



## **Operator Qualification Procedures & Checklists**

*(Listed by Covered Task)*

### **1. Excavations**

- Excavations

### **2. Leaks**

- Use of Flame Ionization (FI) Unit
- Use of Combustible Gas Indicator (CGI)

### **3. Corrosion Control**

Internal Corrosion Inspection

- External Corrosion Inspection
- Atmospheric Corrosion
- Determining Types of Corrosion
- Application of Coatings
- Holiday Detection & Inspection
- Painting Above-Ground Facilities
- Installing Galvanic Anodes
- Installing Rectifiers
- Rectifier Inspection & Maintenance
- Pipe-to-Soil Potentials
- Soil Resistivity
- Electrical Isolation
- Monitoring Test Leads and Stations
- Interference of Stray Currents

### **4. District Regulators**

- Maintaining By-Pass Procedures
- Regulator Inspection
- Regulator Start-up
- Regulator Shut-down
- Monitor Regulators

### **5. Steel Pipe**

- Steel Pipe Joining by Mechanical Couplings
- Tapping & Stopping Steel Lines

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- Plastic Pipe Socket Fusion
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- Electrofusion Saddle Joining
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## **7. Cast Iron Pipe**

- Mechanical Coupling – Cast / Ductile
- Tapping and Stopping – Cast / Ductile

## **8. Main Line Valves**

- Maintaining Emergency Valves
- Locking & Unlocking Valves
- Lubricating & Servicing Valves
- Valve Accessibility

## **9. Odorization**

- Filling Odorant Tanks
- Filling Kingtool & Homemade Odorant Tanks
- Inspecting and Operating Odorant Equipment
- Inspecting and Operating Kingtool and Homemade Odorant Equipment
- Determine Odorant Concentration

## **10. Relief Valves**

- Relief Valve Inspection and Maintenance

## **11. Testing**

- Testing Lines that Operate at or Below 100 PSI

## **12. Meters & Service Regulators**

- Installing Customer Meters
- Shut-In Procedures

## **13. Purging**

- Services and Mains
- Abandoned Mains, Services or Yard Lines

## **14. Damage Prevention**

- Locating Facilities
- Inspection of Exposed Pipelines

## **15. Pressure Uprating**

## **16. Emergency Plans**

- Gas Leak Response
- Fire / Explosion Notification & Response
- Shutting Down & Restoring Gas Service

## **17. Service Lines**

- Restoring Gas Service
- Shutting Down a Service Line with Tap
- Starting up a Service Line with Tap
- Excess Flow Valves

## **18. Calibration of Equipment**

- Odorometer



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## Excavations

### *Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

### **Procedures & Checklist**

- 1. Determine the site to be excavated.
- 2. Call Kansas One-Call for locates.
- 3. Check for locates marks on ground prior to any excavation.
- 4. Wear proper personal safety equipment.
- 5. Check truck for proper tools and safety equipment.
- 6. Check excavation equipment for safe operation.
- 7. Barricade or cone-off area as needed.
- 8. If roads or streets are closed or traffic is disrupted, call Public Safety.
- 9. Begin excavating.
- 10. Locate any utilities to be dug around by hand, or air knife, or water jet.
- 11. Classify soil as to sand, loam, clay, etc.
- 12. Any excavation four feet or deeper needs to be shelved or shored appropriately.
- 13. Dirt and spoils should be placed a minimum of two feet away from the edge of the excavation.
- 14. When returning to the excavation after having left, check for acceptable atmospheric conditions in the hole.

### **Abnormal Operating Conditions**

- 1. Severe weather conditions
- 2. Adverse soil conditions
- 3. Cave-ins
- 4. Escaping gas
- 5. Damage to other utilities
- 6. Equipment malfunction

### Reaction to Abnormal Conditions

- 1. Notify Supervisor
- 2. Shore or shelve
- 3. Clean out, shore or shelve
- 4. Shut in source, contact Supervisor
- 5. Call appropriate representative for repairs
- 6. Contact Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Leaks --**  
**Use of Flame Ionization (FI) Unit**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Check filters and replace if necessary. Check batteries.
- 2. Start up FI unit.
- 3. Check and adjust unit according to manufacturer's recommendations.
- 4. Test unit for flame out.
- 5. Restart unit and begin survey.
- 6. Do not walk too fast; allow FI unit adequate time to sense leakage.
- 7. Use a sweeping motion with the wand over the pipe.
- 8. When surveying under hard surfaces or pavement, check cracks, valve boxes, foundation walls, sewer manholes, etc. for leaks.
- 9. When surveying yard lines, check up to and around building wall.
- 10. If alarm sounds and unit flames out, restart and check area again.
- 11. If a leak is suspected, stop survey and classify using a combustible gas indicator as to a class 1, 2, or 3 and document.
- 12. When conducting the leak survey with FI unit, be aware of other signs of leakage, such as dead vegetation.

**Abnormal Operating Conditions**

- 1. Leak detected during survey
- 2. Batteries low
- 3. Unit will not flame out
- 4. Filter dirty
- 5. Strong wind, wet and inclement weather
- 6. Unit fails the operation check
- 7. Escaping gas

### Reaction to Abnormal Conditions

- 1. Contact supervisor, classify with CGI
- 2. Do not use until proper charge
- 3. Do not use until repaired and calibrated by manufacturer
- 4. Change filter
- 5. Do not conduct leak survey.
- 6. Do not use until unit has been tested and calibrated by manufacturer
- 7. Eliminate source; contact supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Leaks--**  
**Use of Combustible Gas Indicator (CGI)**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

**Aspirator Type CGI**

- 1. Check hose and connections
- 2. Turn unit on, check and adjust voltage
- 3. In fresh air, aspirate to clear unit, adjust zero if necessary
- 4. Barhole area of suspected leak
- 5. Set CGI on LEL scale
- 6. Insert wand into barhole, aspirate, and watch needle for movement
- 7. If needle gets to full scale, remove wand, clear unit in fresh air
- 8. Switch CGI to UEL (full) scale and test barhole again
- 9. Record highest reading; also record stabilized reading
- 10. Determine if gas will pump down
- 11. Continue barholing and testing on either side of leak until 0% readings are achieved
- 12. Classify as to 1, 2, or 3 leak and document
- 13. Depending on classification, follow O&M procedures or Emergency Response Plan

**Electronic Pump CGI**

- 1. Turn unit and allow it to complete it's cycle check
- 2. Turn on pump
- 3. Clear unit in fresh air
- 4. Barhole, test and record readings as with aspirator type
- 5. Classify leak as to class 1, 2, or 3 and document
- 6. Depending on the classification, follow O&M procedures or emergency response plan

### **Abnormal Operating Conditions**

- 1. Escaping gas
- 2. CGI will not zero
- 3. Gas detected at building wall

### **Reaction to Abnormal Conditions**

- 1. Eliminate source, contact supervisor
- 2. Contact supervisor
- 3. Eliminate source, contact supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Internal Corrosion Inspection**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Visually inspect any coupon, pipe, or pipeline that has been removed from any segment of the gas system for internal corrosion.
- 2. If significant internal corrosion exists, inspect adjacent piping to determine the extent of the corrosion.
- 3. Remedial measures must be taken to minimize the internal corrosion found.
- 4. Complete inspection report, which must be kept for the life of the pipe.

**Abnormal Operating Conditions**

- 1. Escaping gas
- 2. Severe corrosion

**Reaction to Abnormal Conditions**

- 1. Shut off source, notify Supervisor
- 2. Notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
External Corrosion Inspection**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Determine by visual inspection if pipe has general or localized corrosion or no corrosion at all.
- 2. Use pit gauge to check pit depth (wall thickness must not be less than 30%).
- 3. Take pipe to soil potential to determine if pipe needs additional cathodic protection.
- 4. Take remedial action if necessary.
- 5. Follow procedures for repairing or replacing coatings, installing appropriate cathodic protection, or replacing pipe if necessary.
- 6. Complete inspection report, which must be kept for the life of the pipe.

**Abnormal Operating Conditions**

- 1. Escaping gas
- 2. Pit depth over 30%
- 3. Abnormally high or low pipe to soil readings
- 4. Holidays in coating, damaged coating

**Reaction to Abnormal Conditions**

- 1. Shut off the source, notify Supervisor
- 2. Replace pipe
- 3. Notify Supervisor
- 4. Replace coating

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Atmospheric Corrosion**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Determine areas and types of corrosion.
- 2. Take remedial actions if necessary.
- 3. Follow procedures for painting above ground piping.
- 4. Complete inspection report, which must be kept for the duration of the pipe.
- 5. Reevaluate at intervals not exceeding three years.

**Abnormal Operating Conditions**

- 1. General corrosion
- 2. Escaping gas
- 3. High moisture area or corrosive environment

**Reaction to Abnormal Conditions**

- 1. Notify Supervisor
- 2. Shut off source, contact Supervisor
- 3. Notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--**  
**Determining Types of Corrosion**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

**Determine which of the following types of corrosion exists:**

- 1. Dissimilar Metals: There is a potential difference between two different types of metals, one being more cathodic and the other more anodic.
- 2. Dissimilar Soils: There is a potential difference that passes through dissimilar soils and can establish corrosion cells. Some soils are more cathodic, others more anodic.
- 3. Differential Aeration Corrosion Cell: Pipe in well-aerated soil will be more cathodic; pipe in poorly aerated soil will be more anodic and subject to corrosion.
- 4. New and Old Pipe: New steel is more anodic and will corrode faster if there is an electrical contact between it and old steel.
- 5. Mill Scale Corrosion: Mill scale acts as a dissimilar metal and steel is anodic to it which can result in severe corrosion.
- 6. Atmospheric Corrosion: Corrosion on above ground piping resulting in rust or pitting.
- 7. Once the type/ types of corrosion is/are identified, take remedial measures as necessary which include any or all of the following: paint pipe, repair/replace coatings, insulate pipe segments, install cathodic protection.
- 8. Complete an inspection report which must be kept for the duration of the pipe.

