

## TABLE OF CONTENTS

	<u>Page</u>
I. <u>Background</u>	2
II. <u>Civil Defense</u>	4
A. <u>Government Support of Civil Defense</u>	4
B. <u>Organization of Civil Defense</u>	4
C. <u>Overall Preparedness Evaluation of Civil Defense in Peru</u>	5
III. <u>Public Education and Information Programmes of Civil Defense</u>	5
A. <u>Education Division</u>	6
B. <u>Public Information Division</u>	7
C. <u>Policy Division</u>	7
IV. <u>Organization of the Health Sector</u>	8
A. <u>Multi-Institutional Health Committee of the Civil Defense System</u>	8
B. <u>Civil Defense Commission of the Ministry of Health</u>	8
C. <u>Other Health Institutions</u>	9
V. <u>Preparedness of Vital Services and Hospitals</u>	9
<u>Vital Services</u>	9
<u>Hospitals</u>	10
VI. <u>Peruvian Red Cross</u>	10
A. <u>Objectives of the Mission</u>	10
B. <u>Background</u>	10
C. <u>Red Cross Relations with the Government</u>	11
D. <u>Organization of the Peruvian Red Cross</u>	11
E. <u>Equipment</u>	12
VII. <u>General Findings of the Mission</u>	12
VIII. <u>Recommendations</u>	14
A. <u>Immediate and Short Term</u>	14
B. <u>Longer Term Recommendations</u>	19
IX. <u>Conclusions</u>	21

Attachment 1

EARTHQUAKE RISK AND PREPAREDNESS IN PERU, WITH SPECIAL REFERENCE TO THE  
PREDICTIONS FOR 1981 - 1982

Attachment 2

REPORT ON DISASTER PREPAREDNESS MISSION TO PERU (6 - 14 October 1980)

Attachment 3

REPORT ON DISASTER PREPAREDNESS MISSION TO PERU (November 1980)

Attachment 4

REQUEST FROM THE PERUVIAN GEOPHYSICAL INSTITUTE FOR SCIENTIFIC  
EQUIPMENT

Attachment 5

INTERNATIONAL ORGANIZATIONS AND VOLUNTARY AGENCIES BELONGING TO THE  
"COMITE DE ENTIDADES DE COOPERACION TECNICA Y FINANCIERA" OF THE  
PERUVIAN CIVIL DEFENSE

Attachment 6

PROGRAMA DE ACTIVIDADES, MISION UNDRO - USAID - OPS - LICR

Attachment 7

PEOPLE MET BY THE MISSION

## I. Background

The Andean Region of South America has a high vulnerability, especially for earthquakes. Members of this mission also visited Colombia and Ecuador; however, Peru has the highest vulnerability in the region. (See Attachment 1, Earthquake Risk and Preparedness in Peru.) Recent publicity of predictions of earthquakes in Peru has raised international awareness and increased public tension in Peru. The Government of Peru requested assistance from UNDRO and the United States, and the Peruvian Red Cross issued an appeal for materials and equipment with which to respond to a disaster.

International organizations such as UNDRO, PAHO and the League of Red Cross Societies (LRCS), and the U.S. Government's OFDA have programme resources for disaster preparedness in the Andean Region, but a comprehensive assessment of needs and possible projects had not been completed. One representative of UNDRO visited Peru in October 1980 (see Attachment 2) and two staff members of OFDA visited Peru in November 1980 (see Attachment 3) to renew contact with Peruvian institutions and initiate discussions of possible international assistance programmes.

The limited funds available precluded financing of the large appeals of the Peruvian Red Cross and the proposal by the Peruvian Geophysical Institute (IGP) requesting scientific equipment to monitor earth movement and to analyze information (Attachment 4). It was determined that the most useful approach to assist Peru in disaster preparedness was to organize an international team to visit the country, as well as Ecuador and Colombia, to identify modest projects and possible technical assistance activities which would form the basis of longer term disaster preparedness programmes in each country.

The purpose of the team was to:

Review general civilian preparedness plans and resources (Civil Defense, Red Cross, Private and voluntary agencies, etc.); stimulate co-ordination among the various local preparedness groups; plan an action programme to improve the preparedness capability of each organization; and identify international resources to support these preparedness activities.

