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NTWC STAFF TRAINING COMPETENCIES

PICT-WG Task Team on Capacity Development
PTWS WG2 Task Team: Minimum Competency Levels for
National Tsunami Warning Centre (NTWC) Operations Staff
Co-Chairs

'Ofa Fa'anunu, Tonga Met Svcs and Coast Radio
Laura Kong, ITIC

Relevant activities and Stakeholders



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- Regional – Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS)
 - **PTWS WG2 Task Team: Minimum Competency Levels for National Tsunami Warning Centre (NTWC) Operations Staff**
 - **PTWS PICT WG Task Team on Capacity Development**
- Global –
 - **Task Team on Tsunami Watch Operations** (under IOC Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG) Working Group)
 - **IOC Ocean Teacher Global Academy (OTGA)** – online learning

Progress - TOWS TT-TWO / DMP 2021



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- **Notes** the International Tsunami Information Centre (ITIC) report on the NTWC Competency Framework to the TT-TWO regarding progressing on finalizing the PTWS Framework, and piloting training according to the Framework in Tonga in 2019,
- **Notes** that ITIC and the Indonesia BMKG have been designated as Ocean Teacher Global Academy Specialized Training Centres (OTGA STC) in 2020,
- **Notes** the confirmation by ITIC that it will take the lead to develop such training under the OTGA, in collaboration with the IOC, TICs, practitioner experts, and Indonesia BMKG,
- **Requests** the ITIC to report to the TT on the progress at the next TOWS meeting.

PTWS WG2 Task Team: Minimum Competency Levels for National Tsunami Warning Centre (NTWC) Operations Staff

ICG/PTWS-XXIX.1 (2021)



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This expert Task Team will establish and document the minimum competency levels for NTWC operations staff and develop a framework for the competencies and training requirements of the roles of a NTWC.

1. Establish the minimum competency levels required for NTWC operations staff.
2. Establish a framework for the required competencies required by the roles of a NTWC.
3. Establish what training is required to ensure NTWC staff meeting minimum competency levels.
4. Investigate and document what schemes are currently in existence and what guidelines and principles can be adapted for this purpose.

The Task Team will be composed of Wilfried Strauch (Nicaragua), Ofa Fa'anunu (Tonga), Yuelong Miao (Australia), Chip McCreery (USA), ~~Lara Bland (New Zealand)~~, Laura Kong (USA), and Ken Gledhill (New Zealand). Co-Chairs are Mr Ofa Fa'anunu (Tonga, second term) and Dr Laura Kong (United States, first term)

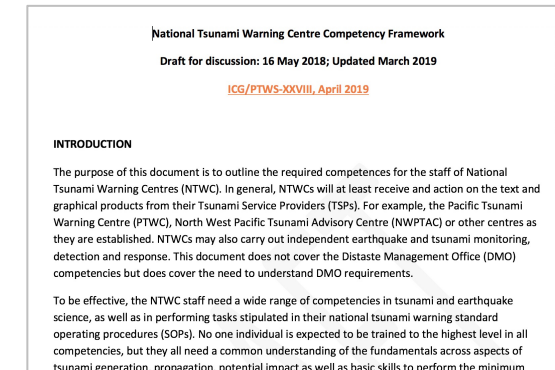
**Draft document, “NTWC Competency Framework”, produced at ICG/PTWS-XXVIII (2019).
Document (on meeting site).**

Competencies

(Tier 1: Comprehensive, Expert, Tier 1: Basic)



- **Core science knowledge: Basic tsunami science / earthquake source knowledge**
- **Advanced science knowledge: Adv tsunami science / earthquake source knowledge, tsunami forecast modelling**
- **Core operational competency**
 - **Understand & use TSP text / graphical products, core set of decision support tools. Perform all core NTCW SOPs**
 - **Identify potential regional, distant, and local source tsunami threats**
- **Advance operational competency**
 - **Understand and produce tsunami threat maps**
 - **Explain relationship of tsunami warning products to evacuation maps and routes**
 - **Use a comprehensive set of decision support tools**
 - **Advanced practical seismology (locate / characterise EQs), sea-level observations: measure & interpret records**
- **Core agency competencies**
 - **Liaise with NDMO and response agencies, Post-event activities, Manage media inquiries and organise TV/Radio interviews, Monitor enquiries from general public, then prioritise response**



PTWS Pacific Island Countries and Territories Working Group Task Team on Capacity Development



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ICG/PTWS-XXIX.1 (2021)

- 1. Continue the development of competency framework for National Tsunami Warning Centres personnel and pilot it in Australia, Vanuatu, Fiji, Samoa and **Tonga** and report progress and lessons learnt to ICG/PTWS WG 1, 2 and 3.**
2. Continue to monitor and coordinate the Pilot Tsunami Ready Programme and TEMPP in Samoa, Tonga, Fiji, Cook Islands, Solomon Islands and Vanuatu and review the Tsunami Ready Checklist for schools and communities in PICT.
3. Continue to develop the guideline for National Tsunami Warning Centres in responding to local tsunami and report to WG 1, 2 and 3.
4. Develop an online survey of warning and mitigation capabilities in the Pacific Island Countries and Territories (Member countries and IOC).

The Task Team Members: Australia, New Caledonia (Co-Chair), Tonga (Co-Chair), Samoa, Vanuatu, New Zealand, Solomon Islands, Fiji, PNG, ITIC, SPREP, SPC, IOC, PTWC. Chair Mr Ofa Fa'anunu (Tonga, third term) .