**Abnormal Operating Conditions**

- 1. Excessive corrosion
- 2. Abnormally high or low pipe to soil potentials
- 3. Escaping gas

### Reaction to Abnormal Conditions

- 1. Notify Supervisor
- 2. Notify Supervisor
- 3. Shut off source, notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Application of Coatings**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Clean pipe surface, removing all rust and scale as is possible.
- 2. Use recommended primer for type of coating to be applied and cover the entire exposed pipe, allowing it to dry before applying coating.  
Avoid any moisture on pipe surface.
- 3. Apply coating in accordance with manufacturer's specifications.
- 4. Complete inspection report, which must be kept for the duration of the pipe.

**Abnormal Operating Conditions**

- 1. Damaged coating
- 2. Escaping gas

**Reaction to Abnormal Conditions**

- 1. Repair/replace coating
- 2. Shut off source, notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



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## **Corrosion Control-- Holiday Detection and Inspection** *Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

### **Procedures & Checklist**

- 1. Check for holidays in pipe coating both by visual inspection and a holiday detecting device.
- 2. Use holiday detector in accordance with manufacturer's specifications.
- 3. Mark any holidays detected for repair.
- 4. Repair holidays found.
- 5. Complete inspection report, which must be kept for the duration of the pipe.

### **Abnormal Operating Conditions**

- 1. Poorly coated pipe
- 2. Holidays in coating
- 3. Escaping gas

### **Reaction to Abnormal Conditions**

- 1. Notify Supervisor
- 2. Repair holidays found
- 3. Shut off source, notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



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**Corrosion Control--  
Painting Above-Ground Facilities**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Determine if any atmospheric corrosion exists and note on inspection report.
- 2. Clean rust and scale from pipe and remove any accumulated moisture.
- 3. Spray or brush paint on pipe, making sure that paint adheres to pipe with complete coverage.
- 4. Reevaluate condition of pipe as necessary, not to exceed three years.

**Abnormal Operating Conditions**

- 1. General corrosion
- 2. High moisture area or corrosive environment
- 3. Escaping gas

**Reaction to Abnormal Conditions**

- 1. Clean and paint pipe and monitor for additional corrosion
- 2. Notify Supervisor
- 3. Shut off source, notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Installing Galvanic Anodes**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Determine size and type of anode to be installed using various methods, including but not limited to, size of pipe, pipe-to-soil potentials, impressed current, soil resistivity, and type of soil.
- 2. Anode may be installed horizontally or vertically.
- 3. When possible, install anode a minimum of five feet from the pipe and lower than the pipe depth.
- 4. Connect anode wire to pipe using a thermite weld.
- 5. The pipe and welded anode wire should be primed and coated in accordance with the application of coatings procedures.
- 6. Tamp dirt around anode to fill in voids, and apply water if available to activate more quickly.
- 7. Do not split open the anode bag.
- 8. Complete inspection report.

**Abnormal Operating Conditions**

- 1. Other underground utilities and structures too close to pipe
- 2. Poor soil conditions
- 3. Escaping gas

**Reaction to Abnormal Conditions**

- 1. Notify Supervisor
- 2. Notify Supervisor
- 3. Shut off source, notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Installing Rectifiers**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Determine the outside diameter and the length of the pipe segment to be protected.
- 2. Verify if pipe is bare steel or coated and what type of coating.
- 3. Locate area for rectifier and groundbed and make arrangements for AC power to be supplied.
- 4. Verify that installation of rectifier will not result in stray current interference for other utilities or facilities in the area.
- 5. Select material for groundbed (anodes or cokebreeze) and install in accordance with intended life expectancy of the protection on the pipe.
- 6. Install rectifier and components; connect positive leads to groundbed and negative leads to pipeline.
- 7. Ensure that power supply provided matches rectifier input (120V or 240V) and connect.
- 8. Switch power on; adjust DC output as necessary.
- 9. Record readings and check on a regular basis, not to exceed 2 ½ month intervals.
- 10. Record must be kept for the life of the pipe.

**Abnormal Operating Conditions**

- 1. Erroneous readings
- 2. Evidence of stray current interference
- 3. Escaping gas

### **Reaction to Abnormal Conditions**

- 1. Check connections, check for evidence of arcing or lightning damage, check instruments for accuracy, contact supervisor.
- 2. May need to install critical bond, contact Supervisor.
- 3. Shut off source, contact Supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Rectifier Inspection and Maintenance**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Rectifier must be inspected on a regular basis, not to exceed 2 1/2 month intervals.
- 2. Prior to opening rectifier unit, slap enclosure with back of hand to make some of the lumina.
- 3. Clean and tighten all connections and repair/replace components as necessary.
- 4. Restore power supply to unit.
- 5. Record readings off of voltmeter and note on inspection report.

**Abnormal Operating Conditions**

- 1. Electrical shock when opening enclosure
- 2. No power to rectifier
- 3. Erroneous readings, abnormally high or low

**Reaction to Abnormal Conditions**

- 1. Notify Supervisor and/or Power Supplier
- 2. Notify Supervisor and/or Power Supplier
- 3. Check voltmeter; disconnect power, check all connection. If not corrected, notify Supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Pipe-to-Soil Readings (Potentials)**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Criteria for pipe to soil potentials in this procedure is based on -.85 millivolts (mV).
- 2. Connect positive lead to pipe or metal structure and connect negative lead to reference cell (copper sulfate probe with crystals and solution added)
- 3. Select desired range on voltmeter.
- 4. Remove protective cap and place reference cell porous plug in soil above pipe.
- 5. Record voltmeter reading.

**Abnormal Operating Conditions**

- 1. Abnormally high or low readings
- 2. Escaping gas

**Reaction to Abnormal Conditions**

- 1. Inspect instruments for accuracy; notify Supervisor
- 2. Shut off source; notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Soil Resistivity**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. This procedure is for a single rod, AC bridge Test.
- 2. Connect both leads from rod to AC bridge.
- 3. Connect headset phone jack.
- 4. Push rod in soil to desired depth.
- 5. Turn on power switch and turn dial clockwise until a null is heard.
- 6. Reading on dial at null indicates resistivity of soil in ohms/centimeter.

**Abnormal Operating Conditions**

- 1. Very corrosive soil

**Reaction to Abnormal Conditions**

- 1. Prep, coat and install pipe appropriately. Monitor for excessive corrosion.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Electrical Isolation**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Determine area for electrical isolation by using pipe to soil potentials or an electrical isolation-checking device.
- 2. After determining the problem area, install fitting to isolate the segment using an insulated union, insulated dresser coupling, insulated flange, or other types of insulated fittings as per manufacturer’s specifications.
- 3. Retest and record results; monitor as required.

**Abnormal Operating Conditions**

- 1. Escaping gas
- 2. Excessive corrosion
- 3. Abnormally high or low pipe to soil potentials

**Reaction to Abnormal Conditions**

- 1. Shut off source and notify Supervisor
- 2. Notify Supervisor
- 3. Notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



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**Corrosion Control--  
Monitoring Test Leads and Stations**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Use maps of test points and test stations and isolated segments if necessary.
- 2. Record pipe to soil potentials at test points and test stations at least once every year, not to exceed fifteen-month intervals.
- 3. Records must be kept for the life of the pipe.

**Abnormal Operating Conditions**

- 1. Erroneous readings
- 2. Escaping gas

**Reaction to Abnormal Conditions**

- 1. Check and calibrate equipment, leads, power switch, etc. Test again in wet weather.
- 2. Notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Corrosion Control--  
Interference of Stray Current**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Determine if area of interference is due to stray current by taking and comparing pipe-to-soil potentials, using a short locator, or interrupting rectifier current.
- 2. If necessary, install critical bond between pipes to eliminate problem.
- 3. Bonds must be monitored by recording pipe to soil potentials six times a year, not to exceed two and one-half month intervals.
- 4. Records must be kept for the life of the pipe.

**Abnormal Operating Conditions**

- 1. Loss of cathodic protection
- 2. Abnormally high P/S readings
- 3. Escaping gas

**Reaction to Abnormal Conditions**

- 1. Take remedial measures as necessary
- 2. Check segment for stray current
- 3. Notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**District Regulators--**  
**Maintaining By-Pass Procedures**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Remove the blank or lock from the by-pass system.
- 2. Back off the pressure on the regulator.
- 3. Crack the valve on the by-pass, watching the gauge or chart.
- 4. Increase pressure to desired psig, monitoring downstream pressure.
- 5. Do not exceed your MAOP.
- 6. When bypass operation is complete, slowly close the bypass valve.
- 7. Ensure that regulator takes over pressure control.
- 8. Shut by-pass down.
- 9. Ensure that regulator is working properly.
- 10. Install blank or lock on bypass valve.

**Abnormal Operating Conditions**

- 1. Pressure exceeds MAOP
- 2. Pressure drops below operating range
- 3. Escaping gas

**Reaction to Abnormal Conditions**

- 1. Reduce pressure on bypass
- 2. Increase pressure through bypass
- 3. Shut off source, Notify Supervisor

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



## kansas municipal utilities

### District Regulators-- Regulator Inspection

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

#### Procedures & Checklist

- 1. Make sure there is a sign with the Emergency Phone Number posted and includes area code.
- 2. Make sure the facility is in a locked building.
- 3. Make sure the building is vented.
- 4. Make sure the area is secured.
- 5. Make sure the system by-pass valve is locked.
- 6. Check entire system for atmospheric corrosion.
- 7. Make sure block valve upstream of regulator station is operable.
- 8. Check the operation of the regulator.
  - a. Must do lock-up on regulator. Lock-up means closing downstream valve for approximately 2-3 seconds. Watch upstream pressure gauge between regulator and valve and make sure pressure stays steady. You are allowed a 2 lb. build-up. If regulator locks up at that pressure, lock-up is good. If not, attempt procedure once again. If it fails, isolate regulator and tear down. Refer to manufacturer's manual.
- 9. Document the M.A.O.P.
- 10. Review the capacity calculations.
- 11. Record, date, and sign off on the inspection.

