SEISMIC ZONATION

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CONCLUSIONS AND PROPOSAL OF WORK GROUP #1 SEISMIC ZONATION

Coordinators: Sergio Mora
Walter Hays

CONSIDERATIONS

The group has reviewed and discussed aspects, current research and basic needs of Costa Rica and the CUSEC states, regarding the seismic-hazard zonation.

A basis for future development in cooperation and joint projects has been identified. This basis can be broadly defined as different goals and procedures are conceived.

SHORT TERM (3 YEARS) GOALS

A data base and seismic zonation maps will be developed for buildings and other infrastructural elements of Costa Rica and CUSEC states.

LONG TERM GOALS

It will contribute to the seismic zonation of the Americas, by adjusting to stadards already available or to be developed.

STRUCTURE OF A TASK FORCE

A task force is to be organized in order to achieve the goals. We propose the establishment of an Executive Committee integrated by the highest officials of CUSEC and CNE. It will base a board of technical advisors.

Two other technical groups, composed of two liaison technical experts from each country, will coordinate their respective work and involve other persons and institutions.

TEAM 1: GEOLOGY, SEISMOLOGY, GEOTECHNICS

For Costa Rica: Walter Montero, Sergio Mora
For CUSEC : Norman Hester, Jim Williams

TEAM 2: STRUCTURAL ENGINEERING
For Costa Rica: Rosendo Pujol
For CUSEC : Jim Beasers

Costa Rican teams should have direct advice and counsel from CERESIS, universities and individuals, as appropriate.

CUSEC teams should invite the contribution of NCEER, other state geologists, and of consulting firms, as appropriate.

Both teams should seek the suggestions and opinions from different types and levels of potential users of their products, and, to the extent possible, their involvements.

STRATEGY

Members of the two working teams should establish an efficient communication system and start, at once, the development of a Draft Proposal. This Draft Proposal should have, at least, the following topics:

- *State of knowledge*
- *State of practice*
- *Needs and most immediate priorities*
- *Time table*

The first draft should be concluded by February 21st, 1993. It will be reviewed and discussed to produce a second draft by March 30th. A final review will be carried out by the middle of May, in order to conclude this first phase by June/July 1993.

PREVENTION AND MITIGATION

INDEX

VULNERABILITY OF GUAPILES HIGHWAY: INSTABILITY OF SLOPES

M. Sc. Gastón Laporte

San Jose-Guapiles Highway

I. Records

-Location
-Importance of the lane
-Original design (several tunnels and walls)
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II. Outlining

-Geology of the zone
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III. Solutions

-Detailed studies in order to define intensities of critical rain
-Precaution signs and closing of highways at strategic points
-Define zones of major danger in terms of geological slide, rain and results indicated
-Zones with a major landslide danger associated with earthquakes in nearby areas
-Appropriate maintenance
-Established labor in order to minimize the problem
-Study selfstabilization phenomena (apparently, they estimated seven years?)

A. Vital Lines

1. *Proposal of the Demonstrative Project on the Management of Natural Threats of Drinkable Water.*

   Based on Michael Cassaro's presentation (Kentucky, U.S.A.) on an analysis model for the vulnerability of systems of drinkable water and mitigation, it was agreed to take the following actions:

   a. Send a copy of the summary and an article on teh recommended model to the project work group of mitigation and other institutions, emphasizing that if there is interest, they should contact the author. The sending will be by S. Bender. It may include, among the possible candidates, Evansville, Indiana; Cali, Colombia, which have a new program with UNDRO; and Guatemala through USAID and OEA.

   b. It will be necessary for the meeting in Memphis, to assure the participation of two or more cities with characteristics such as: intermediate population, reduced systems with basic information about infrastructure, inventory, and reoccurrence and menace magnitude. Packages of programs and capacitation may contribute to the participating cities.

2. *Establish partner groups for the vital line studies.*

Coordinators:	*Mark Winkler*	*Missouri, USA*
	Juan Murría	*Venezuela*
	Roger Lehman	*Evansville, Indiana*
	Omar D. Cardona	*Manizales, Tumaco, Bogotá, Colombia*
	Ana Campos	*Cali, Colombia*
	Arturo Rodríguez	*San José, Costa Rica*

   Omar D. Cardona proposed working with the set of the participating cities, without needing a pair. Some of the people that have been working will continue exchanging in pairs. Furthermore, it is possible for other interested cities to enter in with their corresponding coordinators.

