NATIONAL REPORT
Submitted by Trinidad and Tobago

BASIC INFORMATION

1. ICG/CARIBE EWS Tsunami National Contact (TNC)

The person designated by a Member State to an Intergovernmental Coordination Group (ICG) to represent his/her country in the coordination of international tsunami warning and mitigation activities. The person is part of the main stakeholders of the national tsunami warning and mitigation system. The person may be the Tsunami Warning Focal Point, from the national disaster management organization, from a technical or scientific institution, or from another agency with tsunami warning and mitigation responsibilities.

Name: Dr. Stephen Ramroop
Title: Chief Executive Officer
Organization: The Office of Disaster Preparedness and Management
Postal Address: 4A Orange Grove Road, Tacarigua, Trinidad
E-mail Address: sramroop@mns.gov.tt; stephen.ramroop34@gmail.com
Telephone Number: (868) 640-1285, (868) 640-8905
Fax Number: (868) 640-8988
Cellular Number: (868) 789-2779

2. ICG/CARIBE EWS Tsunami Warning Focal Point (TWFP)

The 7x24 contact person, or other official point of contact or address, is available at the national level for rapidly receiving and issuing tsunami event information (such as warnings). The Tsunami Warning Focal Point either is the emergency authority (civil defense or other designated agency responsible for public safety), or has the responsibility of notifying the emergency authority of the event characteristics (earthquake and/or tsunami), in accordance with national standard operating procedures. The Tsunami Warning Focal Point receives international tsunami warnings from the PTWC, or other regional warning centres.

Name: Mr. Marlon Noel
Title: Director
Responsible Organization: Trinidad and Tobago Meteorological Services
Postal Address: PO Box 2141, National Mail Center, Piarco, Trinidad
E-mail Address: synop@tstt.net.tt, dirmet@tstt.net.tt
Emergency Telephone Number: (868)669-4392, (868)669-4727, (868)669-5465
Emergency Fax Number: (868)669-4009, (868)669-4727

National Tsunami Warning Centre (NTWC) (if different from the above)
Person in Charge: Dr. Stephen Ramroop
Title: Chief Executive Officer
Responsible Organization: The Office of Disaster Preparedness and Management
3. Tsunami Advisor(s), if applicable
(Person, Committee or Agency managing Tsunami Mitigation in country)

Name: Dr. Richard Robertson
Title: Director
Postal Address: UWI Seismic Research Centre, St Augustine, Trinidad
E-mail Address: uwiseismic@uwiseismic.com; richie_robertson@uwiseismic.com
Emergency Telephone Number: (868) 662 4659
Emergency Fax Number: (868) 663 9293

4. Tsunami Standard Operating Procedures for a Local Tsunami (when a local tsunami threat exists, less than 1 hour travel time)

The following diagram summaries the flow of activities for a Local Tsunami with an arrival time of less than 1 hour.

SOP A2: Immediate Threat Exists: Local Tsunami (< 1 hr)
5. Tsunami Standard Operating Procedures for a Regional Tsunami (when a regional tsunami threat exists, 1-3 hour travel time)

The following diagram summarizes the flow of activities for a Regional Tsunami with an arrival time of 1-3 hours.

**SOP B2: Threat Exists: Regional Tsunami (1 – 3 hrs)**

Kindly refer to Appendix B, the Draft Tsunami Protocol for further details.

6. Tsunami Standard Operating Procedures for a Distant Tsunami (when a distant tsunami threat exists, more than 3 hour travel time)

The following diagram summarizes the flow of activities for a Distant (tele) Tsunami with an arrival time of 3 - 8 hours.

Kindly refer to Appendix A, the Draft Tsunami Protocol for further details.
For each situation, please provide the following:

- **What organization identifies and characterizes tsunamigenic events?**
  - The Pacific Tsunami Warning Centre (PTWC) identifies and characterizes tsunamigenic events.
  - PTWC sends tsunami advisories to the following:
    - **Tsunami Warning Focal Point (TWFP)**: Trinidad & Tobago Meteorological Service (TTMS)
    - **National Tsunami Warning Centre (NTWC)**: Office of Disaster Preparedness and Management (ODPM)

- **What is the threshold or criteria for declaring a potential tsunami emergency?**
  - TTMS disseminates; the alerts, warnings and other information to ODPM and TEMA simultaneously,
  - ODPM / TEMA assesses the **Watch Statement** sent by PTWC to determine whether a tsunami emergency poses a threat.

