Scope of Work

Attachment 1

(i)

Emergency Call Processing and Response Procedures

- Questar Gas Company – Emergency Plan
  - Section IV: Handling and Evaluating Emergency Calls

SECTION IV: HANDLING AND EVALUATING EMERGENCY CALLS

1. RECEIVING EMERGENCY CALLS

1.1. Normally within the Company, emergency calls will be received by the Ask-A-Tech Department, Centralized Dispatch and Centralized Operations Call Center. In the event other departments receive the emergency calls, the calls will be transferred or the information relayed to Centralized Dispatch.

NOTE: *Prior to transferring an emergency call, take the name and number of the party calling. Ensure direct contact is made with intended employee.*

1.2. The initial status of the emergency will be determined as quickly as possible. It must be recognized during early stages of emergency conditions the initial information is usually very limited and possibly misleading. Every effort should be made to obtain and document the information as completely and correctly as possible.

2. INFORMATION TO BE OBTAINED

2.1. The following will serve as a guideline to define the type of information needed for an initial status evaluation of an emergency:

2.1.1. Location and description of emergency.

2.1.2. Time of call.

2.1.3. Name of person calling (first and last), their location and phone number, whether they face any imminent danger.

2.1.4. Number of those injured.

2.1.5. Have the injured been cared for and where have they been taken.

2.1.6. Verify if 911 has been called or any others who have been notified.

2.1.7. Persons at scene: Police, Fire Department, Company employees, and any witnesses.

2.1.8. Are there any immediate potential hazards, and what are the known hazards.

2.1.9. Apparent cause of the emergency.

2.1.10. What type of equipment is involved (e.g. pipe size, valve(s)).

2.1.11. Extent of damage.

2.1.12. Damaging party, if applicable.

2.1.13. Actions which have been taken.

3. INSTRUCTIONS GIVEN TO CALLERS

3.1. After evaluating initial status of the emergency, consider giving any or all of the following instructions to callers to minimize the exposure to any potentially hazardous condition:

3.1.1. Immediately evacuate the hazardous area/building as soon as possible.

3.1.2. Stay clear of the hazard.

3.1.3. Avoid open flames and sparks.

3.1.4. Avoid using or operating telephones, door bells, electrical devices, tools or machinery that could ignite hazardous gas-air mixtures (e.g. do not turn light switches on or off or plug in or unplug electrical appliances and do not hang up or dial the telephone).

3.1.5. Shut off service line valve (residential service line valves only), if caller knows how.

3.1.6. From a safe area, Call 911, if there are injuries, fire or other hazards.

4. NOTIFYING SUPERVISION AND DISPATCHING EMPLOYEES

4.1. Informing appropriate personnel:

4.1.1. As soon as possible after obtaining the initial status of the emergency, notify Centralized Dispatch. Centralized Dispatch will notify supervision and Management (refer to Emergency Plan Section XX, "Emergency Personnel").

4.1.2. Give all facts as they are known at the time.

4.2. Initiating emergency action:

4.2.1. Action should be initiated immediately after the emergency condition has been evaluated and the course of action determined, including shutdown, isolation or blowdown of pipelines and pipeline facilities.

4.2.2. Guidelines and major considerations for initiating the actions are as follows:

a. Mobilize and dispatch all necessary personnel, equipment and materials.

b. Establish necessary liaison and communication with appropriate public officials (refer to Emergency Plan Section XI, "Liaison with Appropriate Public Officials").

c. Monitor the system and maintain a status record and log of events.

d. Establish effective control and follow-up procedures.

e. Keep supervision informed of action taken.

5. DISPATCHING EMERGENCY SERVICE ORDERS

5.1. When an emergency call is received, take all pertinent information as shown in paragraph 2 of this Emergency Plan Section.

5.2. Issue a Priority Service Order using the Customer Care & Billing (CC&B). Assign applicable dispatch code and priority using the Radio Dispatch Code List.

5.3. Immediately verify with an Operations representative the address and dispatch code.

5.4. Notification of emergencies:

5.4.1. Centralized Dispatch will make all notifications for all emergency conditions, as listed in Table 1.

NOTE: *Notification will be made by Centralized Dispatch to the appropriate personnel as outlined on the Emergency Call List.*

5.4.2. The on-call supervisor or authorized designate will maintain emergency coordination with Centralized Dispatch and the appropriate supervision as required.

5.5. General emergency instructions:

5.5.1. A copy of the Emergency Call List is located in Centralized Dispatch. Promptly forward all changes, updates and revisions as they occur to Centralized Dispatch for updating.

5.5.2. Provide emergency condition updates through the normal chain of command as listed in Table 1. Update Centralized Dispatch on all emergencies indicated in Table 1 as significant changes occur and at the conclusion of the emergency.

5.5.3. When the Region/Operations Manager determines it is necessary, include follow-up reports to the appropriate management.

5.5.4. After the order is dispatched, the order will automatically be logged by Customer Care & Billing (CC&B). If Customer Care & Billing (CC&B) is down, all orders will be hand written by Ask-A-Tech personnel then Centralized Dispatch will log hand written orders by hand, into the "Hand Log Book":

NOTE:	*When the Customer Care & Billing (CC&B) System resumes normal function, Operations Support personnel will input all hand written order information into the system.*

5.5.5. On emergencies where required, fill out applicable information on the Emergency Call List located in Centralized Dispatch.

5.5.6. If additional help is needed on the job, call the personnel requested by the Operations representative, supervisor or management.

6. GAS CONTROL EMERGENCY CALL PROCEDURES

6.1. Maintain current copies of Emergency Call List (Table 1) and Gas Control Emergency Call Procedures (Table 2) in the Gas Control office.

6.2. Gas Control Department will contact Company personnel following the Gas Control Emergency Call Procedures in Table 2.

Table 1

EMERGENCY CALL CHECKLIST	PERSONNEL TO CONTACT	SUPERVISOR & FOREMAN (2 CALLS)	REGION MANAGER	Manger OPERATIONS SERVICES R. S. JORGENSEN	VP, OPERATIONS R. W. JIBSON	PRESIDENT & CEO A. K. ALLRED	PIPELINE COMPLIANCE (DOT ON-CALL)	HP CONST & MAINT – J. R. WONG	MEASUREMENT & CONT/AUTOMATION B. J. NIEBERGALL	LEGAL/INSURANCE A. MAGRANE	PUBLIC & EMPLOYEE INFORMATION (ON-CALL)	CUSTOMER RELATIONS C. WAGSTAFF	ENVIRONMENTAL & SAFETY SERVICES K. HEIMSATH	SECURITY – M. MAUGHAN	GAS CONTROL – EXT. 4400	OPERATIONS ENGINEERING	G.A.B. ROBINS INSURANCE	TRAINING DEPARTMENT R. HESS
ASPHYXIATION/INJURY RELATED TO NATURAL GAS		▲	▲		▲	▲	▲			▲	▲	▲	▲					
COMPANY VEHICLE ACCIDENT (NON-INJURY)		▲	▲										▲				▲	
COMPANY VEHICLE ACCIDENT (INJURY)		▲	▲		▲								▲				▲	
DAMAGED OR LEAKING HP OR BELT LINE		▲	▲	▲	▲		▲	▲	▲		▲				▲	▲		
DEATH/HOSPITALIZATION (GAS RELATED)		▲	▲	▲	▲	▲	▲			▲	▲	▲	▲					
EARTHQUAKE 3.5 ON RICHTER SCALE, FLOOD, LANDSLIDE OR MAJOR THREATS (REPORTED)		▲	▲	▲	▲		▲	▲	▲		▲	▲	▲	▲	▲	▲		
EMPLOYEE DEATH (ON THE JOB, ANY CAUSE)		▲	▲		▲	▲					▲	▲	▲	▲				
EMPLOYEE INJURY REQUIRING DOCTOR		▲	▲		▲						▲		▲	▲				
CONTRACTOR DEATH OR SERIOUS INJURY ON THE JOB		▲	▲		▲	▲				▲	▲	▲	▲					
EVACUATION – GAS RELATED		▲	▲		▲		▲			▲	▲							
EXPLOSION – GAS RELATED		▲	▲	▲	▲	▲	▲		▲	▲	▲	▲	▲			▲	▲	
FIRE CALLS – GAS RELATED		▲	▲		▲		▲			▲	▲	▲						
FIRE (QGC NON-PIPELINE FACILITY)			▲	▲	▲	▲				▲	▲			▲	▲			
FLASH (GAS RELATED)		▲	▲				▲				▲							
FLASH (DAMAGE TO PREMISE)		▲	▲				▲			▲								
FLASH (CUSTOMER INJURY)		▲	▲		▲	▲	▲			▲	▲							
LOSS OF GAS (TO 10 OR MORE CUSTOMERS)		▲	▲		▲		▲			▲	▲	▲			▲	▲		
LOSS OF GAS TO A TOWN SYSTEM		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲			▲	▲		
REGULATOR STATION OVER PRESSURE		▲	▲	▲	▲		▲	▲	▲						▲	▲		
SAFETY OR ENVIRONMENTAL RELATED CONDITIONS		▲	▲	▲	▲			▲						▲	▲	▲		
SECURITY PROBLEMS, CIVIL EMERGENCY		▲	▲	▲	▲						▲				▲	▲		
NEWS MEDIA IS INVOLVED AND QUESTAR IS ON LOCATION (RELATED TO NATURAL GAS)		▲	▲		▲		▲				▲							
ODORANT LEAK / SPILL		▲	▲	▲					▲				▲	▲				
PIPELINE COMPONENT OR LINE FAILURES EXCLUDING THIRD PARTY DAMAGE																		▲

- UNUSUAL CIRCUMSTANCES GO TO NEXT LEVEL OF SUPERVISION/MANAGEMENT.
- IF NO CONTACT WITH LEVEL INDICATED – GO TO NEXT LEVEL OF SUPERVISION/MANAGEMENT.
- SAFETY RELATED CONDITIONS ARE OUTLINED IN EMERGENCY PLAN.
- NOTIFY QGC DIST. H.P. CONSTRUCTION & MAINTENANCE AND MEASUREMENT & CONTROL/AUTOMATION WHEN THEIR PERSONNEL ARE INVOLVED IN EMERGENCY SITUATION.
- NOTIFY PUBLIC AND EMPLOYEE INFORMATION IN SITUATIONS WHERE EMERGENCY RESPONSE TEAM IS ON SITE OF GAS RELATED INCIDENT.
- NOTIFY ENVIRONMENTAL AND SAFETY SERVICES CONCERNING HAZARDOUS MATERIAL SPILLS OR ENVIRONMENTAL ISSUES
- REFER TO ON-CALL LIST FOR NOTIFICATION OF GAS LAB PERSONNEL, WHEN GAS SAMPLE/ANALYSIS IS REQUIRED.

