

Transco Engineering Standards

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PROCEDURE FOR

**INSPECTION, MAINTENANCE AND MONITORING OF
INTERNAL METALLIC SUPPLIES TO HIGH RISE
BUILDINGS**

MAY 2002

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FOREWORD

This procedure was approved by EPSG, as document number EPSG/L01/410 on 9th May 2002 for use throughout Transco.

Comments and queries regarding the Technical content of this engineering document should be directed to;

Engineering Policy
Transco
Brick Kiln Street
Off Coventry Road
Hinckley
Leicestershire
LE10 0NA

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MANDATORY AND NON-MANDATORY REQUIREMENTS

To establish compliance with a Transco engineering document, it is necessary to be able to identify those provisions that are to be satisfied and those which give freedom of choice. Transco engineering documents express these in the following manner:

- Can:** Indicates a physical possibility.
- May:** Indicates an option which is not mandatory.
- Must:** Indicates a requirement in law and in matters of health and safety.
- Shall:** Indicates a Transco requirement.
- Should:** Indicates a strong preference, but allows deviations exceptionally
- Will:** Indicates an intention by Transco to do something.

BRIEF HISTORY

First published as T/PR/LC21	May 2002
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PROCEDURE FOR INSPECTION, MAINTENANCE AND MONITORING OF INTERNAL METALLIC SUPPLIES TO HIGH RISE BUILDINGS

INTRODUCTION

Following discussions with the Health and Safety Executive regarding Transco's responsibilities for internal metallic gas supply pipes to high rise buildings, a comprehensive review has been conducted.

This review concluded that to comply with current legislation, Transco as a gas transporter, must satisfy the requirements of Regulation 13 of the Pipeline Safety Regulations 1996 and ensure pipelines are '*maintained in an efficient state, in efficient working order and in good repair*'

It is also recognised that the effects of risk mains replacement has left many of these high rise buildings isolated within a supply network and their requirement for inclusion within the scope of Transco Leakage Survey Policy T/PL/LC17, has been removed.

The application of this proactive procedure shall satisfy the requirements of the **Policy for Inspection, Maintenance and Monitoring of Internal Metallic Supplies to High Rise Buildings – T/PL/LC20** and provide condition assessment profiles for longer term risk prioritisation.

Therefore this procedure shall be applied to all 6 storey and above high rise buildings containing a gas supply, irrespective of the level of risk associated with the mains network surrounding each site.

The existing mains and service replacement policies cover supply pipes to all other buildings/structures. (Refer to T/PL/MR1-2002 -T/PL/SER1-1998)

1. SCOPE

This procedure details the measures required for compliance with **T/PL/LC20 - Policy for Inspection, Maintenance and Monitoring of Internal Metallic Supplies to High Rise Buildings** and applies to:

All high rise buildings of six storeys or above containing a gas supply and covers the inspection, maintenance and monitoring of all internal metallic risers and above ground services, up to the consumer's emergency meter control valve. **(Basements/cellars shall be regarded as a storey within the context of this policy.)**

2. DEFINITIONS

2.1 General

For the purposes of this procedure the definitions given in 2.2 and 2.3 apply.

2.2 Personnel

Employer: The person appointed by Transco to take overall responsibility for identified aspects of activities.

Responsible Engineer: The Incorporated or Chartered Engineer with suitable experience and competence, appointed by the Employer to be responsible for the application of all or part of this procedure.

Authorising Engineer: An Engineer deemed competent and appointed by the Responsible Engineer to approve written procedures and authorise Permits to Work and/or Forms of Authority.

Competent Person: A person having the ability, appropriate training, knowledge and experience to supervise and/or carry out the work being undertaken in a safe and proper manner.

2.3 Technical

Main – Defined as an extension of or change to the system with the potential to supply more than 2 supply meter installations

Riser – Risers are defined as an above ground arrangement of pipes (horizontal or vertical), which supply more than 2 supply meter installations in an individual premise or building containing many premises. A pipe is considered a riser from the base of the bend, which rises to each of the building floors.

