ICG/NEAMTWS Task Team on Communication Test and Tsunami Exercises

NEAMTWS
Communication Tests Exercises

Öcal Necmioğlu

Bogaziçi University
Kandilli Observatory and Earthquake Research Institute
Istanbul-Turkey

co-chair of
ICG/NEAMTWS Task Team on Communication Test and Tsunami Exercises

NEAMWave12 Workshop, Southampton-UK, 10 September 2012
End-to-End Chain starts with data collection and ends with saving lives.

(Figure from Tsunami Warning Reference Guide)
ICG/NEAMTWS Task Team on Communication Test and Tsunami Exercises

Right...

 그래프, 원고, 그림... information

 그래프, 원고, 그림... time

 그래프, 원고, 그림... place

 그래프, 원고, 그림... people

NEAMWave12 Workshop, Southampton-UK, 10 September 2012
The Candidate Tsunami Watch Providers (CTWP), National Tsunami Warning Centres (NTWC) and Tsunami Warning Focal Points (TWFP) must keep a high level of readiness so as to be able to act efficiently and effectively to provide watch (CTWP) and warnings (NTWC/TWFP) for the public’s safety during fast-onset and rapidly-evolving natural disasters like the tsunamis.

To maintain this high state of operational readiness, and especially for infrequent events such as tsunamis, tsunami watch/warning centres and emergency agencies must regularly practice their response procedures to ensure that vital communication links work seamlessly, and that agencies and response personnel know the roles that they will need to play during an actual event.
The original operational concept was to establish, where possible, National Tsunami Warning Centres in each country responsible for issuing warnings to the relevant authorities in the Member State. In addition, some of the Centres were envisaged to act as Regional Tsunami Watch Centres with responsibilities for providing tsunami alerts in particular regions.

Following further consideration that also took account of developments by other ICGs and recommendations by TOWS encouraging standardization where appropriate, the concept which has evolved is that of Tsunami Watch Providers and Tsunami Watch Recipients.

Tsunami Watch Providers are those NTWCs willing and able to provide tsunami alert information to other Member States at designated Forecast Points; Watch Recipients are those Tsunami Warning Focal Points choosing to receive such information.
In order to be recognized as part of NEAMTWS, Tsunami Watch Providers must meet a number of requirements and be approved by the ICG of NEAMTWS. Until these conditions are met they will be referred to as ‘Candidate’ Tsunami Watch Providers. The relevant accreditation procedure is being developed at the moment to be approved at the next session of ICG/NEAMTWS.

A key aspect of this approach is that Tsunami Watch Providers do not have designated geographical areas of responsibility.

Member States will have the freedom to decide from which candidate Tsunami Watch Provider(s) they would like to receive tsunami messages. A Member State will be able to receive tsunami messages from more than one Provider.
Present Status of NEAMTWS

As today, the NEAM region is the only area in the Globe affected by destructive tsunamis in its past but where there is not any accredited and/or fully tested Early Warning System in operation.

France and Turkey both declared their CTWP status as of 1 July 2012, followed by Greece on 28 August 2012.
Initial CTEs

Initial CTEs were planned, conducted and evaluated by the a Task Team on Communication Test Exercises (TT-CTE) in June and September 2010.

The scope of these exercises was limited to the Tsunami Watch Providers candidates at this time (Greece, France, Portugal and Turkey), in order to make a thorough evaluation on the procedures to broadcast and receive the tsunami messages.
The communication links used were limited to e-mail and fax.

Despite the small-scale and limitations, these two first Communication Test Exercises provided the required capacity building that opened the way to the first Enlarged Communication Test.
Conclusions from Initial CTEs

- All participants found the exercises useful and the few anomalies detected demonstrated the need for a regular schedule of CTEs.

- All participants performed an extended set of activities at their institutions to prepare them for the exercises.

- A set of technical recommendations and suggestions were elaborated that need to be addressed in future exercises.

