

# 2012 Leak Repair Data Reformatting & Scrub Processes

March 14, 2013

## Table of Contents

I.	Leak Data Reformatting and Scrub Process Overview.....	3
II.	Tighten, Lube, Adjust (TLA) Codes.....	5
III.	TLA Interpretation Examples.....	7
IV.	Leak Data Normalization Pre-Population.....	8
V.	IGIS to PHMSA 7100.1-1 Annual Report Category Mapping.....	10
VI.	Leak Data Normalization Document Splitting.....	11
VII.	Leak Data Normalization Allowable Entries.....	11
VIII.	Leak Data Normalization Review .....	12
IX.	Leak Data Normalization Interpretations .....	14
X.	Leak Data Normalization Batch Reassembly .....	21
XI.	Leak Data Normalization QC and Deliverable Finalization .....	21
XII.	IGIS Data Fields for DIMP.....	25
XIII.	PHMSA F 7100.1-1 (Rev.01/11) Form Instructions .....	26

Appendix A - GasMap/GasView Leaks 2.5 Data Model Overview

Appendix B - Mapping Leaks GasMap2.5

Appendix C - Mapping Leaks GasMap2.5 Data Dictionary

Appendix D - Mapping Leaks GasMap2.5 A-Form

## I. Leak Data Reformatting and Scrub Process Overview

- A. This process was developed to improve the accuracy of key leak repair data field values for use in Distribution Integrity Management Program (DIMP) risk analysis and Pipeline and Hazardous Material Safety Administration (PHMSA) 7100.1-1 Annual Report submission.

The review of leak repair data reported by Company employees in prior years indicates that some selections made on the leak repair form are not always accurate or consistent with other values selected on the form or with the free-form comments that employees provide. For example, the selection of 'Corrosion' as the Leak Cause for a plastic main or service line is one example of inconsistent reporting. This process seeks to identify the most accurate values for the Leak Cause, Line Use, Leak Source, and Line Material by utilizing the available information in the employee comments and other relevant data fields. Use of the scrubbed data for both the risk analysis and 7100.1-1 report should provide the most accurate data available and more closely represent the true results rather than relying on the leak repair data only as reported.

The data normalization portion of this process was developed during 2012 to normalize leak repair data for multiple prior years for use in the DIMP risk analysis model, which is stored in the risk algorithm (RA) database. The portion of this process which addresses the reportability of leaks according to instructions for the PHMSA 7100.1-1 report was developed in 2011 and was utilized in 2011 and 2012 for the 2010 and 2011 PHMSA 7100.1-1 reports, respectively. These two prior processes were combined together and further refined in this document to provide the results for calendar year 2012 for Section C of the PHMSA 7100.1-1 report.

This reformatting and scrubbing process was conducted on a data set selected from the Integrated Gas Information System (IGIS) database on January 26, 2013. The data was selected based on leak repair date occurring during calendar 2012, with any duplicates removed. It is possible that data for individual leaks may have changed after this date, consistent with the design and usage of the IGIS system.

- B. The following is an overview of the leak data scrub and reformatting process steps. There is further discussion of each step in the relevant section below:
1. Remove all open (unrepaired) leaks from the data set.
  2. Remove columns, keeping only the columns shown in the *IGIS Data Fields for DIMP* list (Section XII) as well as the Repair Location, Repair Description, and Remarks columns necessary for the review.
  3. Add columns for population during scrub process, including:
    - a. DMP (District-Map-Plat)
      - i. Concatenate values from *District*, *Map*, and *Plat* fields using the equation:  
=CONCATENATE(*District*,"-",*Map*,"-",*Plat*)
      - ii. Copy the resultant values in the *DMP* column and paste values in the same column
    - b. Cause
    - c. Line Use
    - d. Leak Source
    - e. Material
    - f. Response Time

