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LAST REVIEW DATE:	REVIEW CYCLE:
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SPECIFICATION: **G-11809-28b**

★ **TITLE:** **OUTSIDE GAS LEAK REPORTING, CLASSIFICATION, SURVEILLANCE, REPAIR AND FOLLOW-UP INSPECTION**

VOLUME: **1 and 10**

REGISTRATION NO: **GAS0124**

TARGET TRAINING GROUPS: **Gas Distribution Services (GDS), Emergency Response Force (ERF), Gas Construction, Leak Survey and Gas Emergency Response Center (GERC)**

Rev 28a – Restored Section 5.3 (definition of "Building") inadvertently deleted. (10/27/10)

Rev 28b – Added Section 6.3 (C). Corrected formatting in Section 6.4 and Section 6.15. (10/28/10)

REVISIONS: (See ★)

1)	Cover Page	-	Revised title of specification.
2)	Section 1.0	-	Changed "procedure" to "specification."
3)	Section 2.0	-	Changed title of New York State code.
4)	Section 4.2	-	Reworded for clarity.
5)	Section 5.7	-	Added reference to Section 5.12.
6)	Section 5.11	-	Eliminated section regarding manhole, terminal, vault from prior revision and incorporated into Section 5.19. Renumbered subsequent sections.
7)	Section 5.12	-	Added provision for no LHR and protection test points.
8)	Section 5.19	-	Reworded for clarity and expanded list of examples. Added tunnel and vault from previous Section 5.11.
9)	Section 6.1	-	Added verbiage on Code MuRRE.
10)	Section 6.4 (F)	-	Reworded for clarity.

(Continued)

11)	Section 6.4 (J)	-	Added new section covering use of PEDs.
12)	Section 6.5 (I)	-	Added new section covering tools and equipment check list.
13)	Section 6.8 C	-	Deleted Source Code 49 and added Leakage Survey.
14)	Section 6.12	-	Reworded for clarity.
15)	Section 8.8	-	Reworded for clarity.
16)	Section 10.1 (D)	-	Reworded for clarity and added reference to Section 6.12.
17)	Section 10.1 (G)	-	Reworded for clarity.
18)	Section 11.0 (C)	-	Reworded for clarity and added reference to Section 6.12.
19)	Section 12.1	-	Reworded for clarity.
20)	Section 14.1	-	Reworded for clarity and added reference to Section 6.12.
21)	Section 16.2 (B)	-	Added "building POEs".
22)	Section 16.2 (C)	-	Added reference to Section 6.12.
23)	Section 16.4 (A)	-	Added reference to Section 6.12.
24)	Section 16.4 (C)	-	Eliminated section from previous revision and combined with Section 16.4 A.
25)	Section 16.6 (C)	-	Added reference to Section 6.12.
26)	Section 18.2	-	Reworded for clarity and added reference to Section 6.12.
27)	Section 22.0	-	Updated title of G-11837.

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Gas Operations Standards

TITLE: OUTSIDE GAS LEAK REPORTING, CLASSIFICATION, SURVEILLANCE, REPAIR AND FOLLOW-UP

EFFECTIVE DATE: September 27, 2010

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TITLE: OUTSIDE GAS LEAK REPORTING, CLASSIFICATION, SURVEILLANCE, REPAIR AND FOLLOW-UP INSPECTION

★ 1.0 SCOPE

This specification provides guidelines and requirements for processing outside gas leaks from the time they are reported or discovered through their classification, surveillance, repair, and follow-up inspection.

★ 2.0 LEGAL REQUIREMENTS

This specification is in full compliance with the applicable sections of:

- Code of Federal Regulations Title 49, Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards"
- Official Compilation of Codes, Rules and Regulations of the State of New York (NYCRR) Public Service Part 255, "Transmission and Distribution of Gas"

3.0 ORGANIZATIONS APPLICABLE

Gas operating areas in the Bronx, Queens, Manhattan, and Westchester, Leakage Survey, and the Gas Emergency Response Center (GERC).

4.0 RESPONSIBILITY

4.1 Gas Distribution Services (GDS), Gas Construction, and Leakage Survey personnel trained, experienced and operator qualified in leakage work shall investigate and classify gas leaks.

★ 4.2 Follow-up, recheck, and verification recheck inspections of gas leak repairs shall not be performed by the organization that made the repairs (e.g. Gas Construction). Only operator-qualified personnel in leak investigation and classification shall be used.

5.0 DEFINITIONS

5.1 Annually – At intervals not to exceed 15 months but at least once each calendar year.

5.2 Barholing – Part of the repair process, consisting of drilling holes (usually made with a pneumatic or hydraulic jackhammer.) Once a barhole is made, then at least one repair shall be made before the leak can be closed out or downgraded.

★ 5.3 Building – A structure which is regularly or periodically occupied by people.

5.0 **DEFINITIONS** (Continued)

5.4 Follow-Up Inspection – An investigation conducted at least 14 days after but within 30 days of a leak repair. This investigation is to validate that the repair has satisfied the migration pattern and appropriate test point readings on the Leak History Report and that it has eliminated the hazards identified.

5.5 General Atmosphere – The open air inside of a building.

5.6 Indication – Any unsustained deviation on a properly calibrated leak detection device.

★ 5.7 Inside Leaks - Gas leaks originating from extension piping, meter piping, house piping, or connected gas appliances. (See Section 5.12)

5.8 Investigation – Initial activities performed by GDS, ERF, Gas Construction or Leakage Survey to determine the extent (or migration) and classification of a gas leak (e.g. checks of subsurface structures and pogo stick activity.)