3. *Vital line cases to present in Memphis*

Stephen O. Bender porposed a compendium of management studies of vital lines vulnerability. The interested participants shall send the document before April 1, 1993 to S. Bender. The presentation should be in such a way that it may be ready to publicate, mainly to present and comment on them in the meeting in Memphis. According to the submission date and the information volume, S. Bender will try to provide an easy presentation in both languages. The studies may be just about one system; for instance, pipe system, or others.

4. *Constructive normas for contracts about vital lines in seismic zones*

The lack of information in the public sector about constructive norms of contracts, vital lines in seismic zones was discussed, deciding:

The United States participants will compile information about the topic , contacting people and national and international institution, sending the contracts to L. Claude. Once they are received, the material will be reviewed and selected for its translation and/or its reproduction.

5. *Summary of activities from the Indianapolis meeting over the vital lines management*

Missouri: The Cape Giradau has been very active in repect to the vital lines mitigation activity; however, this effort is not the result of a unique directive, but of the combination of individual projects of municipality departments, private companies and other agencies.

Greater achievements include: use of seismic designs in new water storage tanks consturctions; flixible connector installations in water pipes in vulnerable areas; bridge constructions over anti-seismic supplies; use of flexible pipes for new lines and their replacement; electric substation and principal complex conditioning; electircal charge design to wind charges that overpass the charges for quakes and seismic conditioning of control equipment in the middle of the city.

Added to these activities of vital lines, selectively mentioned, it may assure that various types of non-structural mitigation were also initiated with most if not all of the municipality dependencies, private companies, and other agencies.

Finally, a great level of structual and non-structural activity has been conducted into the local school systems.

Evansville: Elaboration of seismic amplification maps. the work between the public sector and industry people is coordinated.

Manizalez: It has been working on a the first phase of vulnerability study of one and two story buildings. The evaluation of the hospital vulnerability was completed. The first workings in vital lines and beginning. Another Colombian city, Turraco, evaluated the seismic menace and tsunamigenic, including an evaluation of the liquation grounds potential, as a consequence, 3000 living areas will be relocated and a new public service infrastructure was designed with seismic resistant designs.

Venezuela: Completed the definition of the particpant city.

6. *Request of information*

   After the presentation of the obtained experiences as a result of the Limón quake (Costa Rica, April 22 1991) in the local pip system, the engineer Arturo Rodríguez manifested that the adaptation of the flexible unions capable to resist the seismic movements effectively and high pressures in normal conditions was one of the major problems they found. Upon such request, Engineer James Beavers offered to identify contacts for the Engineer Rodríguez to establish. (See attached map)

7. *Stephen Bender will check with CUSEC about energy workshops and a possible coordination with Lain America.*

8. *Omar D. Cardona proposed to include hospitals and gas lines within the vital lines.*

B. GEOGRAPHIC INFORMATION SYSTEM (GIS)

It was considered convenient to prepare a list of the specialists that utilize, in Latin America and the United Sates, the Geographic Information System (GIS), by distributing afterwards this information between the participants. Steve Bender requested the preparation of this list.

In the next meeting, it wil be defined if it is specialists, which will be concerned with possible hazards. An information exchange will also be considered.

A recommendation for those interested in the management

information will be to keep in contact with URISA and the Latin American Association of environment Geographic Information Systems for the

C. TOURISM SECTOR

It was considered to stimulate an exchange of information about hazard at coastal zones. Some countries have developed studies in this field, and they have been efficienthy used.

It was recommended to propose an "International Mitigation" Program for touristic development which considers all those natural and technological hazards that could influence these developments.

D. CONTINUED COURSES FOR ENGINEERING EDUCATION

Based design on a proposal for contined courses related to the codes of desing and construction in seismic zones for enginnering education presented by J. Grases, it was decided:

1- To create an interview form on the existence of courses offered by Professional Associations and responsible entities for the engineers regristation. The form will be elaborated by J. Grases and S. Bender, not later than December 31. 1992.

2- To send the form to the organizations throughout the Mitigation Work Group, CERESIS and CUSEC, in order to be completed not later than March 30, 1993. The form will be sent to J. Grases.

3- To Prepare a compendium of the results of the interviews results, and prepare a document in Memphis in 1993. J. Grases will also prepare the document and S. Bender will facilitate its duplication.