The methodology of the team was to meet with the leadership of the various organizations responsible for disaster preparedness and then conduct intensive

sessions with technicians in each organization to determine priority needs and design programmes and activities which would assist in the solution of identified problems. However, the initial discussions were informational lectures to large audiences (30-50 persons) which did not provide a realistic description of the condition of the Civil Defense. Although they described preparedness plans and programmes to protect the population and for the co-ordination of preparedness activities of other governmental and non-governmental organizations, Civil Defense has little capacity to implement the plans which they have developed.

The Peruvian Red Cross for seven years was controlled by the government. Recently it became independent and has great enthusiasm and high motivation to respond to emergency situations, but it also has little capability and few resources to respond to major disasters. The private and voluntary agencies (foundations, religious organizations, and private sector) have many members and significant resources which could be diverted to respond to the needs of victims after a disaster (food, medicine, and clothing). (See list of international organizations and voluntary agencies, Attachment 5.)

However, despite co-ordination meetings sponsored by the Civil Defense, there is little exchange of information among the Volags about their own programmes and resources, and they stated that Civil Defense viewed them as resources to be used after all governmental and other resources were exhausted. In reality, Volags in Peru are a significant resource which could be used to assist and to stimulate local disaster preparedness activities and they have resources available immediately following a disaster. For example, CARITAS and OFASA (Seventh Day Adventists) have programmes from which food could be diverted to the most needy following a disaster. OFASA has a normal stock of 35 tons of food and quantities of clothing.

Volag representatives expressed a strong interest in participating in preparedness planning to establish better co-ordination among the Volags and initiating a more problem solving orientation in their meetings with Civil Defense. In addition to problems of co-ordination of Volag activities, they identified the problem of expediting material and equipment through customs in Peru. Some organizations said that they can take possession of their equipment by signing a declaration that they will process the paperwork later, others have equipment which has languished in customs for many months. Even when possession is taken by the more successful Volags, the vehicles cannot

be used without license plates etc. which await the formal customs clearance documents.

The clearing of materials and equipment during time of disaster is not significantly better. At times there is also a problem for the consignment and receipt of goods. For example, an ambulance reportedly provided to the Peruvian Red Cross by a Cuban-American community in Miami is stored in the Civil Defense courtyard. Civil Defense states that it was given to them. However, the ambulance has been in the custody of Civil Defense for five months and has not been utilized. Other Volags expressed similar problems without specific examples.

## II. Civil Defense

### A. Government Support of Civil Defense

The low priority status of Civil Defense within the overall government structure (under the Ministry of Interior) will make it almost impossible for the organization to manage the essential co-ordination of inter-ministry resources when responding to a major disaster.

The administrative procedures established to respond to a major disaster do not seem to be realistic, in light of the absence of operational procedures describing the role of the ministries. It is impossible to determine who, from what ministry, would be making the primary decisions during a disaster. It is most likely that the Peruvian military, which has an organized nationwide system would be called upon to respond to a major disaster and probably make all important decisions.

Even though the primary function of Civil Defense is to plan the co-ordination between government agencies to respond to a major disaster, there is not an inventory of national resources to carry out such a task, nor, for that matter, is there an inventory of risks within the country.

### B. Organization of Civil Defense

The conceptual/schematic organization of Civil Defense is adequate, but it is not representative of the actual staffing pattern. There is a lack of staff to carry out the function at a national level. Where this

situation could be modified, through a volunteer manpower system, Civil Defense does not seem to have an organizational approach to develop this important resource.

The existing Civil Defense organization is not prepared to adequately respond to a major disaster, as it is legally mandated by the Government. Whether the Civil Defense organization is a statement of the Government's own state of preparedness to respond in an emergency situation is difficult to determine.

#### C. Overall Preparedness Evaluation of Civil Defense in Peru

The professional capacity of Civil Defense personnel in Peru is generally adequate. There are a number of professionals within the organization who have had exposure to the disaster preparedness systems of other countries, principally the United States. There are definite strengths within the staff that could be further developed.

The planning capacity of the organization is limited by technical needs. Although there is a seemingly good understanding of planning concepts, this base is hindered by the lack of evaluative tools and technical resources.