5.9 Leak Detection Device (LDD) - A New York State approved and calibrated electronic instrument which is used to detect natural gas and carbon monoxide.

5.10 Leak History Report (LHR) - The form (50-13R) or electronic equivalent in the Computer Dispatch System used to record the history of an outside gas leak from the initial investigation to the final follow-up inspection, including all repair efforts.

5.11 Migration Pattern – Test points indicating the perimeter of the leak on the 50-13R (LHR) where 0% gas is obtained on a leak detection device. All subsurface structures (SSS) within the migration pattern shall be tested and documented on the 50-13R.

Note: The leak migration pattern shall not be shown in the street area of the LHR.

5.0 **DEFINITIONS** (Continued)

★ 5.12 Outside Leaks - Gas leaks originating from mains or service piping outside the foundation or building wall.

Leaks originating from above-ground customer-owned piping or equipment (e.g. meter, regulator, barbecue) shall be treated and documented as inside gas leaks. No LHR is required in this case. Protection test points shall be documented on the inside leak report/template.

5.13 Paved Area - An area which is continuously paved from the curb to the wall of a building (including tree plots.) An unpaved area is not continuously paved within these limits.

5.14 Pinpointing – Activities performed by Gas Construction or ERF to determine the source of the leak (e.g. barholing.)

5.15 Protection Test Point – A test point(s) taken to confirm that the classification as indicated on the LHR is not of a greater hazard and/or the migration pattern has terminated, or the classification has not changed. All buildings shall have a protection test point (See Section 16.0).

5.16 Reading – Any sustained display on a properly calibrated leak detection device. All natural gas readings are shown as a percentage of gas-in-air.

5.17 Recheck – The reinvestigation of an outside leak complaint where no gas readings (Type 4) were found on the initial investigation or where no gas readings were found during the last surveillance.

5.18 Residential Service - A service supplying a building of one-to-three families.

★ 5.19 Subsurface Structure (SSS) – Underground structures in the sidewalk or street to access a facility or system, or that a person can physically enter. Examples include, but are not limited to, tunnels, vaults, electric manholes and service boxes, steam manholes, sewer manholes, cable manholes, telephone manholes, fire department manholes, fire alarm pull boxes and traffic signal control boxes. SSSs exclude water main or service valve boxes that consist of only a chimney and do not require physical entry to operate.

★ 5.0 **DEFINITIONS** (Continued)

5.20 Surveillance – A periodic survey using a leak detection device to determine if the potential hazard as indicated on the LHR has changed, requiring the reported leak to be reclassified.

5.21 Test Points – Any point that is investigated with a leak detection device for the purpose of determining leak migration, leak classification, or leak of greater hazard.

5.22 Transmission Main - A gas pipeline operating at 125 psig and above.

5.23 Verification Recheck – The reinvestigation of a Type 1, 2A, 2M, or 2 leak that has been downgraded without repair to confirm the lower classification.

6.0 REPORTING AND RESPONDING TO GAS LEAKS

★ 6.1 Any gas leak, gas odor or damage to gas facilities reported to the Company shall be responded to promptly by qualified Company personnel.

A Multiple Resource Response Event (Code MuRRE) shall be declared by the GERC for the following conditions:

- Probable combined commodity event
- Two or more calls on the same block, in the same vicinity
- Atmospheric readings in buildings of >=.5% that cannot be vented quickly
- Atmospheric readings in two or more buildings
- Type 1 readings in two or more subsurface structures
- Type 1 reading in a single subsurface structure that does not quickly vent below a Type 1 condition
- Report of a strong odor from a Reliable Source (as defined in specification G-11850)
- Inside and outside damages (not secured by qualified gas personnel)
- Other situations requiring an escalated field response

NOTE: If field supervision is not present on location, the GERC Operating General Supervisor (OGS) will take control of the event. The OGS will be in direct contact with the field mechanic who will provide regular updates directly to the OGS as the situation progresses.

6.0 **REPORTING AND RESPONDING TO GAS LEAKS** (Continued)

Gas Emergency Response Center

6.2 Based on the initial report, the GERC shall promptly assign qualified personnel to the reported location.

NOTE: Gas odors, gas leaks and gas damages are to be dispatched on a priority basis. All available resources should be considered when dispatching crews to respond to gas odor, gas leak and gas damage complaints. For inside and outside damages, GERC shall also request Fire Department assistance. If the inside or outside damage has already been secured and made safe by gas qualified personnel (Company or Contractor personnel), then GERC will not request the Fire Department's assistance.

6.3 Based upon a report from Company personnel (including Company Contractors), Fire Department, Police Department, emergency response personnel, hospital or school officials, GERC shall:

A) Assign additional qualified personnel and request Fire Department response, if not already on location, to the reported location and inform operating area supervision when there is: a report of a strong odor, a combined event (e.g. gas and electric), two or more odor calls on the same block, inside or outside damages, or based upon the severity of the condition described.

NOTE: The GERC shall be prepared to provide the location of gas and electric subsurface facilities so that it is available to the responder upon arrival at the scene.

B) Provide information on Company SSS and electric facilities, and provide guidance and support if gas readings are found in any buildings or SSS by the Fire Department prior to arrival of Company personnel **or** when field forces advise GERC of a leak requiring immediate and continuous action.

★ C) Provide electric service information for adjacent buildings for investigation and notify operating area supervision if a gas reading of 4% or greater is detected at the point of entry (POE) of an electric duct in a building.

