1. Introduction, Approval of the agenda

1.1. The Air Emissions from Ships (AEfS) Sub-Group (SG) met for the second time on 2nd October 2017 to significantly move forward the efforts of the maritime community towards air emission reduction from ship combustion. The SG continued to support the Commission, the Member States and the ESSF stakeholders with the provision of technical input on matters under the ESSF AEfS SG’s Terms of Reference (ToR).

1.2. With the technical assistance of European Maritime Safety Agency, the SG’s work prioritised on realising a cost-efficient, coherent and timely implementation of the Sulphur Directive’ and MARPOL Annex VI provisions with particular attention to the 0.50% sulphur requirement from 1st January 2020 in the outside the Sulphur Emission Control Areas (SOx-ECAs). In this context, the SG is also developing and providing technical input for consideration to ongoing work of the Sulphur Committee or to the EU coordination process towards IMO meetings.

1.3. The agenda covered seven distinct topics with related work packages identified at the first meeting and was adopted reflecting the above considerations (Annex 1).

2. Nature of the meeting, SG operation and related appointments

2.1. In accordance with the agenda, each of the six Working Packages (WPs) presented their status on progress and invite feedback and views from the SG members and endorse the continuance and or consideration of other factors being raised. The following provides the outcome of these discussions along with the continuing actions of the WP’s.

2.2. A new Co-rapporteur, Mr Ludovic Laffineur (RBSA) was nominated to be part of the SG steering group replacing Mr Torsten Mundt (DNVGL).

3. Meeting Approach

3.1. The agenda was divided into two main Parts; Part A covered the three main packages WP1, WP2 and WP3 that dealt with the preparation of the issues relating to the 2020 implementation of the 0.50% sulphur limit outside SOx-ECAs; Part B covered WP4, WP5 and WP6 which looked into general aspects in relation to shipping emissions beyond SOx, alternative compliance methods and fuels. Each WPs were to develop recommendations and guidelines that would lead to cost effective implementation and identify synergies for alignments with the IMO developments. The following is a summation of the work package status, next steps and the responses from the floor.

4. Part A - Preparation for the 2020 0.50% sulphur content implementation

4.1. Particular attention was given to develop a common understanding of the scale and the timing of the change to 0.50% and to reach a broad consensus on the way forward, drawing on the experiences within the maritime community through the implementation of past sulphur requirements. The progress of work of the
three related WPs were presented by their leaders. It was noted in the discussions that there were many synergies between these work packages and close cooperation should be encouraged.

4.2. **Work Package 1 Enforcement Strategies on ships, best practices and smart measures. Leader: Denmark, Ms Dorte Kabel**

4.2.1. Two deliverables were agreed to be worked on:

- Compendium of best practices for sulphur enforcement; and
- Dedicated Port State and Flag State guidelines for sulphur inspection.

4.2.2. A presentation was given outlining the details of the WP1 work progress (Ref: AEIS Doc 01), the key outcome to date being the Draft compendium of sulphur enforcement best practices and smart tools. This draft was presented for review by the SG with a consideration to provide the relevant technical input for a potential EU submission to IMO PPR5 for further discussion (Ref: AEIS Doc 02) Work started in June 2017 and after collating input received from the WP members, a 1st draft was circulated to the WP1 group at the end of August. A 2nd Draft was subsequently issued to the AEIS SG on 29th September. After prolonged discussions and with general support from the SG members it was agreed to proceed with the submission to IMO PPR5.

4.2.3. The paper addressed the current applied practises across the EU in particular in the SOx-ECAs under the Commission Implementing Decision 2015/253 which could be of interest to non-EU countries as well: ways to adapt current sulphur related inspection practices by Ports State Control suitable to the 0.50% limit enforcement with reference to documentation and sampling of fuel used and beyond. Further methods, where some experience had been gained, included the analysis of the MARPOL sample and samples of fuel drawn at the time of delivery to provide a greater understanding of the degree of compliance on the fuel being supplied. Concerns were expressed in relation the enforcement approach to be taken outside the EU territorial waters.

