

Report of the 4th Global TestNet meeting, Singapore, November 13, 2012.

Jan Linders.

The fourth meeting of the Global TestNet was held in Singapore, Landmark Hotel, on 13 November 2012 under the chairmanship of Mario Tamburri in his function of chairman of the Steering Committee.

1. Introduction, Mario Tamburri to chair, round the table introduction of participants. The list of participants is added to this report as Annex 1.

2. Agenda for today:
 - a. MoU: is one needed, goals, functions and form? See point 3 of this report.

 - b. Suggested clarifications and amendments for G8 guidelines and ETV protocol. See point 4 of this report.

 - c. Steering Committee elections and action items (last agenda item). Focus on things all agree. Currently about 10 to 12 facilities worldwide. South Africa unclear, Canadian facility. Test facility in India developing. China also unclear. Use slides of Mario. See point 5 of this report.

 - d. Actions for the next meeting and the date of next meeting. See point 6 of this report.

3. Goals and functions:

MoU: some considerations raised on the development of an MoU during the discussion were as follows:

 - If an MoU is to be developed it should mean something.
 - The current draft seems to indicate an exclusive group, which should not be the case.
 - Currently about half of the TF signed or would sign the MoU, another half would not because the annexes were not yet available.
 - The group should concentrate on mutual recognition and information exchange.
 - A conflict of interest may arise if the MoU is too prescriptive.
 - There may be too many political difficulties to finally come to an MoU acceptable for all.
 - Most activities of the group can be done with and without an MoU.
 - It is good to communicate to improve the testing quality, to share science and

methods and to disclose results and clients.

- Users of the test results, like e.g. GESAMP-BWWG, need some confidence in the results of the TF.

- Auditing each other to improve quality may not be reachable.

- The ultimate goal may be an extended MoU but it is too early to aim for on a short notice.

Based on these considerations the meeting decided to aim for an MoU light as it seems to be the best possibility to reach consensus. A draft MoU light has been already distributed to the participants in advance of the meeting by the chairman. After thorough discussion on the MoU light agreement was reached on the version in the attached document (see Annex 2).

4. G8 and ETV Protocols

Mario Tamburri presented some differences between G8 and the ETV protocol of the US. The main thing is that both are not mutually exclusive and both have limitations, where if justified or valid deviations are allowed. See Annex 3 for the presentation of Mario Tamburri.

Some questions were discussed based on this presentation:

- Is there a need to prepare a list of potential changes in these protocols?

The group concluded that it should be hesitant to propose changes to G8 as not to hamper the ratification of the Convention.

- What should be listed on a certificate?

The group came to consensus on a list of limiting conditions as well as operating conditions as indicated in Annex 4.

The group was of the opinion that in addition to these data also data should be made available by the Administration to the annex of the TA an overview of the vendor claims vs. actual test conditions in a table format.

5. Steering Committee:

Each year the Steering Committee will change its composition. The current Steering Committee is formed by Mario Tamburri (US), Jan Boon (Europe) and Kyoung Soon Shin (Republic of Korea) and is stepping down but may be renominated.

Early in the meeting each continent was requested to nominate a new person for the Steering Committee. The new Steering Committee was elected and consists of, for Asia: Kyoung Soon Shin (Republic of Korea) continues his membership of the Steering Committee and also becoming chairman; for Europe: Klaas Kaag (The Netherlands); and for the US: Allegra Cangelosi.

6. Actions:

- Signing of the MoU can proceed after the distribution of the final text as agreed.

Mario will distribute the final version, the start of signing the MoU may then follow in a couple of weeks,

- The Republic of Korea prepared a flyer with information on next year's meeting in Busan (Republic of Korea) and will become available soon. The dates for the next meeting of the Global TestNet will be on 21 and 22 October 2013 in Busan, Republic of Korea (APEC building).

So far the report of the meeting itself.

My personal impression is as follows:

It was a good meeting as the group reached consensus on the MoU and was also able to formulate proposals for the limiting conditions as requested during the last MEPC.

This request was not specifically directed to the GloBal TestNet but the meeting anticipated positively on the general request.

Although I think that not all the limitations mentioned will also show to be relevant limitations but the future when more research is becoming available this has to show.

