



**ACS.CoLPNG1
SAFETY ASSESSMENT CRITERIA
INITIAL & RE-ASSESSMENT
DOMESTIC
LPG TO NATURAL GAS**

CoLPNG1**INITIAL & RE-ASSESSMENT****Introduction**

Tests the gas safety competence of an operative intending to extend work range from LPG to include Natural Gas.

Comprises (relating to Natural Gas):

2. Gas emergency actions and procedures (Inc. characteristics of Natural Gas).
4. Ventilation.
5. Installation of pipework and fittings.
6. Tightness testing and purging.
7. Checking and/or setting meter regulators.
8. Unsafe situations, use of emergency notices and warning labels.
9. Operation and positioning of emergency isolation controls and valves.
10. Checking and setting appliance burner pressures and gas rates.
12. Chimney Standards.
14. Installation of open, balanced and fan assisted chimneys.

CBs may adopt Competence and Criteria numbering different to that used in this document.

CB documentation may adopt wording for criteria different to that used in this document, provided the meaning is unaffected.

Appliance range

All domestic Natural Gas fittings.

Pre-requisites***Initial***

CCLP1.

Re-assessment

CoLPNG1 + CCLP1.

Exclusions

Aspects covered in CCLP1.

References and normative documents

MIs.

All relevant documents as listed in the Legislative, Normative & Informative Document List (LINDL), Inc.:

- HSL56
- GIUSP.
- IGEM/UP/17
- TB118

ACS.SMB. 003.ACDND identifies Normative Documents that should be held by ACs.

Abbreviations

AC. Assessment Centre
 AECV. Additional emergency control valve
 AIV. Appliance Isolation Valve
 CB. Certification Body
 CFS. Communal Flue Systems
 ECV. Emergency control valve
 I. Initial
 IV. Installation volume
 LDF. Leak detection fluid
 MIs. Manufacturer's/manufacturers' instructions
 MIV. Meter inlet valve
 MOV. Maximum operating pressure
 OP. Operating pressure
 OQ. Oral questioning
 R. Re-assessment
 Ref. Reference.

2. Gas emergency actions and procedures (inc. characteristics of Natural Gas)

KNOWLEDGE & UNDERSTANDING	REF	I	R
1(a) priorities of actions and responsibilities		✓	✓
1(b) action to stop a gas escape downstream of ECV/AECV		✓	
1(c) action if gas continues to escape after turning off supply		✓	
2. limits of flammability		✓	
2a. calorific value		✓	
3. specific gravity and its effect in relation to air		✓	
4. hazardous ignition sources and their elimination		✓	
5. preventing/reducing dangerous concentrations of gas in atmosphere		✓	
6. advice to occupants		✓	
7. HSL56 Reg. 37 Escape of gas. Reg.37(1) to (4)		✓	

3. Products and characteristics of combustion

KNOWLEDGE AND UNDERSTANDING	REF	I	R
1. Awareness of regional differences in Building Regulations regarding CO detection when installing new or replacement fixed combustion appliances.		✓	✓

4. Ventilation

This competency is not required if the Candidate holds CCLP1 PD.

* These criteria are K&U for Initial and PC for Re-assessment

PERFORMANCE CRITERIA	REF	I	R
1. calculate free area of selection air vents (inc. terracotta types)		✓	
2. identify adequate and inadequate ventilation		✓	✓
KNOWLEDGE & UNDERSTANDING	REF	I	R
1. siting ventilation (wall, window, floor, ceiling and ducted) direct to outside air; series air vents (identify correct and incorrect)*		✓	
2. identify correct and incorrect positioning/locations/restrictions of air vents (wall, window, floor, ceiling, and ducted) direct to outside air/series air vents*			
3. restrictions to ventilator/grille locations		✓	
4. adventitious air supplies		✓	
5. sizing grilles and vents (free area availability)		✓	
6. calculating ventilation for:			
(i) combustion of open flue appliances*		✓	
(ii) compartments; open, balanced and fan assisted flue appliances*		✓	✓
(iii) Calculating multi-appliance installations (open flue and flueless appliances within same room/space)*		✓	✓
7. ventilation for flueless appliances (inc. cooking, water heating and space heating)*		✓	
8. identification of unsafe ventilation installations e.g. fly screens*		✓	✓
9. ventilator location for single and multiple DFE installations (inc. flued and flueless)*		✓	

