

DBCP-Eighth Meeting of the International Tsunami Partnership (ITP -8) 3 October 2012

International
Tsunami Partnership
Richard C. ...tsen



Courtesy Ken Jarrott

ITP – 8

DBCP - Action Group

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ITP- Terms of Reference

- establish, coordinate and support international tsunameter research and development efforts, including joint activities;
- set common tsunameter standards, including performance standards and testing and calibration protocols, to ensure that designers and operators of tsunami warning systems can rely on the consistency, comparability and availability of tsunameter data to the maximum extent possible;
- provide input as appropriate to sea level observation network design with a view to optimizing the contribution of tsunameter instruments to the operational and cost effectiveness of tsunami warning systems;
- maximise the sharing of tsunameter technology and cooperation among Partners and with suppliers of tsunameter equipment and components to achieve secure global supplies of high quality systems;
- cooperate where appropriate on the testing and calibration of tsunameter instruments, buoys and moorings;
- maximise opportunities for coordination and cooperation among Partners with regards to the siting, ship access, deployment, operation, maintenance and support of tsunameter systems; and
- help build capacity among Partners to accelerate the viability and success of regional tsunami warning systems.

AGENDA

- Introduction and Review of Agenda
- Review of Actions from Prior Meetings
- Product, Technology or Process Developments
- Use of Tsunameter Data by Warning Centres / Performance Standards
- Sustainability and challenges
- International Data and Metadata Exchange
- ITP Operating Model and External Engagement with External Bodies
- Any other issues – Modelling, Nano BPRs, Near field tsunami warning
- Recommendation to the DBCP



Presentations Status reports

Country presentations

- **USA**
- **India**
- **Australia**

Industry

SAIC USA

**(reports received later through email from Sonardyne
UK Envirtech Itlay)**

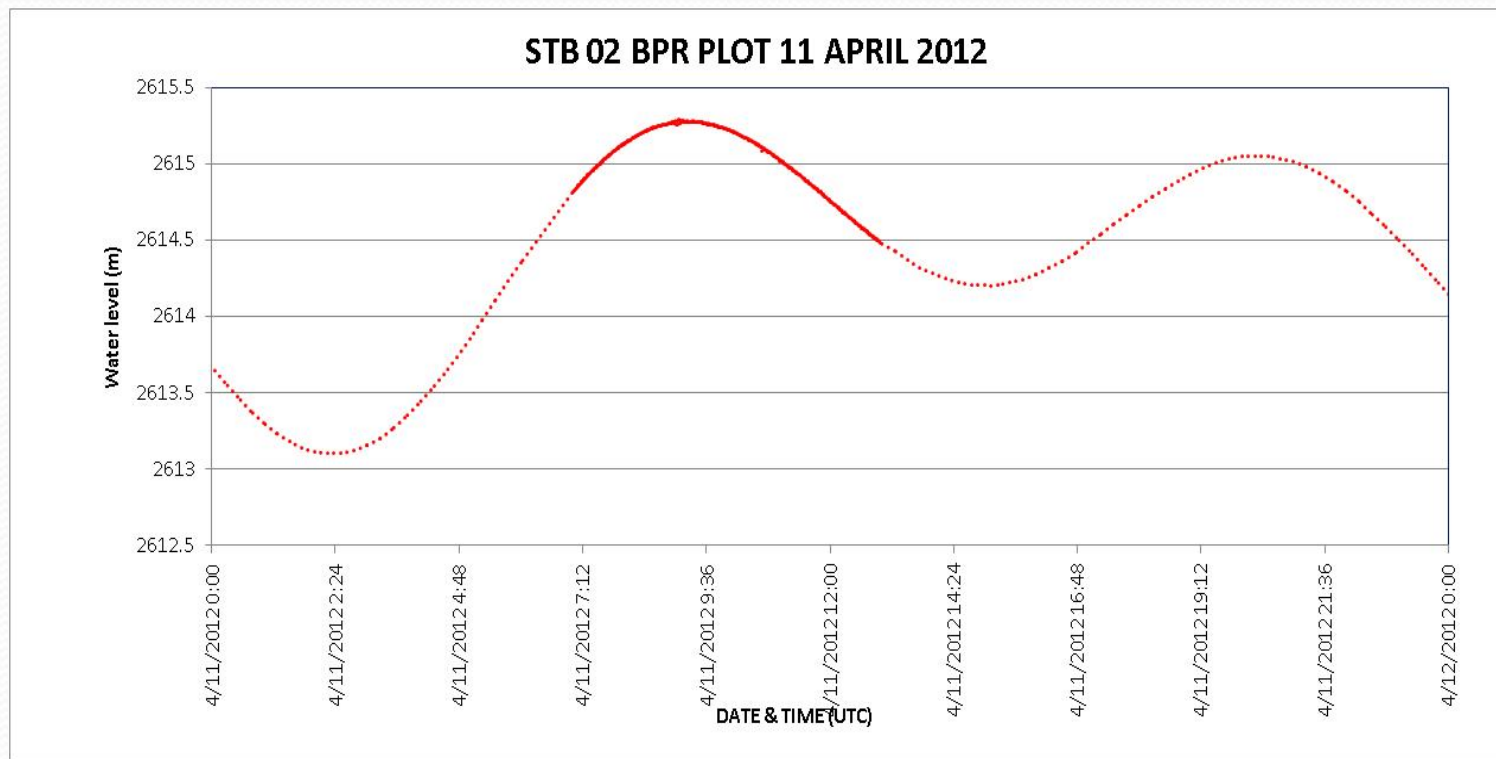
- **Sustainability and Challenges**
- **Inputs to preparatory workshop for an international forum of users of satellite data telecommunication systems (Toulouse, France, 23-24 April 2012)**