4.2.4. The voluntary use of the common information system, THETIS EU, represented a powerful tool for recording and sharing causes for non-compliance, targeting and avoiding duplication of effort and cost. It was also recommended as an EU best practice for any existing/future platform for global compliance information recording and sharing.

4.2.5. The use of sniffers from air and or land was proposed as an element of the submission since currently providing a means to report through the THETIS EU on ships which may be considered for targeting. Further discussion emphasised that at present the sniffer technology provides a first step selection process to target those ships which are most likely operating in a non-compliant mode. Such information, such as the one from on board portable devices or fuel consumption calculator tools, would also benefit and reinforce any 0.50% enforcement regime to be put in place at the IMO.

4.2.6. The presentation also included some new, innovative ideas for the 2020 enforcement challenge such as Soot sampling in stack, Satellite Surveillance. In line continuous Monitoring of the sulphur content in the fuel was also mentioned.

4.2.7. The subject of penalties approaches and sanctions (Administrative fines; Criminal penalties; Detention and Warnings) was highlighted as deserving further discussion in the SG future meetings.

4.2.8. A point was raised on ensuring that clear distinction is given between the sulphur enforcement measures/experiences from Europe versus that of Global and that similar standards should be globally to work towards a uniform and cost effective approach across the maritime community.

**WP1 Discussion and feedback from the floor**

4.2.9. There was significant time given to feedback and questions from the floor, which focused on expressing specific recommendation that enforcement needed to be even more transparent and the consequences of non-compliance severe enough to be a sufficient deterrent to avoid non-compliance.
4.2.10. It was expressed that taking soot samples would be complex with wide and uncontrollable variations affecting the analysis and hence not suitable to be considered as a practical approach. Studies should, however, be encouraged to investigate as all options should be considered.

4.2.11. The idea of monitoring from satellites was also discussed however at this time the technology may not be sensitive enough, problems are related to the ozone layers scattering the results. New equipment may be able to see NOx and SOx but ships will be too small a signal but future R&I would be looking to see whether ships can be picked up. The development in using drones in some member States had run into challenges with flying permits which needed to be worked through.

4.2.12. The concept of self-monitoring by a ship, raised the question as to what benefits the ship might receive for self-monitoring and reporting, when this could require significant investment on time, maintenance, money and resources. However, ways to recognise voluntary measures from ships could be developed.

4.2.13. The proposal of banning ships from having any high sulphur bunker fuel on board whether residual or distillate fuel oil in nature was extensively discussed and many in the SG supported this proposal as an effective way to facilitate enforcement and avoid distortion of competition. The proposal would be designed as not to disadvantage alternative compliance measures, such as SOx Exhaust Gas Cleaning systems, which allow high sulphur bunker fuels to be used. While the measure was not contemplated in the Sulphur Directive, nor excluded, considerable support for the ban proposal in the IMO context was developing in the maritime community.

4.2.14. However, it was expressed that especially in the early stages of implementation there may be situations where ships would have no choice but to use a high sulphur fuel due to non-availability which would deserve to be considered separately.

4.2.15. The SG would closely follow the planned development by PPR of IMO provisions for non-availability of a compliant fuel. Equally, the legal basis for implementing a ban of fuels sulphur >0.50% on ships under current EU legislation would need to be further assessed since currently it applied only to ‘fuel being used’.

4.2.16. WP1 welcomed more members to contribute with further thoughts on the subjects being covered.

4.2.17. The methods used for identifying compliance status of ships in 2020 would have to vary to optimally add up to applied documentation check of the BDN which was currently the key document of evidence from the supplier along with the supporting statutory sample.

