

CHAPTER 16

EMERGENCY OPERATIONS AND DISASTER RELIEF ACTION

Earlier chapters in Part III have been largely concerned with the planning phase of disaster preparedness — the necessary legislative backing to enable such planning to proceed, the warning system with its complex array of communications, preparations for flood fighting and for the evacuation of people from danger areas. The present chapter is concerned with the emergency phase when preparedness plans are brought into action. This particular phase has two main components:

- (a) Emergency operations involving the whole organization for disaster preparedness with all staff and the machinery at national, regional and local levels, as appropriate, implementing the plan in all necessary detail;
- (b) Disaster relief covering the action to be taken in order to bring relief to stricken areas.

It is convenient to consider these two components separately although they are in fact highly interdependent. Both components derive from earlier chapters and in their own settings represent the fulfilment of planning.

Each disaster or near-disaster brought to a country by a tropical cyclone is unique to the extent that no two tropical cyclones are very closely similar in their many and various effects. However, there are a number of features which are common to all disasters and help to guide the action that must be taken. These features may be summarized as follows:

- (a) *People are affected through death, injury or illness.* There is a considerable variation in the effects on survivors but most will suffer from grief and shock. Some may be rendered homeless; others may be separated from their families, members of whom may be reported missing. A whole range of personal losses may occur in regard to homes, household goods, clothing, land, employment, income, livestock, crops, etc.
- (b) *Communities are affected.* They may suffer extensively from destruction or severe damage to public buildings such as schools and hospitals and also to factories, etc. Damage to roads, bridges, railways, harbours and airports may seriously disrupt transportation. Damage to public utilities may cause severe dislocation of services and communications.
- (c) *Systems and services are affected.* Disruption of health and welfare services, the closing of schools and religious centres and breakdown in commerce and industry leading to loss of revenue can have large-scale effects on the complex organization which supports a community's activities.

Needs resulting from a disaster

Virtually the same needs are created by every disaster and these include such fundamental items as food, clothing, shelter and medical care (first aid, nursing or hospital treatment). There is also the need to reunite families, to provide social and welfare services and to distribute in the most effective way all kinds of available assistance. In promoting the re-establishment of normal life, an important by-product is the restoration of personal incomes as people are enabled to return to work.

In view of the plight of the people as a result of the disaster, the government should quickly assume special responsibilities appropriate to the emergency. These would include the maintenance of law and order, mobilizing the labour force for clearance of debris, restoration of electricity, water supply, sanitation and telephone and postal services. Roads, bridges, railways, airports must be made serviceable as soon as possible, if only for the collection and

distribution of emergency supplies. Hospitals, schools, office buildings, etc., should be inspected as early as possible in regard to the safety of foundations and action should then be taken urgently to restore to use those important buildings which are not damaged beyond repair. Other measures to be taken include the provision of temporary housing for the victims of the disaster and of additional support as required for social and welfare services. All these measures will, by themselves, help in the recovery of commercial and industrial activity, but the government should undertake special surveys in order to identify crucial problems and make urgent plans for their solution.

Action when disaster threatens

When it is apparent that a tropical cyclone is approaching and that danger is threatening in the form of violent winds, flooding and storm surge, the National Disaster Control Centre (NDCC) (see Chapter 11) should be activated immediately. The Chief of the Centre and other senior officials should be present and, in addition, there should be representatives of high standing of public health, public utilities, police, communications, transport, National Red Cross, public information. There should also be in attendance senior officials of the Meteorological and Hydrological Services whose technical advice will be essential for most of the decisions that will need to be taken.

A status report, illustrated with wall maps, should be made urgently and thereafter, as information is received, new status reports with revised maps should be prepared so that an up-to-date assessment of the situation is constantly available. Information and advice from the Meteorological and Hydrological Services should also be kept up to date, current forecasts and warnings being replaced by fresh issues whenever new data show that amendments are required. Factual information on the intensity of the tropical cyclone, speed of movement and other characteristics, water levels, etc., should always be available at the NDCC.

