

End-Point Assessment

Gas Network Craftsperson Pipeline Maintenance (PMC)

Practical Tasks

Assessment Specification

This assessment specification has been developed as part of the gas network craftsperson – pipeline maintenance standard. The specification details the apprentice’s required skills, knowledge and behaviour on all the key aspects of the gas network craftsperson - pipeline maintenance activity specifically for those employed by National Grid Pipeline Maintenance Centre – PMC.

This end-point assessment will be separated in to two distinct routes to meet the differing nature of activities undertaken by the separate geographic divisions of PMC. Completion of either route will allow the apprentice to demonstrate meeting the specification of the Gas Network craftsperson – Pipeline maintenance assessment plan and also afford the apprentice the opportunity to undertake practical tasks that are relevant to their day to day work activities.

Route 1 is designed for PMC apprentices operating on higher pressure systems usually based at Ambergate. The practical task is a 6” Stopple operation on a 6” Steel pipeline. This will include the competence required to comply with all health and safety requirements, to follow work instructions and specifications in order to complete the following tasks:

- Setting up hot tap equipment with a 6” drill and 6” Stopple machine
- Installation of isolation valves on to pipeline fittings
- Non-destructive testing - Leak detection methods
- 2” hot tap connection
- 6” pipe end preparation and cutting using a Clyde cutter
- Setting up a butt weld
- Setting a 2” completion plug and flange completion

Route 2 is designed for PMC apprentices operating on low, medium and intermediate pressure systems who are based at other UK locations. The practical task is a flow stopping operation on a 300mm steel pipeline and a 180mm PE pipeline. This will include the competence required to comply with all health and safety requirements, to follow work instructions and specifications in order to complete the following tasks:

- Setting up and applying a bag stop for a 300mm steel main
- Setting up and applying a squeeze off for a 180mm MP main
- 300mm steel pipe end preparation and cutting
- Butt fusion and electrofusion on 180mm PE pipe
- Testing commission and decommissioning

The assessment specification is the minimum core technical standard of these requirements, but this does not preclude employers from enhancing the skills and knowledge of the learner through additional or company specific assessment.

Successful completion of this unit should provide evidence that the apprentice has the required knowledge, understanding and performance skills.

What does this specification look like?

To achieve this unit the apprentice must demonstrate their achievement of all assessment outcomes. This unit will be evidenced through practical assessment, typically being delivered under simulated conditions, in a realistic workplace environment. The evidence of completion of the practical tasks must be available at the end-point assessment interview.

What does the assessment include?

Route 1 – 6” Stopples Operation

This should consist of a test rig comprising of 6” diameter steel pipe in three separate sections for the following activities:

1. 2” threaded O ring fitting for leak testing, drilling 2” hot tap and threaded O ring plug setting
2. Setting up hot tap and stopple equipment
3. Cold cutting, end prep and setting up the Butt weld.

The candidate will be required to set up the following activities for the pipeline this will include:

- Setting up the 2” drilling and carrying out a leak test.
- Calculating tapping distance and drilling the 2” hot tap
- Installation of a vent on the 2” valve for venting operations
- Lead in the installation of the stopple machine.
- On successful isolation depressurise via the vent and purge the pipeline.
- Once the pipeline is decommissioned, set up the Clyde cutter to cold cut the pipeline, completing the cut with an end preparation ready for setting up for a butt weld
- Carry out the 2” TOR plug setting
- Installing a 2”, 4” and 6” flange using the correct completion techniques

Route 2 – Medium Pressure Flow stopping operations

This should consist of test rigs one comprising of 300mm diameter steel pipe and a second consisting of 180mm diameter PE pipe. Both pipes should be pressurised with air to a minimum of 100mbar. The test rig must be capable of facilitating the following activities:

1. Flow stopping using bag stop techniques on the steel pipe
2. Flow stopping using squeeze off techniques on the 180mm PE
3. Cold cutting and the fabrication of both mechanical and PE welded joints

The candidate will be required to set up the tapping, flow stopping and plugging equipment for the pipeline this will include:

- Setting up for the drilling of a metallic main, including the installation of a by-pass
- Complete all under pressure drillings and check for leakage
- Complete flow stop activities using bag stop techniques on the metallic pipeline
- Set up squeeze off equipment on a 180mm PE main installing all pressure, purge and vent points
- Install and commission a by-pass
- On successful isolation depressurise via the vent and purge the both the PE and metallic pipelines
- Cold cut the PE main and replace and re-commission a short section using electrofusion techniques.
- Cold cut the steel main and replace and re-commission a short section of using mechanical joints
- Make repairs to metallic mains using mechanical techniques
- Make a butt fused joint on PE pipe at or greater than 180mm diameter
- Make an electrofusion joint ≥ 90 mm in diameter

Realistic Working Environments (RWE) Centre Requirements

Centres are responsible for ensuring that the RWE assessment is suitably controlled to ensure that assessment decisions are valid and reliable, and that work submitted for assessment by the apprentice is prepared and produced by them independently, due to the nature of the equipment being used, the assistance from others may be required. In such cases, the apprentice must lead the activity and the assistant operates under the direction of the apprentice.

