Defence Infrastructure Organisation

Safety Alert Part A, B & C

Subject: Failure of Bulk Fuel Installation Pipework

Number: SA 2019/02

Health and Safety

DIO Sponsor: Bryan Dunn	**Date of issue:** 9th Novermber 2019

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This Safety Alert is to be read by the following so appropriate action can be taken:

1. DIO Service Manager (or equivalent for non-NGEC contracts)

2. DIO's Maintenance Management Organisations

3. TLB's

Others interested in the content of this Safety Alert might include:

Prime Contractors, Private Finance Initiatives, Public-Private Partnership and other traditionally procured contracts, Heads of Establishments, Infrastructure Managers and Property Managers with responsibility for MOD projects and Property Management Works Services (including the legacy work of EWCs/WSMs), Health & Safety Advisors.

When it takes effect: immediately	**When it is due to expire:** When updated or rescinded.

This Safety Alert does not necessarily cover all aspects of the subject matter and readers should make themselves aware of other potential issues. Readers should also not rely on DIO publications as their only means of becoming aware of safety, operational or technical issues, but they should consult widely across other media to maintain awareness.

Aim

1. To bring to the attention of the appropriate person's the impact arising from the failure of redundant or alienated fuel pipework with the potential to include dead-leg pipework containing hydrocarbons.

Introduction

2. Compliance with the contents of this Alert will enable compliance with Environmental Legislation, the Health & Safety at Work etc. Act 1974 and its subordinate Regulations.

3. The appropriate MOD officer shall arrange for the Maintenance Management Organisation (MMO) contractor to carry out all actions in accordance with this Safety Alert.

4. Any work required because of this Safety Alert must be carried out in accordance with JSP 375 Part 2 Volume 3 – High Risk Activities on the Defence Estate.

5. On MOD Establishments occupied by United States Visiting Forces (USVF) responsibility is jointly held by USVF and DIO(USF). At base level this jointly managed organisation is to take appropriate action to implement the contents of this Alert. Where this Alert contains procedures, which differ significantly from USVF practice, DIO (USF) code of practice will be issued.

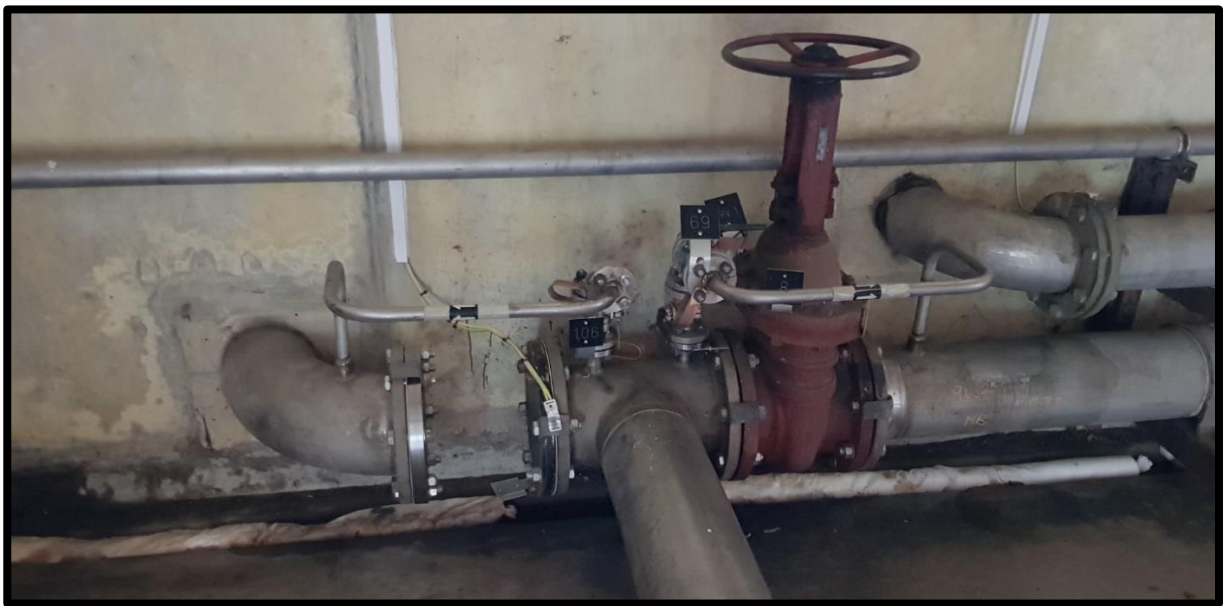
Background

6. There have been instances where MOD sites have identified the presence of fuel within the water course and within oil water interceptors. Investigation identified the drainage system as the source of the leak, which was traced to a neighbouring Bulk Fuel Installation (BFI). The BFI consisted of a circa 1980's constructed semi-buried splinter protected mounded tank. Ground investigations revealed soil contaminated with hydrocarbons within the vicinity of the mounded fuel tank and a surface water drainage pipe running through the BFI.