Decisions taken at the NDCC can apply at national, regional and local level, implementation at the lower regional and local levels usually being instigated at sub-centres of the NDCC. These sub-centres may also make their own decisions regarding their own areas of responsibility but the NDCC should always be kept informed. These decisions, which would have the overriding objective of protection of lives and property, would be concerned with co-ordination among local authorities, provisional arrangements for areas that might have to be evacuated, roads, bridges and communications generally, the utilities and public health precautions, the need to keep the public fully informed and so on.

Action when disaster strikes

If the plans for disaster preparedness are working properly, the whole organization will be in a complete or almost complete state of readiness by the time a disaster strikes the country. During the disaster, according to the circumstances that arise, the NDCC may need to call upon additional information and advice, e.g. from the Department of Agriculture, from voluntary agencies, etc. During the emergency, the different kinds of action that will have to be taken will cover a very wide range, including the following, which are listed without regard to chronology or order of importance:

- (a) Disaster survey and assessment;
- (b) Warning;
- (c) Rescue;
- (d) Evacuation;
- (e) Flood fighting;
- (f) Public safety;
- (g) Relief to families and individuals;

- (h) Communications;
- (i) Transportation;
- (j) Supply and storage;
- (k) Public information;
- (l) Social welfare services;
- (m) External aid and its co-ordination.

Many of the above sectors of action have already been discussed but some additional remarks are given below except in the case of warning action, which is largely dealt with in Chapter 11.

Disaster survey and assessment

Each survey provides a valuable guide to the action that must be taken and therefore it is essential that the surveys be carried out by well-trained staff with the necessary qualifications and with a high sense of responsibility. A survey should determine, in general terms, the areas or communities affected, the number of people involved, the condition of roads, railways, transport and communications in affected areas, local requirements for relief, etc. Aerial surveys, preferably by helicopters and with photographic facilities, can be helpful in furnishing information required for the general aspects of a survey. In addition, the survey teams should include a number of groups who will investigate selected aspects in all necessary detail. The equipment of each team should include two-way radio.

The first, and in some ways the most important, survey should be one of a series because the situation would be dynamic rather than static and the responsible authorities must be kept up to date with the disaster situation. Among the problems to be considered, and this should be done on factual information, is the question of whether the government should declare a state of emergency and appeal for international aid.

The appendix to this chapter illustrates the variety of information that should be sought in a survey.

Rescue

Efforts at rescue, directed by NDCC or its sub-centres, should encompass all available means — helicopters, aircraft, boats and land transport. Communications will be of major importance in the choice and use of collection points from which rescue will be effected. If official resources are inadequate, private transport should be requisitioned and the owners reimbursed when the emergency is over.

Evacuation

The preparedness plans (see Chapter 14) should be followed as closely as possible in the interests of efficient and smooth working but initiatives must be permitted in the event of unforeseen contingencies. The responsible authorities should make all the main decisions — when to move, the escape routes, etc. — and the public information system should be used to the full. The aim is that everyone should be safe. It should be assumed, therefore, that at least some people, in spite of all the pre-disaster education, publicity and posters, will need detailed advice on how to save their own lives.

Flood fighting

The planning and implementation of flood-fighting measures was described in Chapter 13 but it is appropriate to add additional material here since a very high proportion of lives lost in a tropical cyclone disaster are attributed to the effects of floods.

The successful execution of flood-fighting measures demands that they should be capable of meeting the threat in an effective and timely manner, on the basis of advance planning of the necessary operations. To ensure that this will be so, the flood-fighting corps and its members should be given special authority to enable them to take immediate action to cope with emergency situations. Some of the ways in which special authority is likely to be needed during emergency operations are described below in the light of practices that have served well in Japan and in the Republic of Korea.

(a) Traffic control, priority and emergency transport

At times of disaster the need will arise for urgent transportation of men and materials for flood-fighting purposes. All vehicles engaged in these operations should be given right of way. Priority should be accorded not only to vehicles transporting men and materials, but also to those being used as a means of communication between different elements of the flood-fighting corps. It may sometimes be necessary to restrict other traffic, or even to ban it completely, on those sectors of roads serving emergency operations. Examples of special labels to be attached to vehicles and of traffic control signs are given in Figure 22.