#### Abnormal Operating Conditions

- 1. Bypass valve is not locked.
- 2. Escaping gas from fittings or flanges.
- 3. Pressure gauge is not accurate.

### Reaction to Abnormal Conditions

- 1. Lock off
- 2. Shut off gas source and notify Supervisor
- 3. Replace gauge with accurate/calibrated gauge.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**District Regulators--  
Regulator Start-Up**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_

Date \_\_\_\_\_

Employee Name \_\_\_\_\_

ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Ensure all regulators are backed off.
- 2. Slowly open inlet valve to regulator.
- 3. Open sensing lines.
- 4. Open the outlet valve.
- 5. Slowly turn adjustment nut on regulator clockwise to increase system pressure up to the desired pressure.
- 6. Test regulator to make sure pressure will increase and decrease properly.
- 7. Adjust to system final pressure.

**Abnormal Operating Conditions**

- 1. Escaping gas
- 2. Downstream pressure increases too rapidly
- 3. No gas through regulator

**Reaction to Abnormal Conditions**

- 1. Shut off, Notify Supervisor
- 2. Back off regulators and repeat process
- 3. Dismantle and repair regulator

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**District Regulators--  
Regulator Shut-Down**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_

Date \_\_\_\_\_

Employee Name \_\_\_\_\_

ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Isolate segment and blow segment down.
- 2. Remove cap from top of regulator.
- 3. Loosen lock nut.
- 4. Slowly turn adjustment nut counter clockwise to turn flow down to desired pressure.
- 5. Pressure is backed off of system.
- 6. Continue to back off pressure until it is off line.
- 7. Shut off sensing lines to regulator.
- 8. Dismantle, clean, repair and restore.

**Abnormal Operating Conditions**

- 1. Escaping gas.
- 2. System will not blow down.
- 3. Debris inside regulator.

**Reaction to Abnormal Conditions**

- 1. Shut off and notify supervisor.
- 2. Grease and operate isolation valve.
- 3. Clean and/or replace components.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**District Regulators--  
Monitor Regulators**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Shut off the first regulator to stop the flow. Make sure it is locked up.
- 2. Shut off the second regulator and make sure it is locked up.
- 3. Shut in regulator station for the rest of this procedure.
- 4. Shut off both block valves in each station.
- 5. Shut off the control lines.
- 6. Tear down regulator.
- 7. Check all parts for damage, and replace if necessary.
- 8. Put regulator back together.
- 9. Open the inlet block valve. There should not be any flow.
- 10. Open the control lines. There still should not be any flow.
- 11. Open the outlet valve.
- 12. Begin adjusting the monitor regulator.
- 13. Set the monitor regulator to the desired set point, not to exceed MAOP.
- 14. Set the working regulator to the desired operating pressure.

**Abnormal Operating Conditions**

- 1. Gas continues to flow when block valves are shut in.
- 2. Regulator does not respond when increasing or decreasing pressure.
- 3. Escaping gas.

**Reaction to Abnormal Conditions**

- 1. Grease valves; if gas still flows, contact supervisor.
- 2. Take regulator out service; inspect and repair, place back in service.
- 3. Shut off source; contact supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Steel Pipe--**  
**Steel Pipe Joining by Mechanical Couplings**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Make sure you have a sufficient pipe cleaned and exposed to perform the task.
- 2. Stop flow of gas.
- 3. Clean pipe again and mark the center of pipe and fitting
- 4. All pipe ends must be squared.
- 5. Make certain you have proper alignment on the pipe.
- 6. Center the coupling equidistant from each end of the pipe
- 7. Torque the coupling to manufacturer's recommended specifications.
- 8. Either air- or soap-test the fitting for leaks.
- 9. Wrap all exposed pipe with mastic and tape.

**Abnormal Operating Conditions**

- 1. Blowing gas
- 2. Changing weather conditions
- 3. Faulty material
- 4. Extreme corrosion
- 5. Shifting soil
- 6. Gas valve or fitting leaking

### Reaction to Abnormal Conditions

- 1. Shut off and notify supervisor.
- 2. Protect pipe and fittings from inclement weather conditions.
- 3. Replace material.
- 4. Notify supervisor.
- 5. Stabilize soil.
- 6. Repair or replace valve or fitting.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Steel Pipe--  
Tapping and Stopping Steel Lines**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Clean and repair line for welding on tapping tee or line stop.
- 2. Remove completion plug from fitting.
- 3. Apply grease to inside of fitting (to protect inside from welding spatter).
- 4. Reinstall cap on fitting.
- 5. Center and level fitting.
- 6. Weld to main (maintain 1/16" to 1/8" gap between fitting and pipe surface); perform air test.
- 7. Install safety valve on fitting.
- 8. Install drilling machine to safety valve with proper cutter blade.
- 9. Raise and lower cutter bar until contacting main to make sure there are no obstructions.
- 10. Start tapping, advance machine slowly to start until pilot bit is through the main. The drilling will ease up when the pilot bit is through.
- 11. Advance tapping machine forward to make desired cut; when the bit is through the main, the drilling will get easier.
- 12. Turn the machine counterclockwise to retrieve the bit - this will retract the bit from the main. Make sure the bit is retracted completely from the main.
- 13. Close the safety valve - this will relieve pressure from the bit.
- 14. Remove tapping machine from safety valve.
- 15. Tap is complete once you see the coupon in the shell cutter (bit).
- 16. If fitting is a tapping tee, insert completion plug (refer to item #19).
- 17. Bleed pressure from safety valve.
- 18. Remove safety valve and install completion cap.

- 19. If the fitting is a line stop, continue with the following procedure:
  - a. Install chip sweep to safety valve, open valve slowly.
  - b. Lower chip sweep into the main, rock handle back and forth in direction of main to clear cuttings. Grease and install sealing cup to safety valve.
  - c. Remove chip sweep from main and safety valve, install close safety valve.
  - d. Install safety cup in the main, making certain that the arrow on tool is pointing in the direction of gas flow.
  - e. After installing safety cup, bleed gas through tool, start maintenance on line.
  - f. Remove safety plug from main, close safety valve.
  - g. Bleed pressure from safety valve, and remove plug from safety valve.
  - h. Install completion plug.
  - i. Bleed off pressure from safety valve to ensure completion plug is seated correctly.
  - j. Remove safety valve and install completion cap.
  - k. Tape or coat main.

### **Abnormal Operating Conditions**

- 1. Blowing gas.
- 2. Equipment failure.
- 3. Extreme corrosion.
- 4. Sharp internal weld on seam.
- 5. Missing coupon.
- 6. Gas line or line stop leaking by.

### **Reaction to Abnormal Conditions**

- 1. Shut off and notify supervisor.
- 2. Repair or replace.
- 3. Notify supervisor.
- 4. Relocate tap.
- 5. Record and monitor.
- 6. Reseat seal.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Plastic Pipe--  
Plastic Pipe Butt Fusion**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_

Date \_\_\_\_\_

Employee Name \_\_\_\_\_

ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Place pipe in Butt Fusion Machine.
- 2. Clean each pipe end with a clean cotton cloth.
- 3. Square (face) end of each pipe to be fused.
- 4. Check line-up of the pipe ends.
- 5. Adjust the high-low.
- 6. Check for voids and gaps.
- 7. Check heater plate for the proper surface temperature, and clean surface with a clean cotton cloth.<sup>1</sup> Surface Temperature 500 degrees Fahrenheit, plus or minus 10 degrees.
- 8. Insert the heater plate between the aligned ends and bring the ends firmly in contact with the plate, but do not apply pressure while achieving melt pattern.
- 9. Using manufacturer's recommendations, watch for proper melt.
- 10. Remove heater plate after achieving the proper melt and quickly examine the heated ends for completeness of melt.
- 11. If the ends are not properly melted, stop the procedure, remove the melted ends and start over at Step 1.
- 12. Bring melted ends together rapidly. Do not slam. Apply only enough pressure to form a double roll-back bead.
- 13. Allow the butt fusion joint to cool properly while maintaining pressure (until your finger can remain comfortably on the bead).
- 14. Remove pipe from machine and examine it for complete melt pattern. If for any reason you feel the joint is not correct, repeat procedure or contact supervisor.

---

<sup>1</sup> Avoid polyester-type materials which melt and stick to heater plates.

**Remember**

- ✓ Install proper inserts into the fusion unit for the pipe, tubing or fittings that will be joined. A quality butt fusion joint has a double-bead rolled back to the body of the pipe.
- ✓ Heater plates should be double-checked with a tempstick or pyrometer for correct surface temperature ( $500^{\circ} \pm 10^{\circ}$  F).

**Abnormal Operating Conditions**

- 1. If heater is out of range, stop operation and adjust heater to proper temperature.
- 2. If melt bead is not the proper size (too small or too large), then cut out joint and repeat procedure.
- 3. Joint fails pressure test.

**Reaction to Abnormal Conditions**

- 1. Adjust temperature.
- 2. Cut out and replace.
- 3. Cut out and replace.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Plastic Pipe--  
Plastic Pipe Saddle Fusion**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_

Date \_\_\_\_\_

Employee Name \_\_\_\_\_

ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Clean pipe with a clean cotton cloth.
- 2. Install fusion machine on main.
- 3. Prepare the surface of the pipe by roughing it with 60 grit or courser utility cloth. Prepare the saddle base of the tee (side fitting) by cleaning and roughing it with 60 grit or courser utility cloth.
- 4. Align the fitting on the main and tighten the clamp (insert adapter) on the fitting stem while applying slight downward pressure on the fitting.
- 5. Check the saddle base for square alignment on the main.
- 6. Check heater plate for proper surface temperature. The temperature should be 500° +10° F.
- 7. Raise the fitting. Roll in and center the heater plate with the adapter between the base of the fitting and the main.
- 8. For all sizes, apply a strong, firm, continuous pressure until a complete melt can be seen on the main. Release the pressure to zero pressure. Continue the heat soak cycle on the fitting and the main. Watch the base of the fitting for the proper melt:

Main Sizes	Heat Soak Cycle Fitting Melt
1 ¼"	1/16" Melt
2"	1/8" Melt
3"	3/16" Melt
4" & larger	3/16" - ¼" Melt

- 9. Raise the fitting and cleanly remove the heater plate.
- 10. Quickly examine both melted surfaces. If either melt pattern is not complete, continue the fusion process and cut off both the stack of the tee and the outlet to prevent future use. Move to an adjacent spot on the main and begin at Step 1 again.

