Gas Operations Field Leader Guide

02 Contractor Inspection
03 Reporting Unacceptable Materials
04 Pipe and Fitting Markers
05 Types of Right-of-Way
06 Inspection of Pipeline Maintenance Projects — T&S
07 Reporting Vented Gas 1 MMCF or Greater
08 Tracking and Reporting Vented Gas
09 Record Keeping, Retention, and Distribution
11 Maintenance Truck Inventory

Gas Operations Field Leader Guide

02 Contractor Inspection

Revised 10/01/2015

General

This Practice covers the responsibilities of the inspector in monitoring contractor work.

Inspector Duties

Monitor Work of Contractor

- Observe the contractor's work.
- Inform the contractor's supervisor on the job when any work is not done according to the following (where applicable):
    - Permits
    - Methods
    - Standards
    - Work orders
    - Policies
    - Contract provisions
- If the situation is not corrected:
    - Stop the job.
    - Advise the Company supervisor in charge.

DO NOT Supervise or Direct Contractor's Employees

When corrective action is needed, the inspector (or the Company supervisor in charge) works through the contractor's supervisor on the job.

Inspector's Guide

Before the job starts, the inspector:

- Receives a copy of the Guide
- Is given orientation as outlined in the Guide

Gas Distribution Services: Construction maintains the Guide

Gas Operations Field Leader Guide

03 Reporting Unacceptable Materials

Revised 10/01/2015

Purpose

This Practice provides a procedure for prohibiting the use of unacceptable materials and informing all Gas T&S Operating Areas, Gas T&S Engineering, and Purchasing Department of materials found unacceptable during use.

Documentation/Reporting

Report of Unacceptable Equipment or Material

Prepare when found unacceptable for intended use.

Field Leader

Prepare report for unacceptable materials on existing system.

- Original: Gas T&S Engineering Designee
- Copy: Operating Headquarters
- Copy: Purchasing Department

Gas T&S Field Construction Representative

Prepare report for new construction

- Original: Gas T&S Engineering Designee
- Copy: Operating Headquarters

On New Construction

Report unacceptable material immediately to the appropriate Gas T&S Engineering Designee who will then coordinate with the vendor through the Purchasing Department.

Procedure

1. Ensure all materials and equipment conform to applicable standards and codes.
2. Report all unacceptable equipment and material found in a field operating area or during construction to:
    - The Gas T&S Engineering Designee for distribution to all other operating areas
    - The Purchasing Department
3. Keep a copy of each Unacceptable Material Report in the Gas T&S Engineering files for permanent reference.
4. Update the file accordingly if a particular material or piece of equipment is changed by the manufacturer and becomes acceptable.

Collection Name

04 Pipe and Fitting Markers

Revised 07/01/2019

Purpose

- This Practice establishes an identification procedure for:
    - Valves
    - Fittings
    - Flanges
    - Bolting
    - Pipe
    - Tubing
    - Other materials that become a permanent part of the gas system
- As described in 192.63(a)(2), each valve, fitting, length of pipe, and other component must be marked to indicate size, material, manufacturer, pressure rating, and temperature rating. And, as appropriate, the type, grade, and model.

Frequency

Resurvey approximately every 12 months, and update the report.

Responsibilities

Field Leader

- Survey all material in operating department stock that may become a permanent part of the gas system.
- Ensure all materials are properly marked and that only properly marked materials are used in the gas facility.

Anyone Ordering Material

Request that materials are marked according to:

- Field Leader's specific instructions OR
- Manufacturers' Standardization Society (MSS) Standard Marking System (MSS 25) standards.

Gas T&S Field Construction Representative

Ensure the following:

- All material leaving a storage area is properly marked.
- Only properly marked materials are used in the gas facility.

Documentation/Reporting

Stock Condition Annual Report

- Do a survey, and prepare an annual report on all materials in operating department stock for either general or emergency use that can become a permanent part of the gas system.
- Include the following:
    - General condition of the stock
    - Actions needed to bring all items up to the requirements of this Practice, if required
- Issue: Include in the annual emergency plan issue
- Retention: Keep at the operating headquarters until the next annual report is done.

New Pipe

Keep hydrostatic test records at the operating headquarters for the life of the pipe.

Considerations

Gas System Permanent Parts

Consult the following table to ensure all materials are identified with markings applied according to the requirements of this Practice.

GAS SYSTEM PERMANENT PARTS	
Material	**Direction**
Missing identification	If lost due to painting or coating, remark.
Unidentifiable material	Remove from stock and dispose of accordingly.
Storing material	Arrange and segregate by use, specification, pressure rating, etc. to prevent misuse.
Protecting material	Either paint materials or store in shelters to preserve the identification markings and protect material integrity.

FIGURE 1

Color Coding

Pipe

Consult the following table to ensure all existing stock is identified according to this chart if being stored for emergency purposes or for over 24 months.

COLOR CODING FOR PIPE	
Pipe Specification	**Paint Color**
API 5L X65	White
API 5L X60	Dark green
API 5L X56	Gray
API 5L X52	Red
ASTM A381 Y52	Red/international orange
API 5L X46	Pink
ASTM A381 Y46	Pink/international orange
API 5L X42	Yellow
ASTM A381 Y42	Yellow/international orange
API 5L Grade B	Blue
ASTM A333 Grade 6	Blue/International orange
API Grade H-40 (Casing & Tubing)	Black
API Grade J-55 (Casing & Tubing)	Light green

FIGURE 2

Coding Specifications

CODING SPECIFICATIONS	
Pipe	**Direction**
10” OD and larger	Paint each end with a 6” wide band on the INTERIOR surface.
8” OD and smaller	Paint each end with a 6” wide band on the EXTERIOR surface.
All Y and A333 Grades	In addition to the pipe size requirements, paint on an international orange border.

FIGURE 3

Use white paint to record on each end of the pipe:

- Wall thickness in decimal units on each color code band
- Information in the following table (**Figure 4**) for each color code band if space allows. Otherwise, place near the band.

NOTE
If white paint does not contrast well for good definition, use a darker color.

ADDITIONAL INFORMATION	
Pipe Specifications	**Example**
Pipe Size and Wall	26”, 0.360”
Pipe Grade	API 5L X60
Hydrostatic Test Pressure, Time Held and Date of Test	1520#, 24 Hr, 6/9/68
Purchase Order and Date, if known	PO #36052, 3/27/68

FIGURE 4

New Pipe

- Color code as specified in **Figure 4** if for emergency purposes or being stored for over 24 months.
- Mark according to purchase specifications.

Gas Operations Field Leader Guide

05 Types of Right-of-Way

Revised 10/01/2015

General

This Practice provides definitions for various types of right-of-way.

Responsibilities

Operations Employees — Understand the type of right-of-way where the facility is located, and operate and maintain the facility within the parameters of the rights.

Broad Easement

Conveys the right to lay, construct, and maintain one (or more, if so specified) gas main over a particular parcel of land.

- The rights generally cover a large area (usually the landowner's entire acreage), but in some cases the easement defines more precisely the location of the pipeline.
- This type of easement does not provide a strip of a specified width upon which the "no building clause" and other restrictions can be imposed upon the landowner.

Easement of Width

Conveys the right to lay, construct, and maintain one gas main (or more, if so specified) on a strip of land of definite, specified width.

- The exact location of the strip is determined relative to the placement of the first pipeline constructed.
- The location of the pipeline is normally described as being within maximum and minimum dimensions.
- Additional pipelines (if additional lines were agreed upon) can be constructed anywhere on the strip or as specified in the instrument.
- The "no building clause" and vegetation control rights are imposed on the strip.

Strip Easement

The strip of land is described in any one of several land description methods not related to the location of pipeline, as constructed.

- The pipeline may be constructed anywhere on that strip.
- The "no building clause" and vegetation control rights are imposed on the strip.

Fee Strip

A parcel of land which is owned outright by the pipeline owner.

- All activity can be controlled or prohibited by the pipeline owner, subject to rights reserved by the landowner and side agreements made to facilitate negotiations or for other purposes.
- Normally, the landowner from whom the parcel of land was obtained is granted farming rights or other rights on the parcel which are not contrary to the anticipated use of the land.

Gas Operations Field Leader Guide

06 Inspection of Pipeline Maintenance Projects — T&S

Revised 10/01/2015

General

This Practice:

- Establishes requirements for inspecting, reporting, and recording pipeline maintenance projects.
- Ensures quality workmanship and materials that meet the requirements as shown on drawings and specifications are used.

Documentation/Reporting

Form 792, Project Completion Report (**Figure 1**):

- Prepare a report at the end of each project.
- Forward information to Gas T&S Engineering Designee.
- Retain information for the life of the facility.