For the above purposes, as well as for those measures covered by sub-paragraphs (b) and (c) below, it is essential that all those involved should be fully briefed on the restrictions that have been brought into force. There should accordingly be close liaison between the flood-fighting corps and the police or other traffic-control authorities to ensure that no misunderstandings can arise.

(b) Emergency right of passage

When members of the flood-fighting corps are called upon to move to a place where their presence is required urgently for flood-fighting operations, they may need to make use of roads or thoroughways not generally open to public use, or to pass across private land. They should be authorized to do so.

(c) Restricted areas

When urgent flood-fighting operations are being carried out, it may be necessary to designate the area of operations as a "restricted area" or "alarm area". The flood-fighting corps will then be authorized to prevent the entry of persons not connected with the operations and to compel those already there to leave.

(d) Public use of land and facilities

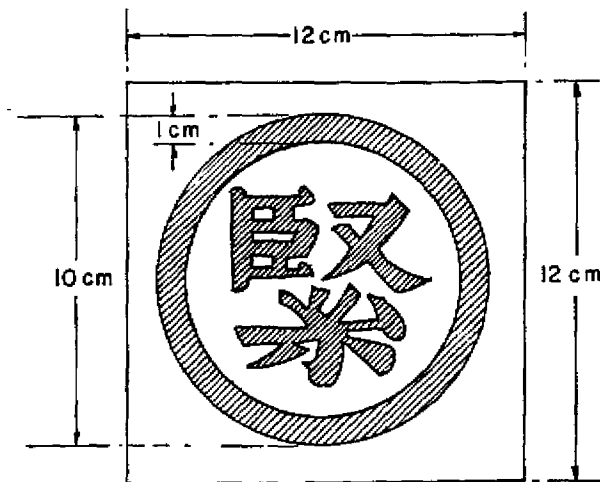
When there is an urgent need the flood-fighting corps should be empowered to use temporarily any land at the scene of operations, to use or requisition earth and stone, bamboo, trees and other materials, to use vehicles and other means of transport such as horses, to use tools and equipment, and to remove structures and other obstacles. Appropriate compensation should be provided later to those who have incurred losses as a result of such action.

(e) Emergency communications

For emergency communications in flood-fighting operations, access should be granted to the use of public communication facilities. If practicable at the time, other exclusive communication facilities such as those operated by the police, military, railway, meteorological and electricity services should also be made available when needed.

(f) External assistance

When an area is endangered by the threat of an embankment or high-tide wall being breached, and the area flood-fighting corps becomes aware that it can no longer protect the area of its responsibility, it should be empowered to call for the assistance of neighbouring flood-fighting corps and, if necessary, for aid from other civil or military groups. The organization of disaster preparedness should provide for this sort of contingency and lay down procedures for calling on any external assistance required.



Vehicles bearing this sign are engaged in emergency work and should be given priority of passage over all other transport.

Chinese character means "Emergency". The circle and the enclosed character are in red on white background.

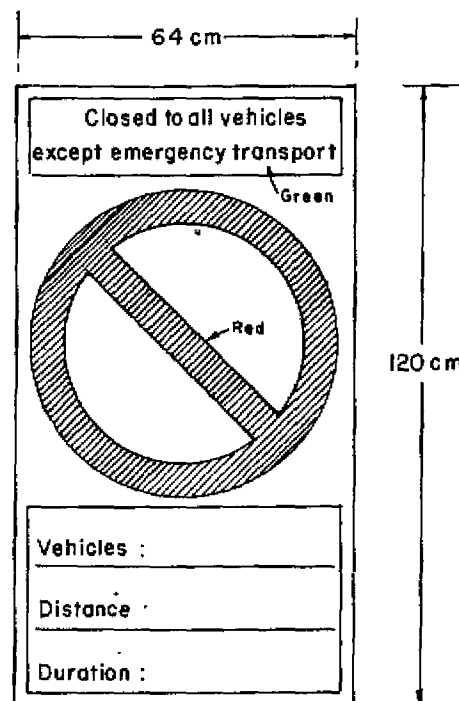


Figure 22 – Examples of special labels for emergency transport vehicles and traffic-control sign

(g) *Flood-fighting signals*

A system of flood-fighting signals should be devised and set up to alert members of the flood-fighting corps to mobilize and to warn the general public of the need to evacuate danger areas. The system used in Japan and the meaning of the signals is shown in Figure 23. When flooding becomes so severe that neither the flood-control structures nor the flood-fighting operations can stem the threat of disaster, the only course of action is the immediate evacuation of the population to safety. Signal No. 4 provides for this contingency but the inhabitants must be alerted when Signal No. 1 is issued so that they are standing by to assist the flood-fighting corps and are prepared to evacuate if circumstances demand it.

