relief Effort

The record of the hours flown and the passengers and freight carried by the participating aircrafts give a good indication of the extent of the airborne relief effort.

12.4 While on task, the Iroquois completed 379 sorties in 158.6 flying hours, carrying 678 passengers and 175,607 lbs of freight. The Caribou completed 41 tasks in 52.4 hours, carrying 178 passengers and 57,050 lbs of freight. The Sea King carried approximately 90 passengers and 28,000 lbs of freight in 36 hours' flying. The SDA flew 32 sorties and delivered to Atoifi a total of 19,090 kg. of freight. The Fletcher aircraft carried out 50 sorties to Koli, Mbambanakira, Avu Avu and Parasi in 23 hours' flying. Solair to the 6th of June had made 45 flights in 65 hours, carrying 21 passengers and 25,456 kg. of freight. The Dornier flew 21 hours in 10 sorties on its support tasks.

12.5 Since the Air Operations' desk position in the National Disaster Centre was closed on 7 June 1986 support has continued to be given to the National Disaster Council by the Civil Aviation Division in the form of advice and perusal of aircraft charter accounts when requested. Supplies were still continuing to come by air. A USAF C130 bringing in more radios and plastic sheetings and a Falcon Jet from Sydney carrying equipment for strengthening the dam wall at Lee's Lake both arrived during the Independence weekend, for example. (See Appendix 6).

12.6 The Air Operations must be considered to have been successful, because of the large number of supplies received and distributed, and the number of passengers carried during the comparatively short duration of the operation. This was achieved in spite of the difficulties encountered, which included the incapacity of one helicopter pilot through malaria; the SDA's taxiing accident and the unserviceability of the helicopter. It was fortunate that two helicopters belonging to Pacific

Helicopters of Papua New Guinea had been positioned at Henderson to support mining operations a few weeks before the cyclone and that, Shell Company had diverted a tanker into Honiara in the middle of May to overcome a shortage of Jet A1 fuel. Another tanker arrived on 29 May 1986 raising stocks of Jet fuel to over 700 tonnes. Supplies were not a problem but there were difficulties in procuring enough drums to carry the fuel to the outstations. Some 250 empty drums were shipped in shortly after the operations got under way.

### 13. THE RECOVERY PHASE

13.1 The aim of the Recovery Phase was to ensure that the rehabilitation and reconstruction operations (projects) are effectively met through the formulation and implementation of a series of clearly defined and co-ordinated programmes. The period of the Recovery Phase is difficult to estimate as it varies according to particular circumstances. In the case of Cyclone Namu, a period of seven years may not be an unreasonable estimate.

### 14. RECOVERY REQUIREMENTS

14.1 The task requirements for the Recovery Phase are found intermediately to the occurrence of the disaster, and may not necessarily be reserved solely for the post-emergency period. Such tasks are as follows:

- + To get accurate assessment of both the magnitude and costs of cyclone damage;
- + To formulate rehabilitation and reconstruction programmes;
- + To monitor and co-ordinate the progress of these programmes during their implementation.

14.2 The identification, formulation and implementation of recovery measures is a long and complex process. However, as can be deduced from Sections 4.6 and 6.1 above, there need not be any sharp discontinuity between the Emergency Phase and that of the Recovery Phase. Both are interdependent at particular stages of the disaster operations.

14.3 Nevertheless, the National Disaster Council (NDC) has inserted some recovery measures into the operations by the following undertakings:



the Statistics Division, MOF; staff of the South Pacific Smallholder Project, MAL and the staff of the Solomon Islands Development Trust (SIDT). The data analysis was undertaken jointly by the staff of the Ministry of Agriculture and Lands and the Ministry of Finance, with the assistance of a consultant data analyst provided by UNDP/ESCAP.

- 15.4 To start with, survey teams were sent to the most affected areas; but eventually almost all the villages in each Province were covered. In total about 22,000 households in 2,431 villages with a population of some 118,000 people were surveyed. (See Table 2).

## 16. SURVEY FINDINGS

The survey was very helpful in that it provided crucial information on the following:

- (a) damage caused by the cyclone in rural areas in the two Provinces;
- (b) estimates of the urgent and long term needs of villagers due to damage by the cyclone.

The former was essential in finding out the magnitude of the effects of the cyclone, and the latter in establishing the nature of material needs and social work needed to lessen the hardship suffered by the people and to help in the rehabilitation of the areas concerned.

### 16.2 Damages to Garden Crops

Food supply in Solomon Islands is dependent heavily on the village gardens where sweet potato, taro, yam, banana, cassava, beans, cabbage, tomato, maize and other vegetables are produced.

- 16.3 Damage to gardens as a result of the cyclone was extensive in both Provinces. It was found that 53% of all gardens in the two Provinces were completely destroyed, and about 26% partly damaged. It is further estimated that the overall damage to garden crops was 66%. (See Table 3).

- 16.4 In Guadalcanal, most of the damage was caused by flooding, the most seriously affected areas being the Plains and Mbambanakira areas. Extensive damage was also caused by landslides in the high bush area of East Guadalcanal and by high winds on the Weather Coast. In total, about 70% of all gardens on the



island were destroyed. In Malaita, by comparison, garden damage was 64%. The worst damage in Malaita was in the river valleys south of a line from Dala to Atori, and in 'Are'Are, South and Small Malaita. Wind damage was more extensive on Malaita than that of flood damage.

17. CASH CROPS

17.1 (a) Coconuts

Coconuts provide an important source of food for village people as well as being the principal cash crop. It is estimated that some 22,000 hectares of coconut lands were affected by Cyclone Namu. Most of the damage was caused by high winds. On Malaita some 49% of palms were destroyed; on Guadalcanal 27%. Field survey and aerial reconnaissance indicated that some 10-15% of new plantings had been ruined by either wind, flood or wave.

17.2 It is estimated that copra production will be severely reduced over the next 12 months or so, losses perhaps being as high as 35-40%. (See Table 4).

17.3 (b) Cocoa

In recent years cocoa has become an increasingly important smallholder crop. However, Cyclone Namu had destroyed a large number of plantings in this crop, being vulnerable to both flooding and high winds. In Guadalcanal 24% of all plantings were destroyed and Malaita lost about 38% of its cocoa crop.

17.4 (c) Livestock

Livestock also suffered the brunt of Cyclone Namu. The most affected areas were the Plains in Guadalcanal and East/West Kwaio and the southern parts of Malaita. Some 5,500 (15%) pigs, 280 (9%) of smallholder cattle and 18,650 (27%) chickens were lost in the cyclone floods. (See Table 5).

17.5 (d) Housing

Houses are one of the items most vulnerable to the elements of flooding, high winds and wave actions. In the two affected areas of Guadalcanal and Malaita approximately 27% of all houses were completely destroyed, while another 26% were partly damaged.

Most of the damage on Malaita were caused by high winds, while flood waters caused the greater damage on Guadalcanal. (See Table 6).

17.6 (e) Others

In terms of other buildings apart from houses, it was found that some 64% (824) of copra driers, 39% (115) of cocoa driers and 82% (372) of classrooms were lost in both Malaita and Guadalcanal.

18. METEOROLOGICAL REPORT

18.1 Cyclone Namu was the most devastating and the most costly tropical cyclone to affect Solomon Islands in living memory.

18.2 Namu developed from gale to hurricane force very quickly on the 18th May 1986 whilst travelling from the north towards Sikaiana. The cyclone was very erratic in its path with varying speeds of movement (ranging from 5 to 20 knots). Many places reported wind speed estimates exceeding hurricane force (64 knots) and there were 100 knots estimates.

18.3 History

A tropical depression advice was first received from Fiji Meteorological Service, Nadi at 1100 LST on 16 May 1986 at seven degrees South, 161 degrees East. Six hours later it was repositioned at seven degrees South, 163 degrees East. The depression then weakened and re-formed 24 hours later at 1700 LST on 17 May 1986 at seven degrees South, 164 degrees East.