Inspecting Materials

- Visually inspects all materials to be used before installation to ensure materials:
    - Are in acceptable condition
    - Meet requirements of plans and specifications
    - Are of the correct quantity
- After fabrication and before backfill, inspect the piping and fittings for damage from installation.
- Visually inspect during the pipe coating operation to ensure compliance with Gas Operations Manual, **Procedure 11-11, Underground Protective Coatings — T&S Facilities** and coating procedures.

Review of Work Done

- Ensure the following:
    - Qualified welding procedures are followed
    - Welders are qualified for the particular job
- Visually inspect welding prior to coating for:
    - Fit-up of joints
    - Stringer beads
    - Completion weld
- Inspect the condition of the pipe coating and ditch bottom just before the pipe is lowered in to see if:
    - The pipe fits the ditch
    - The ditch has no objects that may damage the pipe coating.
    - The pipe coating is damaged (take action to repair detrimental damage)
- Do special tests and inspections per the following Gas Operations Welding Standards:

    - **Section 1-8, Inspection and Testing of Joint Preparation and Welds**
    - **Section 1-9, Acceptance Standards for Non-Destructive Testing**
- Inspect pipe alignment, elevation, and placement to ensure compliance with the drawings and specifications for the project.
- Record all field data for completion in detail of the “As Built” drawings for the project.
- Repair steel pipe per Gas Operations Manual, **Procedure 2-10, Pipe Surface Defects and Remediation Criteria on Transmission Pipelines** as needed.
- Adhere to Gas Operations Manual, **Procedure 1-3, Preventing Accidental Ignition at Gas Facilities**.
- Ensure backfill provides firm support under the pipe and prevents damage to the pipe and its coating.
- Refer to the following as needed:
    - Gas Operations Manual, **Procedure 2-4, Inactivation, Abandonment, or Removal of Gas Mains and Transmission Pipelines**
    - **Gas Operations Safety Practice 08, Lockout/Tagout**

Forms

CONSUMERS ENERGY

PROJECT COMPLETION REPORT

Line Number		Area		
Description of Project				
Station No	To	Work Order No	Outage Date Started	Outage Date Completed
PIPE DATA				
Size	Wall	Grade	Amount Used	
Size	Wall	Grade	Amount Used	
FITTING DATA				
Type	Spec	Quantity		
Type	Spec	Quantity		
VALVE DATA				
Mfg	Size	Type	Fig No	Serial #
Mfg	Size	Type	Fig No	Serial #
TEST DATA				
Start Date	Start Time	End Date	End Time	Minimum Test Pressure
Start Date	Start Time	End Date	End Time	Minimum Test Pressure
WELD DATA				
Number of Welds	Number X-Rayed	Number of Rejects		
Welding Procedure Specification TS-API Dated	Welding Procedure Specification TS-API Dated	"As Built" Drawing Number		
Were Pipe and Fittings Inspected Prior to Installation? ☐ Yes ☐ No	Inspected by Whom?			
Pipe and Coating Inspection Report (Form 1354) Attached ☐ Yes ☐ No				
Remarks (Include why work was needed)				
Signed	Date			

EXAMPLE FORM

Form 792 9-2009 Page 1 of 2

FIGURE 1 Form 792

Gas Operations Field Leader Guide

07 Reporting Vented Gas 1 MMCF or Greater

Revised 10/01/2021

Purpose

This Practice outlines the Michigan Department of Environment, Great Lakes and Energy (EGLE) notification and reporting requirements for venting gas, including scheduled and emergency/unplanned events, where gas volume vented exceeds 1 MMCF.

Definitions

1 MMCF = 1,000,000 cubic feet

DEQ Reporting Requirements

- Scheduled venting (even if gas will be flared) of greater than 1 MMCF of natural gas (GAM Measurement):
  - Notify the EGLE-Air Quality District 2–3 days before the scheduled venting. (See **Figure 3**, or refer to **www.michigan.gov/deqair**.)

    NOTE
    If gas is vented at multiple locations (for a single event), make the notification to all EGLE districts in which gas is vented.
  - Complete Form 80 (**Figure 2**), Consumers Energy Report Natural Gas Venting Notifications.
- Emergency/unplanned release of greater than 1 MMCF of natural gas, Field Leadership:
  - Complete Form 82 (**Figure 4A** and **Figure 4B**).
  - Notify Gas Incident Reporting (GIR) on-call representative.
- GIR on-call representative will notify the Pollution Emergency Alert System (PEAS) immediate notification.
- If the volume of gas vented is unknown, indicate that gas was vented and the volume could exceed 1 MMCF.

Responsibility

GAM Measurement

Measurement Engineering Compression Station Vented Gas Process Map can be accessed from the Standards Management Center – Gas Asset Management.

- Planned/scheduled projects:
  - GAM Measurement will estimate the gas volume to be vented and make the proper notifications, per the EGLE Reporting Requirements section within this Practice.
  - Provide a copy of completed Form 80 (**Figure 2**) in the work order packet.

    NOTE
    If the calculated volume of gas for a scheduled venting does not exceed but is close to 1 MMCF, coordinate with the field to ensure notifications are made if the actual volume does exceed 1 MMCF.

- Emergency/unplanned events and releases: When requested by Field Leaders, perform calculations to determine the amount of gas vented from relief valves and other types of failures.

Field Leader

- Planned/scheduled projects — Field Leaders will communicate any scheduled changes to GAM Measurement so that EGLE notification can be made according to requirements.

> **NOTE**
>
> - For planned/scheduled venting, if the calculated volume of gas does not exceed but is close to 1 MMCF, monitor the venting process closely.
> - Coordinate with GAM Measurement to ensure EGLE notifications are made if the actual volume does exceed 1 MMCF.

- Emergency/unplanned events and releases —
  - Calculate the estimated volume of gas vented for report to the GIR on-call representative when the volume could exceed 1 MMCF.
  - Complete Form 82 (**Figure 4A** and **Figure 4B**).

> **NOTE**
> Provide the appropriate information to System Planning, GAM Measurement or the GIR On-Call representative for a more accurate calculation of the gas volume vented, when required.

Scheduled Venting

For a scheduled venting, use the calculation worksheets included in the work order packet.

Gas Vented from Purging

Gas-to-Air Purge

- The volumes provided using the calculation worksheets include the amount of gas vented when piping is purged from gas to air.
- If needed, the amount of gas released from a section of pipe, assuming a constant temperature, can be calculated using the following equation:

$$V_2 = \frac{P_1 \times V_1}{P_2}$$

Where:
P_1 = Initial Gauge Pressure + 14.7 (psia)
P_2 = Final gauge pressure + 14.7 (psia)
V_2 = Vented Volume (in CF)
V_1 = Internal Volume of the Pipe Segment (in CF)

- Calculate V_1 using the following equation:

