Alabama Natural Gas Association
Gas Worker
Training & Assessment Program

PLAN C ASSESSMENT

Trainee Name: _____ Date of Assessment: _____

Evaluator Conducting Assessment: _____ Location:_____

Evaluator: *Conduct the assessment for one trainee at a time. Do not give the trainee the answers or lead him/her in any way. The assessment should be conducted in a quiet and un-rushed environment if possible. Do not conduct the assessment prior to the end of the 60-day period, but as close as possible to the 60-day period (not more than 5 days later). Correct the trainee during the evaluation process and demonstrate the correct method (if applicable). Record performance on this evaluation sheet.*

Read a Meter	Trainee Passed	Trainee Failed
Give five different meter readings on a 4-dial meter and five on a 5-dial meter. Ensure the numbers are evenly spread between 0000 – 9999. Write down each reading you gave the trainee. Instruct the trainee: *We are going to begin the assessment by having you read a meter. I'm going to ask you to read a 4-dial meter and a 5-dial meter. I'll set the meter reading and then hand it to you. You'll just need to read it and tell me what the meter reading is. You'll be asked to do several meter readings for each.*		
1) 4-dial meter reading one *Score based on whether the trainee gave an accurate reading*	☐	☐
2) 4-dial meter reading two *Score based on whether the trainee gave an accurate reading*	☐	☐
3) 4-dial meter reading three *Score based on whether the trainee gave an accurate reading*	☐	☐

Read a Meter	Trainee Passed	Trainee Failed
4) 4-dial meter reading four *Score based on whether the trainee gave an accurate reading*		
5) 4-dial meter reading five *Score based on whether the trainee gave an accurate reading*		
6) 5-dial meter reading one *Score based on whether the trainee gave an accurate reading*		
7) 5-dial meter reading two *Score based on whether the trainee gave an accurate reading*		
8) 5-dial meter reading three *Score based on whether the trainee gave an accurate reading*		
9) 5-dial meter reading four *Score based on whether the trainee gave an accurate reading*		
10) 5-dial meter reading five *Score based on whether the trainee gave an accurate reading*		

Meter Basics & Types of Meters	Trainee Passed	Trainee Failed

Ask the trainee the following questions about meters.

1) *Explain what a meter does and why the company uses meters*

   Score: Measures the amount of gas used by the customer. It is the mechanism that allows the company to accurately bill the customer.

2) *What is the main factor that determines the size of a meter you select for a customer?*

   Score: BTU load/demand

3) *What is the most common meter that we install?*

   Score: Responds accurate based on company

Regulator Basics & Types of Regulators	Trainee Passed	Trainee Failed

Ask the trainee the following questions about regulators:

1) *Explain what a regulator does and why the company uses regulator*

   Score: A piece of equipment that controls the amount of gas that goes from the gas line to the customer (residential, commercial, industrial).

2) *What is MAOP and why do you need to know the regulator's MAOP?*

   Score: Maximum Allowable Operating Pressure

   Score: Can't exceed this for the regulator. If the line pressure is greater than the MAOP for the regulator, you need to change the regulator (increase the size).

3) *What types of regulators do we install?*

   Score: Responds accurate based on company

4) *How do you ensure the regulator is installed correctly with the direction of flow?*

   Score: Line the arrow to be in the direction of the flow.

Repair Gas Leaks on Services	Trainee Passed	Trainee Failed

Select an appropriate location for the exercise, then tell the trainee: *We are going to repair a gas leak on this service. Walk me through the process. Describe every step of making the repair. Tell me what you are doing.*