WP1 Next Steps

4.2.18. The WP will continue to work on the two deliverables of taking into account some very constructive feedback and suggestions to be worked into the two core deliverables:
- Updating the compendium of best practices for enforcement
  - Exchange of info with the non-EU countries
  - Non-Compliance in international waters
- Port / Flag State guidelines
  - Identification of clear grounds
  - Grounds for Sanctions
- Alignment with IMO

4.3. **Work Package 2 - ‘2020 - Recommendations on Operational Aspects in ECAs: lessons learned, best practice and awareness raising. Leader: Mr. Wolfram Guntermann, Hapag Lloyd**

4.3.1. Three core deliverables were agreed to be worked on:

a) 0.5% Sulphur Fuels – Information Matrix – monitor and build understanding of composition of fuel to be supplied.
b) MARPOL Verification procedure versus ISO 4259 – address and mitigate the application of the two standards without changing EU and IMO regulations

c) Identify ship concerns on the uncertainty of fuel formulations that may be supplied

4.3.2. Recognising that the advent of these new 0.50% fuels brings in a new dimension for the supply industry and the users alike to implement, the lessons learnt from the past and the concerns being raised for the future has warranted this WP to monitor the progress of developments leading up to the January 2020 implementation date. This WP benefited from particular interest with a large group contributing.

4.3.3. A first meeting of the WP was held on 25 July 17 by teleconference and a direction was established to develop an issues matrix covering the three deliverables and follow up work. WP members were encouraged to provide inputs to the matrix and start considering mitigation solutions. The outcome was a comprehensive matrix of viewpoints.

**WP2 Discussion and feedback from the floor**

4.3.1. It was agreed by the floor that time should not be spent on further building on the fuel availability study; however concerns and uncertainties would need to be addressed respecting anti-trust and competition law. Work by the WP will progress on the task to monitor the development of 0.50% fuel formulations and collecting technical information and data to share to the industry with means and solutions to mitigate concerns.

4.3.2. Reference was made looking to ISO and CIMAC fuels working groups for fuel standards to be updated. Whilst the majority of the new formulations should meet the current ISO 8217 requirements, it was anticipated that some formulations may need the original engine makers to provide their no objection for use. The issue of flash point was raised however this being a SOLAS requirement already restricted delivery to the minimum limit of 60 °C.

4.3.3. On deliverable (b) concerning the misalignments between the MARPOL sulphur in fuel verification procedure and the industry ISO 4259 approach, it was agreed to propose approaches within the current legal framework. The related WP matrix had considerable inputs with concrete suggestions from some members in the SG on how to deal with such concerns. Inspection guidance would need to reflect on board complexity of the fuel system piping arrangements and high sulphur residual elements that were difficult to remove and may lead to elevated readings on the sulphur content.

4.3.4. Concerns were raised by some members in relation to the implementation of a mandatory FONAR-like fuel unavailability reports in relation to the 0.50% fuels, currently where countries had established approaches with some discretion elements, and advocated for a mandatory FONAR approach to bring clarity. In the understanding of other members considered that it was anticipated that the FONAR would be used only to ensure the required information was gathered and the discretion remains still with the inspection authority also in relation to 2020 enforcement.

4.3.5. Lessons can be learnt from the 0.10% switch however we need to be mindful that the 0.50% being a global switch will add more challenges, for which need to be worked through also providing solution-oriented input into PPR.

4.3.6. A reminder that safety of 0.50% fuel operation should not be overlooked though, when considering what some ships experienced over the past sulphur changes in particular in relation to the move to 1.00% - 0.10% ECA and ‘At berth’. Mitigation through operational best practices again would need to be communicated to the industry in addition to the commitment to for this SG to provide concrete tools to achieve a consistent and cost effective implementation. This will include the important role this SG has to provide relevant input also into the PPR.

4.3.7. With regards to sanctions it was stressed that Member States efforts should continue to ensure that appropriate sanctions are put in place and a common understanding and guidance on sulphur inspections should be developed/updated to facilitate the early stages of implementation.
WP2 Next Steps

4.3.8. Taking into consideration the constructive feedback of the SG forum on the work done to date, the WP will continue to expand on the initial points raised in the matrix and of those fed back to the WP, to begin the work of specific document deliverables.