$$V_1 = \left[\frac{ID}{24}\right]^2 \times \pi \times L$$

Where:
ID = Inside Diameter (inches)
π = *3.14*
L = *Length of piping (feet)*

Venting Time to Reach 1 MMCF Gas Lost Based on Damage Size and Pressure

Hole Size (in^2)	Time (hours)																	
	Pressure (psig)																	
	1 psig	5 psig	10 psig	15 psig	30 psig	40 psig	50 psig	60 psig	100 psig	150 psig	200 psig	250 psig	300 psig	350 psig	400 psig	600 psig	700 psig	900 psig
1	121.55	55.39	39.98	33.06	21.97	17.95	15.18	13.14	8.56	5.96	4.57	3.71	3.12	2.69	2.37	1.6	1.37	1.07
2	60.78	27.69	19.99	16.53	10.98	8.97	7.59	6.57	4.28	2.98	2.29	1.85	1.56	1.35	1.18	0.8	0.69	0.54
3	40.52	18.46	13.33	11.02	7.32	5.98	5.06	4.38	2.85	1.99	1.52	1.24	1.04	0.9	0.79	0.53	0.46	0.36
4	30.39	13.85	10	8.26	5.49	4.49	3.79	3.29	2.14	1.49	1.14	0.93	0.78	0.67	0.59	0.4	0.34	0.27
5	24.31	11.08	8	6.61	4.39	3.59	3.04	2.63	1.71	1.19	0.91	0.74	0.62	0.54	0.47	0.32	0.27	0.21
6	20.26	9.23	6.66	5.51	3.66	2.99	2.53	2.19	1.43	0.99	0.76	0.62	0.52	0.45	0.39	0.27	0.23	0.18
7	17.36	7.91	5.71	4.72	3.14	2.56	2.17	1.88	1.22	0.85	0.65	0.53	0.45	0.38	0.34	0.23	0.2	0.15
8	15.19	6.92	5	4.13	2.75	2.24	1.9	1.64	1.07	0.75	0.57	0.46	0.39	0.34	0.3	0.2	0.17	0.13
9	13.51	6.15	4.44	3.67	2.44	1.99	1.69	1.46	0.95	0.66	0.51	0.41	0.35	0.3	0.26	0.18	0.15	0.12
10	12.16	5.54	4	3.31	2.2	1.79	1.52	1.31	0.86	0.6	0.46	0.37	0.31	0.27	0.24	0.16	0.14	0.11
12	10.13	4.62	3.33	2.75	1.83	1.5	1.26	1.1	0.71	0.5	0.38	0.31	0.26	0.22	0.2	0.13	0.11	0.09
14	8.68	3.96	2.86	2.36	1.57	1.28	1.08	0.94	0.61	0.43	0.33	0.26	0.22	0.19	0.17	0.11	0.1	0.08
16	7.6	3.46	2.5	2.07	1.37	1.12	0.95	0.82	0.54	0.37	0.29	0.23	0.19	0.17	0.15	0.1	0.09	
18	6.75	3.08	2.22	1.84	1.22	1	0.84	0.73	0.48	0.33	0.25	0.21	0.17	0.15	0.13	0.09	0.08	
20	6.08	2.77	2	1.65	1.1	0.9	0.76	0.66	0.43	0.3	0.23	0.19	0.16	0.13	0.12	0.08		
25	4.86	2.22	1.6	1.32	0.88	0.72	0.61	0.53	0.34	0.24	0.18	0.15	0.12	0.11	0.09			
30	4.05	1.85	1.33	1.1	0.73	0.6	0.51	0.44	0.29	0.2	0.15	0.12	0.1	0.09	0.08			
35	3.47	1.58	1.14	0.94	0.63	0.51	0.43	0.38	0.24	0.17	0.13	0.11	0.09	0.08				
45	3.04	1.38	1	0.83	0.55	0.45	0.38	0.33	0.21	0.15	0.11	0.09	0.08					
50	2.7	1.23	0.89	0.73	0.49	0.4	0.34	0.29	0.19	0.13	0.1	0.08						
55	2.43	1.11	0.8	0.66	0.44	0.36	0.3	0.26	0.17	0.12	0.09							
60	2.21	1.01	0.73	0.6	0.4	0.33	0.28	0.24	0.16	0.11	0.08							
65	2.03	0.92	0.67	0.55	0.37	0.3	0.25	0.22	0.14	0.1	0.08							
70	1.87	0.85	0.62	0.51	0.34	0.28	0.23	0.2	0.13	0.09								
75	1.74	0.79	0.57	0.47	0.31	0.26	0.22	0.19	0.12	0.09								
80	1.62	0.74	0.53	0.44	0.29	0.24	0.2	0.18	0.11	0.08								
85	1.52	0.69	0.5	0.41	0.27	0.22	0.19	0.16	0.11									
90	1.43	0.65	0.47	0.39	0.26	0.21	0.18	0.15	0.1									
95	1.35	0.62	0.44	0.37	0.24	0.2	0.17	0.15	0.1									
100	1.28	0.58	0.42	0.35	0.23	0.19	0.16	0.14	0.09									
105	1.22	0.55	0.4	0.33	0.22	0.18	0.15	0.13	0.09									
110	1.16	0.53	0.38	0.31	0.21	0.17	0.14	0.13	0.08									
115	1.11	0.5	0.36	0.3	0.2	0.16	0.14	0.12	0.08									
120	1.06	0.48	0.35	0.29	0.19	0.16	0.13	0.11										
125	1.01	0.46	0.33	0.28	0.18	0.15	0.13	0.11										

130	0.97	0.44	0.32	0.26	0.18	0.14	0.12	0.11										
135	0.94	0.43	0.31	0.25	0.17	0.14	0.12	0.1										
140	0.9	0.41	0.3	0.24	0.16	0.13	0.11	0.1										
145	0.87	0.4	0.29	0.24	0.16	0.13	0.11	0.09										
150	0.84	0.38	0.28	0.23	0.15	0.12	0.1	0.09										
160	0.81	0.37	0.27	0.22	0.15	0.12	0.1	0.09										
170	0.76	0.35	0.25	0.21	0.14	0.11	0.09	0.08										
180	0.72	0.33	0.24	0.19	0.13	0.11	0.09	0.08										
190	0.68	0.31	0.22	0.18	0.12	0.1	0.08											
200	0.64	0.29	0.21	0.17	0.12	0.09	0.08											
225	0.61	0.28	0.2	0.17	0.11	0.09	0.08											
250	0.54	0.25	0.18	0.15	0.1	0.08												

FIGURE 1

Air-to-Gas Purge

The amount of gas vented when purging from air to gas is negligible.

Emergency/Unplanned Venting

Use the time chart (**Figure 1**) or associated equations to estimate the volume of gas vented for unplanned or emergency work:

- If the volume estimated is 1 MMCF (1,000 MCF) or greater, contact System Planning to determine the amount of gas vented.
- If volume of gas is 1 MMCF or greater, make proper notification per the **EGLE Reporting Requirements** section within this Practice.

Gas Vented Through a Piping Failure

Gas Loss Constant Table (Time Chart)

- To determine if a line puncture/damage has lost 1MMCF or greater (and is therefore reportable), do the following:
  - Determine the size of the puncture in square inches (in^2).
  - Determine the initial pressure of the line (psig).
  - Use **Figure 1** to find the appropriate venting time (in hours).
  - If gas has been blowing longer for the number of hours found in **Figure 1**, then the estimated loss is greater than 1 MMCF.
  - EXAMPLE: If a 3” hole on a 50 psig line has been blowing for more than 5.06 hours, then more than 1 MMCF of gas has been released (approximately).
- If the estimated volume lost is 1 MMCF or greater:
  - Contact System Planning for determination of the actual volume of gas released.
  - Perform any notifications/reporting as required within this Practice.

Gas Loss Equations (Estimation)

The following two equations can be used to estimate the volume of gas released due to a puncture, hole, or break. If the estimated volume lost is 1 MMCF or greater, contact System Planning (see the **Information for System Planning** section within this Practice).

$$V_1 = D^2 \times P_U \times T$$

or

$$V_1 = 1.28 \times A \times P_U \times T$$

Where:
V = Volume of gas vented (MCF)
D = Diameter of hole (inches)
A = Area of break (inches squared)
P_U = Absolute upstream pressure (nearby) (psig+14.4) (psi)
T = Time (hours)

Gas Vented Through A Station Relief Valve

For a quick calculation to determine whether DEQ notification is required, multiply the capacity of the relief valve (found on the relief valve tag) by the total blowing time (hours).

$$V = Q \times T$$

Where:
V = Volume of gas vented in MCF (1000 MCF = 1 MMCF)
Q = Relief valve capacity (MCFH)
T = Blowing time (hours)

Provide the following information to System Planning for a more accurate volume calculation:

- Station/Location
- Manufacturer
- Model number or type
- Size
- Orifice size (if available)
- Set pressure
- Actual station pressure (if available)
- Total time gas vented to atmosphere (hours)

Information for System Planning

System Planning can calculate the actual volume of gas released. Provide the following information to System Planning for a more accurate volume calculation:

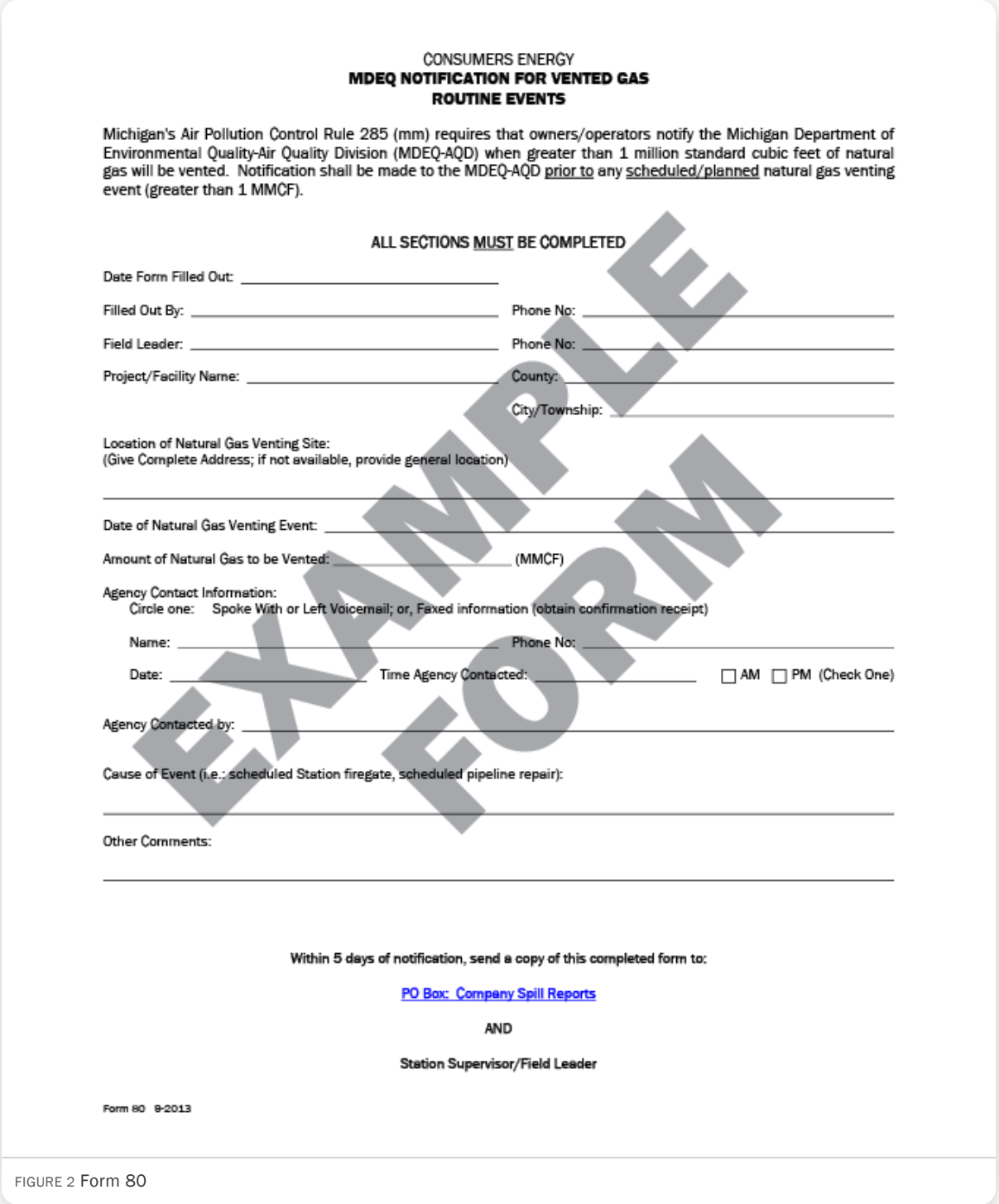
- Area of the break (inches squared)
- Pipe size (inches)
- Total time gas vented to atmosphere (hours)
- Location of break: Show on node map (quarter section map)
- Sequence of events
- Changes in operation, such as:
    - Valving operations
    - City gate pressure changes
- Pressure conditions before, during, and after event

Forms

Form 80

Within 5 days of notification, send a copy of this completed form to:

- PO Box: Company Spill Reports, AND
- Station Supervisor/Field Leader



CONSUMERS ENERGY
MDEQ NOTIFICATION FOR VENTED GAS
ROUTINE EVENTS

Michigan's Air Pollution Control Rule 285 (mm) requires that owners/operators notify the Michigan Department of Environmental Quality-Air Quality Division (MDEQ-AQD) when greater than 1 million standard cubic feet of natural gas will be vented. Notification shall be made to the MDEQ-AQD prior to any scheduled/planned natural gas venting event (greater than 1 MMCF).

ALL SECTIONS MUST BE COMPLETED

Date Form Filled Out: _____

Filled Out By: _____ Phone No: _____

Field Leader: _____ Phone No: _____

Project/Facility Name: _____ County: _____

City/Township: _____

Location of Natural Gas Venting Site:
(Give Complete Address; if not available, provide general location)

_____

Date of Natural Gas Venting Event: _____

Amount of Natural Gas to be Vented: _____ (MMCF)

Agency Contact Information:
Circle one: Spoke With or Left Voicemail; or, Faxed information (obtain confirmation receipt)

Name: _____ Phone No: _____

Date: _____ Time Agency Contacted: _____ ☐ AM ☐ PM (Check One)

Agency Contacted by: _____

Cause of Event (i.e.: scheduled Station firegate, scheduled pipeline repair):

_____

Other Comments:

_____

Within 5 days of notification, send a copy of this completed form to:

PO Box: Company Spill Reports

AND

Station Supervisor/Field Leader

Form 80 9-2013

EXAMPLE FORM

FIGURE 2 Form 80

Form - EGLE Air Quality Division Office Locations

Air Quality Division District Office Contact Information

Bay City District
(Central East Michigan)
401 Ketchum Street, Suite B
Bay City, MI 48708-5430
989-894-6200 Fax: 989-891-9237

Counties: Arenac, Bay, Clare, Gladwin, Huron, Iosco, Isabella, Midland, Ogemaw, Saginaw, Sanilac, and Tuscola

Cadillac District
(Northwest Lower Peninsula)
120 West Chapin Street
Cadillac, MI 49601-2158
231-775-3960 Fax: 231-775-4050

Counties: Benzie, Grand Traverse, Kalkaska, Lake, Leelanau, Manistee, Mason, Missaukee, Osceola, and Wexford

Detroit District
(Wayne County)
Cadillac Place, Suite 2-300
3058 West Grand Blvd.
Detroit, MI 48202-6058
313-456-4700 Fax: 313-456-4692

Counties: Wayne

Gaylord District
(Northeast Lower Peninsula)
2100 West M-32
Gaylord, MI 49735-9282
989-731-4920 Fax: 989-731-6181

Counties: Alcona, Alpena, Antrim, Charlevoix, Cheboygan, Crawford, Emmet, Montmorency, Oscoda, Otsego, Presque Isle, and Roscommon

Grand Rapids District
(Central West Michigan)
350 Ottawa Avenue NW, Unit 10
Grand Rapids, MI 49503-2316
616-356-0500 Fax: 616-356-0201

Counties: Barry, Ionia, Kent, Mecosta, Montcalm, Muskegon, Newaygo, Oceana, and Ottawa

Jackson District
(South Central Michigan)
State Office Building, 4th Floor
301 East Louis Glick Highway
Jackson, MI 49201-1535
517-780-7690 Fax: 517-780-7855

Counties: Hillsdale, Jackson, Lenawee, Monroe, and Washtenaw

Kalamazoo District
(Southwest Michigan)
7953 Adobe Road
Kalamazoo, MI 49009-5026
269-567-3500 Fax: 269-567-3555

Counties: Allegan, Berrien, Branch, Calhoun, Cass, Kalamazoo, St. Joseph, and Van Buren

Lansing District
(Central Michigan)
P.O. Box 30242
Lansing, MI 48909-7742
517-284-6651 Fax: 517-241-3571

Counties: Clinton, Eaton, Genesee, Gratiot, Ingham, Lapeer, Livingston, and Shiawassee

Marquette District
(Entire Upper Peninsula)
1504 West Washington Street
Marquette, MI 49855-3118
906-228-4853 Fax: 906-228-4940

Counties: All counties in the Upper Peninsula

Warren District
(Southeast Michigan)
27700 Donald Court
Warren, MI 48092-2793
586-753-3700 Fax: 586-753-3731

Counties: Macomb, Oakland, and St. Clair

Revised May 21, 2019

FIGURE 3 Form - DEQ Air Quality Division Office Locations

Form 82

Complete a **Form 82** within 3 business days of the incident. Form 82 Job Aid can also be found at this link.