The atmosphere among the participants was at least much better than during the last meeting in Istanbul where several irritations were present.

Of course, it has still to be awaited who and how many of the test facilities will be able to sign the MoU but to my opinion there certainly is a willingness to cooperate.

Annex 1

List of participants by country to the 4th GloBal TestNet meeting of 13 November 2012.

Country	Name	Organisation
US	Allegra Cangelosi	GSI
	Bill Davidson	Golden Bear
	Lisa Drake	US Navy
	Rich Muller	Golden Bear
	Tom Stevens	NSF
	Mario Tamburri (chair)	MERC
	Nick Welschmeyer	Golden Bear
	David Wright	??
	Republic of Korea	Soo-Yeon Im
	Young Soo Kim	Komeri
	Kitae Rhie	Kyung Hee University
	Kyoung Soon Shin	Kiost
	Jung-Hoon Kang	Kiost
	Seung-Gil Tji	Busan Techno Park
	Byung-Hyouk Nam	Busan Techno Park
	Woong-Tae Kim	Korean Register
Netherlands	Jan Boon	NIOZ
	Etienne de Brutel	MEA-NL
	Cato ten Hallers	Catomarine
	Klaas Kaag	IMARES
	Jan Linders	GESAMP-BWWG
	Louis Peperzak	NIOZ
	Andrea Sneekes	IMARES
	Isabel van der Star	MEA-NL
	Singapore	Martin Andersen
	Edina Chua	DHI Singapore
	Matthieu Duchemin	DHI Singapore
Denmark	Torben Madsen	DHI Denmark
	Gitte Pedersen	DHI Denmark
Norway	Stéphanie Delacroix	NIVA
	August Tobiesen	NIVA
Germany	Stephan Gollasch	GoConsult
Japan	Shinichi Hanayama	ORPF
UK	Tim Fileman	Plymouth University
IMO	Antoine Blonce	IMO
	Aïcha Cherif	IMO
	Fredrik Haag	IMO

Memorandum of Understanding as agreed during the 4th Global Test Net meeting.

MEMORANDUM OF UNDERSTANDING ON
THE GLOBAL BALLAST WATER TEST ORGANIZATIONS NETWORK
“GloBal TestNet”

Establishing a Global Ballast Water Test Organizations Network

1 There is a need for the development of effective and environmentally friendly ballast water management systems, as required by the 2004 International Convention for the Control and Management of Ships Ballast Water and Sediments (The Ballast Water Management Convention). Driven by this need, the technology development community is actively designing and constructing various ballast water management systems (“BWMS”) to cater to the emerging ballast water treatment market. Such treatment technologies are required to undergo rigorous testing and thorough approval processes, as per the 2004 IMO Ballast Water Management Convention.

2 Having met on several occasions, a number of organizations involved in the land-based and shipboard testing of BWMS (hereinafter called “the Members”), agree that it would be mutually beneficial to establish a global network to promote co-operation, comparability and accuracy of test results.

3 This Memorandum of Understanding (hereinafter called ‘the MoU’) is made between the Members for the establishment of a Global Ballast Water Test Organizations Network (hereinafter called ‘GloBal TestNet’).

Mission and functions

4 GloBal TestNet’s mission is:

"To promote comparable and accurate test results on the performance of ballast water management systems for certification, through an open exchange of information, transparency in methodologies and advancing the science of testing".

5 The Members agree to:

5.1 discuss or share methods, analyses, procedures and protocols used to support certification testing, and provide insight and lessons learned, to help improve the overall quality and efficiency of BWMS testing by:

5.1.1 participation in quarterly correspondence by each Member via website, email list, conference call, etc.; and

5.1.2 participation in annual meetings by each Member, but representatives do not need to attend in person.

5.2. build awareness of, and coordinate where appropriate with, various Member testing activities;

5.3 work together toward consensus on standardization, to the extent possible, of test and analytical methods and approaches, to increase the comparability and accuracy of results among tests;

5.4 when possible, participate in cross-training and inter-calibration among the Members to increase comparability and consistency within GloBal TestNet;

5.5 when appropriate, assist in vetting or validation of new testing methods and analyses;

5.6 encouraging diverse input from scientific experts, including those outside the ballast water testing community;

Membership

6 The Network is open to any organization involved in the generation of data from land-based and/or shipboard testing for the certification of BWMS under 2004 IMO Ballast Water Management Convention and relevant Guidelines or other test protocols.

