



Defence
Infrastructure
Organisation

Safety Alert

Parts A, B & C

**Subject: Primary Closed Hot Water Heating
System Fluid Leaks**

Number: SA 2021/06

DIO Sponsor: Bryan Dunn

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

- 1. Heads of Establishment**
- 2. DIO Service Manager (or equivalent for non-NGEC contracts)**
- 3. Maintenance Management Organisations**
- 4. Others**

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

Top Level Budget Holders, TLB Infrastructure Branches, Prime Contractors, Private Finance Initiatives, Public-Private Partnership and other traditionally procured contracts, Project Managers, 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When it is due to expire: When updated or rescinded.

Health and Safety

Aim

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.

To bring to the attention of the appropriate persons the potential risks of primary closed hot water heating system failure, the risk of injury to personnel, contamination to the local environment and the potential loss of heating services to an establishment.

Introduction

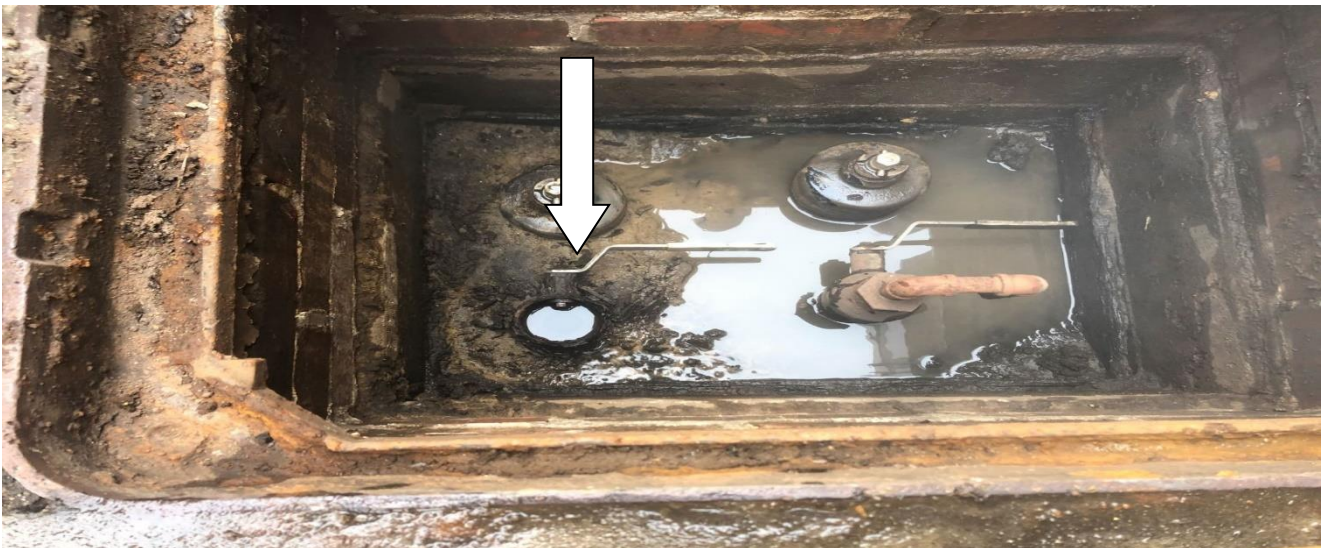
1. Compliance with the contents of this Safety Alert (SA) will enable compliance with the Health & Safety at Work etc. Act 1974 and its subordinate Regulations.
2. The appropriate MOD officer shall arrange for and ensure the Maintenance Management Organisation (MMO) contractor to carry out all actions in accordance with this Alert.
3. Contractors and MMOs are to keep informed the establishment Health, Safety and Environmental Protection Adviser and 4Cs Duty Holder on behalf of the Head of Establishment regarding progress of actions required of this Safety Alert.
4. Any work required because of this Safety Alert must be carried out in accordance with JSP 375.
5. On MOD Establishments occupied by United States Visiting Forces (USVF) responsibility is jointly held by USVF and DIO(USF).

