



COMAH Competent Authority Inspection Report

ESTABLISHMENT DETAILS			
Name of Operator:	ExxonMobil Chemicals Ltd		
Establishment Address:	Fife Ethylene Plant, Mossmorran, Fife, Scotland KY4 8EP	COIN Site Ref:	1036032
		Case No:	4121602
		Service order No:	SVC4303878

INSPECTION DETAILS			
Inspection Title:	Post Assessment – Mechanical Inspection Follow Up Visit		
Report Discipline(s):	Mechanical		
Intervention Plan ref:	TBC	Inspection Date:*	25/08/15

***NOTE TO OPERATOR:** Please ensure that you have updated the "date of the last site visit" field on the public information system following this planned inspection. The date above is the date of the last planned COMAH regulatory visit in line with the intervention plan for your establishment. You can select the relevant date from the system.

Visiting CA Staff:	Discipline:	CA Organisation, Unit & Team:
[REDACTED]	HM Specialist Inspector (Mechanical Specialist)	CEMHD 1F
[REDACTED]	HM Regulatory Inspector	CEMHD 1B
[REDACTED]	HM Specialist Inspector (Observation visit)	CEMHD 1F

Persons seen:	Position:
[REDACTED]	SHE Manager
[REDACTED]	Mechanical / Fixed Equipment Engineer
[REDACTED]	COMAH Safety Engineer
[REDACTED]	Engineering Specialist Group Head

Relevant documentation seen

1. ExxonMobil Chemicals Ltd Documentation: -
 - A) Letter from SHE Group Head, Re: Mechanical Engineering Ageing Plant & Post SR Assessment Inspection Site Braefoot Bay (9th July 2014). Dated 24th July 2015
 - B) Braefoot Bay Marine Terminal COMAH 2012 Safety Report Submission. *Number of relevant sections reviewed in relation to fire protection and drain drum.*
 - C) Loading Arm Drain Drum, B-D-11, *inspection documentation sample reviewed. However, the following were covered in more depth: -*
 - Equipment Strategy Summary, Equipment Item BRAE B-D-11, Last reviewed 05/05/2015
 - Report of an examination of an item within a pressure system, Equipment Number: B-D-11, Description: Ethylene Drain Drum. Examination Date 10th June 2011
 - D) FEP Braefoot Bay Marine Terminal COMAH 2012 Safety Report. *Briefly reviewed sections relevant to the inspection topics discussed, with some references being included in the body of this report*

2. Health & Safety Executive Documentation: -
 - A) Safety Alert Bulletin ED 01-2015 - External chloride stress corrosion cracking of stainless steel locking pipe connectors, dated 14/04/15
 - B) COMAH CA Report, titled: Post Assessment - Mechanical Inspection Visit. Inspection Date 08-09/07/14.
 - C) COMAH CA Technical Demonstrations Record – Braefoot Bay 5 year Resubmission, review date April 2013

Inspection Summary:

The ExxonMobil facility that is based in Mossmorran is Upper Tier (UT) COMAH site that produces ethylene by cracking ethane, which is provided from the neighbouring shell plant.

The primary objective of this inspection visit was to follow up a number of actions that were raised following the mechanical inspection visit in July 2014. These had been raised in order to clarify that the design & operational requirements of the Loading Arm Liquid Drain Vessel (B-D-11) and also confirm that the work on fire water system (passing valve) has been completed.

Further information had been provided via letter to the Competent Authority prior to the visit, which was subsequently discussed during this inspection. The company have complied with the previous actions that were raised. However, it became apparent during these discussions that the company have been aware of the damage to the Passive Fire Protection Coating on the jetty structure for over two years, and it was not as previously inferred, the result of the valve failure. Therefore the company were informed by the Regulatory Inspector that enforcement action would be considered and an Improvement Notice was subsequently issued following this visit.

Eight legal actions have been raised as a result of this inspection, which relate to the failure of the fire water valves, the integrity of the structure beneath the PFP coating, the operation and inspection of the Loading Arm Liquid Drain Vessel (B-D-11) and the inspection and maintenance procedures for the fire protection systems. (*See Legal Actions 1 to 8*).