- Verify address matches work order.
- Make contact with customer, identify yourself, and review the purpose of the visit.
- Secure the truck and the work site with cones, signs, strobe lights, and flags as necessary.
- Put on proper PPE and get fire extinguisher out.
- Evaluate any threat to life or property and eliminate accordingly.
- Notify supervisor and applicable company personnel.
- Contact Emergency personnel if needed.
- If a leak is probable, approach the house from the corner. Houses blow out, not out at the corner.
- Communicate with customer if home. Do not call in advance. Do not ring the doorbell. Evacuate if necessary. Eliminate any ignition source (leave phone in vehicle, don't allow customer to crank car or turn on equipment).
- Call 811 for emergency underground utility locate request if excavating will be performed.
- Make sure all underground utilities are represented before any excavation is performed, if possible. Dig with discretion.
- Locate the utilities.
- Spot the other utilities if any are in the way.
- Bar hole the service and test with the leak detector/ CGI. *Note: CGI is the only certified device to officially grade leaks.*
- Look for possible indications of a gas leak (e.g., dead vegetation, mold) or sources of recent disturbance to a gas line (e.g., excavation, construction work).
- Determine if gas service line should be squeezed off in a location away from the actual gas leak before excavating the leak.
- Depending on the size of the leak, dig over the hole with the greatest concentration of gas or best evidence of a gas leak (hole with greatest reading) *or* if a larger leak, dig on either side of that hole to squeeze off gas in a safe and efficient manner.

Repair Gas Leaks on Services	Trainee Passed	Trainee Failed

- Spot the gas service.
- Soap test the service for leak.
- Once leak is identified, determine the best strategy for repair based on location and type of pipe.

Plastic

- Apply static suppressant spray, soapy water, and/or grounding wires (any measures to stop static unintentional ignition sources.)
- Squeeze off section with leak
- Cut out leaking section
- Clean and prepare pipe (chamfer, pencil sharpen) for repair
- Replace with pre pressure tested new section of pipe
- Connect new section to existing pipe using stab fittings, amp/met fittings, electrofusion, butt fusion, or other.
- Shut meter off and lock
- Apply Gas to perform soap test.
- Soap test fittings and squeeze point
- Mark squeezed off section with black tape at squeeze point

Steel

- Tighten couplings/dresser couplings
- Check the saddle bolts to determine if they are leaking and replace if allowed
- If bare steel, insert or run new service
- If corrosion leak or damage to service, cut out section that is leaking for replacement (if possible – best option), use a wrap-around, or do a partial renewal

Cut Out

- Start at the saddle
- Run the tap down until there is no gas
- If no rundown in the tapping tee, use electrolysis cables for grounding (avoid sparking – potential fire source) (Jumper Wires)
- Clean the section of pipe to be cut using file, isopropyl alcohol, paint scraper, etc.

Repair Gas Leaks on Services	Trainee Passed	Trainee Failed

- Cut out the leaking section of the service line.
- Replace with appropriate size steel pipe and couplings.
- If using a steel Dresser (Style 90), use bonding wires to jump the current from each side to aid in location because the Dresser contains a rubber O-ring.
- Wait for the welder to weld the new section of steel pipe into the existing service and allow it to cool.
- Reapply gas for soap test
- Soap fittings or welds to ensure no leaks.
- Wrap, use mastic, wax tape, hot tape, tape coat 20, primer, and brace.

Wrap-Around/Repair Clamp

- Clean and prepare pipe with file, wire brush, scraper, and hammer
- Install wrap around on pipe
- Tighten bolts
- Check for leaks using soap
- Put brace/blocks under the wrap around

Put on mastic, greyline tape, cheesecloth, wax tape, two-part epoxy, hot tape, tape coat 20, primer, and/or hot wrap

Score: Follows correct procedures (above).

Install a New Main	Trainee Passed	Trainee Failed

Identify an appropriate location based on the task and then tell the trainee: *We are going to be installing a main right here. I want you to explain the process as we go, describing each step.*

