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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

**Nineteenth Session of the International Co-ordination Group for the Tsunami
Warning System in the Pacific (ITSU-XIX)**
29 September – 3 October 2003, Wellington, New Zealand

**Report of *ad hoc* Working Group on
International Tsunami Signs and Symbols**
(Capt. Hugo Gorziglia, Past Chairman ICG/ITSU)

I.- Background.

At the XVIIIth ICG/ITSU Meeting held in 2001 it was recognized the need to establish appropriate internationally standardized and recognized signs and symbols for use in tsunami mitigation activities. Annex “A” to this document provides full text of Recommendation ITSU-XVIII.2 that established a Working Group to progress on this initiative, with the following general tasks:

- To develop an internationally standardized set of signs and symbols to be used in the field and on tsunami inundation maps, tsunami evacuation maps and educational material,
- To present a preliminary draft to the ICG/ITSU Officers Meeting planned for the beginning of 2003, and
- To present a final draft to the Nineteenth ICG/ITSU Meeting for ICG/ITSU consideration and further approval.

The present paper reports on the progress achieved and identifies next steps to be followed. It represents the general view of the Group, as compiled by the Chairman after receiving contributions from Canada, Chile, Colombia, Peru and the ITIC, plus a complete search conducted on the relevant web pages of several international and national organizations, universities and literature available on the web.

II.- Work conducted.

The first step of the work conducted was to find **definitions**, at least for the purpose of this paper, on what do we mean by the words “*sign*” and “*symbol*”.

As a second step, an identification of any **information to be highlighted** that was felt should be posted in the field, as well as on maps, pertaining exclusively to tsunami was done.

Afterwards, a research was conducted to find out the actual practice in employing signs and symbols to represent this information. The **Results of the research**. “**What was found?**” is included next in this document.

Finally, a preliminary draft of the work conducted was submitted to the ICG/ITSU Officers Meeting held in Honolulu, in February 2003, where after a detailed **examination and analysis of the progress report**, and fruitful discussion, the Officers agreed on **the way forward**.

III.- Definitions.

For the purpose of this paper, the term “**SIGN**” is associated with **information posted in the field** to provide the community with relevant information on tsunami, such as public warning messages, identification of evacuation routes and hazardous zones, just to mention a few examples.

As regard to the term “**SYMBOL**”, it is defined as the **value added information indicated on a map**, providing relevant information on tsunami, such as limits of hazardous zones, the locations of shelters and direction of evacuation routes, just to mention a few examples.

It was recognized that some elements have both characteristics, as they are signs and also symbols, but this is not always the case.

IV.- Information to be highlighted.

It seems necessary at this stage to mention that there are many signs and symbols that have a wide international recognition, and that not all of these are ISO recognized elements. The idea under the work carried out has been to identify those signs and symbols that are “exclusively” for tsunami. Therefore, many elements have not been considered as they are of general use, as for example traffic signs, hospital location or topographic symbols.

The following list represents in our view, the elements that, being exclusively related to tsunami, where **initially** considered as needing an internationally recognized and accepted sign and/or symbol.

a) Signs:

- **Tsunami Information Broadcasting (Radio AM/FM Frequency)**

Citizens should be able to tune Radios on the special frequency where Tsunami Information is being broadcasted. The sign could indicate:

For Tsunami Information Tune Radio AM 850 - FM 98.5

- **Tsunami Evacuation Route for Persons**

Pedestrians should have a clear indication of the recommended route to be followed in case of a tsunami. Probably the general sign “Tsunami Evacuation Route” mentioned in section V, plus an arrow indicating the direction of the evacuation and a representation of a person could be used.

- **Tsunami Evacuation Route for Vehicles**

Citizens riding in cars or other vehicles should have a clear indication of the recommended route to be followed in case of a tsunami. Probably the general sign “Tsunami Evacuation Route” mentioned in section V, plus an arrow indicating the direction of the evacuation and a representation of a vehicle could be used.

- **Tsunami Evacuation Route for Persons and Vehicles**

In areas where both routes, for persons and vehicles coincide, a combination of the above identified signs could be used.

- **Tsunami Hazard Zone /Area**

Citizens should be informed of the zones or areas that are hazardous in case of a tsunami. The sign that is indicated in section V could be used directly.

- **Tsunami Refuge Zone /Area**

Citizens should be informed of the location of a refuge area or zone. An arrow indicating the direction and maybe the distance should accompany this sign.

b) Rolling Signs:

- **Tsunami Watch**

This sign consists in a common board (electronic panel) that, located at strategic places, could provide information on the situation. In this case by indicating that a Tsunami Watch is in force.

- **Tsunami Warning**

This sign consists in a common board (electronic panel) that, located at strategic places, could provide information on the situation. In this case by indicating that a Tsunami Warning is in force. It is just one element (panel) but keeping citizen informed in real time about the situation. (It is the same panel referred to above).

- **Tsunami Wave Arrival Time**

This sign consists in a common board (electronic panel) that, located at strategic places, could provide information on estimated arrival time of the first wave. It is just one element (panel) but keeping citizen informed in real time about the situation. (It is the same panel referred to above).

c) Symbols:

1.- Areas.