Operator Performance Rating [where applicable]:

Topic	Rating					
	10	20	30	40	50	60
Ageing Plant – Leadership		X*				
Ageing Plant – Asset Register		X*				
Ageing Plant – Primary Containment		X				
Ageing Plant – Safety Critical Equip		X				
Ageing Plant – Resources	X					

**Note: These two scores have been raised from the previous level of 10, based on the evidence provided from this visit.*

Report author: [REDACTED]

CA Organisation, Unit & Team: CEMHD 1F

Date of report: 28th August 2015

Location: [REDACTED]

Purpose of visit:

The primary objective of this inspection visit was to follow up a number of actions that were raised following the mechanical inspection visit in July 2014. These had been raised in order to clarify that the design & operational requirements of the Loading Arm Liquid Drain Vessel (B-D-11) and also confirm that the work on fire water system (passing valve) has been completed. An agenda was provided to the site prior to the visit and this was used as a basis of discussions on the day. The primary points provided were as follows: -

1. Review of previous legal actions

- *Passing Fire Water Valve*
 - *Valve rectification (Legal Action 1)*
 - *Passive Fire Protection – Rectification work undertaken (Legal Action 1)*
- *Loading Arm Liquid Drain Vessel B-D-11*
 - *Original Design & Operational Intent (Legal Action 3)*
 - *Rectification of Equipment and structures subject to splash from liquid arm deluge (Legal Action 4)*

2. Asset Integrity & Maintenance Management

- *Inspection & Maintenance regime of Active & Passive Fire protection systems at site*
- *Ethylene Drain Drum (Inshore) B-D-04*
 - *Original Design and current operation*
- *Lokring Pipe Connectors Safety Bulletin (ED 01-2015)*
 - *Review of Potential for CSCC*

The visit was conducted through office based discussions, including a review of the relevant documentation that was available. An accompanied site inspection of the facility was also undertaken of the Braefoot Bay Jetty. Further discussion regarding the inspection and maintenance management system continued upon return to the office and this was concluded with an office discussion summarising the main points from the visit and the potential for enforcement regarding the PFP coating.

Factual observations and findings:

INTRODUCTION / BACKGROUND INFORMATION

1. The ExxonMobil facility that is based in Mossmorran is Upper Tier (UT) COMAH site that produces ethylene by cracking ethane, which is provided from the neighbouring shell plant.
2. Since the previous inspection visit in July of last year there has been a number of staff changes with the *SHE Manager and Lead Fixed Equipment Engineer both retiring*, as such these roles have been taken by [REDACTED] and [REDACTED] respectively. A further addition is that of an Engineering *Specialist Group Head*, [REDACTED] who it is my understanding is responsible for all of the non-process related engineering activities at site, which includes the inspection and maintenance activities.

PROGRESS ON TOPICS PREVIOUSLY IDENTIFIED/DISCUSSED

3. Four legal actions were raised following the previous mechanical inspection visit in July 2014, with action three being the primary focus of this site visit. An overview of the previous actions is provided below: -
 1. *"The company should provide confirmation to the Competent Authority that the Firewater valve that was seen to be passing at Braefoot Bay jetty during the*

- inspection visit has been rectified"*
- II. *"The company should provide confirmation to the Competent Authority that either they have completed, or there is a plan in place, to review and rectify the passive fire protection, structures and equipment in the area around where the firewater valve was passing on the Braefoot Bay site"*
 - III. *"The company should provide further details which specify the original design and operational intent of the Loading Arm Liquid Drain Vessel BD-11, which is located on the jetty in Braefoot Bay. This should include the details of the proposed method for achieving heating, for which a seawater drench system is currently being used"*
 - IV. *"The company should provide a time bound action plan to review and rectify, where necessary, the equipment and structures that have been subject to splash back from the water deluge that has been employed on Vessel BD-11"*
4. In the weeks prior to the site inspection the company provided an update, via letter dated 24th July 2015, which provided an overview of their progress with these actions. The letter confirmed that the company had repaired the leaking firewater valve and also rectified that equipment in the area around B-D-11. Therefore complying with actions 1 & 4 respectively.
 5. The company also provided a description of the modification/change in operation of the Loading Arm Drain Vessel (B-D-11), which effectively complies with the action 3. However, this subject is covered in more depth in this section.
 6. The company also provided a timescale by which time the Passive Fire Protection will be rectified, 31st December 2015, which also complies with the action raised but was not in line with the previous discussions at site or our expectation in regards to this protective measure. Again this subject is covered in more depth in this section.