In each country careful thought should be given to those additional dispositions of an emergency nature which may be needed in order to meet specific local conditions.

Division	Alarm bell signal	Siren signal	Significance of signal
Signal 1	○ stop ○ stop ○	○ ——— stop ○ ——— = 5 sec. = 15 sec. = 5 sec.	The water level has reached the warning level.
Signal 2	○-○-○ ○-○-○	○ ——— stop ○ ——— = 5 sec. = 6 sec. = 5 sec.	All members of the flood fighting corps to mobilize.
Signal 3	○-○-○-○ ○-○-○-○	○ ——— stop ○ ——— = 10 sec. = 5 sec. = 10 sec.	The general population of the area to be mobilized.
Signal 4	Continuous	○ ——— stop ○ ——— = 1 min. = 5 sec. = 1 min.	All inhabitants in the area to leave in accordance with the evacuation arrangements

Figure 23 – Flood-fighting signals used in Japan

(h) *Emergency operation of reservoirs*

In addition to emergency flood fighting along river levees and coastal dikes in the downstream area, the emergency operation of reservoirs upstream must be effectively co-ordinated so that release of water from reservoirs and ponds does not cause any unexpected flooding downstream. The rules for operating reservoirs during floods should specify that outflow from the reservoir should not exceed the inflow from upstream and that there should not be

any rapid draw-down of water-level in the reservoir which could cause a sudden rise of flood levels downstream. Operational facilities such as gates and emergency power-generating units should be examined to ensure that they are in full working order beforehand. Floating timber and other matter likely to cause serious damage to downstream structures such as bridges, dikes and houses should be removed from the water before it is released.

Public safety

The subject of public safety involves many official agencies and almost all voluntary organizations. Co-ordinated action should ensure that areas already unsafe are cordoned off, that entry to buildings which become dangerous is prevented, that property left behind by evacuated people is protected from looting, that contaminated food and water are detected and purified or destroyed, and that debris is removed as soon as practicable in order that roads may be re-opened and houses re-occupied if otherwise safe.

Relief to families and individuals

The basic human needs in a disaster are food, clothing, shelter and medical care. These requirements are dealt with officially by the Departments of Health and Social Welfare and also, in the voluntary sphere, by the National Red Cross and other voluntary agencies whose programmes are related to these basic needs.

(a) Food

The most satisfactory method of feeding disaster victims is to issue family food rations, using a ration-card system. In some conditions a rationing system may be impracticable and it would then be necessary to undertake mass feeding at fixed centres or, if more convenient, by mobile units. The balanced quality of the emergency feeding programme should be monitored in order to detect any nutritional deficiencies for which special arrangements may be required.

Wherever possible, food distribution should conform to the normal food habits of the affected populations. When foreign foods are introduced in a feeding programme they should be accompanied by an educational and demonstration programme in order to avoid waste.

In general, food supplies will be derived from three principal sources :

- (i) Foods available on the local market or in adjacent areas and countries;
- (ii) Food supplies from abroad consigned to the National Red Cross and voluntary agencies;
- (iii) Food supplies from abroad consigned to the Government.

There should be close co-ordination between the Government and the National Red Cross and other voluntary agencies to ensure proper distribution and to prevent duplication and waste. The emergency feeding programme is best left to the private agencies having an assigned role in disaster relief. The role of the Government in a feeding programme is to ensure adequate food supplies to the affected areas, to assist recovery through food-for-work programmes, and to take measures to restore the national food production. An emergency feeding programme should be designed to cover the shortest possible time between the occurrence of a disaster and the point at which families can resume normal living even though in temporary quarters. Care must be exercised so individuals will maintain their incentive to self-reliance and not become over-dependent on relief programmes.