GAS CONTROL
EMERGENCY CALL PROCEDURES

EMERGENCY CALL	PERSONNEL TO CONTACT	MEASUREMENT AND CONTROL B. J. NIEBERGALL	DISPATCHER EXTENSION 3900	DISTRIBUTION H.P. CONSTR. & MAINT (ON-CALL)	GENERAL MANAGER, OPERATIONS SERVICES - R. JORGENSEN	V.P., OPERATIONS R. JIBSON	ENVIRONMENTAL & SAFETY SERVICES K. HEIMSATH	PIPELINE COMPLIANCE - DOT ON-CALL	GAS SUPPLY DEPT. – ON-CALL AL WALKER
HIGH/LOW BTU GAS		▲	▲		▲				
HIGH INERT CONCENTRATIONS		▲	▲		▲				
HIGH PRESSURE SYSTEM ALARM		▲	▲	▲	▲				
IHP SYSTEM ALARM		▲	▲	▲	▲				
INABILITY TO SUPPLY GAS DEMAND		▲	▲		O	O		O	▲
LIQUID IN SYSTEM		▲	▲		O	O		O	
QGC COMPRESSOR STATION INOPERABLE		▲			O	O		O	
ODORIZATION PROBLEM		▲			O	O		O	
SOUR GAS IN SYSTEM		▲	▲		O	O	▲	O	
TRANSMISSION LINE BREAK OR DAMAGE			▲	▲	▲	O		▲	

NOTES:

1. THRESHOLD LIMITS ARE CONTAINED IN SECTION V OF THE EMERGENCY PLAN UNDER QUALITY OF GAS.
2. ▲ CONTACT MANAGEMENT AS NOTED.
3. O NOTIFY ONLY IF ABILITY TO SERVE QUESTAR GAS IS THREATENED.

Table 2

Emergency Evacuation Procedures

- Questar Standard Practice
  - 3-75-01 - Evaluating Gas Leak Reports
  - 5-00-08 – Underground Gas Leak Procedure
- Questar Technical Service Policies and Procedures
  - 02-00-01 - Emergency Call Procedures
- Training Bulletin
  - November 16, 2007 – Revised Procedure – Outside Leak Screening on Inside Leak Calls
  - January 28, 2008 – Additional Requirements for Evacuations and "A" Leaks
  - March 6, 2008 - Clarification on Leak Screening during Inside Leak Investigation Procedure
  - May 7, 2008 - Suspected Gas Leaks Inside Buildings
- Questar Gas Emergency Plan
  - Section V: Controlling Emergency Situations

Questar Standard Practice

3-75-01 EVALUATING GAS LEAK REPORTS

1. PURPOSE

This Standard Practice describes the procedure used to evaluate gas leak reports to determine the leak class and probable leak source. This procedure will be used by personnel evaluating gas leak reports.

2. REFERENCES

2.1. Company DOT Operator Qualification Program

2.2. Standard Practice 5-00-07 "Underground Facilities Damage Prevention Program".

2.3. Questar Emergency Plan, Section IX.

3. DEFINITIONS

3.1. Combustible gas indicator - An instrument used to determine the presence and concentration of a combustible gas.

4. SAFETY

4.1. Wear personal protective clothing and equipment.

4.2. Provide job site protection for traffic safety.

4.3. Do not use an open flame to detect or locate leaks.

4.4. Ensure that all open flames in the immediate area are extinguished.

4.5. Do not insert metal probes in openings of man hole covers marked "electric power" or telephone or other unidentified underground structures. When testing such unidentified underground structures, remove the metal probe and insert the rubber hose only.

5. PERSONNEL QUALIFICATIONS

5.1. Personnel responsible for performing covered task(s) outlined herein will be qualified or will be directed and observed by someone who is qualified as outlined in Company DOT Operator Qualification Program.

5.2. Personnel will be familiar with the procedures and safety precautions outlined herein.

6. LOCATING AREA TO BE TESTED

6.1. Obtain Leakage Repair Order (Form 51058) from the dispatcher. Ensure that area maps and necessary service line work cards are attached to the order.

6.2. For required entry code information on Leakage Repair Order form, refer to Table 2.

6.3. Determine address and detection code from Leakage Repair Order.

6.4. When a Leakage Repair Order is received, contact appropriate One-Call center to locate utilities in work area (Refer to S.P. 5-00-07.). Determine waterline locations from water meters and fire hydrant locations.

6.5. Determine location of mains, fittings, taps and service lines by measuring from buildings, property lines, curbs, intersections or other objects shown on area maps or work cards. Where necessary, use pipe locators to locate mains and service lines.

6.6. To establish the initial area for bar testing, mark the location of the main at each end of the area to be surveyed. Mark probable locations for fittings, taps and service lines as an aid in determining leak locations.

6.7. Observe vegetation for possible signs of leakage.

6.8. When evaluating leaks in traffic areas, set up job site protection for traffic safety.

6.9. Whenever possible, choose a time for bar testing when traffic or other interference will be minimal.

7. PREPARING BAR HOLES FOR TEST

CAUTION *Punching bar holes directly over main could puncture main.*

7.1. With a hand operated bar hole tool, bar approximately 3 foot deep holes spaced 2 to 3 feet apart 3 inches outside edge of main.

7.2. Use a jack hammer or rotary drill to drill through concrete, asphalt or other hard surface.

7.3. Do not damage the pipe or pipe coating when using the jack hammer, rotary drill or bar hole drill.

8. TESTING FOR COMBUSTIBLE GAS

8.1. Test for the presence and concentration of gas in each of the bar holes using a combustible gas indicator and probe.

8.2. In order to determine the probable leak location, test the same hole a number of times over a period of several minutes as the gas dissipates from the bar holes.

NOTE: *An air-operated bar hole purging device may be used to remove pockets of gas from test areas and aid in pinpointing leak location.*

8.3. When a leak is indicated, drill other holes along the main or service line and in the general area, until the last holes are free of gas to determine the extent of the area affected by the leaking gas.

8.4. Determine the probable leak location from the evaluation of test results.

8.5. Determine if an immediate hazard exists and if immediate attention will be required (Refer to Table I).

8.6. When tests indicate that an immediate hazard exists, make the necessary repairs immediately. When permanent repairs are not practical, make the necessary temporary repairs to make the leak safe and schedule permanent repairs.

8.7. When determining which leaks are reportable to D.O.T., refer to Table I.

8.8. When obtaining and submitting information for a DOT report, refer to Emergency Plan, Section IX.

8.9. Ensure that confined areas are adequately ventilated.

8.10. After testing and repairs are completed, ensure that test holes in hard surface areas are patched with asphalt mulch.

8.11. Complete appropriate parts of the leakage repair order and return to construction dispatcher for scheduling of a resurvey. When leaks are caused by contractors, utility companies and private parties, list the contractors', utility companies' or private parties' company on the leakage repair order when known.

9. COMPLETING EMERGENCY REPAIR PROCEDURES CHECKLISTS

9.1. Return all completed Emergency Leak Repair Procedures Checklists to supervision (Refer to Form 50610).

9.2. If weather conditions permit, the Region Manager could cancel or initiate frost conditions in an applicable Region/Center, except the St. George Center, which is exempted from frost conditions.

9.3. When frost conditions do not apply in a Region/Center, the Region Manager will notify the Operation Supervisors by written letter, with information copies to any other applicable Region personnel.

TABLE I
LEAK CLASS CODES

Leak class codes are two-digit codes made up of a letter (Alpha) and a number (Numeric). The Alpha portion refers to the leak evaluation. The Numeric portion refers to how the leak was originally detected.

I. ALPHA CODES - LEAK EVALUATION

Code	Description
A.	IMMEDIATE ATTENTION REQUIRED -Line broken and blowing. -Any indication against or in a building. -High volume leak. -Because of its location, leak is considered hazardous.
C.	SCHEDULED REPAIR -Gas not escaping. -Low volume leak. -Because of its location, leak is not considered to be an immediate hazard.
E.	EVALUATE UNTIL REPAIRED -Extremely low volume leak. -Because of its location, leak is not considered to be a hazard.
F.	LEAK OR SOIL TESTS OF SUSPECTED LEAK AREA ARE NEGATIVE -Combustible gas indicator. -Stand up pressure tests. -Odors traced to other sources. -Gas Chromatograph.
G.	DUPLICATE ORDER -Leak is presently under an evaluation or repair schedule.
H.	EMERGENCY LEAK (INCIDENT) - (These leaks must be reported to DOT) -Involves a release of natural gas from a natural gas pipeline or facility resulting in one or more of the following: -Caused a death or personal injury necessitating in-patient hospitalization. -Estimated property damage, including cost of gas lost, of Questar Gas Company or others, or both, of $50,000 or more. -Leak occurring on a High Pressure line. -An event that is significant, in the judgement of management, even though it did not meet the criteria above.

II. NUMERIC CODE - HOW DETECTED

1. Survey methods.
2. Field detection.
3. Other company sources.
4. Customer or outside sources.
5. Leak caused and reported by outside sources.