The response capability to any type of a major disaster is reduced by the lack of essential equipment and the organization's inability to carry out their legal mandate. This situation is due, in part, to the evident low priority status of that organization within the Government's overall structure.

The recovery capability of the organization is difficult to determine since explicit plans for rehabilitation are non-existent. Most likely, a plan for recovery and its implementation, after a major disaster, would have national priority and would not be, in the end, the responsibility of Civil Defense.

#### III. Public Education and Information Programmes of Civil Defense

The educational and informational programmes of the Peruvian National Civil Defense Committee are located in the Dirección de Capacitación y Difusión,

which translates as the Directorate of Education and Public Information. It is under the direction of a Guardia Civil (National Police) officer who is serving a two-year tour of duty.

The Directorate is divided into three sections and staffed as follows: Education Division (two Ministry of Education officials - currently vacant), Public Information Division (two professional employees, a psychologist and a journalist), and Policy/Doctrine Division (one employee - currently vacant). The Directorate has two secretaries.

In general, the Directorate has drawn up a good set of plans to deal with its responsibilities, but it works under the handicap of insufficient funds and personnel and a high rate of employee turnover. These deficiencies limit the Directorate's ability to implement its plans.

A. Education Division: This section offers courses in civil defense for teachers, police, public employees, and other volunteers and co-ordinates civil defense education throughout Peru in co-operation with the Ministry of Education. Since the organization of the Civil Defense Committee in 1972, it has sponsored training courses for more than 650,000 Peruvians.

If fully implemented, the civil defense education programme of the Ministry of Education would seem to offer the greatest opportunity to expand the consciousness of the Peruvian people concerning disaster preparedness, because plans call for teaching civil defense courses at all levels of the educational system. The impact of such a programme if properly implemented would be enormous and extremely beneficial.

The principal problem blocking the effective implementation of this plan is the lack of teachers trained in disaster preparedness. Ministry of Education estimates the percentage of teachers who have received civil defense training at 20 % of 167,000 and the number of students with similar training at 15 % of more than 5 million.

Civil Defense estimates that it can train about 500 teachers a year in its regular programmes, which is obviously much too slow given the size of the teacher population. To resolve this problem, the Ministry of Education plans to launch a massive effort to train all teachers during March, which is the traditional month of teacher training before the beginning of the school year in April.

To accomplish this mammoth task, the Ministry plans to utilize all of the 35,000 teachers who have received civil defense training to teach the remainder. This massive effort may be one positive effect of the Brady prediction, which helped focus attention on a long-standing need.

Other problems facing the civil defense training programmes in the educational system include teacher apathy, lack of teaching materials for all levels of instruction, and competing demands for teacher attention.

B. Public Information Division: This section is responsible for planning and co-ordinating all mass media programmes throughout the country. The public information plan includes pamphlets, television documentaries, radio programmes, and other materials aimed at the mass audience.

Although this section faces the awesome task of reaching 16 million Peruvians with vital information about emergency preparedness, it possesses no production facilities and must rely on the co-operation of other government agencies or the private sector for all of its efforts. It is presently attempting to enlist private support to print its pamphlet and produce a series of television documentaries.

The principal governmental agency with which Civil Defense must deal in its mass media programmes is the National Information System (SINADI), which operated the media under the previous regime and still manages the government radio network, television channels, and daily newspapers. It is a large, well-organized, professional media operation whose director has cabinet rank.

In addition to its own facilities, SINADI has the legal responsibility to place government material in the private media. It is obvious that SINADI is the only Peruvian agency capable of implementing a mass media programme in disaster preparedness, and its director has stated his willingness to do so.

C. Policy Division: Although there is no incumbent in the one position assigned to this division, its task is the development of guidelines and policies for the entire civil defense effort.

As presently organized, the Directorate of Education and Public Information would be hard pressed to fulfill its responsibilities even if it had the 100 % co-operation of all government agencies and the entire private sector, an ideal situation that simply does not exist.



#### IV. Organization of the Health Sector

The "Alpha Centaur" multisectoral plan prepared by the Civil Defense contains guides identifying critical areas that should be given priority attention when dealing with any disaster affecting the city of Lima. As regards the health sector, the plan identifies in a generic way the vulnerability of the hospital centers, vital services and medical care; in each chapter, the document lists the activities that ought to be carried out in the preparedness stage.