- g. Cause Change?
    - i. Mark “Yes” if the final Cause differs from the Reported Cause
      - 1. e.g. Reported Cause is Atmospheric Corrosion, Final Cause is Material or Weld
    - ii. Do not mark “Yes” if the final Cause is a more general description of the Reported Cause
      - 1. e.g. Reported Cause is Atmospheric Corrosion, Final Cause is Corrosion
  - h. Line Use Change?
  - i. Leak Source Change?
  - j. Material Change?
4. Change Grade “2+” leaks to Grade “1.5”
  5. Determine the Reportable/Non-Reportable code for each non-Grade 1 record based on *Tighten, Lube and Adjust (TLA) Codes* (Section II). Examples are provided in the *TLA Interpretation Examples* table (Section III).
    - a. A TLA Issue Check is then performed.
    - b. Filter out TLA Codes 1-4 from the final deliverable.
  6. Populate the Line Use, Leak Source, and Material fields using the *Leak Data Normalization Pre-Population* chart (Section IV).
  7. Populate the Cause field using the *IGIS to PHMSA 7100.1-1 Annual Reporting Category Mapping* table (Section V) and the *Leak Data Normalization Pre-Population* chart (Section IV) for IGIS leak cause values.
    - a. Review questionable leaks in more detail.
  8. Determine if leaks occurred on a Distribution, Transmission, or Gathering line.
    - a. Used documentation provided by Transmission Integrity Management Program (TIMP) used to determine Transmission or Gathering lines for PG&E.
      - i. TIMP Documentation Appendices:
        1. Appendix A - GasMap/GasView Leaks 2.5 Data Model Overview
        2. Appendix B - Mapping Leaks GasMap2.5
        3. Appendix C - Mapping Leaks GasMap2.5 Data Dictionary
        4. Appendix D - Mapping Leaks GasMap2.5 A-Form
      - b. The lines that TIMP determined to be Transmission or Gathering were removed from the Data Scrub and copied into a new sheet titled “Transmission Leaks” in the final deliverable.
  9. Split the reportable distribution records into smaller review files (batches) to facilitate simultaneous review by multiple staff (Section VI).
  10. Perform a review of the values in the four RA database columns (Line Use, Leak Source, Cause, and Material) against other data fields, specifically the Repair Descriptions, Repair Locations and Remarks. Adjust values in the RA database columns as appropriate based on the other available data. Use the *Leak Data Normalization Review* (Section VIII) and *Leak Data Normalization Interpretations* (Section IX) sections to assist the review.
    - a. Review questionable leaks in more detail.
  11. When the review of all the batches is complete, reassemble the reviewed batches back into a master file for the year (Section X).

12. QC the reassembled master file based the *Leak Data Normalization QC and Deliverable Finalization* (Section XI).
13. Remove the Repair Location, Repair Description, and Remarks columns, keeping only the columns shown in the *IGIS Data Fields for DIMP* list (Section XII).
14. Change data format, as necessary, as shown in the *IGIS Data Fields for DIMP* list (Section XII).

## II. Tighten, Lubricate, or Adjust (TLA) Codes

The use of TLA Codes was developed in 2011 to assist with the determination of leaks that are reportable according to the instruction of the PHMSA 7100.1-1 report. According to the instructions, "A non-hazardous release that can be eliminated by lubrication, adjustment, or tightening, is not a leak." Similar to the normalization of leak cause values discussed above, the additional details of the leak repair in the comment fields can indicate that a repair could have been repaired by tightening, lubricating or adjusting. The definition of the TLA codes and the reportability of the leak repairs classified into each code is reviewed to determine which set(s) are reportable. For 2012, all non-Grade 1 leaks with a TLA code equal to or greater than Code 5 are deemed reportable under this process.

- The TLA codes help indicate leak repairs that are not reportable under the instructions of the PHMSA 7100.1-1 report, as well as leaks that are reportable, leaks with insufficient data, and leaks that were zero-ed out before the repair. Tags labeled "Code X" are mutually exclusive. Review each leak and determine which code applies.
- These tags will be used for joints that can be tightened, for valves that can be lubricated, or for regulating devices that can be adjusted.
  - Tightened: Check to see if the repair includes work on a threaded joint, service valve, service riser threads, service tee cap, or service tee threads. Other key words: stopcock, riser valve, branch tee.
  - Lubricated: Review if the leak source is a valve, and it was lubricated or greased.
  - Adjusted: Review if the repair description says "adjusted", "set", or "reset".

### TLA Code Assignment Criteria:

1. Code 1 – Tighten or adjust part without removing part
  - a. Tag this if Repair Remarks contain the word "Tight", "Tighten", "Adjust", "Adjusted", or a combination of those, but does not contain the words "removed" or "replaced".
2. Code 2 – Apply lubricant on or into the part
  - i. Tag this if Repair Remarks contain the word "Lube", "Lubed", "Grease", "Greased", "operated", "greased and operated", "lubed and operated."
3. Code 3 – Apply dope and tighten with or without loosening part
  - a. Tag this if the Repair Remarks include "Doped and tightened". Dope is a substance that seals threads from leaking. The word "sealant" is sometimes used in place of "dope".
4. Code 4 – Remove part - clean and/or apply dope – reuse part
  - a. Tag this if the Repair Remarks include something similar to:
    - b. "Removed, doped, and tightened"