Status and Deployment Plans for 2013

GLOBAL TSUNAMETER NETWORK								
Country	Planned Network	Currently Operational	Tsunami Types	Local Reception	Data to GTS	Data to FTP	Data Formats	Vandalized Stations
Australia	6	6	DART-II DART-ETD SAIC-DART-II SAIC-STB SAIC-ETD	Yes	Yes	No	NOAA-DART BUFR/CREX	0
Chile	3	1	SAIC-DART-II	Yes	Yes	Yes	NOAA-DART	0
China	2	1	DART-STB	Yes	No	No	NOAA-DART BUFR	1
Ecuador	2	1	Sonardyne	Yes	Yes	Yes	NOAA-DART	0
India	7	6	DART-STB IndaBuoy- Sonardyne	Yes	Yes INCOIS	No	BUFR/CREX	1
Indonesia	14	2	InaBuoy SAIC-ETD	Yes	No	No	Local Format NOAA-DART	9
Japan	6	3	SAIC-STB	Yes	Yes	No	CREX	0
Malaysia	3	2	unk	Yes	No	No	Unk	0
Republic of Korea	2	unk	unk	Unk	Unk	Unk	Unk	unk
Russia	3	2	SAIC-STB SAIC-ETD	No	Yes	Yes	NOAA-DART	0
Thailand	3	1	SAIC-STB	No	Yes	Yes	NOAA-DART	0
USA	39	32	DART-II	Yes	Yes	Yes	NOAA-DART	0