Developing the critical points mentioned in the document will require multi-disciplinary technical experts and professionals on a full-time basis.

##### A. Multi-Institutional Health Committee of the Civil Defense System

In 1974 the Civil Defense formed the "Multi-Institutional Civil Defense Health Committee" constituted by high level representatives of all the health sector institutions with mandate to draw up health programmes for emergencies and to co-ordinate health action in the event of disaster. The Committee meets once a week. There are no full-time employees.

The Committee's efforts are currently directed towards preparing a multi-disciplinary emergency programme for the metropolitan Lima area, but as yet, there is no document prepared. Furthermore, co-ordination between the member institutions has apparently not reached a desirable level.

##### B. Civil Defense Commission of the Ministry of Health

In November 1980, the Ministry of Health organized a Multi-Disciplinary Civil Defense Commission, the fundamental purpose of which was to prepare a disaster plan for institutions under the supervision of the Ministry. According to a report from the members of this Commission, the Ministry of Health has included in its 1981 plan of operations the analysis of the country's hospital infrastructure and an inventory of the available human and material resources.

The Ministry of Health has no specific technical unit to serve as the focal point for developing disaster-preparedness programmes; the members of the Commission's main effort is currently directed at determining critical aspects of the hospital infrastructure in the Lima area.

The other components of a preparedness programme in the health field are not being addressed.

The members of the Ministry Commission mentioned the need for technical advice in order to plan health-related efforts, and for better communication with the Pan American Health Organization in the area of technical information. They also observed that there was no appropriate co-ordination between the Commission of the Ministry of Health and the Multi-Institutional Health Committee of the Civil Defense System.

#### C. Other Health Institutions

Other health institutions such as Sanidad Militar, Seguro Social, etc. expressed interest in, and concern about, better preparedness. Each institution is represented in the Multi-Institutional Health Committee of the Civil Defense System, although no internal commission or working group was established within each institution.

#### V. Preparedness of Vital Services and Hospitals

##### Vital Services

The "Alpha Centaur" Plan describes the current condition of the water supply system as follows: "The water and sewerage system in many areas of the large cities is not in a condition, due to its design and age, to cope with the effects of an earthquake. The sewerage system could be affected by burst pipes, which would restrict service, contaminate underground water and cause waste water to rise to the surface, creating potential epidemiological hazards. The water supply could also be affected by burst pipes, and alternate supply systems should be planned for emergencies."

The water supply is currently a critical matter. The slum areas of Lima are served by water trucks, and the people pay for the service. According to information provided by CEPIS, 186 wells have been sunk to meet demand, but most of them are contaminated. The principal source of the water supply is basically the Rimac River. The water is chlorinated in the "La Tarjea" plant, but residual chlorine in the distribution system, according to CEPIS, is below acceptable levels. Lima is a city with a high rate of endemic salmonellosis.

No information was available as to whether studies have been made of the

earthquake vulnerability of the water catchment, treatment and distribution system nor as to possible alternative for supplying the population with water should the present system be seriously damaged. The same is true of the electricity supply system: apparently, there are no studies of alternatives nor specific plans to operate essential services.

### Hospitals

The Ministry of Health carried out an analysis of the physical infrastructure of hospitals in the Lima area. The oldest hospital dates back about 400 years, and most were constructed forty years ago. New buildings of apparently anti-seismic design were built approximately 11 years ago.

The Civil Defense assigned 40 million soles (US \$128,571) to health. This fund is being used to improve the physical structure of at-risk hospitals. On the question of emergency plans for hospitals, there is a document that constitutes a very generic framework for the organization and delivery of medical care in emergency situations. Hospitals that have a complex structure have no specific plans of operations that would enable them to deal effectively with catastrophes.

## VI. Peruvian Red Cross

### A. Objectives of the Mission

1. To analyse the National Society's capacity for disaster relief operations, and level of disaster relief preparedness in view of the current earthquake and possible tsunami predictions.
2. To ascertain the most urgent needs of the National Society.