- c. "Removed, cleaned, and tightened"
  - d. "Removed, doped, and replaced same"
5. Code 5 – Remove existing part, install a new replacement
- a. Tag this if the Repair Remarks include something similar to:
  - b. "Removed, doped, and replaced"
  - c. "Removed, and replaced"
  - d. Examples:
    - i. Remove/Replace Completion Plug –Fitting
    - ii. Replaced Service Valve <2 inch
    - iii. Replace Plastic Tee Cap – Plastic
    - iv. Replace Valve/Plug/Plastic Tee Cap and Rebuilt Meter Set and/or Irons and/or Regulator
6. Code 6 – Reportable Leaks
- a. Tag this when the repair is clearly specified and does not fall into any of the TLA Codes, therefore it is reportable to government agencies.
  - b. Examples:
    - i. Skinner/Bell Joint/Full Circle Clamp
    - ii. Aldyl A Overcap
    - iii. Deactivate Service
    - iv. Replace Entire Service
    - v. Fill/Patch Weld
    - vi. Soap and/or Tape
    - vii. Replace Dist Main
    - viii. Replace Main/Line Valve
    - ix. Cut/Rethread Riser
7. Code 7 – Data inconclusive, recommend further analysis
- a. Tag this if the repair cannot be clearly assigned to any of the other codes. Usually used when Cause/Source/Repair/Remarks= Other or Unknown
8. Code 8 – Repair remarks indicate no leaks before repair
- a. Tag this if the repair crew indicates there was no leak.
  - b. If there is a Check that assigns the leak a New Grade = 0, but a repair is performed at a later date, tag Code 8. If there is a New Grade = 0 on the same date with the repair it could be just a confirmation that the repair was successful (but the exact time of the read and the repair should be checked). A New Grade = 0 after the repair is a post-repair check and it should be a Grade = 0, otherwise a new leak number should be assigned to the new-found leak.

### TLA Issue Check

The purpose of this check is to make sure only the proper values are entered as well as taking a look at issues that are known to have variables due to the keywords noted below in the data set.

1. Create a "REVIEW" column at the beginning.
  - a. Enter Formula: =IF(Grade<> "1",IF(TLA<5,"NO","YES"),"YES")
2. Make sure values in TLA/Reportable column are only "1-8"
3. Look for "QC", "quick change", "valve changer", "used curb valve to apply new pipe dope" in Repair Location and Remarks columns

- a. If just “tighten and dope” and no Replacing of anything, it is TLA 4
- b. If something is being replaced, it is TLA 5
4. Look for “dope” in Repair Location and Remarks columns
  - a. If just “tighten and dope” and no Replacing of anything, TLA 4
5. Filter Repair Description for “Tighten Cap/Bolt – Fitting” and “Greased”
  - a. If just “tighten/dope/grease” and no Replacing of anything, TLA 4
6. Perform another check to ensure all reportable leaks are reviewed is performed on the records marked TLA 1-4.
7. Filter Review Column for entries other than “YES” or “NO” in case of Formula errors

### III. TLA Interpretation Examples

The examples in the table below record the interpretation of the repair as it relates to the TLA code that is assigned.

Data Keywords	TLA Code
Like for Like change out	5
Part Failure	6
Below Ground (replacing cap on PCF, etc)	6
Replacing Aldyl A Overcap	6
Bell Joint	6
Deactivate	6
Replacing Tees	6
Trident Seal	6
Soap/Tape	6
Aquawrap	6
Replumb	6
SPJC = Skinner Pipe Joint Clamp	6
Repair Description: Replace Main Valve <2 inch – Replace or Replace Main Valve >= 2 inch	6
Unless the Remarks says “service valve” or “riser valve”	5
Probe / Valve changer / quick change / supply / clamp and valve stopper / Safety clamp	5
Unless above says “Reinstalled”	4
"QC" or "Quick Change" and just "doping and tightening"	4
"QC" or "Quick Change"	4
Peened	6
No Leaks	8
Change nipple	5
Installed new plug	5
Replace bell reducer	5
Replace fitting and tighten valve	5
Replaced bypass T	6
Replaced bell reducer	6
Replaced elbow	6

Replace Main/Curb valve	6
Installed new clamp	6
Replaced old clamp	5
Deactivate or "install dead end"	6

**IV. Leak Data Normalization Pre-Population**

The table below is used to populate the spreadsheet prior to the in-depth review. The IGIS Value column corresponds to the RA Database Field Value.

LINE USE	IGIS Line Use Description	RA Database Field Value
	All Branch Service and Single Service	Service
	All Dist Main	Main
	If "Open" Leak or Line Use Description: Blank	Unknown
	Transmission	Distribution Main >60 psig
	Gathering	Distribution Main >60 psig
	If "Leak Location" = Above Ground	Above Ground Facility
	IGIS Leak Cause Value = Vehicle	Above Ground Facility
LEAK SOURCE	IGIS Leak Source Value	RA Database Field Value
	IGIS Leak Cause Value = Excavation & IGIS Leak Source Value = Regulator	Pipe
	Bell Joint	Pipe
	Body of Pipe	Pipe
	Clamp	Pipe
	Compression Coupling Steel	Fitting
	Compression Coupling SS	Fitting
	Compression Coupling	Fitting
	Compression Coupling Plastic	Fitting
	Curb Valve	Valve
	Drip	Fitting
	Encapsulation	Fitting
	Fitting	Fitting
	Fusion Joint	Pipe
	Girth Weld	Pipe
	Line Valve	Valve
	Longitudinal Weld	Pipe
	Mechanical Joint	Fitting
	Non-corrodible prefab riser	Riser
	Not Recorded	Unknown
	Other	Unknown
	Other Mechanical Joint	Fitting
	Other Welds	Pipe
Plastic Tee Cap	Plastic Tee Cap	