Form 82 5-2018

CONSUMERS ENERGY
GAS INCIDENT REPORT
ENERGY OPERATIONS

☒ Telephonic
☒ Field Report

GAS DISPATCH

INVOLVING GAS DISTRIBUTION OR TRANSMISSION SYSTEM OR NON-COMPANY PROPERTY

☒ Death or Hospitalization	☐ Property Damage	☐ Evacuation
☒ Personal Injury	☐ Pipeline Rupture	☐ Blocked Traffic
☒ Gas Explosion	☐ Gas Release ≥ 3 MMCF	☐ Interruption of _____Customers
☒ Primary Gas Fire	☐ Gas Release ≥ 1 MMCF	☐ Customer's Appliance: _____
☒ Secondary Ignition	☐ Firegate Operation	☐ Exceed MAOP
☐ Non-Gas Fire	☐ Extensive News Coverage	☐ Other: _____

RESPONSE TIME ANALYSIS

First Responder	Crew
Time Call Received: Hours	Time Notified: Hours
Time Dispatched: Hours	Time Arrived: Hours
Time Arrived: Hours	Time Gas Off: Hours
Response Time: Min	Emergency Order No.:

Reported By: zdf	Date:	Time:	Date of Incident:
Location (Address/Locality/Pipeline Number/County/Township/etc.): asdf	Area:	Plant/Headquarters:	

Incident Description and Cause: sadf

Non-Company Property Damage: asdf

Description of Injuries or Fatalities: asdf

NOTIFICATION RECORD

	DEPARTMENT	DATE	TIME	REPORTED BY	TO WHOM
GAS DISPATCH	Gas Control/Gas Dispatch				
	Field Leader/FL On-Call				
MID-MANAGEMENT PERSON (MMP)	Mid-Management Person (MMP)				
	Security Command Center				
	Damage Claims				
	Public Safety Outreach				
	Call Center				
	Media Relations				
	Human Resources/Safety Admin				
	Gas Incident Rptg (GIR) On-Call				
	Business Account Manager				
GIR ON-CALL	Confirmed Discovery Time				
	MPSC				
	NRC (# _____)				
	NRC Secondary Notification				
	PEAS (# _____)				
	Executive Director G&GAM				

EXAMPLE FORM

FIGURE 4A Form 82, Page 1

Form 82 5-2018

GAS INCIDENT REPORT (Cont'd)

FIELD LEADER

GAS FACILITIES

☐ Gas Distribution	☐ Gas T&S	Company Costs Incurred: $_____	Non Company Costs Incurred: $_____
☐ Non-Company Property	☐ ≥ 20% SMYS		

Safety Related Condition (≥ 20% SMYS)*

☐ Reduced Pressure > 20% ☐ General Corrosion ☐ Abnormal Loading/Movement ☐ Material Defect/Damage

RESULTS OF TESTS PERFORMED (AS APPLICABLE)

1. Odorant Test: Employee - ☐ Perceptible ☐ Not Witness - ☐ Perceptible ☐ Not	2. Meter Location: ☐ In ☐ Out ☐ N/A	3. Inside Gas Leak Checks: ☐ N/A Service Entry _____ % Free Air _____ %
4. Outside Leak Survey Result: ☐ Negative ☐ Gas Found ☐ N/A	5. Other Tests:	
6. Carbon Monoxide: ☐ Free Air Reading _____ ☐ N/A	7. Material Samples Collected: ☐ Yes ☐ No Describe:	
8a. Pressure: Pipeline/Service	8b. Pressure: Fuel Line/Appliance	
9. Venting Problems: Equipment/Appliance:	10. Pollution Emergency Alert System (PEAS) Reportable Gas Release ≥ 1 MMCF Estimated release:	
11. Employee Post-Accident Testing: ☐ Alcohol ☐ Controlled Substance ☐ Not Applicable		

INTERRUPTION DATA		FOR SYSTEM DAMAGE	
Gas Restored Date:	Time: Hours	Name of Firm:	Miss Dig: ☐ Yes ☐ No
Customer's Relit Date:	Time: Hours	Facility Staked: ☐ Yes ☐ No	Hand Dug: ☐ Yes ☐ No

Completed By: _____ Date: _____

PRINCIPAL/SENIOR FIELD LEADER REVIEW

GAS STANDARDS

Did employee(s) effectively follow gas standards?

☐ Yes ☐ No, Employee Review Required

If no, explain:

49 CFR 192.615(b)(3)

Were incident response procedures adequate?

☐ Yes ☐ No, consider revising

If no, explain:

49 CFR 192.605(c)(4)

EXAMPLE FORM

To sign form, please place cursor next to X below and double click, click on select image, select your saved bitmap or jpeg file of your written signature, click OK, close document without saving and it is now signed and marked final.

Reviewed By	MS Word Electronic Signature (Prior to signing, Save As a renamed file to your computer for future use. Once signed you cannot change or save the file without removing or invalidating the signature). X _____ Signature

- All Telephonic and Field Report Form 82's should be emailed to the Regulatory and Compliance Mailbox at PO Box: CE Regulatory Services within three (3) business days of the incident.
- All Transmission Form 82's should be emailed to Gas Measurement Engineering at PO Box: Vented Gas Reporting within five (5) business days of the incident.

FIGURE 4B Form 82, Page 2

Gas Operations Field Leader Guide

08 Tracking and Reporting Vented Gas

Revised 06/01/2022

Purpose

This Practice outlines reporting requirements for venting gas, including scheduled and emergency events. Examples include:

- Pipeline blow downs
- Compressor Station fire gates
- Relief valve venting
- Sections of pipe vented for O&M or capital work

This Practice DOES NOT cover equipment designed to vent gas for normal operations such as:

- PID controllers
- I/Ps
- Dump valves, etc.

Responsibilities

Field Leader

Planned projects:

- Capital/Pipeline Integrity projects: For all volumes, use the **Vented Gas Job Aid** section within this Practice to generate internal vented gas volume notifications.
- O&M projects/other venting: For all volumes, report actual volumes vented using the Vented Gas Report.
- If a project is planned to be less than 1 MMCF, but the actual volume is more than 1 MMCF, ensure that proper notification is made:
    - Pre-event: Report to MDEQ per TSEM 1-100, OR
    - Post-event: Report same as emergency release

Emergency releases:

- Volumes 1 MMCF or more: Notify Gas Control, complete and distribute Form 82 (**Figure 3A** and **Figure 3B)** in accordance with **Procedure 1-11, Reporting Incidents, Test Failures, and Safety Related Condition**s.
    - If the volume of gas vented is unknown but may reasonably exceed 1 MMCF, indicate that gas was vented and the volume may exceed 1 MMCF to Gas Control.
    - Report actual volumes vented using the Vented Gas Report.
- Volumes less than 1 MMCF: Report actual volumes vented using the Vented Gas Report.

Vented Gas Report

- Submit by the first day of each month for the previous month's activity, as indicated on the form.
- Pipeline integrity and capital projects may be submitted as they occur using the **Vented Gas Job Aid** section within this Practice.

T&S Engineering

- Planned projects:

- Make MDEQ notifications, if required.
- Refer to TSEM 1-100.

- All venting — Assist operations employees with volume calculations as needed.

Reporting

PLANNED EVENTS			
	MDEQ Report	Internal	
		Cap/PI	O&M
Less than 1MMCF	None*	Vented Gas Job Aid	Vented Gas Report
More than 1MMCF	Engineering Refer to TSEM 1-100	Vented Gas Job Aid	Vented Gas Report
*If the planned volume will be exceeded and may be greater than 1 MMCF, contact engineering to ensure the MDEQ report is completed (prior to venting additional gas).			

FIGURE 1

EMERGENCY EVENTS			
	PEAS Report	Internal	
		Cap/PI	O&M
Less than 1MMCF	None*	Vented Gas Job Aid	Vented Gas Report
More than 1MMCF	Notify Gas Control	Vented Gas Job Aid	Vented Gas Report

FIGURE 2

Definitions

Definitions included here only apply to this Practice, and not to other documentation:

1 MCF = 1,000 cubic feet at a pressure base of 14.65 psia dry at 60°F

1 MMCF = 1,000,000 cubic feet at a pressure base of 14.65 psia dry at 60°F

Planned events — Engineering must notify the MDEQ per TSEM 1-100.

Emergency events — Field Leader must notify Gas Control to provide for PEAS reporting through the incident reporting process per **Procedure 1-11, Reporting Incidents, Test Failures, and Safety Related Conditions**.

Vented Gas Job Aid — Computer based program to assist in calculating volumes of gas vented and identifying reporting responsibilities and requirements. See **Vented Gas Job Aid** section within this Practice.

Vented Gas Report — Spreadsheet used to track and report volumes of gas vented to Gas Transportation Services. Spreadsheet may be downloaded from Vented Gas Job Aid.

Procedures

The following discusses how to determine vented gas volumes for various circumstances.

Scheduled Venting

- For a scheduled venting, use the calculation worksheets (see **Vented Gas Job Aid** section within this Practice) to update the estimated volume by determining the actual amount of gas vented.
- Tabulate the volume of gas vented (per event) on the Vented Gas Report and provide copies as indicated on the report.
- To calculate the amount of gas vented, at least the following is required:
  - Pipe ID (inches)

- Length of pipe (feet or miles); (1 mile = 5,280 feet)
- Initial and final pressure (psig)
- Temperature (°F)

Gas Vented From Purging

Gas to Air

The volumes provided using the calculation worksheets (see **Vented Gas Job Aid** section within this Practice) include the amount of gas vented when piping is purged from gas to air.