NTWC Training – Tonga, 14-24 October 2019



- **Tsunami warning:** Detection, Threat analysis, Warning, Dissemination, Cancellation.
- **SOP Topics:** Earthquake / Tsunami science, Warning center operations, PTWC products, Decision-support tools, Public info, Media engagement.
- **Lessons learned past events,** Atypical events (Palu, Anak Krakatau), Emerging Tech
- **Hands-On:** Locating EQs, Estimating Magnitude, Determining Fault Mechanism, Tools: EQ (CISN), Sea Level (Tide Tool, IOC SLMF), Tsunami Travel Time, TsuCAT (forecasts, threat sensitivity by sources), online web sites & databases
- **Tonga SOPs (MOST TIME SPENT):** Emphasis on Local SOP (what is possible), Scenario exercises and SOPs (distant, regional, local)



15 January 2022 – Tonga Met



- **Used TsuCAT**
 - **Create Database of Tonga threat scenarios from diff EQ sources**
 - **Regular (daily) NTWC exercising – previous shift uses TsuCAT to select scenario for next shift to practice**
- **Create “Did you feel it” tool. No seismic network, use Modified Mercalli-type intensity rpts fr Met Svc/Obs on diff islands to locate (N / S), strength. Has been used as basis for Warning.**
- **14 January 2022:**
 - **1030-1050 TOT: Received Observations of unusual waves from Mango Town/Marine Ports**
 - **1112 TOT: Issued Marine Warning**, monitored, cancel 15 Jan 1000 TOT

15 January

- **0513, 0521 TOT: Ash Cloud, Loud blast, sea birds flock inland (Director calls, issue Warnng)**
- **0530 TOT: Issued Urgent Tsunami Warning by Radio Tonga**
- **0630 TOT: Nuku’alofa gauge, Internet cut**
- **0148 TOT 16 Jan: Downgrade Marine Warning based direct obs, consult Wellington VAAC**

Online Pre-Training (before in-person)



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- **COMET[®] (USA) – self-paced, videos, quiz. (TONGA)**

- Tsunamis, Tsunami Warning Systems
- Near Shore Wave Modeling, Ocean Tides, Rip Current Forecasts, Shallow Water Waves, Wave Life Cycle (Generation, Propagation & Dispersion), Low level Coastal Jets, Wave Type and Characteristics



- **Ocean Teacher Global Academy (IOC) ITIC, Indo BMKG/IOTIC (2022-23)**

- Tsunami Ready (ONLINE: Awareness, Tsunami Ready (what, how))
- Global reach – Online / hybrid trainings (use in-person content)



- **Tsunami Early Warning Systems (40-80 hrs)**
- **Tsunami Evacuation Maps, Plans, & Procedures (200 hrs) – IOC MG 82**
- **Tsunami Warning Center and Emergency Management Response SOPs (40 hrs content) – IOC MG 76**
- **Tsunami Warning Center Competencies (80 hrs content) content under development, taught 1 pilot in 2019 in Tonga**

OTGA training to support IOC Tsunami Programme



- Collaborative with IOC Tsunami Unit.
- Coordinate with IOC Tsunami Information Centers (CTIC, IOTIC, NEAMTIC, ITIC).
- All courses previously taught in-person, so have course outlines and contents
- Tsunami Awareness minimum prerequisite for later courses
- Hands-on Activities, For Certificate must pass Test
- Proposed online (self-paced, hybrid):
 1. **Tsunami Awareness** (4-8 hr content) – introduction available to everyone - 2023
 2. **Tsunami Ready** (8 hr content) – 3 audiences (Govt officials, Community, Facilitators) - 2023
 3. **Tsunami Early Warning Systems** (40-80 hrs content) – overview, taught in-person to country government officials / scientists since 1970s – 2023-2024
 4. **Tsunami Evacuation Maps, Plans, & Procedures** (200 hrs content) – IOC MG 82 course manual, taught since 2015, training on Tsunami Ready Indicators (Assess, Prepare, Respond) – 2023-2024
 5. **Tsunami Warning Center and Emergency Management Response SOPs** (40 hrs content) – IOC MG 76 course manual, taught since 2006, training on operations
 6. **Tsunami Warning Center Competencies** (80 hrs content) – content under development, taught 1 pilot in 2019 in Pacific SIDS



ITIC-PTWC Training and Informational Videos Support OTGA

1. PTWC Products (Pacific, Caribbean)

Enhanced Products (EN-SP-FR) -20-25 min, **Staging (EN)** 10 min

Link: <https://vimeo.com/showcase/8956022>

Password: training (password protect since products not public)

2. TWC Operations – What happens at PTWC during an event?

Pacific Earthquake (EN) 20 min

3. Tsunami Forecasting (EN) (request from 4 Mar 2021 debrief)

30 min –

4. Exercise Informational Videos (EN, SP, FR): 3 min each

- Get Pacific Tsunami Ready Shout-out (Western, PICT, Eastern) – WTAD 2021
- Exercise Pacific Wave – Dec 2021
- Exercise Caribbean Wave, Public Service Announcement – Feb 2022



NTWC Competencies Pilot for PTWS



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- Knowledge – self-paced, hybrid, in-person, Regional
- Operations SOPs – self-paced, hybrid, in-person – Regional, National
- Attachment to Advanced Centre – PTWC, other possible to be explored (Chile, NZ, Australia...)
- National certification – by each country

- ITIC has funding to pilot and explore feasibility in 2024

Next steps – Actions for TT - proposed

- Complete Draft of Requirements
- Develop Implementation concept
- Continue to pilot
 - Support ITIC implementation pilot



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TRAINING COMPETENCIES

PICT WG TT , 22 Feb 2022

Item J7

Laura Kong, ITIC