Table 2
Leak Repair Order Codes

Revised May 10, 2004

AREA (office use only)
00 – Wyoming **(inactive)**
10 – Logan
20 – Ogden
30 – Southern **(inactive)**
40 – Springville
50 – Salt Lake
60 – Idaho
70 – S.L. South (inactive)
80 – Heber
90 – Price
100 – Vernal
110 – Moab
120 – Roosevelt
130 – Evanston
140 – Rock Springs
150 – Ephraim
160 – Richfield
170 – Fillmore
180 – St. George
190 – Cedar City
300 – Questar Pipeline
400 – Questar Southern Trails
UND – Undetermined

TYPE OF PIPELINE
(M or S)
M – Main
S – Service
F – Feederline
T – Transmission (QPC/ QST)
CP – Customer Piping (Fuel Line)

PIPE SIZE

½" – 21	2 ½" – 25	14" – 14
5/8" – 58	3" – 03	16" – 16
¾" – 34	4" – 04	**18" – 18**
1" – 01	6" – 06	20" – 20
1 ¼" – 11	8" – 08	24" – 24
1 ½" – 15	10" – 10	**36" – 36**
2" – 02	12" – 12	

LEAK CLASS
A – Immediate Attention Required
B – Rush Evaluate and Repair
C - Set up on Regular Repair Schedule
F – Soil or Leak Test Negative
G – Duplicate Order
H – Emergency Leak – Reportable to DOT

HOW DETECTED
1 – Survey Methods **(leak survey)**
2 – Field Detection (**Operation** Crews)
3 – Other Company Sources
4 – Customer or outside source
5 – Damage and reported by Outside source

LEAK CODE
Basic Cause (see guidance on reverse)
50 – Corrosion
51 – Construction Defect **(inactive)**
52 – Material **or Welds**
53 – **Excavation**
54 – Other Outside Force Damage
55 – Other (Normal Wear)
56 – Natural Forces
57 – Equipment
58 – Operations

Component
P – Pipe
V – Valve
F – Fitting
T – Tap Connection
M – Meter/Regulator
R – Riser
C – Coupling or other Joint
D – Drip

LEAK REPAIR CODE
R70 – Welded
R71 – Patched
R74 – Replaced
R75 – Greased
R76 – Tightened
R79 – Retired/ Abandoned
R80 – Mechanical Repair

PIPE
Type of Pipe
ST – Steel
RT – Rocket Tubing
XT – X Trube
SP – Stove Pipe
PO – Orange TR 418 Pipe
PT – Tan Aldyl Pipe
PY – Yellow Plexco
PL – Plastic (inactive 7/1/2000)

Condition
1 – Like New
2 – Minor Corrosion
3 – Medium Corrosion
4 – Heavy Corrosion
5 – Brittle Cracking

SIGN-OFF
Foreman and Resurvey
Date – Day/Month/Year
First Letter of First Name
First 3 Letters of Last Name
Employee Number

EX: John Smith – JSMI**-8697**

PRESSURE
2 – IHP (intermediate high pressure)
3 – HP (Mainline or High Pressure)

COATING
Type of Coating
BR – Bare
SM – Somastic
MW – Mill Wraped
GR – Granny
XC – X Tru Coat
FC – Flood Coated
PT – Plastic Tape
CC – Cement Cased
SN – Synergy Coated
EP – Epoxy (Continental Riser)
PC – Paint Coated

Condition
1 – Like New
2 – Minor Damage
3 – Medium Damage
4 – Heavy Damage
5 – No Coating

SOIL
Type of Soil
S – Sand
C – Clay
L – Loam
R – Rock or Shale
G – Gravel
V – Vault or Pit

Moisture Condition
D – Dry
M – Moist
W – Wet

Contact Pipeline Compliance for Code Changes (X-3645)

Leaks

A leak is defined as an unintentional escape of gas from the pipeline. A non-hazardous release that can be eliminated by lubrication, adjustment, or tightening, is not a leak. Note in Leak Repair Code: R75 – Greased or R76 - Tightened

A leak resulting from…

…a hole in the pipe or other component caused by galvanic, bacterial, chemical, stray current, or other corrosive action is a CORROSION leak (50).

…earth movements, earthquakes, landslides, subsidence, lightning, heavy rains/floods, washouts, flotation, mudslide, scouring, temperature, frost heave, frozen components, high winds, or similar natural causes is a NATURAL FORCES leak (56).

...damage caused by earth moving or other equipment, tools, or vehicles is an EXCAVATION leak (53). Includes leaks from damage by operator's personnel or contractor or people not associated with the operator.

…fire or explosion and deliberate or willful acts, such as vandalism, is an OTHER OUTSIDE FORCE DAMAGE leak (54).

…faulty wrinkle bends, faulty field welds, and damage sustained in transportation to the construction or fabrication site is a MATERIAL AND WELDS leak (52). Includes leaks after a dent, gouge, excessive stress, etc., occurs on originally sound material. Also includes leaks resulting from a defect in the pipe material, component, or the longitudinal weld or seam due to faulty manufacturing procedures. Report leaks from material deterioration, other than corrosion, after exceeding the reasonable service life, under "Other." (55)

…malfunction of control/relief equipment including valves, regulators, or other instrumentation; stripped threads or broken pipe couplings on nipples, valves, or mechanical couplings; or seal failures on gaskets, O-rings, seal/pump packing, or a similar leak, is an EQUIPMENT leak (57).

Leaks resulting from inadequate procedures or safety practices, or failure to follow correct procedures, or other operator error are an OPERATIONS leak (58).

…any other cause, such as exceeding the service life, not attributable to the above causes, is an OTHER leak (55).

NOTE: Above ground leaks that are repaired at the time of discovery by either tightening (R76) or greasing (R75) do not require a "Green" to be completed.

Questar Standard Practice

5-00-08 UNDERGROUND GAS LEAK PROCEDURE

1. PURPOSE

1.1. This Standard Practice describes the procedures to be followed when responding to reports of underground gas leaks. This Standard Practice will be followed by personnel trained in leak search, detection and repair.

2. REFERENCES

2.1. Emergency Plan.

2.2. Standard Practice 8-12-01, "Portable Fire Extinguishers."

2.3. Standard Practice 8-13-01, "Respiratory Protection Program."

2.4. Standard Practice 8-10-03, "Selecting, Using and Maintaining Fire Suits."

2.5. Standard Practice 5-00-02, "Repair Procedures for Damaged Plastic Pipe."

2.6. Standard Practice 5-00-03, "Repairing Steel Pipe."

2.7. Standard Practice 5-20-01, "Extracting Natural Gas from the Ground and Associated Facilities."

3. DEFINITIONS

3.1. Emergency Gas Leak – Situations requiring evacuation and/or immediate repair (A or H Leak) such as gas detected in or within 10 feet (20 feet during winter season) of a house or building; any gas registering a stable reading on a CGI (approximately 2% or more) detected within a duct system, such as, sewer, telephone, storm drain, or power; or situations requiring immediate repair only (A Leak), with a stable 100% reading obtained on the combustible gas indicator at any single location.

3.2. CGI – Combustible gas indicator.

3.3. Backpack – A portable flame ionization leakage detector.

3.4. Background Level – Normal interference gases picked up in atmosphere being checked by backpack or mobile detectors. Background levels vary with atmosphere checked. In normal atmospheres, using flame ionization detectors, reads will vary from 10 to 1000 PPM and excessively high concentrations of an interference gas could read as high as 5000 PPM.

3.5. Class A Leak – Immediate attention required, such as a line broken and blowing, any indication of gas near or in a home or building, a high volume leak or any leak considered hazardous because of its location.

3.6. Class H Gas Leak – An event (emergency or Class A Leak) that involves a release of gas from a natural gas pipeline resulting in one or more of the following:

3.6.1. A death, or personal injury necessitating in-patient hospitalization.

3.6.2. Estimated property damage, including cost of gas loss, of Questar Gas Company or others, or both, of $50,000 or more.

3.6.3. An event that is significant, in the judgment of management, even though the event did not meet the criteria of paragraphs 3.6.1. or 3.6.2.

3.7. Limit of Leaks – The extent gas has migrated from a leak as determined by taking readings with a CGI or backpack.

4. SAFETY

4.1. Ensure maximum precautions are taken for the safety of the general public and Company personnel when a gas leak is detected. When a gas leak is determined an emergency, or when determining action priorities and considerations and for obtaining and submitting information for a DOT report, follow the emergency procedures referenced in paragraph 2.1.

4.2. Ensure all sources of possible ignition are eliminated until source of leak is determined and made safe.

4.3. Keep all unnecessary personnel out of gas leak area until area is declared safe.

4.4. Ensure fire extinguisher, respiratory aids, life lines, fire suits and other safety aids are available for usage if needed (refer to paragraphs 2.2 through 2.4).

5. ORGANIZATION

5.1. During emergency underground leak conditions, use the following organizational outline:

5.1.1. The senior construction employee at the scene, or his designate, will be in charge for gas leaks apparently originating upstream of the meter.

5.1.2. Personnel from Technical Services or other departments will be assist when requested or dispatched.

5.1.3. The senior construction employee at the scene will make the operational decisions, including manpower requirements, individual assignments, coordination and supervision of activities, liaison with other parties and reports.

5.1.4. Where gas has entered or is around a structure, the senior construction employee at the scene will coordinate with the technical service technician in evacuation houses or buildings.

6. EMERGENCY LEAK REPAIR PROCEDURES WHEN THE GAS LEAK SOURCE IS VISIBLE OR EVIDENT

6.1. Checking gas migration.

6.1.1. Check the area around the leak, starting within 10 feet (20 feet in winter) of any houses or buildings, for the possible migration of gas with a CGI or backpack.

6.1.2. When gas is detected below ground, within 10 feet (20 feet in winter) of a house or building, follow the procedures outlined in paragraph 7 of this Standard.

6.1.3. When no gas is detect below ground, within 10 feet (20 feet in winter) of a house or building, proceed with repairs to damaged gas line and continue to monitor all house or building for signs of gas (refer to paragraph 7.2).

6.1.4. When source of gas is visible but ends of damaged pipe are not visible, follow procedures outlined in paragraph 7 of this Standard.

6.2. Control any blowing gas by following procedures outlines in the Standard Practices referenced in paragraphs 2.5 and 2.6.

6.3. Ensure any areas of known gas concentrations are dissipated or vented to allow dissipation before leaving the area of the gas leak. When determined necessary, remove concentrations of natural gas with vacuum pumping equipment using the procedure referenced in paragraph 2.7.

7. EMERGENCY LEAK REPAIR PROCEDURES WHEN THE GAS LEAK SOURCE IS NOT VISIBLE

7.1. When a gas leak is reported and the source is not visible, follow the procedures outlined on the Emergency Leak Repair Procedures Checklist (refer to Figure).