*Kindly refer to Appendix C, the Draft Tsunami Protocol for further details*
What organization acts on the information provided by the agency responsible for characterizing the potential tsunami threat?

- The ODPM and TEMA will alert key members of communities to be affected and initiate Community-based evacuation plans.
- The ODPM and TEMA will alert and update the GORTT

How is the tsunami information (warning, public safety action, etc) disseminated within country? Who is it disseminated to?

- The ODPM and TEMA will:
  - Disseminate the alerts, watches, warnings and other necessary information to the communities-at-risk through the media (digital and print) and social media (facebook, twitter, website), SMS Messaging and All Hazard Alerting Systems (South-west Tobago).
  - Initiate the National Response Framework / Plan (NRF)
  - Activate the National Emergency Operations Center (NEOC)

How is the emergency situation terminated?

- PTWC sends updated Watch Statement to TTMS and ODPM
- ODPM will assess the current conditions and make a determination based on the information at hand
- Post event, NEOC will remain activated until it is determined that no further disaster management actions are required
- ODPM disseminates information about terminating the emergency situation, via the media, bulletins, etc.

For Distant Tsunami Procedures:
What actions were taken in response to warnings issued by PTWC and/or US NTWC, during the intersessional period?

No warnings were received during the intersessional period consequently, no actions were necessary in response to warnings issued by PTWC, US NTWC, and/or JMA NWPTAC during said period

7. National Sea Level Network
Please include a table with position and description of stations/sensors, and a map,

The following information was provided by the Hydrographic Unit, Lands and Surveys Division of the Ministry of Land and Marine Resources, Trinidad and Tobago.
Existing Tide Gauge Network:

There are currently four primary continuous tidal observation stations, which are located in strategic coastal areas, namely, Port-of-Spain, Cedros, Scarborough and Charlotteville. These stations are located at different seaports around Trinidad and Tobago; (as shown in Figure 1 and listed in the table 1 below). Mean values of datum planes are derived from the operations of these primary tide stations. They likewise serve as references for analyzing data from secondary and subordinate locations where short periods of tidal data exist.

<table>
<thead>
<tr>
<th>No.</th>
<th>Tide Gauge</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Port of Spain</td>
<td>10°38'48.00&quot;N</td>
<td>61°30'46.59&quot;W</td>
</tr>
<tr>
<td>2</td>
<td>Scarborough</td>
<td>11°10'42.61&quot;N</td>
<td>60°44'6.69&quot;W</td>
</tr>
<tr>
<td>3</td>
<td>Cedros</td>
<td>10° 5'35.74&quot;N</td>
<td>61°51'56.46&quot;W</td>
</tr>
<tr>
<td>4</td>
<td>Charlotteville</td>
<td>11°19'24.67&quot;N</td>
<td>60°32'57.59&quot;W</td>
</tr>
</tbody>
</table>

Table 1: Geo-Location of Tidal Stations in Trinidad and Tobago

Figure 1: Location of Existing Tide Guages
Source: Hydrographic Unit, Land and Surveys Division

Characteristics of Trinidad and Tobago Tidal Stations
The tidal stations operated by the Hydrographic unit are Mircocomm GTX data loggers with the ability to transmit real time data to GOES. A Level troll 500 pressure sensor is used to measure the water heights above chart datum. Water levels are recorded on a 10 minute interval and the data is transmitted on an hourly basis to the GOES satellites. All the gauges are tied to two benchmarks and leveling exercises are conducted annually to ensure that there is no movement in the sensors and tide boards.