4- Vanessa Rosales, answering an inquiry made by the Comision Permanente de Revision del Codigo Sismico de Costa Rica, infomed the group that in may 1993, the Asociacion Costarricense de Ingenieria Estructural, and the Earthquake Engineering Research Institute (EERI) with the aid of OFDA, will celebrate a Workshop-Seminar on Seismic-Resistent Engineering, in San Jose, Costa Rica.

This event will include training activities in three areas:

a) Politicians, local governments, etc.

b) Architects, engineers of projects, and builders

c) Structural engineers

She will also send information about this event to all participants to the Forum using the directory that will be made with their own information.

JOINING OF THE AMERICA

Based on the information presented by the O.D. Cardenas about the joining of the Americas program, it was decided, the following actions were decided to be taken:

1- Contract program to find out about its interest it has to open the process of preparing a new document dedicated exclusively to the joining of the seismic zones in the Americas. A. Bender will make the contract.

2- The mitigating group will provide the O.D. Purple, before Feb. 01 st, 1993, names of individual and/or interested institutions in being candidates to contribute in a new tone.

F. BOLETIN OF THE US- LATINOAMERICA PARTNERSHIP

Based on the wish to systematicly contribute to the Boletin of the U.S. Latinoamerican Partnership, the mitigation working group will prepare one more page of news about the advances of the activities of the group to include it into the document.

Ed Gray will encharge of advising the groups about the due dates of submision of the material and will performe as local point for the reception of the material . Stephem Bender will facilitate the edition of the material and will translated into spanish.

G. Information package of the working Group to be sent at january 30th, 1993.

1. Document of th ATC-26 (design of vital lines in seismic zones)

2.List of headquarters and bosses of 25-30 federations and international associations realted to the design and construction.

3. List of specialists of GIS working in threatningsin the United States and Latin America.

4. Manuals of the management of natural threatningnsof the vital lines in coastal zones. (Grenada and Santa Lucia).

5. Bibliography of the materials of interest to the working group.

We have to participate as cittizens so that the goods of the public domain be object of a particular protection.

* *The public functionaries must carry out their protection obligations.*

Evaluation of Environmental Impact

* *An instrument to aloud the integration of environmental considerations in the projects and programs from an interdisciplinary perspective.*

Methodology or group of methods to study the relation of a project or activity with its natural and social perimeter (in Costa Rica).

Evaluation of the environmental impact is the esam analyzis and evaluation of some activities planed lloking forward to the achievement of a development which be adequate and supportable from an environmental point of view. (PNUMA).

* *In a study of the effects of an action proposed in the middle...the middle includes all the aspects of the natural and human environment...according to the importance of the forseeable effects of the action proposed, and EIA and the fauna, of the erosion of the soil, and the human health, the urban migration or of the employment, it means, that all the physical, biological, social, economic and other impacts (Ahmad).*

* *Study of the environmental impact is the description of the effects of the mineral activity over the environment in which it is developed (mineral code).*

Environmental Political Law (NEPA) established a serial of principals that served as guide for other countries so that further on they could establish the bases for these evaluations.

Objectives of the EIA in Costa Rica

a) Garantee that all the important environmental factors related

with a project be taken into account.

b) Contribute to a comparison of the environmental effects of the different alternatives of a project.

c) Develop a unique structure for the groupal evaluation.

Vulnerability of Water Distribution Systems
Instituto Costarricense de Acueductos y Alcantarillados
Engineer: Arturo Rodriguez

By virtue of the earthquake on April 22, 1991, in Limon, it was agreed upon the need to take some actions to mitigate the impact of the seismic events on the water pipes and their rapid recuperation. It is necessary:

- *to have prepared answers at the disaster region*
- *to use flexible materials, proper pipes*
- *to avoiid rigid by structured joints*
- *to have alternate equipment ready and dully filled*
- *to keep an adquate communication system*
- *to avoid having pipers at inaccesible places*
- *to implement emergency distribution plan*
- *to have portable equipment and 4-wheel drive vehicles*
- *not to*