The practical assessments must be designed following the guidance and requirements given in this document. The assessor checklist must be adhered to and cannot be altered without prior written consent from EUIAS.

It is envisaged that in the interest of safety that the system is supplied with air and not fuel gas.

Centres may deliver any number of assessments together in combined assessment of their own design, but this must be in with the prior agreement with EUIAS.

Where the combined option is used the performance and knowledge criteria of each unit assessment must be satisfied and the respective assessor checklists must be completed.

The necessary operational procedures should be made available to the apprentice throughout the assessment process.

Practical Assessment Centre Requirements

The assessments must be assessed by a technically competent assessor who is independent of the apprentice. Please refer to the gas network craftsperson scheme handbook for further details.

Assessment areas

The assessment area must be designed to allow the apprentice to demonstrate the skills as prescribed in the performance criteria. All appropriate legislative requirements must be met. Evidence for the practical aspects must be observed in the realistic working environment. The pressure equipment used in the assessment should be pressurised with air to a minimum pressure of 100mbar or the minimum pressure for satisfactory operation of the equipment being used. All equipment used must be fully functional, the apprentice is allowed assistance in assembling and mounting the equipment on to the pipeline. Subject to the assessment centre design, assessor to apprentice ratios could be up to a maximum of 1:3. To allow a variability of the task sufficient equipment should be made available to the apprentice to allow the apprentice a choice for the correct selection of materials. A technical drawing of the proposed task should be made available to the apprentice and the apprentice must have access to company work procedures specific to the task. The EUIAS reserve to right to inspect assessment centres to ensure they comply with requirements.

General requirements

Centres may create workbooks that will allow the apprentice to demonstrate their underpinning knowledge on method statements, testing and commissioning requirements etc. The same examples must not have been utilised as part of the apprentices training.

The equipment used for this assessment must be for assessment purposes only and the apprentice must not have had prior access to this.

Apprentice Requirements

To achieve a pass in these assessments the apprentice must complete all of the following:

- Ensure all health and safety requirements are observed throughout the assessment
- Complete a site specific risk assessment
- Select method statements appropriate for the activity
- Use company specific procedures
- Complete any calculations regarding positioning, testing, commissioning and decommissioning of the flow stopping apparatus
- Pressure test and commission the equipment
- Complete functional checks on the equipment prior to use
- Complete all testing and commissioning requirements
- Reinststate the system back to operational condition following application of the flow stopping technique

Assessor Requirements

Apprentices carrying out the practical tasks will be observed by an EUIAS approved technical expert.

The technical expert may question the candidate as they are carrying out the practical tasks. Questions may cover the following areas:

- Practical experience and knowledge gained through work experience
- Technical questioning related to the installation, testing, commissioning and maintenance of operational equipment
- A variety of “what if” scenarios to determine problem solving skills
- Comprehension of basic operations or engineering principles related to plant and equipment
- Ability of candidate to elaborate in their field of expertise
- General attitude and enthusiasm of the candidate

Candidates should be able to demonstrate a depth of understanding of the practical principles of the systems they are working on.

Permissible allowances and reasons for immediate failure

- Apprentices have to carry out the task in a prescribed sequence covering all of the assessment criteria required, health and safety must not be compromised at any time as this would not be considered a permissible allowance.
- Apprentices should ensure that the tasks are completed safely. It is permissible not to have identified all tools and safety equipment prior to the task starting but the additional requirements must be identified and acted upon appropriately as the task progresses
- Apprentices will fail immediately if they do not select and wear the correct PPE for the task
- Apprentices will fail immediately if they do not follow control measures as set out in the risk assessment
- Apprentices will fail immediately if they put themselves or anyone else at danger – i.e. by failing to safely isolate plant and equipment

Grading

This assessment is graded as Pass or Fail. The assessor will determine successful completion of the practical tasks using the assessor checklist. This will determine Pass or Fail. The completed assessor checklists must be made available at part 1 of the apprentice's end point assessment interview.

Assessment Duration

The following are indicative durations for the completion of each assessment area:

- 12 hours which can be increase or decreased by 10%
- The apprentice is allowed to take breaks in line with working time regulations which will allow the apprentice to move to another location to the next. During the break the technical expert must continue to supervise the apprentice one a one to one basis