10.	effects of oil or solid fuel appliances on ventilation for DFEs*		✓	
11.	identification and installation of intumescent air vents*		✓	
12.	operation of passive stack ventilation*		✓	
13.	ventilation for internal kitchens*		✓	✓
14.	identify correct labels and notices*		✓	

5. Installation of pipework and fittings. Pipe sizes: 6 mm to 35 mm

PERFORMANCE CRITERIA	REF	I	R
0. join mild steel pipe using appropriate fittings, methods and agents		✓	
1. join copper pipe using appropriate capillary fittings, methods and agents (only applicable to Candidates holding CCLP1 Part B(B))		✓	
3. check work carried out is gas tight		✓	
4. purge meter and pipework of air		✓	
5. test gas supply tightness, isolate, attach temporary earth continuity bond correctly.			
6. disconnect meter, cap and make safe			
7. cap or plug all open ends and take all general safety precautions, prior to work			
8. install copper capillary fitting adjacent to meter, using appropriate methods and agents			
9. re-connect meter and remove temporary earth continuity bond correctly			
10. check work carried out is gas tight. (C6 Tightness testing and purging of domestic sized Natural Gas installations can be assessed at this point)			
11. purge meter and pipework of air. Apply any protective coating (OQ).			
12. identify installation pipework safety defects			✓
KNOWLEDGE & UNDERSTANDING	REF	I	R
1. threaded fittings, mild steel pipe and fittings ,suitability and use		✓	
2. flexible and rigid connections Standards, suitability and use		✓	
3. pipe sizing for appliances – inc. theoretical exercise		✓	✓
4. jointing and cleaning agents used for copper and mild steel pipework		✓	
5. precautions and protection when installing pipework		✓	
6. precautions when using an exposed flame for soldering joints on pipework previously containing gas		✓	
7. restrictions on use of mechanical joints		✓	
8. ventilation size for pipework installed within ducts (purposely designed to contain gas pipes)		✓	
9. Requirements for pipework :			
(i) laid in joisted floors & roof spaces		✓	
(ii) notching and drilling solid timber floor joists		✓	
(iii) installed in solid floors		✓	
(iv) behind dry lined walls		✓	
(v) within timber/light steel frame walls		✓	
(vi) passing through a timber/light steel frame/masonry wall - accommodating movement		✓	
10. external surface mounted installation pipework		✓	✓
11. fixing pipework when connected to a meter not securely restrained		✓	
12. fire stopping in buildings containing flats or maisonettes		✓	✓
13. installing pipework inside a protected area		✓	
Removed criteria			
15. pipework for multi-occupancy dwellings		✓	✓
16. minimum depth/identification of pipework buried below ground		✓	✓
17. pipework installed under base of a wall or foundations		✓	
18. use of PE pipework		✓	
19. identify unsafe situation of a MP installation where pipework directly enters premises through rear spigot of meter box		✓	✓
20. The protection of stainless-steel semi rigid pipe from corrosive products i.e. meter connections from flux		✓	✓
21. Restrictions for making and sealing holes into meter boxes		✓	✓
22. purpose and suitability of using a non –contact voltage tester		✓	✓

6a. Tightness testing and purging. Total IV ≤ 0.035 m³ (LP or MP with MIV fitted)

Up to 1¼ (steel) and/or 35 mm (copper)