7. Further investigation included pressure testing of the pipework within the BFI pump room; one pipeline failed the test. The failed pipeline was one of two dead legs that terminated within the earth mound covering the fuel tank. It is believed these pipelines where installed as part of the design to enable the future connection of an additional storage tank within the BFI should the storage demand need to be increased. The previously unidentified surface water drainage pipe traversing the BFI was found to have failed thus allowing fuel contamination into the drainage system and surrounding earth mound.

8. Due to their location the fuel pipelines had not been identified on any maintenance regime, but the valves (although not in service) on the pipework which were located within the pump room had received operational attention (opening and closing) along with all the in-service valves. This activity had seen the pipelines remain pressurised with fuel. The lack of inspection and testing of these pipelines had seen them deteriorate over time with one eventually failing; this failure was undetected due to lack of maintenance and inspection. The operational activity to the the valves continued on the failed pipeline causing contamination of the surrounding area compounded by failed surface water drainage pipe providing a pathway to the drainage system.

9. Dead-legs and redundant pipelines are not unique to the Defence Estste, the Health and Safety Executive (HSE) has recently issued a Safety Alert highlighting the Catastrophic rupture of dead-leg pipe-work. http://www.hse.gov.uk/safetybulletins/catastrophic-rupture-dead-leg-pipe-work.htm#utm_source=govdelivery&utm_medium=email&utm_campaign=dead-leg-alert&utm_content=ebul-link-2



Photograph showing one of the pipelines isolated in the BFI pump room

Requirement

10. To confirm the risk, site(s) containing BFI's must be inspected as detailed in **Part A** to identify the existence of dead leg pipework and surface water drainage pipes.

11. Where dead leg pipework has been identified as being installed. The pipework should be immediately drained and isolated as described in **Part B**.

Part A

12. The Maintenance Organisation (MMO), on direction from the DIO Service Manager or Equivalent, are to arrange for a suitably qualified person to undertake the following tasks:

a. Identify all applicable Bulk Fuel Installations and their locations.

b. Investigate to establish whether the dead leg pipework exists.

c. Isolate or physically lock off any valves connected to redundant or dead-leg pipework to prevent operation of the valve and hence pressurisation of pipework.

d. Investigate to establish whether buried water drainage pipework runs through the BFI.

13. Initial inspections are to be carried out by a competent person who is familiar with the existing Bulk Fuel Installation. All work is to be in compliance with JSP 375 Part 2 Volume 3 Chapter 5.

14, The MMO is to notify the DIO Service Delivery Performance Management Team, DIO SD-Perf Mgt Team (MULTIUSER) account, through their respective DIO Service Manager, identifying the location of any BFIs with dead-leg pipework or buried drainage pipework.

15. The data requested at paragraph 12 is required by 12th December 2019 and will be reviewed on the 6th January 2020.

16. The contents of this Alert should be considered when undertaking Inspections or Appraisals of this type of asset.

Part B

17. Where a dead-leg or drainage pipe is identified or suspected within a BFI, the MMO is to investigate to confirm the existance or otherwise. The MMO is to undertake a risk assessment to

determine the action and mitigation required for both the fuel dead leg pipework and water drainage pipework within the BFI.

18. If where identified, a dead leg pipeline has been deemed as no longer required, the pipework should be drained and physically isolated from the existing system by fitting a suitable blank. Once the pipework has been isolated the surrounding area should be investigated/tested for evidence of hydrocarbon contamination.

19. Where hydrocarbons have been identified within the surrounding area a full ground investigation survey should be instigated in liaison with the DIO Technical Services Environmental Team.

20. In the event that there is a requirement to retain the dead leg pipework due to required future increased capacity of fuel storage, a programme of NDT examination and pressure testing shall be instigated to determine the integrity of the pipework.

20. Where water drainage pipework has been identified as running through the BFI, this should be notified to Aquatrine where applicable for their attention. On non-Aquatrine sites a programme of work should be instigated to remove and divert the pipework around the BFI.

21. The MMO is to notify the DIO Service Manager, the HoE, and the establishment 4Cs Duty Holder of their findings.

Part C

22. The MMO is to notify the DIO Service Delivery Performance Management Team, DIO SD-Perf Mgt Team (MULTIUSER) account, through their respective DIO Service Manager of the date action detailed in **Part B** was completed.

Ends