- Verify location matches work order.
- Make contact with customer (if parked on customer's property), identify yourself, and review the purpose of the visit.
- Determine the material needed and request from supervisor.
- Secure the truck and the work site with cones, signs, strobe lights, and flags as necessary.
- Direct traffic if necessary.
- Put on proper PPE.
- Verify a locate request of other underground utilities has been made, you have a valid locate number, and the other underground utilities have been located.
- Locate the utilities or ensure utilities have been located (check ticket to ensure locate date has not expired).
- Take picture/video of locates and anything else notable (existing damage).
- Spot other underground utilities in proposed route that may be in conflict.
- Depending on the size of the pipe either fuse pipe together or roll out the pipe.
- If installing Welded Steel main, set up supportive cribbing and prep pipe ends for welder to perform the welding process. Prepare the pipe ends by grinding with angle grinder to remove surface scale and establishing the appropriate bevel angle for the weld joint.
- Inspect weld to ensure it meets company procedures and/or API 1104 welding code and have X-rayed if applicable.
- Jeep pipe with Jeeper to check for any holidays (missing sections of pipes coating) in pipes protective coating and repair as needed with wax tape, hot tape, tape coat 20, two-

Install a New Main	Trainee Passed	Trainee Failed

part epoxy, primer, or F1H1 Fusion Bonded Epoxy if boring.

- Wrap weld joint with Wax Tape, Hot Tape or apply F1H1 Fusion Bonded Epoxy (FBE) if boring.
- Install casing with vent pipe and appropriate spacers for pipe size if the main is to be placed under a state or county highway (if traffic and/or county requirements dictate).
- Trench, plow, or bore the ground to place the pipe.
- If trenching:
    - Inspect trench bottom to make sure it is level to ensure pipe will be properly bedded on the bottom of the trench.
    - Inspect trench for large rocks, rocks with sharp edges or foreign debris that could damage the pipe or pipe coating.
    - Place pipe in the trench.
    - Cover the pipe with dirt.
    - Place the tracer wire and marking tape (plastic only) on top of the dirt.
    - Place a marker ball every 500 feet or line maker or GPS the main.
    - If plowing or boring:
    - Set pipe trailer to designated position.
    - Install appropriate attachment to plow, if directional boring or plowing attach weak link and mud plug to boring head.
    - Connect the pipe and tracer wire to the plow or boring head
    - Ensure all bands holding the pipe together are cut properly
    - Plow/Bore and pull the pipe and wire the designated length, taking care to ensure the wire does not break and that the direction bore rig is properly grounded.
    - Complete all tie-ins.
    - Shoot a pig to clean out all debris inside the pipe.
    - Place a marker ball or line markers every 500 feet or

Install a New Main	Trainee Passed	Trainee Failed

GPS the main.

- If installing No blo/ Tapping Tee, prepare the existing main (scrape/peel and clean) and connect tapping tee to the existing main.
- If installing Branch side tapping tee, prepare the existing main for installation of side tap and tapping valve and perform pressure test on the components.
- If installing full bore tee, prepare pipe for squeeze off tools, potential bypass and downstream pressure monitoring point.
- Determine where the poly valves will go.
- Connect the valves to the tee.
- Connect the valves to the main.
- Put air on the line.

  Note: In order to test the line, use one of multiple strategies to prevent air from exiting the system. This might include putting butt or socket fuse caps on ends, butt fuse or electro-fuse a 2" transition, or another method.

- Use the service chart/test box/clock to perform shut in/pressure test following company guidelines.
- Bleed off air test.
- Put on appropriate fire retardant PPE as required before tapping and place fire extinguisher in appropriate location.
- Tap the main.
- Purge down the gas line and test with CGI/GMI/Rover.
- Squeeze off end of line or install valve.
- Connect cap to end of line:
  - Butt fuse or electro-fuse if at the end at an existing main
  - Polytap or hot tap if valve is necessary
  - If connecting to steel:
    - Use appropriate tapping machine to stop off steel

Install a New Main	Trainee Passed	Trainee Failed

main in order to tie into plastic.

- Use a Weld Steel (W.S.) Tapping Tee/Noblo and transition fitting to tie steel into plastic.
- If installing full bore tee, prepare and install stopple fittings for line stops for installation of full-bore tee
- Put on appropriate fire retardant PPE as required before tapping.
- If installing branch side tapping saddle, prepare and install branch side tapping saddle and full bore tapping valve and flange to make tap with tapping machine.
- If making branch side tap perform pressure tests on these components to 1.5 times the operating pressure before the side tap is made.

