INTERVENTION IN CASE OF SEA POLLUTION BY PETROCHEMICAL PRODUCTS

by Mr. J.W. Richardson, Humberside County Emergency Planning Officer, Kingston upon Hull, England

Introduction

Just after midnight on Wednesday, 28th September, 1983, the local authorities in Humberside received the first indication that the inevitable had happened. At this stage it appeared that a major spillage of oil seemed to be a possibility. It was reported that the VLCC "SIVAND", carrying over 100,000 tonnes of oil, had collided with a jetty whilst berthing at the oil terminal situated near to Immingham on the South Bank of the Humber. All the previous scenarios, for exercises, discussions and training courses, had envisaged such an occurrence at sea affecting either the North Humberside coastline or off the beaches of Cleethorpes and North Lincolnshire. But, it all happened in the very place that had received the least attention - The Humber Estuary.

THE HUMBER AND ITS TRIBUTARIES

The problem then was the large scale pollution of one of the few deep water estuaries in Britain. An estuary that, with its tributaries, the Rivers Trent and Ouse, drains nearly 20% of the English land mass. A waterway system tidal for over 70 miles North to York on the River Ouse and 60 miles South to Newark on the Trent. The Humber ports of Hull, Grimsby, Immingham and Goole are of national importance - handling over 33 million tonnes of cargo and nearly half a million passengers each year, and a large newly developed yacht marina at Hull.

This major waterway is also of considerable significance in the field of nature conservancy and fisheries. Spurn Head is a reserve belonging to the Yorkshire Naturalists Trust. The mud flats inside Spurn Bight provides feeding grounds for many species of birds and are of special fisheries interest. Up river there is a bird sanctuary at Blacktoft, just inside the River Ouse and areas of salt marsh which often offer grazing for sheep. Much of the river bank areas consist of mud flats, fully exposed at low water, backed by reed beds and salt marsh. Many industries also draw water for production purposes from the river at Grimsby, Immingham, Hull and numerous other locations.

THE HUMBERSIDE CONTINGENCY PLAN

Humberside is made up of nine constituent District Councils, of these, only one, Scunthorpe, has no Maritime or Riverine boundary and most of the coastline of North Humberside and Cleethorpes on the south of the Estuary is considered to be of amenity area status. The County Oil Pollution Plan is built upon the basic understanding that Maritime or Estuarial District Authorities take any initial operational and financial responsibility, with the County involved from the outset in a co-ordination role but has no initial financial involvement. The County financial participation begins with the funding of any support in personnel, materials or equipment which might be considered necessary to supplement the District operations.

./.

In this strategic role the County operates in the broadest terms. The COPCC (County Oil Pollution Co-ordination Centre) is an information centre, and clearing house for all agencies and support services involved in the operation. The County Oil Pollution Officer, who is also the County Emergency Planning Officer, is responsible for the setting up of a County Oil Pollution Co-ordination Centre at the Emergency Planning Headquarters located just outside Hull.

THE FIRST DAY

By 08.30 a.m. on Day one, 28th September, the COPCC was staffed and operational. It was by then under considerable pressure from the Press and media, the first call having been received from BBC Radio Humberside at 05.30 a.m. The "SIVAND", over 1,000 feet long and almost 160 feet wide, coming alongside No. 1 Berth, with the assistance of 6 Tugs, had struck the jetty, demolishing mooring dolphins and causing the ship to be holed below the waterline. There was a gash 2 feet wide and 70 feet long in No. 4 oil tank containing 9,000 tonnes of cargo, and No. 3 ballast tank was ruptured.

The first task was to make firm contact as quickly as possible, with about thirty different organisations ranging from eight Humberside District Councils and the two neighbouring counties together with three government departments, three water authorities, the NCC, RSPB, RSPCA, Associated British Ports, BP International, UKPIA, ITOPF, CEGB and many others. During this initial period also, the COPCC was deluged with enquiries from commercial concerns offering everything from beach cleaning equipment to specialists vessels and protective clothing. During the first day little, of any, oil was on the shoreline other than at Cleethorpes, so the local authorities could only earmark resources for possible action whilst the Marine Pollution Control Unit attacked the oil with thousands of gallons of dispersant from both sea and air. The aerial unit flew 42 sorties and six tugs worked from dawn to dusk for four days.