6.0 REPORTING AND RESPONDING TO GAS LEAKS (Continued)

Initial Response

★ 6.4 Actions to be taken when responding to a reported gas leak are as follows:

A) Note the time of arrival at the location of reported leak and communicate the arrival time to the GERC as soon as practical.

B) If possible, learn the nature of the problem from the person who reported the leak.

C) When necessary, request the GERC to provide information on Company SSS and electric facilities.

D) Upon arrival, contact the GERC immediately if EMS, Police, Fire Department, OEM or news media are at the scene.

E) Before entering a premise, verify that a "clear access" problem does not exist at the location by checking the Customer Operations Clear Access Tracking System (CATS).

★ F) Verify proper operation of equipment (including the combustible gas indicator (CGI) or other approved leak detection device and flashlight) in a non-gaseous environment.

NOTE: This equipment shall be turned on prior to entering buildings.

G) Do not operate any electrical switches, including doorbells. For apartment buildings, make every attempt to gain access without ringing the downstairs apartment buzzer.

H) Identify the source of the odor.

I) Establish if the cause of the complaint is a natural gas leak or a condition related to gas usage. If it is established that the cause of the complaint is not due to a natural gas leak or a condition related to gas usage, an attempt shall be made to identify the cause of the complaint.

6.0 **REPORTING AND RESPONDING TO GAS LEAKS** (Continued)

★ J) Personnel shall not use personal electronic devices (PEDs) (e.g. cell phones, Blackberries, iPods) while performing tasks, or working with someone performing tasks described in this specification, or while in other situations in which they may be distracted and pose a safety risk to oneself or others.

Exception: It is acceptable to use Company-issued intrinsically safe radios or cell phones to communicate with the GERC, Gas Control or supervision to request assistance or to report findings.

6.5 Additional measures to be taken, when necessary:

A) Test all openings in sidewalk, street, inside foundation wall where gas can vent from.

B) Cordon off the area.

C) Shut off sources of gas and/or ignition.

D) Test for stray voltage as appropriate.

E) Call for assistance.

F) Vent manholes and other subsurface structures.

G) Investigate gas migration from manholes and other subsurface structures into buildings as required.

H) Keep the GERC informed.

★ I) Prior to use, ensure that your vehicle has all of the proper tools and equipment. The check list can be found in Outlook in: Public Folders/Con Ed Co of NY/Gas Operations/GA – Gas Specifications/Tools and Equipment Check Lists.

6.6 Request the Chem Lab obtain a gas sample, and perform an analysis, if leaking gas or vapor cannot be positively identified.

6.7 Outside leaks shall be classified according to an investigation at the scene to determine the leak migration pattern and degree of potential hazard. (See Sections 9.0 through 15.0)

6.0 **REPORTING AND RESPONDING TO GAS LEAKS** (Continued)

6.8 Gas leaks found by Company forces qualified in Outside Leak Investigation/Classification shall be reported to the Gas Emergency Response Center (GERC) as follows:

A) For Type 1 and 2M leaks: As soon as practical.

B) Leaks that originate inside a regulator station (manhole) need not be reported to the GERC. Pressure Control shall internally record the discovery of and the repair of any leaking equipment within the manhole.

★ C) Leaks that originate outside the regulator station (manhole) shall be reported to the GERC. GDS or Leakage Survey will investigate, and prepare a LHR.

Actions by Responding Field Personnel

6.9 Any indication/reading of gas found inside a building requires immediate and continuous action until the hazard is eliminated. When a leak investigation leads inside to the basement, check all POEs in the vicinity of the outside readings. (Refer to Specification G-11837.)

6.10 During the initial leak investigation when pogo stick holes fill up with water or there is no penetration, additional investigation is required at appropriate outside subsurface structures and a check of the outside foundation wall (or inside foundation wall and POEs), and protection test points as appropriate.

6.11 Any reading on a leak detection device within 5 feet of a building wall (including buildings with basements vaulted to the curb) shall require building access to check the inside foundation wall and POEs. This must be done prior to checking the outside foundation wall and completing the migration pattern. Also check the outside foundation wall of the buildings on both sides of the building with readings within 5 feet of the building wall, where practical. Record all readings on the LHR. Contact the Fire Department via GERC for access if required.

6.0 **REPORTING AND RESPONDING TO GAS LEAKS** (Continued)

★ 6.12 Any gas leak in a SSS shall be investigated for gas migration into adjacent and connected SSSs and buildings. In all cases, a minimum of three (3) buildings on both sides of the street shall be checked for gas migration (In cases where there are less than three (3) buildings on one or both sides of the street, then at a minimum, all of those buildings shall be checked for gas migration).

NOTE: If readings are found in a SSS in an intersection, at a minimum, the building on each corner shall be checked for gas migration.

If a reading of 4% or greater is obtained, vent the subsurface structure (SSS) immediately and investigate adjacent and connected buildings on both sides of the street for gas migration prior to completing the migration pattern. Upon arrival of additional Company personnel and/or Fire Department to assist with investigation of buildings and SSS, the first responder shall continue completing the migration pattern. For leaks which require immediate and continuous action, contact GERC for information on gas facilities and buildings and Company SSS connected to electric facilities. Utilize Byers for all other conditions.

NOTE: If gas readings are found in any buildings or Con Edison SSS by the Fire Department or other agency prior to arrival of Company personnel, GERC shall provide information on Company SSS and electric facilities to those agencies.