- Remove Squeeze Off (if used)
- Mark squeezed off section with black tape at squeeze point (if squeezed off was used)
- If trenching, safe-in service line and tracer wire to ensure they remain uniform and together before backfill.
- Install valve boxes and back fill
- Bury the end cap at proper depth, backfill and place pipeline markers or GPS the main.
- If installing Welded Steel Main, install anodes and test stations, test station wires for cathodic protection and monitoring as required.

Score: Follows correct procedure (above)

Insert Steel Services	Trainee Passed	Trainee Failed
Ask the trainee the following questions about inserting steel services.		
1) *Explain what an insert is* Score: Installing new pipe inside old pipe to provide service.		
2) *Why would you insert a steel service instead of trenching a new service?* Score: You might already have a line dug at the riser. There may be a cathodic protection issue. Prevents you from cutting utilities in the yard. There could be a leak on the service. It might run under a drive, road, or sidewalk. It saves time.		
3) *Explain how a tracer wire works when inserting.* **Score:** Correct response based on company procedures		

Tie In	Trainee Passed	Trainee Failed
Instruct the trainee: *Tell me what a tie in is and when you would perform a tie in. Give me an example of when you do a tie in.*		
Score: Connecting two pieces of pipe together to make one solid pipe.		
Score: Provides a good example.		

Relocate Mains & Services	Trainee Passed	Trainee Failed

Identify an appropriate location for this task and then tell the trainee: *We are going to relocate this service. I want you to walk me through each thing that we are going to do, step by step, explaining what we are doing and why as we go.*

- Verify address matches work order.
- Make contact with customer, identify yourself, and review the purpose of the visit.
- Secure the truck and the work site with cones, signs, strobe lights, and flags as necessary.
- Direct traffic as necessary.
- Put on proper PPE and get fire extinguisher out.
- Verify a locate request of other underground utilities has been made, you have a valid locate number, and the other underground utilities have been located.
- Locate the utilities.
- Spot the other utilities if any are in the way.
- Depending on the size of the pipe either fuse pipe together or roll out the pipe.
- For a service, install casing and appropriate spacers for pipe size if the service is to be placed under a state or county highway (if traffic and/or county requirements dictate).
- Trench, plow, or bore the ground to place the pipe.
- Inspect trench to ensure the bottom of the trench is level and the pipe will be properly bedded on the bottom of the trench to avoid stress points.
- Inspect trench for large rocks, rocks with sharp edges or foreign debris that could damage the pipe or pipe coating.
- Place pipe in the trench.
- GPS any exposed pipe.
- Cover the pipe with dirt.
- Place the tracer wire and tape, if using (plastic main or service only) on top of the dirt.
- Continue the backfill.
- Test the line to ensure no leaks are present using company guidelines and specific situation to determine which test to use (e.g., air, nitrogen,

hydrotest).

- Put air on the line (must be done *before* the test if conducting an air test, but after if conducting a nitrogen test or hydrotest).
- Use the service chart/test box/clock to perform shut in/pressure test following company guidelines.
- Once the test passes, connect to the existing gas source.
  - Put on appropriate fire retardant PPE as required before tapping.
  - Butt fuse or electrofuse if at the end at an existing main
  - Polytap or hot tap if valve is necessary
  - If connecting to steel:
    - Use appropriate tapping machine to stop off steel main in order to tie into plastic
    - Use a weld tee tap and transition fitting to tie steel into plastic
- Use leak detection equipment (GMI, CGI) to ensure it is 100% gas.
- Apply static spray, soapy water, and/or grounding wires (any measures to stop static and avoid sparks)
- Squeeze off the test point and place end cap on end of main.
- Unless it is to be retired, mark squeezed off section with black tape at squeeze point.
- Bury the end cap at proper depth and place pipeline markers.

Take measurements for Service record and/or GPS relocated facility.

Score: Follows the correct procedure (above). | | |

When the trainee has finished, ask: *What additional steps would you have taken if this would have been a main instead of a service?*

- If installing welded steel main, set up supportive cribbing and prep pipe ends for welder to perform the welding process. Prepare the pipe ends by grinding with angle grinder to remove surface scale and establishing the appropriate bevel angle for the weld joint.