- The NEAMTWS is mature for an extended Communication Test Exercise.
ICG/NEAMTWS Task Team on Communication Test and Tsunami Exercises

Structure of the CTE

CTE Manual

---

CTWP

E-MAIL

FAX

TWR

TWFP and CTWP

Evaluation Questionnaire for CTWP

GTS

Evaluation Questionnaire for TWR

INITIAL REPORT BY CTWP

FINAL REPORT AFTER TT-CTTE REVIEW AND APPROVAL

NEAMWave12 Workshop, Southampton-UK, 10 September 2012
The first Enlarged Communication Test Exercise was conducted on 10 August 2011.

Message Provider: KOERI (Turkey)

E-mail, fax and GTS

ECTE1 was realized with the participation of 139 end-users, belonging to 42 agencies in 31 countries.
The second NEAMTWS Communication Test Exercise was conducted on 22 August 2012.

Message Provider: CENALT (France)

E-mail, fax and GTS

ECTE1 was realized with the Participation 31 countries.
ICG/NEAMTWS Task Team on Communication Test and Tsunami Exercises

CTE Messages

TEST MESSAGE FOR EMAIL AND FAX

Subject: TSUNAMI COMMUNICATION TEST MESSAGE NUMBER 001

Body:

TSUNAMI COMMUNICATION TEST MESSAGE NUMBER 001
KANDILLI OBSERVATORY AND EARTHQUAKE RESEARCH INSTITUTE (KOERI)

ISSUED AT 1036Z 10 AUG 2011

... TSUNAMI COMMUNICATION TEST

THIS TEST APPLIES TO ... CGCCR(BELGIUM)... BAS(BULGARIA)... INMG(CAPE VERDE)... NPGD(CROATIA)... OOC(CYPRUS)... DMI(DENMARK)... NIFAG(EGYPT)... EMI(ESTONIA)... FM(FINLAND)... CENALT(FRANCE)... BSH(GERMANY)... NDW(GERMANY)... NGUG(GREECE)... DPC(ITALY)... NCRR(LEBANON)... MFA(MALTA)... SPMC(MONACO)... KNMI(NETHERLANDS)... DSB(NORWAY)... NHQFSPOLAND)... IM(PORTUGAL)... NIPPHON(Romania)... NPO(Turkey)... TFRO(UK)... DEMP(TURKEY)... FDQ(UNITED KINGDOM)

FROM – KANDILLI OBSERVATORY AND EARTHQUAKE RESEARCH INSTITUTE (KOERI)

TO – TWFP PARTICIPANTS IN THE FIRST NEAMTS ENLARGED COMMUNICATION TEST EXERCISE

SUBJECT – FIRST NEAMTS ENLARGED TSUNAMI COMMUNICATION TEST

THIS IS A TEST TO VERIFY COMMUNICATION LINKS AND DETERMINE TRANSMISSION TIMES INVOLVED IN THE DISSEMINATION OF OPERATIONAL TSUNAMI MESSAGES FROM THE CANDIDATES TO REGIONAL TSUNAMI WATCH CENTERS AND TO TSUNAMI WARNING FOCAL POINTS OF THE NEAMTS TSUNAMI WARNING SYSTEM

RECIPIENTS ARE REQUESTED TO FILL THE EVALUATION QUESTIONNAIRE AND SEND IT ACCORDING TO THE NEAMTS-CTE TEST INSTRUCTIONS

THANK YOU FOR YOUR PARTICIPATION IN THIS COMMUNICATION TEST

THIS WILL BE THE FINAL MESSAGE ISSUED

TSUNAMI COMMUNICATION TEST MESSAGE NUMBER 001

NEAMWave12 Workshop, Southampton-UK, 10 September 2012
CTE Evaluation Reports

Intergovernmental Oceanographic Commission
Technical Series

TSUNAMI EARLY WARNING
AND MITIGATION SYSTEM
IN THE NORTH-EASTERN ATLANTIC,
THE MEDITERRANEAN
AND CONNECTED SEAS

First Enlarged Communication
Test Exercise (ECTE1)