7.2. Monitor, evaluate and schedule for repair all gas leaks found, beyond 10 feet (20 feet in winter) of any houses or buildings, that indicate on a CGI a gas concentration less than a stable 100 percent reading.

7.3. Each time a step is completed on the checklist, make an indication in the box to the side of the step. Do not proceed on to a new step until all portions of the present step are completed unless sufficient manpower is available to allow the starting and completion of additional steps.

7.4. If any problem arises which is not covered on the checklist, contact supervision for assistance.

7.5. Repair gas leaks following procedures outlined in the Standard Practices referenced in paragraphs 2.5 and 2.6.

7.6. Ensure any areas of known gas concentrations are dissipated or vented to allow dissipation, before leaving the area of the gas leak. When determined necessary, remove concentrations of natural gas with vacuum pumping equipment using the procedure referenced in paragraph 2.7.

8. TESTING GAS FOUND IN SEWER MANHOLES

8.1. When a duct system such as sewer, telephone, storm drain or power contains 2 percent or more gas by volume when registering on a CGI, evacuate houses/buildings on both sides of the street and houses that are within 70 feet.

8.2. Start evacuation at the manhole with a CGI reading of 2 percent or more gas and continue from manhole to manhole until gas free area is found in any direction from the original reading.

9. COMPLETING EMERGENCY REPAIR PROCEDURES CHECKLISTS

9.1. Return all completed Emergency Leak Repair Procedures Checklists to supervision (refer to Figure 1).

9.2. If weather conditions permit the Region Manager could cancel or initiate frost conditions in an applicable Region/Center, except St. George Center which is exempted from frost conditions.

9.3. When frost conditions do not apply in a Region/Center, the Region Manager will notify the Supervisor of Construction and Maintenance by written letter, with information copies to the Technical Services Supervisor and any other applicable Region personnel.

Refer to original file for Figures.

02-00-01 EMERGENCY CALL PROCEDURES

1. PURPOSE

To provide guidance and procedures to follow when responding to emergency calls.

2. REFERENCES

2.1. American National Standards Institute (ANSI)

2.2. Casarett and Doull's Toxiocology (The Basic Science of Poisons)

2.3. Manufacturer's instruction manual for CO test equipment

2.4. Occupational Safety and Health Administration (OSHA)

2.5. Questar Gas Emergency Plan, Section V

2.6. Standard Practice 4-14-01 Combustible Gas Indicator Maintenance and Operation Procedures

2.7. Standard Practice 4-65-02 Conducting Leak Surveys with the Heath Detecto Pak II, Heath Detecto Pak III or Southern Cross Flame Pack Portable Flame Ionization Leak Detector

2.8. Standard Practice 4-65-03 Flame Ionization Equipment (Mobile Mounted) Operating Procedures

2.9. Standard Practice 5-00-08 Underground Gas Leak Procedure

2.10. Standard Practice 8-10-00 Personal Protective Equipment

2.11. Standard Practice 8-10-3 Selecting, Using and Maintaining Fire Suits

2.12. Technical Service Policies and Procedures 01-00-02 Guideline For Employees Performing Technical Service Work

2.13. Technical Services Policies and Procedures 02-00-02 Sulfur Testing Appliances

2.14. Technical Services Policies and Procedures 03-00-02 Appliance safety Checks and Adjustments

3. DEFINITIONS

3.1. Aldehyde odor – during the process of combustion if the flame is cooled, hydrogen and alcohol is left unburned creating this odor.

3.2. Ambient air – existing or present on all sides encompassing.

3.3. CGD – combustible gas detector; a device that detects combustible gases and normally gives an audible alarm indicating the presence of combustible gas.

3.4. CGI – combustible gas indicator; a device that detects combustible gases and indicates this with an audible alarm and a read out of concentrated levels of combustible gas. Normally the device is calibrated for a specific gas.

3.5. Class A gas leak - Immediate attention required. Line broken and blowing, any gas indication against or in a building, high volume leak or any leak considered hazardous because of its location, any leak registering a stable 100% reading on a CGI.

3.6. Class B gas leak – Any leak on a riser with less than 2% CGI read at 20" below ground or less that can be vented. Rush evaluate and/or repair, to be determined by appropriate supervision.

3.7. Class C gas leak – Schedule for repair. (Low volume leak. Because of its location it is not considered to be an immediate hazard).

3.8. Class H gas leak - An event (emergency or Class A leak) that must be reported to D.O.T. and that involves a release a natural gas from a pipeline resulting in one or more of the following:

3.8.1. A death or personal injury necessitating in-patient hospitalization.

3.8.2. Estimated property damage including cost of gas lost by Questar Gas Company or others, or both, of $50,000 or more.

3.8.3. An event that is significant, in the judgment of the Company, even though the event did not meet the criteria of Paragraph 3.8.1, or 3.8.2, above.

3.9. CO – carbon monoxide – a product of the incomplete combustion of carbon that is colorless, odorless, and normally lighter than air.

3.10. CO1 – the dispatch code used for the investigation of carbon monoxide with headache or illness complaint and asphyxiation or near asphyxiation calls.

3.11. CO2 – the dispatch code used with alarm and the customer does not experience any symptoms of CO poisoning.

3.12. CO3 – the dispatch code used with no alarm and the customer does not experience any symptoms of CO poisoning but would like their home checked for carbon monoxide. In special instructions will appear "check for carbon monoxide, no illness."

3.13. ES1 – the dispatch code used to shut off a meter due to an evacuation.

3.14. ET1 – the dispatch code used to turn on a meter after an evacuation.

3.15. Excess air – oxygen that is left unburned in the process of combustion, making up a portion of the exhaust flue gases.

3.16. LEL - Lower explosive limit - the least concentration of flammable gas in air that will burn. Normally, this will correspond to 5% natural gas.

3.17. OL – outside leak (instructions required).

3.18. PPM – parts per million.

3.19. RMGA – Rocky Mountain Gas Association.

4. SAFETY

4.1 Use only approved equipment for detecting and locating natural gas leaks. Open flames shall not be used as a method of detecting or locating natural gas leaks.

4.2 Employees shall not be exposed to airborne concentrations of carbon monoxide in excess of the established OSHA Permissible Exposure Limit of 50 ppm measured as an 8-hour time weighted average.

4.2.01 35 ppm of CO as the threshold limit value based on an eight hour time-weighted average for a normal work day (commercial).

4.2.02 200 ppm of CO as the threshold limit value for a short term exposure limit, representing the maximum concentration of CO in the air to which the worker may be exposed for a period not exceeding 15 minutes. 15 minute exposure may be repeated up to a maximum of 4 times during an 8 hour shift, with a minimum period of one hour between each subsequent exposure. Under no circumstances shall more than 15 continuous minutes be spent within the building.

4.3 Ensure all operations representatives have available, and where necessary, use personal protective equipment for the protection of the head, eyes, hearing, respiratory organs, hands and feet refer to Standard Practice 8-10-00.

5. PERSONNEL QUALIFICATIONS

5.1. Personnel responsible for performing covered task(s) outlined herein will be qualified or will be directed and observed by someone who is qualified as outlined in Company DOT Operator Qualification Program.

5.2. Personnel will be familiar with the procedures and safety precautions outlined herein.

6. GENERAL

6.1. When Dispatch receives an emergency call, they will immediately call and voice verify with an operations representative giving them the address and dispatch codes. Dispatch will also make arrangements for additional help if needed.

6.2. If contacted by dispatch to respond to an emergency and the representative is currently involved in an emergency, the representative will make safe the current emergency by doing the following:

6.2.1. Ensure there is no gas in the building following the procedure listed in paragraph 9.1.

6.2.2. Ensure there is no gas at or near the exterior of the building by performing the leak screening procedure listed in paragraph 9.3.

6.2.3. Shut off the meter and respond to the second emergency.

6.3. If the current emergency can not be made safe, the representative will notify dispatch and remain at the current emergency until it is made safe or the representative is relieved by another qualified employee.

7. EQUIPMENT OPERATION

7.1. Back Pack Operation

NOTE:	*Do not insert metal probes in opening of a manhole cover marked "Electric Power", telephone, or other unidentified underground structures. When testing such unidentified underground structures, remove the metal probe and insert the rubber hose only.*

7.1.1. For information about conducting mobile leak surveys, refer to Standard Practice 4-65-03.

7.2. Combustible Gas Indicator Operation.

7.2.1. Refer to Standard Practice 4-14-01 for operating instructions.

7.2.2. Ensure that CGIs are operated and calibrated in accordance with the manufacturers operating instructions.

7.2.3. Do not insert metal probes in openings of a manhole cover marked "Electric Power", telephone, or other unidentified underground structures. When testing such unidentified underground structures, remove the metal probe and insert the rubber hose only.

8. GAS LEAKS

Caution:	*Remove non-intrinsically safe devices, i.e., cell phones.*

8.1. Investigation for gas leakage shall be carried out to the point where the gas leak or source of odor has been identified and outer limits of leak, if any, have been found.

8.2. Where a gas leak is found, identify the location, determine the degree of hazard and immediately take any steps necessary to protect life and property. Final disposition of the gas leak is to be handled in accordance with the applicable procedure listed below:

8.2.1. Main or service line - Gas leaks located beyond 10 feet (20 feet during winter) of any houses or buildings that indicate on a CGI a concentration less than a stable 100 percent reading are to be evaluated and scheduled for repair (Leak Repair Order issued - green). If gas leak meets situation requiring immediate repair or immediate repair and evacuation (A Leak) as defined in Standard Practice 5-00-08, the Operations Representative will notify Dispatch, start evacuation procedure if required, continue to monitor the leak, and remain at the location until the source is found and secured, repairs are made, service is re-established, or relieved by supervision. Refer to Emergency Leak Repair Procedures Checklist located in Standard Practices 5-00-08.

8.2.2. Meter set - Repair gas leaks located at the meter set, when possible, at the time of the first call. If circumstances do not permit repair of the gas leak on the first call and no hazard exists, leave gas meter on and issue a follow-up order.

