



European Sustainable Shipping Forum 7th Plenary Meeting

Brussels, 24 January 2017

Submission from ESSF sub-groups

1. Submission from (please choose):

- a) ESSF sub-group on Marine LNG

2. Sub-group recommendation(s) to the Plenary

- **To note** the developments in the context of **standardization of LNG Bunkering equipment**, as reported to the LNG sub-group at its 10th sub-group meeting, in particular with regards to **standard bunker connectors** (see point 4.1)
- **To note** the progress made in the development of the **EMSA Guidance to Port Authorities/Administrations**, in particular regarding the outcomes of the online questionnaire (see point 4.2 and document 8b)
- **To acknowledge** the different tasks distributed to new working groups established early 2016 on the following items:
 - Equipment – WP3
 - Bunkering guidelines - WP1
 - LNG projects - WP6

3. Required action(s) to be considered by the ESSF Plenary based on sub-group recommendation(s)

The LNG sub-group, considers that the following actions to be recommended for Plenary's consideration:

- **Standardization in LNG Bunkering.** Having understood that standardization is a key factor for the uptake of confidence in LNG as a marine fuel, in particular in the aspects of safety and operations, the sub-group recommends that Plenary keeps this in high priority in the Agenda of the sub-group. In this context, the Plenary should note the progress in development of **Standard Bunker Connectors** (See updated Work Package table in Annex 1).
- **LNG Bunkering Guidelines.** The sub group recommends the Plenary to acknowledge and encourage the efforts of the sub-group on the development of a comprehensive set of **workable reference LNG safety guidelines**. For LNG Bunkering

it is also recommended to endorse the sub group decision to take into account the publication of ISO 20519 "Specification for bunkering of gas fuelled ships" and SGMF "safety guidelines LNG bunkering" for the further development of EMSA LNG Bunkering Guidance to Port Authorities/ Administrations. In a more general context it is recommended to the Plenary to encourage the close technical exchange established with IACS, ISO, SGMF and IAPH.

- **EMSA LNG Bunkering Guidance to Port Authorities/Administrations.** The sub-group has contributed so far in different initial steps of this guidance initiative. Having reiterated the need for this effort to be consistent, non-overlapping and complementary to the existing LNG Bunkering Guidelines, the sub-group recommends Plenary to recognise the relevance for the ESSF LNG sub-group to continue its support in the drafting of the EMSA Guidance, providing elements where necessary to ensure consistency and harmonization in both Industry guidelines and the advised best-practice procedures to Port Authorities/Administrations.

4. Timing of required action(s) in view of upcoming deadlines and critical requirements

A number of significant context variables have recently combined to highlight the relevance of alternative fuels in the future of more environmental sustainable shipping. LNG as a marine fuel is considered an important option within this frame, especially in consideration for the adoption of the 0.50% global sulphur limit in 2020. It is the understanding of the LNG sub-group, that the adequate prioritization of standardization efforts and LNG bunkering guidelines development, under the best harmonization compromise is of utmost importance given the entry into force of the IGF Code just earlier this year, 1st January 2017. In addition, it is also to be noticed the take-over of the LNG as fuel market with the recent orders of 13 large cruise vessels in European shipyards.

It is also important to note that the standard ISO 20519 "Specification for bunkering of gas fuelled ships" should be published on time to fulfil the standardisation mandate M/533 (Commission Implementing Decision of 12/03/2015 on a standardisation request addressed to the European standardisation organisations, in accordance with Regulation (EU) No 1025/2012 of the European Parliament and of the Council, to draft European standards for alternative fuels infrastructure) to develop a European standard (EN) for Liquefied Natural Gas (LNG) refuelling points for maritime vessels (due date 31/12/2017). The draft standard is prepared and has been under participated revision with some diverging position having been reported at the 10th LNG sub-group meeting, with the risk of not having this standard adopted in 2017 being mentioned as a worst case scenario. Recent developments however, already in 2017, seem to confirm that publication will indeed take place in the course of the present year.

The sub group will meet on 15th March to pursue the work engaged in the different Work Packages.

Timeline update for the work on the EMSA Guidance to Port Authorities/Administrations is provided in a separate submission.