Exercise Manual & Evaluation Report

UNESCO

Intergovernmental Oceanographic Commission

TSUNAMI EARLY WARNING
AND MITIGATION SYSTEM
IN THE NORTH-EASTERN ATLANTIC,
THE MEDITERRANEAN
AND CONNECTED SEAS

Second Enlarged Communication
Test Exercise (CTE2)

Evaluation Report

UNESCO
Summary and Conclusions of ECTE1

Through the ECTE1, ICG/NEAMTWS was able to test the communication related issues with 139 end-users belonging to 42 agencies in 31 countries for the first time.

27 new recommendations were provided in order to improve all aspects of a CTE, ranging from the manual to the interaction with the media, but especially focusing on the technical and procedural improvements.

19 countries of 31 (61%) have actively participated in ECTE1, which should be considered as a good level of participation, especially considering that this was the first test with the participation of TWFPs.

Some technical problems during the ECTE1 have helped to clearly identify certain operational and procedural issues on which NEAMTWS should conclude some guidelines.
ICG/NEAMTWS Task Team on Communication Test and Tsunami Exercises

**Summary and Conclusions of CTE2**

- CTE2 was a successful test with the participation of 31 countries.

- Most of the recommendations previously introduced in the First Enlarge Communication Test Exercise (ECTE1) were successfully implemented, and some of the problems faced during ECTE1 have been successfully resolved.

- There are still some ongoing problems which need further attention.

- An improvement in the fax and GTS message latencies has been observed and e-mail message latencies are comparable with ECTE1.

- The number of actively participating countries increased from 20 to 26 with respect to ECTE1.
Future CTEs

In the future, the conduct of the CTEs should be expected as the responsibility of CTWPs as a regular activity, where the TT-CTTE should perform an oversight role and should be responsible for the validation only.

\[
\# \text{ of CTWPs} \propto \# \text{ of CTEs}
\]

Need to simplify and optimize the evaluation!

CTE Performance Indicators

The performance indicators are grouped into two major sets, one characterizes the universe of the exercise participants and the second one summarizing the technical details of the exercise results. The “CTE Performance Indicators” document is closely linked and cross-referenced to the CTE Manual and will be updated by the TT-CTTE co-chairs after each CTE.
ICG/NEAMTWS Task Team on Communication Test and Tsunami Exercises

CTE Performance Indicators

Indicators on the Participants Universe
- Registered TWFP and TNC
- Messages distribute
- Evaluation questionnaires received

Indicators on the Exercise Preparation
- Synchronization of PCs
- Synchronization of Fax machines

Indicators on Message Delivery
- Success of e-mail message delivery
- Success of e-mail reception
- Latency of e-mail messages
- Success of fax message delivery
- Delivery time of fax messages
- Fax transmission time
- Latency of fax messages
- Latency of fax messages measured from delivery time
- Latency of GTS messages.
- Latency of 1st message to be received by each country
- Type of the 1st message that was received by each country
CTE Manual Update

- CTE Manual underwent considerable improvement during both preparation and evaluation phases of CTE2. The manual provides detailed information and guidance on the preparation, conduct and evaluation of a CTE.

- A CTE Timeline Flowchart has been provided as an Annex to use as a quick-guide for the CTE covering the most essential issues and a CTE Checklist is has been provided in another Annex as a process control mechanism for all parties involved in the CTE.