Tidal Gauge
Source: Hydrographic Unit, Lands and Survey Division

Related Issues with Tidal Stations

As stated above the tidal network established in 2009 comprised of 6 tidal monitoring stations, since then there were many challenges experienced in keeping the tidal stations operational. It was discovered that tidal station on the East coast of Trinidad was extremely difficult to operate due to the high wave energy this coast experiences between November and June. Due these wave conditions the Hydrographic Unit lost the Toco gauge pressure sensor after only four months of operation. The pressure sensors that were supplied with the gauges also began to fail in a relatively short time after installation, either giving no response, or developing drifts and offsets. It is therefore necessary to visit these gauges on a monthly basis to do sensor calibrations so offsets can be determined, to correct the collected data. Many ports were also upgraded within the recent past, so gauges had to be removed to facilitate improvements, such as Galeota Port.
8. **Information on Tsunami occurrences/Tsunami Exercises**

*Please include sea level observations, pictures, wave arrival descriptions, public, media, or other responses to warnings, lessons learned, etc.*

According to the Seismic Research Unit of the University of the West Indies, there are no properly recorded incidents of tsunamigenic activity in Trinidad and Tobago. However, they recently discovered a document entitled "Adventures in the Wars of the Republic and the Consulate" by M. Alexandre Moreau De Jonnes. In this document, M. De Jonnes was in the Eastern Caribbean and visited Trinidad some time between 1795 and '96. He described a strong earthquake in Port-Of-Spain that produced a Tsunami. He describes the Captains efforts to save the canoe they travelled on: "On the first shock being felt on the quay, he had made every man take his place on board; this measure had saved the canoe from the ill-effects of the earthquake on the waters of the port. Twice had the sea ebbed out of sight, leaving vessels high and dry, but it had returned with a rush, and had filled and turned over every vessel which was not properly prepared. The canoe, manned by its oarsmen, had suffered no harm". At this time, no supporting evidence or documents appear to exist to verify the report.

In September 2005, a series of large swells inundated several beaches in Trinidad and Tobago. Coastal property such as vending stalls and boats were damaged. Many curious onlookers converged on the beaches. The lesson learned here was that there was a lack of knowledge regarding awareness of and preparedness for tsunami and coastal hazards.

Since 2011, the ODPM participated in all the Tsunami exercises organized by the ICG/CARIBE EWS, with the level of participation increasing each year. In 2014 and 2015, the Tsunami Exercise was part of a much larger National Disaster Exercise, spanning three days.

Currently, the Tsunami Exercise conducted in March each year, is the only tsunami-related exercise conducted in Trinidad and Tobago annually.

9. **Web sites (URLs) of national tsunami-related web sites**

- [www.uwiseismic.com](http://www.uwiseismic.com)  Seismic Research Centre Webpage
- [www.weready.org](http://www.weready.org)  CDEMA Earthquake and Tsunami Portal
- [www.metoffice.gov.tt](http://www.metoffice.gov.tt)  Trinidad and Tobago Meteorological Services
- [www.odpm.gov.tt](http://www.odpm.gov.tt)  Office of Disaster Preparedness and Management
- [www.tema365.com](http://www.tema365.com)  Tobago Emergency Management Agency

10. **Summary plans of future tsunami warning and mitigation system improvements.** *This information will be used to aid the development of the CARIBE EWS Implementation Plan.*

There are a number of initiatives to geared towards upgrading the Tide Gauge Network and improving tsunami warning and mitigation systems in Trinidad and Tobago.
Hydrographic Unit, Land and Survey Division

This Unit has acquired two (2) microwave sensors to replace the pressure sensors at Port-of-Spain and Scarborough. The Unit is currently in the process of constructing the hardware required for the installation of the sensors onto the existing data loggers and transmitters. The pressure sensors removed from these sites would be utilized in the re-installation of the Galeota Gauge at the recently completed Galeota Port.

Trinidad and Tobago Meteorological Service (TTMS)

TTMS will soon embark on a programme to strengthen the tidal monitoring network in Trinidad and Tobago. It is anticipated that by 2018, they would have deployed and commissioned six (6) new stations throughout Trinidad and Tobago. The system will provide data in real time to Global Telecommunication System (GTO) for which PTWS is a member, and other international organisational as deemed necessary.