PERFORMANCE CRITERIA	REF	I	R
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1. testing new or existing installations with gas or air:			
(i) visually inspect the installation to ensure joints made correctly and no open ends Additional OQ for re-assessment - install copper capillary fitting adjacent to meter, using appropriate methods		✓	✓
(ii) check appliances and ensure AIVs are open & any SSOV are open.		✓	✓
(iii) turn off the gas installation at the appropriate valve: <ul style="list-style-type: none"> • ECV /AECV for MOP \leq 75 mbar • or MIV for MOP $>$ 75mbar ensuring ECV is open 		✓	✓
(iv) connect the pressure gauge to a suitable pressure test point on the installation or, if testing with air, branch of test T-piece		✓	✓
(v) If using gas, carry out a let-by test of the closed supply control valve (OQ) related to actions should do with a LP ECV letting by or a MP MIV letting by.		✓	✓
(vi) adjust the pressure to between 7 and 10 mbar (OQ related to MOP $>$ 75mbar, ensure the regulator on the inlet side of MIV is activated.)		✓	✓
(vii) close the valve and note the gauge reading		✓	✓
(viii) test for 1 minute. If pressure rises by more than 0.25 mbar, let-by may be occurring		✓	✓
(ix) if pressure rise is observed, if LP check valve by disconnecting its outlet union and applying LDF to valve barrel (OQ on actions for a MP supply)		✓	✓
(x) on satisfactory completion of let-by test, slowly raise the pressure in the installation to between 20 and 21 mbar		✓	✓
(xi) turn off gas or air supply		✓	✓
(xii) allow 1 minute stabilisation; if necessary re-adjust pressure to between 20 and 21 mbar		✓	✓
(xiii) check for any perceptible movement (fall) of the gauge over the next 2 minute period		✓	✓
(xiv) for new installations, or existing installations with no appliances connected check there is no pressure drop		✓	✓
(xv) for existing installations, check any pressure drop is within permissible values and there is no smell of gas		✓	✓
(xvi) if installation fails test, trace and repair escape and re-test installation		✓	✓
(xvii) if tightness test is successful, remove pressure gauge and re-seal test point		✓	✓
(xviii) when connected to gas, test pressure test point; ECV/AECV outlet connection; regulator connections and, where appropriate, MIV connections with LDF		✓	✓
(xix) purge installation		✓	✓
(xx) record test results		✓	✓
2. locate and repair a gas escape		✓	✓
KNOWLEDGE & UNDERSTANDING	REF	I	R
1. selection and reading of pressure gauges		✓	
2. allowed pressure drops for existing installations related to meter size/type, pipe diameter and IV with appliances connected to gas supply and not isolated inc. E6, U6/G4, U16/G10 and where no meter is fitted		✓	✓
3. identify no perceptible movement on gauge (0.25 mbar water gauge and 0.2 mbar electronic gauge reading to 1 decimal place)		✓	
4. allowed pressure drop for existing installation, inc. ECV but no meter is installed e.g. flat where supply is not individually metered		✓	
5. electronic token meter tamper devices and their effect on tightness testing		✓	✓
6. dealing with ECV/AECV/MIV that is letting by		✓	✓
7. actions when smell of gas persists (a) after completion of satisfactory tightness test (b) when ECV/AECV/MIV is turned off, or a leaking installation cannot be repaired		✓	✓
8. testing pipework of diameter $>$ 35 mm or total IV $>$ 0.035 m ³		✓	✓
9. testing prior to alteration or extension to existing installations		✓	
10. acronyms and symbols		✓	
11. calculating IV and PV exercise for E6, U6 and G4 meters connected to 35 mm diameter pipework and U16 meters connected to any pipework of diameter \leq 35 mm		✓	✓
12. purging installations of IV \leq 0.02 m ³ and those of IV $>$ 0.02 m ³		✓	✓

6b. Tightness testing and purging. Total IV \leq 0.035 m³ (MP without MIV)

Up to 1½ (steel) and/or 35 mm (copper)

Knowledge & Understanding	REF	I	R
Tightness testing existing NG installations for 75mbar $<$ MOP \leq 2bar without a MIV (IGE/UP/1B Edition 3 Appendix 4 A4.3)			