18.4 It remained stationary in this position for six hours and then began moving southwest towards Sikaiana at 8 knots. At a position of 30 nautical miles northwest of Sikaiana it had developed into a tropical cyclone and was named Namu. It continued to move southwest travelling at approximately 7 knots and was positioned at 0130 LST on 19 May 1986 at Manawai Harbour, East Malaita bringing destructive winds of an estimated 50-60 knots to this area. Data gathered after the cyclone suggested that Namu again changed direction at Manawai to travel parallel down the east coast of South Malaita to cross north of Maka and then curved easterly towards Guadalcanal and Marau Sound. Eyewitness reports suggested that the eye of the cyclone crossed Marau at 0300 LST on 19 May 1986, and then very slowly crossed Eastern Guadalcanal's weather coast to recurve southwards just before Avu Avu. It then moved south to south-

westerly at 15-20 knots passing approximately 20 nautical miles to the northwest of Bellona.

- 18.5 It is interesting to note from observational reports that between Manawai and Marau, Cyclone Namu travelled at 20 knots. Whereas from Marau Sound until the cyclone left the weather coast of Guadalcanal to travel southwest it spent some 12 hours delivering very heavy rains and storm to hurricane force winds. Further, it appeared that its movement slowed down considerably or even became stationary near Avu Avu for approximately three hours, between 0500 and 0800 LST on 19 May 1986.

#### 18.6 Warnings

During the passage of Cyclone Namu through Solomon Islands, the Fiji Meteorological Service issued three (3) gale warnings and seventeen (17) tropical cyclone warnings. When the cyclone passed into Brisbane's area of responsibility the Brisbane Tropical Cyclone Warning Centre issued eight (8) warnings whilst in the Solomons' waters Fiji also issued the appropriate International Marine Warnings.

- 18.7 The first tropical depression advice was issued by the Solomon Islands Meteorological Service (SIMS) at 1433 LST on Friday, 16 May 1986 indicating the likely development of gale force winds, followed by a further gale warning at 1531 LST with a final gale warning issued at 2202 LST on 16 May 1986.

- 18.8 The depression redeveloped on Sunday, 18 May 1986 and a gale warning was issued at 0300 LST. The first tropical cyclone warning was issued at 1100 LST on Sunday, 18 May 1986. In all, eighteen (18)\* Tropical Cyclone Warnings were issued by SIMS, the final being when the cyclone was 110 nautical miles southwest of Bellona at 1030 LST on 20 May 1986 and moving further southwest out of Solomon Islands' territory.\*\*

#### 18.9 Effects

Henderson Airport - the airport sustained strong winds of 30 knots gusting between 45 and 63\*\*\* knots between 1000 and 1500 LST on 19 May 1986 occasionally reaching gale force. From 1500 to 2300 LST the winds averaged 20 knots with several gusts exceeding 40 knots. The minimum pressure recorded at Henderson was 983\*\*\*\* hPa (corrected to mean sea level

\* See Appendix 7

\*\*\* See WS Record on Page 48

\*\* See Appendix 8

\*\*\*\* See Barograph on Page 46

pressure) at 0600 and 0700 on 19 May 1986. The aerodrome runway, tarmac area and terminal buildings were flooded shortly after midday on 19 May and the water quickly rose to approximately one metre in depth. Water was lapping over the floor of the Meteorological Office and the Flight Service Centre. The flood waters began receding at 1600 LST. About 50 people were stranded in the Meteorological Office during the flooding. Because of the initial flooding and the subsequent flooding of the instrument enclosure, no rainfall readings were available for 20 May 1986 but were calculated from the pluviograph. Rainfall recorded at Henderson from Cyclone Namu was 353 mm, between 18 and 21 May 1986.

18.10 The closest the eye of the cyclone came to Henderson was when it was located at Haimarao some 30 nautical miles southeast, at 0600 LST on 19 May 1986.

18.11 Conclusion

Even though Namu was late in the season it very quickly intensified to gale force upon identification off Sikaiana. Further intensification over South Malaita resulted in hurricane force winds to South Malaita and Eastern Guadalcanal in its path. The strongest winds recorded were behind the eye and for several hours following.

18.12 Eye witness reports from Manawai Harbour and Maka on Malaita, Marau and Haimarao (near Avu Avu) on Guadalcanal, stated that Namu had travelled an erratic track as reported at the time of passage. Satellite data shows a clouded eye for the whole time making it quite diffuse. However, it was likely that the eye was between 15 and 25 miles wide after the cyclone's intensification over South Malaita.

18.13 The problem of accurately positioning the eye, at the time of warning issues, depends upon a very much larger source of accurate and timely wind speed and direction observations passed to SIMS, which was not made available during Namu.

18.14 Meteorologically, a good fix on the eye is within 30 miles, but with a clouded eye 60 to 90 miles. This is nowhere near accurate enough for the Solomon Islands as an error of 30 miles is the difference between the cyclone being at Malaita or Guadalcanal. A weather radar at Honiara would have been the only way to have the position of the eye more accurately determined. No such equipment is currently available in Solomon Islands.

TABLE 1  
OFFICIAL DEATH TOLL BY PROVINCES

Province	No. of Deaths	Classification
Guadalcanal	49	11 identified 38 unidentified believed dead
Malaita	11	9 identified 2 unidentified believed dead
Temotu	2	Believed drowned
Makira	1	Identified
	63	21 identified 42 unidentified believed dead

NB: When the final count was taken it was found that the above were the only ones documented as dead or missing.

TABLE 2  
POPULATION SURVEYED

Province	Number of		
	Villages	Households	Persons
Guadalcanal	1,068	7,061	39,244
Malaita	1,363	14,514	78,479
Guadalcanal & Malaita	2,431	21,575	117,723

TABLE 3  
GARDEN DAMAGE BY NUMBER AND PERCENTAGE

Province	Gardens Before Cyclone	Number Completely Damaged	Number Partly Damaged	% Damage
Malaita	28,060	13,662	8,512	64
Guadalcanal & Malaita	50,153	26,837	12,943	66

TABLE 4  
DAMAGE TO COCONUT AND COCOA TREES BY PERCENTAGE

Province	% Of Trees Destroyed	
	Coconuts	Cocoa
Guadalcanal	27%	24%
Malaita	49%	38%
Guadalcanal & Malaita	45%	31%

TABLE 5  
LOSS OF LIVESTOCK BY NUMBER AND PERCENTAGE

Province	Pigs		Cattle		Chicken	
	No. Lost	%	No. Lost	%	No. Lost	%
Guadalcanal	2,247	16	114	12	11,491	37
Malaita	3,292	15	166	8	7,162	19
Guadalcanal & Malaita	5,539	15	280	9	18,653	27

TABLE 6

HOUSE DAMAGE BY NUMBER AND PERCENTAGE

Province	No. Houses	No. Houses	Total No. Damaged	% Damage
	Completely Destroyed	Partly Damaged		
Guadalcanal	1,098	986	2,084	12
Malaita	5,031	4,870	9,901	48
Guadalcanal & Malaita	6,129	5,856	11,985	40

EMERGENCY FEEDING

It was decided for food procurement and supply purposes, that an estimate of some 90,000 persons would require feeding for at least three (3) months period.

BASIC FOOD

Based on diet accustomed to by a Solomon Islander, the basic food items provided were - rice, biscuit, canned fish/meat.

Rice Supplies

<u>Vessel</u>	<u>Consigned to NDC</u>	<u>Others</u>
Coral Chief V106 PNG Rice	390 m/t mixed pack	315 m/t brown calrose for Solrice
Kumul Express V37 Rice Growers Co-op., Australia	500 m/t mixed pack	315 m/t milled calrose for Solrice
Perlas V1 UNWFP ex Singapore	1,080 m/t of 40/50 kg. bags	-
Chengtu V56 (EEC Aid) 1st	850 m/t Thai rice 25 kg. bags	420 m/t Thai rice
Sun Flores V2 (EEC Aid) 2nd	850 m/t Thai rice 25 kg. bags	420 m/t Thai rice for Sol- rice
MV Trinco/ US Food Aid	900 m/t	

Supplies received by the end of July 1986 exceeded 3,300 m/t. In addition 350 m/t were purchased locally and 250 m/t arrived by Naval vessels.

- Weekly ration distribution based on a rough guideline of:

- + 1 x 25 kg. bag for 10 persons;
- + 1 large ctn. fish for 20 persons; or
- + Fish and meat on a 50-50 basis.