Above Ground Service (Horizontal or Vertical) – The minimum length of pipe from the teed connection on the riser to the consumer's emergency control valve(s). This may only feed ≤ 2 supply meter installations.

Fire Valve – A valve (other than an emergency control valve) for controlling a supply of gas:

- i.) incorporated in a supply pipe between the main and the riser; and
- ii.) intended for use by a supplier or transporter of gas; and
- iii.) not situated inside a building.

Emergency Control Valve – A valve for shutting off the supply of gas in an emergency, being a valve intended for use by the consumer.

(NOTE: If an additional internal tamper-proof emergency control valve has been fitted at the point of entry to the building, and is accessible to all consumers, then Transco's responsibility ends at this position.)

Tamper-proof – Protected against unauthorised operation.

Basement/cellar – A room below ground level in a house or property that is being used for accommodation or as a storage area, or could easily be altered and used for accommodation or storage. **(Basements/cellars shall be regarded as a storey within the context of this policy)**

Storey – Floor construction level. The ground floor is counted as a storey within the context of this policy.

Risk Level – The value applied to distribution mains by the application of the Transco Mains Risk Prioritisation System (MRPS).

Below ground entries – Pipework that is buried as it enters the building.

Above ground entries – Pipework that is exposed externally and enters the building above ground level.

3. REFERENCES

This Transco Procedure makes reference to documents listed below. Unless otherwise specified, the latest editions of these documents, including all addenda and revisions, shall apply.

- a) Health and Safety Executive - Pipeline Safety Regulations 1996 – Design, construction and installation of gas pipes.

- b) Health and Safety Executive – Gas Safety (Installation and Use) Regulations 1998 – Safety in the installation and use of gas systems and appliances
- c) Transco Policy for Inspection, Maintenance and Monitoring of Internal Metallic Supplies to High Rise Buildings – T/PL/LC20
- d) Transco Surveying Guidelines in Support of Mains Risk Prioritisation System 1999 – DE64
- e) Transco Service Replacement Policy – T/PL/SER 1
- f) Transco Mains Replacement Policy – T/PL/MR1-2002
- g) Transco Policy for Leakage Survey – T/PL/LC17
- h) Transco Specification for Defining Pipes as Mains, Services or Risers - T/SP/NP10
- i) H, S & E Management Systems.
 - Procedure PROC/H,S&E 002
 - Auditing Directive DIR/H, S&E 10
- j) Transco Procedure for Walking Leakage Detection Surveys Using Portable Instruments of High Sensitivity (ppm detectors) – T/PR/LC13
- k) Transco Escape Procedures – EM 71&72

4. GENERAL REQUIREMENTS

4.1 The Responsible Engineer within the LDZ shall ensure that within 5 years of the policy commencement, electronic data is compiled on all 6 storey and above high rise buildings containing a gas supply. Information held will include records of the location of all high rise buildings, the owner, the number of floors, the number of flats per floor, construction details of riser and building, the location of fire valves and risers, the method of riser entry and access to riser etc. A proforma for collecting this information can be found in Appendix A.

In addition the database shall be updated with any information available from sources such as mains surveys and meter reading agencies.

5. INSPECTION

The supplies to all high rise buildings of 6 storey and above containing a gas supply, shall be inspected within five years of the commencement of the policy at a rate of approximately 20% per annum.

Priority should be given to buildings not previously inspected.

Subsequent inspections shall be carried out at a frequency not exceeding ten years.

5.1 Leakage survey

5.1.1 A walking perimeter leakage survey shall be conducted which shall include surface boxes, visible gas pipework and accessible pipe entries, from the distribution main to the building line, in accordance with Transco Procedure – ‘Walking leakage detection surveys using portable instruments of high sensitivity (ppm detectors)’ T/PR/LC13

5.1.2 A complete internal leakage survey of all risers and above ground services shall be conducted with an intrinsically safe gas detection instrument. In the event of a continuous riser shaft being present for the full height of the riser, a leakage survey should be undertaken at the top of the shaft. If a complete internal leakage survey cannot be undertaken, the reasons shall be recorded on the electronic database.