*\*See manufacturer's table for correct heat soak and fusion pressure.*

- 11. Bring melted surfaces together rapidly, do not slam, apply continuous, progressive pressure until the third bead appears. Maintain this pressure until the joint has cooled (until your finger can remain comfortably on bead).
- 12. Remove machine from main.
- 13. Make tap.

### **Abnormal Operating Conditions**

- 1. Improper melt pattern.
- 2. Fitting will not hold air test.
- 3. Escaping gas.

### **Reaction to Abnormal Conditions**

- 1. Cut off fitting and repeat procedure on an adjacent spot on the pipe. Check manufacturer's specifications.
- 2. Cut off fitting and repeat procedure on an adjacent spot on the pipe. Check manufacturer's specifications.
- 3. Shut off source; contact supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Plastic Pipe--  
Plastic Pipe Socket Fusion**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Using a pipe cutter squarely cut off damaged or oval ends of pipe.
- 2. Use chamfering tool to remove the sharp corner at the pipe end. Remove burrs and chips inside pipe ends.
- 3. To prepare pipe for correct penetration into socket, place depth gauge down flush on end of pipe.
- 4. Place cold ring clamp around pipe, adjacent to depth gauge. After securing cold ring clamp, remove depth gauge.
- 5. Fitting surfaces should be clean and dry - wipe with cloth - do not touch with hands.
- 6. The socket faces of the heating tool should be at 500° + 10°F and clean.
- 7. First, firmly seat the socket fitting on the male face of the heating tool. Then place the female face on the end of the pipe firmly against the cold ring clamp. Heating time starts when the cold ring is bottomed out on the heater surface.
- 8. While holding the fitting firmly in a fixed position, rotate heating tool slightly to feel the melt, and promote uniform heating of pipe and fitting.

**Socket Fusion Time Cycles\***

Pipe Size (inches)	Heating Time Cycle (seconds)	Cooling Time Cycle (seconds)
½ CTS	6 - 7	20
1 CTS	9 - 10	20
½ IPS	6 - 7	20
¾ IPS	8 - 10	20
1 IPS	10 - 12	20
1 ¼ IPS	12 - 14	30
2 IPS	16 - 19	30
3 IPS	20 - 24	40
4 IPS	24 - 28	40

*\* Guidelines only, exact time depends upon environmental conditions and condition of fusion equip.*

- 9. Snap the heating tool and fitting from the melted pipe by holding upper part of tool handle with one hand and rapping sharply on the handle with the free hand. Immediately remove fitting from heating tool.
- 10. Inspect the heated parts quickly to make sure all surfaces have been melted. If melt is not complete, cut off melted pipe end, use a new fitting, and repeat fusion steps 1 through 8.
- 11. Within 3 seconds after the heating tool has been removed, firmly push the melted fitting squarely onto the pipe until it makes firm contact with the cold ring clamp. Do not twist or rotate the fitting. Hold the fitting firmly in place for total cooling time. After waiting 3 additional minutes cooling time, remove the cold ring clamp and inspect the joint.

### **Abnormal Operating Conditions**

- 1. Uneven or erratic melt pattern.
- 2. Voids are visible between socket fitting and pipe.
- 3. Fusion does not hold air test.
- 4. Escaping gas.

### **Reaction to Abnormal Operating Conditions**

- 1. Cut off fitting; repeat procedure. Check iron temperature and time cycle.
- 2. Cut off fitting; repeat procedure. Check iron temperature and time cycle.
- 3. Cut off fitting; repeat procedure. Check iron temperature and time cycle.
- 4. Shut off source; contact supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Plastic Pipe--  
Electrofusion Fitting Joining**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Check to make sure equipment is complete, clean, undamaged and in working order.
- 2. Cover the pipe ends remote from the fitting joint.
- 3. Clean pipe ends and check if there is sufficient clearance.
- 4. Check that the pipe ends to be joined are cut square to the axis and burrs removed. Mark on the pipe surface the proper positioning of the fitting to be installed.
- 5. Check that the pipe clamps are of the correct size for the pipes to be joined. Do not remove fitting from its packaging at this stage.
- 6. Using the appropriate scraper, remove the pipe surface over the area indicated by the witness mark.
- 7. Make sure the prepared surfaces are completely dry and do not touch the prepared pipe surface.
- 8. Remove fitting from its packaging and check that it is clean.
- 9. Insert pipe ends up to the center stop of the fitting.
- 10. Secure the pipe with the pipe clamps and check for alignment.
- 11. Make sure generator is switched on and running satisfactorily before connecting the electrofusion control box to the power supply.
- 12. Make sure the correct time is shown on the control box display.
- 13. Press the start button and check that the count down is proceeding.
- 14. On completion of the heating cycle, the melt indicator (if there is one on the fitting), should have risen. If they have not risen, the joint should be investigated.
- 15. If a satisfactory joint has been made, allow the joint to cool in clamps, remove clamps and inspect.

### **Abnormal Operating Conditions**

- 1. Melt indicator not visible.
- 2. Machine does not indicate completed melt.
- 3. Escaping gas.

### **Reaction to Abnormal Conditions**

- 1. Check fitting to ensure proper melt. Cut out and replace if necessary.
- 2. Inspect machine and adjust to manufacturer's specifications.
- 3. Shut off source; contact supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Plastic Pipe--  
Electrofusion Saddle Joining**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Make sure equipment is complete, clean, undamaged and in working order.
- 2. Clean pipe and make sure pipe and fittings are of the same size and that there is sufficient clearance.
- 3. Do not remove saddle from its packaging at this stage.
- 4. Using the appropriate scraper, remove the pipe surface to the appropriate depth over the required area.
- 5. Wipe the scraped surface with an authorized pipe cleaner.
- 6. Make sure the prepared surfaces are completely dry before proceeding. Do not touch the prepared pipe surface.
- 7. Remove fitting from its packaging and check that the base of the saddle is clean.
- 8. Position fitting base onto the prepared area and bring lower saddle into position and gradually tighten the nuts and bolts. Inspect the assembled fitting to ensure firm contact with the pipe.
- 9. Make sure the generator is switched on and running satisfactorily before connecting the electrofusion control box to the power source.
- 10. Make sure the correct time is shown on the display box.
- 11. Press the start button and check that the count-down is proceeding.
- 12. On completion of the heating cycle, the melt indicator(s) if one is provided, should have risen. If it has not risen, a new saddle joint should be made at a minimum distance of 12" from the abandoned position and the faulty saddle should be cut off at the base.
- 13. If a satisfactory joint has been made, allow the joint to cool in the clamps for the specified time.
- 14. When cool, remove the joined pipe from the clamps and inspect the join.
- 15. Do not tap through into main until at least 10 minutes after cooling period is complete.

### **Abnormal Operating Conditions**

- 1. Melt indicator not visible.
- 2. Machine does not indicate completed melt.
- 3. Escaping gas.

### **Reaction to Abnormal Conditions**

- 1. Cut off fitting at base and repeat procedure at different location on pipe.
- 2. Inspect machine and adjust to manufacturer's specifications.
- 3. Shut off source; contact supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



## **Plastic Pipe-- Squeeze-off**

### *Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

#### **Procedures & Checklist**

- 1. Select the correct size of squeeze tool for the pipe being squeezed. Squeezebar closure stops must be in place, and must be the correct size for the pipe's diameter and wall thickness or DR.
- 2. Use a grounded conductor wound around, or laid in contact with, the entire section of the exposed piping.
- 3. Fit the tool on the pipe so the pipe is centered in the tool, and the tool is square to the pipe. The squeeze-off tool must be positioned at least 3 pipe diameters, or 12 inches, whichever is greater, away from any heat fusion joint or sidewall connection, saddle or mechanical fitting, a prior squeeze-off, or a second squeeze-off tool.
- 4. Operate the closing mechanism to flatten the pipe between the bars at a controlled rate.
  - a. For 3" IPS and larger pipe, pause at least 1 minute when the pipe is flattened halfway and another minute when  $\frac{3}{4}$  closed. For all pipe sizes, pause one minute when the inside walls of the pipe make contact.
  - b. After pausing one minute when the pipe inside walls make contact, continue closing at about half the prior closing rate until the tool bars contact the closure stops.  
Caution: Do not remove or change the tool closure stops, or place anything (rags, sticks, etc.) between the bars and the pipe.
  - c. If temperatures are near freezing or lower, closure rates should be halved and pauses should be doubled.
- 5. If available, engage the accidental release prevention mechanism on the squeeze-off tool.
- 6. Perform the necessary work downstream of the squeeze-off.

- 7. When work is complete, disengage the accidental release mechanism (if provided), and open the squeeze-off tool bars at a controlled rate no faster than the Step 3 closure rate (use manufacturer's recommendations).
- 8. When the squeeze-off tool has been completely opened, rotate the tool 90° around the pipe, and slowly re-round the pipe.
  - a. Re-round the pipe by partially closing the tool until the pipe is circular. It may be necessary to close somewhat past circular, so that the pipe is round when the tool is again released. Rerounding closure rate should not exceed the Step 3 closure rate.
  - b. Re-rounding is partial closure, sufficient to make the pipe circular again. Do not completely flatten the pipe.
- 9. Open the bars, and remove the squeeze-off tool.
- 10. Identify the squeezed-off area by wrapping tape around the pipe, or installing a full encirclement band clamp over the area.  
*Caution:* Do not squeeze off more than once in the same place, as doing so will damage the pipe.

### **Abnormal Operating Conditions**

- 1. Gas will not shut off (Relocate squeeze tool and repeat procedure).
- 2. Pipe damaged during squeeze off (Relocate squeeze tool, repeat procedure and replace damaged segment).