1. Recognise what the gas operative should do in encountering a MP system without a MIV.		✓	✓
2. What procedure would the operative follow if they need to tightness test the installation i.e. Appendix 4 IGEM IGE/UP/1B		✓	✓
Performance Criteria		I	R
1. turn off the gas installation at the ECV		✓	
2. connect the pressure gauge to a suitable pressure test point on the installation		✓	
3. carry out a let-by test of the closed ECV as follows:		✓	
(i) adjust the pressure to between 7 and 10 mbar		✓	
(ii) operate the UPSO or excess flow valve reset to balance the pressures either side of the device, then allow it to re-shut		✓	
(iii) close the ECV and note the gauge reading		✓	
(iv) check for any perceptible movement (rise) of the gauge reading (>0.25 mbar) over the next 1 minute period		✓	
(v) if ECV is letting-by the test is suspended, installation made safe and the appropriate Gas Emergency Service Call Centre immediately notified (OQ)		✓	
4. Slowly raise the pressure in the installation to between 18 and 19 mbar by opening the ECV then turn off the valve		✓	
5. Allow 1minute for temperature and pressure stabilisation, if necessary re-adjust the pressure to between 18 and 19 mbar (the test shall not proceed until a stable reading is obtained)		✓	
6. Continue test as from 6a) 1 (xiii) to (xx)		✓	

7. Checking and/or setting meter regulators

* These criteria are K&U for Initial but PC for Re-assessment

PERFORMANCE CRITERIA	REF	I	R
1. turn all appliances off		✓	✓
2. zero pressure gauge and connect to meter test point		✓	✓
3. observe and record standing pressure at test point		✓	✓
4. turn on gas appliances and, dependent on appliances available, operate:			
(i) boiler – at full rate		✓	✓
(ii) space heater – at full rate		✓	✓
(iii) cooker – three hotplate burners at full rate		✓	✓
(iv) other appliances – at full rate		✓	✓
5. read and record nominal OP on gauge (21 mbar)		✓	✓
6. if reading is incorrect:			
(i) use procedure for notifying GT for pressures outside 19 – 23 mbar range		✓	✓
(ii) apply procedure for AMI to re-set regulator		✓	✓
7. remove gauge; re-seal test point and test for gas tightness		✓	✓
KNOWLEDGE AND UNDERSTANDING	REF	I	R
1. effects of low/high flow rates on regulator outlet pressures (19 – 23 mbar)* (OQ)		✓	
2. effects of pressure absorption across primary meter installation* (OQ)		✓	
3. operation of a gas meter regulator		✓	
4. identification of MP meter/regulator installation		✓	
5. HSL56: Reg. 14 Regulators 14(1), (5), (6), (7)		✓	

8. Unsafe situations, use of emergency notices and warning labels

PERFORMANCE CRITERIA	REF	I	R
1. when and what to report under RIDDOR		✓	
KNOWLEDGE & UNDERSTANDING	REF	I	R
1. identify correct labels - MP gas supply		✓	

9. Operation and positioning of emergency isolation controls and valves

PERFORMANCE CRITERIA	REF	I	R
1. identify incorrectly positioned ECV/AECV/MIV			
2. identify correctly positioned ECV/AECV/MIV			
3. demonstrate dealing with incorrectly positioned ECV/AECV/MIV			
4. identify correct labels and attach to ECV/AECV/MIV			
KNOWLEDGE AND UNDERSTANDING	REF	I	R
1. inside meter positions		✓	

2.	outside meter positions		✓	
2.	multi-occupancy building installations:			
(i)	external risers		✓	
(ii)	internal risers		✓	
(iii)	remote meters		✓	
(iv)	types of isolation valves used (AECVs etc.)		✓	
3.	HSL56 – Reg. 9 (1) to (4)		✓	

10. Checking and setting appliance burner pressures and gas rates

(* A Smart Meters exercise can be delivered via PAWS)

