

**National Report of Thailand
ITSU XX
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1. Introduction

The Indian Ocean Tsunami That occurred on 26 December 2004 was one of the greatest natural disaster in the world. The destructive occurred in many countries in Asia around the Indian Ocean and as far as the east coast of Africa. Total report of dead, among these countries more than 200,000. In Thailand, total casualties in six provinces along the Andaman coast namely, Ranong, Phang-Nga, Phuket, Krabi, Trang and Satun are approximately 5,395 with 8,457 injured and 2,932 still missing.

The earthquake occurred around 8 o'clock (Local time) on Sunday and the first tsunami wave reach Thailand spend 2 hours striking the Phuket Province. Wave period is found to vary from 5 to 15 minutes and wave heights vary from 3 to 10 metres where Khao Luk

in Phang-Nga Province was the highest tsunami wave and most destructive in Thailand.

2. Tsunami Warning Center

The tsunami on December 26, 2005 was one of the worst disaster ever happened in the Indian Ocean. At that time not only we never had experienced in such very big magnitude of earthquake and destructive tsunami before, but also without any existing tsunami warning system in Thailand. The lost of lives and damage to houses, farmlands, fisheries, livestock, business and infrastructure including in environmental were seriously. The Thai Government has realized that it is very important to establish an effective tsunami warning center. Then a national committee on study of the early warning system chaired by Assistant Minister of the Office of Prime Minister has set up immediately. After that the National Disaster Warning Center (NDWC) will function as a national central command center in early warning on severed disaster. The main activities are as follows :-

- a) Early warning system arrangement and preparedness
- b) Issue of warning, rules and procedures
- c) Administration of the center and
- d) Security system arrangement

The NDWC will receive data from the related government department such as Meteorological Department, Department of Royal Thai Navy, Department of Disaster Prevention and Mitigation and other national agencies. When there are indications that the severe condition are expected, The NDWC will make the decision as to when the tsunami warning should be issued. In formulating the decision will also benefit by receiving data from international agencies such as The Pacific Tsunami Warning Center, WMO, IOC, JMA, etc.

To disseminate the Tsunami Warning, the Warning Studio is operated by linked to TV (10 stations) radio (211 AM and 312 FM), amateur, local and cable radio stations, mobile telephones (20 Million sets) and to the warning towers. By the end of 2005, 65 warning towers equipped with sirens will set up along the west coastline at six provinces in southern Thailand.

3. Sea-level Stations

There are eight tidal gauge stations along the west coast in southern Thailand. Those stations are located in six provinces which effected severe impacts of tsunami. The tidal gauge stations at Ao Tub Lamu in Phang-Nga was totally destroyed by tsunami. Analog type is the standard equipment used for all stations and the Hydrographic Department has the responsibility to manage the record. Two stations at Ko Taphao Noi in Phuket and Ko Tarutao in Satun recorded the first wave trough at 10.10 and 10.55 (local time) and the first wave crest at 10.20 and 11.00 which their distance between two islands was about 185 km.

After the Tsunami on Dec 26, 2005, the Hydrographic Department has set up temporary digital tidal gauge station at Ko Maing about 70 km from the coast in order to observe the abnormal sea level. In case of tsunami occur, this station could report to the NDWC for tsunami warning in 15 minutes before by using the satellite link. By the end of 2005, the Hydrographic Department will set up 9 digital tidal gauge stations in real time along the west coast and some islands in Andaman sea. Thai Meteorological Department has also got the budget to set up 9 digital tidal gauge stations and will integrate the system with the Hydrographic Department. Both system will support the tsunami early warning in the near future.

4. Seismic Stations

Seismic monitoring in Thailand started when two WWSSN seismographs were established at Chiang Mai and Songkhla in 1963 and 1965. Since then the network has been improved and expanded by Thai Meteorological Department (TMD). At present there were 14 analog seismic stations and 11 digital seismic stations. The two years projects (2005 – 2006) to upgrade the seismic network with 15 digital stations has been set up for improving the seismic monitoring. Data transmission will utilize through intranet, telephones lines and VSAT.

After the Tsunami on Dec 26, TMD has got the budget to upgrade and expand more seismic stations. In the next three years (2006-2008), 30 digital seismic stations will also be added to previous network, putting the national seismic network to a total of 45 digital stations by the end of 2008. Software compatibility with the world network (IRIS, USGS) has been considered in these plan for linkage and data exchange internationally.

5. Data Communication and Analysis

All monitoring equipment will require a satellite link to Thai Meteorological Department (TMD) in nearly real time for rapid processing and evaluation of records event. This system will be connected to a reliable broadcast system for all center concerned.

First, the preliminary determination of earthquake parameters must be done automatically, Software should be able to display necessary parameters on topographic and bathymetric maps and other features such as historical seismicity, focal mechanisms, active structures, Tsunami events and other information to assist in judging the potential to generate Tsunami. Data communication shall perform to exchange of information national and international. The Global telecommunication system (GTS), hot line number, electronic mail, fax, voice message, SMS or MMS shall be consider to disseminate the tsunami warning.

6. Future Plan

There are three projects related to improve the tsunami warning in Thailand.

First is the Development of seismic monitoring system, seismic data base, and telecommunication link (2005 – 2006). The project consists of establishment of 8 short period and 7 broadband seismometers on real-time basis in order to estimate the location of earthquake immediately.

Second is Automatic teleseismic network for Tsunami warning (2006-2008). This project has proposed after the occurrence of tsunami in Dec 26, 2004 in order to expand and upgrade the seismic network around the country especially to detect the earthquake in Andaman Sea and Northern Sumatera region. The project consists of 30 digital seismic stations and 9 tidal gauges along the west coast of southern Thailand.

Third is Tsunami measurement in Andaman Sea (2005-2007). Since the parameter of earthquakes such as location and magnitude could not make decision very well in tsunami warning. This project will assist the tsunami warning by putting 3 DART bouys in Andaman Sea and satellite link to the center in Bangkok.