THE SECOND DAY

On Thursday, 29th September, it appeared that approximately 6,000 tonnes of light crude oil had been spilled, and Oil was now in the Docks at Grimsby and Immingham on the South Banks of the Humber and a large quantity had collected in the entrance to the Hull Dock Marina. Specialist support from Warren Springs Laboratory, ITOPF and the Vicoma/BP clean up team, arrived together with the first of the specialist equipment from the DOE stockpile at Warrington. Two Invictacats were being used with great success in spraying dispersant over the wide expanse of flat, sandy beach exposed at low water. The ITOPF representative, Dr. Moller, had a helicopter available and this was used to great effect over the coming days for aerial reconnaissance, communication, and in one instance for placing of absorbent booms in a remote bird sanctuary at Blacktoft.

The first of the specialist Beach cleaning equipment had arrived from the stockpile at Burton Wood. This included two Invictacat Beach vehicles and an oil mop along with various absorbents and plastic pit liners. This equipment, delivered direct to Cleethorpes, was to prove particularly valuable, especially the Invictacats. The beach area at Cleethorpes at low water can be half a mile or more in depth, and these six wheeled vehicles, rigged for spraying, were used to the full.

./.

THE THIRD DAY

During the third day, 30th September, the situation began to settle down to the sheer drudgery and routine of aerial survey backed by land based monitoring teams. The beach cleaning at Cleethorpes continued, mainly by spraying dispersants at the water line on the rising tide. Mechanical cleaning had been tried but the pollution consisting, as it did, of a very thin film of oil, proved to be extremely inefficient - of 50 tonnes of oil sand picked up, the oil content was assessed at less than 5%.

The oil was beginning to show marked signs of emulsification and was being washed on and offshore with almost monotonous regularity. The ever increasing height of water, as a period of particularly high tides approached, and a steady change in wind direction from north east to south east, made prediction of onshore pollution increasingly difficult. In addition, oil was now in the lower parts of the Rivers Trent and Ouse and, though mainly sheen, some oil was reported as high up as Goole and Gunness. The BP Vicoma teams were concentrating their cleanup efforts in Grimsby and Immingham Docks with an occasional foray to some of the smaller outfalls on the upper Humber and River Ouse.

The MPCU reported that the oil was not responding to dispersant spraying and by the end of the day had ceased all spraying from both sea and air. Their presence was reduced to two aircraft on standby at Humberside Airport and a liaison officer with HM Coastguard. The overall approach to the problem now fell into three main categories :

a) the clearance of oil which had been deposited on mud flats or in reed beds was neither practicable nor desirable. The environmental damage resulting from any attempts to clean up by either mechanical or physical means, would far outweigh the effects of natural degradation.
b) the place to carry out large scale clean up was in natural catchment areas such as the docks and possibly, some of the many water outfalls.
c) the only practical method of recovery in these catchment areas was by vacuum systems and the use of skimmers, though the use of absorbents in some areas could be considered.

As a result of these decisions, there was now in the County, all the Komara skimmers from the DOT stockpiles at Burton Wood, Bristol and Stirling. In addition, from other sources there were more oil mops, plastic tanks, quantities of absorbent materials and additional knapsack dispersant sprayers.

DAY 4 ONWARDS

During the remainder of the period, that is from 1st to 12th October, when the COPCC finally stood down, the clean up continued in the dock areas at Grimsby and Immingham under the control of the BP Vicoma team, operating from a forward control centre based in a village Community Centre. In the Hull Marina, where the oil had now entered the dock area and was threatening the moored vessels, the Hull City Council, with the support of Dr. John Nightingale from Warren Spring Laboratory, the Humberside Fire Brigade and skimmers from the DOT stockpile, were removing the oil - about 5 tonnes of emulsified oil was removed in one period of 3 hours.

./.

Absorbent booms were placed across the mouth of a creek leading into the Blacktoft bird sanctuary on the River Ouse - due to extreme difficulty of access, this was done by the use of the ITOPF helicopter, with the booms supplied by the Anglian and Yorkshire Water Authorities, labour and road transportation by Boothferry Borough Council and the whole operation was co-ordinated from the COPCC. Some fairly heavy oil was onshore by this time, a fair amount of weathering had taken place, and District Councils were clearing this where practicable, by the time honoured method of "A man - a shovel and a plastic bag".

Disposal, always a difficult problem, was restricted to one site in South Humberside which had a very limited capacity. It was decided to establish a holding area at Cleethorpes, and the Director of Technical Services lined an old former refuse tip for this purpose. This proved a very fortunate decision, because after discussions with the Water Authority it was found that this site was suitable for disposal and consequently the waste was left in situ and subsequently covered the area graded. During the last stages of official operation, aerial reconnaissance reported that on the ebb tides, large quantities of oil were being drawn out to sea. It was these reports, and those indicating that oil was now on mud banks and in reed beds in small quantities only, that influenced the decisions to cease major operations on 12th October.