PERFORMANCE CRITERIA		REF	I	R
Measure operating pressure of an appliance				
1.	assemble and zero a suitable pressure gauge (OQ on electronic gauges)		✓	✓
2.	dismantle appliance as required; remove pressure test screw and connect gauge via suitable tubing		✓	✓
3.	light appliance, and check and record operating pressure and confirm to MIs		✓	✓
4.	turn off appliance; remove gauge; replace test screw; re-establish gas and check test point with LDF		✓	✓
Measure gas rate of an appliance:				
1.	check and record gas rate of an appliance using gas meter test dial or index (* PAWS')		✓	✓
2.	check measured gas rate and confirm to manufacturer's rated appliance input		✓	✓
3.	explain requirements for range rated appliances		✓	
KNOWLEDGE AND UNDERSTANDING		REF	I	R
1.	reasons for excessive pressure loss at appliance		✓	
2.	effects of excessive pressure at appliance		✓	
3.	calorific value of Natural Gas		✓	

12. Chimney Standards

Note: This competency is not required if Candidate holds CCLP 1 PD

KNOWLEDGE AND UNDERSTANDING		REF	I	R
1.	existing solid fuel chimneys:			
(i)	suitability – checks required		✓	
(ii)	min. size of unlined chimney used for gas fire before terminal is required		✓	✓
(iii)	min. size of side openings for slabbed over chimneys		✓	✓
(iv)	min. cross sectional area of new chimney installations – gas fires		✓	✓
(v)	operation of dampers and restrictor plates		✓	✓
(vi)	effects of other fuels on chimneys and need for cleaning		✓	✓
(vii)	min. void dimensions below appliance connections		✓	✓
(viii)	catchment spaces and standard dimensions/volumes		✓	✓
(ix)	types of flue liners – during construction (salt glazed clay etc.), poured/pumped concrete flue liners, flexible flue liners		✓	
(x)	restrictions on use of poured concrete liners		✓	
(xi)	sealing and support for flexible flue liners in chimneys		✓	
(xii)	inspection of chimneys through loft spaces		✓	✓
(xiii)	chimney heights/appliance types where liners are required		✓	
(xiv)	sealing chimney voids		✓	✓
(xv)	fitting bird guards to chimneys		✓	
(xvi)	suitable and unsuitable terminals for space heaters inc. radiant, inset and DFE		✓	✓
2.	pre-cast flue systems:			
(i)	pre-cast flue design, standards, operation, routing, connection, termination		✓	
(ii)	min. cross sectional area of new gas flue block		✓	✓
(iii)	min. requirement of vertical flue blocks before off-sets		✓	✓
(iv)	jointing material for pre-cast flue blocks		✓	✓
(v)	min. flue size diameter to connect pre-cast transfer blocks to termination point		✓	
(vi)	effects of temperature on installation of pre-cast flues		✓	✓
3.	chimneys for individual open flue natural draught appliances:			
(i)	termination positions for chimney outlets		✓	
(ii)	ridge terminal positions		✓	
(iii)	effects of adjacent structures, basement areas, light wells and retaining walls, on terminal positions		✓	
(iv)	dealing with downdraught on steeply pitched roofs		✓	