LEAK REPAIR DATA NORMALIZATION DOCUMENTATION

	Pressure Control Fittings	Fitting
	Regulator/Pilot	Regulator
	Riser	Riser
	Riser Inset Kit	Riser
	Riser Valve Threads	Valve
	Stab Type Fittings	Fitting
	Tap Connection	Fitting
	Threads (on Service)	Valve
	Unknown	Unknown
	Valve	Valve
<b>CAUSE</b>	<b>IGIS Leak Cause Value</b>	<b>RA Database Field Value</b>
	Atmospheric Corrosion	Corrosion
	External Corrosion	Corrosion
	Internal Corrosion	Corrosion
	Stress Corrosion Cracking	Corrosion
	Earthquake	Natural Force
	Damage by Earth Movement	Natural Force
	Damage by Heavy Rains/Flood	Natural Force
	Other Natural Forces	Natural Force
	Lightning	Natural Force
	Root Damage	Natural Force
	Dig-In/Excavation	Excavation
	Damage by 3rd Party (if Above Ground)	Other Outside Force
	Damage by 3rd Party (if Below Ground)	Excavation
	Damage by Electrical Facility	Other Outside Force
	Deliberate Acts\Vandalism	Other Outside Force
	Fire or Explosion on Customer Facilities	Other Outside Force
	Fire or Explosion on Company Facilities	Other Outside Force
	Vehicle	Other Outside Force
	Rodent	Other Outside Force
	Compression Coupling	Material or Weld
	Material Failure	Material or Weld
	Plastic Crack Failure	Material or Weld
	Plastic Embrittlement	Material or Weld
	Weld Failure	Material or Weld
	Equipment Malfunction	Equipment
	Leak Source = Valve, Regulator & Reported Cause = Construction Defect	Equipment (otherwise Construction Defect = Material or Weld)
	Incorrect Operation	Incorrect Operation
	No/Deteriorated Pipe Dope	Other
	Other	Other
	Previously Damaged	Other

**LEAK REPAIR DATA NORMALIZATION DOCUMENTATION**

	Unknown (Incl. Replaced facility)	Other
	Cast Iron Fractures	Material or Weld
	None Recorded	Other
<b>MATERIAL</b>	<b>IGIS Line Material (Repaired) &amp; Line Material (Inspection) Values</b>	<b>RA Database Field Value</b>
	If both column values match	IGIS Line Material (Repaired)
	If "Line Material (Repaired)" is blank	IGIS Line Material (Inspection)
	If both columns are blank	Unknown
	If columns do not match	IGIS Line Material (Repaired)
	If columns do not match, but each has a plastic value	Plastic
	IGIS Leak Cause Value = Excavation	IGIS Line Material (Repaired)
	IGIS Leak Cause Value = Corrosion (any type)	Steel
	IGIS Leak Source Value = Regulator	Steel
	IGIS Leak Source Value = Plastic Tee Cap	Plastic (if Reported Material is metallic)
	Aldyl A	Plastic
	Casing	Unknown
	Cast Iron	Cast Iron
	Cast/Ductile Iron	Cast Iron
	Copper	Copper
	Ductile Iron	Ductile Iron
	Other	Unknown
	Other Plastic	Plastic
	PE 2406 (Orange)	Plastic
	PE 2406/2708 (Yellow)	Plastic
	PE 3408 (Black)	Plastic
	PE 4710 (Black)	Plastic
	Steel	Steel
	Wrought Iron	Wrought Iron
	Steel/Wrought Iron	Steel

**V. IGIS to PHMSA 7100.1-1 Annual Report Category Mapping**

The table below is used to populate the spreadsheet prior to the review. The IGIS Cause Description column corresponds to the PHMSA Cause Category.

