

**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION  
(of UNESCO)**

**ITSU Officers Meeting  
Honolulu, Hawaii, 10 – 13 February 2003**

**Progress Report of *ad hoc* Working Group on International Tsunami  
Signs and Symbols**

**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 so far, and identifies next steps to be followed.

**II.- Work conducted.**

It has been difficult for the Chairman of this Group, due to his appointment at the International Hydrographic Bureau in Monaco, to contact the other members of the Working Group, and therefore the present document represents the views of the Chairman plus contributions received from, Canada, Chile and ITIC, plus a complete search conducted on the relevant web pages of several international and national organizations, universities and literature available on the web.

The first step of this work was to define, at least for the purpose of this paper, what is understood by the words *sign* and *symbol*.

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

Later, research was conducted to find out the actual practice in employing signs and symbols to represent this information.

### 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 – which is not exhaustive or complete – represents in our view the elements that, being exclusively related to tsunami, deserve to have 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
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- **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.- What principles are to be considered when designing a Sign?**

- Use a distinctive design as much as possible;
- Use a simple design as much as possible; and
- Use a design that can be correctly understood under different conditions.

It has to be considered as well that there are three groups of signs that might be considered, which should be compatible with ISO - 7001/3864 (safety colors and safety signs) and ISO – 7001/4196 ( Graphical symbols, use of arrows).

- Signs for safety and danger,
- Signs indicating directions, and
- Signs indicating degrees and quantity.

#### **VII.- Next steps.**

- Continue research into the present practices for employing signs and symbols to represent tsunami information.
- Propose draft designs for signs and symbols identified as necessary.
- Assess the existing (Oregon) signs within the context of ISO 7001:1990
- Investigate requirements and expectations for signage at night. (e.g., use of reflective material and/or LED ‘beacons’).

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:

**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.