Passing Fire Water Valve & Passive Fire Protection

7. As stated we have been informed that the passing fire water valve was rectified not long after our visit in July of last year. However, one of the main issues that was raised at the time of that inspection was the condition of the Passive Fire Protection in this area that had been subject to a continuous deluge of water from the failed valve. We were informed at that time there was a plan in place to rectify this following the repair/replacement of the fire water valve, which at the time of the inspection was inferred to be the primary cause of the breakdown of this coating. However, the recent letter informed us that this was scheduled to be completed by the 31st December 2015. Almost 18 months following our initial visit, this is clearly not in line with our discussions with the Lead Fixed Equipment Engineer and SHE Head at that time.
8. We were informed during this inspection visit that the company had received a number of tenders and the delay in progressing this reinstatement work had been due to a number of factors including the difficult access conditions, which requires scaffolding over water. However, one of my concerns that I raised at the time of this inspection visit was the difficulty in applying such coatings during adverse weather, past experience would indicate that with winter approaching it is likely that if this work is not completed in the next few months then it will require a much more significant delay.
9. Following the inspection at the Braefoot Bay Jetty, where the PFP damage was again viewed, the company provided an overview of the maintenance Management system, SAP, specifically describing how notifications are prioritised and managed. As expected this differs depending on whether the damage, or issue, identified is considered a financial or safety risk. The question was raised as to how the damaged PFP has been categorised and as such the relevant notification was brought up in the system. Ref Notification 72453392.
10. Upon viewing the notification it became apparent that the company had raised this issue on 19th June 2013, over a year prior to our inspection in July of last year. Secondly it could be

seen that this had been identified as a financial risk and not safety related, when it is my understanding that the PFP has been applied in this area to protect the structure from a possible jet or pool fire scenario as a COMAH mitigation measure. Comments on the notification indicate that the PFP was "Severely damaged and falling off the structure", with the effect or ultimate consequence being a "Lack of capability to withstand fire heat. Buckle in the event of a fire and pipe rack will not be supported resulting in pipe work ruptures and leak in to the sea".

11. We were subsequently informed that the Passive Fire Protection at site is not considered to be Safety Critical, which is why the financial implication/prioritisation would have been selected in this instance.

12. In regards to passive fire protection, section 5.2.6.1 - *Fire Proofing* of the Braefoot Bay COMAH Safety Report states the following: -

"In general, steel vessels that require fire proofing are covered with 38mm of gunite. An alternative with weight savings is thermal insulation covered by a steel jacket provided it meets the requirements of the ExxonMobil Global Practices (which include design and installation: support, materials, thickness, cladding, banding, resistance to fire water jet impingement and a minimum fire resistance as specified in the codes below). Maintenance procedures require fabrication and replacement of all removed insulation.

Structural steel support members and vessel skirt sheets are fire proofed with a minimum of 50 mm concrete to a height of 6 m above a potential seat of fire (grade or platform). Above this height, light weight fire proofing is allowed but the requirement to resist direct flame and fire hose impingement remains.

The above standards are intended to provide an initial protection to the equipment to allow time to initiate full fire-fighting activities. The fireproofing meets the test requirements for 1.5 hours protection as outlined in ASTM 119, UL 1709 or equivalent (BS 476). For structural steel this means an average temperature below 538 degC. For vessels, the critical temperature is determined by the yield strength of the material"

13. We were also informed during this inspection that a second fire water valve had failed on the jetty and again this was dousing the area around it. This was also viewed during our inspection at Braefoot Bay. Again, we were informed that there was a plan in place for this to be rectified in the next few weeks.

Loading Arm Liquid Drain Vessel B-D-11

14. The letter provided by the SHE Manager gave a brief description of the original design intent, how its operation had been changed and recently what had been considered in regards to potential modifications as a part of the recent Braefoot Bay expansion project. This is summarised below: -

- *Original vessel installed in 1982, with heated jacket.*
- *Heated Jacket removed in 1987 due to failure, said to be incorrect wiring*
- *Sometime over the recent past, water deluge has been added to increase the speed by which the ethylene in the drum is vaporised.*
- *Following the inspection in July of last year the deluge was turned off and no operational issues were said to have arisen as a result. Clear guidance was said to have been issued that this must no longer be operated in this way.*

15. It is understood that both effluent and fire water have been used as a source for the deluge in the past, but as stated the company stated that this will no longer be used, primarily due to the accelerated deterioration of the equipment in the area.

16. The liquid drain arm drain drum/vessel is designed to be used, as the name suggests, to collect the liquid ethylene drained from the loading arms at the end of ship loading. The

temperature of the liquid received into the drum is gradually raised, due to the ambient temperature of the uninsulated drum, and vaporised. The water deluge has been added in the past to increase the speed of this process, which it was said is likely to be due to the increased throughput of ship loading at the jetty.