### **Reaction to Abnormal Conditions**

- 1. Relocate squeeze tool and repeat procedure.
- 2. Relocate squeeze tool, repeat procedure and replace damaged segment.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Cast Iron Pipe--  
Mechanical Coupling - Cast / Ductile**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedure & Checklist**

- 1. Expose the piping following the proper procedures.
- 2. Inspect the cast or ductile piping for any defects.
- 3. Clean the entire area of the pipe to be worked on.
- 4. After thoroughly cleaning the pipe, isolate the segment of the main and proceed to cut the pipe with proper cutting tools.
- 5. If the main cannot be isolated, use a saddle of the proper size and type to attach to the main to tap and stop following the proper tapping and stopping procedure.
- 6. Once the main has been prepared, a coupling of the proper size for cast or ductile that reduces to steel or polyethylene may be attached.
- 7. After the piping has been pressure-tested with the proper procedure, connect the final hookup to the coupler and tighten the bolts to specifications.
- 8. Remove the stopping device from the main following the proper procedures.
- 9. Proceed to purge the main of air.
- 10. After the main has been purged, seal the purge point and inspect the coupler and all fittings for leaks with a leak detector.
- 11. Check the pipe-to-soil potential reading and install an anode if needed.
- 12. Coat all unprotected steel with approved mastic or wrap.
- 13. Take measurements of the piping and record them on a construction report.
- 14. Backfill the piping following the proper procedure.
- 15. File all test records and reports and keep for the duration of the system.

**Abnormal Operating Conditions**

- 1. Blowing gas or gas odorant smell
- 2. No gas to the new section of the
- 3. Leak still indicated by detection equipment

**Reaction to Abnormal Conditions**

- 1. Shut off source and contact supervisor.
- 2. Make sure the valves are turned back on.
- 3. Follow leak investigation procedures and contact supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Cast Iron Pipe--  
Tapping and Stopping Cast / Ductile Iron**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Expose the piping following the proper procedures.
- 2. Inspect the cast or ductile piping for any defects.
- 3. Clean the entire area of the pipe to be worked on.
- 4. After thoroughly cleaning the pipe, attach a saddle of the proper size and type, following the manufacturers recommended procedure.
- 5. Install a pressure testing device to the saddle, and test the saddle for a tight seal.
- 6. Install the drilling machine following the manufacturer's recommended procedures.
- 7. Tap the main following the manufacturer's operating instructions.
- 8. After the main has been successfully tapped, remove the drilling machine according to the manufacturer's operating instructions.
- 9. Insert the stopper into the fitting, and expand until stop-off of gas flow is achieved.
- 10. When the work on the pipeline is completed, contract the stopper and extract it from the fitting.
- 11. Install a completion plug into the top of the fitting and completion cap.
- 12. Check the fittings and saddle for leaks with a leak detector.
- 13. Coat all the unprotected parts with approved mastic or wrap.
- 14. Take measurements of the piping and tap location, and record on a construction report.
- 15. Backfill the piping following the proper procedure.
- 16. File all records and reports, and keep for the duration of the system.

### **Abnormal Operating Conditions**

- 1. Blowing gas or gas odorant smell.
- 2. Cutter not penetrating the main or cutting slowly.
- 3. Unable to stop the flow of gas with the stopper.
- 4. Leak still indicated by leak detection equipment.

### **Reaction to Abnormal Conditions**

- 1. Investigate the area following leak classification procedures and notify proper personnel.
- 2. Remove the cutter from the tool and inspect it for defects or brakes.
- 3. Check to see if the correct stopper is being used or if it is damaged.
- 4. Follow leak investigation procedures to find and repair the leak and notify supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Main Line Valves --  
Maintaining Emergency Valves**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Make sure valve and valve box are clean and free of dirt.
- 2. Make sure valve is in the full open position.
- 3. Remove plug from plug valve.
- 4. Insert sufficient amount of stick lubricant-sealant.
- 5. Install valve plug.
- 6. Operate valve from full open to completely closed position until valve operates freely.
- 7. If valve does not operate freely, repeat lubrication procedures.
- 8. Check for leaks with soapy water.

**Abnormal Operating Conditions**

- 1. Valve box is too low or too high.
- 2. Valve will not operate.

**Reaction to Abnormal Conditions**

- 1. Adjust to proper level.
- 2. Flush and lubricate.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Main Line Valves --  
Locking and Unlocking Valves**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Make sure valve is in the fully closed position with locking wings lined up.
- 2. Install company-approved lock.
- 3. Only authorized personnel shall lock or unlock valves.
- 4. Unlock and follow appropriate restoring procedures.

**Abnormal Operating Conditions**

- 1. Valve does not have locking wings

**Reaction to Abnormal Conditions**

- 1. Use barrel lock or other locking device.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Main Line Valves --  
Lubricating and Servicing Valves**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

**Valves with Plugs**

- 1. Make sure valve and valve box are clean and free of dirt.
- 2. Make sure valve is in the full open position.
- 3. Remove plug from plug valve.
- 4. Insert sufficient amount of stick lubricant-sealant.
- 5. Install valve plug.
- 6. Operate valve from full open to completely closed position until valve operates freely.
- 7. If valve does not operate freely, repeat lubrication procedures.
- 8. Check for leaks with soapy water.

**Valves with Ball-Check Zerk**

- 1. Make sure valve is in the full open position.
- 2. Attach grease gun fitting to zerk.
- 3. Inject appropriate amount of grease.
- 4. Exercise valve.
- 5. Remove grease gun fitting from zerk.

**Abnormal Operating Conditions**

- 1. Valve box is too low or too high (Adjust to proper level).
- 2. Valve will not operate (Flush and lubricate).

**Reaction to Abnormal Conditions**

- 1. Adjust to proper level.
- 2. Flush and lubricate.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Main Line Valves --  
Valve Accessibility**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Ensure that valve locations are documented on maps and made available to all gas personnel.
- 2. Make sure valve and valve box are clean and free of dirt.
- 3. Keep valve box straight to ensure that valve wrench fits securely and operates freely.
- 4. Make sure valve boxes are to proper grade and are free of any obstruction, e.g. abandoned vehicles, trash piles or any other obstruction that would restrict prompt accessibility.
- 5. Make sure proper valve height is maintained for valve wrench length and for minimum depth requirements.

**Abnormal Operating Conditions**

- 1. Valve cannot be found (Review maps and/or other documentation).
- 2. Valve box is too low or too high (Adjust to proper level).

**Reaction to Abnormal Conditions**

- 1. Review maps and/or other documentation.
- 2. Adjust to proper level.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Odorization --  
Filling Odorant Tanks**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Before starting the process of filling the odorant tank, make sure all of the equipment needed to transfer the odorant is there and in good condition.
- 2. Notify the supervisor and dispatch personnel ahead of time that you will be working with the odorant.
- 3. Wear plastic gloves and chemical goggles for protection when working with odorant.
- 4. Have a good supply of odorant neutralizer (Clorox or other household bleach often works well) on hand in case it is needed.
- 5. Make sure there is a fire extinguisher upwind of the area, and that the equipment being used is properly grounded to prevent any ignition sources.
- 6. Shut down and depressurize the odorant tank by closing all the valves to and from the tank, removing the plug from the top vent valve and slowly opening to relieve pressure.
- 7. Connect the pressure supply regulator to the gas main with the quick disconnects.
- 8. Once the tank pressure is relieved, remove the fill port plug, install the transfer, and vent piping on the tank.
- 9. Extend the vent hose as far as it will reach away from and downwind of the tank.
- 10. Stab the vent burn stack securely in the ground so it will stay upright.
- 11. Slowly open the odorant container, being careful not to release odorant.
- 12. Insert the odorant transfer pipe into the barrel and securely tighten it.
- 13. Hook up the transfer hose from the odorant barrel piping to the odorant tank piping, ensuring that all connections are tight.
- 14. Connect the pressure supply regulator to the odorant barrel piping pressure input supply.

- 15. Open the odorant tank vent hose valve and have an igniter ready at the vent burn stack.
- 16. Slowly apply pressure to the odorant container until a flow of odorant is visible through the supply hose.
- 17. Ignite the gas exiting the vent burn stack and maintain the fire for the duration.
- 18. When the transfer has been completed, shut off the pressure source and relieve the pressure from the barrel and odorant tank.
- 19. Remove the transfer equipment in the reverse order of installation making certain that all open piping and hoses are properly sealed.
- 20. After the odorant tank has been resealed, the tank pressure can be applied and all the valves opened to the injection system.
- 21. Check all fittings and connections for leaks.
- 22. Monitor the injection sight glass to ensure that the odorant injection pump is primed.
- 23. Take a reading of the odorant level in the tank and make a report of the location, date of odorant level, and the equipment condition.
- 24. Take the empty odorant container to the landfill and when the wind is not drifting into the city, cut the top out of the barrel, add diesel fuel and burn up the residue of odorant.
- 25. Burn all contaminated clothing in the container to prevent gas leak complaints.
- 26. Dispose properly of the empty container.

### **Abnormal Operating Conditions**

- 1. Any signs of leakage from the shipping container or the odorant tank.
- 2. Cracks in hoses or loose clamps and fittings.
- 3. No chemical gloves or eye protection.
- 4. Bulging of the odorant shipping container.
- 5. Liquid odorant flowing out of vent burner stack.
- 6. No liquid flowing out of shipping container to odorant tank.
- 7. Pressure regulator not working.
- 8. Spillage of odorant.
- 9. Wind direction drifting toward populated areas while burning odorant barrel.
- 10. Blowing gas

### **Reaction to Abnormal Conditions**

- 1. Notify the supervisor
- 2. Repair or replace any hoses or clamps and take apart fittings to dope and plumb again.
- 3. Get the proper safety equipment before working with odorant.
- 4. Lower the pressure to the tank to eliminate the bulging.
- 5. Back down the pressure supply to the barrel and regulate flow to the tank with the fluid control valve at the barrel to where no liquid is flowing to the vent burner.