Office of Disaster Preparedness and Management (ODPM)

As the National Disaster Office and within its remit of the National Tsunami Warning Center, the ODPM initiated programme (Community Organised and Ready for Emergencies) geared towards preparing the populace for all hazards, tsunami being one. Special attention is placed on persons living and working within coastal regions. The Office, in collaboration with the Municipalities, the Ministry of Education and other first responders have developed and rolling out a Safer Schools programme in Trinidad and Tobago. The ODPM has identified, that there are approximately 131 schools at least 2 miles from the coastline that is deemed, at risk to tsunamis. Under the Safer Schools programme, these at risk schools will be engaged in programme geared to improving the overall preparedness for Tsunamis and other hazards. Emergency response plans will be developed for each school and tested annually.

The ODPM also plans to improve the early warning system at the community level through the introduction of Early Warning Points. This solution was modelled after the Risk Reduction Management Center model from Cuba. A pilot was successfully conducted in South-East Trinidad
in the municipality of Mayaro/ Rio Claro. Discussions are on-going to replicate this initiative throughout Trinidad. Community leaders (EWP) will be given preparedness training and tsunami signage will be installed in coastal communities.

Seismic Research Center (SRC)

The Centre completed and rolled out an Earthquake Automatic Solutions and Reporting System, a system. Based on the SeisComP3 software (a seismological software for data acquisition, processing, distribution and interactive analysis of earthquake data), system has the capability to produce generally reliable solutions, as long as there are sufficient number of stations and a good azimuthal coverage in the monitored area. Solutions are automatically disseminated to selected subscribers via Email, SMS. Rapid public feed are also sent the social network via Facebook and Twitter.

Completed the eleven-station upgrade/expansion of the network of strong motion instruments in the eastern Caribbean. The following are the locations of the new/upgraded installations. Data are streamed via internet to the SRC

- St. Georges, Grenada (Strong motion only)
- Cave Hill, Barbados (Strong motion only)
- Castries, St. Lucia (Strong motion only)
- Bordelais, St. Lucia (Strong motion and Broadband seismometer)
- Kings Town, St. Vincent (Strong motion only)
- Morne Daniel, Dominica (Strong motion and Broadband seismometer)
- Roseau, Dominica (Strong motion only)
- Basseterre, St. Kitts (Strong motion only)
- Charlestown, Nevis (Strong motion and Broadband seismometer)
- Boggy Peak, Antigua (Strong motion and Broadband seismometer)
- St. Johns, Antigua (Strong motion only)

SRC, represented by Mr. Lloyd Lynch attended and participated in the December 4-5 meeting convened by the ICG/CARIBE EWS Task Team on Tsunami Services Model. This meeting was held in Cartagena, Columbia and facilitated discussions on suitable future Tsunami Services Model for the Caribbean region. However, due to an inconsistent level of support from its contributing territories, SRC has adopted the position to continue to upgrade its monitoring capabilities and base capacity towards the target goal of becoming adequately equipped to function as a Tsunami Service Provider institution. The Seismic Research Centre has emphatically stated that they “CANNOT and WILL NOT accept this responsibility unless its supporting regional governments provide the necessary financial commitment to do so”.

SRC also participated in the final CHILE-SPANA workshop on “Regional Seismic and Tsunami Risk”, held in Jamaica from 3rd March – 4th March, 2015. SRC delivered a presentation on Seismic Risk in the Caribbean.
NATIONAL PROGRAMMES AND ACTIVITIES INFORMATION

11. EXECUTIVE SUMMARY

Brief statement of no more than one page addressing all items discussed in the Narrative section of the National Report (below)

Having adopted the Sendai Framework for Disaster Risk Reduction 2015 – 2030, formerly the Hyogo Framework for Action (2005 – 2015) and the Regional Comprehensive Disaster Management Framework (2014 – 2024), coupled with our national CDM Policy Framework 2010, the Government of the Republic of Trinidad and Tobago remains committed to reducing vulnerability and building resilience in Trinidad and Tobago. The Office of Disaster Preparedness and Management coordinate and collaborate with all stakeholders (Public and Private sector, civil society and academia) to mainstream the concept of comprehensive disaster management in all spheres of society. The report seeks to highlight the progress made in addressing the tsunami risk in Trinidad and Tobago through a number of initiatives.