17. It should be noted that the company were not able to present any detail as to how this change to a water deluge system was managed or controlled, but it was stated that it was unlikely to have been completed in line with their management of change process. It is also understood that the removal of the water deluge has not been subject to any operational change assessment.
18. I stated to the company that there have been a number of changes to the original design intent of this vessel since it was installed, specifically the removal of the insulation and trace heating and subsequently the addition and subsequent removal of the deluge. No details could be provided at the time of this inspection to demonstrate that any of these changes have been suitably assessed.
19. It should be noted that the company did state that since they stopped using the deluge on the vessel they haven't experienced any operational issues, due to the increased time taken for the ethylene to vaporise. However, the safety report is seen to take credit for the insulation of this vessel in a fire scenario, specifically section 4.2.4-Major Accident Scenarios states: -
"There are several low temperature ethylene process drums at the Braefoot Bay process part of the plant containing flammable pressurised liquid streams (which flash to flammable vapour/mixed phase streams on release to atmosphere). The drums are of the same material of construction, design pressure, design temperature and contain the same process fluid, ethylene. The drums are: Ethylene HP Flash Drum B-D-01, Ethylene MP Flash Drum B-D-02, Ethylene LP Flash Drum B-D-03, Ethylene Drain Drum (Inshore) B-D-04 (normally empty) and Ethylene Drain Drum (Jetty) B-D-11 (normally empty). All the drums are fire proofed with external insulation and fire proofing of the drum supports."
20. Following on from the inspection in July of last year the company updated their Written Scheme of Examination, which the company identifies as an Equipment Strategy, to include the potential for the occurrence of Chloride Induced Stress Corrosion Cracking (CSCC). However, it was stated that this inspection would not be undertaken until 2016. Upon reviewing the Equipment Strategy it could be seen that the company had identified a 48 month interim and 192 month thorough inspection frequency. The last thorough being seen to be undertaken in 2000 and interim inspection being completed in 2011. This presented a discrepancy with between the WSE and the next planned inspection date,
21. The last interim inspection that was undertaken on the 10th June 2011 was reviewed, where it can be seen that the Competent Person had agreed that the next inspection wasn't due until 13th June 2016 with the report concluding that
"On the basis of this report, having reviewed the previous reports, the Run Basis Document, the Written Scheme of Examination and the Risk Based Inspection documentation it is recommended that the next inspection dates are those stated on page 1 of this report"
Where page 1 is seen to align the next through and interim inspections to the aforementioned 2016 date.
22. The report also states that there are "... no changes to be made to the WSE, however the RBI was updated".
23. Since the last thorough inspection in 2000, interim inspections have been undertaken in 2003, 2007 and 2011. So it is my understanding from discussions that over this period the interim inspections have moved from an initial frequency of 3 to 5 years over this period.

ASSET INTEGRITY & MAINTENANCE MANAGEMENT

Inspection & Maintenance regimes for fire protection systems

24. The failure of the fire water valve prompted a number of questions, particularly in regards to the maintenance and inspection of the fire protection systems at site. However, due to the issues that arose regarding the previous actions/topics this subject was not able to be covered in any depth during this visit.
25. It is understood from the brief discussions that were held that the company have an inspection and maintenance procedure in place for the equipment associated with the fire deluge/suppression system, pumps etc. However, as discussed with the site at the time of the inspection it is necessary that further information is provided on this topic area.
26. The company stated that there would also be an inspection and maintenance procedure in place for monitoring the Passive Fire Protection, certainly when it comes to assessing the condition on vessels, although again further information will be required on this topic area. As discussed at the time there are concerns as to how any degradation of the PFP that is identified is subsequently being managed.
27. In regards to the inspection of passive fire protection, section 5.2.6.1 - *Fire Proofing* of the Braefoot Bay COMAH Safety Report states that: -
"Inspection of fireproofing is carried out by the inspection group for vessels and structural steel and by maintenance for emergency block valves and cabling. Maintenance work orders are raised to make repairs where defects are noted through these inspections"

Ethylene Drain Drum (In-Shore) B-D-04

28. I was aware of this additional drain drum (B-D-04) that is located onshore, as such this was included as a topic of discussion following the questions that were raised in regards to operational changes and modifications of the B-D-11 drain drum that is located on the jetty. However, discussions on the day highlighted that this drum is operated in a completely different manner with Methanol Vapour being used as the heating medium and as such has not undergone any similar operational changes. Therefore, this was not seen as a topic requiring any further discussion during this site inspection.