(b) Clothing

The best and most practical way of providing clothing for disaster victims is through the distribution of new clothing or cloth. The provision of clothing is best left to the National Red Cross and voluntary agencies who can appeal locally for donations from the non-affected population, or through their international channels for funds or appropriate items from abroad.

(c) Shelter

The need for shelter is common to all disasters. Whenever and wherever possible, disaster victims should be encouraged to seek shelter with their relations or friends. Mass or congregate shelter is often necessary even though it presents many problems. Whenever a mass shelter is opened it should be on a temporary basis with every intention to close it as soon as practicable.

Among the alternatives for emergency shelter are the following:

- (i) Public buildings such as schools, places of worship, fair or exhibition sites, stadia, etc. Due regard should be given to water supply, sanitation and cooking facilities;
- (ii) Tents and tented camps. These are less desirable but often necessary when there is great destruction. Where possible, individual family tents should be erected on or adjacent to the family home site and tented camps as such should be erected only as a last resort;
- (iii) Canvas or plastic sheeting can often serve as a temporary protection against the elements and is preferably used at the home site;
- (iv) Temporary barracks or prefabricated units are the least desirable because of expense and the prospect of creating semi-permanent slums.

Individual family initiative should be encouraged to the greatest degree possible in meeting shelter needs. Private agencies can to some degree assist in providing shelter but, of course, the appropriate government agencies should also concern themselves with the problem. Housing programmes can be designed to assist the individual family along some of the following lines:

- (i) The provision of basic materials and guidance for a self-help programme of repair or reconstruction;
- (ii) Food-for-work programmes to encourage self-help in reconstruction;
- (iii) Assistance in relocation in safe areas;
- (iv) Assistance in debris removal and land restoration.

Reconstruction should adhere to pre-established codes and regulations which are in the interest of safety, health and welfare. Later, in normal conditions, the government might hold a review of building codes, land use and allied questions.

(d) Medical care

Disasters produce a variety of needs related to health and medical care. The government health authorities are responsible for health services, and assistance from the National Red Cross and other voluntary agencies is of an auxiliary nature. The following activities should be undertaken as required on the occurrence of a disaster, priorities being determined in the light of prevailing circumstances:

- (i) Evacuation of the ill from institutions threatened by disaster;
- (ii) Treatment and/or hospitalization of those injured or made ill by the disaster, including the establishment of emergency hospitals when required;
- (iii) Establishment of first aid posts for the treatment of minor injuries;
- (iv) Collection, identification and removal of the dead;
- (v) Establishment of inoculation programmes against certain diseases;

NOTE. This activity may in some cases be the responsibility of other than the health authorities.

NOTE: Epidemics are *not* caused by disasters and it is erroneous to indicate that a country is threatened by an epidemic as a result of a disaster.

- (vi) Sanitary inspection of shelters and feeding stations;
- (vii) Inspection of water supply for the provision of potable water;
- (viii) The provision of adequate medicaments and medical supplies for the care of disaster victims;
- (ix) The establishment and enforcement of sanitation and waste-disposal regulations in the disaster areas;
- (x) The establishment and supervision of nutritional or supplementary feeding programmes in co-operation with those responsible for feeding;
- (xi) The collection and distribution of blood and blood derivatives needed by disaster victims.

(e) Tracing services

During relief operations the authorities will receive inquiries, from inside the country or from abroad, concerning the fate of individuals or families. Every encouragement should be given to the National Red Cross to operate a tracing service, a function that is its by tradition.

Communications

In many respects communications are among the most vital components of an emergency organization. In a disaster normal communications are often disrupted and measures held in reserve, such as additional radio links and dispatch riders, have to be utilized. A great deal of improvisation may also be necessary and part of the training of the engineers and technicians responsible for communications should include problems associated with partial, major and complete breakdowns. If required, recourse should be made to the facilities owned by amateur radio enthusiasts.