8.2.3. House piping - When a gas leak is discovered within the customer's house piping, make minor repairs or shut off the gas to make safe and

refer the customer to the Yellow Pages or the RMGA. Complete a Notice of Unsafe Operating Condition, form 50184, and leave a copy with the customer, attach a Red Tag, form 59184.

8.2.4. Appliances and their connections - Gas leaks located on appliances or their connections are to be repaired if this can be accomplished by any of the following operations:

a. Tightening a loose part or fitting.

b. Lubricating a shut off valve core.

c. Minor repairs. Refer to Policies and Procedures 01-00-02.

8.2.5. If leakage cannot be repaired, shut off the appliance, to make safe, and refer the customer to the Yellow Pages or the RMGA. Complete a Notice of Unsafe Operating Condition, form 50184, and leave a copy with the customer, attach a Red Tag, form 59184.

8.2.6. If a gas leak call is canceled at the customer's request after arriving at the job, have the customer sign and initial the Service Order, form 50205, where the words "canceled by customer" are written, the outside gas leak procedure will be completed.

8.2.7. If the gas leak call is canceled by Dispatch per the customer, before arriving on the job, write an order or fill in on comments screen on laptop: "Canceled by Customer, per Dispatch". No call to the address will be required.

9. GAS LEAK INSIDE

Caution: *Do not call the location of the gas leak order and do not ring door bell (knock).*

Caution: *A combustible gas detector and/or indicator shall be used inside on all inside gas leak calls. Gas detection equipment is to be turned on in a gas-free environment and readied for use before entering the building.*

9.1. Testing for inside gas leaks.

9.1.1. Test for natural gas presence at the door before you enter. If background gas is indicated using a CGD, use a CGI to determine percentage. If any reading of gas in ambient air is found inside a structure with a CGI, immediately start and follow evacuation procedure. Refer to Standard Practice 5-00-08.

9.1.2. If it is determined to be safe to enter the building, use CGD and/or CGI inside. Tests shall be made within the building at appliance locations, house piping, manifolds, meter sets, and any obvious location where it is possible to have gas leakage into the building, such as water line entry, sewer or gas line entry, or cracks in cement foundations, etc.

9.1.3. Refer to paragraphs 9.5 through 9.9 for appliance and inside leak testing. Ensure that appropriate safety precautions, including immediate

evacuations (including company employees), are taken as warranted by the severity of any inside gas leakage that is found – refer also to Section 8.

9.2. Checking meter set.

9.2.1. Use a combustible gas detector or soap to test for leakage on the meter set.

9.2.2. Follow spot test procedures outlined in paragraph 10.

NOTE: *"Leak screening" involves the aboveground use of gas detection instruments (e.g. CGD, or preferably a CGI) to make precautionary checks for outside natural gas leakage. Leak screening should be used in place of bar testing in circumstances where there is no report or indication of an outside gas leak, and the check for outside leakage is only precautionary.*

9.3. Leak screening for outside leaks. Utilize CGI (or alternately, CGD) to check at ground-level for indications of natural gas leakage. Check for natural gas leakage at ground-level at the locations shown in Figure 1 (standard building) or Figure 2 (corner building), as applicable.

9.3.1. If no outside gas leakage is identified by leak screening, no further bar testing for outside leaks is required. The exception would be in the event of frozen ground conditions, where limited bar tests may be employed as needed to penetrate into the frozen ground at points of interest with approved bar holing tool. Under frozen conditions, test from aboveground any areas immediately adjacent to buildings where the ground is not frozen.

9.3.2. If outside gas leakage is identified, follow the procedures in Section 8 and Standard Practice 5-00-08, as applicable. Bar testing should be performed to find and delineate the outer limits of the leak.

Warning: *Bar testing may result in damage to buried utilities and may result in hazards such as electrical shock and uncontrolled release of natural gas from damaged lines. Utilize only company-approved probe bars that are electrically shock-resistant and wear specified personal protective equipment. Note any obvious foreign utility equipment, housings, meters or markings to help avoid unintended contact or damage to other utilities from bar testing. Report any known damage from bar testing to appropriate parties and company supervision.*

Caution: *Care must be taken to avoid damaging company service lines or mains during bar testing. Note the location of service riser and consult company maps as needed for information on location of mains, tap and service line. Do not bar directly over the gas main or service line to avoid damaging the pipe.*

Warning: *In the event that bar testing damages a company pipeline and results in the uncontrolled release of natural gas, immediately proceed with all required safety precautions per Standard Practice 5-00-08, including required evacuations, notifications and control of potential ignition sources. Call 911 (or request Dispatch call 911) to report the emergency.*

NOTE: *Take precaution when storing and using bar hole tool, protecting the insulation from damage.*

9.4. Bar testing for outside leaks. Outside bar hole tests shall be made using an electrically shock-resistant probe bar and CGI near the service line riser, the service line, across the front of the building, the front property line, sidewalk location and at any other location where appearance indicates gas may be leaking (such as dead vegetation). The bar shall be inserted into the ground between 18 and 30 inches deep, where possible. (Take precautions not to bar test directly over the gas main or service line to avoid damaging the pipe). Refer to Figure 1.

NOTE: *If a corner lot, follow bar test procedure on both street sides of building. Refer to Figure 2.*

9.4.1. Follow the same bar test procedure when gas is served from rear or sides of the building. If operations representative has computer access to mapping system, they will be required to locate tap and bar test that location.

9.4.2. If outside gas leakage is identified, follow the procedures in Section 8 and Standard Practice 5-00-08, as applicable, including immediately proceeding with all required evacuations and other specified safety precautions.

9.5. Appliance checks.

9.5.1. Check all appliances (give reason if all appliances cannot be checked). Note on Service Order, form 50205.

a. Use soap or combustible gas detector to check fuel line from flat head valve to control and down stream of control - make sure that connections are tight. If leak is found with CGD, verify with soap.

b. Combustion air.

c. Venting.

d. Combustion chamber.

e. Controls (thermostats, limits, and safeties).

f. Burners.

g. Door in place and secure (fire door, fan doors, etc.).

h. Make all required appliance safety checks.

i. If a leak is found, indicate on Service Order, Form 50205, including where or which appliance and if it was repaired. Also indicate if no leakage was found, or if other than natural gas odor, indicate cause if known.

9.6. Not home

9.6.1. Complete outside work.

9.6.2. Shut off and seal meter.

9.6.3. Complete order noting in remarks "meter off and sealed per customer not home, outside work complete."

9.6.4. Leave a Not Home Notice, form 50354, at the door.

9.6.5. In winter conditions notify supervision to complete call and to get gas turned back on.

9.7. Use a CGD or the application of soap to the suspected location to locate inside gas leaks.

WARNING: *Use of open flame to detect leaking gas can cause an explosion possibly causing injury or death.*

9.8. If inside gas leak is found with CGD, verify with leak test soap. Never use an open flame to check for gas leaks.

Caution: *If leak test soap is left on aluminum tubing it can corrode the tubing.*

9.9. All aluminum tubing and fittings are to be wiped clean of soap after any soap tests.

10. METER SPOT TEST PROCEDURE

10.1. Turn each appliance shut-off valve to the off position and leave appliance control valve in the on position. If an appliance is equipped with an "A" and "B" valve, shut both valves off and spot test the meter to this point. A CGD or soap test must be used downstream of "A" and "B" valve. Begin test with the test hand on the meter on the up stroke. See table 1 for test times on various meter dials.

Dial Size Cubic Feet	Test Time / Minutes
1/4	5
1/2	5
1	7
2	10
5	20
10	30

Table 1

10.2. A spot test will be required in the following situations:

10.2.1. Whenever a gas leak is reported within the customer's premises.

10.2.2. Where, in any other situation in the operations representative's judgment or at the request of the customer, it is deemed necessary or desirable to determine if leakage exists.

10.2.3. Anytime an in-line or service valve is turned on. (Refer to exception below).

10.3. When a meter spot is not practical, the following manometer test will be performed:

10.3.1. Manometer will be installed on fuel line with shut off valves open and control valves and pilot valves off. Manometer will be observed for zero reading. Fuel line will be pressurized with gas and source valve shut off. Release a small amount of gas from the line being tested to lower pressure on the manometer and observe manometer for five minutes for pressure change. A drop in pressure indicates leakage. An increase in pressure indicates a bypassing valve. Make necessary repairs if possible, and retest.

10.3.2. If repairs are not possible, turn off gas to the appliance. Complete a Notice of Unsafe Operating Condition, form 50184, and leave a copy with the customer, attach a Red Tag, form 59184.

10.3.3. All piping, controls, fittings and valves not in manometer test will be tested with CGD or soap solution. Wipe soap off.

10.3.4. All fuel lines will be traced where possible. Unused open lines will be plugged or capped.

NOTE: *Anytime a valve is turned on after a meter spot test or a manometer pressure test, the meter will be re-spotted or manometer test performed.*

EXCEPTION: *A range where pilots can't be shut off. A shut-off valve installed within 6 feet of the appliance, in the same room as the appliance and with no concealed piping between the shut-off valve and the appliance may be used. Use CGD or soap on all piping from shut-off valve to appliance.*

10.4. A meter spot test will not be required in the following situations:

10.4.1. In cases where the meter serves a multiple dwelling or commercial establishment, the operations representative is to determine if a meter spot test is required. If required, and if practical, the operations representative shall make necessary arrangements for testing the premises at a convenient hour, at which time sufficient manpower will be sent to the location to carry out the test.

10.4.2. In the case of multiple dwellings, if the request originates with the individual tenant, the operations representative shall consider the call complete after investigating the concern of the tenant.

Caution: *If a condition is considered immediately hazardous or unsafe, gas service shall be shut off.*

10.4.3. If the operations representative believes gas leakage conditions exist elsewhere on the premises, arrangements are to be made with the property owner or property management representative for spot testing all house lines from the master meter as outlined in paragraph above.

11. GAS LEAKS OUTDOORS

11.1. When a customer complains of gas odors outside in the ambient air or from outdoor appliances such as gas lights, patio heaters, tiki torches, barbecues, air conditioners, incinerators, spa or pool boilers, other outdoor appliances, or an outside gas meter, the following procedure shall be followed:

11.1.1. Meter set

a. Use a combustible gas detector or soap to test for leakage on the meter set.