OTHER\_BASIC\_FOODS

<u>Item</u>	<u>Local_Consignment</u>	<u>Overseas</u>
+ <u>Biscuits</u> (Navy)	10,000 cartons on a 850-1,000 car- tons (5-6 tonnes) per day production	30 m/t milk- biscuits from emergency food aid
+ <u>Canned_Fish</u>	5,650 cases were procured from Taiyo Ltd for 3-4 months feeding	5,000 cases of 15 oz. cans
+ <u>Canned_Meat</u>	(Not available)	(Not available)

NATIONAL DISASTER COUNCILSTATEMENT OF RECEIPTS AND PAYMENTS TO 17/11/861. RECEIPTS

Overseas Government	\$1,005,782.58
Overseas Companies, Institutions* & Individuals	509,990.04
	-----
	\$1,515,772.62
	-----
Solomon Islands Government	136,978.37
Local Companies, Institutions & Individuals	564,664.35
	-----
Total Receipts	\$2,217,415.34
	=====

2. PAYMENTS

Foods, including tinned fish & meat	756,789.18
Equipments & materials	167,665.78
Fuel	197,340.52
Air & sea transport charters	215,255.45
Survey & maintenance	104,025.36
Wages/Allowances	48,470.77
Grants to Provinces & HTC	36,817.00
HQ Administration Expenses	45,665.82
SIBC Service Charges	12,088.60
Lee's Lake	30,175.48
Freight charges	14,648.87
Hire of plant & vehicles	17,406.41
	-----
Total Payments	\$1,646,349.24
	-----
Total Receipts	2,217,415.34
Total Payments	1,646,349.24
	-----
Credit Balance**	\$ 571,066.10 CR

Commitments:

SI Government	\$62,104.63
Companies	24,236.60
	-----
	\$86,341.23

\* UNDP - SI\$88,181.82

\*\* Note: The balance of this money is held in four separate accounts which are:

NDC Account No. 1 (01-908199-0301-3)	SI\$271,788.10
NDC Account No. 2 (Held by AHC)	154,000.00
NDC Account No. 3 (Held by BHC)	122,000.00
SI Government's Account Code No. 722-09001	23,278.00

3. EEC'S CASH GRANT

An accountable cash grant of US\$402,640.61 was paid to the Central Bank by the EEC from which two payments were made for two consignments of EEC rice received from Thailand.

1st Payment	US\$149,832.50
Freight	73,100.00
2nd Payment	US\$146,886.19
Freight	73,100.00
	-----
Total Payments	US\$442,918.69
Receipt by the Central Bank	US\$402,640.61
Payments	US\$442,918.69
<u>Debit Balance</u>	US\$ 40,278.08

Payments made by the Central Bank exceeded the EEC's grant by the sum of US\$40,278.08 which is equivalent to SI\$71,124.99. The Central Bank has charged the above overdraft to the Government's temporary advance account without interest.

4. The Central Bank also made a further payment of SI\$571,166.08 to a PNG Rice Company for the initial supply of rice procured to supplement what was then available locally.

SHIPPING MOVEMENTS

SHIP	DATES	DESTINATION	DEPARTURE SCHEDULE	ARRIVAL SCHEDULE	REMARKS
MV Southern Cross	22/5/86	Loaded with relief supplies for Sikaiana, Kwai & East Malaita.	Honiara morning 22/5/86 Sikaiana 1600 hrs 25/5/86	Sikaiana 0990 hrs 23/5/86 Kwai thence Honiara	Sikaiana-Kwai route (2nd trip)
MV Island Trader	22/5/86	Loaded with supplies for Temotu via Small Malaita.			Supplies; 40 x 200 litres fuel
MV Compass Rose II	22/5/86	Loaded with supplies for MDC, Auki; proceeded to Su'u and evacuated 160 students.		Honiara 25/5/86	
MV Wataro	22/5/86	Relief supplies & diesel fuel for Tetera beach.	Honiara 0600 hrs	Honiara 23/5/86	
	23/5/86	Loaded with supplies for Mbambanakira.			
MV Wango	23/5/86	Loaded with relief supplies for Ruavatu, Guadalcanal Province.	Honiara morning 24/5/86		
LC Kotu	23/5/86	Loaded with relief supplies for Ulawa, Uki thence to Kira Kira.			

SHIP	DATES	DESTINATION	DEPARTURE SCHEDULE	ARRIVAL SCHEDULE	REMARKS
FV Ufinatasi	23/5/86	Loaded with relief supplies for South Malaita.	Honiara 0715 hrs 24/5/86		
	27/5/86	Loaded with relief supplies for Buale.	Honiara 27/5 pm		
	29/5/86	Loaded with relief supplies for Tarapaina, South Malaita through Maramasike Passage.			
	3/6/86	Departed for East Malaita.			
	6/6/86	Loaded with diesel & petrol drums for Auki and South Malaita.			
	16/6/86	Loaded with relief supplies for Malaita.			
MV Belama	24/5/86	Loaded with relief supplies for Rennell and Bellona.	Honiara 1400 hrs		
	28/5/86	Loaded with diesel & petrol drums for Auki and relief supplies for South Malaita and Kira Kira.	Honiara 1900 hrs	Kira Kira 30/5/86	
	3/6/86	On standby.			
	19/6/86	Loaded with relief supplies for Auki and sailed to north-eastern Malaita.			

SHIP	DATES	DESTINATION	DEPARTURE SCHEDULE	ARRIVAL SCHEDULE	REMARKS
MV Solomon Princess II	24/5/86	Loaded with relief supplies for South Malaita.	Honiara 24/5 pm		
MV Atawa	24/5/86	Loaded with relief supplies for Buala.	Honiara 2200 hrs 24/5/86		
FV Solomon Kariqa	26/5/86	Loaded with relief supplies for ports between Su'u and Maka, West Malaita.			
	27/5/86	Loaded with relief supplies for Ndai Island and Sikaiana.	Honiara 29/5/86		
	29/5/86	Departed with supplies for Weather Coast, Guadalcanal Province.			
	5/6/86	Departed with relief supplies for Guadalcanal's Weather Coast.			
	10/6/86	Loaded with tent supplies for Rennell and Bellona.			
	17/6/86	Loaded with relief supplies for Guadalcanal Ports.			
	2/7/86	Loaded with relief supplies for Ulawa and Makira.			

SHIP	DATES	DESTINATION	DEPARTURE SCHEDULE	ARRIVAL SCHEDULE	REMARKS
MV Compass Rose II	29/5/86	Loaded with relief supplies for East Malaita.			
FV Sun King	29/5/86	Loaded with relief supplies for Rennell and Bellona on a scheduled run.			
FV Solomon Atu	27/6/86	Loaded with relief supplies for Auki and South Malaita.			
	3/7/86	Loaded with relief supplies for Guadalcanal Ports.			

EVACUEES ACCOMMODATED IN TEMPORARY CAMPS

NAME OF VILLAGE	NO. OF FAMILIES	APPROX. POPULATION	LOCATION	REMARKS
Foxwood	3	23	Foxwood Company House	Eventually returned to villages.
Tutuva	3	27	Near Foxwood	"
Ravu	8	62	Near Ngalimbiu	"
No. 6	2	9	Near Selwyn College	"
Selenivela	5	30	?	"
Siroiga	4	27	?	"
Makila, Vutu and Supere	12	65	Near Sea Coast by way to Ravu Village	"
CDC 1	65	424	Ngalimbiu	They were allowed to remain in camp for extra two weeks.