<b>IGIS Cause Description</b>	<b>PHMSA Cause Category</b>
Atmospheric Corrosion	Corrosion
External Corrosion	Corrosion
Internal Corrosion	Corrosion
Stress Corrosion Cracking	Corrosion
Earthquake	Natural Forces
Damage by Earth Movement	Natural Forces
Damage by Heavy Rains/Flood	Natural Forces

Other Natural Forces	Natural Forces
Root Damage	Natural Forces
Dig-In/Excavation	Excavation
Damage by 3rd Party	Other Outside Force OR Excavation
Damage by Electrical Facility	Other Outside Force
Deliberate Acts\Vandalism	Other Outside Force
Fire or Explosion on Customer Facilities	Other Outside Force
Fire or Explosion on Company Facilities	Other Outside Force
Vehicle	Other Outside Force
Rodent	Other Outside Force
Compression Coupling	Material or Weld
Construction Defect	Material or Weld OR Equipment OR Incorrect Operation OR Other
Material Failure	Material or Weld
Plastic Crack Failure	Material or Weld
Plastic Embrittlement	Material or Weld
Weld Failure	Material or Weld
Equipment Malfunction	Equipment
Incorrect Operation	Incorrect Operation
No/Deteriorated Pipe Dope	Other
Other	Other
Previously Damaged	Other
Unknown (Incl. Replaced facility)	Other

**VI. Leak Data Normalization Document Splitting**

After formatting, TLA review, and removal of all non-reportable and transmission leaks is complete the data set is then split into batches for simultaneous review by multiple staff.

1. Unhide all columns. Clear all filters. Unfreeze all panes.
2. All "Reviewable" leaks: Sort by "Leak Cause"
  - a. Split into about 3000 records per batch

**VII. Leak Data Normalization Allowable Entries**

Line Use
Main
Service
Distribution Main >60 psig
Above Ground Facility
Unknown

Material
Plastic
Steel
Copper
Wrought Iron
Cast Iron
Unknown

	Ductile Iron
<b>Leak Source</b>	<b>Cause</b>
Riser	Excavation
Fitting	Corrosion
Valve	Incorrect Operation
Plastic Tee Cap	Equipment
Pipe	Material or Weld
Regulator	Natural Forces
Unknown	Other Outside Force
	Other

**VIII. Leak Data Normalization Review**

The following review was performed following the instructions and protocols contained in this process document. The purpose of this review is to adjust the Cause, Line Use, Leak Source and/or Material values based on a review of multiple comment fields for the record and comparing the comment data against the originally recorded values for the record. Adjustments are made when specific data exists & provides a clear indication consistent with these instructions. If the review does not identify a clear indication that a value should be changed, the value is not changed.

Following the pre-population steps as described in Section IV and after the file has been divided into batches, begin a more in-depth review of leak data. When it is necessary for information in the Cause, Line Use, Leak Source, or Material columns to be changed based on further review of associated data, indicate a change has been made in the columns named “Cause Changed?”, “Line Use Changed?”, “Leak Source Changed?”, and “Material Changed?”, respectively. This information is important for tracking of changes after analysis is complete.

1. Highlight the columns with duplicate names
2. Cut the duplicate column farthest to the right and paste it so the columns with identical headings are adjacent to one another. This will facilitate the adjudication necessary to eliminate one column.
3. Begin review for “Line Use” information
  - a. The allowable entries for this column are: Main, Service, Distribution Main > 60psig, Above Ground Facility, or Unknown
  - b. Review the data in the “Leak Location” column to determine if the facility is above or below ground. Refer to “Surface Over Pipe” data if “Leak Location” field is incomplete.
  - c. If the facility is above ground, place “Above Ground Facility” in the new “Line Use” column
    - i. Note that work completed ON risers (as described in the “Remarks”, “Repair Description”, and “REP\_LOC” column) should be marked as “Above Ground Facility” in the new “Line Use” unless the Remarks specifically indicate the source of the leak is below ground, in which case follow the steps outlined in Subpart d, below.
  - d. For the remaining (below ground) facilities,
    - i. if the description in “Line Use Description” indicates it is a service (single or branch), place “Service” in the new “Line Use” column