- **Tsunami Inundation /Flooding Zone/Area**

A special shaded design to identify this element.

- **Tsunami Hazard Zone / Risk Zone/Area**
A special shaded design to identify this element.
- **Tsunami Limit Danger Zone / Risk Zone / Area**
A special shaded design to identify this element.
- **Tsunami Evacuation Zone/Area**
A special shaded design to identify this element.
- **Tsunami Refuge Zone/Area**
A special shaded design to identify this element.

2.- Lines/Limits:

- **Tsunami Inundation Limit / Line**
A special dashed and color line to identify this element.
- **Tsunami Evacuation Route for persons**
A special solid and color line to identify this element
- **Tsunami Evacuation Route for vehicles**
A special solid and color line to identify this element
- **Tsunami Evacuation Route for Persons and Vehicles**
A special solid and color line to identify this element
- **Tsunami Probable Maximum Water Level**
A special dashed and color line to identify this element
- **Tsunami Horizontal Inundation Distance**
A special dashed and color line to identify this element
- **Tsunami Maximum Run-Up**
A special dashed and color line to identify this element

3.- Points

- **Tsunami Sirens Position**
A symbol identifying the position where sirens or other elements of mass communication exist.
- **Tsunami Signs Position**
A symbol or a collection of symbols to represent where, in the field, these different signs are located.

V.- **Results of the research. What was found?**

One of the most recent efforts was conducted in 1994. A group from the Oregon Department of Geology and Mineral Industries, Department of

Transportation, Land Conservation and Development, Parks and Recreation, and Oregon State University Extension Sea Grant searched for an “**international warning symbol for tsunamis**”. When they couldn't find one, they asked Oregon State University Extension and Experiment Station Communications artist Tom Weeks for help. They gave Weeks some ideas, and he created the attached designs for the **bright blue tsunami hazard zone and tsunami evacuation route signs** that are currently being installed at several locations on the Oregon coast.

At its March 4, 1997, meeting in Seattle, the Tsunami Hazard Mitigation Federal / State Steering Group voted to adopt the Oregon signs as tsunami hazard zone and evacuation route signs for California, Oregon, Washington, Alaska and Hawaii. These have also been adopted and are in use in British Columbia. This means that anyone visiting the beaches in any of those states will see the same signs warning them of this hazard. In addition, decals with smaller versions of the hazard zone sign will be installed on 200 all-hazard warning signs at Oregon coastal state parks.

The blue and white reflective signs are manufactured by the Oregon Department of Transportation and come in several sizes. The round evacuation route sign features a tsunami wave and is available in 12"-, 18"-, and 24"-diameter sizes. A second sign with a white arrow on a blue background is placed below the evacuation route sign to show which way to go to safely escape a tsunami. The rectangular tsunami hazard zone sign shows a person running up a hill to escape the tsunami wave and says, "In case of earthquake, go to high ground or inland." The hazard zone sign, which is to be placed in low-lying areas that are vulnerable to tsunamis, also comes in three sizes: 15" x 12", 22" x 18", and 30" x 24". Signs may be placed only in locations agreed upon by local and/or state governmental authorities.



Tsunami Hazard Signs almost agreed to internationally.

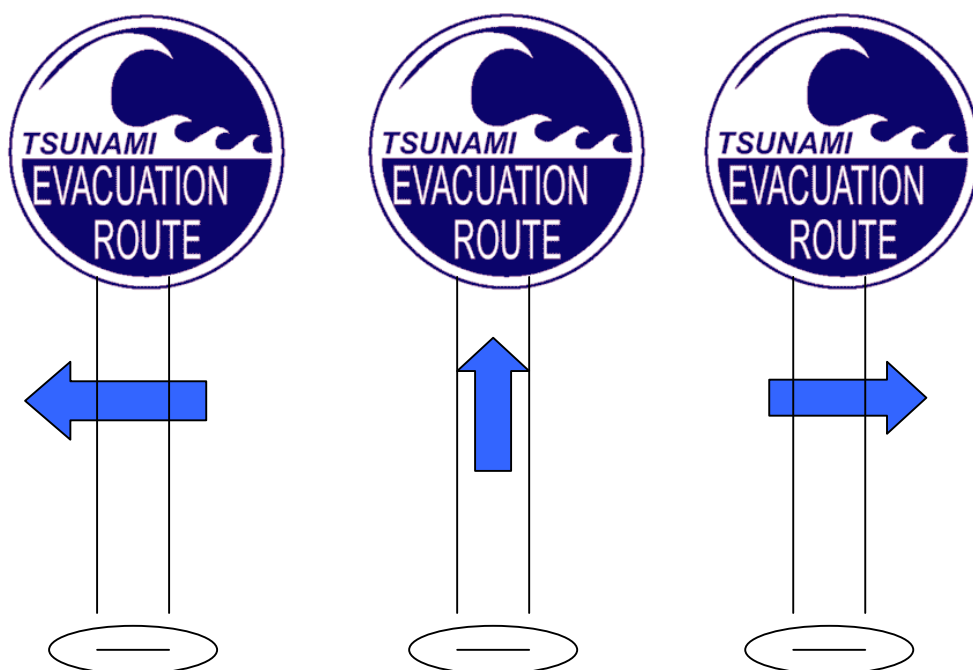
Nevertheless, there are no tsunami symbols or signs adopted internationally and none that have received registration through the International Organization for Standardization (ISO).