Air to Gas

Provide the following information to Engineering for a volume calculation:

- Length of time 100% gas vented
- Pressure nearest vent location (specify pressure reading location)
- Inside diameter of blow down

Emergency Venting

- Use the calculation worksheets (see **Vented Gas Job Aid** section within this Practice) whenever possible to determine the volume of gas vented.
- When necessary, provide the appropriate information to Engineering for a more accurate calculation of the gas volume vented. Engineering will provide this data back to the field for internal reporting.

NOTE
Include the volume of gas vented on the Vented Gas Report.

Gas Vented Through a Piping Failure

Contact Engineering for a volume calculation. Provide the following information, if known:

- Area of the break (inches squared)
- Pipe size (inches)
- Total time gas vented to atmosphere (hours)
- Location of break — show on node map (quarter section map)
- Sequence of events
- Changes in operation
  - Valving operations
  - City gate pressure changes
- Pressure conditions before, during, and after event

NOTE
Include the volume of gas vented on the Vented Gas Report.

Gas Vented Through a Station Relief Valve

For a quick calculation to determine whether Gas Control emergency notification is required, multiply the capacity of the relief valve by the total blowing time.

$$V = Q \times T$$

Where:
V = Volume vented (MCF)
Q = Relief valve capacity (MCFH)
T = Blowing time (hours)

To obtain a more accurate volume for Company reporting, provide the following information to Engineering for a volume calculation:

- Station/Location
- Manufacturer
- Model number or type
- Size
- Orifice size (if available)
- Set pressure
- Actual station pressure (if available)
- Total time gas vented to atmosphere (hours)

NOTE
Include the volume of gas vented on the Vented Gas Report.

Unmetered and Metered Storage Gas User Volumes

- On the Vented Gas Report, provide the total amount of gas delivered to unmetered gas users.
- This total amount can be calculated by multiplying the number of unmetered gas users by the assumed usage volume from the Unmetered Gas User Table.

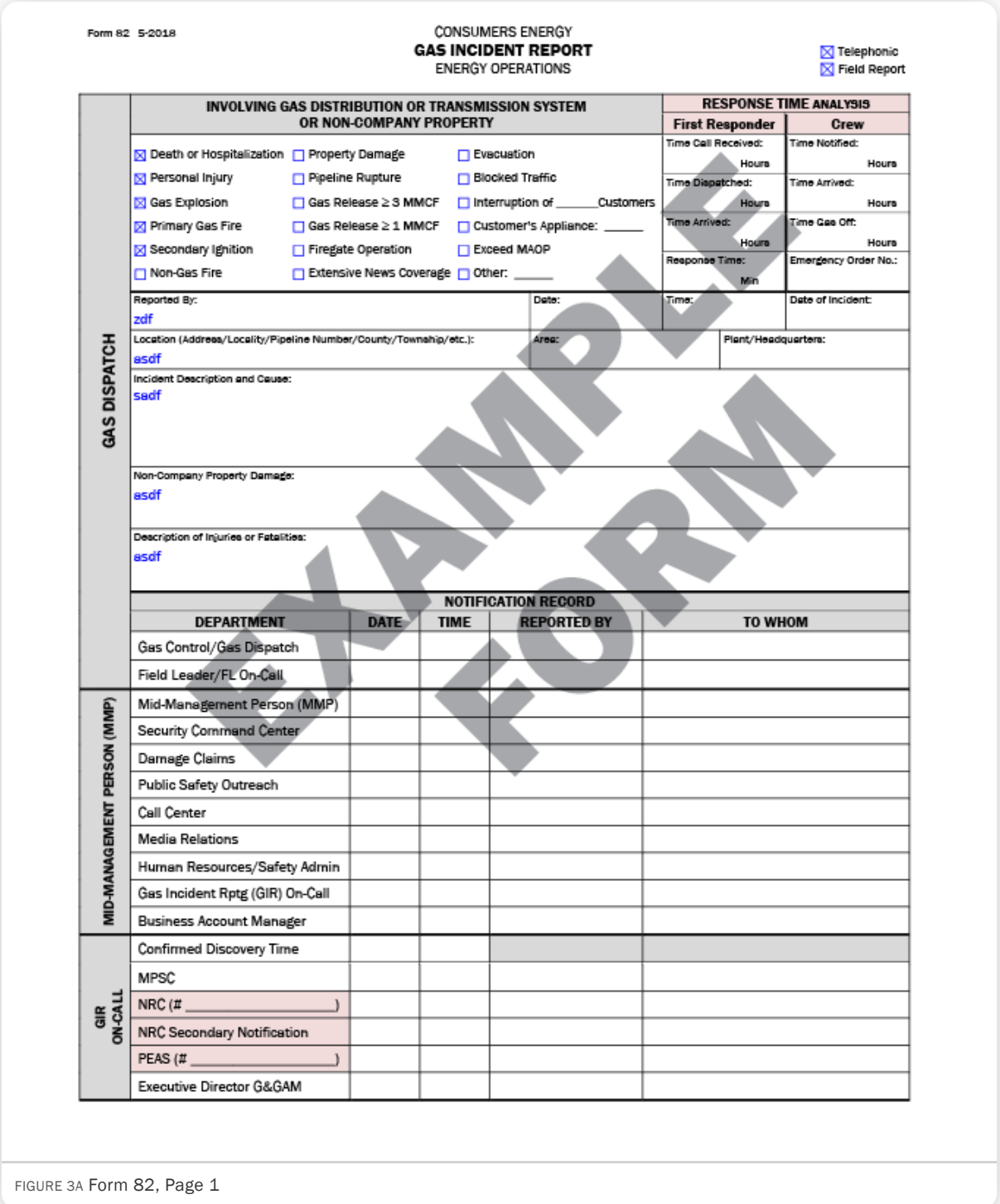
Vented Gas Reporting Online Tool Access

1. Navigate to the Consumers Energy **Connect** Page.
2. Select the **Sharepoint** tab at the top of the Page.
3. Type in **Measurement Engineering** in the *Search in Sharepoint Bar* at the top of the Page.
4. Click on the **Measurement Engineering [ME] link**.
5. Click on the **Vented Gas Reporting Tool** Button under *Interactive Tools* section of the Page.
6. Click on **+New** on the *VentedGasReports* Page. This will generate a New Vented Gas Report.
7. Select the **Type of Vented Gas Incident to Report** from the 8 options identified.
8. Input the required Data/Variables in the input fields for the *Vented Gas Incident*. Contact Engineering if assistance with the Volume Calculation is requested.
9. The following Options will be available after Initiation/Completion of the report:
    - **Save as a Draft** – This will Save the Vented Gas Report and will allow the user to access at the Home screen of the VentedGasReports.

- **Submit and Close** – Entered Data will be cleared from the Input Fields and the User will be routed to the VentedGasReports Page.
- **Submit and Enter Another** – The Data-Field for the initial entered Vented Gas Incident will remain. The User can input different variables for the same site Or Clear the Input Fields for New Data: Site Specific or Otherwise.

10. The *Vented Gas Report* will be routed electronically via a System Generated email to the Gas Measurement Designee.
11. The *Vented Gas Report* will be submitted along with the Volumes compiled using the Monthly Vented Gas Reporting Process
12. The Vented Gas Report will be routed electronically to the Gas Measurement Designee.
13. The Venter Gas Report will be submitted with the volumes compiled using the Monthly Vented Gas Reporting Process (RLM_Version 1).