4.3.9. Any further comments from outside the WP on submissions are welcomed.

4.4. Work Package 3 Approach to Monitoring and assuring integrity of the fuel oil supply chain. Summary of key points raised leading to WP. Leader: KVNR, Mr Nick Lurkin

4.4.1. Three core deliverables consisting of:

a) Collate current requirements to facilitate the delivery of a compliant fuel
b) Define fuel non availability and application of letters of protest
c) Guideline on procedure for supply china integrity

4.4.2. The SG recalled that the control of sulphur content in the fuel starts at the supplier end of the hose. There had been focus on enforcing compliance on the ship to date however, the advent of the global 0.50% fuels in 2020, would demand a renewed focus on the supply chain. In order to develop a best practice approach on the control of fuel suppliers, some administrations already looked into this enforcement aspect and were preparing to address ‘non-availability’ claims in a uniform and consistent manner.

4.4.3. Correspondence on the three deliverables had been carried out by the WP to collect initial thoughts from the members. This consisted of addressing issues such as non-availability management, supplier’s registration scheme and the issues of noncompliance of BDN and MARPOL samples. The WP was also working to align itself with other forums such as the ‘ARA’ fuel quality forum’ where similar work is being conducted.

4.4.4. Currently there are two Member States represented on this group, a call was made for more to participate.

WP3 Discussion and Feedback from the floor

4.4.5. The supplier registration scheme function was discussed; further research is needed on assessing the application of the supplier registration scheme by understanding how Member States currently apply this.

4.4.6. Other key discussion points included the declaration of non-availability clause of MARPOL Annex VI needing more clarity as to the boundaries for acceptance; in particular to what degree a deviation from the intended course is determined. Letters of Protest rarely get submitted to the Port and Flag States, the reasons for which need to be looked into and guidelines given to better use this option. A more consistent approach to the application of test methods for determine the sulphur content and the interpretation allowing would be useful by providing a more consistent and uniform guidance.

4.4.7. It was noted that some aspects of WP3 overlapped with the WP1 and WP2 and therefore work between all three WP’s should be closely coordinated.

WP3 Next Steps

4.4.8. The WP will work move forward with the deliverables (face to face meeting) and consider best approach to coordinate with the WP2.

4.4.9. Explore alignment with other similar work being carried out such as: ARA Fuel Quality Forum; ISO and CIMAC activities and keep in line with the activities of the IMO MEPC and PPR.

1 Amsterdam-Rotterdam-Antwerp (ARA) initiative of bunkering ports
5. PART B - General Aspects of Emissions from Ships

5.1. Work Package 4 Conventional or Alternative Compliance Methods (impact on emissions). Leader: EGCSA, Mr Don Gregory)

5.1.1. The objective of this WP is to understand the consequences of applying alternative compliance means, with regards to their relative impact on emissions, recognising that to address the specifics would be an iterative process.

5.1.2. One core deliverable:

   a. Develop a Matrix of alternative fuels and their impacts on emissions (conventional & non-conventional fuels). Capture – SOx, NOx, (and CO2); PM/BC – unburned HC, CH4 and other non-regulated emissions.

5.1.3. The beginnings of a matrix were presented and generated discussion and further input, with contributions from various SG Members.

WP4 Discussion and Feedback from the floor

5.1.4. The depth and scope of the presented alternative compliance Matrix was debated recognising that the undertaking could become very detailed and complexity in populating the matrix to varying degrees of accuracy was underlined. Consideration was to be given, when populating the matrix, to the high dependence of emission figures to engine type and load conditions. However, some Members recommended cautious should be taken while making comparison among different fuel performance and consider emission factors as only relative indicators.

5.1.5. The insertion of emission factors would add useful comparative values and come in line with IMO, using the marine gas oil distillate grade as the main bench mark. Levels of detail included the idea of adding the engine type and combustion efficiencies and perhaps just keeping to the 4-stroke and 2-stroke ranges. Further consideration was to be given to the carbon content and the aromaticity index of a fuel.

WP4 Next Steps

5.1.6. Consideration will be given to all the comments made during the SG meeting and focus will be put on making this a comparative index rather than an absolute table of figures in view of the complexity that this will add. Carbon content and aromaticity will be of particular interest, some interface with ISO and CIMAC may be required.