4.1. Equipment - WP3

Specifically, on WP3, consultation on the draft ISO 21593 “Marine LNG fuel bunkering quick connect/disconnect coupling standard” will be done during next LNG sub group meeting in order to ensure that this important standard will reflect the LNG bunkering industry need and the ESSF initial demand for QCDC¹ standardisation. A SGMF WG6 meeting will be held in London 11 and 12th January, it is expected that SGMF contribution will help to make significant progress on the draft. Scope of the ISO 21593 includes:

- Functional Requirements
- General requirements
- Testing
- Dimensions

4.2. EMSA Guidance on LNG bunkering for Port Authorities and Administrations - WP1 (see also document 8b)

The development of the EMSA Guidance on LNG bunkering for Port Authorities and Administrations is pursued. A questionnaire was sent earlier to administrations and industry stakeholders (e.g. port authorities, port and terminal associations, shipowners, classification societies etc.) and outputs have been valuable and used to continue the work. Four major items were highlighted and presented as discussion paper for opening contributions from the ESSF LNG sub-group members:

- Small Scale LNG bunkering - SEVESO applicability
- Safety Distances – Methods for calculation and Criteria
- Permitting & Authorization – Multi-Layer procedure – Single-Window approach
- Simultaneous Operations – Suggested Procedure for SIMOPS approval

An EMSA Workshop on LNG bunkering guidance for Port Authorities and Administrations was organised on 1-2 December 2016.

It is to be noticed by the Plenary that the work is following up on the recommendations from EU LNG Study Lot1, relevant for the EMSA Guidance on LNG bunkering for Port Authorities and Administrations. In that respect, the sub group will identify remaining recommendations from LNG Study LOT1 (to be prepared by EC/EMSA) that require further actions, with proposal for assignment of specific recommendation to relevant Work Packages.

A separate submission provides more detail on the progress of this particular task, including an insight from the EMSA Workshop held in Lisbon, in December 2016.

4.3. LNG projects – WP.6

Following the interpretation that the LNG sub-group would be an ideal showcasing platform for finalized or ongoing projects related to LNG as fuel for shipping the 10th sub-group meeting has already materialized with the presentation of the CEF MoS co-funded project Into the future - Baltic So2lution 2013-EU-21003-S, with Terntank providing a good outcome report presentation of the project. Significant experience from operation was made available to the discussions of the LNG sub-group, in particular regarding experience with a variety of different LNG bunkering methods (including Ship-to-Ship).

¹ QCDC – Quick Connect Disconnect Coupling

For future meetings of the LNG sub-group more presentations from projects are expected, with a clear view to obtain real experience feedback from EU co-funded projects on LNG as fuel.

5. Summary of the issue and possible alternative solution(s)

N/A

6. Background information

Since the previous ESSF Plenary meeting, in June 2016, the LNG sub-group had only 1 (one) meeting (10th sub-group session, held 10NOV16), where the major focus has been dedicated to LNG Standardization, Bunkering Guidelines and EU co-financing opportunities, both within the CEF and H2020 calls that could be relevant for projects involving LNG as fuel.

The following information is considered to be relevant as background taken from the single intersessional work of the LNG sub-group meeting.

ISO/CEN LNG related standards

- a. Standardization in LNG Bunkering (Bunkering procedures, LNG bunkering equipment, LNG metering and LNG quality) is still the most important challenge in the discussions on LNG as fuel for shipping.
- b. ISO/TS18683 “Guidelines for systems installations for supply of LNG as fuel to ships” has, again, been concluded to be insufficient to support harmonization in LNG Bunkering procedures, remarkably due to the different uncertainties in the calculation of safety distances.
- c. ISO20519, received a remarkable number of more than 400 comments, was discussed, and there was a risk of not having this standard adopted in 2017. Recent developments, to be confirmed, have given indication that the Standard gained a lot of support both at the ISO and at CEN, therefore a consequent publication is very likely to take place in 2017.
- d. Good developments on standardization of LNG bunker connectors, having taken the good initiative from SGMF to develop the work within one of its WGs as a good step towards a good compromise by the industry. It is considered that, since the ESSF submission to MSC94, this is the first concrete step to a standard in LNG bunker connectors, with a NWIP² accepted on 9/07/2016 and a limit date for publication on 02/08/2019.
- e. **Standard on LNG quality as a marine fuel still far from reality, with a proposal under discussion but still with no NWIP accepted at ISO.**
- f. Bunkering delivery quantification is the subject of a NWIP, accepted on 28/09/2016, representing an important point in the context of LNG bunkering transfer operations.

IACS/ SGMF LNG Bunkering Guidelines

² **NWIP – New Work Item Proposal** (ISO terminology)

- a. IACS Rec.142, LNG Bunkering Guidelines, has been published in June 2016, following a participated revision process. The publication of the IACS Rec.142 is seen by the sub-group as a relevant mark in the history of LNG Bunkering, representing the agreement of associated Class Societies in such a way that it will very likely be of high relevance to harmonization in LNG bunkering in Europe and internationally.
- b. It has been concluded that, in the context of SGMF revision of its LNG Bunkering Guidelines, the work by IACS will be incorporated. In practice the guidance from the shipping and LNG industries with the Recommendation from IACS, will constitute a consolidated reference that will gain from the good aspects on both documents.