Forms



Form 82 5-2018

CONSUMERS ENERGY
GAS INCIDENT REPORT
ENERGY OPERATIONS

☒ Telephonic
☒ Field Report

GAS DISPATCH

INVOLVING GAS DISTRIBUTION OR TRANSMISSION SYSTEM OR NON-COMPANY PROPERTY

☒ Death or Hospitalization	☐ Property Damage	☐ Evacuation
☒ Personal Injury	☐ Pipeline Rupture	☐ Blocked Traffic
☒ Gas Explosion	☐ Gas Release ≥ 3 MMCF	☐ Interruption of _____Customers
☒ Primary Gas Fire	☐ Gas Release ≥ 1 MMCF	☐ Customer's Appliance: _____
☒ Secondary Ignition	☐ Firegate Operation	☐ Exceed MAOP
☐ Non-Gas Fire	☐ Extensive News Coverage	☐ Other: _____

RESPONSE TIME ANALYSIS

First Responder	Crew
Time Call Received: Hours	Time Notified: Hours
Time Dispatched: Hours	Time Arrived: Hours
Time Arrived: Hours	Time Gas Off: Hours
Response Time: Min	Emergency Order No.:

Reported By: zdf | Date: | Time: | Date of Incident:

Location (Address/Locality/Pipeline Number/County/Township/etc.): asdf | Area: | Plant/Headquarters:

Incident Description and Cause: sadf

Non-Company Property Damage: asdf

Description of Injuries or Fatalities: asdf

NOTIFICATION RECORD

	DEPARTMENT	DATE	TIME	REPORTED BY	TO WHOM
GAS DISPATCH	Gas Control/Gas Dispatch				
	Field Leader/FL On-Call				
MID-MANAGEMENT PERSON (MMP)	Mid-Management Person (MMP)				
	Security Command Center				
	Damage Claims				
	Public Safety Outreach				
	Call Center				
	Media Relations				
	Human Resources/Safety Admin				
	Gas Incident Rptg (GIR) On-Call				
	Business Account Manager				
GIR ON-CALL	Confirmed Discovery Time				
	MPSC				
	NRC (# _____)				
	NRC Secondary Notification				
	PEAS (# _____)				
	Executive Director G&GAM				

EXAMPLE FORM

FIGURE 3A Form 82, Page 1

Form 82 5-2018

GAS INCIDENT REPORT (Cont'd)

FIELD LEADER

GAS FACILITIES

☐ Gas Distribution	☐ Gas T&S	Company Costs Incurred: $_____	Non Company Costs Incurred: $_____
☐ Non-Company Property	☐ ≥ 20% SMYS		

Safety Related Condition (≥ 20% SMYS)*

☐ Reduced Pressure > 20% ☐ General Corrosion ☐ Abnormal Loading/Movement ☐ Material Defect/Damage

RESULTS OF TESTS PERFORMED (AS APPLICABLE)

1. Odorant Test: Employee - ☐ Perceptible ☐ Not Witness - ☐ Perceptible ☐ Not	2. Meter Location: ☐ In ☐ Out ☐ N/A	3. Inside Gas Leak Checks: ☐ N/A Service Entry _____ % Free Air _____ %
4. Outside Leak Survey Result: ☐ Negative ☐ Gas Found ☐ N/A	5. Other Tests:	
6. Carbon Monoxide: ☐ Free Air Reading _____ ☐ N/A	7. Material Samples Collected: ☐ Yes ☐ No Describe:	
8a. Pressure: Pipeline/Service	8b. Pressure: Fuel Line/Appliance	
9. Venting Problems: Equipment/Appliance:	10. Pollution Emergency Alert System (PEAS) Reportable Gas Release ≥ 1 MMCF Estimated release:	
11. Employee Post-Accident Testing: ☐ Alcohol ☐ Controlled Substance ☐ Not Applicable		

INTERRUPTION DATA		FOR SYSTEM DAMAGE	
Gas Restored Date:	Time: Hours	Name of Firm:	Miss Dig: ☐ Yes ☐ No
Customer's Relit Date:	Time: Hours	Facility Staked: ☐ Yes ☐ No	Hand Dug: ☐ Yes ☐ No

Completed By: _____ Date: _____

PRINCIPAL/SENIOR FIELD LEADER REVIEW

GAS STANDARDS

Did employee(s) effectively follow gas standards?

☐ Yes ☐ No, Employee Review Required

If no, explain:

49 CFR 192.615(b)(3)

Were incident response procedures adequate?

☐ Yes ☐ No, consider revising

If no, explain:

49 CFR 192.605(c)(4)

EXAMPLE FORM

To sign form, please place cursor next to X below and double click, click on select image, select your saved bitmap or jpeg file of your written signature, click OK, close document without saving and it is now signed and marked final.

Reviewed By	MS Word Electronic Signature (Prior to signing, Save As a renamed file to your computer for future use. Once signed you cannot change or save the file without removing or invalidating the signature). X _____ Signature

- All Telephonic and Field Report Form 82's should be emailed to the Regulatory and Compliance Mailbox at PO Box: CE Regulatory Services within three (3) business days of the incident.
- All Transmission Form 82's should be emailed to Gas Measurement Engineering at PO Box: Vented Gas Reporting within five (5) business days of the incident.

FIGURE 3B Form 82, Page 2

Gas Operations Field Leader Guide

09 Record Keeping, Retention, and Distribution

Revised 10/01/20

General

This Practice discusses recordkeeping requirements:

- Work management system records
- Record distribution
- Record retention location
- Record retention duration

Responsibilities

Field Leaders

- Review records, including work management system.
- File and maintain records at local operating headquarters as required.
- Distribute records as required.

Gas T&S Engineering Designee

- Review records received, and take appropriate action with the operating headquarters.
- File records in the Gas T&S Engineering files as needed.
- Distribute records as required.

Gas T&S Engineering Manager

Assign a designee to review the records on the work management system.

RECORD DISTRIBUTION		
Discipline	**Title**	**Designee**
Gas T&S Engineering		
Compression	DIR GAS COMPRESSION, GE&S/GAM-Compression Engineering	Steven J Herrygers
Corrosion Control	SR ENGINEER LEAD, ED GAM-Direct Assessment & Corrosion	James Warner
M&R	PRIN ENGINEER, ED GAM-Metering & Reg Eng	Kurt Adams
Pipeline	SR ENGINEER LEAD, ED GAM-T&S Pipeline Eng	Chad Alley
Storage	PRIN TECH ANALYST – LEAD, GE&S/GAM/SI-Gas Storage Integrity	Gary Isham
Gas Measurement Engineering	SR ENGINEER II, ED GAM-Measure Sys Design & Application	Sam Patel
Asset Reliability	SR PLNR/SCHED LEAD, EOS-GAM Asset Reliability	Courtney Kazim
Regulatory Services	GAS COMPLIANCE MGR, ED-MPSC Gas Regulatory Services	Jason Pionk
Gas Transmission & Storage		
Construction Representative	Engineering employee on-site during construction	
Gas Manuals Procedure Owner	**Gas Regulatory Procedures**	

FIGURE 1

Record Retention

- Duration
  - Maintain records as indicated in the applicable Practice.
  - Consult the Corporate Retention Schedule if retention is not specified in the Practice.
- Location
  - Records may be maintained in the Work Management System and/or in the local operating headquarters files.
  - Use an indexed filing system that ensures the information is readily available for retrieval by employees.

Record Distribution

Only required if specifically stated in the applicable Practice.

Gas Operations Field Leader Guide

11 Maintenance Truck Inventory

Revised 04/01/2019

General

This Practice provides suggestions for maintaining a basis maintenance truck stock.

- Reduce the loaded truck weight.
- Remove unapproved fittings from trucks.
- Reduce waste of material.
- Improve housekeeping.

Tools

TOOLS	
Cast Iron — Standard Pressure	
Gas main stoppers or bags, 4” (2)	Rubber stretcher for bell joint clamp
Gas main stoppers or bags, 6” (2)	Scaler
Gas main stoppers or bags, 8” (2)	Tapping equipment
Gauges, 0-30” (10064610) (2)	
Plastic	
Fusion equipment	Tapping tool
Plastic squeezers	Tubing cutters
Other	
Air mover	Drill, rotary
Alternator — welder	Ear Protection
Axe	Emergency lighting
Bore rods, motor, and heads	Extension cords
Barricade boards and legs	Fire extinguisher
Broom, push	Flags
Channellocks	Flasher lights
Chinese fingers, 5/8” and 1-1/8”	Fresh air equipment
Chisels, cold	Frost bar
Gauges, 0 to 160-lb (2)	Pipe wrenches, 10” (2)
Gauge, 0 to 1,000-lb	Pipe wrenches, 14” (2)
Gauze	Rags
Goggles	Rain suits
Grass seed	Rake, garden
Grease gun for lockwings	Ratchet
Grease gun for valves (hydraulic)	Rope
Hacksaw	Safety cones (minimum 5)
Hammer, 2-lb	Screwdrivers
Hammer, chipping	Shovel, round point

Hammer, sledge	Shovel, square
Hammer-drill	Sockets
Hose clamps, 3/4” and 1-1/4”	Spade, air
Hydraulic cement	Spade, sod
Identification tags	Spade, tile
Impact rod	Tamp
Jackhammer	Tarp
Jumper wire (#10)	Thermit weld kit
Kilfrost	Traffic control signs & stands • “Worker” (2) • “Shoulder Work” (2) • “One Lane Road Ahead” (2)
Ladder	
Leak detector	
Leak soap	
Log chain	
Measuring tape, 100’	Tubing cutters — copper and X-trube
P/S instrument	Utility knives
Padlocks, 1417 (2)	Valve key, curb
Pipe cutters (4-wheel and 1-wheel)	Valve key, large (2” and larger)
Pipe dies	Water jug
Pipe dope	Wire brushes
Pipe locator	Wire cutters
Pipe wrenches, 18” (2)	Wire strippers
Pipe wrenches, 24” (2)	Wrenches, crescent
Pliers	Yellow stick
Plugs and stoppers, emergency	
Portable Hydraulic Shoring • S-3.5X2846 STD Vertical Shoring Assembly (2) • AS510001 48” Release Tool (2) • AS510001 48” Release Tool (2) • AS512039 5 GAL EPI Translucent Plastic Pump Can (1)	
*Tools will need to be ordered through Capital Tools.	