Relocate Mains & Services	Trainee Passed	Trainee Failed
• If welded steel main is being installed, jeep pipe with pipe jeeper to check for any holidays (missing sections of pipes coating) in pipes protective coating and repair as needed with wax tape, hot tape, tape coat 20, primer, two-part epoxy, or F1H1 Fusion Bonded Epoxy if boring. • If welded steel main is being installed, wrap weld joint with wax tape, hot tape, tape coat 20, primer, or apply F1H1 Fusion Bonded Epoxy (FBE) if boring. • For a main, install casing with vent pipe and appropriate spacers for pipe size if the main is to be placed under a state or county highway (if traffic and/or county requirements dictate). • If welded steel main is being installed, inspect welds to ensure welds meet company procedures and/or API 1104 welding code and have X-rayed if applicable. • Test the new main with appropriate test to ensure no leaks are present.		
Score: Appropriately identifies the differences in relocating a main.		

Repair Gas Leaks on Mains	Trainee Passed	Trainee Failed

Identify a work order that requires a gas leak repair on a main. Choose that for this assessment. Tell the trainee the following: *We are going to repair a gas leak on a main. I want you to walk me through each thing that we are going to do, step by step, explain what we are doing and why as we go.*

- Verify address matches work order.
- Make contact with customer (if parked on customer's property), identify yourself, and review the purpose of the visit.
- Secure the truck and the work site with cones, signs, strobe lights, and flags as necessary.
- Evaluate any threat to life or property and eliminate all ignition sources.
- Notify supervisor and applicable company personnel.
- Contact Emergency personnel if needed.
- Call 811 for emergency underground utility locate request if excavation will be performed.
- Direct traffic as necessary.
- Depending on location and situation, communicate with customers if home. Do not ring the doorbell. Evacuate if necessary.
- Put on proper PPE and get fire extinguisher out.
- Make sure all underground utilities are represented before any excavation is performed if appropriate under the emergency conditions.
- Locate the utilities.
- Spot the other utilities if any are in the way.
- Bar hole and test the main with the leak detector. Check for migrating gas into surrounding utilities and/or property.
- Determine if gas main should be valved off or squeezed off in a location away from the actual gas leak before excavating the leak.
- Depending on the size of the leak, dig over the hole with the greatest concentration of gas or best evidence of a gas leak (hole with greatest reading) *or* if a larger leak, dig on either side of that hole.
- Spot the gas main.

Repair Gas Leaks on Mains	Trainee Passed	Trainee Failed

- Soap test the main for leak.
- Once leak is identified, take pictures of damage that caused the leak whether natural forces, third party damage or component failure for documentation
- Once leak is identified, determine the best strategy for repair based on type of leak, location of the main, type of pipe, pressure, and if it is a one-way or two-way feed. More experienced personnel on the scene will determine best strategy for repair.

Plastic:

- Apply static suppressant spray, soapy water, and/or grounding wires (any measures to stop static and avoid sparks)
- Squeeze off section with leak or valve off.
- If it is a one-way feed and a section of the main must be cut out, add a bypass and downstream pressure monitoring point to determine if minimum operating pressure was exceeded.
  - Add bypass saddle (bolt on, tapping tee/Noblo or electrofuse) to each side of the section of main to be removed.
  - Install gauge downstream of repair to ensure system holds pressure.
  - Squeeze off on both sides behind the cutoff point
- If the section of main is lost, physically cut off and lock all meters on the impacted main line.
- Cut out the section of pipe to be removed
- Clean the replacement pipe (clean with alcohol, file)
- If butt fusion process is used to install the new segment of pipe, the length of new segment of pipe shall be determined, account for shave out distance and cut to this measurement.
- If fittings are being installed, the takeoff measurement of those fittings must be accounted for before cutting the new segment to length.
- Measure couplings to be used
- Insert pipe and couplings
- Connect pipe and fittings to existing main through electrofusion, butt fusion, or stab fittings
- Remove squeeze offs and soap squeeze location for leaks
- Mark squeezed off section with black tape at squeeze point

Repair Gas Leaks on Mains	Trainee Passed	Trainee Failed

- Check fittings for leaks using soap
- Remove the bypass and gauges
- Bed the couplings or place blocks under the couplings for support
- Record all materials used and get location measurements of repair by using the nearest intersecting street and measurement from back of the curb or edge of pavement.