DISASTER MEDICAL TEAMS AND AREAS SURVEYED

TEAM	PERSONNEL	AREAS COVERED	SURVEY FINDINGS/ TREATMENT	DURATION OF EXERCISE
New Zealand	2 Doctors 2 Paramedics 1 Health Inspector	Posted at Mbambanakira West Guadalcanal.	Reported to have sorted out all necessary acute problems but advised by NDC (Ops) to remain till risk of disease/epidemic was over.  Toured area and settled immediate needs; assigned local Nurse on normal activities.	Arrived 22/5/86  Commenced Operations: 23-27/5/86  27/5-1/6/86
The NSC/ Australia	1 Doctor	Posted at Afio, toured Saal Malaita extensively.	Gradually aided local team to return to normal work; attended to normal health problems.	Arrived 26/5/86  Commenced Operations: 27/5-3/6/86
Japan	1st Group: 2 Doctors 2 Nurses 1 JICA Official - Coordinator	Posted at Avu Avu, South Guadalcanal.	Treated cases normally prevalent in SI.	Arrived 26/5/86  Commenced Operations: 27-29/5/86

TEAM	PERSONNEL	AREAS COVERED	SURVEY FINDINGS/ TREATMENT	DURATION OF EXERCISE
Japan	2nd Group: Junior Medical Team	Posted at Avu Avu, South Guadalcanal.	Toured and treated medi- cal cases.	Arrived 1/6/86
AODRO - Australia	2 Doctors 2 Nurses 1 Health Surveyor 1 Health Admini- strator	Posted at Binu Clinic, North Guadalcanal.	Covered Guadal- canal Plains - worst hit areas; conducted medical surveys and other assess- ments. Initially not many patients but later increased as health condi- tions on Plains worsened. Cleared mud and debris from Clinic and resumed services.	Arrived 27/5/86  Commenced Operations: 27/5/86-?
FSP - Australia	4 Doctors	2 Doctors and 2 Nurses posted at Atoifi Hospital.  1 Doctor and 1 Nurse posted to Small/South Malaita.  1 Doctor and 1 Nurse posted to Totongo, East Guadal- canal.	Helped with hos- pital patients.  Toured and treated patients.	Arrived 29/5/86

1 RELIEF OPERATIONS TO 31 MAY 1986APPENDIX 6

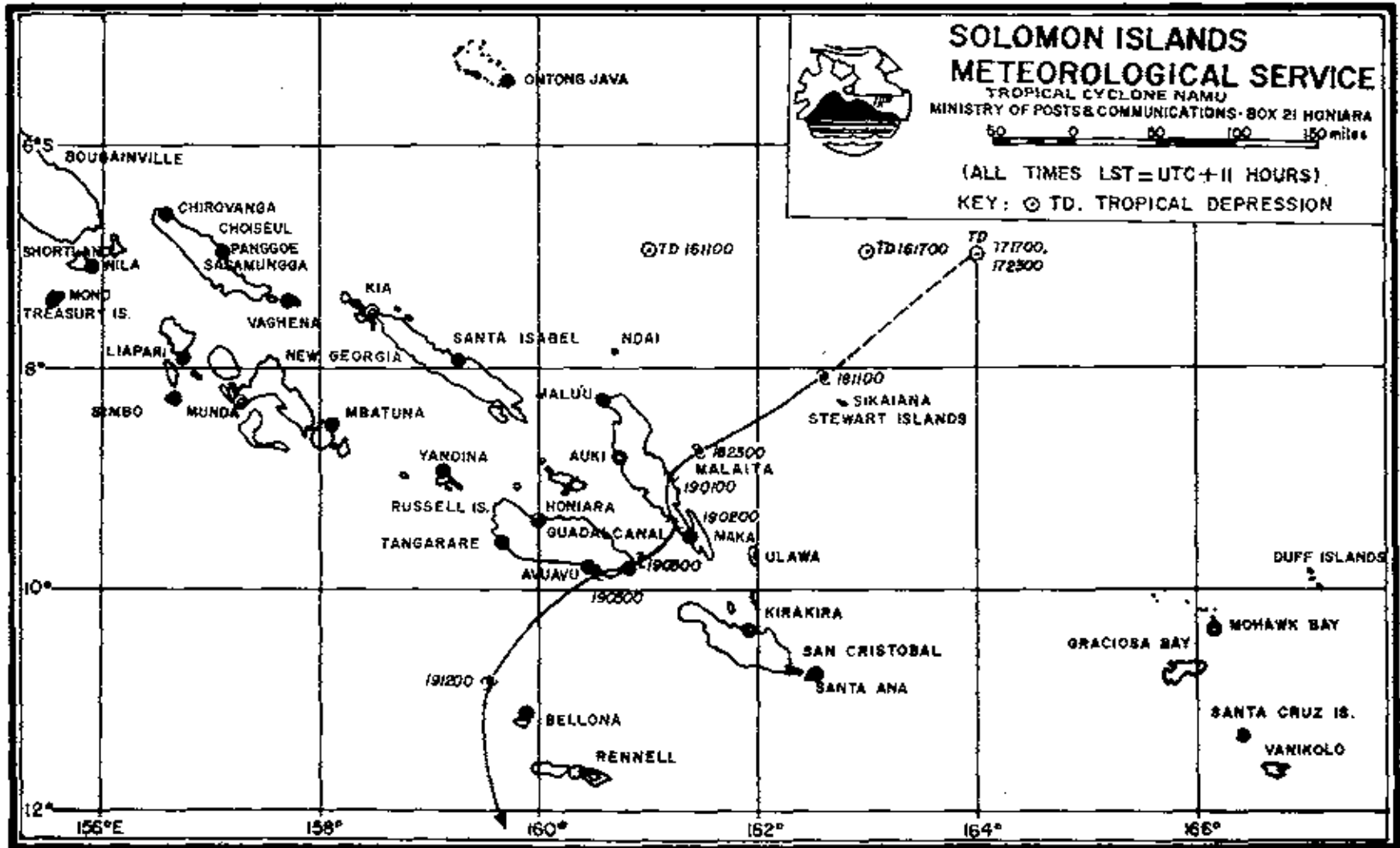
<u>DATE</u>	<u>SOLAIR CRAFTS</u>	<u>AUSTRALIAN CRAFTS</u>	<u>NZ CRAFTS</u>	<u>USA CRAFTS</u>	<u>CIVILIAN CRAFTS</u>
20.5.86	operations suspended pending checks and cleaning up of the Henderson Runway.				2 Helicopters made assessment flights. The Fletcher flew to Koli with supplies.
21.5.86	Mbambanakira, Atoifi, Kira Kira aerodromes not yet serviceable.  Islander: Supplies dropped at Sikaiana. Supplies flown to Rennell and Bellona.	Arrived - 2 RAAF C130s carrying 2 Iroquois Helicopters which were quickly assembled.			More assessment flights were made carrying supplies.
22.5.86	Islander: Shuttle flights to Avu Avu.	1 Iroquois assigned to Guadalcanal Province.  1 C130 arrived with supplies.	1 C130 arrived with supplies.		2 Helicopters assigned to Guadalcanal Province.  SDA Aztec to Atoifi.
23.5.86	2 Islanders: Shuttle flights, delivered 5,600 kg. of supplies to Parasi.	1 Iroquois moved to Parasi; airlifted supplies to inland areas.			Fletcher - delivered supplies to Mbambanakira.
24.5.86	Aztec: Shuttle flights to Parasi.  Queenairs: Inspection flight to Makira/ Ulawa with NDC Officials.	Both Iroquois continued operation from Parasi.  Caribou: Arrived and delivered supplies to outstations for distribution by Helicopters.			SDA Aztec sustained damage - out of action for 3 weeks. Pilot flew Solair Aztec instead.

<u>DATE</u>	<u>SOLAIR CRAFTS</u>	<u>AUSTRALIAN CRAFTS</u>	<u>NZ CRAFTS</u>	<u>USA CRAFTS</u>	<u>CIVILIAN CRAFTS</u>
25.5.86	Queenairs: Collected food from Balalai. Other planes served Auki; Avu Avu; and made a reconnaissance flight.	Caribou: Supply runs to Auki; Parasi and Avu Avu.		2 C130s: Arrived from Guam with woven plastic tarpaulins.	1 Helicopter grounded, Pilot sick with malaria till end of operations.
26.5.86	Islander: Carried NDC, EEC & American Disaster Relief Experts around Guadalcanal and Malaita.	1 Iroquois assigned to Malaita and the other remained on Guadalcanal.  Caribou: Delivered supplies to Auki; and dropped supplies at Sikaiana.  MSC Dornier: Arrived and immediately transported Medical Teams to various sites.		Another C130 arrived with tinned meat.	Fletcher: Continued with Mbambanakira shuttle flights.
27.5.86	Islander: Surveillance flight over Guadalcanal Plains with Prime Minister.	2 Iroquois: Assigned to Guadalcanal.  1 C130 arrived with supplies.  Caribou: Delivered supplies to Avu Avu.  NSC Dornier: Transported Medical Teams to Parasi and Avu Avu.	1 C130 arrived with supplies.		Fletcher: Reassigned to Guadalcanal operations.