A summary of the main tsunami-related initiatives included:

- National stakeholder consultation to review / update the National Tsunami Protocol
- National drill with Caribe Lantex
- Expansion of the multi-hazard Sirens implementation programme in South-West Tobago
- Expansion of Tsunami Signage Programme
- Safer Schools Programme – Emergency preparedness for schools within coastal communities
- Climate-Smarting and Enhancement of the Country Work Programme
- Implementation of Community-based Early Warning Systems
- Community Organised and Ready for Emergencies (CORE) Programme

12. NARRATIVE

Detailed description of innovations or modifications to National tsunami warnings procedures or operations since last National Report, tsunami research projects, tsunami mitigation activities and best practices (especially in preparedness and emergency management), tsunami exercises, as well as public education programmes or other measures taken to heighten awareness of the tsunami hazard and risk.

Since the last national report the Office of Disaster Preparedness and Management (ODPM) in collaboration with the University of the West Indies, Seismic Research Centre (UWI, SRC) hosted a Seminar in October 2014, in an effort to enhance the national mechanisms for notification and dissemination of warning information for Tsunamis and other Coastal Hazards in Trinidad and Tobago (T&T). Subsequent to the seminar, a stakeholder meeting was held which sought to close the gaps identified in the Tsunami Protocol.
Other research projects included collaboration with SRC together with Regional partner, the Caribbean Emergency Disaster Management Agency (CDEMA). Last year 2014, the ODPM in conjunction with CDEMA hosted and facilitated Climate Smarting and Enhancement of the CDM Country Work Programme through climate smarting consultations. ODPM also invested in creating visibility of Tsunami Awareness Signs at major beaches across Trinidad and Tobago and continues to advocate preparedness measures through various such as our Communities Organized and Ready for Emergencies Programme (CORE), Safer Schools and Lifeguard Training Programmes.

In addition, ODPM participated in the Caribe Wave/LANTEX 2015 Regional Tsunami Exercise which sought to evaluate schools along the coastlines and evaluate the overall readiness of Trinidad and Tobago to respond to a local/regional source tsunami. Tested the tsunami preparedness of 131 vulnerable schools within two (2) miles from the Trinidad and Tobago coastline.

Other areas of focus included:

- Testing the resiliency of national disaster communication mechanisms in particular, emergency telecommunication and crisis communication systems before, during and after a national disaster.
- Examining the implementation of a humanitarian operations coordination mechanism that will efficiently direct resources through the appropriate national agencies.
- Executing efficient command, control and coordination of first responders to the consequences resulting from various hazards in Trinidad and Tobago at the National Emergency Operation Centre.

Prepared By
National Tsunami Warning Center
Office of Disaster Preparedness and Management, Trinidad and Tobago

Approved By
Dr. Stephen Ramroop,
Chief Executive Officer,
The Office of Disaster Preparedness and Management

Date
18th May 2015
## APPENDIX A : LOCAL Tsunami <1 hr

### 1. SOP A IMMEDIATE ACTIONS CHECKLIST

**Meteorological Services Duty Officer (TWFP)** must review the message from the Pacific Tsunami Warning Centre (PTWC) and learn if the tsunami is forecast to arrive at Trinidad and Tobago.

#### a. Does not threaten Trinidad and Tobago.

After assessment of the Bulletin, the Meteorological Services (TWFP) determines the event does not threaten Trinidad and Tobago coastlines. The Meteorological Services faxes the information to the ODPM and should continue to monitor information about the event and contact the ODPM/TEMA to advise that a Tsunami Bulletin was received and subsequently faxed; that assessment shows that it will not impact Trinidad and Tobago; and that no further action is required. (Use Attachment A for directory of ESF Contact Information)

The ODPM Call Centre will then immediately notify the TNC (CEO of the ODPM) and alternates of the Tsunami Bulletin

**ODPM/TEMA**

i. Contact the ESF for the Trinidad and Tobago Police Service.
ii. Contact the ESF for the Trinidad and Tobago Fire Service.
iii. Contact the ESF for the Trinidad and Tobago Defence Force.
iv. Contact the Trinidad and Tobago Media Houses.
v. Contact any Other relevant ESF’s (NEOC Standard Operating Procedures)
vi. Advise all that assessment shows that it will not impact Trinidad and Tobago and that no further action is required.