5.1.7. Links will be made with the R and I group to expand on the work they have already done rather than duplicating time and effort.

5.2. Work Package 5 Conventional or Alternative Compliance Methods - impact on emissions; Experience with Ship Emission modelling / monitoring; primary and secondary PM and Black Carbon state of play. Leader: FMI, Mr Jukka-Pekka Jalkanen)

5.2.1. Two core deliverables:

   a. Experience with ship emission modelling

   b. Primary and secondary PM / BC emissions, state of play
Further to the core deliverables three tasks were formed: Task 1: Emission Factors for Ships; Task 2: Fuel Properties and Emission Factors; Task 3: Listing of Emission Models

5.2.2. Considerable work has gone into producing a comprehensive document by addressing the first Task 1 on Emission factors for Ships, which was circulated for discussion. The purpose of this document was to summarise the features and the working logic in generating emission factors for ships using various types of fuels. Task 2: A comprehensive spread sheet covering the calculation of the emission factors for: LNG, MGO, MDO and HFO was supplied for review.

WP5 Discussion and Feedback from the floor

5.2.3. Discussion centred on the calculation on fuel emission factors with a point of note to be in alignment with the IMO approach. Further, it was noted that it was not easy to collect realistic emission measurements and indeed it was mentioned that experience had shown how difficult it was to collect repeatable measurements.

5.2.4. With regards to the focus on particular matter (PM) it was pointed out that as of this time the regulations put no requirement on shipping specific to particulate matter. This however would become of greater focus as the industry moved from having established the SOx and NOx limits and more focus was given over to CO2, black carbon and particulate matter. FMI advised that this would be more for scientific interest but at the same time then if required then this information would be to hand.

5.2.5. Mass of pollutant emitted can be modelled giving an inventory which would then indicate a certain mass of the pollutant in a particular map grid. This would then provide the impact of environmental measures that were put into place to be more apparent.

5.2.6. Other points were also raised on addressing the impact of low load operations on the CO curve and methane release from gas engines; how these could be measured could be looked into as well. One Member State advised that their ministry were looking at checking emission factors with real life measurements to validate the calculations. It was further commented that much of the knowledge needed was held in the hands of commercial entities and to this extent ways needed to be found to have these contributed to the efforts of this WP.

WP 5 Next Steps

5.2.7. WP1 leader advised that a further revision would be developed in light of the feedback and any comments were to be submitted by 13 October

5.2.8. The WP was encouraged to link with the ‘Task Force on Emission Inventories and Projections’ (TFEIP) under the UNECE Convention on Long-range Transboundary Air Pollution.

5.2.9. A draft document on Emission factors for ships, as per WP4 emissions, to be worked on along with the work continuing with the collation of the data already gathered

5.3. Work Package 6 NOx Implementation and enforcement of future NECAs in the Baltic/ North Sea. Leader: Denmark, DMA, representative tbc.

5.3.1. Core deliverable

a) NOx Compliance Matrix if technical and operational issues in maintaining compliance

5.4. It was noted that the issue of NOx required some administrations in the relevant Member States to implement the NOx Tier III limit for new ships as of 2021. It was therefore considered that this SG needed to obtain an outcome on the efforts made to support where applicable the implementation by the administrations as well as equipment manufacturers and ship operators.

WP6 Discussion and Feedback from the floor

5.4.1. The SG forum was advised that there had been no development as yet on this package at this early stage.
5.4.2. It was expressed that it is important not to overlap on the work done on NOx and the verification process that are in place at IMO defined by the NOx Technical code.

5.4.3. Furthermore, one Member State stressed that this subject matter was out of the legal scope for the sulphur directive and that each MS might take their own relevant position in the IMO context.

5.4.4. On board monitoring of NOx was discussed and it was recommended to have technical exchange with WP1.

5.4.5. Low load operations of below the 25 % cycle measurement needed to be better understood.

WP6 Next Steps

5.4.6. This WP may start before the end of 2017 – requests for interested parties in joining the group to express so at the soonest.