COUNTING THE COST

The County Council has submitted an interim claim for costs incurred by both the County Council and District Councils affected by the incident amounting to £ 66,564.61 broken down as follows :

Humberside County Council				
Fire service	£	32,378.85		
Technical Services	£	1,973.76		
Emergency Planning	£	19,000.00	£	53.352,61
Distric Councils				
Cleethorpes	£	4,000.00		
Glanford	£	2,900.00		
Holderness	£	2,862.00		
Hull	£	3,000.00		
Beverley	£	450.00	£	13,212.00
			£	66,564.61

There will be a further claim when final detailed costs are available, bringing the total bill to around £ 80,000. In addition, there are the costs of the Department of Transport's efforts involving the spraying aircraft and tugs and the cost of repairing the Associated Petroleum Terminal's jetty which was badly damaged in the incident. These additional costs are likely to leave a final total of several million pounds.

./.

CONCLUSIONS

1. The policy of the County Council and the District Councils in encouraging, supporting and developing oil pollution contingency planning as part of the overall County Emergency Plan, training and exercising over the past years, has been fully vindicated, in that :

1.1 the co-operation between all authorities, departments and organizations was of a very high standard;
1.2 all key personnel were aware of the problems arising or likely to arise from such a contingency;
1.3 the exercising work carried out by all concerned, tested Counter Pollution Control methods to the utmost and has shown that they were sound.

2. The concept of a County Oil Pollution Co-ordination Centre was fully justified by :

2.1 providing co-ordinated support in equipment, materials and specialist advice to the District Councils and all other organizations involved;
2.2 providing up to date, accurate information to elected members, the public, media and services alike;
2.3 providing an adequate and efficient communications system.

3. Though this particular incident can be said to have been dealt with in a textbook manner, there is no room for complacency, as the County was fortunate in several respects namely :

3.1 the oil spilled, despite the large quantity, was a light crude of which approximately 30% evaporated within hours;
3.2 the proximity of particularly high tides and weather conditions including wind direction, all contribued to a comparatively rapid dispersion of the oil;
3.3 the time of year meant that little or no disruption of the tourist industry occurred;
3.4 the timely appearance of a highly trained, fully professional clean-up team from British Petroleum ensured that the threat of large quantities of oil in docks was controlled.

4. The operation proved beyond doubt that contingency plans must be tested, refined and retested if they are to be effective on the day, but above all, success comes through

CONSULTATION - CO-OPERATION - CO-ORDINATION

THE UISC-7 AIRBORNE DISASTER INTERVENTION DETACHMENT ADVANCED ELEMENT OF A MEDICAL EVACUATION CHAIN INTEGRATED INTO THE GENERAL RELIEF ORGANIZATION

by Surgeon Lt. Col. Pierre Chevalier, Chief of the Civil Safety Intervention Unit No. 7, Brignoles, France

INTRODUCTION

Although its name does not indicate so, the U.I.S.C. 7 (Civil Safety Instruction Unit No. 7) is a military unit, placed at the disposal of the Ministry of the Interior for carrying out Civil Safety operations.

Created in 1974, this Unit, located at Brignoles, performs training, prevention and operational functions :

- **Training** : Training of young recruits and specialized military units in the area of Civil Safety.
- **Prevention** : Snow removal on motorways, setting-off of avalanches as a prevention measures, brush clearing, studies and research on specific materials.
- **Operational** : These functions, all of which involve medical equipment and staff, are the following : forest fire prevention, river and sea pollution control, road accident assistance, the control of special harmful agents (CMIR), searches for persons and objects and disaster relief operations.

Since this is the topic concerning us at this Congress, we believe it would be useful to repeat a definition of it : "destructive event representing a serious threat to the population or the environment and involving a sudden imbalance between needs and resources".

The U.I.S.C. 7 Airborne Disaster Intervention Detachment (henceforth referred to as DICA) was the result of a need for an appropriate tool for dealing with this type of situation, by providing the necessary "front-line" medical facilities, together with high-potential technical groups. Its role is both national and international (overseas). The Detachment has repeatedly dealt with situations as diverse as the earthquakes in El Asnam, Algeria, and Mezzogiorno, Italy, both in 1980; the cyclones in Veena, Tahiti in 1983, and in Kamisy, Mayotte in 1984, and the attack at Beirut (Drakkar building) in 1984. It has been modified several times in the light of the experience acquired from those operations.

