**MJV Workshop on Enforcement and Risk Management on
Liquefied Petroleum Gas (LPG) and Liquefied Natural Gas (LNG) Sites
26-28 September 2017, Nicosia, Cyprus**

**Session 2. LPG/ LNG Inspections Focus and Techniques**

***This session consists of a discussion of the focus of inspections surrounding different key topics, e.g., storage, loading/unloading, emergency response, transport interfaces, etc***

***Instructions:***

* ***Groups should cover at least 2 questions. There are no mandatory questions.***
* ***Please look at all the questions together and decide the group’s strategy for the session. You will not be able to answer all the questions so you must decide which questions the group will answer and in what order.***
* ***Rapporteurs/Presenters – Please label your sessions and presentations on the memory stick clearly (e.g., Group 1, Session 1)***

***Please note that Session 2 has an additional task compared to Session 1. You must identify questions and tips (inspection techniques) for inspections.***

***Therefore, your main tasks are:***

***1) The group should agree on the main questions and the order that they will be discussed. To get this decision on the table, the chair may want to ask group members the types of sites they cover (LPG, LNG; production, storage, distribution; upper vs. lower tier) or if anyone has a strong interest in a particular question.***

***2) The group should choose a rapporteur at the beginning of the session. Rapporteurs should take good notes on a pc and these should be provided to the Chair at the end of the session.***

***Please spend no more than 5 minutes on choosing questions and selecting a rapporteur.***

***3) Discuss the questions and try to provide concrete answers to each. Specific details such as inspection methods, inspection questions, strengths and weaknesses, best and worst case criteria, using real cases from inspections, are all good ways to make your experience useful for other inspectors.***

***4) Before leaving each question, the group should spend 5 minutes brainstorming on inspection questions and tips for inspecting the issues identified by the group. The rapporteur should record all the questions on the memory stick.***

***5) The group should use the last 10 minutes to structure the plenary presentation and decide who will give the presentation.***

***You have 90 minutes. Watch your time and please stay on topic!***

**Discussion Topics - Inspection Techniques and Parameters**

1. **Inspection priorities**

Discuss what are your main inspection priorities when inspecting LPG and LNG-sites. Please identify differences and similarities between LPG and LNG sites and also production, distribution and storage sites, as necessary

Some possible key topics:

• Maintenance?

• safe operation?

• training and competency of personnel?

• emergency preparedness and response?

• labelling of tanks, equipment and piping

• security related issues?

• domino-effects?

• Other?

**Questions to be considered**

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| ***Inspection criteria.*** For each item you identify, what conditions (be specific) would convince you that the element was well-managed (e.g., equipment features, procedures, human factors, maintenance). |
| ***Typical findings****.* What are typical findings in inspections of these priority areas? |
| ***What does success look like?***What are signs that the inspection element is not well-managed (specific to the element, e.g., maintenance, safe operation, etc.)? |
| ***Questions for inspection checklists.***What questions can inspectors ask to verify good risk management of these priority areas? |

1. **Safety Reports, Safety Management Systems (SMS) and the Major Accident Prevention Policy (MAPP)**

What are some challenges associated with the quality of safety reports for LPG/LNG upper tier sites? Please give examples if possible.

**Questions to be considered**

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| ***Safety reports. Operator practices and evaluating safety reports.**** What are minimum elements that you would expect to see discussed in the safety report of an LPG/LNG site? *Please indicate differences with LPG vs. LNG, small vs. large, production vs. distribution vs. storage, as appropriate.*
* What are typical strength and weaknesses of safety reports at LPG and LNG sites?
* What challenges do inspectors face in reviewing safety reports at LPG and LNG sites?
* How do you verify that the safety report adequately represents site risks?
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| ***Safety Management Systems (SMS) and Major Accident Prevention Policy (MAPP).**** What kinds of requirements do you look for in an SMS on an LPG/LNG sites? Think about the 7 elements of the SMS in Annex III.*Please indicate differences with LPG vs. LNG, small vs. large, production vs. distribution vs. storage, as appropriate.*
* What elements of the SMS are strongest/weakest on LPG/LNG sites?
* What evidence or elements convince you that the SMS/MAPP is adequate for an LPG/LNG site, or conversely, the SMS is not adequate for the site?
* What evidence do you look for during an LPG/LNG site inspection to confirm that the operator and staff understand (or don’t understand) the SMS/MAPP?
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| ***Questions for inspection checklists.***What are some questions to ask for verifying safety reports and the SMS? |

1. **Technical Measures**

What technical measures do you look for on LPG/LNG sites? As you answer the subquestions, please indicate if there are differences for LPG vs. LNG sites.

 **Questions to be considered**

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| ***Overpressure and overfill protection.***What safety measures do you require:* to prevent overpressure and overfilling of storage tanks?
* to prevent overpressure and overfilling of road trucks?
* to prevent overpressure and overfilling of rail wagons?
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| ***Inspection and Maintenance**** What inspection frequencies do you require for equipment associated with these activities, including tanks and transfer lines?
* What inspection techniques do you expect operators to use?
* What other maintenance management criteria would you expect to see on a well-managed site (e.g., treatment of critical equipment, aging)?
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| ***Gas detection**** Do you require gas detection systems at (un)loading stations)?
* Do you require them to trigger automatic safety interlocks?
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| ***Gaskets.***What gaskets do you require to be used (fire safe, blow out resistant, …)?* What safety measures do you require to prevent ignition by stray currents for ship (un)loading?
* *Other.* Indicate any other technical measures that you would be specifically looking for on
 |
| ***Questions for inspection checklists.***What questions would you ask to verify that technical measures are appropriate to the risk? |

1. **Findings from past LPG/LNG Inspections**

**What issues have you found during your inspections covering the following? For each of the following, ask the question:**

* **How would you verify the integrity and quality of risk management of this aspect?**
* **What are clear signs of potential problems?**

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| ***PLANT INTEGRITY**** Primary containment; (vessels, piping, pumps etc)
* Safety systems; ESD overpressure etc.
* Site layout
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| ***PEOPLE**** Ownership culture and attitude
* Resources; technical authorities, managers
* Competence of managers and operators
* Management of 3rd parties; contractors, customers and suppliers working on site
* Communication to staff on hazards, incident lessons learned, procedures, changes
* Communication to the public
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| ***PROCESSES**** SMS – adequacy, use
* Maintenance/mechanical integrity
* Control of the site; access people etc.
* Interfaces; ships, road/rail tankers
* Management of change
* Emergency response planning
* Auditing, accident/incident investigation, feedback loops, performance measurement
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| ***Questions for inspection checklist.*** The group should provide some questions that they would ask in future inspections based on these findings. |