ANNEXURE - 06

RADIOGRAPHY TEST REPORT					
Client:	INDRAPRASTHA GAS LIMITED			REPORT NO.	
Project:				DATE	
				SITE	
S. No	JOINT NO.	PIPE SIZE	WELDING REPORT NO	RADIOGRAPHY REPORT NO	REMARKS
CONTRACTOR's (Name & Signature)		TPIA (Name & Signature)		PMC (Name & Signature)	IGL (Name & Signature)

ANNEXURE – 07

HYDROTEST REPORT						
Client:	INDRAPRASTHA GAS LIMITED			REPORT NO.		
Project:				DATE		
				SITE		
S. No	TIME	PRESSURE (kg/cm2)	TEMPERATURE (deg.C)	PRESSURE RELEASED (kg/cm2)	PRESSURE DROPPED/INCREASED	REMARKS
CONTRACTOR's (Name & Signature)		TPIA (Name & Signature)			PMC (Name & Signature)	IGL (Name & Signature)

ANNEXURE – 08

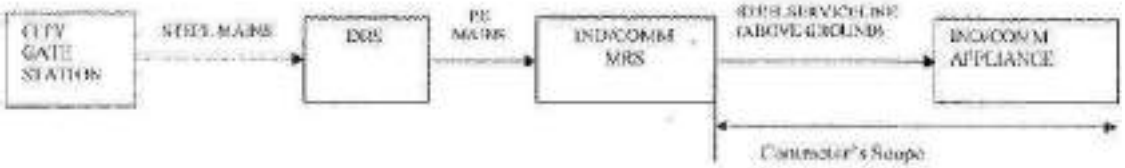
WELDING INSPECTION REPORT									
Client:	INDRAPRASTHA GAS LIMITED					REPORT NO.			
Project:						DATE			
MRS NO						PIPE MATERIAL			
S. No	SIZE	PIPE / FITTINGS	HEAT NO	LENGTH	JOINT NO	FIT UP CHECK	WELDER NO	VISUAL INSPECTION	REMARKS
CONTRACTOR's (Name & Signature)		TPIA (Name & Signature)			PMC (Name & Signature)			IGL (Name & Signature)	

ANNEXURE – 09

NDT REPORT					
Client:	INDRAPRASTHA GAS LIMITED			REPORT NO.	
Project:				DATE	
				SITE	
S. No	SIZE	JOINT NO	SEGMENT	INSPECTED BY	REMARKS
CONTRACTOR's (Name & Signature)		TPIA (Name & Signature)		PMC (Name & Signature)	IGL (Name & Signature)

ANNEXURE -10

(TYPICAL PNG DISTRIBUTION SYSTEM FOR INDUSTRIAL / COMMERCIAL CUSTOMERS)



ENERGISING QUALITY

VCS QUALITY SERVICES PVT.LTD.

STANDARD SPECIFICATION ELECTRO FUSION FOR PE PIPES & FITTINGS

VCS – SS – PE - 0002

REV.	DATE	Purpose	Prepared By	Checked By	Approved By
00	19.06.18	ISSUED AS STANDARD	BS	MVK	AD

CONTENTS

1.0 ELECTRO FUSION FOR PE PIPE

1.1 ELECTRO FUSION FITTING JOINTING

1.1.1 For electro fusion fitting jointing, an electrical resistance element is incorporated in the socket of the fitting which, when connected to an appropriate power supply, melts and fuses the materials of the pipe and fitting together.

1.1.2 The effectiveness of this technique depends on attention to the preparation of the jointing surfaces, in particular the removal of the oxidized surface of the pipe over the socket depth and ensuring the jointing surfaces area clean. Also, the pipe should be checked for ovality. If ovality causes a gap between concentrically located pipe and the fitting to exceed l% of the pipe OD, the pipe must be re-rounded to ensure correct welding. If the gap still exceeds 1% of the pipe OD after re-rounding then a check should be made of the pipe OD dimensions to determine if it meets specification.

Max gap 1% of pipe OD

Concentrically Located

Max gap 2% of pipe OD

Eccentrically Located

1.1.3 The maximum gap between eccentrically located pipe and fitting i.e. Pipe touching fitting at one point, must not exceed 2% of the pipe OD.