It can now be considered to have reached its final form, which we will describe below. To this end, we would like to review the organizational breakdown of a disaster site as we conceive it : the hours immediately following a disaster are filled with confusion. The organized relief brought in from the outside immediately experiences difficulty in knowing where to bring their first efforts to bear. These teams should therefore refer to a simple and for the most part identical outline : a **reconnaissance** is carried out with the help of aerial methods, especially helicopters. Next, **zoning** and **sectoring** are carried out.

The stricken zone, also called red zone or lethal zone, contains the most destruction. It is placed under strict control. Access to it is limited to the relief services. It is surrounded by a regulated orange

./.

zone, where access and circulation are subject to authorization. The purpose of this zone is the installation of shelters for disaster victims, storage and distribution areas for the relief facilities, and the setting-up of advance hospitals. Finally there is a green zone, with free access and circulation. Next, the red zone is divided into sectors. Each sector can include tens of thousands of persons in urban areas and covers several neighbourhoods which themselves are groups of disaster sites. It is at this last level that the main action of the DICA takes place - for the disaster site is the first link in the chain of command and relief and, of course, the first link in the medical chain.

DICA presentation - General

DICA, which comprises a total of 50 men, is divided into two parts :

- **The Forward Operations Co-ordination Detachment (DACO).** A first aid element, centred on a medical squad and the core of all possible operational situations. It is divided into three squads : command, health and logistics.
- **The Technical Detachment (DT) :** This detachment comprises three groups whose purpose is search, detection and rescue and clearing operations.

Its components are completely autonomous for a seven-day period and independent at the group level, making it possible to adapt operations to each case, and the special packaging of the equipment also facilitates any change in the emergency configuration. DICA components are ready to move out within three hours, by air (air transport, helicopter transport, air drop) and by road, rail or sea.

Three operational possibilities are envisaged : the full DICA, the DACO only, the DACO with all or part of the DT.

At any rate, whichever option is adopted, a second group using second echelon resources, is made ready to depart as soon as the first takes off. This support group of 150 men, with heavy equipment, enables operations to be broadened and to be conducted over a longer period.

DICA resources

The entire DICA resources, staff and equipment, are designed to be transported by air. They comprise 10 vehicles, i.e. 6 ACMAT short-wheelbase trucks, 2 cross-country light vehicles and 2 motorcyles.

The Forward Operations Co-ordination Detachment comprises a total of 17 men divided into three squads : command, health and logistics, covering seven operations : communications, lighting, camp, secretariat, food, water purification and group marking and lighting for aircraft. **The medical squad** made up of three doctors and three male nurses, plays an important role in the DACO. It is an integral part of the Detachment, and its members wear clothing identical to that of the others, but they are easily and rapidly identified by the fact that they wear specially-marked jumpers or armbands. Its basic structure is **modular** and **ternary**. It is modular, in its use of medical resources; not all resources are necessary in all operations (tropical medical chest, for example, or first aid-triage post). It is ternary to allow the medical team either to act as a group, or to be split up so that one doctor and one nurse can work with each of the technical groups, which is why the number of components is a multiple of three, with the exception of the secretariat and the field medical chest.

./.

Equipment includes :

- Three sets of portable first-aid kits whose contents are not very different from those of a resuscitation ambulance.
- Three kits for "operations in difficult terrain", packed in mountain bags, the contents of which are practically identical to those of the portable kits, but divided into three - respiratory resuscitation, circulatory resuscitation and miscellaneous - to facilitate use.
- A medical-surgical disaster component comprising three sets of seven chests. Each set includes : a surgical chest with the equipment, drugs and general anaesthetics necessary for the painful extrication of buried victims; a chest containing aseptic, antiseptic, dressing and immobilization materials; a circulatory resuscitation component with macromolecular, crystalloid and alkaline solutions, and equipment for intravenous injection, with the necessary drugs; the usual medicines used to provide first aid to victims and support to first-aid teams are packed in two chests; pediatric and tropical components.

The addition of one Mathieu SSM 80 field operating-table and two double-roofed tents which can be air-conditioned is planned for the near future to make joint work with a surgical team possible.