#### b. Tsunami threatens Trinidad and Tobago.

A local earthquake in excess of Mag 6.5 at less than 100 km depth in the waters adjacent to Trinidad and Tobago will likely produce a Tsunami that will impact coastal areas in 20 minutes or less.

i. If the Tsunami message arrives from the PTWC before the waves, the TWFP contacts the Office of Disaster Preparedness and Management (ODPM) and Tobago Emergency Management Agency (TEMA) by phone first to advise of an imminent Tsunami threat and then faxes the Watch message. If the first waves have already arrived and the TWFP is aware of this, then the normal protocol of faxing first and then confirming by phone should be observed.

**ODPM/TEMA**

Local Tsunami


For a local Tsunami, it is likely that the first waves will strike before an official warning can be issued. However, all effort must be made to get the message out, as it is always uncertain how many waves will impact the area and their duration.

**Anticipated Regional Tsunami**

i. On issue of the callout notice by the CEO of the ODPM, contact the Emergency Support Functionaries and advise of callout to deal with potential Tsunami situation. This exercise must be rushed to completion, because of the likelihood of the first waves arriving in less than three hours.

ii. Contact the Trinidad and Tobago Coast Guard and Port Authority of Trinidad and Tobago and advise of Tsunami threat.

**Initiate Evacuation.**

i. Evacuate all vulnerable coastal areas to established Muster Points. (Use Attachment B for Listing of Vulnerable Coastal Areas.)

And

ii. Notify Civil Authorities. (Use Attachment A for directory of ESF Contact Information)

iii. Liaise with Municipal Corporations with respect to response to Tsunami threat and opening of shelters to house evacuees.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.</strong></td>
<td>ACTIVATE PUBLIC AND PRIVATE ALERTING (Use Attachment C, for Listing of Alerting Devices and Directory of Contact Information for Device Activation)</td>
</tr>
</tbody>
</table>
| **3.** | The ODPM must contact the ESF for the *Trinidad and Tobago Defence Force* and confirm receipt of a Tsunami Watch Bulletin and if not, give all available information on the event. (Use Attachment G for Broadcast Message to Mariners.)  
*Note:* Because a Tsunami is a sudden onset event, no time must be lost in attempting calls to ESF; **call COAST GUARD OPERATIONS CENTER immediately** if ESF is not available. |
| **4.** | The ODPM must contact the ESF for the *Port Authority of Trinidad and Tobago*. Advise Tsunami Alert. (Use Attachment G for Broadcast Message to Mariners.)  
*Note:* Because a Tsunami is a sudden onset event, no time must be lost in attempting calls to ESF; **call the Port Authority directly** if ESF is not available. |
| **5.** | CONTACT RADIO, TV, AND CABLE BROADCAST STATIONS. (Use Attachment D, for Directory of Broadcast Media Partner Contact Information). Advise -- Tsunami Evacuation Alert (Use Attachment F for Broadcast Message—Tsunami Evacuation Alert)  
Or  
b. Evacuate all vulnerable coastal areas. (Use Attachment B for Listing of Vulnerable Coastal Areas.) |
| **6.** | CONTACT CELL PROVIDERS AND ESTABLISHED CALL CENTRES. (Use Attachment E for Directory of Cell Service Company Partner’s Contact Information.) |
| **7.** | Meteorological Services Duty Officer reports to the NEOC Director, ODPM to provide continuing assistance throughout the remainder of the alert. |
| **8.** | Meteorological Services Duty Officer issues cancellation of Tsunami Watch and reports to the NEOC Director, ODPM at the NEOC of same. ODPM institutes deactivation protocols (NEOC SOPs) |
| **9.** | End of procedure. |
# APPENDIX B : REGIONAL Tsunami (1 - 3 hrs)

## 1) SOP B IMMEDIATE ACTIONS CHECKLIST

Meteorological Services Duty Officer must review the message from the PTWC and learn if the tsunami is forecast to arrive at Trinidad and Tobago.