<u>DATE</u>	<u>SOLAIR CRAFTS</u>	<u>AUSTRALIAN CRAFTS</u>	<u>NZ CRAFTS</u>	<u>USA CRAFTS</u>	<u>CIVILIAN CRAFTS</u>
28.5.86	Aztec: Continued with supplies to Atoifi. (Other operations concentrated on Guadalcanal including ferrying Royal Signal Personnel to outer islands.)	MSC Dornier: Continued with Medical Teams.		Another C130 arrived from Guam with further supplies of woven plastic tarpaulins; radios and a detachment of Marines.	
29.5.86		Iroquois: Assigned to Malaita, uplifting supplies.	(Other Crafts on usual tasks. No international relief movements).		
30.5.86	Islander: Delivered medical supplies to Atoifi.	Iroquois: Returned to Guadalcanal operations.  Caribou: Served Auki and dropped supplies at Atoifi.			World Food Programme: C 130: Arrived with supplies of milk, tea and biscuits.
31.5.86	Chartered flights - carried visiting Dignitaries, Local Authorities and Experts in various fields over stricken areas.	Iroquois: Airlifted 250-300 villagers to camps at Gold Ridge and Turarana.	*1 Iroquois - was unserviceable and was removed from service. The other Iroquois completed assignments on Guadalcanal.		
*1.6.86		Sea King: Helicopter arrived on HMAS Stalwart - assigned to set up refugee camps on Gold Ridge and Turarana.	*Sea King - completed evacuation and commenced carrying water purification plants to Guadalcanal Plains; Experts to landslide areas and dam on Lee's Lake.		
**2.6.86			*Dornier - carried TV Crews and Journalists from Australia, NZ and France to various stricken areas. **Sea King - continued transporting Engineers, Police and Army Personnel to various locations; supported ground parties. It became unserviceable on 6 June 1986.		

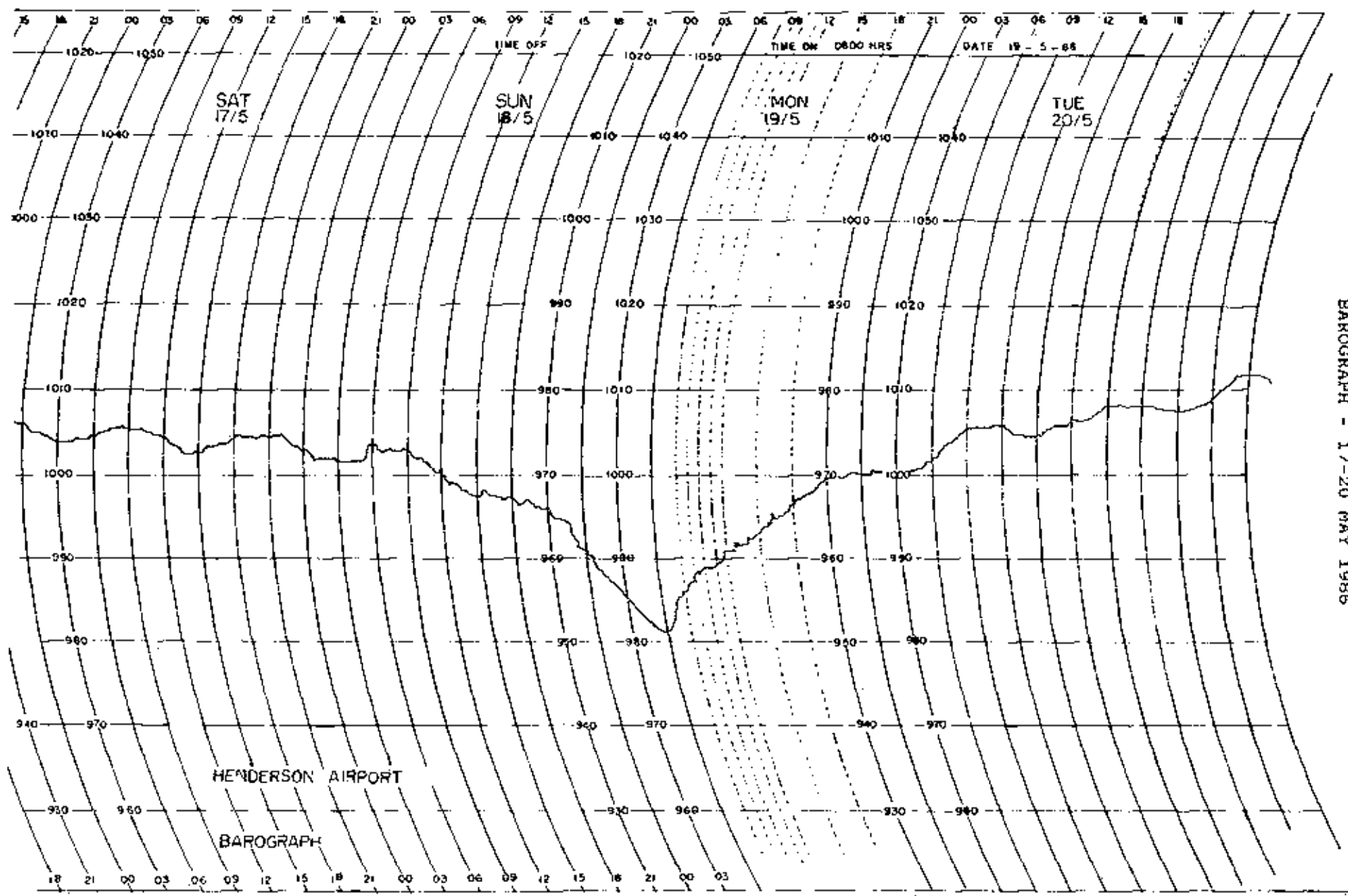
RECORD OF TROPICAL CYCLONE NAMU WARNINGS ISSUED

<u>Fiji</u> <u>Warning</u> <u>No.</u>	<u>Issue</u> <u>Time</u> <u>(LST)</u>	<u>Receipt</u> <u>Time</u> <u>(LST)</u>	<u>Date</u> <u>(LST)</u>	<u>SIMS</u> <u>Warning</u> <u>No.</u>	<u>Issue</u> <u>Time</u> <u>(LST)</u>
1	0945	0955	18 May 1986	1	1100
-	-	-	18 May 1986	2	1300
2	1230	1240	18 May 1986	3	1400
3	1530	1540	18 May 1986	4	1600
4	1900	1903	18 May 1986	5	2000
5	2200	2200	18 May 1986	6	2300
6	0100	0108	19 May 1986	7	0200
7	0400	0412	19 May 1986	8	0500
8	0645	0705	19 May 1986	9	0800
9	1000	-	19 May 1986	10	1130
10	1315	-	19 May 1986	11	1400
11	1600	1631	19 May 1986	12	1700
12	1900	-	19 May 1986	13	2000
13	2200	2212	19 May 1986	14	2300
14	0100	0112	20 May 1986	15	0200
15	0400	0415	20 May 1986	16	0500
16	0645	0645	20 May 1986	17	0730
17	0945	0955	20 May 1986	18	1030
18	Outside Solomon Islands				