7 To be included as a Member of GloBal TestNet, testing organizations should be committed to the mission and have a quality plan and a no conflict of interest policy.

8 An organization fulfilling the criteria set out in Articles 6 and 7 may become a GloBal TestNet Member by applying to the Secretariat. In their application, they must provide a description of facilities and capabilities. The Secretariat will then circulate the intention of the applicant organization to all current Members.

Observers and advisers

9 GloBal TestNet welcomes outside expertise to their meetings and encourages scientific/ engineering input from all related disciplines. The Steering Committee will invite observers and advisers from all stakeholders to meetings on a regular basis. Interested stakeholders can apply to the Steering Committee to take part in meetings.

Financial arrangements

10 Each Member is responsible for its own costs associated with activities under this MoU.

Organization

11 GloBal TestNet will be led and coordinated by a Steering Committee, which will be established. At least three continents shall be represented in the Steering Committee (North America, Asia and Europe, as of the initial drafting of this MoU).

12 The representatives from the test facilities of each continent will elect their representative on the steering committee by two-thirds majority, using a procedure of their choice, by the end of November of each year for the following calendar year.

13 The members of the Steering Committee elect their chair unanimously by correspondence. If no unanimous decision can be reached, the position of chair rotates.

14 The Steering Committee should meet quarterly, in person or by teleconference, and the minutes of the meeting should be circulated to all other Members. Steering Committee meetings are open to all Members.

Withdrawal from the MoU by a Member

15 Any Member can withdraw from the MoU upon written notice served the Steering Committee and, upon receipt of such notice, will cease to be a party to this MoU.

Miscellaneous

16 Except as expressly provided, nothing in this MoU is intended to, or shall be deemed to, establish any partnership, collaboration, or joint venture between the Members or other parties, constitute either Member the agent of another, nor authorize a Member to make or enter into any commitments for or on behalf of any other Member.

Test Organization GloBal TestNet Member	Point of Contact Name and Title	Signature and Date
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Test Organization GloBal TestNet Member	Point of Contact Name and Title	Signature and Date
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Annex 3

Presentation of Mario Tamburri on differences between G8 and the ETV protocol at the 4th GloBal TestNet meeting of 13 November 2012.

ETV Protocols

- A protocol for verifying performance of BWMSs developed through the USEPA Environmental Technology Verification program in partnership with the USCG and a Technical Advisory Committee.
- ETV protocol is incorporated by reference into the USCG regulations.
- This protocol addresses land-based testing (shipboard testing under development) to provide comparable conditions for verifying BWMS performance and, to the maximum practical extent, representative of use conditions.
- ETV verification testing is meant for commercial-ready BWMS and includes:
 - biological evaluations,
 - operations and maintenance evaluations,
 - environmental acceptability and safety evaluations.

G8/G9 and ETV Protocols

ETV Testing Approach:

- Specific Test Plan, Quality Plan and Report requirements
- Commissioning trials – should include one full-scale verification test cycle
- Operations and Maintenance evaluations (including cost estimates)
- Three test trials at two of three salinity ranges
- Hold times of 24 hours or more

G8/G9 Testing Approach:

- Five test trials at two of three salinity ranges
- Hold times of 5 days
- No Cost and Operations & Maintenance evaluations

G8/G9 and ETV Protocols

Challenge Conditions:

Parameter	ETV	G8
Temperature (°C)	4 - 35	-
Salinity (psu)	Two salinities from <1 psu, 10-20 psu, 28-38 psu	Two salinities, >10 psu difference
Total Suspended Solids (mg/l)	≥ 24	> 50 (< 3 – 32 psu) > 1 (> 32 psu)
Particulate Organic Carbon (mg/l)	≥ 4	> 5 (< 3 – 32 psu) > 1 (> 32 psu)
Dissolved Organic Carbon (mg/l)	≥ 6	> 5 (< 3 – 32 psu) > 1 (> 32 psu)
Zooplankton (> 50 µm) / m ²	≥ 100,000	≥ 100,000
Phytoplankton (10 - 50 µm) / ml	≥ 1,000	≥ 1,000
Heterotrophic Bacteria cfu / ml	≥ 1,000	≥ 10,000