5.1.3 If there is no such shaft, e.g. shaft sealed at each floor, the riser should be leakage surveyed in the same way as the above ground services, by gaining access to every unit and carrying out a gas detection test. Where access cannot be gained an intrinsically safe gas detection instrument shall be used to check the atmosphere through an opening such as a letterbox or ventilation grill.

5.1.4 In the event of leakage being detected it shall be actioned in accordance with Transco Escape Procedures – EM 71&72.

5.2 Visual Condition Assessment

The minimum visual inspection regime to be followed after each leakage survey is:

5.2.1 Risers - An external visual inspection of all risers should be undertaken to determine the condition at the top, middle and bottom of the structure.

5.2.2 Above Ground Services - A minimum of 10% of the above ground services, equally spaced, should be inspected in each high rise building. At least one inspection at the top, middle and bottom of the structure should be conducted to determine the condition at each inspection site.

5.2.3 Further intermediate sampling shall be undertaken if any of the initial samples indicate poor condition from severe corrosion where flakes of oxidised material or pipe wrapping can be easily removed.

5.2.4 In the event of enclosed risers or above ground services, arrangements shall be made with the owner of the building to gain access to enable the pipe condition to be determined.

5.3 Pipe Wall Thickness Assessment

5.3.1 If following the visual condition assessment, any section of pipe is found to be in poor condition from corrosion as indicated in **5.2.3** its remaining wall thickness shall be established by the use of non-destructive testing. A minimum of four equally spaced points around the pipe circumference should be tested at each corrosion location and the readings recorded on the database.

5.3.2 A minimum wall thickness of >2mm shall be maintained, with particular attention given to the pipework immediately above sealed inter-floor positions and shoulders of socketed joints where severe corrosion is most likely to occur.

6. MAINTENANCE

6.1 If any pipe wall thickness is found to be $\leq 2\text{mm}$, sectional pipework repair, or full pipework replacement if the overall general condition is poor, shall be carried out as soon as practicable. A riser support risk assessment shall be undertaken prior to any sectional repairs.

6.2 Any leaking joints identified during the inspection process shall be repaired using Transco approved techniques.

(NOTE: Approved leakage repair techniques are for use on leaking joints only. They shall not be applied as a permanent barrel corrosion repair.)

6.3 When the LDZ have identified or exposed risers/above ground services, consideration shall also be given to the following to minimise further deterioration:

- ◆ Painting of exposed and accessible pipework;
- ◆ Over-wrapping damaged wrapping;

6.4 In the event of limited gas usage within the building consideration should also be given to its removal, subject to customers, shippers and regulatory agreement.

7.0 MONITORING

7.1 LDZs shall liaise with Local Authorities and other property owners to obtain and record demolition programmes, enabling consideration to be given to the timing of the replacement of risk mains in the vicinity of buildings included on the database.

7.2 In order to further validate corrosion data and enhance inspection methodology, the LDZ should wherever possible prior to demolition obtain additional riser/lateral samples for analysis.

7.3 Upon completion of the first five-year inspection programme future individual building inspections shall be conducted in accordance with the minimum pipe wall thickness found, as follows:

>2 mm and <5 mm	Maximum five-year inspection frequency
=>5 mm	Maximum ten-year inspection frequency

(NOTE: Inspection frequencies shall be reviewed in the first quarter of 2005 following analysis of available inspection data.)

8. RECORDS

8.1 In the event of visiting 6 storey or above high rise buildings containing a gas supply, due to an escape or for any other reason, the maximum amount of inspection information and data gathering shall be undertaken and recorded on the electronic database.

The minimum other information to be gathered is:

- property owner
- external condition of pipe (painted, corroded)
- through floor construction (sleeve, sealed)
- environment of riser (damp, effluents)
- riser construction (type of joint, material, size, dust trap, riser support, emergency control valve, suitable repair techniques)
- external provision for riser replacement
- protective measures exist/required for exposed pipework in accessible areas,
- whether a listed building

8.2 The Responsible Engineer within the LDZ shall ensure that the presence of high rise buildings are recorded on the database using Ordnance Survey mapping co-ordinates and TeAR pipe object number (PON) of the closest/supplying pipe. Consideration should also be given to indicating high rise buildings on DRS with either a polygon or a note.