FIRST REPORT ABOUT THE EVALUATION OF THE SEISMIC THREAT

RECOPE, EL ALTO PLANT, CARTAGO, COSTA RICA

Geol. Alvaro Aguilar Díaz

SUMMARY

The location of Costa Rica within the regional tectonic scheme, in which important geodynamic processes are established and the interaction of the tectonic elements such as the Coco plate and the Caribbean plate, places Costa Rica under different levels of seismic threat. Knowing the above and with the proposal of establishing the means of preparation and adequate mitigation, it is considered necessary to develop a diagnosis of the real seismic threat to which the facilities of RECOPE are exposed, including those in the first stage and the ones located in El Alto plant. According to this diagnosis, an ample gama of information has been utilized in the analysis of different types. Among these types, we can mention regional geology (Central Valley) and local (near the plant), including a stratigrafical and litological analysis of the principal rock units that flourish in the area and a structural analysis of the principal systems of identified lines and faults and that may correspond to potencial seismogenic sources, a space-time analysis and dynamic parameters of the seismic history, seismic zonation, including a precise analysis of the slight accelerations of the land where the plant is located, analysis of the actual seismic code and an estimation of the accelerations that could provoke the historical earthquakes located near the installations of El Alto plant.

The results of the diagnosis indicate that the facilities of El Alto plant are located in a region extremely close to the epicenters of the earthquakes that have caused major damage in the past in the southeast sector of the Central Valley (1841, 1905, 1910, 1912 amd 1952). The minimum distance of the plant from the epicenter is 6.5 km and the maximum 12 km. These quakes have been of intermediate magnitude (5 to 6.5), but very insignificant in their destructive character (5 to 15 km). The established structural analysis shows the presence of line and fault systems

that could be associated with the seismogenic sources of those damaging events. The majority of such events have been in the south of the Central Valley between the coordinate North Lambert 530 - 560 and 200 - 220.

The analysis of the registered accelerations in the accelerograph that the Laboratory of Seismic Engineering has located in El Alto plant reveals the sensibility of the dynamic behavior of the land where the plant facilities are located for quakes of intermediate magnitude (M=5.0 to 6.5) and superficial force located within the Central Valley, with respect to the quakes of major magnitude (M≥6.5) located outside this area. This is the case of El Cóbano quake on March 25, 1990 (M=6.5, P=17 km) that registered a slight acceleration of 0.06 of g, in comparison with the quake of Piedras Negras (Alajuela) on December 22, 1990 (M=5.7, P=6.4 km) that registered a slight acceleration of 0.12 of g. From these historic quakes, an empirical relation of CAMPBELL (1981) was utilized to determine the slight acceleration that would register in El Alto plant facilities with a quake of those characteristics. Therefore, for the quake of September 2, 1841 (M=6 to 6.9, P=5 to 15 km), a slight acceleration of 0.33 of g was estimated, and for the quake of May 4, 1910 (M=5.5, P=5 to 15 km) a slight acceleration of 0.17 of g was calculated. These acceleration values are beyond those the Seismic Code of Costa Rica contemplates for a return period of 50 years. In accordance with the peiods of seismic energy release determined for the Centrl Valley (36 ± 3 years), such code must be taken into consideration. We could actually find ourselves on the threshold of a new period. It is also important to take into account that quakes manifested in the proximity of the Central Valley could induce an acceleration in the earth up to 0.50 of g. A recent example of this type of behavior is the aforementioned Piedras Negras earthquake, which was induced at the site of the San Miguel Hydroelectric Project. A rock acceleration between 0.65 and 0.90 and in the center of Alajuela 0.45 was produced. This could be the case for El Alto plant facilities, considering that the proximity of the seismogenic sources to the plants' facilities is similar.

Although El Alto plant facilities are presented with a level of important seismic threat, the need to relocate themselves to another site in the Central Valley should not be an option, but rather, they shoudl apply themselves to all the mitigation actions and necessary preparations in order to reduce their vulnerability, considering another expenditure as an investment. In general, detailed studies of vulnerability and risk must be made as well as emergency and contingency plans to attend disaster situations in their three stages established: before (prevention, mitigation, preparation, and warning), during (response) and after (rehabilitation, reconstruction and development) such disasters.

VULNERABILITY OF GUAPILES HIGHWAY:

INSTABILITY OF SLOPES

M. Sc. Gastón Laporte

San Jose-Guapiles Highway

I. Records

-*Location*
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-*Precaution signs and closing of highways at strategic points*
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-*Appropriate maintenance*

-Established labor in order to minimize the problem
-Study selfstabilization phenomena (apparently, they estimated seven years?)