Performance

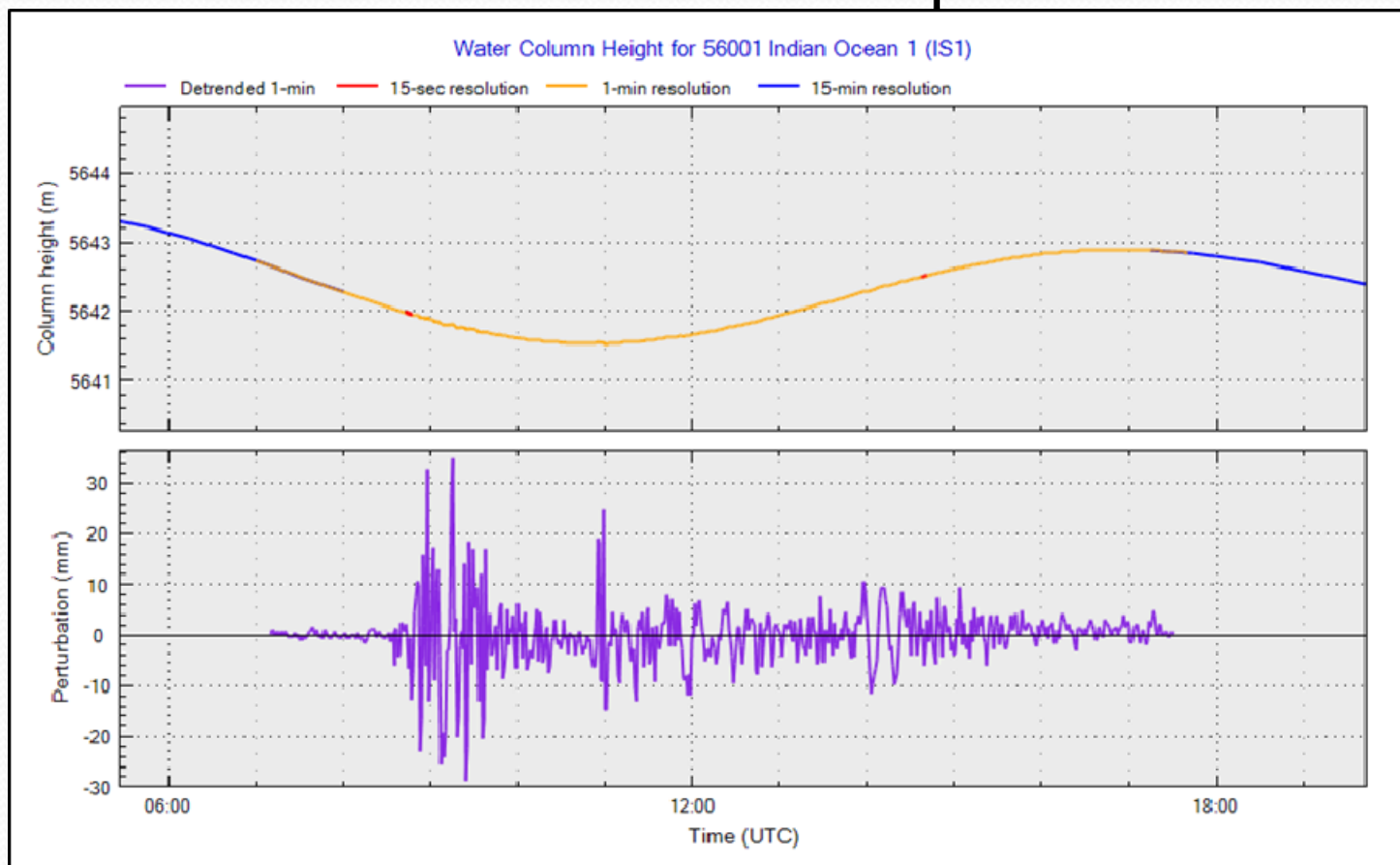
Indian Tsunami Warning System



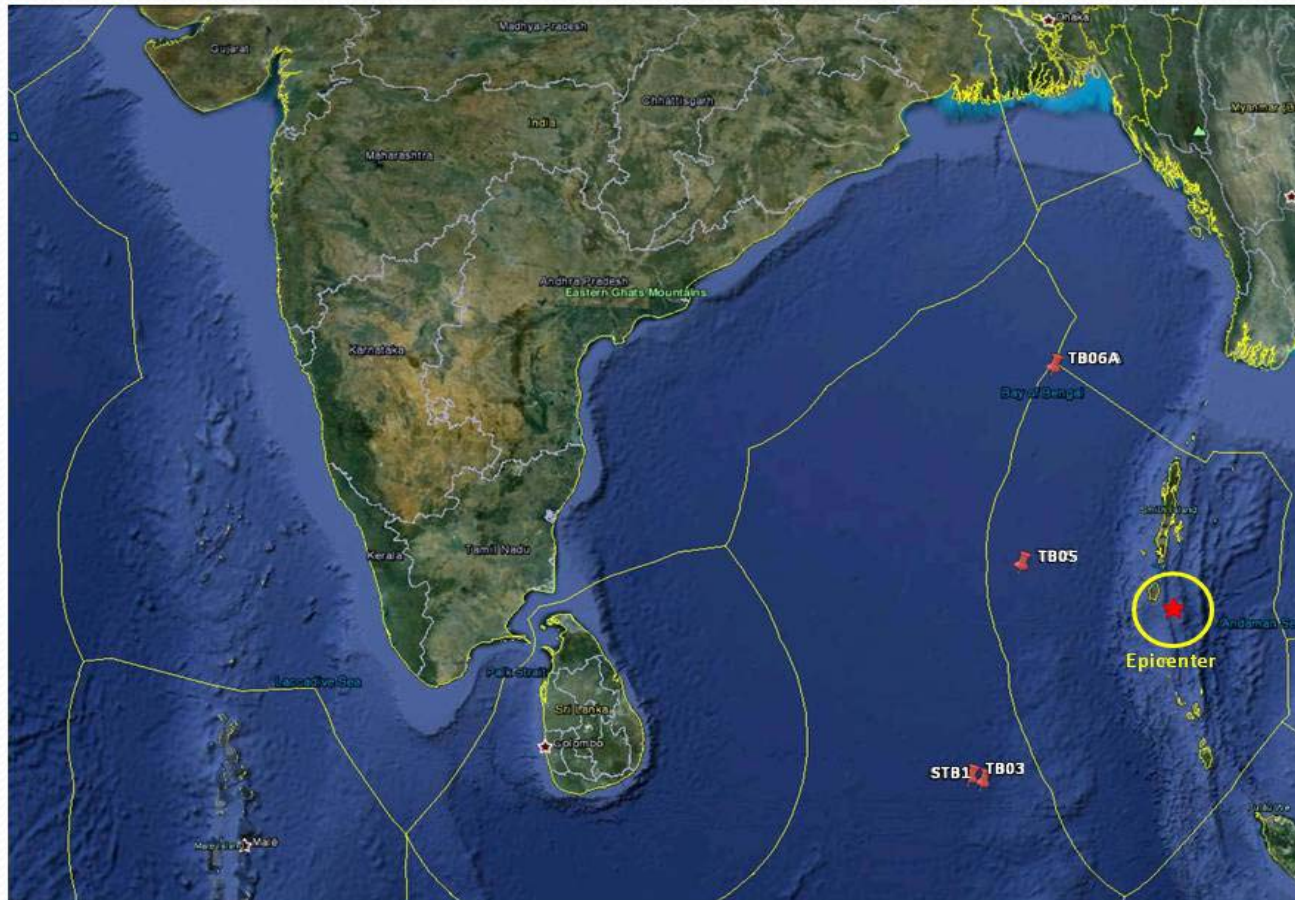
ATWS Tsunameter Status

56001 Indian Ocean 1 (STB)

- Detected Indonesian event on 11 Apr 2012

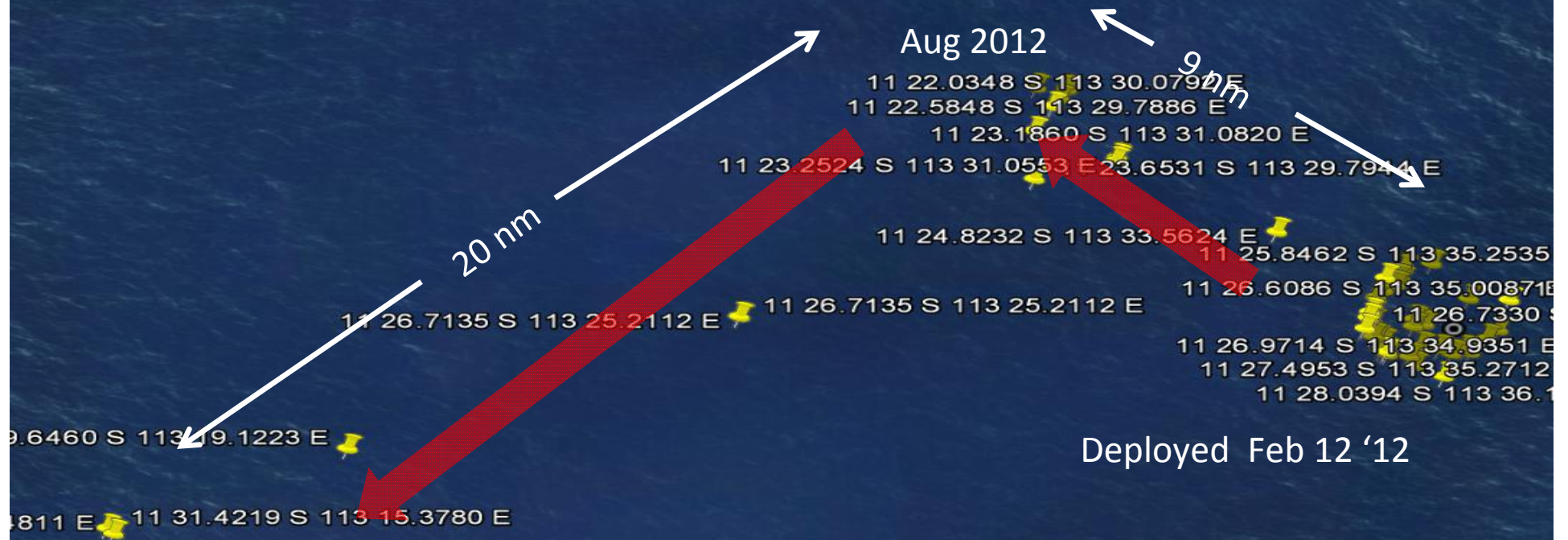


Monday, August 27, 2012 at 12:05:23 UTC



INDO-AUS ETD DART Dragged by Fisherman and Continuing to Provide Data

Indonesian/Australian DART-ETD



Still transmitting tsunameter data, even after being dragged

Product, Technology or Process Developments

India

Successfully developed payload for tsunami buoy

Indian made buoy with BPRs from Sonardyne Envirtech are working

Indian BPR tested at Sea

SOP is being prepared

SAIC