(v)	restrictions to siting and lengths of chimney run to avoid condensation		✓	
(vi)	min. up-stand for chimneys passing through tiled or slated roofs		✓	
(vii)	chimneys passing adjacent to combustible material or through other dwellings		✓	✓
(viii)	pre-fabricated metal starter box for space heaters		✓	
(ix)	passive stack ventilation systems in houses, where open flue natural draught appliances are fitted		✓	
(x)	methods of jointing chimney components			
(xi)	sealing flues surrounded by enclosures			
(xii)	terminal and guards – protection against wildlife			
4.	fan draught chimneys for open flue appliances:			
(i)	requirements prior to installing fans in secondary flues		✓	
(ii)	additional requirements when fans are installed in secondary flues		✓	✓
(iii)	fan dilution and shared open flue, fanned draught systems in domestic dwellings		✓	
5.	shared open flue chimneys for natural draught appliances:			
(i)	two or more appliances connected to same flue		✓	
(ii)	appliances with a common flue in same room		✓	
(iii)	labelling appliances on shared flues installed on different floors		✓	
(iv)	maintenance of shared flue systems		✓	
6.	room sealed natural draught chimney configurations for appliances: Identify 2 positions from each of (ii) to (v):			
(i)	balanced flue construction		✓	
(ii)	outlet position horizontal to an opening relating to appliance net input		✓	
(iii)	outlet position below an opening relating to appliance net input		✓	
(iv)	outlet position above an opening relating to appliance net input		✓	
(v)	outlet options below gutters, soil pipes, drain pipes and eaves		✓	
(vi)	outlet positions in car ports		✓	
(vii)	balanced flue terminal guards		✓	
7.	room sealed fanned draught chimney configurations for appliances:			
(i)	restrictions on lengths, bends etc. for fanned draught room sealed appliances		✓	
(ii)	restrictions for outlet positions inc. horizontal and vertical configurations		✓	
(iii)	enclosing chimneys		✓	
(iv)	proximity of flue duct outlets to boundaries		✓	
(v)	identify unsafe situation where a room sealed fanned system is enclosed without sufficient inspection facility		✓	✓
8.	balanced compartments for open flue appliances:			
(i)	ducted air positioning		✓	
(ii)	cross sectional areas of air inlet ducts		✓	
(iii)	compartment construction		✓	
9.	room sealed appliances for shared chimneys (SE-ducts, U-ducts and CFS): *CFS reference only			
(i)	types of shared flue systems construction and operation of e.g. SE-ducts, U-ducts and CFS Natural Ventilated (NV), CFS Exhaust Only (EO), CFS Positive Pressure (PP)		✓	✓
(ii)	categories of appliances suitable for installation		✓	✓
(iii)	chimney outlet positions for roof terminals		✓	✓
(iv)	labelling air inlet ducts		✓	✓
(v)	labelling replacement appliances		✓	✓
(vi)	responsibility for the maintenance of shared flue systems		✓	✓
(vii)	requirements for replacement appliances		✓	✓
(ix)	NRV requirements for appliance/exhaust ducts for CFS		✓	✓
(ix)	identify unsafe situation of room sealed fanned flue system on CFS		✓	✓
10.	condensing flues			
(i)	Selection for correct condensate disposal positions and terminations for appliances of heat input ≤ 4 kW		✓	
(ii)	plume management kits		✓	
(iii)	differing air inlet duct and terminal positions		✓	
(iv)	terminal guards for plumbing kit air inlets		✓	
11.	chimneys for vertex appliances:			
(i)	construction and operation of vertex chimney		✓	
(ii)	min. height of appliance draught break above roof insulation		✓	
12.	exchange of information and planning for chimneys/flues:			
(i)	requirements of designer, builder, provider or installer when installing gas chimneys		✓	✓
(ii)	chimney certificates		✓	✓

14. Installation of open, balanced and fan assisted chimneys

This competency is not required if Candidate holds CCLP1 PD.

PERFORMANCE CRITERIA	REF	I	R
Open flue installation - identify correct and incorrect installations:			
1. cement based and metallic rigid - flueing into a pre-lined chimney (clay lined)		✓	
2. flexible flue liners:			
(i) joining at base and at terminal position using appropriate adaptors		✓	✓
(ii) clamping at terminal position		✓	✓
(iii) sealing annular space between liner and chimney		✓	✓
(iv) sealing voids at chimney base - pipework etc.		✓	
3. fan assisted flue installation - identify correct and incorrect installations:			
(i) number of bends within flue duct length is to MIs		✓	✓
(ii) calculate ventilation for a vertex system		✓	✓
KNOWLEDGE AND UNDERSTANDING	REF	I	R
1. condensing appliance chimneys		✓	
2. effects and hazards of inadequately sealed flue liners		✓	
3. incorrect applications of flue liners		✓	
4. identify difference of vertex systems and vertical room sealed chimney configurations		✓	
5. unsafe situation of room sealed fanned flue system not adequately secured at the appliance		✓	✓