6. Conclusions/recommendations/opinions

The updates given by each of the WPSs, notably provided an encouraging start and facilitated relevant discussions to achieving objectives and illustrated broad involvement of the SG members. Some WP’s however called for more members to participate in particular WP1, WP3 and WP4. The SG Steering group thanked all WP leaders and SG members for their close cooperation, the contributions and progress being made to develop further tools for enhancing and facilitating the implementation of the Sulphur rules in the EU and IMO contexts and beyond in accordance to the objectives of the AEFS ToR.

7. Next meeting

7.1. The next meeting was scheduled for 1 December 2017.
Annex: participants list

Annex

List of participating member organisations

<table>
<thead>
<tr>
<th>Type C Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABB</td>
</tr>
<tr>
<td>Cruise Lines International Association Europe (CLIA Europe)</td>
</tr>
<tr>
<td>CONCAWE</td>
</tr>
<tr>
<td>d'Amico</td>
</tr>
<tr>
<td>European Community Shipowner's Associations (ECSA)</td>
</tr>
<tr>
<td>Exhaust Gas Cleaning Systems Association (EGCSA)</td>
</tr>
<tr>
<td>European Sea Ports Organisation (ESPO)</td>
</tr>
<tr>
<td>European Association of Internal Combustion Engine Manufacturers (EUROMOT)</td>
</tr>
<tr>
<td>FEPORT</td>
</tr>
<tr>
<td>Finnish Meteorological Insitute</td>
</tr>
<tr>
<td>Good Fuels Marine</td>
</tr>
<tr>
<td>Hapag-Lloyds</td>
</tr>
<tr>
<td>International Association of Classification Societies Ltd. (IACS)</td>
</tr>
<tr>
<td>Lloyd's Register Marine</td>
</tr>
<tr>
<td>Naturschutzbund Deutschland e.V. (NABU)</td>
</tr>
<tr>
<td>Shell Companies (Shell)</td>
</tr>
<tr>
<td>Trident Alliance</td>
</tr>
<tr>
<td>Transport and Environment (European Federation for Transport and Environment)</td>
</tr>
<tr>
<td>Type D Members</td>
</tr>
<tr>
<td>Belgium - FOD Mobiliteit en Vervoer</td>
</tr>
<tr>
<td>Germany - Federal Ministry of Environment</td>
</tr>
<tr>
<td>Denmark - Danish Environmental Protection Agency</td>
</tr>
<tr>
<td>Estonia - Ministry of the Environment</td>
</tr>
<tr>
<td>Finland - Ministry of Transport and Communications</td>
</tr>
<tr>
<td>France - Ministère de l’Environnement, de l’Énergie et de la Mer</td>
</tr>
<tr>
<td>Latvia – State Environmental Service</td>
</tr>
<tr>
<td>MT – Transport Malta</td>
</tr>
<tr>
<td>The Netherlands - Ministry of Infrastructure and the Environment</td>
</tr>
<tr>
<td>Poland – Ministry of Marine Economy</td>
</tr>
<tr>
<td>Sweden - Swedish Transport Agency</td>
</tr>
<tr>
<td>United Kingdom - Department for Transport; Maritime and Coastguard Agency</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type E Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norway – Norwegian Maritime Authority</td>
</tr>
</tbody>
</table>
### ANNEX 2 – Work-packages matrix