Made significant improvements in electronics and testing - increased the reliability and durability of these systems.

developed a mid-frequency (MF) variant of the STB which uses the ETD BPR, an inverse catenary mooring, and MF transducers.- performs well in higher current regimes.

26 STB and ETD DART systems for the global tsunami network.

October 2012 SAIC deployed one new ETD DART system for Russia and three of six new STB MF systems for Japan.

Sonardyne UK

- Reported that the tsunameter functionality has been transferred into the latest (6th) generation of Compatt. One major technological advance is the improved performance of the acoustic telemetry in marginal conditions, extending the operational envelope inside which the acoustic link can be relied upon.

A qualification trial of the new BPR began in August this year off the East coast of USA in collaboration with NDBC, where one tsunameter has been deployed in 3000m.

A Wave Glider from Liquid Robotics Inc. has been fitted with the Sonardyne top-side modem, and will visit the site periodically over the next 12 months. Performance trials of the acoustic communication with the tsunameter will be conducted.

Envirtech

- Efforts to develop reliable and cost effective tsunami gauges.
- A new *class of tsunameters*
- During the 2012 have been also tested Iridium transceivers, in short burst mode, to expand the satellite communication segment both in Control Centre and on board the relay buoys.
- A Beidou transceiver, Chinese Oceanic Administration, has been tested too.