If any branch of an underground electric service or looped electric service (i.e. electric conduits running from one building to one or more buildings) passes through the gas migration pattern, access to all buildings supplied by the electric service or looped electric service shall be gained, regardless of whether or not the electric SSS supplying the electric service or looped electric service has any reading.

When access cannot be made to buildings with suspected gas migration, request assistance from the Fire Department via GERC to gain access. Continue investigation of connected manholes/service boxes until readings of 0% gas are obtained. For gas readings in sewer manholes, all buildings on both sides of the street in between sewers that have 0% gas readings shall be accessed and checked for gas migration.

6.0 **REPORTING AND RESPONDING TO GAS LEAKS** (Continued)

If gas readings are found in telephone or other ducted SSSs (non-Con Edison electric), continue investigation of connected manholes/service boxes until readings of 0% gas are obtained. Also check connected buildings for gas migration. If adjacent SSSs are not visible or maps of these systems are not available, document this on the LHR and access a minimum of three buildings on both sides of the street that are in front of the SSS with readings to check for gas migration (In cases where there are less than three (3) buildings on one or both sides of the street, then at a minimum, all of those buildings must be checked for gas migration).

NOTE: If readings are found in a SSS in an intersection, at a minimum, the building on each corner shall be checked for gas migration.

If any gas reading is found in a building, check inside the buildings on both sides of the building with a reading, where practical. If gas readings are found in ducted systems and any reading is above 4% and cannot be vented below 4%, call the Fire Department for assistance (See Sections 6.13 J & K). Establish the complete migration pattern, which includes areas outside the manholes, service boxes, etc. (e.g. behind curb lines.) All work performed during the investigation shall be shown on the LHR. This includes documenting SSS within the migration pattern regardless of whether a 0% reading is obtained. If the investigation involves several leaks, separate ticket numbers and LHR may be issued.

In the event of a serious leak condition (e.g. strong gas odor, broken cast iron main, contractor damage, etc.) and there are SSS with suspected gas migration that cannot be accessed, every attempt shall be made to gain access to protect life and property. This may include using go-jacks to move vehicles, requesting additional Company resources for assistance, installing an air mover on an adjacent SSS, or excavating a vent hole to remove the hazard. If necessary, additional assistance from the Fire Department shall also be requested. In the event that this requested assistance is unavailable or slow to respond, every possible effort shall be made to remove the hazard.

6.13 Upon determining that a leak requires immediate and continuous action to protect life or property, a qualified Company representative shall take the following actions, as appropriate, until the condition is no longer hazardous.

6.0 **REPORTING AND RESPONDING TO GAS LEAKS** (Continued)

A) Determine the migration of leaking gas into or near buildings and/or underground facilities.

B) Establish a made-safe condition by venting enclosed spaces (including removing manhole covers where gas is entering sewer or duct systems,) sealing points of gas entry and shutting off gas service. Vent SSSs and check buildings before continuing with the migration pattern.

C) Evacuate buildings, including yourself, when gas readings in the general atmosphere cannot be quickly brought down below 0.5%. Request assistance from the Fire Department, if necessary, and instruct them to evacuate residents if an odor of gas or any gas instrument reading is obtained.

NOTE: For multi-family or large commercial buildings, evacuate the affected area(s), including yourself, when gas readings in the general atmosphere cannot be quickly brought down below 0.5%. Request assistance from the Fire Department, if necessary.

D) Request assistance from the Fire Department (if not already on location) to evacuate buildings if atmospheric readings that cannot be quickly reduced below 0.5% or eliminated, are found in multi-family buildings or if atmospheric readings are found in more than one building.

E) Request continued assistance from the Fire Department or other agencies (if already on location) as long as needed to protect the safety of residents, the public, Company personnel, other responders and property until the full extent of the leak hazard has been assessed and the situation has been made safe.

F) Request assistance from additional Company forces and the Fire Department via the GERC if any gas readings are found in two or more buildings or high (4% or greater gas in air) readings are found in two or more SSS. (See Sections 6.13 J and K)

6.0 **REPORTING AND RESPONDING TO GAS LEAKS** (Continued)

G) Request assistance from additional Company forces and the Fire Department via the GERC when first responder identifies strong atmospheric gas odor upon arrival. (See Sections 6.13 J and K)

H) Request assistance from additional Company forces and the Fire Department via the GERC to vent and/or evacuate buildings prior to completing the migration pattern, if a SSS with high readings (greater than 4% gas in air) cannot be vented. (See Sections 6.13 J and K)

I) Request assistance from additional Company forces and the Fire Department via the GERC to vent and/or evacuate buildings prior to completing the migration pattern, if the gas readings in a vented SSS do not quickly fall below 4% gas in air. (See Sections 6.13 J and K.)

J) When a leak investigation in an area with one and two story buildings requires evacuation of multiple residences and the FD has not yet arrived, the megaphone should be used with the following message: ***"If you smell gas, leave the building immediately and take others with you. Proceed to the next street."***

If available, Fire Department systems should be used to deliver such evacuation messages.

K) As needed, direct additional Company personnel and the Fire Department to take appropriate actions to protect life and property such as checking inside nearby buildings and rechecking them, or assisting in removing manhole covers. Then determine the migration pattern.

L) Periodically recheck buildings and SSS where gas readings have been found and not immediately eliminated.

M) In the event of a serious leak condition (e.g. strong gas odor, broken cast iron main, contractor damage, etc.), periodically check buildings and SSS in the area, as conditions can rapidly change. This includes checking buildings and SSS where no gas readings were originally found.