FIGURE 1

CAST IRON — STANDARD PRESSURE		
Description	**Quantity**	**Material No.**
Bell joint clamp, 4”	2	10086978
Bell joint clamp, 6”	2	10086980
Bell joint clamp, 8”	1	10086981
Bell joint clamp, 10”	1	10087003
Brass service tee, 1” x 1” x 1-1/8”	2	10088774
Brass service tee, 1-1/4” x 1-1/4” x 1-1/8”	2	10088776
Brass service tee, 2” x 2” x 2”	1	10088803
Brass street elbows, 90°, 1-1/8” x 1-1/8”	2	10087432
Full circle clamp, 8”	1	10086891
Full circle clamp, 10”	1	10086923
Mall service tee, 1-1/4” x 1-1/4” x 1-1/8”	2	10088760
Vented band clamp, 3”	1	10087108
Vented band clamp, 4”	2	10087109
Vented band clamp, 6”	1	10087111
Weld tee (SP), 1-1/8”	2	10088772

FIGURE 2

PLASTIC		
Description	**Quantity**	**Material No**
Clamp, stainless steel, 3”, 15” long	1	10087140
Compression coupling (Temp. repair for plastic), 1-1/4”	4	10087342
Compression coupling (Temp. repair for plastic), 2”	2	10087214
Cutter, 3/4” (tap) for fusion tee	4	10089086
Fusion cap, 1-1/4”	2	10089400
Fusion cap, 2”	2	10089121
Fusion elbow, 90°, 1-1/4 “	4	10089440
Fusion elbow, 90°, 2”	4	10089349
Fusion reducer, 1” x 5/8”	4	10089433
Fusion reducer, 1” x 1-1/8”	4	10089434
Fusion reducer, 1” x 1-1/4”	2	10089438
Fusion reducer, 1-1/4” x 2”	1	10089435
Fusion tee, 5/8” outlet x 2”	2	10089191
Fusion tee, 5/8” outlet x 3”	1	10089189
Fusion tee, 5/8” outlet x 4”	1	10089213
Fusion tee, 5/8” outlet x 6”	1	10089215
Fusion tee, 5/8” outlet x 8”	1	10089301
Fusion tee, 1-1/8” outlet x 2”	2	10089262
Fusion tee, 1-1/8” outlet x 3”	1	10089219
Fusion tee, 1-1/8” outlet x 4”	1	10089264
Fusion tee, 1-1/8” outlet x 6”	1	10089266
Fusion tee, 1-1/8” outlet x 8”	1	10089313

FIGURE 3A

PLASTIC		
Description	**Quantity**	**Material No**
Stab cap, 5/8" OD, .090	10	10087327
Stab coupling, 5/8" OD, .090	10	10087249
Stab cap, 5/8" OD, .062	10	10087328
Stab coupling, 5/8" OD, .062 x .090	10	10087325
Stab coupling, 1-1/8" OD, .101	10	10087251
Stab cap, 1-1/8" OD, .101	10	10087330
Plastic to copper coupling, 5/8" x 1/2"	6	10096704
Plastic to copper coupling, 5/8" x 5/8"	6	10096706
Plastic to male pipe thread adapter, 5/8" x 3/4"	4	10096680
Plastic to male pipe thread adapter, 1-1/8" x 3/4"	2	10096600
Plastic to pipe coupling, 5/8" x 3/4"	6	10087274
Plastic to pipe coupling, 1-1/8" x 3/4"	2	10087218
Plastic to pipe coupling, 1-1/8" x 1-1/4"	2	10087243
Plastic to X-trube coupling, 5/8" x 1/2"	6	10087276
Plastic to X-trube coupling, 5/8" x 5/8"	6	10087273
Plastic tubing, 5/8"	1	10084829
Plastic tubing, 1-1/8"	1	10084831
Plastic tubing, 1-1/4", 20' long	1	10084853
Plastic tubing, 2", 20' long	1	10084822
Transition fitting, 1-1/4"	1	10089088
Transition fitting, 2"	1	10089112
Weld tee, 5/8"	4	10088823
Weld tee, 1-1/8"	2	10088809

FIGURE 3B

OTHER		
Description	**Quantity**	**Material No**
Anode, 5-lb	3	10096990
Anode, 17-lb	1	10096992
Automatic shutoff set,	1	10089858
Automatic shutoff set, 1", 60 psig	1	10089860
Automatic shutoff set, 2", 60 psig	1	—
Ball check valve, 1/4", Fisher P-503	4	10089528
Bracket, gas meter	2	10090311
Bracket, prebrick	2	10090174
Clamp, leak, 1-1/4"	2	10087024
Clamp, leak, 2"	2	10087028
Clamp, mall pipe, 3/4"	2	10087023
Clamp, mall pipe, 1-1/4"	2	10087024
Clamp, stainless steel band, 1-1/4" (service)	2	10086972
Clamp, stainless steel full circle (steel), 2"	1	10086945
Clamp, stainless steel full circle (steel), 6"	1	10086948
Clamp, stainless steel full circle (steel & plastic), 4"	1	10086946
Clamp, steel repair, 4"	2	10087078
Clamp, steel repair, 6"	2	10087080

Clamp, steel repair, 6		2	10087080
Clamp, steel repair, 8”		1	10087102
Clamp, threaded pipe joint, 1-1/4”		2	10087057
Clamp, threaded pipe joint, 2”		2	10087061
Coupling, 3/4”		4	10085150
Coupling, 1”		2	10085162
Coupling, 1-1/8” x 1-1/8” to copper		2	10096665
Coupling, socket weld, 3/4” x 1”		2	10087391
Coupling, socket weld, 3/4”		2	10087418
Curb valve, 3/4”		2	—
Curb valve box		2	10097199
EH nipple, 3/4” x 12”		2	10085657
Foundation mount		2	10090176
GG, summer		1	10097589
GG, winter		1	10097605
Insulator, 3/4” (2/3 union for lockwing)		2	10089872
Insulator, 1” (2/3 union for lockwing)		2	10089873
Locate wire (roll)		1	10099808
Lockwing valve, insulated, 3/4”		6	10089770
Lockwing valve, insulated, 1”		3	10089768
Lockwing valve, insulated, 1-1/4”		2	10089782
Male swivel, 1”		3	10090492
Marker Ball		2	10195629
Outer wrap, 6” x 50’ roll		1	10099777
Plastic tie		50	10099541
Plidco, 1-1/4”		2	10088395
Plidco, 2”		2	10088397
Plidco, 4” x 8-1/2”		1	10088401
Plug, 1/2”		4	10086183
Plug, 3/4” (steel)		6	10086146
Plug, 1”	Malleable	4	10086148
	Steel	2	10086148
Plug, 1-1/4”	Malleable	4	10086150
	Steel	2	10086150
Plug, 2”	Malleable	2	10086154
	Steel	2	10086154
Pressure control fitting, 1-1/4”		2	10087571
Pressure control fitting, 2”		2	10087657
Saddle tee, 5/8” x 1-1/4”		2	10088829
Saddle tee, 5/8” x 2”		2	10088854
Service regulator set, 3/4”, 30 psig (internal relief)		1	10090445
Service regulator set, 3/4”, 30 psig (no relief)		1	10090443
Split bolt connector		12	10099644
Steel pin, threaded		6	10098940
Swivel gasket		6	10090251
Swivel nut		3	10090358
Template, 3/4”		1	10090308

Template, 1”	1	10090310
Test plug, 1/4”	2	10099064
Test lead box	1	10097162
Weld elbow, 90’, 1-1/4”	2	10087470
Weld elbow, 90’, 2”	2	10087482
Weld reinforcement sleeve, 1-1/4”	2	10088591
Weld reinforcement sleeve, 2”	2	10088603
Weld tee, 2”	2	10089112
Wire nut, silicone filled	Box	10099646
Wood blocking	12	10097225

FIGURE 4