11.1.2. Appliance checks - check outside appliances where applicable. Make all applicable appliance safety checks as outlined in Policies and Procedures 03-00-02.

a. Use soap or combustible gas detector to check outside fuel line from flat head valve to control and down stream of control. Make sure connections are tight and make necessary repairs, if possible.

b. Venting (where applicable).

c. Combustion chamber (where applicable).

d. Controls (thermostats, limits, and safeties).

e. Burners.

f. Doors in place and secure (fire door, fan doors, etc.).

11.1.3. C.G.I.

NOTE:	*If any indication is given of gas odors or leakage inside by either investigation or by the customer's suggestions or request and the Gas Leak Inside procedure shall be followed, refer to paragraph 9.*

a. CGI or back pack used outside. Bar test and use CGI to check service line, property line, and front of house. Refer to paragraph 9.3.

b. If any leakage is found on the meter set or an outside appliance that cannot be repaired or underground within the distances of the evacuation policy, the procedure in Gas Leaks Inside, refer to paragraph 9, and the Gas Leak Evacuation procedures shall be followed, refer to paragraph 14.

12. CUSTOMER NOT HOME

12.1. If the customer is <u>not home</u>, the following procedure will be used:

12.1.1. If an OL order (outside leak or odors) is issued, and the customer is not home or with remarks "3rd party", follow procedures outlined in paragraph 11. Use gas detector to check around accessible windows, doors and combustion air vent terminations. If no hazard found, leave the meter on.

12.2. If a hazard is found:

12.2.1. Shut off the gas service.

NOTE:	Verify customer is not home before shutting off meter.

12.2.2. Leave a door hanger Not Home Notice, form 50354, on all entrances of the building instructing the customer to call upon their return. Complete the order with remarks "left meter off and sealed with explanation".

12.2.3. Return all not home gas leak orders that result in shutting the meter off to Supervision and notify Dispatch. Supervision will monitor these orders and if freezing weather exists, will make the necessary arrangements to get the gas turned on and checked to prevent damage to water piping or the house.

12.2.4. If a hazard is found requiring an evacuation, follow all proper evacuation procedures as outlined in Emergency Leak Repair Procedure Checklist referenced in Standard Practice 5-00-08 and paragraph 14.

13. GAS LEAKS TO BE REPORTED ON SERVICE ORDER, FORM 50205

13.1. Written reports of gas leak investigations shall contain all the information necessary to describe conditions found and work done. Where a gas leak or source of odor has been found, the specific work done in completing the assignment is to be briefly but clearly described. When a gas leak or source of odor cannot be identified, all details of the investigation are to be given on the Service Order, form 50205. When possible, order is to be signed by the customer and returned to the office and scanned into the records retention.

13.2. When aldehyde odors are the cause of the complaint, the burners are to be adjusted for proper combustion, this condition causing the odor is to be explained to the customer and noted on the Service Order, form 50205.

14. EVACUATIONS – SUMMER OR WINTER

14.1. Follow Emergency Leak Repair Procedures Checklist, refer to Standard Practice 5-00-08.

14.2. Cover items outlined in Gas Leaks Inside, refer to paragraph 9 plus:

14.2.1. Notify Dispatch, information is needed for emergency plan check sheet. Attach Warning Emergency Shut-Off, form 59185, to the valve and attach Customer Evacuation Notice (CEN), form 50356, to each entrance of the building, including the garage.

NOTE:	*Use the mapping system to ensure all service lines are identified for restoration of service.*

14.2.2. Meter(s) shut off (make "ES1" for each meter shut off, Dispatch to make "ET1" for relights).

14.2.3. Customer(s) evacuated (number of homes involved).

14.2.4. Cause of gas leak.

14.2.5. Name of supervision on job site.

14.2.6. Building(s) cleared before service restored.

a. Once the gas leak has been found and repairs have commenced and any gas outside the building in the ground is less than 2 percent the building may be evaluated for entry.

b. An Operations representative will enter the building with a CGI (e.g. Ranger) and determine the building is free of natural gas.

c. If any gas is present the representative will leave the building immediately and continue to allow the gas to dissipate through appropriate measures. Return to paragraph 14.2.6.a.

d. If the building is determined to be free of gas, a second employee will enter the building with a second CGI or CGD (e.g. Range or TIF) and verify no natural gas exists in the building. If a second employee is not involved in the evacuation the initial employee may perform he secondary evaluation with a second leak detection device during an additional second check.

e. If any gas is present the representative will leave the building immediately, leave the door open, and continue to allow the gas to dissipate through appropriate measures. Return to paragraph 14.2.6.a.

f. Once the secondary verification of no gas is received, occupants of the building may re-enter at this time.

14.2.7. Appliances checked for each building that was shut off.

14.2.8. On an "ET1" the building may be cleared with the combustible gas detector.

14.2.9. Locations of all evacuees (phone number, addresses, contacts, etc.).

14.2.10. Necessary forms/reports.

14.2.11. Follow evacuation procedures. Refer to Standard Practice 5-00-08.

15. FIRE CALLS

NOTE: *Items to be completed depends if permission (from officials in charge) and access can be obtained.* Upon arrival, report to fire official in charge for instructions.

15.1. Cover items outline in Gas Leak Indoors refer to paragraph 9, plus:

15.1.1. Notify Dispatch (needs information for emergency plan check sheet).

15.1.2. If natural gas is involved, notify supervision on call.

15.1.3. Name of supervision on job site, if any.

15.1.4. Indicate meter left on or off (sealed) or removed after completion of call.

15.1.5. Name of fire department person in charge.

15.1.6. Injured person(s) name if possible.

15.1.7. Where injured person(s) went for treatment/condition.

15.1.8. Cause of fire (is gas involved, check with fire chief).

15.1.9. Extent of property damage – dollar value.

15.1.10. Necessary forms / reports.

16. ASPHIXIATION (CO1) WITH REMARKS

16.1. Cover items outlined in Gas Leaks Indoors, refer to paragraph 9 plus:

16.1.1. Notify Dispatch (needs information for emergency plan check sheet).

16.1.2. Name of supervision on job site.

16.1.3. Injured person(s) name if possible.

16.1.4. Where injured person(s) went for treatment/condition.

16.1.5. CO test all appliances (follow paragraph 17).

16.1.6. Sulfur test furnace if possible. Refer to Policies and Procedures 02-00-02.

16.1.7. Necessary forms/reports.

17. "CO" COMPLIANTS (CO1 AND CO2)

17.1. Testing ambient air.

17.1.1. Before entering the building, if you are using a mechanically powered CO tester, turn on the unit allowing the proper warm up time. Ensure the instrument is sampling outside air. After the instrument is zeroed, enter the building to begin sampling for CO.

NOTE: *CO has a specific gravity of 0.975, slightly lighter than air but could be at any level in the building. CO will diffuse and mix with the air in all parts of the enclosure depending on the air and humidity level in the air.*

17.1.2. Begin by sampling at different levels in the building. Take samples on each floor, at the ceiling, midway in the room, and the floor.

a. Record readings on Service Order, form 50205.

17.1.3. When taking ambient air samples, take samples near gas appliances, appliance draft hoods, fire doors, and at the heat registers closest to the furnace.

a. Record reading taken from nearest register on Service Order, form 50205.

17.1.4. If sustained level of CO above 50 ppm remain in the home and all appliances have been eliminated as sources of CO, contact supervision and emergency authorities to assess need for evacuation.

17.1.5. If the ambient air test throughout the building is 10 ppm or less and the gas appliances have been eliminated as a CO source, consider the CO reads to be within normal limits.

17.1.6. If the ambient air test at any location shows a CO read between 11 ppm and 69 ppm, assess whether the building should be ventilated and if necessary evacuate.

17.1.7. If the ambient air test at any location shows a CO reading between 70 ppm and 199 ppm, ventilate the building. Assess whether the building should be evacuated based on site conditions, i.e., if CO is located in one area or in the entire building.

a. If evacuation is determined, notify Dispatch and supervision.

17.1.8. If the ambient air test is equal to or exceeds 200 ppm CO, do not stay inside the building, perform the following:

a. Notify occupants to evacuate while you leave the building.

b. If possible, shut off the gas at the meter.

c. Ventilate area, if possible.

d. Notify Dispatch and your supervision.

17.2. Testing at appliance.

17.2.1. Operate any mechanical exhaust systems (cloths dryer, bath fan, etc) which may have been in use, while testing appliances.

17.2.2. Record readings of each appliance on Service Order, form 50205, before any changes to the appliances have been made.

17.2.3. After adjusting burner input and cleaning burners, pilots and air mixers record readings on Service Order, form 50205.

17.3. Use the CO tester to sample flue gases at each gas appliance except unvented room heaters as follows:

17.3.1. Prior to taking a CO test, operate the gas appliance long enough to heat the combustion chamber to allow adequate time for the equipment to vent properly.

17.3.2. Make no changes or adjustments to the equipment prior to the CO check. Make the CO test under actual operating conditions as the equipment was found.

17.3.3. Take fireplaces and exhaust fans that might effect the combustion process into consideration for the test (turn them on if normally on).

17.3.4. Fire appliances with a common vent, high input, or shared equipment room at the same time and close doors that would be closed under normal operation of appliance prior to taking CO reads.

17.3.5. Acceptable levels of CO with excess air in each chamber after all cleaning and adjustments of burners have been made on vented appliances is 50 ppm or less, 100 ppm or less on ranges, and vent-less heaters with any CO reads shall be checked for air free CO. See figure 3 for acceptable levels of air free CO.

17.3.6. After all tests and adjustments are concluded, perform a sulfur test on all furnaces where possible. Refer to Policies and Procedures 01-00-02. Sulfur testing is optional on CO2 and CO3 calls.

17.4. Take the flue gas sample as indicated in the appliances listed below.

17.4.1. Natural draft appliances.

a. When using equipment which reads CO only, take reads out of each chamber flue passage opening before entering the draft hood. Use a high heat probe to sample flue gas, excessive temperatures will affect the accuracy of the CO test.