Background

6. Primary closed water heating systems (LTHW, MTHW, HTHW, Heating Systems) can unnoticeably release hot water and associated chemicals from the system due to component failure. Leaks on these systems may be common if the pipework and its auxiliary components and connections such as valves and gauges are in a poor condition and have not been inspected and maintained on a regular basis or subject to an appropriate balanced water treatment program.
7. Without an effective Planned Preventative Maintenance (PPM), these systems can deteriorate and promote corrosion to a point where the system pipework and/or their auxiliary components will eventually fail releasing fluids into the environment.
8. Failure of these systems through release of fluids may only be evident when the boiler heating system shuts down due to the loss of primary fluid. Failure in this way may cause long term damage to the heating system boilers that is unrecoverable and unrepairable.
9. This safety alert follows the investigation of a recent failure of a primary closed hot water heating system at an MOD establishment. This resulted in manhole cover lid being forcefully lifted (approx. 90 degrees) by the physical pressure of water causing hot water to be sprayed approx. 15 ft upwards into the air and surrounding area. The location of the leak could easily have resulted in impact or scold injuries to personnel.



Photograph 1: Failed heating system component corroded through internally and externally



Photograph 2: Pipework snapped clear from the valve body within manhole



Photograph 3: Impacts of fluid leak on the local environment and drainage system

Requirement

10. All primary closed hot water heating system pipework and their auxiliary components and connections should be assessed and where required subject to an appropriate balanced water treatment program and where required an asset replacement program.
11. Monitoring of the water consumption and quality as part of the water treatment program and regular examination of the physical condition of the primary closed water heating system pipework and their auxiliary components, where physically possible, and compliance with manufacturer's requirements should be assessed,
12. Where fluid leaks are identified, effective risk assessment and subsequent controls shall be put in place to prevent this from continuing. If deterioration or defects are identified and where appropriate, the component or pipework should be replaced, or remedial action planned.
13. Any work incurring expenditure of MOD funding requires appropriate authority from the MOD officer responsible for the establishment.

Part A

14. The MMO, on direction from the DIO Service Manager or Equivalent, shall initiate the following tasks:
 - a. Confirm that the primary closed water heating system pipework and their auxiliary components and connections have been recorded on the establishment asset database and are subject to an appropriate PPM schedules and their inspection regimes.
 - b. Confirm that the risk assessments for plant rooms and other areas where primary closed water pipework heating systems are located have considered the risk of failure and have identify means to reduce and manage risks to operatives in vicinity of such systems should a failure occur.
15. If there is doubt about the serviceability or the safety in use, then it is recommended that consideration is given to their urgent replacement and/or repair.
16. The MMO is to notify the DIO Service Manager, HoE and establishment 4Cs Duty Holder of any defective Primary Closed Water Heating System. Where defective pipe work heating systems identified, the 4Cs risk register should be suitably annotated pending replacement or remedial action.
17. 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 confirming the existence of Primary Closed Water Heating System Pipe Work Heating Systems has been recognised and they have been subject to routine periodic inspection. The Head of Establishment should be notified where unrecorded and unmaintained heating systems are identified.
18. The contents of this Alert should be considered when undertaking Inspections or Appraisals of plant or equipment containing this type of asset.
19. **A nil return is required from Establishments.**
20. The data requested in **Part A** is required by 15th November 2021 and will be reviewed on the 15th December 2021.

Part B.

21. Any Primary Closed Water Heating Systems isolated under **Part A** of this Safety Alert are not to be returned to service until it has been subject to appropriate maintenance, testing and inspection and all remedials identified are completed.
22. On completion of any necessary maintenance, inspection, testing and any remedial work, the units can be returned to service.
23. The MMO is to notify the DIO Service Manager, HoE and establishment 4Cs Duty Holder when any unit is returned to service.

24. Once the condition, age and serviceability of the assets is known the MMO is requested to provide an establishment specific Asset Management Plan, for approval of DIO Service Manager, detailing their strategy for the planned preventative maintenance (or replacement where appropriate) of these assets by 5th February 2022.

Part C.

The MMO is to notify the DIO Service Delivery Performance Management Team, DIO-RDSafetyAlerts@mod.gov.uk (MULTIUSER) account, through their respective DIO Service Manager of the date action detailed in **Part B** was completed.