Lokring Pipe Connectors Safety Bulletin (ED 01-2015)

29. The company were forwarded a Safety Alert Bulletin *ED 01-2015 - External chloride stress corrosion cracking of stainless steel lokring pipe connectors* via email from the Regulatory Inspector [REDACTED] on 22/04/15, as I was aware from previous discussions that the company utilise these in their piping systems. We were subsequently informed by the Lead Fixed Equipment Engineer on the 23/04/15, who at this time was [REDACTED], that the company were aware of this issue and were assessing the potential impact this may have on their use of lokrings in stainless steel service.
30. The primary point for inclusion in this visit agenda was to ascertain whether the assessment the company have made has identified any potential for this to affect or give rise to a Major Accident Hazard Scenario. We were informed that the review that was undertaken did not identify any potential for this to occur. However, the company did state the Equipment Strategy/Examination procedure for the diesel pipework had been updated as a result of this work.

Discussion and Conclusions:

Progress Against Previous Legal Actions

31. The company were found to have complied with all four of the previous legal actions that were raised and as such these can now be closed. However, discussions on the day have raised a number of additional questions that will require address by the company. These actions are covered in more detail in this section of the report.

Passive Fire Protection at Jetty

32. It became apparent from our discussions that the company were aware that the PFP had deteriorated to a level where it was considered to be "severely damaged" in June of 2013. However no work has been done to rectify this issue to date, and the company were said to be at the stage of evaluating tenders for this work with a deadline being set of 31st December to have this rectified.
33. The company stated that they do not consider PFP to be Safety Critical, however it is my view that if this is a COMAH Mitigation measure as suspected then it should be considered to be Safety Critical based on the definition provided in *HSG 190 - Preparing Safety Reports: Control of Major Accident Hazards Regulations 1999 (COMAH)*, which states: -
"In relation to an item, an item of equipment is safety critical if either its failure could cause or contribute substantially to a major accident, or its purpose is to prevent, or limit the effect of, a major accident. In relation to an event, an event is safety critical if its occurrence could lead to a significant release of contaminant with major consequences"
34. Therefore the company are required to review the classification given to Passive Fire Protection at site and deem whether it is Safety Critical in regards to the Major Accident Hazard Scenarios at site. (*Legal Action 1*). In regards to the Mechanical Engineering aspects, a failure of these protective systems increases the likelihood of developing corrosion underneath.
35. On further issue that became apparent during our discussions was that the Fixed Equipment Engineer, [REDACTED] had not been involved in the process to rectify this protective coating system. The primary issue being that it would have been expected that this structure would be subject to a full inspection, prior to the reapplication of this coating, to ensure that it is fit for continued service. Therefore the company are required to confirm to the Competent Authority that prior to the application of the Passive Fire Protection System the structure has been assessed, by someone who is suitably competent to do so, and is fit for continued service. (*Legal Action 2*).
36. In regards to the completion of the work to rectify the Passive Fire Protection in this area the Regulatory Inspector, [REDACTED], has issued Improvement Notice (Ref IN/26.08.15/DS1). Therefore no further legal actions have been raised in regards to this issue in this report.
37. However, if I consider the damage that was viewed during the inspection against the HSE Document *OIS 12-2007: Advice on acceptance criteria for damaged Passive fire Protection (PFP) Coatings*, then it can be said that the PFP had deteriorated to such an extent that the structural steel work was exposed and it would be quite difficult on first viewing to find an area that wouldn't be classed as a *Severity Level 1*, particularly as the entire area had been subject to deluge from the failed fire water valve. The severity level 1 criteria is described as follows: -
- Severity Level 1** – Will cause gross failure of PFP, when subject to a fire threat, leading to a significant element of the protected component becoming exposed to the fire. Remedial action will involve removal and reinstatement of significant amounts of material and should

be undertaken immediately.

This level of damage includes,

- *Unretained and disbonded material*
- *Corrosion or mill scale under an epoxy intumescent*
- *Reinforcement exposed and visibly damaged*
- *Substrate exposed with reinforcement damaged*
- *Major failure of retention system at corners*
- *Water at PFP/substrate interface*
- *Waterlogged or "popped" material*
- *Modification with PFP not reinstated*
- *Addition of attachment with no PFP protection*

38. While this advice/guidance may have been originally put together for our offshore division, I believe the advice and issues raised are equally as applicable to the protection of the equipment at this facility.