CAUTION: *Do not drill holes in Type "B" double wall venting it will void the listing of the vent.*

b. When using the Firerite or Gas Ranger which reads air free CO, take the sample down stream of the diverter. For single wall vent connector, drill the vent to take sample and repair the hole with metal tape. For Type "B" double wall vent connector, lift vent off of vent collar or sample through the diverter into the connector.

c. Check all chambers individually. Do not add the CO reads from each chamber. Take the highest read found as the final read with excess air.

17.4.2. Conversion burners.

a. Drill a hole in the vent connector between the furnace collar and upstream of the draft hood or barometric damper on conversion burner furnaces.

b. After completing the CO test, cover the opening with a metal hole plug or high temperature aluminum tape.

17.4.3. Fan assisted furnaces.

a. If the fan assisted furnace is vented with Type "B" double wall vent, do not drill a hole in the vent or in the collector box.

CAUTION: *Damage to the inducer blower wheel could result.*

b. Lift the Type "B" double wall vent slightly off the furnace vent collar and place the probe into the collector box. Be careful not to place the probe too far into the collector box because of the blower wheel.

c. If the fan assisted furnace is vented with Type "C" single wall vent, drill hole in the vent connector as close as possible to the vent collar and seal with high temperature aluminum tape.

17.4.4. Condensing furnaces.

a. On condensing furnaces with PVC vent pipe, take a test sample at the vent termination or as follows:

b. If the vent termination is out of reach, take the flue gas sample at the inducer blower by disconnecting the neoprene coupling.

c. On models with a condensate drain tube on the inducer blower, take the flue gas samples by removing the condensate tube. Be careful when removing the condensate drain tube not to drip any water on the electrical edge connector or any other electrical parts.

CAUTION: *Failure to replace all tubes in venting will allow flue gas to enter structure.*

d. Replace all tubes and venting back to their proper location after the CO test is completed.

17.4.5. Water heaters.

a. Sample flue gases at the center flue outlet before dilution of the flue gases entering the draft hood. Take readings on both sides of the baffle.

17.4.6. Ranges.

a. Sample flue gases at the range oven vent outlet. Allow sufficient time for the oven to heat up to steady state before taking the samples. Acceptable level is 100 ppm or less with excess air. Take reading with broiler door in the closed position.

b. Visually check for proper operation and adjustments.

17.4.7. Vent-less heaters.

a. Take CO samples one foot above the flame.

b. If using equipment that does not measure AIR FREE CO and any CO reading is found, take oxygen read from the same location as CO reading was taken and calculate the air free CO. Refer to paragraph 17.6.2 and figure 3.

17.4.8. Other gas burning appliances.

a. For space heaters, wall furnaces, domestic boilers, dryers, fireplace inserts, and gas logs check the CO samples at the flue gas outlet, exhaust gas opening, or exhaust termination.

17.5. Corrections to be taken.

17.5.1. Take every effort within the scope of Questar's service to minimize the amount of CO in the exhaust gases. Refer to Policies and Procedures 01-00-02.

17.5.2. Clean and/or adjust burners and pilots.

17.5.3. Adjust air mixers.

17.5.4. Check for proper input of the appliance and change orifices if improperly sized. If you peen and drill the orifices on equipment that requires and orifice change, instruct the customer you made a temporary repair and

to call their installer or heating contractor to have proper orifices installed. Note information on Service Order, form 50205, with customer's signature.

17.5.5. Check for:

a. Flame impingement.

b. Flame disturbance.

c. Plugged combustion chambers.

d. Cracked combustion chambers.

e. Plugged center flues.

f. Blocked venting.

g. Spillage at the draft hood.

h. Proper combustion air.

17.6. After corrections have been completed:

17.6.1. After all methods of eliminating unsatisfactory levels of CO have been exhausted and the CO reading is in excess of the allowable air free CO for the appliance, leave the appliance off and issue a Notice of Unsafe Operating Condition, form 50184, attach Red Tag, form 59184, and inform the customer.

17.6.2. Procedure to follow to obtain AIR FREE CO reading with equipment which does not read AIR FREE CO:

a. Take the CO reading.

b. Use an oxygen tester to sample the oxygen level in the flue gas. (Zero at 20.9) Take oxygen reading at the same spot as the CO reading was taken.

c. Use the CO formula on figure 3 to obtain the CO reading without excess air.

17.6.3. To find the maximum allowable level of AIR FREE CO for an appliance, find the ANSI number on the rating plate and refer to table 20.

17.6.4. Investigate all suspected sources of CO. If the gas appliances are eliminated as a source of CO, look for other possible sources using the following ideas:

a. Automobiles left running by building air inlets or automobiles left running inside a closed garage.

b. Exhaust vent terminations installed near gravity air inlets or evaporative cooler.

c. Charcoal briquettes used inside the building.

d. Improper use of kerosene heaters.

e. The burning of solid fuels.

17.7. Investigative procedure - customer is not home (CO1).

17.7.1. On a headache or illness complaint call:

a. Call the residence by telephone in an attempt to reach the customer.

b. Question the neighbors for information as to the customer's whereabouts.

17.7.2. If attempts at reaching the customer and gaining access fail:

a. Shut the gas meter off.

b. Contact your supervision.

17.7.3. Supervision will determine how access should be gained by calling the fire and/or police department.

17.7.4. If the fire or police are present, complete the call by following the procedure outlined in paragraph 17.1 thru 17.5.5. If the fire or police are not willing to stay for the duration of the procedure, leave the meter off and sealed. The call will need to be rescheduled.

17.8. (CO2) CO detector alarm with no symptoms or (CO3) the customer requests the home is checked for CO.

17.8.1. Do same procedure as CO2, paragraph 17, - lower priority. Optional sulfur test and appliance input check; baring service line is not required.

17.8.2. **NOT HOME** - Do not shut meter off, complete the order and indicate customer not home. Leave Not Home Notice, form 50354, on customer's door.

18. EXPLOSIONS AND FLASHES

18.1. Cover items outlined in Gas Leaks Indoors refer to paragraph 9 plus:

18.1.1. Notify Dispatch (needs information for emergency plan check sheet).

18.1.2. Name of supervision on job site, if any.

18.1.3. Person(s) injured name(s) if possible.

18.1.4. Where injured person(s) went for treatment/condition.

18.1.5. Extent of property damage.

18.1.6. Cause of explosion or flash.

18.1.7. Necessary forms/reports.

18.1.8. Verify proper operation and input of the appliance involved in the flash.

18.1.9. Check input of appliance in question and derate if necessary.

19. GAS LINE BREAK OR GAS BLOWING – EVACUATION

CAUTION: *If gaseous atmosphere is present and it is deemed necessary to enter ensure fire suits are worn. Refer to Policies and Procedures 01-00-02.*

19.1. Notify Dispatch (needs information for emergency plan check sheet).

19.2. Secure area. If there is a fire at the gas line do not attempt to put fire out unless the fire threatens buildings or persons. Refer to Emergency Plan Section V.

19.3. Evacuate if necessary. Cover all items in Gas Leak Evacuation refer to paragraph 14 and Standard Practice 5-00-08.

19.4. Bar area to make sure of no other leakage or breaks in service lines or main line.

19.5. After the break has been secured, determine the following:

19.5.1. Cause of break.

19.5.2. Person/company responsible for damage.

NOTE: *Do not attempt repairs of plastic service lines unless you possess the proper installation qualifications as well as the proper operator qualifications.*

19.6. ½" and ¾" plastic service lines may be repaired as long the proper qualifications are possessed. Ensure you have access to the Questar Standard Practices listed in paragraph 20.

19.7. Complete any necessary forms/reports.

20. REQUIRED QUESTAR STANDARD PRACTICES FOR REPAIRING ½" AND ¾" PLASTIC SERVICES

20.1. Ensure the following standard practices are available when making repairs to ½" and ¾" plastic service lines.

20.2. 1-01-01 Designing Plastic Piping Systems.

20.3. 2-17-02 Excavating and Backfilling.

20.4. 2-31-01 Installing and Hot Tapping with Bolt-On Tapping Tee for Plastic Pipe.

20.5. 3-00-04 Pre-Testing IHP Repair Pipe.

20.6. 2-33-01 Squeezing off Plastic Pipe.

20.7. 5-00-02 Repair Procedures for Damaged Plastic Pipe and Fittings.

20.8. 5-00-09 Dissipating Static Electrical Charges on Plastic Pipe.

20.9. 5-02-01 Repairing½" CTS and 3/4" IPS Plastic Pipe with Permasert Repair Couplings.

20.10. 8-10-3 Selecting, Using and Maintaining Fire Suits.

20.11. 8-10-04 Protective Clothing Program.