G8/G9 and ETV Protocols

ETV Water Augmentation:

- TSS - Arizona Test Dust + Humic Acid
- POC - Humic Acid
- DOC - Instant Ice Tea

- *Standard Test Organisms*
- *Majority of test organisms should natural ambient*
- *Salinity – natural waters*

G8 Water Augmentation:

- No specific requirements or guidelines

G8/G9 and ETV Protocols

ETV and G8 Ballasting/Deballasting:

- Sequential or simultaneous
- 200 m³/hr, 200 m³ tanks

ETV Sampling:

- Inline, time-integrated isokinetic samples
- 60 m³ if 20, 1 ml subsample analyzed for > 50 µm (or better)
- 3 – 6 l for 10 – 50 µm and microbes

G8 Sampling:

- 3 x 1 m³ for > 50 µm land-based
- 3 x 1 m³ beginning/middle/end for > 50 µm shipboard
- 3 x 1 m³ for 10 – 50 µm and microbes land-based
- 3 x 1 l beginning/middle/end for 10 – 50 µm and microbes shipboard

G8/G9 and ETV Protocols

ETV Sample Analyses:

- Recommended validated methods
- Live samples within 6 hours
- > 50 µm: microscope counts with stimuli
- 10 – 50 µm: FDA + CMFDA or another validated approach
- Microbes: USEPA methods
- Water quality: commercial sensors or USEPA methods

G8 Sample Analyses:

- Live samples within 6 hours
- Recommend the use of Standard Methods, such as:
Handbook of Standard Methods For the Analysis of Water and Waste Water
ISO, UNESCO, WHO, ASTM, USEPA standard methods, and
Peer-reviewed publications

G8/G9 and ETV Protocols

ETV Operations and Maintenance Testing:

- **Qualitative indicators include:**
 - treatment system performance
 - operating characteristics (e.g., unusual noise, leakage, other atypical condition)
 - difficulties in operating the system
 - changing system parameters
 - detection and diagnoses of fault conditions
 - overall ease of system use
- **Quantitative indicators include:**
 - operational parameters (e.g., flows, pressures, operating times)
 - treatment startup and shutdown time
 - amounts of chemical used
 - amount of waste generated
 - power consumption
 - time required for all scheduled and unscheduled maintenance activities

G8 Operations and Maintenance Testing:

- It should be verified that the treatment equipment performs within its specified parameters, such as power consumption and flow rate, during the test cycle
- BWT mechanical requirements but not G8 O&M testing

Annex 4

List of limiting and operational conditions for G8 testing as adopted by the GloBal TestNet at its 4th meeting on 13 November 2012.

GloBal TestNet suggested changes to Draft MEPC Resolution MEPC 175(58)

13 November 2012

.4 a copy of the Type Approval Certificate which should include details on all conditions including:

Limiting conditions:

- Salinity (active substances and hydro-cyclone)
- Temperature (active substances)
- Suspended solids (filters, hydro-cyclones, active substance, UV)
- Dissolved organics (UV and active substances)
- UV-Transmittance (UV)
- Biological load and community types (all)

Operating conditions:

- Dose of treatment (maximum and/or minimum, where applicable)
- MADC (e.g. TRO)
- min/max pressures
- min/max flow rates
- minimum required holding time
- minimum required warm-up time
- maximum oxygen and pH (de-oxygenation systems)

The annex to the Type Approval Certificate should contain a summary of the test results of the land-based and shipboard test runs, and information on testing conditions, as related to vendor claims on limiting conditions and operating conditions.

The Administration should provide access as soon as possible, preferably in electronic form, to:

- the land-based test protocol according to which testing was undertaken, including details on the use of natural, cultured or mixed test organisms
- the full test report of the land-based and shipboard tests including O&M results, all failed and invalid tests and access to all raw data
- QA/QC documentation of the test facility
- methods, analyses, procedures and protocols of the test facility