1.1.4 Sometimes coiled pipes may be too oval to fit into couplers, or the end of the pipe may make the alignment of the ends impossible. In such circumstances the use of a mechanical pipe straightener or rounding tool is necessary.

1.1.5 The equipment and procedures following relate to fittings with center stops. If fittings without center stops are used, the maximum insertion depth must be clearly marked on the pipe ends prior to joining (felt tip pen).

Equipment

- The control box input supply to be from a nominal 240V generator, which is normally of approximately 5kVA capacity. The nominal output of the generator is to be 240V +15%, I 0% between no load and full load. Control boxes are to include safety devices to prevent excessive voltages being present at the control box output. The safety device shall operate in less than 0.5s.

Note that extension leads are not to be used on the control box outlet connections.

WARNING: Control boxes are not intrinsically safe and must therefore not be taken into the trench.

- A mechanical pipe surface preparation tool is to be used before fusion is attempted. The tool is to be capable of removing the oxidized surface of the pipe in excess of the insertion depth. The tool is to remove a layer of surface material 0.2 to 0.4 mm thick from the outer surface of the pipe preferably in a continuous strip of swarf over that length and round of the pipe.

- Pipe clamps for restraining, aligning and re-rounding the pipes in the fusion process are to be used.

- Pipe cutters with saw and saw guide.

- Protection against adverse weather conditions.

1.2 ELECTRO FUSION JOINTING METHOD / PROCEDURE

Preparation

- Ensure there is sufficient space to permit access to the jointing area. In a trench, a minimum clearance of 150 mm is required.

- Check that the pipe ends to be jointed are cut square to the axis of the pipe and any burrs removed.

- Wipe pipe ends using clean lint-free material to remove traces of dirt or mud, etc...

- Mark the area over which the oxidized pipe surface is to be removed, i.e. In excess of the insertion depth, on each pipe to be joined by placing the socket of the bagged fitting alongside the pipe end. Trace a line round the circumference at the appropriate distance from the end of the pipe using a felt tip pen or similar.

Note that the fitting should not to be removed from the packaging at this stage.

- Connect the electro fusion control box input leads to the generator.
- Check that the reset stop button, if fitted on the control box, is in the correct mode.
- Using the pipe end preparation tool, remove the entire surface of the pipe uniformly, preferably in continuous swarf over the area identified, i.e. In excess of the insertion depth.
- A mechanical scraper could be used however; there is a considerable risk that the end preparation will not be adequate with the use of such a tool.

Note that the prepared pipe surface should not be touched by hand.

- Remove the fitting from its packing and clean the scraped area of the pipe surface and the bore of the fitting with a disposable wipe impregnated with Iso-propanol *I*

Acetone. Ensure the prepared surfaces are completely dry before proceeding.

Note that while Iso-propanol is a suitable cleaner, its use is subject to local Health and Safety Regulations.

- Check that the pipe clamps are of the correct size for the pipes to be jointed.
- Insert the pipe ends into the fitting so that they are in contact with the center stop.
- Using the pipe clamps, secure the pipes so that they cannot move during the fusion cycle. Check that the pipe ends and the fitting are correctly aligned.
- Check that there is sufficient fuel for the generator to finish the joint. Start the generator and check that it is functioning correctly.
- Switch on the control box.
- Connect the control box output leads to the fitting terminals and check that they have been fully inserted.

If required by the control box enter the fusion jointing time into the control box timer. The jointing time is indicated on the fitting. Check the correct time is shown on the control box display.

Note 1: Automatic control boxes are available which obviate the need to enter the fusion time.

Note 2: Gloves and goggles should be worn during the Fusion process.

- Press the start button on the control box and check that the heating cycle is proceeding as indicated on the display.
- On completion of the heating cycle, the melt indicators should have risen. If there is no apparent move in the melt indicators, the joint should be cut out and a fresh joint made (See note 3below).
- If a satisfactory joint has been made, the joint is to be left in the clamps for the cooling time specified on the fitting or the automatic control box.

Note 3: If the fusion cycle terminates before completion of the countdown, check for faults as indicated by the control box warning lights and check that there is adequate fuel in the generator. DO NOT attempt a second fusion cycle within one hour *I* cooling of joint at Ambient Temperature of the first attempt.

1.3 RECORDS

Records of appropriate servicing and calibration shall be kept.