A first aid-triage post is brought by the second echelon. This equipment is supplemented as necessary by a set of standardized and interchangeable warehouse crates regularly used at Brignoles for arranging and storing single-use materials and medicines used daily on our missions. In the event of a disaster alert, this system makes it possible to arrange these crates with their contents on pallets and secure them with thermoretractable plastic or binding wire and thus to facilitate the almost immediate removal of these materials, while avoiding the need to secure perishable drugs. This technique has served as a model for the packing of materials for the entire Detachment. The weights, volumes and dimensions of the components enable them to be transported by air. Evacuation cards are also included. They are completed for every victim and give the background to the injury, biographical data on the person concerned, diagnosis, category of urgency, treatment carried out, destination and mode of transport recommended. The cards have a detachable section which remains at the first-aid post.

The Technical Detachment is made up of three groups (one non-commissioned officer and eight men in each) and a dog-handling group (one non-commissioned officer, five men, six dogs). Each group is provided with sets of materials packed into jumboxes for transport. In addition to the usual camping and medical supplies, they contain : a listening unit, a search unit, a lifting unit, a chain-saw unit, a rescue unit, a unit for lowering by overhead cable, a demolition unit, a lighting unit.

There is also, at Detachment level, disincarceration equipment for releasing trapped victims (Hurst, Gallégo, and Libervit), and each team-member has an individual technical bag. Any heavy equipment necessary will be brought by the second echelon (demolition component, two air-compressors, two thermal hoses, two oxyacetylene torches, a T32 haulage unit). The preparation for departure includes, besides selecting the men, providing them with additional instruction and with equipment, bringing their statutory and international vaccinations up to date and issuing them with passports.

./.

The mission

Although they are interconnected, for ease of description two phases are usually distinguished in relief operations, with a supplementary phase involving parallel tasks.

The first phase, involving what FAVRE has called an epidemic of injured, raises the acute problem of how to channel this flow while endeavouring, as far as possible, to adapt insufficient means to meet enormous needs. This period, which lasts from 24 to 36 hours on average, can be handled correctly only by triage, the single method capable of harmonizing needs with means. An attempt is therefore made to set up, as rapidly as possible, a medical chain based on the procedure outlined below : the victims are collected, and brought by rotating transport chain to the Medical Evacuation Centre (CME). A Forward Medical Post may be set up at the front. If such is the case, a pre-triage may be made, to separate at the outset the seriously from the less seriously injured, and the bodies may be deposited here. The Medical Evacuation Centre will classify victims as E.U., U1, U2, or U3. Resuscitation, treatment, preparation for evacuation and some surgical operations are carried out here. By order of priority and means of transport recommended, the victims are sent to hospitals within the infrastructure which are in a position to receive them by vehicles which are part of a larger chain called the Evacuation Noria.

Obviously DICA, whose role is to deal with the problems at the front, could not countenance setting up such a structure by itself. Its medical squad can begin the chain by proceeding to make a triage on the basis of 20 to 30 victims an hour. As soon as the second echelon resources have been received it can set up a first-aid station large enough (half-way in size between the Forward Medical Post and the Forward Medical Centre) to allow it to make a triage. In this sequence, it should be borne in mind that only simplified treatment is provided; futile efforts are avoided, in favour of treatment benefitting the greatest number of people.

Once the massive influx of wounded has been channelled and "processed", the teams must turn to the search for victims whom it has not been possible to remove rapidly. There are two stages to the detection procedure : the initial search is made with the help of dogs who have the advantage of being able to work in a noisy environment, but who tire quickly; acoustical detection equipment (Capson, Orbiphone) is used for confirmation. If the response is positive, clearing operations are carried out using appropriate equipment (disc saws, chain saws, oxyacetylene concrete breakers, pneumatic cushions). When the victim is accessible, the medical squad intervenes to ensure continuation of the vital functions while advising the rescue team on the extrication of the injured person in terms of his medical state. In such situations, medical intervention is entirely complementary to the detection and clearing operations. The doctor works to alleviate crush-syndrome and its after-effects, and may also have to perform amputations after anaesthesia in order to free limbs when mechanical means are inadequate. All buildings explored must be marked with a generally accepted sign. Marking is carried out each time a site has been fully covered by a team.

./.

Secondary tasks

There are numerous secondary tasks, involving very different areas of activity.

Medical assistance to victims, with the setting up of permanent clinics or the establishment of health-care circuits, as well as advice to authorities on health rules to be observed in setting up shelters, priorities to be given in food distribution in cases of insufficient supply and the emphasis to be placed on the care of children are not the least important, and medical support to the working teams, vaccinations, water management and treatment, the disinfecting of the disaster zone and areas of operations and help with identifying bodies, may enter into the functions of the DICA medical squad.