- 6. Check to see if all the valves are open for proper flow.
- 7. Make sure that the valve is open at the gas main, or that the regulator inlet is not clogged.
- 8. Neutralize the odorant with odor buster or diluted household bleach.
- 9. Put out the fire in the container and seal the opening until it can be burned again.
- 10. Find the source and shut it down.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Odorization -  
Filling Kingtool and Homemade Odorant Tanks**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Before starting the process of filling the odorant tank, make sure all of the equipment needed to transfer the odorant is there and in good condition.
- 2. Notify the city office personnel ahead of time that you will be working with the odorant.
- 3. Wear plastic gloves and chemical goggles for protection when working with odorant.
- 4. Have a good supply of odorant neutralizer on hand in case it is needed.
- 5. Make sure there is a fire extinguisher upwind of the area, and that the equipment being used is properly grounded to prevent an ignition source.
- 6. Make sure that all shut off valves between the odorizer and the reserve odorant tank are in the off position and that the vent and fill pipe valves are shut off and capped.
- 7. Carefully remove the cap from the vent tube on the reserve odorant tank and open the valve slightly to depressurize the tank. Do not open the valve too far or liquid odorant might escape.
- 8. Remove the seals from both access ports on the odorant shipping container, and carefully remove the small plug. Remember the can might be slightly pressurized.
- 9. Insert the transfer apparatus into the small port in the odorant shipping container. Use thread tape on the threads making sure it is tightened securely. Leave valve closed.
- 10. Carefully remove the cap from the fill port in the reserve odorant tank and slowly open the valve all the way. Leave the valve open.
- 11. Close the valve on the vent tube on the reserve tank and secure the cap tightly.
- 12. Place the funnel in the fill tube on the reserve tank and add odorant from the shipping container by inserting the transfer tube into the funnel and slowly opening the transfer shut off valve. Do not open valve far enough to cause spillage or splashing.
- 13. Do not overfill reserve tank.

- 14. When reserve tank is full, or container is empty, shut off transfer valve on container.
- 15. Shut off inlet port valve on reserve tank, install cap and secure tightly.
- 16. Make sure vent shut off valve is in the closed position and capped.
- 17. Remove transfer apparatus from shipping container and wash in a neutralizing solution. Put apparatus in the storage container and secure lid.
- 18. Insert plug in shipping container and tighten securely.
- 19. Open northernmost valve between the odorizer and the reserve odorant tank.
- 20. Slowly open the southernmost valve between the odorizer and the reserve odorant tank to equalize the pressure between the two. This pressurizes the reserve tank.
- 21. After the pressure has equalized, close the southernmost valve, isolating the reserve odorant tank from the odorizer.
- 22. Close both the inlet and outlet odorizer valves at the main. The odorizer is now isolated from the gas main and the reserve odorant tank. DO NOT STOP GAS FLOW!
- 23. Make certain the southernmost needle valve on the odorizer is in the closed position and remove the plug.
- 24. Open the needle valve slowly to depressurize the odorizer. Do not open the valve too far or liquid odorant may escape out the vent.
- 25. When the odorizer has been depressurized, close the needle valve, insert the plug, and tighten it securely. At this point the odorizer has been depressurized while the reserve odorant tank has been pressurized.
- 26. Slowly open the southernmost valve between the reserve tank and the odorizer to transfer odorant from the reserve tank to the odorizer tank. Close the valve to stop the transfer of odorant before overfilling the odorizer. Do not fill the odorizer over the 14 lb. point in the sight glass.
- 27. After the transfer process has been completed, open the odorizer inlet and outlet valves at the gas main to put the odorizer back in operation.
- 28. Document the odorant level in the odorizer, the date and condition of the facilities.
- 29. Close the northernmost valve between the odorizer and the reserve tank.
- 30. If there is still odorant remaining in the shipping container, repeat steps 6 through 18 to empty container.
- 31. Pour neutralizing solution on any spillage or contaminated tools.
- 32. Clean area and make sure all valves are in their correct position, check for damage or leaks and verify that the odorizer is operating properly.
- 33. Dispose of the empty shipping container and rubber gloves in the burn pile at the dump.

### **Abnormal Operating Conditions**

- 1. Any signs of leakage from the shipping container or the odorant tank.
- 2. Cracks in hoses or loose clamps and fittings.
- 3. No chemical gloves or eye protectors.
- 4. Bulging of the odorant shipping container.
- 5. Liquid odorant flowing out of vent.

- 6. Spillage of odorant.
- 7. Wind direction drifting toward populated areas while burning empty odorant container.
- 8. Blowing gas.

**Reaction to Abnormal Conditions**

- 1. Notify the supervisor.
- 2. Repair or replace any hoses or clamps and take apart fittings to dope and plumb again.
- 3. Get the proper safety equipment before working with odorant.
- 4. Lower the pressure to the tank to eliminate the bulging.
- 5. Close down the valve to restrict the flow to the vent.
- 6. Neutralize the odorant with odor buster or diluted household bleach.
- 7. Put out the fire in the container and seal the opening until it can be burned again.
- 8. Find the source and shut it down.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



## kansas municipal utilities

### Odorization -- Inspecting and Operating Odorant Equipment *Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

#### Procedures & Checklist

- 1. Visually inspect the odorant system for damage or leaks.
- 2. Check odorant level in odorant tank by removing protective cover from gauge on tank top.
- 3. Inspect pressure system to odorant tank and make sure tank has approximately 15 psi.
- 4. Inspect supply pressure to timer port for 15 psi minimum or the regulator output pressure needed to overcome the discharge pressure plus 5 psi, using an amplification ratio chart.
- 5. Inspect odorant injection sight glass to insure odorant is flowing when the pump cycles.

#### Abnormal Operating Conditions

- 1. Gas or odorant leakage noticed while inspecting system.
- 2. Pressure in odorant tank below or above 15 psi.
- 3. Pressure to timer port not within specified pressure range.
- 4. Odorant not dripping through injection sight glass.
- 5. Odorant flowing too much through injection sight glass.

#### Reaction to Abnormal Conditions

- 1. Any leaks in system must be repaired or replaced immediately.
- 2. Check for closed valves to odorant tank or loss of upstream line pressure.
- 3. Adjust pressure to timer port as specified by the manufacturer.

- 4. If no flow is going through the sight glass, follow the inspection steps 1-4 to insure that it is set correctly. Bleed and prime pump if necessary. If pump still does not operate properly, dismantle and replace any worn or defective parts as per manufacturer's specifications.
- 5. If pump flows too much, use same procedure above as if it flowed too little. Contact Supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Odorization -  
Inspecting and Operating Kingtool and Homemade Odorant Equipment**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Inspect line marker sign at casing.
- 2. Check for leaks on the odorizer system with a soapy solution.
- 3. Check above ground facilities for atmospheric corrosion.
- 4. Check for soil subsidence.
- 5. Inspect ground rod and attachment.
- 6. Check all valves for correct positioning and that all plugs and caps are in place.
- 7. Check odorant level in odorant tank and document odorant usage since last inspection.
- 8. Take reading at tap and document amount of gas through tap since last inspection.

**Abnormal Operating Conditions**

- 1. Gas or odorant leakage noticed while inspecting system.
- 2. Presence of atmospheric corrosion on above ground facility.
- 3. Line marker sign damaged or missing.
- 4. Valves in incorrect position.
- 5. Plugs or caps missing.
- 6. Ground wire damaged.
- 7. Soil subsidence present.
- 8. Gas through tap, but no odorant usage since last inspection.

**Reaction to Abnormal Conditions**

- 1. Contact supervisor / repair leaks.
- 2. Paint or touch up paint facilities.
- 3. Repair or replace line marker sign.
- 4. Contact supervisor.

- 5. Install plugs or caps as necessary.
- 6. Repair ground wire.
- 7. Check for stress on piping and correct grade.
- 8. Contact supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Odorization --**  
**Determine Odorant Concentration**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Determine the locations that the odorant level will be tested.
- 2. Before conducting test at a location, investigate and eliminate any possible ignition source in the immediate area.
- 3. Connect the detection equipment according to the manufacturer's recommendation.
- 4. Position nose within 1 inch of the sniff chamber and with valve closed sniff exhaust.
- 5. Open flow valve until odorant is detected and record the threshold detection level.
- 6. Position nose within 1 inch of the sniff chamber and continue opening flow valve until readily detectable odor is attained and record test level.
- 7. Remove test equipment and purge according to the manufacturer recommendations.

**Abnormal Operating Conditions**

- 1. Calibration date has been exceeded.
- 2. Low battery charge.
- 3. Test equipment dusty or has debris on it.
- 4. Unit has not been properly vented after previous use.
- 5. Unit has higher than normal background smell after proper purging cycle.
- 6. Person doing test sense smell has been affected by circumstances such as cold, medication, smoking etc.

### Reaction to Abnormal Conditions

- 1. The unit must be sent in as soon as possible for the proper calibration.
- 2. Charge the batteries fully before using the unit.
- 3. Clean the unit carefully before use.
- 4. Vent the unit to purge of gas, if saturated it will need to be serviced.
- 5. If background smell persists, it will need to be sent in to be service.
- 6. If sense of smell is affected, test should not be done until a normal sense of smell has been established or another person can run the test.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Relief Valves --**  
**Relief Valve Inspection and Maintenance**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Check and record gage reading on relief valve.
- 2. Shut off gas to relief valve and bleed off pressure.
- 3. Using air pressure, bring pressure on relief valve up to set point.
- 4. When the relief valve opens and starts relieving, record the pressure.
- 5. Ensure that relief valve resets after relieving excess air pressure.
- 6. If relief passes inspection, disconnect air and open gas valve.
- 7. Determine that relief valve is seated and there is no seepage.
- 8. Document procedure for records.

**Abnormal Operating Conditions**

- 1. Relief does not relieve when pressured above set-point.
- 2. Relief valve does not reseal after being tested.