Steel:

- Tighten couplings
- Check the saddle bolts to determine if they are leaking and replace if needed (per company policy)
- If bare steel, make temporary repairs and document for replacement
- If a section of steel main must be cut out, the flow of gas may need to be stopped before work can be completed.
- If corrosion leak or damage to main, use a wrap-around, repair clamp, split bell/M80/Plidco sleeve/overweld, or cut out section that is leaking.

  - Cut out

    - Clean the section of pipe to be cut using file, paint scraper, alcohol, etc.
    - Appoint a designated fire watch
    - Install jumper wires
    - Cut the section of pipe to be removed
    - Take exact measurement of segment to be replaced (e.g., account for weld joint root gap) for the welder to perform welding in of new segment.
    - Prepare the replacement pipe for welding and couplings by buffing and beveling
    - Replace with appropriate size steel pipe and couplings by welding or using compression couplings (Maxigrip)
    - If Dresser couplings or Maxigrip fittings are used, install bonding wire to allow cathodic protection to bypass the Dresser couplings, Maxigrip couplings and plastic pipe replacement segment to continue maintaining CP and prevent possible isolated sections of steel main without CP
    - Allow welded area to cool

- Soap fittings to ensure no leaks
- Bring up bonding wire and valve box to be able to locate main
- Wrap, use mastic/hot tape/wax tape, and brace.

▪ Wrap-Around/Repair Clamp

- Clean & Prepare pipe with file, wire brush, scraper, and brass hammer
- Install wrap around on pipe
- Tighten bolts
- Check for leaks using soap
- Bring up bonding wire and valve box to be able to locate main
- Put brace under the wrap around
- Put on mastic, greyline tape, cheesecloth, two-part epoxy, hot wrap

Cast Iron:

o Tighten couplings

o Check the saddle bolts to determine if they are leaking and replace if needed

o Pack the bell with lead and/or use Anacure and a screw plug to create a seal for holes in the cast iron.

o If a section of cast iron main must be cut out, the flow of gas must be stopped before work can be completed (Maxigrip). If needed to prevent large outages, a plan to perform segment replacement in blowing gas (hot) will be carefully created and executed with appropriate personnel and materials.

o If corrosion leak or damage to cast iron main has occurred, use a wrap-around, split bell/M80/stainless steel repair sleeve, or cut out section that is leaking (rare)

▪ Cut out

- Clean the section of pipe to be cut using file, paint scraper, alcohol, etc.
- Cut the section of pipe to be removed
- Prepare the replacement pipe and couplings
- Replace with appropriate size plastic pipe and couplings using transition couplings or using compression couplings (Maxigrip)

Repair Gas Leaks on Mains	Trainee Passed	Trainee Failed

- Soap fittings to ensure no leaks.
- Wrap, use mastic/wax tape/hot tape, tape coat 20, primer, and brace.

▪ Wrap-Around

- Clean & Prepare pipe with file, wire brush, scraper, and brass hammer
- Install wrap around or sleeve on pipe
- Tighten bolts
- Check for leaks using soap
- Put brace under the wrap around
- Put on mastic, greyline tape, cheesecloth

- Check bar holes again for gas level
- GPS the section of main that is exposed.
- Back fill
- Once the leak is repaired and back fill is made, go to the furthest service away that was lost. Breakdown and bleed for 100% gas. Relight pilots and work from furthest point back to the leak site.
- If gas service was interrupted for any customers:
  - Communicate with the customer
  - Conduct relight of appliances
  - Tag appliance(s) if necessary
- Landscape to repair road damage

Recheck leak after repair according to company procedures to ensure no additional leaks.

Score: Follows correct procedure (above)