Passing Fire Water Valves

39. A second fire water valve has failed on the jetty and again this was seen to be dousing the area around it. We were informed that there was a plan in place for this to be rectified in the next few weeks. Therefore the company are required to inform the competent authority when this work is complete and also what they believe the cause of the failure to be. (*Legal Action 3*).

40. There are now two areas of the jetty that have been subjected to a large volume of water spray/dousing due to these failures. This has exposed the structure, pipework, insulation etc to a considerable amount of water and as such it would be expected that this equipment be subject to suitable inspection to ensure that it remains fit for continued service. Therefore the company are to confirm to the competent authority that these two areas have been suitably inspected and the relevant equipment contained within is fit for continued service. Where any issues are identified then it would be expected that a time bound action plan will be put in place to ensure that these issues are completed in an appropriate manner. (*Legal Action 4*).

Loading Arm Liquid Drain Vessel B-D-11

41. I was informed by the company that there have been a number of changes to the original design intent of this vessel since it was installed, specifically the removal of the insulation and trace heating and subsequently the addition and subsequent removal of the deluge. No details could be provided at the time of this inspection to demonstrate that any of these changes have been suitably assessed. The sites COMAH safety report was also seen to take credit for the original insulation, which is predominately no longer in place.

42. Therefore the company are required to undertake a review of the current operational requirements of this vessel, taking into consideration the original design specification and confirm to the Competent Authority that it is fit for continued service. (*Legal Action 5*).

43. If considering this under the SRAM the company should be able to demonstrate that they have suitable information for this equipment, so that they are able to meet the following criteria: -

12.2.1.8 – The Safety Report should show how the containment structure has been designed to withstand the loads experienced during normal operation of the plant and all foreseeable operational extremes during its expected life.

12.2.1.10 – The Safety Report should show that adequate safeguards have been provided to protect the plant against excursions beyond design conditions.

44. The company have updated their Written Scheme (Equipment Strategy) since the last interim inspection in June of 2011, but have not taken account of the increase in frequency that has been agreed by the Competent Person on the Examination Report. Therefore they have effectively not complied with their Written Scheme of Examination.
45. The company have aware that the vessel and surrounding area has been subject to deluge, an operational change that was not subject to a management of change procedure, yet have not deemed it necessary to undertake an interim inspection of the vessel. The company have also identified a further degradation mechanism being the potential for CSCC, which it would have been expected would already have been included in the scheme given its location, even though the company believe the probability of this occurring is low given the operating temperature range.
46. Therefore the company are required to undertake a review of their Written Scheme of Examination and Confirm to the Competent Authority that this has now been suitably updated. Furthermore they are also required to provide confirmation when this equipment will undergo an Interim and Thorough Examination in accordance with the updated scheme. (*Legal Action 6*).

Inspection & Maintenance regimes for fire protection systems

47. As stated previously, due to the issues that arose regarding the previous actions/topics that were identified this subject was not able to be covered in any depth during this visit.
48. It is my understanding that the fire protection systems at site have been installed to limit the consequences of a potential Major Accident Hazard. Therefore it would be expected that the company would be undertaking suitable inspections to ensure that the systems should function and provide appropriate protection if required. It would be expected that the routine inspections and testing of the equipment would be undertaken in accordance with a relevant standard, such as *NFPA 25* or an equally equivalent standard.
49. Therefore the company are required to provide a further information on this topic area, and specifically: -
 - Confirm that they have an inspection and maintenance procedure in place to ensure the ongoing integrity of the Passive Fire Protection Systems at Site, it would be expected that a copy of the relevant procedure would be provided for review. (*Legal Action 7*)
 - Confirm that they have an inspection and maintenance procedure in place to ensure the ongoing integrity of the fire deluge and suppressions systems. Again, it would be expected that a copy of the relevant procedure would be provided for review. (*Legal Action 8*)
50. It is the intention that this documentation provided will be used in preparation for a visit when these topic areas can be covered in more depth.

Actions Legal

Action number / Description: 1. The company are required to undertaken a review of their Passive Fire Protection and establish whether this safety critical in regards to the Major Accident Hazard Scenarios at site

Reference [Issue tab]:

End date: [REDACTED]

Details: HSG190 states that an item of equipment can also be classed as safety critical if its purpose is to prevent, or limit the effect of, a major accident. Currently the company do not consider PFP to be safety critical. There is the fundamental problem that the deterioration of the PFP may result in it no longer being fit for its original purpose, however, there are also other issues that will arise such as the increased risk of corrosion developing underneath;. Therefore the company are required to confirm to the Competent Authority that have reviewed the Passive Fire Protection and considered whether it is deemed safety critical, particularly when considering the definition provided in HSG190.