**Reaction to Abnormal Conditions**

- 1. Relieve pressure, repeat process. If it still does not relieve, dismantle, check for dirt and foreign material, and replace any worn or defective parts as per manufacturer's specifications. Retest, contact supervisor.
- 2. Repeat process. If it still does not reseal, dismantle, check for dirt and foreign material, and replace any defective or worn parts as per manufacturer's specifications. Retest, contact supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Testing**  
**Testing Lines that Operate at Below 100 PSI**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Isolate segment of service from main.
- 2. Clean rust, dirt, scale or coating from the end of the pipe to receive test gauge.
- 3. Install test gauge on the segment to be tested.
- 4. Disassemble meter set removing meter, regulator, all piping and valves to the inlet riser.
- 5. Apply pipe dope to threads and install steel cap.
- 6. Using compressed air, pressurize service to 50 psi or 1 ½ times MAOP whichever is greater. Systems operating in excess of 15 psi need to be tested to 100 psi.
- 7. Record the initial time of the test period.
- 8. Soap-test the test gauge, cap, and fittings.
- 9. Maintain testing pressure for 60 minutes after removing the source of pressure.
- 10. If pressure test is good, relieve pressure slowly through testing device.
- 11. Remove testing device and caps or plugs from service.
- 12. Install lock stop and meter set and make final hookup to the main.
- 13. Test the final connections for leaks with leak detecting equipment.
- 14. Test any steel piping for pipe-to-soil potential reading and install an anode if necessary.
- 15. Take measurements of all the piping and record them on a service inspection form.
- 16. Backfill the piping using the proper procedure.
- 17. File all test records and reports and keep for the life of the system.

### **Abnormal Operating Conditions**

- 1. The segment being tested will not come up to pressure.
- 2. Segment loses pressure during test.
- 3. Total failure of test.

### **Reaction to Abnormal Conditions**

- 1. Check for open pipe, fittings or holes in the piping.
- 2. Make sure pressure supply is working properly and the test gauge is operational.
- 3. Check the piping and fittings with soap for leaks.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Meters & Service Regulators --  
Installing Customer Meters**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_

Date \_\_\_\_\_

Employee Name \_\_\_\_\_

ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Verify correct address.
- 2. Knock on door and verify if anyone is home.
- 3. Verify meter number.
- 4. Turn off gas at inlet valve.
- 5. Use correct wrench to loosen spud nut.
- 6. Let gas pressure bleed down.
- 7. Take off outlet nut and inlet nut from meter.
- 8. Visually inspect inlet insulator spud or meter bar union for damage and replace if needed.
- 9. Visually inspect outlet spud for damage and replace if needed.
- 10. Replace gaskets on spuds.
- 11. Install new meter.
- 12. Tighten inlet nut on meter.
- 13. Leave outlet nut loose.
- 14. Open shut off valve very slowly
- 15. Purge new meter till foot hands make a complete movement.
- 16. Tighten outlet nut down and check for leaks.
- 17. Adjust regulator to correct set point pressure.
- 18. Relight any appliance that needs to be lit.

**Abnormal Operating Conditions**

- 1. Shut off valve will not move.
- 2. Gas leaking through shut off.
- 3. Meter set leaks after new installation.

### Reaction to Abnormal Conditions

- 1. Notify Supervisor.
- 2. Notify Supervisor.
- 3. Tighten loose fitting.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



## kansas municipal utilities

### Shut-In Procedures

#### *Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

#### Procedures & Checklist

- 1. Be certain that you are at the correct address.
- 2. If customer smells gas, but you can't get a reading with your C.G.I., you must do a shut-in test.
- 3. Tell customer that you need to turn off gas to all gas appliances.
- 4. Shut off valves at hot water heater, furnace, etc.
- 5. Loosen the outlet spud nut on the meter.
- 6. Watch index dial until foot hand comes to the up stroke position on dial.
- 7. Tighten spud nut and check for leaks.
- 8. If there are no leaks on the meter, use a pen to mark where the index is stopped.
- 9. Time for 15 minutes. If index moves, there is a leak between the meter and appliances.
- 10. Inform customer.
- 11. Shut meter off and lock meter out.
- 12. It is the customer's responsibility to have the meter fixed and to let you know when it can be put back in service.

#### Abnormal Operating Conditions

- 1. Smell of gas.
- 2. Excess use of gas.
- 3. Dead spot in yard line.

### Reaction to Abnormal Conditions

- 1. Call supervisor.
- 2. Check with C.G.I.
- 3. Document your findings.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



# kansas municipal utilities

## Purging -- Services and Mains

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

### Procedures & Checklist

- 1. Add vent pipe to service or main and extend above head.
- 2. Insure safety gear and fire extinguishers are on job site.
- 3. Test CGI and set on percent gas scale.
- 4. Open valve or remove cutter until a steady supply of gas is allowed into the service or main line.
- 5. Vent gas-air mixture until you have a 100% gas reading on the CGI, continue purging gas for 15 seconds, reset CGI and take another reading.
- 6. Shut down valve on riser and secure or install meter.

### Abnormal Operating Conditions

- 1. Fire or explosion.
- 2. Unplanned escape of gas from a pipe.

### Reaction to Abnormal Conditions

- 1. Shut off source, notify supervisor and follow emergency plan.
- 2. Shut off source, notify supervisor and follow emergency plan.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Purging --  
Abandoned Mains, Services or Yard Lines**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Check both ends of pipe segment to make sure they are disconnected.
- 2. Vent pipe installed and extended above head height.
- 3. Safety gear and fire extinguishers on job site.
- 4. Tested CGI and set on percent scale.
- 5. Attached air supply and allowed steady supply of air.
- 6. Vented air-gas mixture and tested for 0% gas with CGI twice.
- 7. Shut down and secure, plugging both ends of pipe.

**Abnormal Operating Conditions**

- 1. Fire or explosion.
- 2. Unplanned escape of gas from a pipe.

**Reaction to Abnormal Conditions**

- 1. Shut off source, notify supervisor and follow emergency plan.
- 2. Shut off source, notify supervisor and follow emergency plan.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Damage Prevention --  
Locating Facilities**

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Receive a work order from the office or a One- Call Locate notice before doing any locate.
- 2. Before leaving the shop, investigate all files and records for information on the area being located, and if necessary, make copies of the files.
- 3. Check the equipment over to make sure the batteries are good and that the locator is functioning properly.
- 4. Use only the type of locator that you have read the operators manual and have been properly trained to locate with.
- 5. Upon arrival at the locate site, note all other visible utilities.
- 6. If possible, find a location to hook up the transmitter directly to the facility.
- 7. Set up the Transmitter and Receiver as recommended by the Manufacturer.

**Conductive**

- a. Plug the Direct Connect Cable (DCC) into the output jack on the Transmitter.
- b. Connect the RED lead of the DCC to the targeted conductor.
- c. Extend the BLACK lead of the DCC at a right angle as far as possible from the conductor. Look for a convenient existing ground, such as a metal street sign. Be careful not to get too close to or cross any adjacent buried conductors. If no existing ground is available, use the ground spike by driving the spike as far as possible in the ground, and attach the Black lead. If the ground surface is too hard, place the ground plate on the ground and attach the Black lead. To improve conductivity, put water and/or weight on the plate.

- d. Plug the DCC into the output jack on the transmitter.
- e. Set the transmitter according to manufacturer's recommendations.
- f. Set the frequency on the transmitter according to the manufacturer's recommendations.
- g. Set the receiver to match the transmitter for the highest signal strength.

### **Inductive**

- a. Position the transmitter across the buried conductor as indicated by the arrow on the transmitter, making sure it is directly over the conductor.
  - b. Set the transmitter as recommended by the manufacturer.
- 
- 8. Hold the receiver in front of yourself, making a 360 degree sweep 8 to 10 feet around the connection point to determine the pipe location.
  - 9. Follow the target conductor, sweeping left and right while walking away from the transmitter. Mark the centerline on the ground with yellow paint and/or flags according to the ground cover conditions.
  - 10. Indicate the type of piping in the ground by painting on the ground, or directly informing the personnel at the site.
  - 11. On the locate notice, indicate the individual who performed the locate, the date of the locate, and the manner in which the area was marked.
  - 12. Turn in completed locate notices to be kept on file.

### **Abnormal Operating Conditions**

- 1. Equipment will not turn on or will not function.
- 2. Signal is not dependable, or there is no signal at all.
- 3. Locate marks are off when piping is exposed.
- 4. Operators are performing an excavation without calling in a locate.
- 5. Dead vegetation along gas main or service line.
- 6. Blowing gas or gas odorant smell.

### **Reaction to Abnormal Conditions**

- 1. Check batteries for proper charge. If the problem is not the batteries, notify the supervisor to have the locator serviced and use another locator that is working properly.
- 2. Make sure all connections and grounds are good.
- 3. Move the transmitter to another location, if one is available.
- 4. If overhead utilities are present, follow the manufacturer's recommended procedure to check the locator for accuracy.
- 5. Inform the personnel who are digging that a locate is required, and notify the supervisor.

- 6. When a possible leak is discovered, follow the leak investigation procedure and file a report. Notify supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Damage Prevention --  
Inspections of Exposed Pipelines**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Inspect bell hole; make sure it is safe to enter.
- 2. Visually see if pipe is damaged, dented, or coating damage.
- 3. If damaged, repair damage according to procedures.
- 4. Make sure you have good clearance between pipe, if there is pipe under yours.
- 5. Inspect back fill when covering pipeline for rocks, trash etc.

**Abnormal Operating Conditions**

- 1. Damage to your pipe.
- 2. Escaping gas

**Reaction to Abnormal Conditions**

- 1. Make repairs to pipe and notify your supervisor.
- 2. Shut off source, contact supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



## kansas municipal utilities

### Pressure Upgrading

#### *Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

#### **Procedures & Checklist**

- 1. This procedure is based on upgrading a pipeline segment that produces a hoop stress of less than 30% SMYS.
- 2. Review installation records, operating, maintenance, and leakage history of the pipeline segment to be upgraded.
- 3. Conduct a leak survey on the line segment if one has not been done in over a year.
- 4. Repair any leaks found.
- 5. If any repairs, replacements, or modifications are required for the upgrading, these must be completed prior to the pressure upgrading.
- 6. Isolate the segment of pipeline to be upgraded from any adjacent segment of pipe that will continue to be operated at a lower pressure.
- 7. Pressure must be increased in increments of 10 psig, or 25% of the total pressure increase, whichever produces the fewer number of increments.
- 8. As each incremental increase is achieved and the pressure stabilizes, a leak survey must be conducted on the entire segment of pipeline within eight hours.
- 9. Each leak detected must be repaired before another increase in pressure is made.
- 10. Record all information of the upgrade procedures performed.
- 11. Records must be kept for the life of the pipeline segment.