6.0 **REPORTING AND RESPONDING TO GAS LEAKS** (Continued)

N) Report information and actions taken to supervisor, to the GERC and the relieving crew.

NOTE: When Company personnel and the Fire Department (or other agencies) respond to the location of a reported gas leak or odor, they shall exchange specific information regarding buildings and other structures investigated for the presence of gas and the severity of the findings.

O) Notify the GERC when DOT/NRC, PSC, and/or DEP reporting criteria is met. See G-11850 for further details.

Carbon Monoxide

6.14 If a carbon monoxide (CO) reading of 35 PPM or more is found while performing an outside leak investigation, check nearby electric manholes/service boxes for possible CO source. If positive CO readings are found, immediately notify GERC for assistance from Electric Operations. When CO readings are obtained in the ground or SSS, perform a leak investigation to determine the extent of migration and take remedial action as needed. If CO readings are identified within buildings, refer to Specification G-11837.

Gas Leaks in the Vicinity of a Transmission Main

★ 6.15 Outside gas leaks in the vicinity of a transmission main (including a service or the inlet to a regulator station fed from a transmission main), shall on initial receipt be classified as Type 1 leaks. In addition:

A) Immediate and continuous investigation/pinpointing shall be undertaken to determine if the transmission main is the source of the leak.

6.0 **REPORTING AND RESPONDING TO GAS LEAKS** (Continued)

B) If it is determined that the transmission main is the source of the leak, immediate and continuous action shall be taken until the source of the hazard is removed (see Section 7.0 and 10.0.) This action may include the closing of one or more valves or initial excavation and repair. If pinpointing determines the leak is centered over a distribution main and does not involve the transmission main, no actions to the transmission main are required.

C) If the immediate and continuous pinpointing centers on a parallel distribution main **and** there are no readings in the immediate area of the transmission **and** the leak is not otherwise classified as a Type 1 (as defined in Section 10.1 A through G), the local Gas Construction Section Manager may approve venting or other appropriate action(s). However, excavation and repair shall begin no later than the next business day. When such authorization is given, the leak shall be surveilled in the interim on each shift.

D) If gas migration still exists after the repair or the leak repair fails follow-up inspection, the leak shall be reclassified as a Type 1 until the local Gas Construction Section Manager has reviewed the leak to ensure that it is not on a transmission main. If after review, the leak is determined not to be on a transmission main, the leak shall be classified to the appropriate category and be surveilled accordingly. If the remaining leak is classified as a Type 3, it shall be surveilled at least twice per year.

E) Any subsequent leak report or call-in shall initially be treated as a Type 1 and Sections 6.15 A through C shall be followed (including at least one additional repair.) *Duplication to prior leaks is **only** permitted with the approval of the local Gas Construction Section Manager.*

NOTE: All approvals by the local Gas Construction Section Manager stated above, shall be documented on the LHR.

7.0 OUTSIDE LEAKS DISCOVERED ON A GAS TRANSMISSION MAIN

If it is determined that the transmission main is the source of the leak:

7.1 If the condition poses an **immediate hazard to life or property** (such as blowing gas or ignition):

A) Field forces shall immediately contact the GERC to identify the location of the valves to isolate the section;

B) Field forces shall immediately close the valves. If ROV(s) can be utilized, Gas Control (GC) shall immediately close the valves;

C) The GERC and GC shall determine the impact to the system and the number of customer outages associated with the shutdown.

7.2 If the condition **does not pose an immediate hazard to life or property**:

A) Field forces shall immediately contact the GERC to identify the location of valves to isolate the section;

B) The GERC, GC and Gas Transmission Engineering shall review the matrix of affected customers to determine if and when the transmission main can be isolated (i.e. valved off) and if necessary, the pressures reduced.

C) If the transmission main can be isolated (i.e. valved off) with minimal or no impact to customers, field forces shall close the valves. If ROV(s) can be utilized, GC shall close them.

D) Area gas operations shall determine whether the segment needs to be reduced in pressure after isolation and if this needs to be done before any excavating is started. This shall be done in consultation with Gas Transmission Engineering or Pressure Control – sometimes with both.

E) If neither a shutdown nor pressure reduction can be implemented without significant customer impact, crews shall be assigned to man valves and hand excavation shall be used to expose the leak.

F) The GERC and GC shall follow the particular case for the affected transmission main segment to assess and mitigate the impact to the system and the number of customer outages associated with the shutdown, which may be required to affect repairs.

7.0 OUTSIDE LEAKS DISCOVERED ON A GAS TRANSMISSION MAIN (Continued)

7.3 Upon completion of repairs, the GERC and GC shall be notified of the completed work. GC shall return the system to normal. This shall be in consultation with Gas Transmission Engineering or Pressure Control – sometimes with both.

NOTE: If excavation determines that the transmission main is not the source of the leak, the local Gas Construction Section Manager can authorize the reopening of the valve(s) under the direction of GC.

7.4 If the suspected leak is thought to be on a non-Company owned transmission (i.e. Algonquin, Tennessee, Iroquois) main, the owner shall be notified immediately by GC and requested to reduce pressure or shutdown in the same manner as for Company-owned mains.

8.0 LEAK REPAIRS AND GAS SUPPLY SHUTOFFS

8.1 A) The Company is required to repair leaks on residential service pipes. However, leaks on customer-owned pipe (beyond the property line) may be repaired at the customer's expense when conditions warrant.

B) Leaks on commercial and industrial service pipes shall be repaired at the Company's expense for the Company-owned portion and at the customer's expense for the customer-owned portion.