EC INF submission to MEPC 70 regarding EU LNG Study

The submission to IMO, informing on the results of the Study on the completion of an EU framework on LNG-fuelled ships and its relevant fuel provision infrastructure (lots 1-3), was considered by the sub-group as an important initiative, underlining the relevance of the study.

LNG bunkering - WP.3 Equipment - report from the SGMF working group on standardising LNG Couplings

The sub-group has taken particular note that work is advancing towards standardization of LNG bunker couplings with SGMF working in the context of ISO. Even though no first draft has been yet available, the fact that industry is working together towards standardization could be concluded as a remarkable step forward. Further updates on this are expected in the next LNG sub-group meetings.

LNG Bunkering Guidance to Port Authorities/Administrations

- a. Following the update on the EMSA LNG Bunkering Guidance to Port Authorities/Administrations the sub-group concluded that a considerable amount of work is yet to be done and that a revision of the timeline for the conclusion of the work would be necessary.
- b. The sub-group has underlined positively the good participation in the EMSA online questionnaire, highlighting the importance of good participation to allow the EMSA Guidance to be an adequate response to the actual needs of the Port Authorities/Administrations regarding LNG Bunkering.

Update on the MoS and other CEF 2016 call possibilities for LNG funding

Following INEA presentation on the ongoing 2016 call for CEF, it has been concluded that a significant and relevant financing opportunity could still be considered for potential implementation projects for LNG as a fuel for shipping.

LNG projects – WP.6

Presentation by Terntank on the CEF co-funded project “Into the future - Baltic So2lution 2013-EU-21003-S”. The presentation allowed learning the operator’s difficulties and perceived challenges on the use of LNG as a marine fuel. It could also be concluded that more show-casing time should be given to different EU co-financed projects.

New Work Package table and coordinators

No sufficient time for discussion of the new Work Package Table and coordinators. To be addressed at the next meeting. This new Work Package Table has been agreed at the 6th ESSF Plenary session.

From the single intersessional LNG sub-group meeting it is important to note the very high relevance of the cooperation with IACS, IAPH and SGMF, as well as of the reports on the ISO developments for the consistent, coherent and effective development of guidance in the context of LNG bunkering.

List of annexes:

Annex 1 - ESSF LNG sub-group – Updated Work Package Table, after the 10th LNG sub-group meeting

Annex 2 - ESSF LNG sub-group – New Work Package table (Version agreed at the 6th ESSF Plenary Meeting)

Annex 1 – ESSF LNG sub-group – Work Package table
(Updated Work Package Table, after the 10th LNG sub-group meeting)

EUROPEAN SUSTAINABLE SHIPPING FORUM - SUB-GROUP PROGRESS ON WORK-PACKAGES – 10 th LNG Sub-group meeting						
Agenda Item	WP	Work-Package Title	Coordinator(s)	Members	Expected Delivery + Deadline	Milestones (updated after 10 th LNG sub-group meeting)
Compatibility of LNG bunkering rules in EU ports, and link to international developments	1	Hoses and connections	Lasse Karlsen (Norway)	Shell, SIGTTO, Classification societies	<ul style="list-style-type: none"> ➤ Follow-up with ISO on the LNG Bunker Connectors standard development (following from IMO submission) 	<ul style="list-style-type: none"> ➤ Follow up on different ISO Standards presented during the 10th meeting. Standard Bunker Connectors <ul style="list-style-type: none"> ➤ Following the submission to MSC94, the IMO request to ISO for the development of the standard, a letter to ISO by the EC highlighting the relevance for the standard, a new Work Item Proposal was finally accepted on 09/07/2016 “Marine LNG fuel bunkering quick connect/disconnect coupling”: ➤ First draft developed by SGMF, in the context of one of its Working Groups. ➤ Limit date for publication: 02/08/2019
	2a	Simultaneous bunkering while loading/unloading cargo and/or embarking/disembarking passengers	EMSA (provisionally)	Lot 1 DG MOVE LNG tender	<ul style="list-style-type: none"> ➤ Enhanced focus on quantitative risk assessments for simultaneous operations (SIMOPS) 	<ul style="list-style-type: none"> ➤ EMSA LNG Bunkering Guidance for Port Authorities/Administrations under development. ➤ 4 discussion papers submitted to the sub-group meeting: SIMOPS, Safety Distances, SEVESO requirements and Permitting. ➤ Updates on SGMF Guidelines and IACS Rec142 – consolidated version expected.
	2b	Safety distances			<ul style="list-style-type: none"> ➤ Safety Distances calculation methodology 	
	2c	Bunkering Guidelines			<ul style="list-style-type: none"> ➤ EMSA LNG Bunkering Guidance for Port Authorities/Administrations. 	
	3	Training	EC/EMSA	Port of Rotterdam, Stockholm, VDR, Shell, Norway	<ul style="list-style-type: none"> ➤ Finalization of the Training Matrix – including all the relevant instruments containing training and competencies related to LNG as fuel. 	<ul style="list-style-type: none"> ➤ Training matrix finalized - Overview of instruments containing provisions relevant for the definition of training requirements for the different stakeholders involved in LNG as fuel.
	4a	Gas quality, heating value and CO2 reduction potential			<ul style="list-style-type: none"> ➤ ISO Standard regarding gas quality ➤ Methane Release Mitigation Plan 	<u>No developments at the 10th LNG sub-group meeting</u>
	4b	Standard bunker delivery note	Wolfgang Hintzsche (VDR)		<ul style="list-style-type: none"> ➤ LNG Bunker Delivery Note in the IGF Code – Adoption of the Code in MSC95 – June’15 	