### a. If the event does not threaten Trinidad and Tobago.

- If after assessment of the Bulletin, the Meteorological Services (TWFP) determines the event does not threaten Trinidad and Tobago's coastlines, they should continue to monitor information about the event. The TWFP must contact the ODPM/TEMA immediately to advise that a Tsunami Bulletin was received and forwarded by fax; that assessment shows that it will not impact Trinidad and/or Tobago and that no further action is required. (Use Attachment A for Directory of ESF’s Contact Information)

#### ODPM/TEMA

1. Contact the ESF for the Trinidad and Tobago Police Service.
2. Contact the ESF for the Trinidad and Tobago Fire Service.
3. Contact the ESF for the Trinidad and Tobago Defence Force.
4. Contact the Trinidad and Tobago Media Houses.
5. Contact any other relevant ESF (NEOC Standard Operating Procedures)
6. Advise all the above stakeholders that assessment shows that it will not impact Trinidad and Tobago and that no further action is required.

### b. Tsunami threatens Trinidad and Tobago.

**Current:**

- Trinidad and Tobago’s Meteorological Services Duty Officer will send fax / email and initiate telephone call to the NTWS (ODPM) to verify receipt of Watch message. NTWS (ODPM) relays message to TEMA and conduct assessment of tsunami wave arrival time, potential for size of wave, etc. Following this discussion, Trinidad and Tobago Meteorological Services Duty Officer should proceed with remainder of the SOP.

**Or**

**Future:**

- Trinidad and Tobago Meteorological Services Duty Officer will participate in a CTWC Conference Call (this will only be possible once the CTWC is built and operational)

- Conference Call in Number: ____________________________
- Participant Code: ____________________________

- Following the Conference Call, Trinidad and Tobago National TWFP Duty Officer should proceed with remainder of the SOP

### c. The CEO of the ODPM initiates activation of the NEOC and callup of ESF’s.

### d. Members of the ODPM PRU/ Call Centre immediately contact ESF’s, advise of formation of Tsunami and expected Tsunami Arrival Time. Priority should be given to those with Maritime interests and/or with major coastal infrastructure. (Use Attachment A for Directory of ESF’s Contact Information)

## 2) ACTIVATE PUBLIC ALERTING (Use Attachment C for listing of alerting devices and directory of contact information device activation)

## 3) The ODPM must contact the ESF for the **Trinidad and Tobago Coast Guard** and advise of a Tsunami Watch, giving all available information on the event. (Use Attachment G for Broadcast Message to Mariners.)

**Note:** Because a Tsunami is a sudden onset event, no time must be lost in attempting calls to ESF; call COAST GUARD DISPATCH immediately if the ESF is not available.

## 4) The ODPM must contact the ESF for the **Port Authority of Trinidad and Tobago** and advise of
5. CONTACT AMATEUR RADIO, COMMERCIAL RADIO, TV, AND CABLE BROADCAST STATIONS. (Use Attachment D for Directory of Broadcast Media Partner Contact Information). Advise -- Tsunami Evacuation Alert (Use Attachment F for Broadcast Message—Tsunami Evacuation Alert)
   Or
   [ ] b. Evacuate all vulnerable coastal areas. (Use Attachment B, for Listing of Vulnerable Coastal Areas.)

6. CONTACT CELL PROVIDERS. (Use Attachment E for Directory of Broadcast Media Contact Information.)

7. Meteorological Services Duty Officer (TWFP) reports to the NEOC Director, Office of Disaster Preparedness and Management at the NEOC to provide continuing assistance throughout the remainder of the alert.

8. Meteorological Services Duty Officer issues cancellation of Tsunami Watch and reports to the NEOC Director Office of Disaster Preparedness and Management at the NEOC of same. ODPM institutes deactivation protocols (NEOC SOPs)

APPENDIX C : REGIONAL Tsunami (3 -8 hrs)

1 | **SOP C IMMEDIATE ACTIONS CHECKLIST**
Meteorological Services Duty Officer must review the message from the PTWC and learn if the tsunami is forecast to arrive at Trinidad and Tobago.

