Engineering Bulletin (Gas) EB/689 – Application of Welding Standard GD/SP/P/1 to Pressure Reduction Installations (PRIs) with Inlet Pressures at 7 barg and below

Published: 30/04/2020 **Review date:** 30/04/2021

Clarification of Welding Standard for use on Pressure Reduction Installations (PRIs) with Inlet Pressures at 7 barg and below

Overview of EB

GD/SP/E/28 defines the specification required by Cadent for the design of PRIs on the network. The welding standard stipulated within this document is GD/SP/P/1 or BS 2971 (1991) by agreement with the Company. As a consequence, there is ambiguity over the requirement for welding and Non-Destructive Testing (NDT) to be applied for below 7bar PRIs

This Engineering Bulletin clarifies the NDT requirements from BS2971 and GD/SP/P/1 and where they shall be applied during the design and fabrication of all new and replacement installations. It also outlines actions required on PRIs installed during GD1 which have not had the level of NDT described in this bulletin.

Scope

This bulletin applies to all PRIs (Including skid units) designed to operate at inlet pressures 7 barg and below.

All classifications of PRI are covered by this document: 1.

District governor

a. 10 customers or above (commercial, domestic or a mix of both)
b. Design capacity 200 m^3hr^{-1} or above
c. Any governor that cannot be classified as a service governor

2. Service Governor

a. Up to 10 customers (commercial, domestic or a mix of both)
b. Less than 200 m^3hr^{-1} design capacities

Action

- Welding procedures and controls should meet, as a minimum, the standards outlined within BS 2971.
- The Competent Designer undertaking the work shall assess the criticality of the proposed location as part of the design review process. The criticality shall define the level of NDT inspection required.
- The NDT regime for welds on the PRI shall be applied as per Table 1 below.
- If a PRI, upon assessment, meets any single criticality requirement for a higher criticality it shall be inspected as the higher criticality.

Location Criticality	Criticality Criteria	NDT Methodology
High Criticality	• All installations with inlet above 2 barg • Installations affected by external vibration or stresses (e.g. vehicular or industrial) • Capacity of PRI above 25000 m^3hr^{-1}	As per GD/SP/P/1 Critical Location to include: • Visual examination • Radiographic Inspection or ultrasonic inspection • Magnetic Particle Inspection (MPI)
Medium Criticality	• Installations with no external vibration or stresses • Capacity of PRI up to 25000 m^3hr^{-1} • District governors	As per BS 2971 Category A, to include: • Visual examination • Radiographic Inspection or ultrasonic inspection
Low Criticality	• Capacity of PRI up to 200 m^3hr^{-1} • Service governors	As per BS 2971 Category C, to include: • Visual examination

Cadent
Your Gas Network

Engineering Bulletin (Gas) EB/689 – Application of Welding Standard GD/SP/P/1 to Pressure Reduction Installations (PRIs) with Inlet Pressures at 7 barg and below

Published: 30/04/2020 **Review date:** 30/04/2021

Table 1

Guidance on External Vibration or Stresses

Typical causes of increased stress loads or external vibration that can lead to fatigue failure

- Crossings associated with bridges
- Railways – Close proximity
- Major roads and motorways – Close proximity
- Navigable waterways – Close proximity
- Below ground modules – Close proximity to major roads/Motorways
- Below ground modules – Located in the carriageway
- Any foreseeable location that would see increased stress loading onto the PRI with a potential to cause fatigue failure.

Examination method

BS 2971 specifies the relevant British Standards for various methods of inspection, however, a number of these standards are now withdrawn and superseded. The current standards are all incorporated into the company specification GD/SP/NDT/2 which has been deemed the suitable method for inspection of welded joints and to be applied to PRIs.

All inspections shall be completed as per GD/SP/NDT/2.

Defective welds

Should the percentage of radiography, ultrasonic or MPI reveal a defective weld, two welds on either side of this defective weld shall be examined by radiography or ultrasonic methods.

Should the additional welds inspected meet the quality requirements of this specification, NDT inspection can return to the minimum specified requirements.

If either of the additional welds inspected contain unacceptable weld defects the level of girth weld NDT shall be increased to 100% of completed welds. This level of NDT shall be maintained until the causes of the defects are identified and corrective action taken to prevent further occurrence. At such time the standard level of inspection may be reinstated.

The Employer (Cadent) shall have the option to have any production weld inspected by NDT. All welds subject to NDT shall be chosen by the Employer or their representative.

Approach to manage PRI delivery **Previously installed and Commissioned PRIs, and**

PRIs installed and awaiting commissioning.

BS 2971 is to be accepted for PRIs installed from April 2013 after a deviation from GD/SP/P/1 has been approved that evidences, as a minimum, the standard of welding and pressure test carried out as part of the fabrication process. This deviation will be submitted by the responsible project manager.

Fabricated PRIs

Quality assurance of any welding is to be undertaken as per Table 1 of this Bulletin on any PRI already manufactured, prior to commissioning. This is required to support the delivery of deviations against previously installed and commissioned PRIs.

New PRIs

All PRIs ordered from the date of publishing are to be fabricated in line with this Engineering Bulletin.

Cadent
Your Gas Network

Engineering Bulletin (Gas) EB/689 – Application of Welding Standard GD/SP/P/1 to Pressure Reduction Installations (PRIs) with Inlet Pressures at 7 barg and below

Published: 30/04/2020 **Review date:** 30/04/2021

Related documents

BSI

BS EN 2971 -	Specification for class II arc welding of carbon steel pipework for carrying fluids
BS EN ISO 17636-1 -	Non-destructive testing of welds. Radiographic testing. X- and gamma-ray techniques with film
BS EN ISO 17636-2 -	Non-destructive testing of welds. Radiographic testing. X- and gamma-ray techniques with digital detectors
BS EN ISO 17637 -	Non-destructive testing of welds. Visual testing of fusion welded joints
BS EN ISO 17640 -	Non-destructive testing of welds. Ultrasonic testing. Techniques, testing levels, and assessment
BS EN ISO 17638 -	Non-destructive testing of welds. Magnetic particle testing
BS EN ISO 9934-1 -	Non-destructive testing. Magnetic particle testing. General principles

Cadent standards

GD/SP/E/28 -	The Design of Pressure Regulating Installations with Inlet Pressure not Exceeding 100 Barg
GD/SP/P/1-	Specification for Welding of Steel Pipe Designed to Operate at Pressures Not Greater Than 7 bar
GD/SP/NDT/2 -	Non-Destructive Testing of Welded Joints In Steel Pipelines and Pipework

Cadent
Your Gas Network