VI.- Examination and analysis of the progress report.

The Officers examined the report and decided:

Signs:

- **Tsunami Information Broadcasting:** no particular international sign was required as this tool is non exclusive to tsunami and is used by authorities to warn people on different topics, such as traffic, weather, etc. Therefore this sign was cancelled.
- **Tsunami Evacuation Route for Persons:** no particular international sign was required exclusively for persons. The concept of Evacuation Route should be as general as possible. Therefore this sign was cancelled.
- **Tsunami Evacuation Route for Vehicles:** no particular international sign was required exclusively for vehicles. The concept of Evacuation Route should be as general as possible. Therefore this sign was cancelled.
- **Tsunami Evacuation Route (for Persons and Vehicles):** As a generic sign, it was agreed to propose de adoption of the ‘Tsunami Evacuation Route’ sign as an international sign. It was considered that an arrow pointing the direction to be followed should be used in conjunction. (The arrows to follow ISO)



- **Tsunami Hazard Zone/Area:** It was found that the wording “In case of earthquake go to high ground or inland” was too restrictive as it only considers the situation under a local event, and a more generic sign would be one without that sentence. Also it was agreed to keep the word “zone” instead of area. Finally it was agreed to propose de adoption of the ‘Tsunami Hazard Zone’ sign as an international sign.



- **Tsunami Refuge Zone/Area:** no final decision was taken on the need to have such a sign. Moreover it was considered not helpful, as in a real case, people will tend to reach that zone/area and decide to stay there making difficult the circulation of those that have not reach yet that zone/area. On the other side it was considered important to have an indication on where people would seem to be safe. The Officers decided to bring this issue to the attention of ITSU-XIX, requesting advise on how to deal with this matter. (draft sign is included)



Rolling Signs :

- The Officers did not consider it essential to have any internationally agreed upon rolling signs. It was felt inconvenient to try establishing an international regulation to provide a message using this technology. It was considered more of a local matter.

Symbols:

- After acknowledging that all tsunami inundation maps have as integral part of it a “legend” describing all symbols used, the Officers did not consider it essential to have any internationally agreed upon symbols.

VII.- The way forward.

- 1.- ITSU-XIX is requested to consider the present report and :
 - a) Decide on the need to have the following elements as international recognized sign:
 - a. Tsunami Evacuation Route
 - b. Tsunami Hazard Zone
 - b) Decide on the need to or not to have as an international recognized sign for the following element:
 - a. Tsunami Refuge Zone
 - c) Decide on adopting the Report of the Ad-hoc Working Group on International Tsunami Signs and Symbols.

- 2.- ITSU-XIX to consider requesting IOC Executive Secretary to submit a proposal for the agreed tsunami signs to ISO (International Standards Organization).
- 3.- If any sign is agreed, ITSU-XIX to consider requesting ITIC to give wide coverage of this by disseminating its results worldwide.

Hugo Gorziglia
Chairman
ITS&SWG

ANNEX “A”
Recommendation ITSU-XVIII.2

WORKING GROUP ON INTERNATIONAL TSUNAMI SIGNS AND SYMBOLS

The International Co-ordination Group for the Tsunami Warning System in the Pacific,

Noting the Conclusions and Recommendations of the Joint IOC/IUGG Workshop ‘Tsunami Mitigation Beyond 2000’ held in Cartagena, Colombia from 5-6 October 2001;

Recognizing that the recommendations of the Joint Workshop provide an ample opportunity for facilitating co-operation between the IOC/ITSU and the IUGG Tsunami Commission;

Acknowledging the achievements of some Member States in the development of the tsunami danger-related signs and symbols;

Recognizing further the need to establish appropriate internationally standardized and recognized signs and symbols for use in tsunami mitigation which will be an important instrument for contributing to tsunami preparedness and finally to saving human lives and property;

Agrees that a Working Group on International Tsunami Signs and Symbols should be formed with the following Terms of Reference:

- *To develop an internationally standardized set of signs and symbols to be used in the field and on tsunami inundation maps, tsunami evacuation maps and educational material,*
- *To present a preliminary draft to the ICG/ITSU Officers Meeting planned for the beginning of 2003, and*
- *To present a final draft to the Nineteenth ICG/ITSU Meeting for ICG/ITSU consideration and further approval.*

Recommends that the representatives from Canada, Chile, Colombia, Peru and Chairman of the IOCARIBE Tsunami Steering Group of Experts will form the Group, chaired by the Past Chairman of ICG/ITSU, Mr. H. Gorziglia.

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