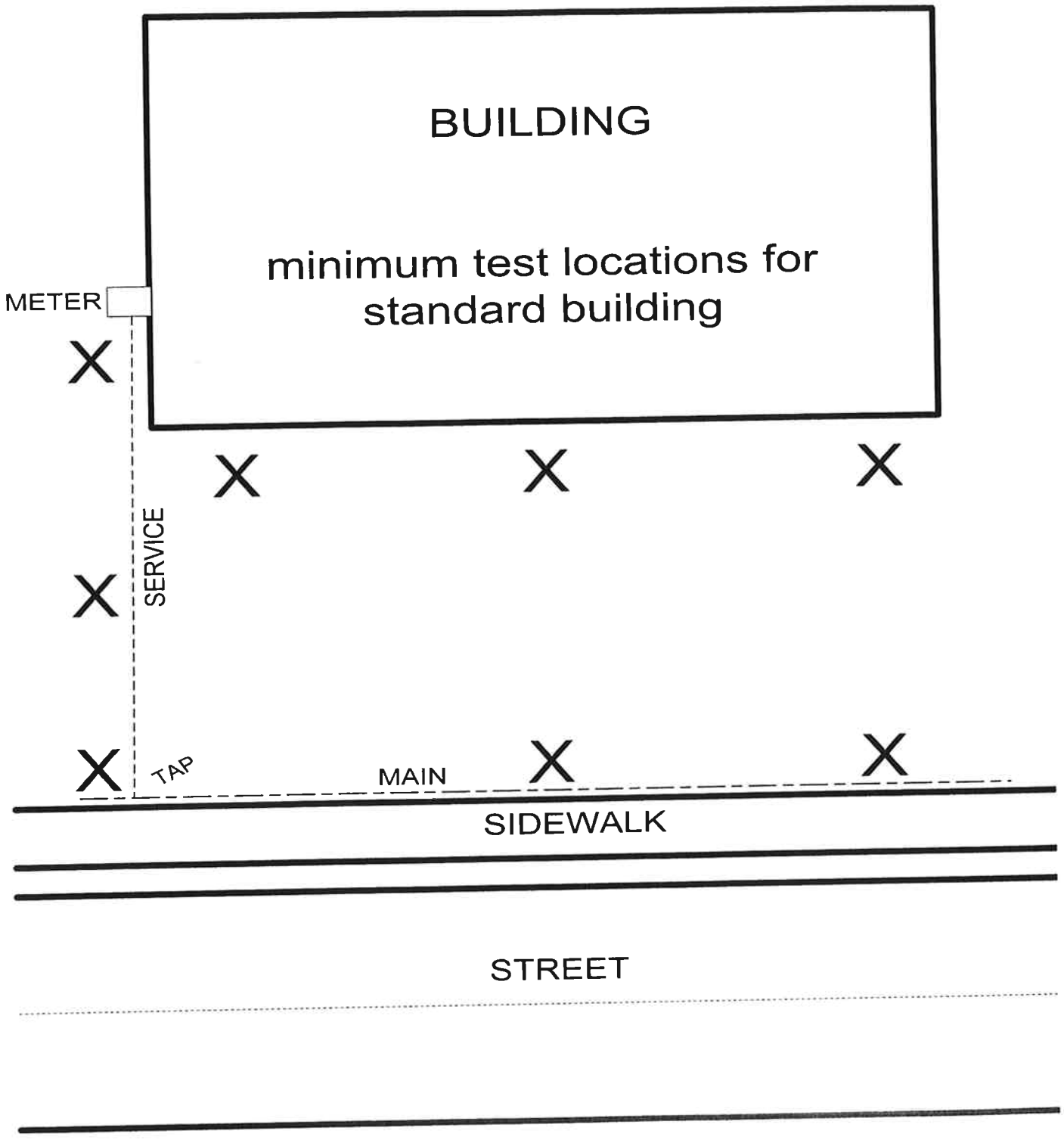

Figure 1

Note: If operations representative has computer access to mapping system, they will be required to locate tap and bar test that location.

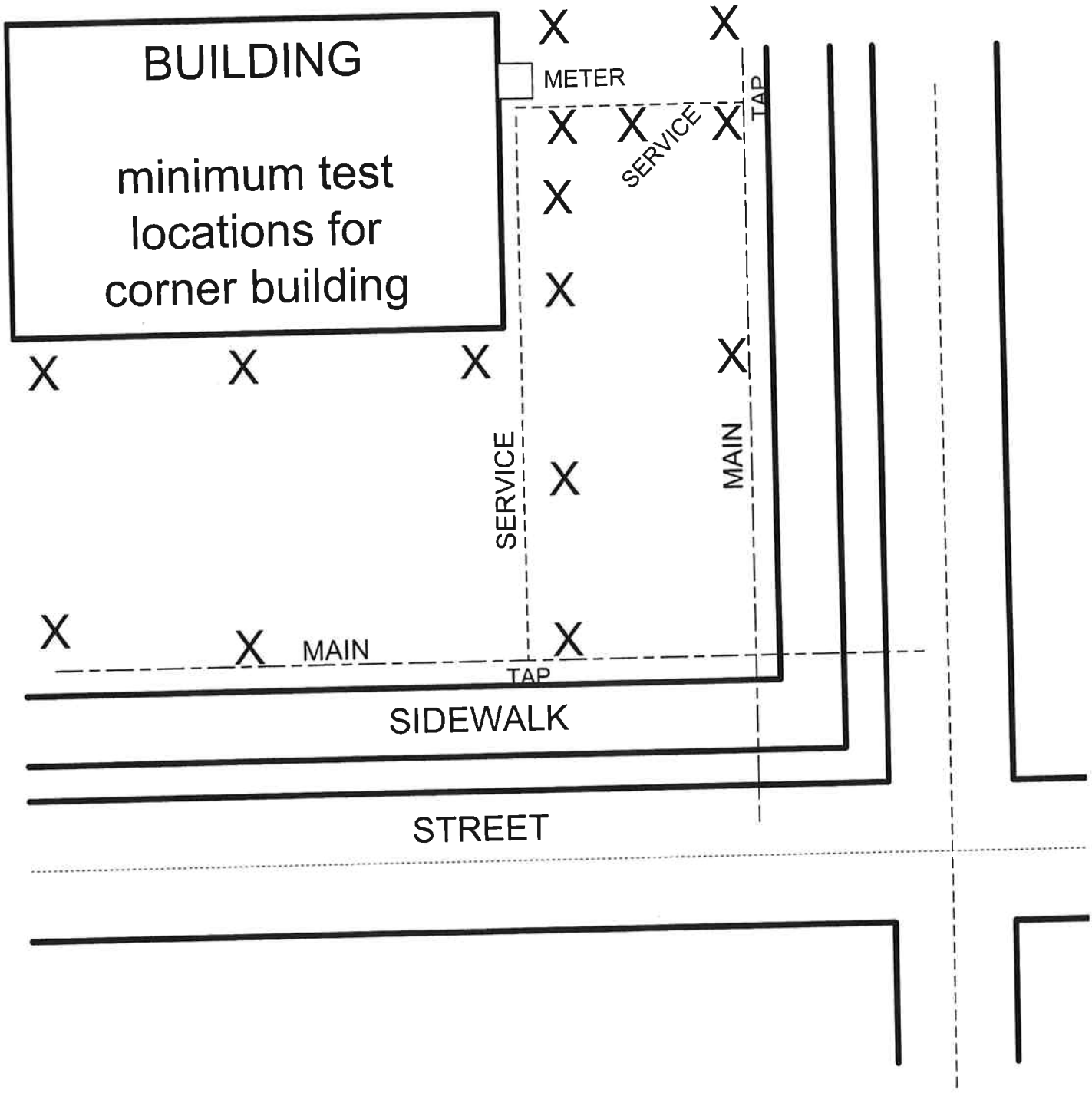

Figure 2

Note: If operations representative has computer access to mapping system, they will be required to locate tap and bar test that location.

WHAT IS CO AIR FREE MEASUREMENT?

The CO Air Free unit of measurement is computed from the CO and O_2 measurements. It is a concept for determining the amount of CO present in a sample by compensating for the excess air provided by the burner. Excess air from a burner dilutes the products of combustion and causes a test for CO to be *understated*. **A CO air free measurement eliminates the excess air dilution.**

To determine the amount of CO on an air free basis first measure the amount of O_2 and CO present in the sample, and then calculating by the equation below:

$$\frac{20.9}{(20.9 - O_2)} \times CO = CO \text{ Air Free}$$

ANSI Standards specify appliance emissions using ppm CO air free as the unit of measurement.

ANSI Z21.2 **American National Standards Institute**

Maximum concentration **(200 ppm)** allowed from an unvented and vented space heaters, wall furnaces and natural draft water heaters when measured on an air-free basis.

Maximum concentration **(400 ppm)** allowed in flue gases of furnaces, domestic boilers, power and direct vented water heaters, fireplace inserts and gas logs when sampled on an air-free basis.

Maximum concentration **(800 ppm)** allowed from an unvented gas oven, when measured on an air-free basis.

Figure 3

Table 20: ANSI STANDARDS For AIR FREE CO READS		
CODE	APPLIANCE	PPM
Z21.1	Household cooking appliance	800
Z21.5.1	Domestic clothes dryer	400
Z21.5.2	Commercial clothes dryer	400
Z21.10.1	Domestic natural draft water heaters Direct vent / induced draft	200 400
Z21.10.3	Natural draft water heaters with input over 75,000 btu Direct vent / induced draft	200 400
Z21.11.1	Vented room heater	200
Z21.11.2	Unvented room heaters	200
Z21.13	Low PSI steam and hot water boilers	400
Z21.17	Domestic conversion burner	400
Z21.40.1	Air conditioner	400
Z21.44	Direct vent wall furnace	400
Z21.47	Central furnaces	400
Z21.48	Floor furnaces	400
Z21.49	Vented wall furnace	200
Z21.50	Decorative appliance	400
Z21.55	Sauna heater	200
Z21.56	Pool heater	200
Z21.58	Outdoor cooking appliance	800
Z21.60	Decorative appliance (gas logs) for installation in vented fireplace	400
Z21.64	Direct vent furnace	400
Z21.88	Vented gas fire place heater	
	- gravity vent	200
	- direct vent	400
	- induced draft	400
Air Free CO Standards for Commercial Gas Appliances		
Z83.6	Infrared heaters	400
Z83.9	Duct furnaces	400
Z83.11	Range and unit boiler	800
Z83.12	Baking / roasting ovens	800
Z83.13	Deep fat fryers	800
Z83.14	Counter appliances	800
Z83.15	Kettles / steam / stern cookers	800

Flame Ionization Detector
Written Test Answers – Do Not Distribute (47)

1. In a walking survey, how far off the ground should the tip or cone of the sample collection wand be held?

   A. At least 6 inches
   B. At least 12 inches, since natural gas rises
   C. As close to the ground as possible, but not more than 2 inches

2. The FID unit can be used in an explosive environment.

   TRUE ***FALSE***

3. What gases make up the fuel gas used in the FID?

   A. Methane and nitrogen
   B. Methane and hydrogen
   C. Hydrogen and nitrogen
   D. Natural gas and air

4. How does the operator know when the FID is detecting gas?

   A. The flame gets higher
   B. The handle gets hot
   C. The sensitivity control increases then decreases
   D. An audible alarm will sound or the meter will read higher

5. It is determined that a house must be evacuated. Your actions are to: (AOC)

   A. Knock on the door to inform the occupants of the evacuation. You can then enter the house with an FID unit
   B. Knock on the door to inform the occupants of the evacuation. The occupants are not at home. Shut off the service and proceed to the next house
   C. Knock on the door to inform the occupants of the evacuation. You ask the occupants to turn off all lights as they exit. You move on to the next house