### B. Background

In the 102 years since the National Society was established, it has had to face earthquakes and other disasters which, due to the geographical position of Peru, constitute a permanent danger. The Peruvian Red Cross endeavours to develop at the national level a maximum efficiency in volunteer first-aid workers, disaster activities, nursing auxiliaries for hospitals, evacuation, rescue and life-saving.

The mission was informed during the meetings with the Central Committee of their deep concern over the lack of logistic support in the preparedness phase which would permit them to deal adequately with disasters when they occur.

C. Red Cross Relations with the Government

The Peruvian Government through its "National Civil Defense System" has entrusted the Red Cross with specific tasks in case of disaster, as follows:

- First Aid;
- Installation, Administration and Maintenance of Emergency Camps.

D. Organization of the Peruvian Red Cross

To ensure a better coverage and facilitate action, the Peruvian Red Cross is divided into six regional groups, as follows:

I. Region: PIURA

Tumbes, Piura, Lambayeque, La Libertad, Cajamarca, Amazonas.

II. Region: LIMA

Lima, Ica, Cerro de Pasco, Huancavelica, Junin, Huanuco, Ayacucho, Callao, Coronel Portillo.

III. Region: AREQUIPA

Arequipa, Mozuegua, Tacna, Puno.

IV. Region: CUZCO

Cuzco, Apurimac, Madre de Dios.

On the basis of experience gained from past disasters, and considering the constant threat to the community of new disasters occurring suddenly and causing further heavy loss of life and widespread material damage, it is felt by the Central Committee that there is an urgent need to set up an Emergency Operations Centre (EOC) within the National Red Cross Society.

## E. Equipment

The equipment available to the National Society at present is worn and obsolete; most of it dates back to the 1970 earthquake, and includes the following:

- Vehicles: 3 trucks (all with mechanical problems);  
2 ambulances (only one in working order);  
1 pick-up truck (functioning).
- Tents: The last 83 tents (16 beds each) have been used for the past nine months in the Cuban Refugee Camp.
- First Aid: Everything is lacking - not even a stretcher available. Whatever stock exists belongs to Region II: Lima; in the other regions virtually no first aid equipment is to be found.
- Communications: Only one Heathkit radio is available at national level; it is in very poor condition and the transmission antenna is missing.
- Blankets and clothing: There is a national stock of 280 blankets and 15 bundles of clothing.
- Generators: 3 small generators in very poor condition.

## VII. General Findings of the Mission

The Civil Defense has developed a broad organizational structure and philosophy, which are quite sound. Little implementation of existing plans, however, seems to have taken place and the plans are not based on any detailed inventory of resources (both human and material) available within the country to cope with disaster situations or to promote preventive measures, nor on a detailed inventory of existing risks. Available resources are not fully utilized and co-ordination in their deployment and use is often lacking. In fire fighting, for example, which may be of prime importance in an earthquake

situation, there is no agreement for joint or co-ordinated action between the voluntary firemen and the airport fire department. Similarly, resources such as those offered by the Red Cross and other voluntary agencies are not properly utilized and no specific role has been assigned to the various agencies which have a role to play in disaster situations.

The communications means available to the Civil Defense are very limited and its Emergency Operations Center would no doubt have difficulties in establishing and maintaining communications with affected areas.

The lack of real implementation of the plans seems to be due in large part to the lack of trained personnel, at the various administration levels, particularly within the regions and departments. The shortage of staff trained in disaster management nationwide is compounded by the high turnover rate of the higher management of the Civil Defense who seldom stay in a position for more than a year. As part of the Ministry of the Interior, the Civil Defense is further limited in its action because it can only make recommendations to other ministries and agencies and has no power of enforcement. This raises the question of the proper placement of the Civil Defense within the government structure so as to enable it to influence ministers to get things done, both in pre-disaster planning and post-disaster relief activities.

These general findings have been discussed with Civil Defense officials whose recommendations for improvement in the organization have been taken into account. It is considered, for example, that the Civil Defense should be placed under the Office of the President with a Director who is a technical expert and holds a career appointment. The priorities identified by Civil Defense are: training of staff; formulation of emergency plans, for example in the event of a tsunami; and equipment (communications and data processing). Additional priorities include planning for simulations to test existing emergency plans; a public awareness/education campaign; and an exchange of scientific information and personnel as well as the provision of scientific equipment to support the Geophysical Institute. The team indicated that the provision of all types of equipment should be treated separately, possibly as a follow-up to the technical advisory services. It did not feel that data processing equipment should be considered a priority requirement in the present development stage of disaster prevention and preparedness in Peru.