Pressure Sensors

Paroscientific sensors

Model 410K-101

- Improved the resolution of our Intelligent Pressure devices such as the Intelligent Depth Sensor and Intelligent Transmitters.
- Developed practical techniques to measure the frequency outputs of these inherently-digital sensors to a new level of sensitivity with our Nano-Resolution technology.
- Nano-Resolution is a change to the counting and signal processing of our Intelligent Pressure Instruments which increases resolution from our previous standard of one-part-per million to one-part-per billion.
- A secondary benefit is a significant increase in the sample rate of our Intelligent devices; it is now possible to achieve one-part-per million resolution at an update rate of 11 msec.
- Application Note describing the theory behind our Nano-Resolution technology:
- <http://paroscientific.com/Nano-Resolution.pdf>
- Applications for Nano-Resolution were initially focused in the Atmospheric Sciences, but Oceanographic and Meteorology fields are also expressing interest in this technology.



Data

- Data Management
 - Data Distribution
 - Data Policy
 - Real-time Data Exchange
 - Delayed-mode Data Exchange
 - Data Quality
- Instrument Practices

ITU-UNESCO-IOC-WMO Cables Workshop, 20-21 September, Paris by David

- **This initiative arose in 2010 as a result of ITU resolutions on use of ICT in support of climate change and disaster mitigation, - Nature paper by Prof You on scientific uses of submarine communication cables.**
- **First workshop Rome, September 2011 and attended by representatives from the scientific community, from cable industry and from the three secretariats.**
- **Industry side viewed the concept of 'dual purpose' sensor-equipped cables as a serious threat to the physical integrity of the cables, to the privileged legal position**
- **Second workshop in September 2012.**
- **Tele-conferences allowed progress towards reasonable & achievable work plan.**
- **Consortium including the major cable manufacturer TESubcom, NOAA-PMEL, Scripps and the Australian Bureau of Meteorology was planning to instrument the Trans-Tasman leg of a new cable, PacificFibre, with sensors for pressure, temperature and acceleration.**
- **Tsunametry was an obvious choice for a pilot project, given the reliability and vandalism issues surrounding the existing network, and the possibility to quickly demonstrate a real societal benefit from instrumented cables.**
- **TESubcom - considerable amount of background research to demonstrate the engineering, commercial and legal viability of dual purpose cables.**
- **'Joint Task Force' and the drawing up a work plan that could make significant progress over the coming year.**
- **PacificFibre project might never re-emerge, discussion was directed towards the instrumenting of a possible new cable serving small island states in the Pacific. Significant external funding from bodies such as the UN and/or World Bank,**

Action Plans

- New Members
- Data BUFR format –NDBC will do its best to move to BUFR- tsunameter data by Dec 2013.
- To discuss the near-field tsunami warning problem, and the implications for monitoring technologies and for downstream warning centre operations- Nano BPR
- To work on updated version of Tsunamimeter equipment performance standards and guidelines



International Data and Metadata Exchange

Tsunami data should be made freely available on the GTS in accordance with the IOC Oceanographic Data Exchange Policy.

Data Sharing

Initiation or extension of tsunami networks by countries such as Ecuador, Russia, China and Japan as an important contribution to national and regional tsunami capability, and the increase in the number of stations reporting in real time on the GTS, but strongly urges a wider commitment to real time data sharing by all national operators. This commitment is needed to increase the observation network's coverage and resilience during tsunami events and to strengthen scientific understanding and modelling of tsunamis



Vandalism

- Significant efforts taken to reduce the incidence and impact of vandalism, and notes India's initiative to engage with regional governments and fishermen. It welcomes some encouraging early indications of the fruits of that effort, but notes the continuing toll experienced by many global networks, and specifically the reports of high levels of vandalism in the oceans and seas of concern to Korea, China and Japan. It invites those and other countries to consider the Indian initiative as one approach that could deliver benefits.



ITP

- Contribute to relevant WMO and IOC applications, and act as an Action Group of the WMO-IOC Data Buoy Cooperation Panel (DBCPC) for reporting on its activities, building synergies with data buoy operators regarding implementation on Tsunameter networks, and promoting standards.
- Revised IPT report will be submitted.