The following tasks also concern the Detachment as a whole, which, separately from and following its priority emergency relief and rescue mission, can be fully or partially used to :

- Protect and search for property,
- Clear access roads and highways (fallen trees, snow),
- Help repair overhead telephone and electricity networks,
- Cover houses,
- Distribute food,
- Help set up shelters,
- Participate in administration of stores and humanitarian assistance in the orange zone.

Some elements may be used for the repair of equipment or to take care of communications. These activities, which are extensions of the initial mission, actually represent the preparation for and beginning of the third phase (the reconstruction phase).

Reinforcement - Specialization - Integration into another structure

The Airborne Disaster Intervention Detachment is autonomous and designed to work by itself under difficult conditions, but it can also be reinforced or integrated into other structures, so as to increase its capacities or extend its operating time. When reinforcements are required, it is obviously the second echelon that must be called on first : it consists of 150 men, heavy technical equipment, shelter facilities, food, a substantial supply of medicine (six tons), making it possible to broaden operations and extend them over a longer period.

However, this work could be carried out simultaneously with that of other detachments which are not identically structured and which do not necessarily have the same capabilities, but which can be placed under a single command (this was the case at El Asnam for a group from the Paris Fire Brigade, in Italy with the Marseille Naval Fire Brigade, and in Tahiti with the UISC 1 from Nogent le Rotrou). Some components can be absorbed in order to round out some teams : this is true of the dog-handling and medical teams (which could be provided by the health services of the armed forces or other relief services (SAMUS)).

The availability of specialized resources can make it possible to tackle certain specific problems which may arise during disasters; we

./.

are thinking essentially in terms of technological risks. A nuclear accident, for example, would warrant the setting up of one or two CMIRs (Mobile Radiological Intervention Unit). These four-man groups, using sophisticated equipment to search out, localize, identify, mark and decontaminate, are trained to work with medical teams in all situations involving irradiation or contamination of victims also suffering from conventional injuries. Along the same lines, we are working on establishing a CMIC (Mobile Chemical Intervention Unit) which would be to toxic substances what the CMIR is to nuclear substances.

With regard to the evacuation chain, the triage should involve a surgical team; otherwise, a large part of its purpose is lost. For this reason, we plan to purchase double-roofed air-conditioned tents and an SSM 80 operating table. This technical support team could take the form of an ACP (Parachute Surgical Antenna) or a Rapid Military Medical Intervention Force. Although the DICA should be considered as a commando unit capable of responding rapidly to a sudden phenomenon, this does not mean that slowly-developing disasters should be neglected.

Discussions have been held with Bioforce Development (which is an operation-oriented group located in Lyon whose purpose is to develop an international training programme in bio-co-operation and to conduct or participate in short-term or continuing biomedically-based operations designed to deal with or prevent emergency situations). A series of exchanges is planned in connection with the reciprocal training and operational missions. The Bioforce Development specialists can be integrated into DICAs on relief missions in connection with major disasters. This could occur during the first two phases, of course, but also at the assistance stage, where the expertise of these young people would make it possible to extend the operations of the organized relief services by enabling the process of reconstruction to begin. Similarly, part of the disaster detachment could be integrated into Bioforce Development, in which case the DACO would be the one to carry out vaccinology operations (the term vaccinology covers not only vaccination and vaccines but also all the health logistics necessary for carrying out a programme under very special conditions).

The DACO could also come to serve as a vector, framework and logistical support for various other operations (for example, the installation of a workshop at Aramyaprathet, in Thailand to make improvised prosthetic devices for the handicapped, war victims and refugee camp inmates).

CONCLUSION

The Airborne Disaster Intervention Detachment, working on an autonomous basis, is capable of carrying out all types of operations in disaster zones, for the purpose of bringing relief and assistance to the population :

- It makes evaluations and provides information, with a view to facilitating and co-ordinating the operations of more extensive or specialized resources.
- It provides medical treatment and lays the foundation for a medical evacuation chain which is to be extended later.

./.

- It makes possible the conducting of all types of technical operations : search, rescue and clearing, clearing of roads, etc.
- It provides support to its active units.
- It forms part of a more extensive mechanism (EMMIR - BIOFORCE), with a view to participating in a general, technical or medical operation, in logistic support action.

Given the fact that it can be brought in by air or by road, that it is a flexible and adaptable in its action, that its structure is modular and that its components can act independently, it is able to : stagger its operations, perform a number of functions, and use a variety of resources. At the unit level, therefore, this calls for staff specialization and adaptation of material resources and training.