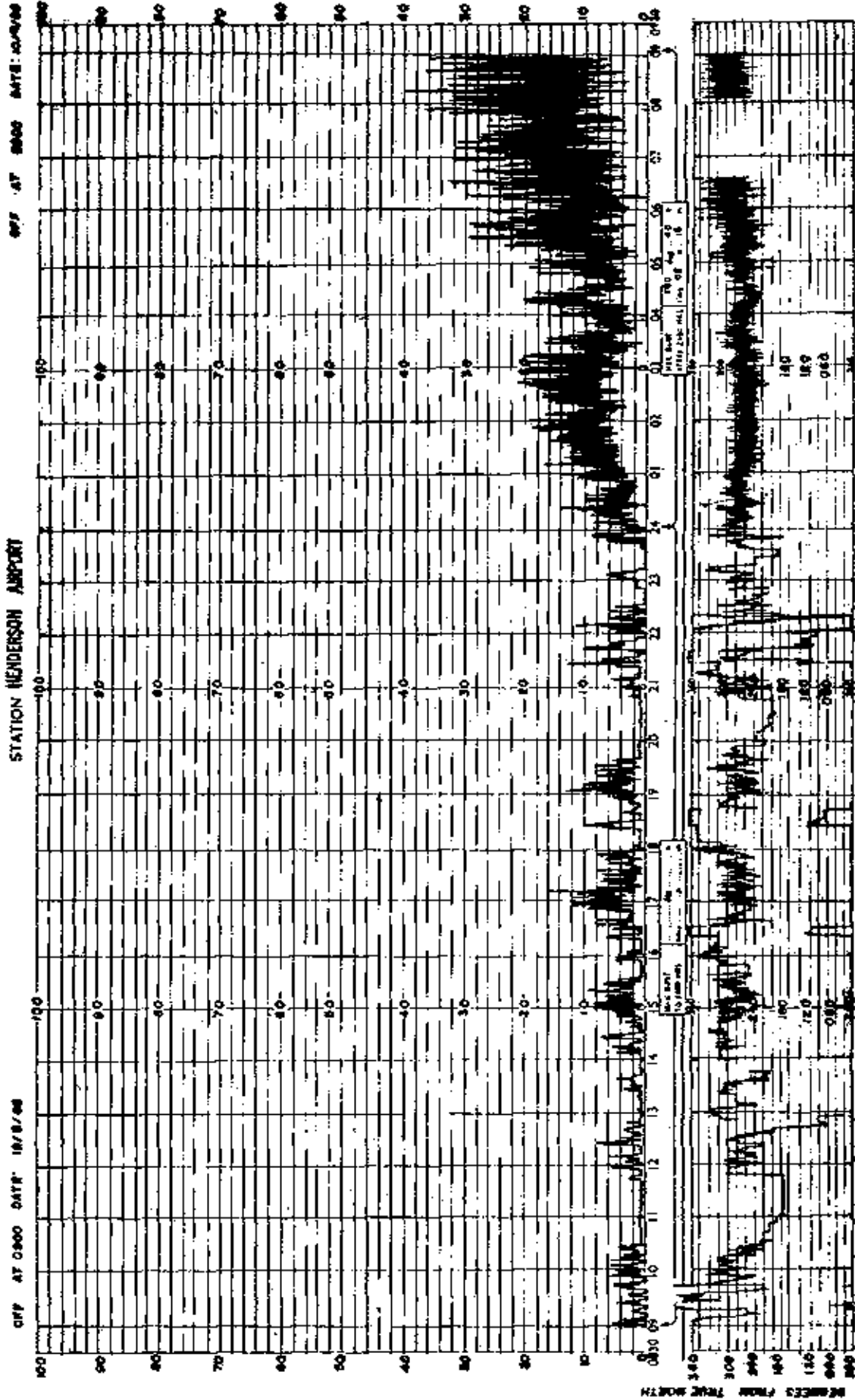


MAP SHOWING THE ERRATIC PATH OF CYCLONE NAMU

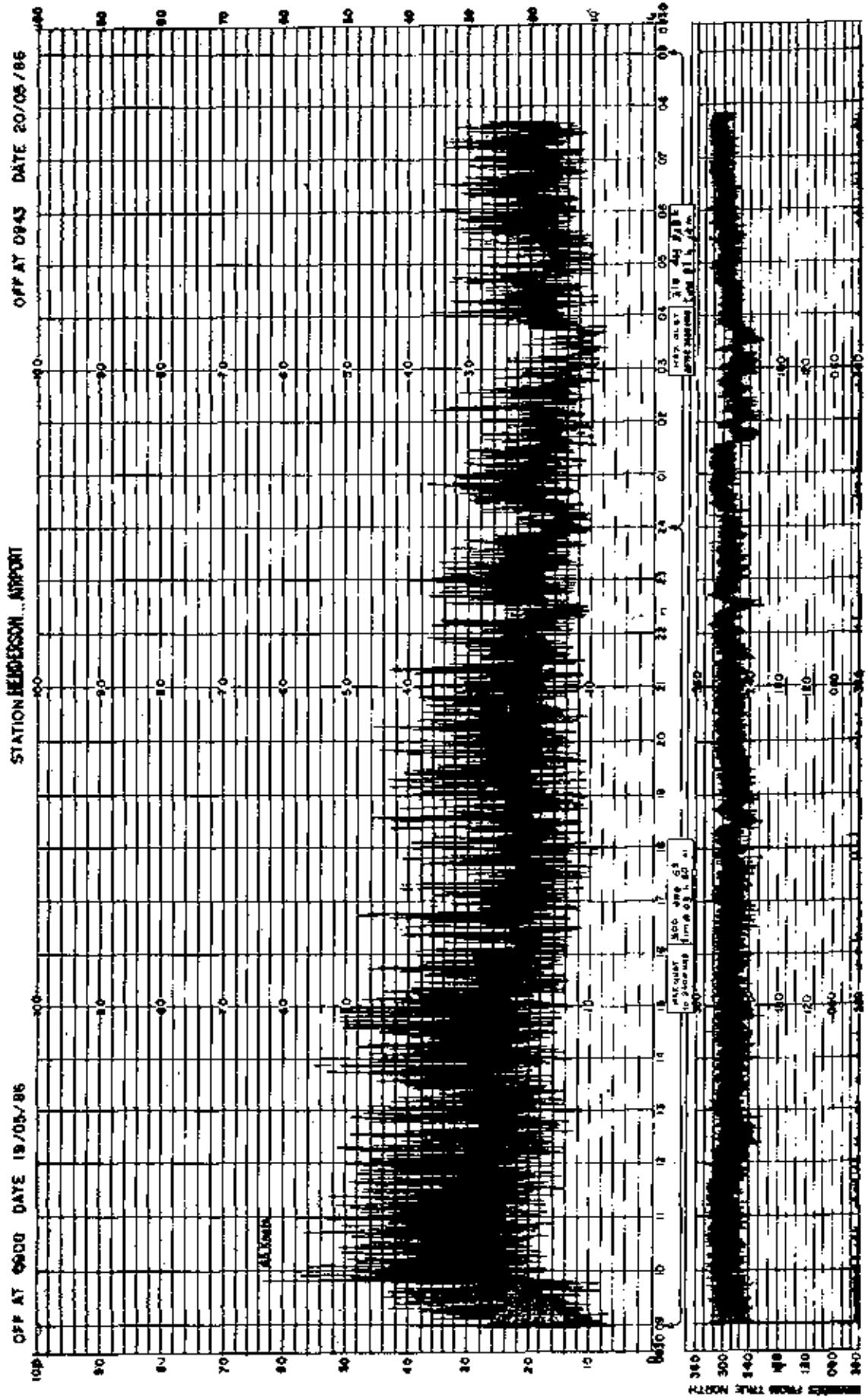
45.







WIND SPEED RECORD - 19-20 MAY 1986



VEHICLES, BOATS AND CANOES USED IN EMERGENCY

RESCUE OPERATIONS

GOVERNMENT'S PLANTS, VEHICLES, BOATS AND CANOES

Ministry of Transport, Works & Utilities

- 1 D6 Bulldozer
- 2 Graders
- 1 Loader
- 6 Trucks
- 8 Other vehicles

Guadalcanal Road Improvement Project (MTWU)

- 8 Hino tipper trucks
- 4 Hilux Toyota pick-up trucks
- 2 Graders
- 2 Loaders
- 2 D6 Bulldozers

Rural Services Project (MAL)

- 1 Hilux Toyota pick-up
- 2 Trucks
- 1 Car

Ministry of Natural Resources

- 2 Ray boats

Statistics Office (MOF)

- 1 Canoe

Rural Services Project

- 3 Fibreglass canoes

Solomon Islands Ports Authority

- 3 Fork lifters
- 1 Crane
- 4 Trucks

PRIVATE TRANSPORT OPERATORS

Dongsan Construction Company

- 9 Tipper trucks
- 2 Excavators
- 1 Water truck
- 1 Cargo truck

Shorncliffe (SI) Limited

- 1 D6 Bulldozer
- 1 Grader
- 6 Tipper trucks

South Seas Evangelical Mission

- 1 Pick-up truck
- 2 Hilux pick-up trucks

Solomon Sheet Steel Limited

- 2 Forklifters (hired)

Solomon Islands Service Station Limited

- 1 Car (hired)