## VIII. Recommendations

The following recommendations are based in part on the resources available and perceptions of priorities of each of the organizations which comprise the team. The immediate and short term actions which could be taken are critical starting points which will identify further longer term possibilities. An important factor in determining future programme activities will be the amount of resources the Government of Peru is willing to commit to longer term disaster preparedness planning integrated within the development process.

### A. Immediate and Short Term

#### i. Immediate

1. Invite several of the most capable professionals from Civil Defense staff to visit the State of California as part of a general orientation mission. The mission would have the following objectives:
  - a. to learn of the disaster preparedness system in the United States as organized in the State of California;
  - b. to review simulation exercise programming and have an on-site observation of an actual earthquake response operations exercise; (Note: this was accomplished Feb. 7, 1981 when three Peruvian officials visited California)
  - c. to tour and become familiar with seismic research programmes that provide essential risk information utilized in earthquake disaster planning.

#### ii. Short Term

2. Provide technical assistance to the Civil Defense of Peru in the development of a national plan for responding to a major disaster. The first phase of the technical assistance should be in the development of a study of possible earthquake losses in the greater Lima metropolitan area. The study would include the following:
  - a. the development of detailed isoseismal maps which can depict the distribution of shaking intensities (as measured on the Modified Mercalli Scale) for a simulated earthquake of the "most probable

magnitude". In this regard, much of the base work has already been done by other institutions in Peru and should be utilized in this proposed study. Variation in the epicenter location should be considered;

- b. based on the shaking intensities reflected in the isoseismal maps, estimates should be made of the probable loss of life, number of injured, and the damage to key facilities considered critical to disaster relief and recovery.

The following information can be calculated from this proposed study:

- Possible casualties;
  - Estimated long term homeless;
  - Probable fires following earthquakes;
  - Debris removal needs;
  - Effect on medical resources;
  - Effect on communications;
  - Effect on transportation including: railroads, freeways, highways, bridges, mass transportation, airport(s) and port facilities;
  - Effect on public utilities including natural gas, electrical power, sewerage and petroleum pipelines;
  - Effect on public structures including schools, dams, and priority public buildings.
3. The second phase of this technical assistance should consist in the utilization of information derived from the first phase to develop earthquake response strategies and to make estimates of emergency resources needed, including international assistance.
  4. A technical assessment of communication requirements needed to respond to disasters should be undertaken. This would most likely include recommendations on how Civil Defense might co-ordinate with the Peruvian military establishment.
  5. Systematic procedures to be implemented by the Civil Defense should be developed to co-ordinate and manage inter-ministry resources which will be required in the operational response to any disaster.
  6. The need for a composite risk analysis for metropolitan Lima,



together with a disaster response plan for central Lima in response to an imminent earthquake warning or after a disaster was identified. In the longer term, the project would help identify areas where streets should be widened, open spaces created and, generally speaking urban renewal activities undertaken. The project could take the form of the provision of advisory expert services (about 6 man/months initially). (Possible UNDRO supported project.)

UNDRO indicated its willingness to assist in the completion of the studies necessary to properly evaluate the tsunami risk in the area of Callao and to formulate and implement appropriate warning systems and emergency plans. The assistance will consist mainly in financing the remaining studies necessary over a year period, starting about 1 April 1981. (Note: the project started, as planned, with UNDRO financing in April 1981.)

OFDA has offered to provide a disaster preparedness expert to assist the Civil Defense and other organizations in the identification of gaps in disaster plans, in the formulation and implementation of plans, including, for example, a simulation exercise, and in the co-ordination of various groups and agencies with resources to contribute to preparedness and disaster response.