**Sub-Group: AEfS – updated after ESSF AEfS 2nd meeting 02 October 2017**

<table>
<thead>
<tr>
<th>WP</th>
<th>Work-Package Title</th>
<th>Coordinator</th>
<th>Members</th>
<th>Activity/Expected Deliveries</th>
<th>Comments/Milestones/Deadlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enforcement Strategies on ships, best practices and smart measures (ToR Reference to Tasks 2.2.1 and Deliverable D1 and D2)</td>
<td>Denmark (+ EMSA)</td>
<td></td>
<td>Compendium of best practices for enforcement</td>
<td>- Include exchange of Strategies in the EU, Canada, US, China…others? Involvement of industry Distinguish between EU and Global issues - <strong>Compendium prepared for PPR5 submission</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dedicated Port State and Flag State guidelines for sulphur inspection</td>
<td>- Identification of clear grounds for enforcement in particular non-compliance in international waters - Grounds for sanctions? - Alignment with IMO, avoiding duplication - <strong>An initial Matrix template has been created to start building on this deliverable</strong></td>
</tr>
<tr>
<td>2</td>
<td>Recommendations on Operational Aspects in ECAs: lessons learned, best practice and awareness raising (ToR Reference to Tasks 2.2.1 and Deliverable D1 and D2)</td>
<td>Hapag Lloyd</td>
<td></td>
<td>0.50% Fuels - Information Matrix on fuels</td>
<td>- Monitor progress and build a matrix on available 0.50% fuel types and possibly on the development of 0.5 fuel formulations. Regarding refinery, storage and blending, what is traders approach to the different formulations to be supplied. - Include any trials and development programmes. - <strong>First round WP2 activity matrix created</strong> - <strong>No further WP2 activity matrix considered necessary</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MARPOL Verification procedure versus ISO 4259</td>
<td>- Review current MARPOL Verification procedures taking into consideration ISO 4259. - Address and mitigate the application of these two standards without changing EU and IMO regulation. - <strong>Work in progress – first thoughts submitted in activity matrix</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Identifying Ship concerns</td>
<td>- Identify the concerns of the ship operator on receiving fuel of diverse characteristics – - Develop requirements for facilitating transparency of the fuel characteristics to the receiving ship.</td>
</tr>
</tbody>
</table>
| 3 | Approach to Monitoring and assuring integrity of the fuel oil supply chain | KVNR | - Identify essential fuel properties to be reported by the supplier.  
- Develop guidance for the marine industry on the preparatory steps needed to be taken  
(to be 2020 ready, and during the current transition period which ends at the implementation date of 01 Jan 2020.)  
- See activity Matrix  
- Review and collate what is already required under MARPOL Annex VI,  
i.e. the BDN, statutory Sample, declarations, etc…  
- Work in alignment with IMO fuel quality CG best practice for suppliers /  
MS / users …  
- List current Supplier registration scheme practices and recommend  
additional practices to enhance supply compliance performance  
- Initial thoughts shared in WP  
- Define fuel oil non-availability requirements and application of  
letters of protest  
- The application of notes of protest for both sulphur content and fuel related  
engine operational issues  
- Guideline and procedures for supply chain integrity  
- if time permits, provide draft guidelines to facilitate the integrity of the fuel  
oil supply chain |
| 4 | Conventional or Alternative Compliance Methods (impact on emissions) | EGCSA | - Draft a matrix of alternative fuels and technological alternatives and their  
relative / qualitative impact on emissions  
- following emissions should be captured / displayed:  
  - SOx, NOx (and CO2),  
  - PM / BC  
  - unburned hydrocarbons, CH4 separately  
  - other non-regulated emissions?  
- differentiation between “tank-to-wake” and “well-to-wake” emission  
impact  
- 1st matrix created as a foundation  
- More input requested - |
| 5 | Agenda items 7, 8 and 10 covering: Conventional or Alternative Compliance | FMI (+EGCSA, EMSA) | - identify different models (available via Member States or companies and  
willing to share this) and then compare different models and analyse their  
accuracy compile a guidance paper which addresses general aspects on  
how such models work and where uncertainties and boundaries are  
discuss appropriate / latest emission figures that apply for other air |
| Methods (impact on emissions); Experience with Ship Emission modelling / monitoring; Primary and Secondary PM and Black Carbon state of play. | pollutants (as listed in the matrix of WP 4)  
- Comprehensive paper on emission factors and supporting analytics supplied – an updated version to be delivered |  
Primary and secondary PM / BC emissions, state of play  
- provide latest info about PPR discussion on this topic  
- identify other scientific and other research info that suits the purpose of this task |  
NOx Implementation and enforcement of future NECAs in the Baltic/ North Sea | Denmark | NOx compliance Matrix of technical and operational issues in maintaining compliance  
- To act as a guidance document to facilitate compliance and its enforcement  
- no progress yet |