Individual/Private Transport Owners

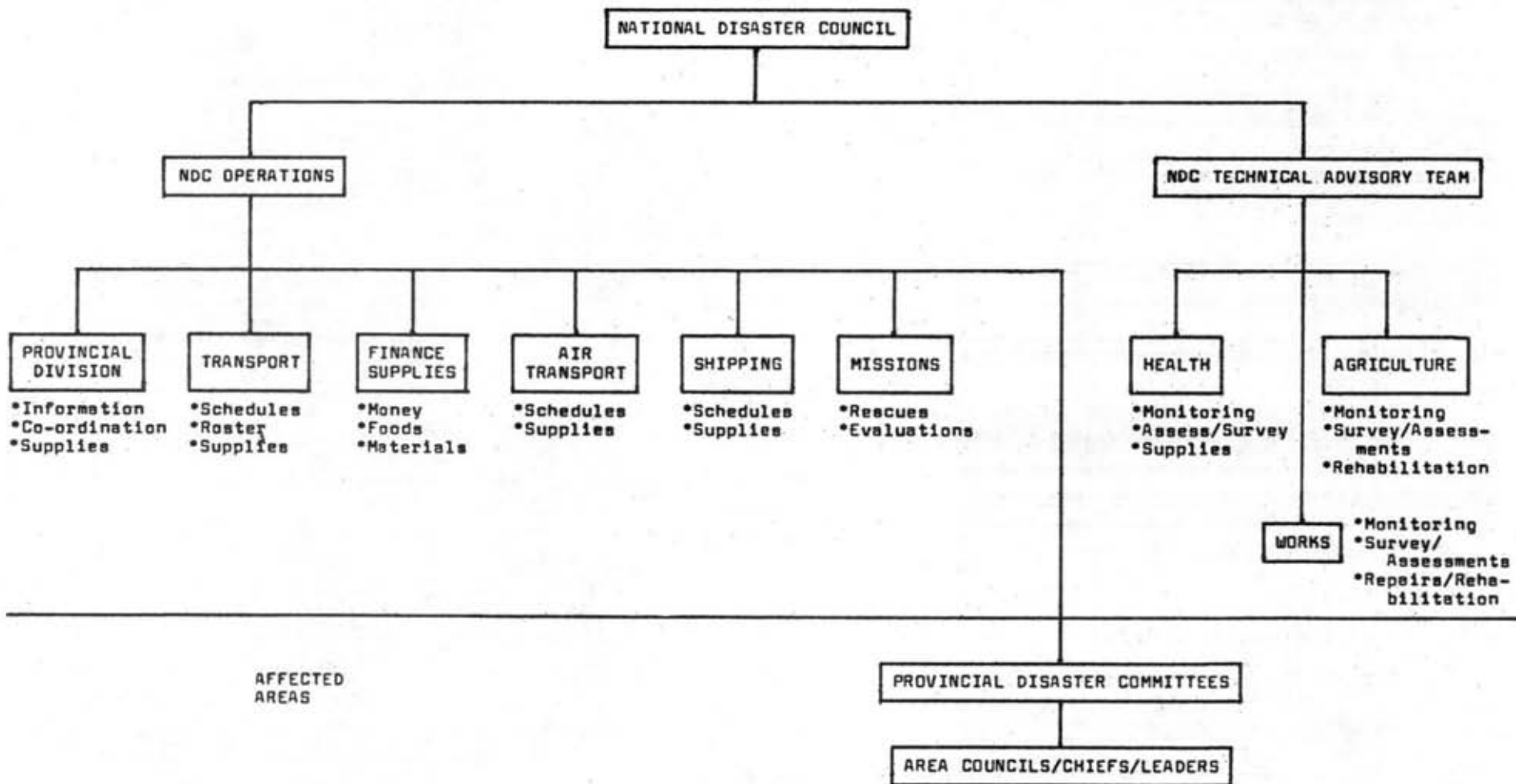
Due to lack of official information, these are not documented.

ABBREVIATIONS USED IN THIS REPORT

AHC	- Australian High Commission
AODRO	- Australian Overseas Disaster Response Organisation
Approx.	- Approximately
BHC	- British High Commission
CDC	- Commonwealth Development Corporation
Co.	- Company
Co-op.	- Co-operative
Corp.	- Corporation
ctn.	- carton
DOC	- Disaster Operations Coordinator
DSE	- Development Services Exchange
EEC	- European Economic Community
ESCAP	- Economic & Social Commission for Asia and the Pacific
FSP	- Foundation for the People of the South Pacific
FV	- Fishing Vessel
hPa	- hectopascals
HQ	- Headquarter
hrs	- hours
HTC	- Honiara Town Council
JICA	- Japan International Co-operation Agency
kg.	- kilogramme
lbs	- pounds
LC	- Landing Craft
LST	- Landing Ship Tank
LST	- Local Standard Time
Ltd	- Limited
MAL	- Ministry of Agriculture and Lands
MDC	- Malaita Disaster Committee
mm	- millimetre
MOF	- Ministry of Finance
MST	- Marine Salvage Tug
m/t	- metric ton
MTWU	- Ministry of Transport, Works & Utilities
MV	- Marine Vessel
NDC	- National Disaster Council
NDOC	- National Disaster Operations Centre
NDP	- National Disaster Plan
No.	- Number
NSC	- National Safety Council (Australia)
NZ	- New Zealand
oz.	- ounces
PDC	- Provincial Disaster Committee(s)
PNG	- Papua New Guinea
RAAF	- Royal Australian Air Force
ROC	- Republic of China (Taiwan)
SDA	- Seventh Day Adventist

SI - Solomon Islands  
 SIBC - Solomon Islands Broadcasting Corporation  
 SICHE - Solomon Islands College of Higher Education  
 SIDT - Solomon Islands Development Trust  
 SIMS - Solomon Islands Meteorological Service  
 SIPL - Solomon Islands Plantations Limited  
 TAT - Technical Advisory Team (NDC)  
 UCDF - Ulawa Community Development Fund  
 UK - United Kingdom  
 US - United States  
 USA - United States of America  
 USAF - United States Air Force  
 USS - United States Ship  
 UNDP - United Nations Development Programme  
 UNWFP - United Nations World Food Programme  
 V - Voyage  
 WFP - World Food Programme  
 WHO - World Health Organisation  
 WS - Wind Speed  
 YWCA - Young Women's Christian Association

NATIONAL DISASTER COUNCIL ORGANISATIONAL CHART



53.