- Some procedures are clarified, whereas some procedures have been improved, where appropriate.
ICG/NEAMTWS Task Team on Communication Test and Tsunami Exercises

CTE Manual

TABLE OF CONTENTS
1. INTRODUCTION
2. PREPARATION OF NEAMTWS-CTE
3. DESCRIPTION OF NEAMTWS-CTE
4. REQUIREMENTS AND GUIDELINES FOR THE COMMUNICATION TECHNOLOGIES TO BE USED IN NEAMTWS-CTE
   4.1 General Requirements
   4.2 Requirements for E-mail
   4.3 Requirements for Fax
   4.4 Requirements for GTS
      4.4.1 GTS Capacity Building
5. MESSAGE SECURITY
6. EXERCISE PARTICIPANTS
7. EVALUATION OF NEAMTWS-CTE
8. SMALL SCALE COMMUNICATION TEST EXERCISE (SSCT)
9. REFERENCES

ANNEXES
ANNEX I.A SAMPLE TEST MESSAGES FOR E-MAIL AND FAX
ANNEX I.B SAMPLE TEST MESSAGES FOR GTS
ANNEX II.A INFORMATION ON MESSAGE PROVIDER
ANNEX II.B INFORMATION ON MESSAGE RECEIVER
ANNEX III.A EVALUATION QUESTIONNAIRE FOR MESSAGE PROVIDER
ANNEX III.B EVALUATION QUESTIONNAIRE TO MESSAGE RECEIVER
ANNEX IV GENERAL OVERVIEW OF GTS
ANNEX V GTS HEADER FORMAT FOR TSUNAMI MESSAGES
ANNEX VI LIST OF NATIONAL METEOROLOGICAL SERVICES IN NEAM REGION
ANNEX VII EXAMPLE OF MESSAGE DETAILS AVAILABLE IN THE SERVER MAIL BOX
ANNEX VIII EXAMPLE OF TIME STAMPS ON A FAX MESSAGE
ANNEX IX CTE FIRST ANNOUNCEMENT MESSAGE TEMPLATE
ANNEX X CTE SECOND ANNOUNCEMENT MESSAGE TEMPLATE
ANNEX XI CTE TIMELINE FLOWCHART
ANNEX XII CTE CHECKLIST
CTE Manual Update: Timeline Flowchart

**Week -4**

First announcement from official IOC channels to all TWFPs/TNCs registered in the NEAMTWS. CTE Manual and CTE Performance Indicators document should also be sent at the first announcement as an attachment and the announcement should clearly indicate from where this Manual could be downloaded.

**Week -1**

Second announcement sent by the Message Provider via e-mail. Evaluation Questionnaire to Message Receiver (Annex III.B) should also be distributed as a word file to the Message Receivers during this second announcement.

**Exercise Day**

The NEAMTWS CTE begins by the broadcast of a Tsunami Test Message by the Message Provider.

The participant NTWC/TWFP receives this message. Operator that receives the message takes note of the time when the message was received by the local equipment (TS1), and the time when the message was read and understood by the operator (TS2).

Evaluation Questionnaires should be filled.

**IOC Secretariat**

**Message Provider**

**Message Receiver**

ICG/NEAMTWS-IX, Southampton-UK, 11-13 September 2012
CTE Manual Update: Timeline Flowchart

**NEAMTWS - CTE**

**Communication Test Exercise Timeline and Responsibilities**

- **Week +1**
  - Evaluation Questionnaires should be sent to the Message Provider via designated e-mail address.
  - **Message Receiver**

- **Week +5**
  - Message Provider prepares the Exercise Report and sends it to TT-CTE co-chairs.
  - **Message Provider**

- **Week +7**
  - TT-CTE co-chairs provide their comments to the Message Provider.
  - **TT-CTE co-chairs**

- **Week +9**
  - If necessary, the Message Provider will update/modify the CTE report accordingly and send it back to the TT-CTE.
  - **Message Provider**

- **Week +11**
  - TT-CTE co-chairs approve the CTE report and send it to IOC Secretariat.
  - **TT-CTE co-chairs**

- **Week +16**
  - IOC Secretariat approves and disseminates the CTE report to Members States.
  - **IOC Secretariat**