Legal Basis: COMAH Regulation 5

Guidance: HSG190

Action number / Description: 2. The company are required to confirm to the Competent Authority that prior to the application of the Passive Fire Protection System the structure has been assessed, by someone who is suitably competent to do so, and is fit for continued service

Reference [Issue tab]:

End date: [REDACTED]

Details: It became apparent during our discussions that the inspection team had not been involved in the process to rectify the protective coating system. It would have been expected that this structure would be subject to a full inspection, prior to the reapplication of this coating, to ensure that it is fit for continued service particularly considering the structure. Therefore the company are required to confirm that this has been suitably inspected, by someone who is competent to do so. Where any issues are identified then it would be expected that a time bound action plan will be put in place to ensure that these issues are completed in an appropriate manner

Legal Basis: COMAH Regulation 5

PUWER Regulation 6

Action number / Description: 3. The company are required to inform the competent authority when the work has been complete to rectify the Firewater valve, which was seen to be passing at the Braefoot Bay jetty during this inspection visit, and they should also provide details as to what they believe the cause of the failure to be.

Reference [Issue tab]:

End date: [REDACTED]

Details: A second fire water valve has failed on the jetty and again this was seen to be dousing the area around it. We were informed that there was a plan in place for this to be rectified in the next few weeks. Therefore the company are required to inform the competent authority when this work is complete and also what they believe the cause of the failure to be.

Legal Basis: COMAH Regulation 5

PUWER Regulation 5

Action number / Description: 4. The company are required to suitably inspect the relevant equipment that has been subject to water deluge, due to the two passing fire water valves on the jetty, and confirm to the competent authority that it is fit for continued service

Reference [Issue tab]:

End date: [REDACTED]

Details: There are now two areas of the jetty that have been subjected to a large volume of water spray/dousing due to these two valve failures. This has exposed the structure, pipework, insulation etc to a considerable amount of water and as such it would be expected that this equipment be subject to suitable inspection to ensure that it remains fit for continued service. Therefore the company are required to confirm to the competent authority that these two areas have been suitably

inspected and the relevant equipment contained within is fit for continued service. Where any issues are identified then it would be expected that a time bound action plan will be put in place to ensure that these issues are completed in an appropriate manner.

Legal Basis: COMAH Regulation 5
PUWER Regulation 6

Action number / Description: 5. The company are required to undertake a review of the current operational requirements of this Liquid Arm Drain Vessel, taking into consideration the original design specification, and confirm to the Competent Authority that it is fit for continued service.

Reference [Issue tab]:

End date: [REDACTED]

Details: There have been a number of changes to the original design intent of this vessel since it was installed, specifically the removal of the insulation and trace heating and subsequently the addition and subsequent removal of the deluge. No details could be provided at the time of this inspection to demonstrate that any of these changes have been suitably assessed. The sites COMAH safety report was also seen to take credit for the original insulation, which is predominately no longer in place. Therefore the company are required to undertake a review of this equipment given these changes and confirm to the Competent Authority that it is fit for continued use.

Legal Basis: COMAH Regulation 5
PUWER Regulation 4

Action number / Description: 6. The company are required to undertake a review of their Written Scheme of Examination for the Liquid Drain Arm Vessel (B-D-11) and Confirm to the Competent Authority that this has now been suitably updated. Furthermore they are also required to provide confirmation when this equipment will undergo an Interim and Thorough Examination in accordance with the updated scheme.

Reference [Issue tab]:

End date: [REDACTED]

Details: The company have updated their Written Scheme since the last interim inspection in June of 2011, but have not taken account of the increase in frequency that was agreed by the Competent Person on the Examination Report. Therefore they have effectively not complied with their Written Scheme. There is also the issue that the company are aware that the vessel and surrounding area has been subject to deluge; an operational change that was not subject to their management of change procedure, yet have not deemed it necessary to undertake an interim inspection of the vessel. Therefore the company are required to confirm to the competent Authority that they have reviewed the written scheme of examination for the Liquid Drain Arm Vessel and provide the relevant dates by which time the vessel will be inspected.