8.2 Avoid, whenever practical, applying a temporary repair.

8.3 Where an outside leak presents no immediate hazard and gas service shutoff will cause a severe hardship, supervisory personnel shall attempt to arrange for continued service until repairs are completed.

8.4 Prior to completing a follow-up inspection, all barholes shall be filled, and all excavations backfilled and restored. Excavations in paved areas shall be permanently or temporarily paved.

8.5 Prior to downgrading a leak, all barholes shall be filled and all excavations backfilled.

NOTE: This does not apply to the repair of leakage caused by contractor or third party damages.

8.0 LEAK REPAIRS AND GAS SUPPLY SHUTOFFS (Continued)

8.6 Prior to downgrading a repaired Type 1 leak where aerating has been performed, an additional surveillance shall be performed the day following aerating.

8.7 For Types 2A 2M, or 3 Leaks in Electric Manholes:

When a Type 2A 2M, or a 3 leak is detected in a Con Edison electric manhole or service box without gas migration, the manhole/service box cover may be replaced with a vented manhole cover. The vented manhole cover will then be considered part of the manhole's normal condition.

A) After placement of the vented manhole cover, the leak shall be surveilled the following day, and if necessary repaired in accordance with Section 11.0, 12.0, or 14.0 of this procedure.

B) When the leak classification changes due to the placement of a vented manhole cover, the leak shall be surveilled the following day and again within a 7 to 14 day period.

C) If upon follow-up inspection, verification recheck or recheck, the initial leak classification warrants downgrading, the leak shall be downgraded in accordance with Section 17.1 of this procedure.

★ 8.8 Leaks that are found in the base of a street light shall be shown on the LHR as a test point and shall be investigated for gas migration into adjacent and connected substructures and other traffic lights.

8.9 Leaks found on compression couplings on buried 2" high pressure (15 to 99 psig) steel pipe that can be repaired by tightening, shall also be repaired with a mechanical sleeve, (e.g. Dresser Style 54), welded sleeve, (e.g. Dresser Style 220 or 220S) or Trident Seal (Class/Stock 342-4777).

9.0 LEAK SURVEILLANCE UNDER ADVERSE CONDITIONS

9.1 Under certain conditions, the interval between surveillances may need to be shortened where the potential for an increased hazard exists. Consider evidence of current major construction activity, settlement over facilities, winter conditions, etc.

9.0 **LEAK SURVEILLANCE UNDER ADVERSE CONDITIONS** (Continued)

9.2 During extended periods of frost, outstanding workable leaks should be evaluated to determine if the potential for a greater hazard exists. Additional surveillance should be performed based on proximity to buildings and level of gas-in-air readings. The Leakage Survey Section shall evaluate the level of frost by borough or municipality and shall advise the GDS Manager(s) to increase surveillance accordingly.

10.0 **TYPE 1 LEAKS**

10.1 A Type 1 leak is one which, due to its location and/or relative magnitude, constitutes a potentially hazardous condition to the public or buildings. A Type 1 leak requires an immediate effort to protect life and property. **Immediate and continuous** action shall be taken until the condition is no longer hazardous. Once the hazard is removed, completion of repairs shall be scheduled on a regular day-after-day basis, **or** the condition kept under daily surveillance until the source of the leak has been corrected. Type 1 leaks include, but are not limited to:

A) A leak resulting from contractor or outside source damage to a service or main shall require access to investigate the affected building(s). Immediate and continuous action shall be taken to check for gas leakage/migration from the damage. There is a possibility of multiple leaks and the underground migration of gas into nearby buildings including the possibility of broken pipes in foundation walls or basements due to the force of the damage. Establish the complete migration pattern. Test Point shots shall encompass the point of damage for main and service lines to ensure no leak migration has occurred and document all findings on LHR. For a damage to a service, refer to OJT GAS0139.

B) Any indication on a leak detection device of gas entering a building or a tunnel.

C) Any reading on a leak detection device within 5 feet of a building wall (including buildings with basements vaulted to the curb). A check at the outside foundation wall is required and shall be documented as a protection test point on the LHR.

★ D) Any reading of 4% or more on a leak detection device in a SSS Sampling shall be conducted with the structure in its normal condition (as nearly as physically possible). See Section 6.12.

10.0 **TYPE 1 LEAKS** (Continued)

E) Any leak which in the judgment of qualified personnel at the scene is regarded as potentially hazardous.

F) If, during an investigation, a condition is found which in the opinion of the qualified personnel may require immediate attention, they are to take appropriate action and notify their supervisor as soon as possible.

★ G) When a reading is received within 5 feet of the outside building wall, then a check shall be made on the inside foundation wall, building POEs, and building atmosphere prior to checking the outside foundation wall.

H) Any leak in the vicinity of a transmission main found during initial investigation. See Sections 6.15, 7.1, 7.2, 7.3, and 7.4.

I) If a leak on a transmission main is determined to be a fitting on a valve, the local Gas Construction Section Manager may approve venting or other appropriate action(s) to remove the immediate hazard and authorize repairs to begin no later than the next business day. When such authorization is given, the leak shall be surveilled in the interim on each shift.

NOTE: All approvals by the local Gas Construction Section Manager stated above shall be documented on the LHR.

11.0 **TYPE 2A LEAKS**

A Type 2A leak presents no immediate hazard to life or property but must be repaired within six (6) months of the time it was classified Type 2A and until repaired must be surveilled at intervals not to exceed two weeks. Type 2A leaks include the following:

A) In a Paved Area: Any reading of 10% or more, beyond 5 feet and within 30 feet of a building and inside the curb line.