   - **If the event does not threaten Trinidad and Tobago.**
     If after assessment of the Bulletin, the Meteorological Services (TWFP) determines the event does not threaten Trinidad and Tobago’s coastlines, they should continue to monitor information about the event. The TWFP must contact the ODPM/TEMA immediately to advise that a Tsunami Bulletin was received and forwarded by fax; that assessment shows that it will not impact Trinidad and/or Tobago and that no further action is required. (Use Attachment A for Directory of ESF’s Contact Information)
     **ODPM/TEMA**
     - i. Contact the ESF for the Trinidad and Tobago Police Service.
     - ii. Contact the ESF for the Trinidad and Tobago Fire Service.
     - iii. Contact the ESF for the Trinidad and Tobago Defence Force.
     - iv. Contact the Trinidad and Tobago Media Houses.
     - v. Contact any other relevant ESF (NEOC Standard Operating Procedures)
     - vi. Advise all the above stakeholders that assessment shows that it will not impact Trinidad and Tobago and that no further action is required.

   - **Tsunami threatens Trinidad and Tobago.**
     **Current:**
     Trinidad and Tobago’s Meteorological Services Duty Officer will send fax / email and initiate telephone call to the NTWS (ODPM) to verify receipt of Watch message. NTWS (ODPM) relays message to TEMA and conduct assessment of tsunami wave arrival time, potential for size of wave, etc. Following this discussion, Trinidad and Tobago Meteorological Services Duty Officer should proceed with remainder of the SOP.

     **Future:**
     Trinidad and Tobago Meteorological Services Duty Officer will participate in a CTWC Conference Call (this will only be possible once the CTWC is built and operational)
     Conference Call in Number:______________________________
     Participant Code:______________________________
     Following the Conference Call, Trinidad and Tobago National TWFP Duty Officer should proceed with remainder of the SOP

   - **c. The CEO of the ODPM initiates activation of the NEOC and callup of ESF’s.**

   - **d. Members of the ODPM PRU/ Call Centre immediately contact ESF’s, advise of formation of Tsunami and expected Tsunami Arrival Time. Priority should be given to those with Maritime interests and/or with major coastal infrastructure. (Use Attachment A for Directory of ESF’s Contact Information)**

2 | **ACTIVATE PUBLIC ALERTING** (Use Attachment C for listing of alerting devices and directory of contact information device activation)

3 | The ODPM must contact the ESF for the **Trinidad and Tobago Coast Guard** and advise of a Tsunami Watch, giving all available information on the event. (Use Attachment G for Broadcast Message to Mariners.)

   - **Note:** Because a Tsunami is a sudden onset event, no time must be lost in attempting calls to ESF; call COAST GUARD DISPATCH immediately if the ESF is not available.
|   | The ODPM must contact the ESF for the **Port Authority of Trinidad and Tobago** and advise of a Tsunami Watch. (Use Attachment G for Broadcast Message to Mariners.)  
**Note:** Because a Tsunami is a sudden onset event, no time must be lost in attempting calls to ESF; call the PORT AUTHORITY immediately if the ESF is not available. |
|---|---|
| 5 | CONTACT AMATEUR RADIO, COMMERCIAL RADIO, TV, AND CABLE BROADCAST STATIONS. (Use Attachment D for Directory of Broadcast Media Partner Contact Information). Advise -- Tsunami Evacuation Alert (Use Attachment F for Broadcast Message—Tsunami Evacuation Alert)  
Or  
[ ] b. Evacuate all vulnerable coastal areas. (Use Attachment B, for Listing of Vulnerable Coastal Areas.) |
| 6 | CONTACT CELL PROVIDERS. (Use Attachment E for Directory of Broadcast Media Contact Information.) |
| 7 | Meteorological Services Duty Officer (TWFP) reports to the NEOC Director, Office of Disaster Preparedness and Management at the NEOC to provide continuing assistance throughout the remainder of the alert. |
| 8 | Meteorological Services Duty Officer issues cancellation of Tsunami Watch and reports to the NEOC Director Office of Disaster Preparedness and Management at the NEOC of same. ODPM institutes deactivation protocols (NEOC SOPs) |
| 9 | End of procedure. |