## 7. Public Information Recommendations

It is obvious to the outside observer and to most aware Peruvians that the country needs a massive, well-organized campaign which is both short and long range in character to prepare the population for the disasters that seem likely to strike in the near or distant future. The Directorate of Education and Public Information can plan and co-ordinate this effort if it is fully staffed with competent people, but it cannot implement the campaign with its own resources. Given this situation and the likelihood that it will not change in the immediate future, the following recommendations are aimed at improving the capability of co-operating government agencies and the co-ordinating capacity of the Directorate.

- a. Provide immediately a Spanish-speaking expert in teacher training and curriculum development to advise and assist the Ministry of Education in its massive teacher-training effort scheduled for

March of this year. The expert should have experience in incorporating emergency preparedness programmes into public education systems. The purpose of this technical assistance would be to provide the Ministry of Education with advice based on valid experience on how to best conduct its teacher-training programmes, improve the content of the courses, and develop relevant educational materials.

- b. Invite the Director of the Public Information Division of Civil Defense and a high-level SINADI official to visit the United States and Mexico as a team for one month to study and to observe public awareness programmes there. The purpose of the trip would be to promote co-operation between Civil Defense and SINADI, to observe programmes underway in other disaster-prone countries, and to identify materials, such as pamphlets, radio programmes, films, and television programmes that would be adaptable for Peru. The timing of the trip should be as soon as possible given local concerns, but it is essential that the two travel together as a team. The Director of SINADI has offered to identify an appropriate official from his staff.

#### 8. Health Sector

- a. To strengthen the co-ordination within the health sector and between the health sector and the Civil Defense System by defining levels of authority and responsibility and identifying the Ministry of Health as the focal point and leading institution in the health sector.
- b. To set up a team of health professionals and technical experts within the health sector, in particular the Ministry of Health, in order to prepare a preparedness plan on a full-time basis.
- c. At a later stage, to retain a nucleus of health professionals on a full-time and permanent basis to staff a disaster preparedness unit/office within the Ministry of Health and maintain a satisfactory level of preparedness through training and planning.
- d. To increase the technical co-operation provided by PAHO and in

particular to promptly assign an adviser on emergency preparedness to the Andean Region. (Note: a PAHO regional adviser was assigned to Peru in April 1981.)

- e. To set up by PAHO regional training activities. More specifically, to give priority to (1) a course for high level officials from Andean countries and other earthquake-prone countries; (2) the adaptation of PAHO Simulation Exercise to the situation in Peru.
- f. To consider a study, through the Pan American Center for Health Engineering and Environmental Sciences (CEPIS), of the city of Lima's water supply system, and of alternatives in the event of a disaster, to be internationally funded.

9. Conclusions and Recommendations in Respect of the Peruvian Red Cross Society

In the light of discussions with governmental authorities and religious and Red Cross institutions, it was clear that the National Society was in urgent need of technical and material assistance in order to be able to continue its humanitarian action for the good of the community. Given this situation, the following recommendations are formulated:

- 1. Technical advice should be provided in order to draw up general Red Cross relief plans;
- 2. Following a study at national level, the necessary radio-communications equipment should be supplied;
- 3. Decentralized warehouses should be established with relief stockpiles;
- 4. Two delegates should be sent for two weeks technical training in:
  - a. Disaster team action;
  - b. Camp administration;
  - c. Communications;
  - d. Warehousing techniques;
  - e. Community warning system;
  - f. Study tour to the National Hurricane Centre.

The training programme would be co-ordinated by:

1. American Red Cross;
2. F.E.M.A.;
3. USAID/OFDA;
4. League of Red Cross Societies.

#### 10. Voluntary Agency Recommendations

Recognizing the willingness of other countries to send immediate aid to Peru in times of disaster, the following points should be considered:

- a. The Government, through Resolutions or Decrees, must declare duty-free entry of items to be used in assisting Peru, whether addressed to the Government or to voluntary agencies;
- b. The Government must provide the necessary facilities to take donations from ports, airports, etc., immediately upon their arrival. The regular customs-clearing formalities could be completed later;
- c. Donations sent from outside sources to a voluntary agency must be given directly to the voluntary agency concerned. The agency will take charge of these items and will be responsible for their distribution in the assigned area. This operation will be co-ordinated with the Civil Defense.