- ii. if the description in "Line Use Description" indicates it is a main (less than or equal to 60 psig), place "Main" in the new "Line Use" column
        - iii. if the description in "Line Use Description" indicates it is a main (greater than 60 psig), place "Distribution Main > 60psig" in the new "Line Use" column
      - e. If any rows remain for which sufficient data is unavailable to make a Line Use determination (Above Ground Facility, Service, or Main), place "Unknown" in the new "Line Use" column
  4. Begin review for "Leak Source" information
    - a. The allowable entries for this column are: Riser, Fitting, Valve, Plastic Tee Cap, Pipe, Meter, Regulator, or Unknown
    - b. Use information in the "Leak Source" column to populate the "Leak Source" column
    - c. If insufficient data is available in the "Leak Source" column, use queries to search for all of the following key words: Riser, Fitting, Valve, Plastic Tee Cap, Meter, Regulator, in the "REP\_LOC," "Remarks," or "Repair Description" columns
      - i. If any of these key words are found, place the respective word (riser, fitting, etc.) in the new "Leak Source" column
    - d. For all items where the Leak Source is "Bell Joint", "Drip", "Fusion Joint", "Other Welds", and "Other" or where the facility type is unknown or was not recorded, use the "REP\_LOC," "Remarks," or "Repair Description" columns to determine the Leak Source type
  5. Begin review for "Material" information
    - a. The allowable entries for this column are: Plastic, Steel, Copper, Wrought Iron, Cast Iron, or Unknown
    - b. Use information in the "Line Material (Repaired)" column to populate the "Leak Source" column
    - c. If data is insufficient data in the "Line Material (Repaired)" column, use information from the "Line Material (Inspection)" column to populate the "Leak Source" column.
    - d. If data is still insufficient, use information in "REP\_LOC," "Remarks," or "Repair Description" columns to determine the material of the leaking component.
    - e. Enter all plastic materials (including Aldyl-A) as "Plastic" in the new "Materials" column
    - f. Verify that materials listed as "Wrought Iron" or "Ductile Iron" are not actually steel using the "REP\_LOC," "Remarks," or "Repair Description" columns
    - g. For items where "Casing" or "Other" is the line material, use the "REP\_LOC," "Remarks," or "Repair Description" columns to determine the actual material type
      - i. "Casing" is not actually a material so it is an invalid choice. If "Casing" is the reported material and no additional information is available, Change Material to "Unknown".
    - h. For items where no material is indicated in the "Line Material (Repaired)" or Line Material (Inspection)" columns, use the "CP", "REP\_LOC," "Remarks," or "Repair Description" columns to determine what the material type is.
      - i. If there is not enough information to make a material determination, enter "Unknown" in the new "Material" column
  6. Begin review for "Cause" information
    - a. The allowable entries for this column are: Excavation, Corrosion, Incorrect Operations, Equipment, Material or Weld, Natural Forces, Other Outside Forces, Other, or Unknown (Replaced Facility)

- b. Use information in the “Reported Cause” column to populate the “Cause” column
- c. If data is insufficient, use information in “REP\_LOC,” “Remarks,” or “Repair Description” columns to determine the cause of the leaking component.

## IX. Leak Data Normalization Interpretations

The following interpretations are used in combination with the *Leak Data Normalization Review* (Section VIII). These interpretations arise from the most common and more complex issues noted during the review. The interpretations are used by the reviewers to populate or change the RA database fields, based on the issue and context of the data as a whole for a particular leak record.

### A. GENERAL ISSUES

#### 1. General

- a. If you cannot find anything to contradict what was pre-populated or evidence otherwise, leave the entry as whatever was pre-populated.
- b. Review the following reported causes as well as the “REP\_LOC,” “Remarks,” or “Repair Description” columns in greater detail to determine the actual leak cause: Construction Defect, Unknown (Replaced Facility), Previously Damaged, Unknown, None Recorded, and Other.

#### 2. Importance of notes in the Remarks and Repair Location columns

- a. Very Important! Usually have more information than the data selections from the A-Forms in IGIS and at times contradict the data entries. Especially for Leak Source and Cause.
- b. The data may say the Source is a Valve, but the Remarks say “Replaced Riser.” Enter “Valve” as “Leak Source.”

#### 3. Language

- a. Other terms for Valve: cock, stopcock, GSV, VLV.
- b. SPJC = Skinner Pipe Joint Clamp. Anytime you see SPJC in the remarks, treat your review as they are installing or repairing a clamp.
- c. “BOV riser threads” = “bottom of valve at riser threads”.
- d. SS = Stainless Steel.
- e. “R&R” or “R/R” = Remove and Replace.

### B. LINE USE ISSUES

#### 1. Line Use: Above Ground Facility

- a. Above Ground Facility takes precedence over all other Line Use categories.
- b. Note that work completed ON risers (as described in the “Remarks,” “Repair Description,” and “REP\_LOC” column) should be marked as “Above Ground Facility” in the new “Line Use” unless the Remarks specifically indicate the source of the leak is below ground, in which case the Line Use should be Service, Main, or Distribution Main > 60psig, as indicated by the reported data.
- c. Any time there is language in the Remarks or Repair Location that mention “cutting concrete”, “breaking concrete”, “digging”, “hand dug”, “excavating”, “below ground”, “buried”, etc. Line Use will be Main, Service, Distribution Main > 60psig or Unknown not Above Ground Facility.