EUROPEAN SUSTAINABLE SHIPPING FORUM - SUB-GROUP PROGRESS ON WORK-PACKAGES – 10th LNG Sub-group meeting

Agenda Item	WP	Work-Package Title	Coordinator(s)	Members	Expected Delivery + Deadline	Milestones (updated after 10th LNG sub-group meeting)
					(No further deliverable expected)	
Developing the business case of LNG as marine fuel	5	EU co-financed projects and their objectives	EC/EMSA		EU funded LNG related projects – overview of R&D TEN-T programs	<ul style="list-style-type: none"> ➤ Update on different LNG related R&D projects. ➤ EU co-funded projects, on LNG sustainable shipping, have been presented at 6th session. ➤ Value of the LNG subgroup as a showcase platform for dissemination of EU funded project results has been demonstrated.
	6	LNG pricing	EC/EMSA	Lot 3 DG MOVE LNG tender	<ul style="list-style-type: none"> ➤ To be followed-up by the DG MOVE consultants 	<u>No developments at the 9th LNG sub-group meeting</u>

Annex 2 – ESSF LNG sub-group – New Work Package table
(Version agreed at the 6th ESSF Plenary Meeting)

PROPOSED REVISED STRUCTURE			
Agenda Item	WP	Work-Package Title	Non-exhaustive list of actions/deliverables
LNG Bunkering	1	Bunkering Guidelines	<ul style="list-style-type: none"> • Follow up of on-going initiatives regarding LNG bunkering (like IACS, SGMF, ISO, EMSA etc.) • Support in development of harmonised EU guidance for LNG bunkering • Steering and contribution to the EMSA Guidance on LNG Bunkering to EU Ports/Administrations
	2	Risk & Safety	<ul style="list-style-type: none"> • SIMOPS – Risk Criteria for support in decision making • Safety Distances (Probabilistic vs Deterministic approach) • Contribution to EMSA Guidance on LNG Bunkering to Port Authorities/Administrations
	3	Equipment	<ul style="list-style-type: none"> • Follow-up with ISO on the LNG Bunker Connectors standard development (following from IMO submission) • Explore further needs for standardization (ESD, hoses or other LNG bunkering related equipment) • Liaison with CCNR for consistent standard requirements • Dual Fuel Engine Technology (showcasing/update in developments)
	4	Training	<ul style="list-style-type: none"> • Continuing discussion on Issue papers with differentiated approaches for the port side and the ship side. • Follow up of Training Matrix • Support in drafting relevant chapters of EU guidance for LNG bunkering
	5	Environment	<ul style="list-style-type: none"> • Continue discussions in 4th LNG sub-group (3 September on on-going work of the CEN/EN + ISO regarding gas quality) • Methane Release (Mitigation Plan, Technology, new developments) • Support in drafting relevant chapters of EU guidance for LNG bunkering • LNG Well-to-Wake – Holistic approach to methane emissions mitigation
LNG Projects	6	Implementation and R&D Projects	<ul style="list-style-type: none"> • Sharing information about the relevant international initiatives, research projects, EU and national/regional infrastructure projects, ongoing EU policy- and legislative • EU funded LNG related projects – overview of R&D TEN-T and Horizon 2020 programs • Overview of international initiatives • Follow up on relevant EU legislation
Sustainable Transport Forum	7	Cooperation with Sustainable Transport Forum	<ul style="list-style-type: none"> • Follow up of relevant developments within STF • Follow up on National Policy Frameworks with regard to LNG bunkering infrastructure