Establish procedures and requirements to control and impose the corresponding sanctions under events of default.

The regulating plan is the local planning instrument embrasing the following elements: floor plans, maps, regulations, graphics, suplements, land usage policies, circulation ways, public services, community facilities, construction, conservation and rehabilitation of urban areas.

The municipal government has to plan and control the urban development within its territorial limits.

The municipality summons a meeting wherein the inhabitants under its jurisdiction state their opinion on the terms and conditions of the regulating plan, or oposing them, if necessary.

Some aspects of the development of the geographic information system for the prevention and preparation of desasters in Costa Rica.

Douglas Salgado
Comision Nacional de Emergencia,
Costa Rica.

I SIE Conceptual Aspects

SIE has been considered a disaster planning tool, as well as a support in the decision making process related to preparation aspects, prevention and attention. The design has been estructured to streng then two basic elements in the beginning planning process, the gama of natural and antropogenetic threats of the national territory, as well as the inventory and sistematization of the basic resources of different institutions.

By gama of natural threats, we mean the systematic compendium of information of data and elements, or variables, related to disasters. In general terms, the format assumed by this information may be graphicaly managed, namely, maps or cartograms, wherein an array of relations, locations, closeness, projections, etc. Can easily be visualized, thus facilitating interpretation and analysis.

It is by means of this geografical cognotation of the different threats of the country (seismic sources, faults, landslides, floods, hazards derived by the use and management of chemicals, hydrocarbons, and the like) that the process of

desasters preventive steps gets started. This is specilly true for the elaboration of strategies in the area of territorial ordening, and for the derivation of the corresponding policies by the executive institutions.

Nevertheless, the spacial expression (the map itself) is just a complement of a complex array of information of related data that, once operationalized, will permit the development of analytical and synthesis tasks in key areas, including: The response, rehabilitation and reconstruction.

The project focuses on entities that, by virtue of their executing function (i.e., municipalities and other local organisms), must count on the information relative to threats and, therefor try to mitigate those threats which can be faced through implementing the necessary preventive actions.

Threat zonification: The location of zones under threat takes place by means of the identification of the main natural and antropic threats, in conjuction with geological, geographical, environmental and infraestructural aspects.

Identification of the main cantons with high frequency and potenciality to disasters. Such identification must be aimed at initiating the mitigation and prevention processes, according to the development of the communities in general.

- Development of a support, advisory and action tool for the different institutions directly related with the control, supervision and approval of civil works in general.

- For the development not only of the programs in the areas of prevention, capacitation and education, but also for the design of strategies for the community preparation and organization, it must be constructed the beginning disaster planning base, which must be carried out by CNE in the mid and long term.

- SIE takes into account the informative support of the cartographics Atlas that establishes relations with other data, such as: resource description, location, quantity, person, etc. It also takes into consideration the management of the elements whose main expression is spacial. Therefore, there must not only handle computer graphic attributes (periods, lines, areas, etc), but also description of basic characteristics of the elements. Besides administrating the graphics (if that is the way operations and procedures to obtain a map of a determined phenomenon variable to which is referred), exist the exchange moving of data, and the data base alphanumeric information with the purpose of establishing inquiries that supply related information about thje characteristics of the resource.

One of the advantages of SIE as a graphic and alphanumeric

platform is that it updates the information of the atlas with relative facility. Besides, it has intrinsic advantages of the visual display and the outcomes in rigid formats (paper or others), as well as the different levels of proximity, according to a scale containing tematic documents that can be put into regional scales (1:500.000, and 1:250.000, 1:200.000) medium, cantonal and distrital scales (1:50.000) even local aspects or of special interest (1:12.500, 1:10.000) or of extreme detail (1:15.000 to 1:1000).

Another of the advantange that the D-Base and Intergraph platform programs allow the exchange of data with whatever homologous informative system (be it alpha or graphic), since these use very well known universal patterns (DBF and DXF formats, respectively.

The tourism sector and the Costa Rican legislation about land usage at coastal zones.

Indirect Effects:

1. Exposure to natural disasters', measures must be included to face those possible problems. Information should request about seismicity and grotogical conditions in the proposed placed of the project (CEDUE). This information could serve to identify potencialy dangerous natural disasters.