8.3 The scheduling of the inspections shall be included in an electronic scheduling database. Repair work shall be recorded in Storms/TeAR

APPENDIX A

DATA COLLECTION FOR HIGH RISE BUILDINGS

SECTION 1 (MANDATORY)

This information is required to complete/update the database of High Rise buildings

Property Address

Name/No.

Street/Road

Town/City

Post Code

O/S References (Easting:----- Northing:-----)

Nearest Pipe Object Number (PON)

Ownership of Property -

Local Authority

Housing Association

Private

Name and Address

Contact Name and Tele.No.

Property Details

Age of building

Number of Storeys

Name of PGT

Listed building Y/N

Supplies per Storey

Ronan Point Construction Y/N

('Large Panel Blocks')

Walls strengthened Y/N

Cellar/Basement/Underground Garage Y/N

Included on Existing Supplementary Survey Register Y/N

Provision for External Riser Replacement Y/N

Provision for Internal Riser Replacement Y/N

Digital Photograph(s) of the Property Taken Y/N

SECTION 2

This information is to be compiled from on-site inspection

Visual Condition Assessment - Riser Details

No. of Risers

Riser 1

Riser 2

Riser 3

Riser 4+

- Length-----
- Diameter(s)-----
- Change Position (storey)
- Material-----
- Above or Below Ground Entry
- Type of Joints-----
- Accessible Y/N-----
- Shaft Y/N-----
- Ventilated Y/N-----
- Exposed Y/N-----
- Unventilated Voids Y/N-----
- Sleeves, Fire Proofing Y/N-----
- Passing Through

- Solid Floors Y/N-----
- Interfloor Sealing Material
Concrete/Mastic/Other/None—
- Dust Trap(s) Fitted Y/N-----
- Riser Support Fitted Y/N-----
- Accessible Emergency
Control Valve(s) Fitted Y/N----
- Service Isolation Valve(s)
Fitted Y/N-----
- Pipe Environment-
Wet/Damp/Dry-----
- Pipe Corrosion-
Heavy (Flaking)Y/N-----
Minimal (Surface Rust) Y/N -----
None Y/N -----
Exposed Pipework Y/N-----
Protection Required Y/N-----

Sketch of Main(s)/Riser(s)
Configuration Provided Y/N-----

Visual Condition Assessment – Above Ground Service Details - Min.10% Sample

- Total No. of Above Ground Services-----
- No.Assessed at -
Top-----
Middle-----
Bottom-----
 - Material(s)
 - Average Length-----
 - Diameter-----
 - Accessible Y/N-----
 - Exposed Y/N-----
 - Laid in Unventilated Voids Y/N---
 - Sleeves, Fire Proofing Y/N-----
 - Passing Through
Solid Floors Y/N-----
 - Interfloor Sealing Material
Concrete/Mastic/Other/None—
 - Pipe Environment-
Wet/Damp/Dry-----
 - Pipe Corrosion-
Heavy (Flaking)Y/N-----
Minimal (Surface Rust)Y/N-----
NoneY/N-----
 - Exposed Pipework
Protection Required Y/N-----

SECTION 3

This information is to be compiled from on-site investigation

Leakage Survey

Perimeter Leakage Survey From Distribution Main to Building

- No. of indications-----
- Action(s) taken-----

Internal Leakage Survey of all Horizontal and Vertical Risers/Above Ground Service.

- No. of indications-----
- Leaking component(s)
 - Joint (state type)-----
 - Pipe Wall-----
 - Valve-----
 - Other-----
- Action(s) taken-----

SECTION 4

This information is to be compiled from on-site investigation

Non-Destructive Testing

- Location of test(s) -----
- Min. Wall Thickness found -----
- Action(s) taken-----

Other Comments

	Name	Signature	Pay No.	Date
Completed By:				

Verified By:

APPENDIX B

DECISION FLOW-CHART