Transportation

The importance of transport in disaster-relief operations needs no emphasis. The major requirements are the availability of transport – land, sea and air – and the ability to operate and to maintain this ability throughout the period of disaster relief. In the interests of efficiency all transport should be co-ordinated and operated under an authority within or closely linked to the NDCC.

Supply and storage

The national arrangements for the supply and storage of relief requirements should have the spare capacity in staff, organization and space so that the arrival of food, medical stores and other necessities from other countries and from international sources may be handled efficiently and without waste. Disaster-relief officers with staff, storage space and transport should be stationed at airports and sea ports. Goods should be received and distributed expeditiously in order to avoid congestion at any of the ports. Most relief supplies are intended for rapid consumption or utilization and it is clear that the administrative arrangements for receipt of goods, inventory, classification, protection and distribution must be of a very high standard.

Public information

A prime responsibility of the NDCC is to ensure that the public receives all the information, instructions and guidance necessary for families and individuals to do what is expected of them. A public that has been well educated in advance of any disaster can be taken into the confidence of the authorities. This would be a wise course since if information were withheld, members of the public would tend to draw their own conclusions and the result could be panic.

It will also be important to provide regular situation reports to government departments, the press, radio and television and also to international organizations concerned, to countries which may be regarded as potential donors

of relief supplies, and to foreign correspondents. Press conferences form a useful medium for amplifying situation reports and for giving special briefings on any aspects of the disaster that have aroused most interest or concern.

Social welfare services

One of the principal aims of disaster relief is to enable the individual and family to become independently self-sustaining as soon as possible. The Social Welfare Ministry or department and the voluntary agencies such as the National Red Cross should normally deal with these important, personal requirements.

The emotional shock of disaster, the death or injury of family members, the separation of families, changes in living accommodation, the burden of hardship from material losses, physical handicaps resulting from injury and the loss of income or employment all may create problems and affect the ability of an individual or family to recover. The agencies concerned must be conscious of the need to deal with such problems at the level of understanding of the persons concerned. Some situations will require only counselling and advice but there will be many cases which can be relieved only by material help and the constant support of a welfare officer.

External aid and its co-ordination

A number of United Nations organizations, notably UNDRO, voluntary organizations, such as the League of Red Cross Societies, and national agencies are anxious to provide help to countries affected by tropical cyclones or by other causes of natural disaster. The government of a country which is the victim of a disaster should make arrangements to ensure that potential donors are given all the information that will help them to decide how best to give assistance and the form it should take.

It is therefore in the interest of a stricken country to give whole-hearted co-operation to any outside organizations which make inquiries relating to the provision of assistance. Full information should be made available to UNDRO, which is the UN body responsible for the co-ordination of international emergency relief.

APPENDIX

PROPOSED LIST OF ITEMS OF INFORMATION TO BE SOUGHT IN A DISASTER SURVEY AND ASSESSMENT

Kind of disaster Highest wind velocity

Date and hour of occurrence

* Localities affected Names of cities, towns, villages

For floods: depth of water in homes and buildings

Number of persons affected

Number of persons killed

Number of persons injured

Number of persons homeless

Number of persons evacuated and where to

Number of dwellings destroyed

Number of dwellings damaged and needing repair

Number of commercial buildings destroyed

Number of commercial buildings damaged and needing repair

Institutions destroyed or damaged
(indicate whether schools, hospitals, places of worship, etc.)

Livestock losses: number and kind

Agriculture losses: kind and number of hectares

Conditions of streets and highways and airports

Conditions of utilities

Conditions of water supply

Conditions of communications

*A separate survey should be made for each locality and consolidated for the national survey.

Number of persons (families) needing shelter

Number of persons needing food

Number of persons needing medical care

Kind and quantity of supplies, personnel and/or equipment in the disaster area(s).....

.....
(It is necessary to be very specific. For example, if food is needed the kind of food and quantity must be specified. Medical supplies must be requested by a responsible physician or public health officer, keeping in mind that disasters do *not* cause epidemics, etc.)

Availability of manpower in disaster area

Availability of storage space in disaster area

Weather conditions in disaster area

Names of responsible local officials

Names of organizations working in disaster area

Location of local disaster-control centre

Name of person(s) making survey

Sources of information