2. Problems to mange tourism; as a result ofan inappropiated legislation, fast contamination, lack of logistic support, scarce resources to mitigate impacts; inadequate preparation or lack of technicians to manage the enviornment.

3. Conflicts in using other resources such as agriculture, and fishing development.

4. The development of other industries increases the tension among resources and services (craft markets, salesmen, food supplier, taxis and suppliers' of products).

5. Congestion and over population:

- The State must strengthen itself to exert control and vigilance of the environmental impacts.

- Establish an adequate supervision to maintain a constant control over the impacts that tourism can produce.

- The actival legislation is inadequate. Legal reforms should be promoted, specially in areas which do not have any regulation to favor tourism and project the environment.

- Our natural resources require can integral protection, that need that the entities in charge of making decisions coordinate the policies and the programs, looking for resources production and the sustentable and rational explotation.

- El MIRENEM must coordinate with the ICT, the CNE, National enterprises of receptive tourism, and local groups, to fortify an especialized office that establish clearly the necessary rules which will guide the whole activity.

REHABILITATION AND RECONSTRUCTION

REHABILITATION AND RECONSTRUCTION

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LUIS FERNANDO PERNUDI	*COSTA RICA / INS*
EDGAR SOLANO	*COSTA RICA / INS*

REHABILITATION AND RECONSTRUCTION

The group heard four special presentations from Costa Rican representatives, on the following subjects:

-Vulnerability study of Hospital Mexico

-Methodology used by CNE to estimate building damage

-Estimation of probable annual loosses and attention of disasters by INS

-Reinforcement of the National Theater and its procedures

The group also heard a special presentation on the current status of its priority project proposed a year ago in Indianapolis.

Based on extensive discussion after each presentation and the need to focus on specific projects that the group could address during the next year, the following recommendations are made:

1- Recommendations to other groups:

-That vulnerability studies encompass the following elements:

1-Structural
2)Non-Structural and
3)Functionality

-That repair standards be developed in order to make them applicable to the rehabilitation and recovery processes.

-Study how the critical decision to retrofit a building (Pre- or Post- Earthquake) is made (why, when, under, what incentives).

2- Refinement of rehabilitation and reconstruction group's document titled "Rehabilitation and reconstruction following earthquakes - a guide for local official."

-Translate document into Spanish

-More case studies (Chile's, for example, need to be incorporated)

-Socio-economic issues need to be given equal treatment in the report (as compared to the physical aspects)

-Identify the users of the document

-Determine how the document can be used in training efforts

-Greater emphasis needs to be put on the rural experience

3- TRAINING:

-That a "train the trainer" session be scheduled on the rehabilitation and recovery model developed by William Spangle and Associates for officials most likely to be involved in the rehabilitation and recovery process

-Explore ways on how the RER Guide can be used in the "train the trainer" session

4- Damage Assessment -Safety Evaluation Process:

-That members of the group come prepared to present the process utilized in their respective country/locale at the next meeting for the purpose of developing the content of a standard methodology and procedures (it will be necessary to coordinate with preparedness and response group)

-At the same meeting, the group will address the issue of training and scarce resources (trained professionals)

5- General Recommedations:

-That members of the group present the inventory institutions and/or organizations in their countries that have international exchange efforts

-The group should develop strategies for promoting the purchase of insurance and incentives, as an important recovery resource and mitigation measure

-The group should exchange information on data base software being utilized to encourage more information exchange.

PREPAREDNESS AND RESPONSE

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PREPAREDNESS AND RESPONSE

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BOBBY BAINES	AMERICAN RED CROSS
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INTRODUCTION

The main topics considered by group #4 were Preparedness and Response. These main topics evolved into several sub-topics including:

a. *Federal/National plans for response*
   State/Regional plans for response
   Local/Community plans for response
   And the necessity for all sectors of the population to develop a disaster culture.

b. *Education as the key to successful response.*

c. *Exercises and simulations as a significant aspect of education.*

d. *Recognition that plans are living documents and that a readiness cycle including planning, evaluation, excercising and revising plans is critical to successful planning.*

e. *Recognition that institutionalizing the teaching of disaster preparedness in the health related faculties (nursing, medicine, public health) of universities in the Partnership countries is critical to ensuring that this disaster culture will begin to be developed as the adult level of the population.*

f. *Recognition that the education of school children and teachers is an essential key to developing a disaster culture.*

From these topics, we developed three projects. They are as follows.