#### B. Longer Term Recommendations

1. Training being one of the most glaring deficiencies of the existing Civil Defense system, it was felt that the establishment of a "Civil Protection School" would make it possible to assure that all civil servants and other personnel having direct responsibilities in disaster prevention, preparedness and relief operations (prefects, mayors, etc.) would receive adequate training and be in a position to implement emergency plans efficiently in time of disaster. If a decision by the government to establish such a school were to be taken at an early stage, it was felt that the international community would be in a position to provide assistance, basically in the form of advisory services. In view of the lack of any similar training

facilities anywhere in Latin America, such a school could become a regional training center open to personnel from other countries, which in itself might ensure wider support from the international community.

2. In case of a disaster affecting the metropolitan area of Lima, the supply of water to the affected population (which might be the entire population of 5 million) would constitute a major problem. The fragility of the system is known. It is proposed, in the short term, to carry out with appropriate expert services from PAHO/WHO a survey of the existing system in order to recommend ways and means of improving it (reticulation of the network, protection of the water treatment installations, etc.). As the Water Authority is responsible for providing water in normal times as well as in disaster situations, alternate means of supplying water to a large population (trucking, tapping of wells, etc.) would have to be identified and prepared. While necessary expertise (about 6 man/months) would be provided in the short term, the improvement of the water supply system would clearly be a long term activity requiring a sustained effort on the part of the government.
3. It was also felt that the international community may provide funding for the programming and implementation of an international symposium, in the city of Lima, the objectives of which would be the exchange of information, through the presentation of papers, on the following themes:
  - a. Seismic research, either completed or in progress, in the Andean Region (including earthquake prediction programmes);
  - b. Identification of the seismic risk of the Andean Region;
  - c. Planning for the seismic safety of the Andean Region.

The results of this symposium-conference should include a set of recommendations to the international community on how to proceed to reduce and mitigate the loss of life and property in the Andean Region.

4. Other long term activities of the participating agencies should

include the following:

- a. Continue training programmes and the exchange of personnel with the Government, and better prepare those technicians involved in disaster preparedness and response planning;
- b. Initiate efforts, within the international community, to manage and standardize procedures for seismic prediction;
- c. Provide ongoing technical assistance to Peru (and other Andean Region countries) in disaster preparedness/response planning.

## IX. Conclusions

The decision of the US Earthquake Prediction Council undoubtedly reduced some of the Peruvian anxiety about an imminent specific earthquake in the vicinity of Lima, but initial response to the decision indicates that the majority of the people still believe that a destructive earthquake affecting Lima will occur in the not too distant future. The high frequency of damaging earthquakes in Central Peru virtually ensures that this will in fact be the case. Therefore, the time is ripe to act while the awareness and interest of the people, the Government of Peru and the international community are still high.

As indicated on pages 14 - 20 the agencies which took part in the mission are ready to provide assistance in a number of fields related to disaster preparedness and prevention and have indeed already started to do so. For such assistance to be really effective, however, a number of basic decisions are undoubtedly needed on the part of the Government. They relate in particular to the placement of the Civil Defense in the Government structure, the appointment of career personnel at the head of the Civil Defense as opposed to the current frequent turnover of military staff, the systematic training of civil servants and other people in key positions within the central, provincial and local administration and in certain fields such as health, fire fighting, etc., and the formulation and testing through periodic drills of realistic emergency plans. One basic additional consideration in a country as disaster-prone as Peru is the integration of pre-disaster planning in the country's economic, social and physical planning process. Close co-operation between the Civil Defense and the Instituto Nacional de Planificación is in this respect of paramount importance, particularly in relation to the country's development

plans for 1981-82 and 1982-86. In the course of the mission, the Instituto Nacional de Planificación expressed keen interest in taking disaster risks systematically into account within the 1982-86 five-year plan. The agencies which participated in the January 1981 mission stand ready to assist in this task. Apart from direct assistance in specific fields, they are ready to respond to any enquiry and provide all available information to the Government. They do consider the mission carried out jointly in January 1981 as the start of a continuing process of consultation and interchange as well as technical co-operation and wish to assure the Government of their continued willingness to assist, within the means available to them.

Acknowledgement: The team wishes to thank the Peruvian Civil Defense, the UNDP Office in Lima, USAID/Lima and the US Embassy in Peru for their assistance during the mission.