B) In an Unpaved Area: Any reading of 20% or more, beyond 5 feet and within 20 feet of a building and inside the curb or shoulder of the road.

11.0 **TYPE 2A LEAKS** (Continued)

★ C) Any reading on a leak detection device greater than 1% but less than 4% in a SSS, taken with the structure in its normal condition (as near as physically possible). (See Section 6.12) If there is no access to one or more connected buildings or SSS, the leak shall be classified as a Type 2M (See Section 12.0). If access to connected buildings and SSS has been obtained and no readings are found, the leak shall be classified as a Type 2A.

12.0 **TYPE 2M LEAKS**

★ 12.1 A Type 2M leak includes any reading on a leak detection device less than 4% in a SSS that is connected to one or more buildings or SSS **and** there is no access to at least one of these connected buildings (e.g. access has been denied by the fire department or other municipal agency) or SSS (e.g. access can not be made due to an obstruction such as a dumpster, building construction or other items that cannot be easily moved). All positive 2M SSSs require investigation into buildings and/or SSSs connected to these structures.

A) Type 2M leaks shall be surveilled daily. Investigation shall continue as specified in paragraph 6.12. If access to connected building(s) or connected SSSs cannot be obtained, the leak shall remain a 2M.

B) Type 2M leaks can be reclassified (i.e. Type 2A or Type 3) and then surveilled accordingly once access has been gained to all buildings and SSSs.

C) Type 2M leaks shall be given a higher repair priority than Type 2A leaks if possible.

13.0 **TYPE 2 LEAKS**

A Type 2 leak presents no immediate hazard to life or property but must repaired within one year of the time it was classified Type 2 and until repaired must be surveilled at intervals not to exceed two months. Type 2 leaks include the following:

13.0 **TYPE 2 LEAKS** (Continued)

13.1 In a Paved Area:

A) Any reading below 10% beyond 5 feet and within 30 feet of a building and inside the curb line.

B) Any reading of 30% or more, beyond 30 feet of a building but within 50 feet of a building and inside the curb line.

13.2 In an Unpaved Area:

A) Any reading below 20% beyond 5 feet but within 20 feet of a building and inside the curb line or the shoulder of the road.

B) Any reading of 30% or more, beyond 20 feet but within 50 feet of a building and inside the curb line or shoulder of the road.

14.0 **TYPE 3 LEAKS**

Any leak not classified as a Type 1,Type 2A, Type 2M, or Type 2 shall be classified as a Type 3. A Type 3 leak is not immediately hazardous at the time of detection and can be reasonably expected to remain that way. However, Type 3 leaks shall be reevaluated during the next required leakage survey or annually whichever is less.

★ 14.1 A reading of 1% or less on a leak detection device in a SSS, taken with the structure in its normal condition (as near as physically possible.) Investigation is to continue into adjacent and connected buildings and SSSs until zero readings are obtained. (See Section 6.12) If there is no access to one or more connected buildings or connected SSS, the leak shall be classified as a Type 2M (See Section 12.0). If access to connected buildings and connected SSS has been obtained and no readings are found, the leak shall be classified as a Type 3.

14.2 Type 3 leaks in the vicinity of any transmission main shall be surveilled at intervals not exceeding 6 months.

15.0 TYPE 4 (NL)

15.1 When an outside leak investigation results in a type 4 no leak found condition, both a "zero" reading at the foundation wall and a "zero" reading at the curb line must be recorded on the LHR to confirm the Type 4 condition with buildings in the investigation area.

15.2 Non-Reportable Readings: Since an annual leakage survey of all mains is conducted, any sustained reading of 4% or less gas-in-air on a leak detection device at an isolated test point outside the curb line or shoulder of the road can be considered as a non-reportable reading except where found in SSSs.

15.3 Leaks of 4% or less found in a valve box during a valve inspection, with no migration, and shall be documented on the inspection form as "No Migration". A LHR is not required.

16.0 PROTECTION TEST POINTS

A protection test point is required to assure that a leak is not of a greater hazard or classification. All protection test points shall be recorded on the LHR. If there is no migration outside of a valve box, manhole, service box, or any isolated test point, "No Migration" shall be indicated on the LHR.

16.1 All Leak Classifications

A protection test point is required on the opposite side of the roadway behind the curb (or if no curb, then behind the point where the roadway ends), when practical (e.g., a street width up to 40 feet wide). Consideration must always be given to the possibility of the leak migration in any direction and take the appropriate protection test points in each direction and record such action on the LHR.

All buildings shall have a protection test point recorded on the LHR.

16.2 Type 1 leak

These readings will not change the classification but will better define the hazard.

A) Gas reading within 5 feet of a building – Protection test point shall be made at the outside foundation wall, inside foundation wall, building POEs and building atmosphere.

16.0 **PROTECTION TEST POINTS** (Continued)

★ B) Gas reading at the outside foundation wall – Protection test point shall be made at the inside foundation wall, building POEs and building atmosphere.

★ C) Gas reading of 4% or greater in a SSS in near normal physical condition as possible – Protection test points shall be made at the curb line, and in adjacent and connected SSSs. (See Section 6.12)

16.3 Type 2A Leak (not in a SSS)

A protection test point shall be made 5 feet from the building to assure that the leak is not of a greater classification.

16.4 Type 2A and 2M Leak (In a SSS)

Protection test points shall be made:

★ A) In adjacent and connected buildings and SSSs until 0% gas readings are obtained. (See Section 6.12).