Legal Basis: COMAH Regulation 5
PUWER Regulation 6

Action number / Description: 7. The company are required to confirm that they have an inspection and maintenance procedure in place to ensure the ongoing integrity of the Passive Fire Protection Systems at Site

Reference [Issue tab]:

End date: [REDACTED]

Details: Where the fire protection systems at site have been installed to limit the consequences of a potential Major Accident Hazard. It would be expected that the company would be undertaking suitable inspections to ensure that these systems should function and provide appropriate protection if required. Therefore the company are required to provide appropriate details to demonstrate that this work is undertaken, specifically a copy of the relevant site procedure

Legal Basis: COMAH Regulation 5
PUWER Regulation 5 & 6

Action number / Description: 8. The company are required to confirm that they have an inspection and maintenance procedure in place to ensure the ongoing integrity of the fire deluge

and suppressions systems at site.

Reference [Issue tab]:

End date: [REDACTED]

Details: Where the fire protection systems at site have been installed to limit the consequences of a potential Major Accident Hazard. It would be expected that the company would be undertaking suitable inspections to ensure that these systems should function and provide appropriate protection if required. Therefore the company are required to provide appropriate details to demonstrate that this work is undertaken, specifically a copy of the relevant site procedure

Legal Basis: COMAH Regulation 5
PUWER Regulation 5 & 6

CA Action

[This section of the report details how the issues identified can be taken forwards and follow up allocation to the Inspector responsible. This section of the report should NOT be copied to the duty-holder.]

[REDACTED]
COIN Reference [If applicable]:

Owner: Regulatory inspector

Details: [REDACTED]

[REDACTED]
COIN Reference [If applicable]:

Owner: Regulatory inspector

Details: [REDACTED]

Glossary

1. **CA** – Competent Authority
2. **HSE** – Health and Safety Executive
3. **COMAH** – Control of Major Accident Hazard
4. **PSSR** – Pressure Systems Safety Regulations 2000
5. **PUWER** – Provision and Use of Work Equipment Regulations 1998
6. **MA** – Major Accident
7. **MAH** – Major Accident Hazard
8. **MATTE** – Major Accident To The Environment
9. **AP** – Ageing Plant
10. **SCE** – Safety Critical Equipment
11. **P&ID** – Piping and Instrumentation Diagram
12. **WSE** – Written Scheme of Examination
13. **NDT** – Non-destructive testing
14. **MOC** – Management of Change
15. **SAFed** – The Safety Assessment Federation
16. **EEMUA** – The Engineering Equipment & Materials Users' Association
17. **MMS** – Maintenance Management System
18. **CSSC** – Chloride Induced Stress Corrosion Cracking

References

1. **L111** - A guide to the Control of Major Accident Hazards Regulations 2015, guidance on regulations (<http://www.hse.gov.uk/pubns/books/l111.htm>)
2. **HSG 190** - Preparing Safety Reports: Control of Major Accident Hazards Regulations 1999 (COMAH) (<http://www.hse.gov.uk/pubns/books/hsg190.htm>)
3. **L122** – Safety of Pressure Systems, Pressure Systems Safety Regulations 2000 ACOP and guidance. (<http://www.hse.gov.uk/pubns/books/l122.htm>)
4. **L22** – Provision & Use of Work Equipment Regulations 1998, ACOP and guidance. (<http://www.hse.gov.uk/pubns/books/l22.htm>)
5. **IMG01 (EMMUA 231)** – The Mechanical integrity of plant containing hazardous substances - A guide to periodic examination and testing. (<http://safed.co.uk/technical-guides/pressure-equipment/>)
6. **RR509** – Plant ageing, management of equipment containing hazardous fluids or pressure. (<http://www.hse.gov.uk/research/rrpdf/rr509.pdf>)
7. **RR823** – Managing Ageing Plant, A Summary Guide (<http://www.hse.gov.uk/research/rrpdf/rr823-summary-guide.pdf>)
8. **ED 01-2015** – External chloride stress corrosion cracking of stainless steel locking pipe connectors (<http://www.hse.gov.uk/safetybulletins/locking-pipe-connectors.html?eban=govdel-safety-bulletins&cr=16-Apr-2015>)
9. **OIS 12-2007**: Advice on acceptance criteria for damaged Passive fire Protection (PFP) Coatings (<http://www.hse.gov.uk/offshore/infosheets/is12-2007.pdf>)
10. **NFPA 25** – standard for the inspection, testing, and maintenance of water-based fire protection systems. 2011 Edition