Welds on Certain Types of Boiler - Competent Person's Inspections

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DEFENCE ESTATES
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INTRODUCTION

1. The contents of this Technical Bulletin (TB) are Advisory. This TB is to be brought to the attention of, and read by, Defence Estate Advisors, Project Sponsors, Project Managers, Establishment Works Consultants (EWCs), Works Services Managers (WSMs), Authorising Engineers (Boilers and Pressure Systems) and Authorised Persons (Boilers and Pressure Systems). No work, involving expenditure on any Ministry of Defence (MOD) account, is to be entered into without authority from the Property Manager or the appropriate MOD officer for that location or facility.

2. The aim of this TB is to make it clear that the frequency of inspections of Boiler Plant and its associated equipment is to be advised by the Competent Person and also why the frequency of inspection may be varied by the Competent Person over and above that required by DEO(W) Specification 005 Issue 003 (incorporating Amendment 01 dated 31.10.96 – or its extant version (the Specification 005).


4. For MOD Establishments occupied by United States Visiting Forces (USVF) the responsibilities of Property Manager, EWC and WSM are jointly held by the USVF and DE (USF). At base level this jointly managed organisation is to take appropriate action to implement the contents of this Bulletin. Where this Bulletin contains procedures which differ significantly from USVF practice, a DE(USF) Code of Practice section will be issued.

BACKGROUND


6. During an annual inspection of a Medium Temperature Hot Water Boiler, while carrying out a routine examination of the circumferential welds, in accordance with Safety Assessment Federation (SAFed) guidelines, the Competent Person passed over the area where the shell to endplate weld butted with the longitudinal seam of the shell. It was observed that there was a lack of penetration in the longitudinal seam and, as a duty of care, it was investigated further.
Welds on Certain Types of Boiler - Changed Frequency of Competent Person's Inspections

7. The guidelines laid down by SAFed, the body which issues guidance to Competent Persons, would not normally require a hot water boiler, of this age, operating within this pressure/temperature regime to undergo such non-destructive testing (NDT) inspections of the longitudinal seam.

8. An NDT inspection of the longitudinal seam was not required at the time of manufacture and consequently the manufacturer did not carry out any inspection. SAFed guidelines cover hot water boilers with a diameter greater than 650mm, operating at a pressure greater than 3bar and at a temperature greater than 100°C (Combination of all three).

9. As a result of the NDT, it was deemed that the shell longitudinal seam weld was free from cracking, however lack of fusion 5-6mm cross section was noted mid wall and the Competent Person advised that the seam must be re-examined within two years.

10. Unless otherwise required by the Competent Person, the frequency of this examination of the longitudinal seam is stated by SAFed, as no later than five years from being taken into service and should not exceed five years thereafter. Examination of the longitudinal seam is not normally required in pressurised hot water boilers.

11. When the test is carried out after the prescribed period, ie two years, it may well be that the Competent Person will decide that the original frequency and testing protocol can be resumed. This inspection should be carried out at the same time as the annual inspection, required in the Specification 005.

ACTIONS

12. If you are required as the result of a Competent Person's inspection to change the frequency of NDT inspection then this requirement must be carried out.

13. If the EWC has reason to believe that the regime under which the boiler is operating does not require more frequent NDT inspection than that required in the Specification 005, then you are advised to contact the Chief Engineer of the Competent Person's employer.

14. It is important that DE does not pay needlessly for services which are not required, taking into consideration the number of items of equipment which are examined by Competent Persons.

15. This area of uncertainty will gradually work through the system and it is possible that the problem will only occur on a limited basis. This particular difficulty has been brought to DE attention by the vigilance of the Competent Person's company.

16. In order to ensure that such problems do not re-occur, before the procurement of a boiler, or any piece of equipment subject to inspection under Statutory and/or DE requirements, it would be prudent to enquire of the Competent Person's company what extra-ordinary tests should be carried out, if any, to satisfy their requirements and thus save the MOD money in the future.

17. Annex A is a copy of an instruction, ref RPDB/GSR – 11 June 1998, issued by Hoval, a boiler manufacturer, who supplied and still supplies boilers to the MOD Estate.
18. It must be stressed that under no circumstances shall safety or Statutory Duties be compromised nor shall any of the requirements of DE Document: Property Management of the Defence Estate – DEO(W) Specification 005 Issue 003 (incorporating Amendment 01 dated 31.10.96) – or its extant version be omitted.

**Bulletin Authorised By:**

[Signature]

Jack Lawlor  
Defence Estates  
Hd SpS
You are aware of the requirements of "In service" examinations performed by insurance inspection agencies (SAFed Guidelines for the examination of Boiler shell to Endplate and Furnace to Endplate Welded Joints 1997) BS 3523 Pt 1 1986.

These examinations involve both the use of ultrasonic and magnetic particle equipment to check welds for cracking, etc. We are now aware that these examinations may detect manufacturing faults, e.g. lack of penetration or side wall fusion which may result in expensive site repairs. Please ensure that all future boilers which are built to the BS 555 code are to be subject to ultrasonic testing to prove the integrity of the welding.

cc: A Roche
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