B) At the curb line.

16.5 Type 2 Leak

A protection test point shall be made at one of the following points:

A) 5' from the building, if the migration pattern is within 20' (unpaved).

B) 5' from the building, if the migration pattern is within 30' (paved).

C) If the migration pattern is within 50' of the building, the protection test point shall be taken at one of the following points:

1) the 20' point (unpaved)

2) the 30' point (paved)

16.0 **PROTECTION TEST POINTS** (Continued)

16.6 Type 3 Leak

A protection test point shall be made at one of the following:

A) Behind the curb line if the gas is confined to the street area.

B) If the migration pattern is behind the curb or shoulder of the road, the protection test point shall be made at one of the following:

1) the 20' point (buildings with a 20' to 50' setback)

2) the 30' point or building wall if less than 30' (paved)

3) the 50' point

4) 10' beyond the peak of the migration (no buildings involved).

★ C) For Type 3 leaks in SSSs, a protection test point is at the curb line, all connected buildings and adjacent and connected SSS. (See Section 6.12)

16.7 Type 4 Leak (NL)

A protection test point shall be made:

A) behind the curb line, **and**

B) at the foundation wall.

17.0 **LEAK RECLASSIFICATION**

17.1 Prior to downgrading a workable leak (Type 1, 2A, 2M, or 2) without any repair, at least one additional surveillance at the normal interval is required to verify that a lower class of hazard exists. Except for leaks downgraded to Type 3 classification, which do not require a time limit for repair, if a leak is reclassified to a lower hazard level, the original date of discovery determines the time period for repair. In no case shall the time limit for required repair of any workable leak exceed one year from the date of discovery.

17.0 **LEAK RECLASSIFICATION** (Continued)

This requirement does not apply to leaks classified as Type 2, 2A or 2M based on consideration of frost conditions nor to leaks, at the time of discovery, classified at a higher level pending a further, more complete investigation of the leak hazard area.

17.2 When a leak is upgraded to a higher hazard level, the time period for repair is the remaining time based on its original classification or the time allowed for its new classification, whichever is less. This does not apply to leaks classified at a higher hazard level based on consideration of frost conditions or to leaks, at the time of discovery, classified at a lower level pending a further, more complete investigation of the leak hazard area.

18.0 **FOLLOW-UP INSPECTION OF REPAIRS**

18.1 Repair of a Type 1, Type 2A, or Type 2, or Type 2M leak shall be validated by means of a follow-up inspection at least 14 days after, but within 30 days following repair. A follow-up inspection is not required for the following situations:

A) Replacement of entire length of pipe, either direct buried or inserted. A partial replacement of a service must still be inspected.

B) Repair of leakage caused by contractor or third party damage.

NOTE: (A) & (B) apply provided that after repairs are made, a complete reevaluation of the leak area verifies no further indications of leakage exist, before the leak ticket is "closed out".

C) Abandonment of pipe.

D) Repair of a Type 3 leak.

E) Lubrication of a valve or tightening the packing nut which seals a leak that had not migrated beyond valve box.

★ 18.2 A repair that has failed follow-up inspection with Type 3 readings in a SSS requires a check in all adjacent and connected buildings and SSSs (See Section 6.12). If access cannot be obtained to ensure that buildings or SSS with readings prior to the repair are clear of gas, then leak classification reverts to a Type 2M. The action taken shall be documented on the LHR.

18.0 **FOLLOW-UP INSPECTION OF REPAIRS** (Continued)

18.3 When readings are found within the original migration pattern, the existing leak ticket shall be re-classified to the proper leak classification.

18.4 When readings are found outside the original migration pattern, the existing leak ticket shall be closed out and a new leak ticket generated.

19.0 **VERIFICATION RECHECK AND RECHECK**

19.1 Verification Recheck is the reinvestigation of a Type 1, 2A, 2M or 2 leak which has been downgraded without repair to confirm the lower classification. (See Section 17.1 for permissible time limits.)

19.2 Recheck is the reinvestigation of an outside leak complaint where no gas readings (Type 4) were found on the initial investigation or where no gas readings were found during the last surveillance.

A) 10% of the outside leaks where no gas readings (Type 4) were found on the initial investigation shall be rechecked.

B) Outside leaks where no gas readings were found during the last surveillance shall be rechecked within 14 days of the last surveillance. This does not apply to Type 3 leaks.

20.0 **DUPLICATION OF LEAKS**

When duplicating (AKA "duping") a leak to another leak, all test points with a positive reading shall be documented on the LHR.

21.0 **LEAK RECORDS**

21.1 The LHR, described in Specification G-11834, shall be used to depict the complete history of a leak.

21.2 Records shall be retained at least 3 years following final disposition of a leak, except all records pertaining to any transmission pipeline shall be kept for as long as the line remains in service. Copies of all records for leaks on transmission pipeline shall be sent to the Section Manager of Major Projects, Gas Transmission Engineering.

★ 22.0 REFERENCES

G-4530	-	Limiting Gas Use and Load Shedding During a Supply Curtailment or Emergency
G-11834	-	Leak History Recording and Monitoring
G-11837	-	Investigation of an Inside Gas Leak or Odor Call and Issuance of a Warning Tag
G-11850	-	Reporting Natural Gas Incidents, Evacuations, Major Service Interruptions, Exceeding MAOP and Carbon Monoxide Incidents
GAS0139	-	Requirement For a Minimum of Nine Test Points For a Service Damage
GAS0416	-	Stray Voltage Procedure