PROJECT #1

Activities:

1. *Establish a glossary of terminology for planning and exercises.*

2.

   a) Exchange model and/or succesful plans and exercise documents: Federal level and state level Local level.

   b) Exchange after action reports and lessons learned from past disasters.

   c) Exchange studies and reports on post-disaster trauma and stress.

   d) Exchange bibliographies on disaster information.

Project:

1.

   a) FEMA and EPA American Red Cross will take responsibility for drafting and translating into Spanish a first draft of the glossary by May 1, 1993.

   b) Partners will review and comment on the glossary by September 1, 1993.

   c) FEMA and EPA will finalize and distribute the glossary by October 1, 1993.

2.

   a) U.S. Partners will provide documents (plans, etc.) to CUSEC by March 1, 1993. Latin American Partners will provide the same to PAHO by March 1, 1993.

   b) CUSEC will provide the collection to the PAHO Disaster Directory in Costa Rica, by July 1, 1993.

   c) PAHO will add this information to an existing bibliography on disaster planning and then distribute it to everyone.

3. *(Potential) Establish linkages between specific U.S. states and Latin American countries for exchange of personnel to do excercise design/participation. Latin American Partners interested in attending Response '93 (Salt Lake City) shouldindicated go.*

   Partners can request copies of the desired document from PAHO at the Disaster Documentation Center in San Jose, Costa Rica (no expense).

The following is a proporsal for cooperation in the areas of planning and exercising for Earthquakes and Natural Disasters between the U.S and Latin American Partners.

Objetives:

1. *To improve the capabilities of communities and goverments to plan adequately the response to earthquakes and other natural disasters.*

2. *Educate planners on efficient and effective methodologies for planning.*

3. *Educate planners and responders in effective methodologies for exercise design and conduct.*

4. *Promote the exchange of experience, skills, documents, case studies, after action reports and other documents.*

Audience: Disaster Planners

PROJECT #3

Exchange Of Social Communication Programs Regarding Earthquake

Objectives:

Recognazing that the education shall be integral, identify the responsible people, entities or programs for the social communicatiòn in each participating country or state.

Activities:

1. Identify the responsible people of the social communication regarding earthquake matters in the CUSEC states.

2. Identify the counterparts of such aforementioned people in the participating Latin American Countries.

3. Contact Miss Sandra Salazar, in Costa Rica, about every detail related to audiovisual materials, such as: radio and television announcement, or their outlines, charts, pamphlets and flyers used as social mass media.

4. Encourage the sending of plans or policies of social communication in earthquake matters.

5. Encourage a meeting among people responsible of the social comunication in earthquake matters.

PROJECT #2

Pilot Plan Of Educational Exchange - Sister Schools

Objective:

Establish a pilot program of sister schools to encourage the exchanging of the current educational materials in the participating countries or states.

Rules:

1. *The participants would be those who expressed their willingness to participate: United States of America, Costa Rica, Ecuador, Mexico and Puerto Rico.*

2. *Five schools of each country will be participating.*

3. *The chosen schools will be primary schools having a real interest in the project and those with a high level of earthquake vulnerability.*

Activities:

1. *Sending didatic material.*

2. *Sending general information concerning the sisters schools.*

    a) *photographs*
    b) *history*
    c) *letters and drawings of the children.*
    d) *experience in the field of education regarding earthquake emergencies.*

3. *Sending current capacitation patterns.*

4. *Sending emergency plans.*

5. *Sending an effected non-structural repairments list and the way they were carried out.*

6. *Sending developed lessons and excercises.*

7. *Development of a presentation (through charts of the sister schools).*

8. *Formal launching of the pilot program. All sister schools will be doing this on the same day, as a symbolic act.*

9. *Encouragement and establishment of a competition of competition of charts, as well as the corresponding prize recognizing the best participation. All this must be made through CUSEC.*

Schedule:

January 30, 1993	-	*Selection of Schools.*
March 15, 1993	-	*Official launching of the program.*
March 30, 1993	-	*Sending the first communication among the sister schools.*
April 15, 1993	-	*Response to the first communication.*
April 30, 1993	-	*School Presentations.*
May 3-5, 1993	-	*CUSEC will choose the best participant.*
Nov/Dec, 1993	-	*CUSEC will prize the best participant.*