- d. Check “Leak Location” and “Surface Over Pipe” columns for information indicating an above ground facility.
  - e. Remarks and Repair Location could also contradict what is in the Repair Location (“REP\_LOC”) column.
2. Line Use: Above Ground – Tighten Fitting
    - a. Tighten Fitting in a vault or pit (not buried) – Line Use = Above Ground Facility.
  3. Line Use: Service v. Main when “Risers” are involved
    - a. Normally, a riser is at the end of a service line to bring the service aboveground and connect to a regulator and meter at a customer location.
  4. Line Use: Above Ground Facility – “Replacing Riser”
    - a. When leak source data is not sufficient enough to indicate a Line Use, but references to replacing a riser in comment fields DO NOT contain remark language indicating the problem is below ground, such as “installed riser at dig break-in” – Line Use = Above Ground Facility.
    - b. Any reference to replacing a riser that DOES contain language indicating the problem is below ground, such as “installed riser at dig break-in” – Line Use = Service.
    - c. Compression Couplings connect the service line and riser, thus are below ground. Line Use = Service.
  5. Line Use: Plastic Tee Cap – Replacement or tightening
    - a. Plastic Tee Cap replacement or tightening or any other issue with a service tee fitting Line Use = Service.
  6. Line Use: Service Tee to Main – Fusion or Welds
    - a. Failure of fusion or weld of service tee to main – Line Use = SERVICE.
  7. Line Use and Leak Source: Welds
    - a. Welding occurs on Steel; Fusion occurs on Plastic.
    - b. If Repair is Weld, Leak Source is Pipe, unless another component is specified.

## C. LEAK SOURCE ISSUES

1. Leak Source: Priorities
  - a. If a riser and valve replaced. Leak Source = Riser most of the time, unless they specifically chose Valve as Leak Source.
  - b. If a nipple or other fitting is replaced. Leak Source = Fitting.
2. Leak Source: Specifically Identified Source
  - a. Example:
    - i. IGIS Leak Source: Fitting
    - ii. RA Database Leak Source: Fitting
    - iii. Leak Cause: Construction Defect

- iv. Repair Description: Other
  - v. Remarks: "leak at fitting, 1/2 permasert bad - replaced riser and added 12" of driscopex pipe. soap tested at line pressure"
  - b. In this example, the remarks clearly state that the leak was at a fitting. We would leave Leak Source as "Fitting", even though the riser and pipe were replaced.
  - c. *If the leak source is specifically identified, as in the example above, then choose that as the Leak Source.*
3. Leak Source: Riser v. Valve
- a. If the Remarks indicate that a valve was being replaced or worked on, but also includes "cut and rethread riser" or "cut down" riser, Leak Source would be Riser.
  - b. If a valve AND riser are being replaced, the replacing of the riser would take priority and Leak Source would be Riser.
  - c. Make sure the Valve is the actual source, could be replacing Riser, Pipe, Fitting, etc.
    - i. NOTE: REPLACING ANY KIND OF VALVE, Cause: "Equipment", unless Corrosion, Natural Forces, Excavation, or something better applies.
      - 1. If the remarks say "replaced same valve" then the leak is not-reportable.
      - 2. See Section D *Cause Issues* item 3 about Cause selection regarding Regulators, Fittings, Valves, Tee Caps, and O-Rings.
4. Leak Source and Cause: Clamps
- a. Clamps are generally used on Pipes or Risers. If the data indicates that a clamp is installed pay close attention to where it's being installed. If the data says "at/on riser threads" Leak Source is Riser.
  - b. If they are just "installing" or "repairing with a clamp" Leak Source is Pipe or Riser if the Repair Location or Remarks mention Pipe or Riser. Otherwise leave Leak Source as reported. Again unless the Repair Location or Remarks mention Pipe or Riser, we would just leave it as reported.
5. Leak Source and Cause: Replacing Clamps and Valves
- a. "Clamps" and "Valve" – Look to see if a Clamp or a Valve has been replaced.
  - b. Replacing "Clamps" – Leak Source: "Fitting", Cause: "Equipment" (unless other Cause is appropriate).
  - c. Replacing "Valves" – Leak Source: "Valve", Cause: "Equipment" (unless other Cause is appropriate).
    - i. NOTE: REPLACING ANY KIND OF VALVE, Cause: "Equipment" unless Corrosion, Natural Forces, Excavation, or another cause applies.
      - 1. If the remarks say "replaced same valve" then the leak is not-reportable.
      - 2. See Section D *Cause Issues* item 3, which refers to Cause selection regarding Regulators, Fittings, Valves, Tee Caps, and O-Rings.
6. Leak Source: Riser, Riser Threads, Valve
- a. If Repair Loc/Remarks indicate "at riser threads" or "on riser below valve" – Leak Source: Should remain as reported