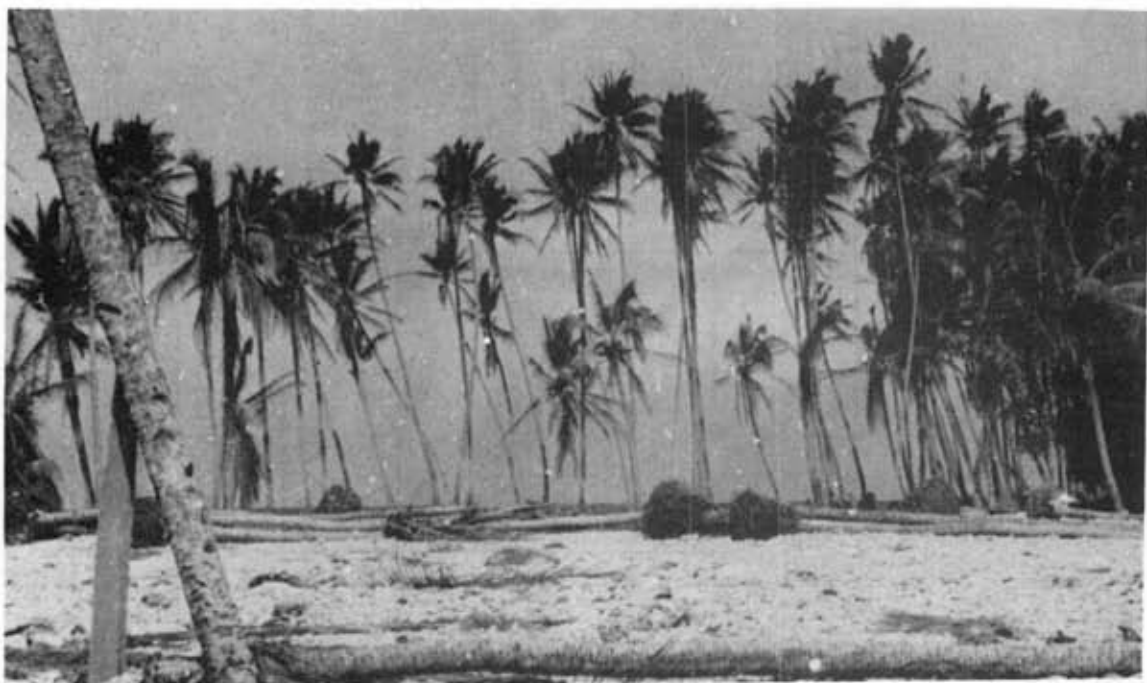


FIGURE 2. TIDAL AND WIND DAMAGES TO COCONUT PLANTATION IN SOUTH MALAITA

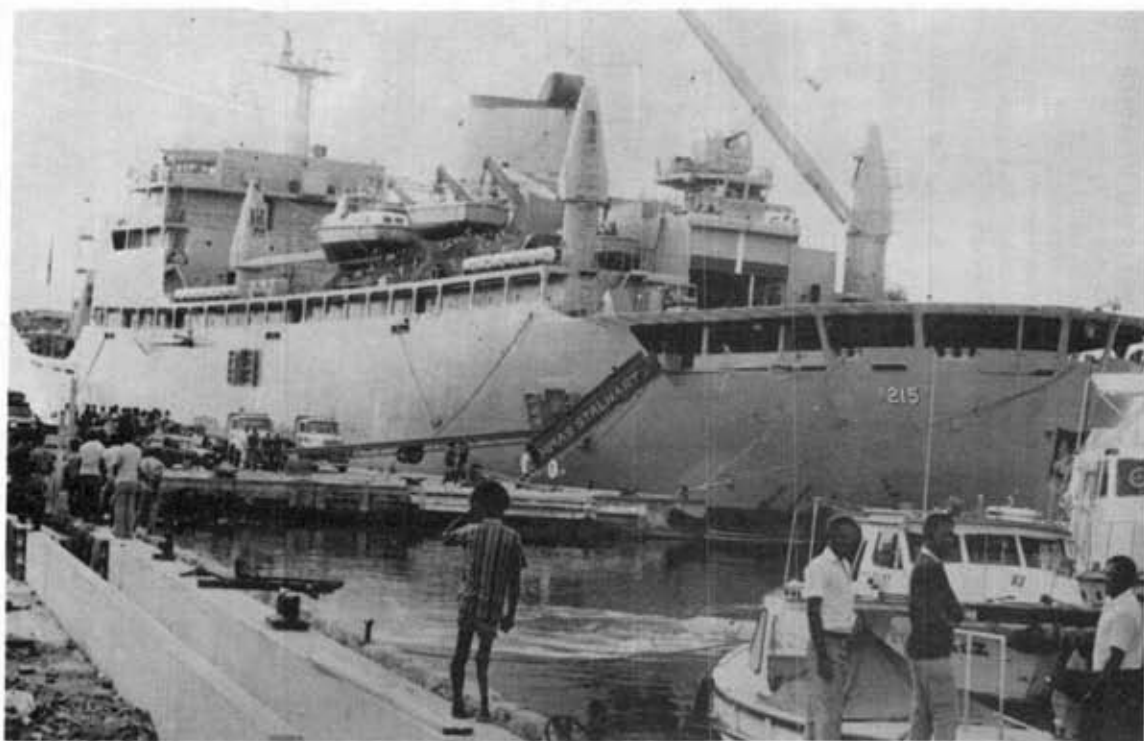


FIGURE 3. HMAS STALWART, THE AUSTRALIAN FLAGSHIP OF THE ROYAL AUSTRALIAN NAVY, UNLOADS RELIEF SUPPLIES AT POINT CRUZ, HONIARA.





FIGURE 4. MR JEAN-CLAUDE MELLOR (EEC'S REPRESENTATIVE) HANDS OVER A CONSIGNMENT OF RICE TO MR MILNER TOZAKA (CHAIRMAN, NDC). BRITISH HIGH COMMISSIONER, MR JOHN NOSS IS IN THE MIDDLE.



FIGURE 5. THE DEVASTATED MBALISUNA BRIDGE, GUADALCANAL.



FIGURE 6. HUGE LOGS JAMMED AGAINST THE DEVASTATED NGALIMBIU BRIDGE, GUADALCANAL.



FIGURE 7. FLOOD WATERS DISCARDED LOG DEBRIS AT SIPL'S HOUSING ESTATE, NGALIMBIU, GUADALCANAL.



FIGURE 8. LOGS WASHED ASHORE ALONG RANANDI BEACH, HONIARA.

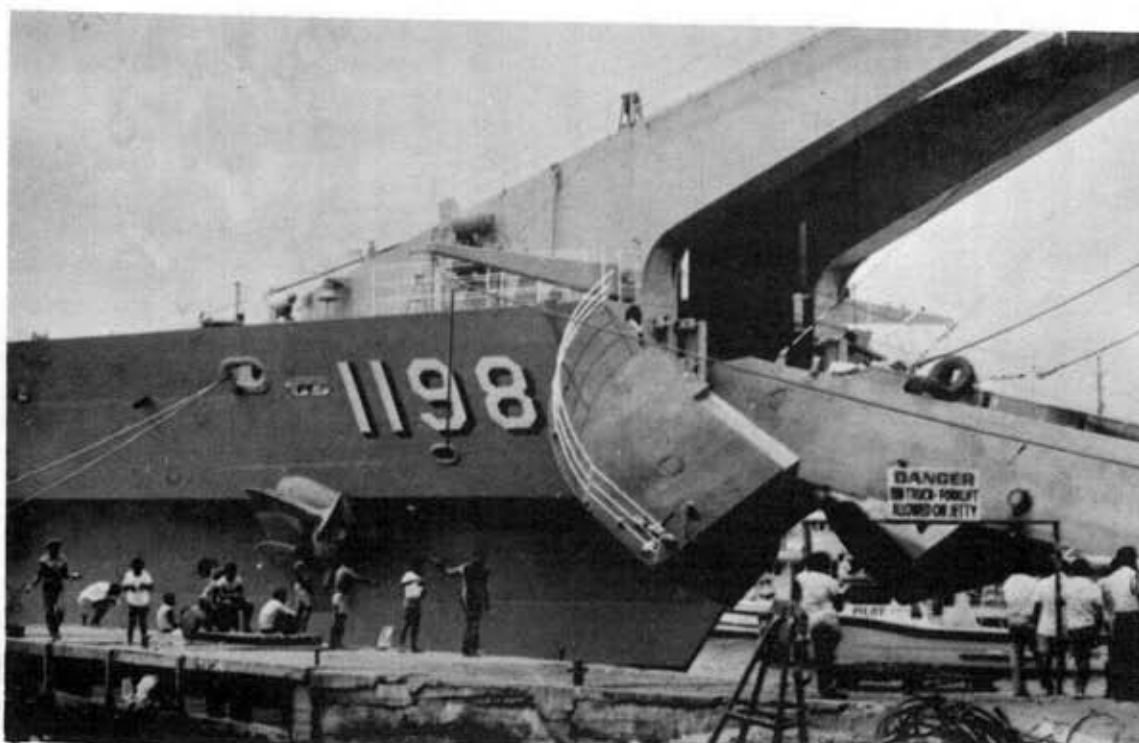


FIGURE 9. THE UNITED STATES NAVAL LST "USS BRISTOL COUNTY" UNLOADS SEABEE DETACHMENT'S MOBILE CONSTRUCTION EQUIPMENTS AT POINT CRUZ, HONIARA.



FIGURE 10. THE ROYAL SIGNAL CORPS COMMUNICATORS FROM THE UNITED KINGDOM (SITTING)



FIGURE 11. NEW ZEALANDERS WHO ASSISTED IN CYCLONE NAMU RELIEF OPERATIONS (LEFT TO RIGHT): SQUADRON LEADER, DR. R. EWING; STAFF SERGEANT, T. HOPKINS; R. BANKS, DEPUTY HIGH COMMISSIONER; A. PEARCE, HIGH COMMISSIONER; CORPORAL M. SMYTH; C. EAGAN, SECOND SECRETARY; FLIGHT LIEUTENANT, P. JACKSON. (PHOTOGRAPH BY B. LOCKSTONE)

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