#### **Abnormal Operating Conditions**

- 1. Sudden pressure drop during upgrading.
- 2. Escaping gas.
- 3. Relief valve blowing.
- 4. Unusually high number of customer calls reporting gas odor.

### Reaction to Abnormal Conditions

- 1. Lower pressure immediately and check for leaks.
- 2. Eliminate source; contact supervisor.
- 3. Reduce pressure, check gage for accuracy, check relief setting, check regulator if using one.
- 4. Reduce pressure, conduct leak survey.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



## kansas municipal utilities

### Emergency Plans -- Gas Leak Response

*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

#### Procedures & Checklist

- 1. On arrival, verify that the location is the correct address.
- 2. Assess danger to building occupants, the public, and to property.
- 3. Use flame ionization unit or barhole and use CGI.
- 4. Check for gas against the building foundation; also check adjacent buildings, sewer manholes, cracks in concrete and asphalt, and any other available openings.
- 5. Classify as to class 1, 2, or 3 leak with CGI.
- 6. If necessary, implement emergency response procedures.
- 7. Notify supervisor of situation.
- 8. Make the necessary repairs or replacements and restore gas service.
- 9. If it is a hit line and gas is blowing, shut off gas at isolation valve. Call for backup.
- 10. If necessary, implement emergency response procedures.
- 11. Make the necessary repairs or replacement and restore gas service.

#### Abnormal Operating Conditions

- 1. Escaping gas
- 2. Erroneous readings on gas detection equipment
- 3. Fire

### Reaction to Abnormal Conditions

- 1. Shut off source; contact supervisor.
- 2. Use alternate equipment; have equipment checked and calibrated.
- 3. Shut off gas source at nearest location; contact fire department and supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Emergency Plans --  
Fire / Explosion Notification & Response**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. The Gas Superintendent, Foreman, or Gas Leak Technician shall be called immediately by City personnel on the scene.
- 2. Should natural gas or a gaseous vapor be suspected in a structure explosion, maximum effort shall be directed toward determining the actual cause of the explosion.
- 3. Initially, visually inspect area or structure for damage to any gas facilities, such as meter, regulator, service riser, etc.
- 4. If the gas has been shut off already, check from point of shut-down toward street main by C.G.I. and bar holes or F.I., if the line is shallow (less than 12").
- 5. Check a 360 circle around the scene to determine if any main leakage is present and determine extent of migration by C.G.I.
- 6. Check available openings; sewer, manholes, catch basins, etc. with C.G.I. for possible explosive mixtures; obtain actual samples if possible.
- 7. Inspect interior piping (if possible) for evidence of severe corrosion, faulty fittings, vandalism etc. that might have contributed to the situation.
- 8. After the area is secured and safe, begin testing the rest of the service by F.I. or C.G.I. bar holing, including line down stream of meter.
- 9. All information developed should be held confidential to prevent premature and possible erroneous assessments of cause. And all records, gas samples, pipe fittings or other evidence pertaining to the incident shall be documented and preserved by Fire Department, Police Department, and Gas Department and held as evidence until final conclusion has been reached as to actual or probable cause.
- 10. If incident results in an injury and/or fatality or more than \$50,000.00 in property damage, notify the KCC within two hours.

### **Abnormal Operating Conditions**

- 1. Blowing gas or strong gas odor present.
- 2. Gas concentration in surrounding structure or structures.
- 3. Piping has evidence of tampering.

### **Reaction to Abnormal Conditions**

- 1. Investigate and stop gas flow at the source.
- 2. Evacuate the surrounding structures of the affected area and ventilate the buildings.
- 3. Secure the area and notify Fire and Police Depts. of the evidence.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**Emergency Plans --  
Shutting Down & Restoring Gas Service**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. In the event of gas outage the Superintendent or his designated representative should be notified first.
- 2. The Superintendent or his designated representative will immediately notify all service men of the problem and dispatch personnel and equipment to care for the emergency.
- 3. Notify the police and fire department.
- 4. Evacuate and blockade the area if necessary.
- 5. Determine the cause and extent of the outage.
- 6. Check the area for alternative feeds and isolate the section by closing valves or otherwise stopping gas flow.
- 7. Make repairs to problem area of the gas system.
- 8. All gas services affected must be turned off before pressurizing and purging the mains.
- 9. Resume service to customers in a priority basis but no gas shall be admitted to any building if an occupant is not present. Leave an appropriate notice at these locations.
- 10. Throughout the emergency, keep the locally affected customers advised of the situation.
- 11. When the service has been reinstated to the affected area, notify dispatch and all emergency personnel.
- 12. Prepare a written report stating the cause of outage, number of customers affected, and the length of time of the outage or equipment failure.

### **Abnormal Operating Conditions**

- 1. Blowing gas
- 2. Excavation in area without proper notification, locates or permits.
- 3. Regulation station failure.

### **Reaction to Abnormal Conditions**

- 1. Locate and isolate cause of leak.
- 2. Stop excavation work until the proper steps have been followed and any damage has been repaired to satisfy local codes.
- 3. Find the cause of failure and repair the regulator or if the failure is the supply from the gas provider, contact the emergency personnel of the provider.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



# kansas municipal utilities

## Service Lines -- Restoring Gas Service *Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

### Procedures & Checklist

- 1. Close valves at meters within the section you are restoring.
- 2. Purge the service lines in the sections which have been shut off.
- 3. Restore pressure to service lines.
- 4. Close valves at furnaces, heaters, appliances or any other areas to which gas will be provided.
- 5. Open gas stops at meters and relight appliances.
- 6. Make sure all relit appliances are working properly.
- 7. Monitor all areas for any indication of gas before leaving.

### Abnormal Operating Conditions

- 1. Valves are not in good operating condition.
- 2. Leaks persist.

### Reaction to Abnormal Conditions

- 1. Service or replace.
- 2. Repeat shut-down procedures and repair all leaks.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**kansas**municipal**utilities**

**Service Lines --  
Shutting Down a Service with Tap**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Identify service line tapping tee.
- 2. Remove tapping tee cap.
- 3. Screw linestop down in tapping tee until gas flow is shut off.
- 4. Replace tapping tee cap to prevent any escaping gas through top of tee.
- 5. Check for leaks.

**Abnormal Operating Conditions**

- 1. Gas won't shut off.

**Reaction to Abnormal Conditions**

- 1. Notify supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**kansas**municipal**utilities**

**Service Lines --  
Starting up a Service with Tap**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Close valve at meter.
- 2. Remove tapping tee cap.
- 3. Turn line stop out making sure to never screw out further than top of tapping tee.
- 4. Replace tapping tee cap securely, but do not over tighten.
- 5. Purge service line.
- 6. Check for leaks.

**Abnormal Operating Conditions**

- 1. No gas.

**Reaction to Abnormal Conditions**

- 1. Notify supervisor.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



**kansas**municipal**utilities**

**Service Lines --  
Starting up a Service with Tap**  
*Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

**Procedures & Checklist**

- 1. Choose correct size of EFV and make sure to install it in the correct direction of flow.
- 2. Install EFV as near as practical to the fitting connecting the service line to its source of gas supply.
- 3. Do not install EFV on a service line where there has been prior experience with contaminants.
- 4. Document and map all excess flow valves installed in the system.
- 5. Backfill carefully with sand or good quality dirt.

**Abnormal Operating Conditions**

- 1. EFV shuts off when purging.

**Reaction to Abnormal Conditions**

- 1. Shut down and purge again slower.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_



## kansas municipal utilities

### Odorometer Calibration

#### *Operator Qualification Procedures & Checklists*

City / Utility: \_\_\_\_\_ Date \_\_\_\_\_

Employee Name \_\_\_\_\_ ID # \_\_\_\_\_

#### **Procedures & Checklist**

- 1. Check both odorometer and C.G.I. for batteries and cracked hoses.
- 2. Calibrate C.G.I. on both L.E.L. and H.E.L.
- 3. Set C.G.I. to L.E.L.
- 4. Hook up odorometer to system gas.
- 5. Open shut off valve all the way until you get a strong smell of gas.
- 6. Close valve and let it run for 30 seconds.
- 7. Open valve and press read button until you get a .25% reading on the display (you may have to adjust the zero knob to get .25%).
- 8. Put C.G.I. hose in odor sniff area (3/4 to 1 inch above the sniff chamber).
- 9. Pump C.G.I. up. You should get a .25% reading on C.G.I.
- 10. Clear C.G.I.
- 11. Set odorometer to .50% (repeat steps 8-10).
- 12. Set odorometer to 1.00% (repeat steps 8-10).
- 13. If your odorometer is right, you should get the same reading on the C.G.I. Calibration is complete.
- 14. Clear both odorometer and C.G.I. with clean air.
- 15. You are ready for odor check.

#### **Abnormal Operating Conditions**

- 1. Cracked glass and cracks in sample hose.
- 2. Corrosion in battery compartment.
- 3. Fan not running or can't reach correct milliamperes.
- 4. Detection equipment and C.G.I. do not correspond.

### Reaction to Abnormal Conditions

- 1. Send in equipment to be repaired or replace hose.
- 2. Discard bad batteries, clean or repair corroded holder and replace batteries.
- 3. Check batteries for correct voltage or send in to have fan replaced or repaired.
- 4. Check for wind interference and if not a factor, send unit in to be repaired, or have a qualified person adjust calibration screw.

Employee Signature: \_\_\_\_\_

Qualifier Signature: \_\_\_\_\_