- **Week +16 onwards**
  - Member States are invited to provide their comments to IOC Secretariat to be forwarded to TT-CTE co-chairs to elaborate a revised version of the report when necessary.
  - **IOC Secretariat**

ICG/NEAMTWS-IX, Southampton-UK, 11-13 September 2012
### CTE Manual Update: Checklist

<table>
<thead>
<tr>
<th>Time Line</th>
<th>Task Sequence</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week referred to</strong></td>
<td><strong>Action</strong></td>
<td><strong>MP</strong></td>
</tr>
<tr>
<td><strong>Exercises Day</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>-4</strong></td>
<td>The CTE period begins by issuing a test announcement from official JCC channel to all TWP/TNPs registered in NEAMTS, at least 4 weeks in advance of the planned exercise date. This CTE Manual and CTE Performance Indicators should be sent at first announcement as an attachment and the announcement should clearly indicate from where this Manual could be downloaded.</td>
<td></td>
</tr>
<tr>
<td><strong>-4 and -1</strong></td>
<td>During the following 3 weeks period TWP/TNP from Member States (MS) will have the time to correct and update all the contact information. Updates are collected by the IDC Secretariat.</td>
<td></td>
</tr>
<tr>
<td><strong>-1 and 1/2 days</strong></td>
<td>The CTE period is preceded by one week training, by a second attendance announcement sent by the Message Provider via e-mail in order to ensure that the anti-spam and firewall software operating in the Message Recipient’s networks do not block the Communication Test Message. The evaluation Questionnaire Message Receivers (Annex H3) should also be distributed as a word file to the Message Receivers during this second announcement.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>0</strong></td>
<td><strong>Before 0</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The number of e-mail message recipients should be restricted to 2 e-mail addresses per agency and 4 e-mail addresses per member state.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The number of fax message recipients would be restricted to 2 per member state. If 4 agencies and 2 agencies are designated, if a single agency has been designated, both primary and alternate fax numbers would be utilized.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Message Provider should set up the fax servers in such a way so that each recipient fax number will be subject to at least three attempts to send the fax message, where in each attempt the fax recipient will be notified.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Message Recipients are recommended to develop codes to automatically detect GTS messages and send them as internal mail.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operator that receives the correspondence note of the time when the message was received by the local equipment (TS11) and the time when the message was not understood by the operator (TS2).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evaluation Questionnaires should be filed on the day of CTE.</td>
</tr>
<tr>
<td></td>
<td><strong>Before 0</strong></td>
<td><strong>End of 0</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>All communication technology systems should be synchronized.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The number of e-mail message recipients would be restricted to 2 e-mail addresses per agency and 4 e-mail addresses per member state.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The number of fax message recipients would be restricted to 2 per member state. If 4 agencies and 2 agencies are designated, if a single agency has been designated, both primary and alternate fax numbers would be utilized.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Message Provider should set up the fax servers in such a way so that each recipient fax number will be subject to at least three attempts to send the fax message, where in each attempt the fax recipient will be notified.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Message Recipients are recommended to develop codes to automatically detect GTS messages and send them as internal mail.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>The Message Provider broadcasts the Tsunami Test Message</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>In addition to T30, T31E (time stamp of e-mail message) should be reported by the Message Provider</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>In addition to T30, T31F (time stamp of fax message) should be reported by the Message Provider and ASCII Character set should be used in the fax message templates</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>In addition to T30, T31G (time stamp of GTS messages) should be reported and ASCII Character set should be used in the GTN message templates</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>In coordination with the WMO-National Representatives, detailed GTS logs should be acquired both the Message Provider and Message Recipient, where applicable</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Evaluation Questionnaire should be filed on the day of CTE.</strong></td>
</tr>
</tbody>
</table>
ICG/NEAMTWS Task Team on Communication Test and Tsunami Exercises

Thank you...

NEAMWave12 Workshop, Southampton-UK, 10 September 2012