- b. If valve is on Riser, then Line Use is "Above Ground Facility".
  - c. If Repair Loc/Remarks indicate "at valve" – Leak Source: Valve.
  - d. Powell Kits = Risers.
  - e. If Leak Source = Riser is clearly the Source of the leak, and the Repair Description was either "Repair Entire Service" or "Replace Partial Service", Line Use = Above Ground Facility (unless Remarks specifically state "below ground" or the coupling on the riser was leaking which is usually below ground).
7. Leak Source: Bell Joints
    - a. Leak Source: Pipe. Cause: Other (exceeded normal service life).
  8. Leak Source: Manifold
    - a. Replacing Manifold = Pipe.
  9. Leak Source: Pipe or Body of Pipe
    - a. If the Reported Leak Source is Body of Pipe and the remarks mention only that they added a coupling, do not change Leak Source to Fitting, keep as Pipe.
  10. Leak Source: IGIS Source – Body of Pipe
    - a. Check Remarks to see if it was actually pipe being replaced as opposed to a Fitting, Riser, Valve, etc. which could be a more accurate Leak Source.
  11. Leak Source: IGIS Source – Other
    - a. Check Remarks to see if they made repairs on a Riser, Valve, Fitting which could be a more accurate Leak Source.
  12. Leak Source: "Mueller" and Fitting
    - a. If you see the word "Mueller" in the Leak Location or Remarks, it is most likely referring to a Fitting manufactured by Mueller. So if in the Leak Location or Remarks indicate the leak is on or relating to the "Mueller" mentioned Leak Source is Fitting.
  13. Leak Source: Fitting – "dope/tighten/replace cap and Material: Steel"
    - a. If the Remarks are dope/tighten/replace cap and the Material is Steel, Leak Source is Fitting.
  14. Leak Source: Regulator/"H202" and Cause: Equipment
    - a. "H202" is a model number for a Regulator. If an "H202" is being replaced Leak Source: Regulator and Cause: Equipment.
  15. Leak Source and Cause: Trident Seal
    - a. If a Trident Seal is applied, but there is no indication on what the Trident Seal is applied to, leave the Leak Source and Cause as reported. Unless the evidence points to something more specific.
  16. Leak Source and Cause: Welds

- a. Pay attention to whenever the word “weld” is mentioned. If the weld was faulty and the actual cause of the leak, the Cause would be Material or Weld. Leak Source would be whatever the weld was on, i.e. Pipe.

#### 17. Leak Source and Cause: Replacing Caps

- a. There are three general caps Steel, Plastic, and Aldyl-A. Aldyl-A is a type of plastic, but is reported differently. The Leak Source and Cause is dependent on the type of cap being replaced.
  - i. Steel Cap – Leak Source: Fitting, Cause: Equipment.
    1. See Section D *Cause Issues* item 3 which refers to Cause selection regarding Regulators, Fittings, Valves, Tee Caps, and O-Rings.
  - ii. Plastic Tee Cap (Non-Aldyl-A) – Leak Source: Plastic Tee Cap, Cause: Equipment.
    1. See Section D *Cause Issues* item 3 which refers to Cause selection regarding Regulators, Fittings, Valves, Tee Caps, and O-Rings.
  - iii. Aldyl-A Plastic Tee Cap – Leak Source: Plastic Tee Cap, Cause: Whatever is chosen in the “Leak Cause” unless something in the Remarks contradicts the choice. Cause will never be Equipment if an Aldyl-A cap is being replaced. Cause could be Equipment if Aldyl-A cap is tightened, doped or greased.
- b. To determine if a tee cap is a Plastic Tee Cap or an Aldyl-A Tee Cap, look at the Material column, as well as Repair Loc, Repair Description (especially “Aldyl A Overcap – Plastic”), and Remarks. In addition, if anything says “Aldyl-A,” “Aldyl,” “Aldyla,” “Fusion,” “Overcap”, “Electrofusion”, “Fused” in relation to caps, etc.
  - i. Due to various abbreviations and potential misspelling of “Aldyl-A”, leaks involving Aldyl-A are reviewed in more detail during the following the initial reviews.

#### D. CAUSE ISSUES

##### 1. Cause: General

- a. When reviewing for Cause, if you see comments and other data that suggest a different Cause, enter the most accurate cause based on the PHMSA definitions included in this document. If you do not have additional data to suggest a different Cause, assign the corresponding category based on the original IGIS Cause value (Section IV).
- b. Try to follow the “story” from the data presented. The crews might be responding to a corrosion leak, “Broken riser heavily corroded” but there may be another clue as to what the cause was, “Riser struck by car. Broken riser heavily corroded.” Here the cause would be Other Outside Force (IGIS Cause: Vehicle).

##### 2. Cause: Equipment – “Replace” in general

- a. If a valve, fitting, or regulator is replaced along with a Riser and Pipe, and there is no specific indication that the valve, fitting, or regulator was the leak source, the Cause will remain unchanged (the pre-populated Cause value).
- b. If the remarks indicate that the valve, fitting, or regulator was leaking, the Cause is Equipment.

##### 3. Cause: Equipment v. Pre-Populated Cause – Regulator, Fitting, Valve, Tee Caps, O-Ring

- a. If a Regulator, Fitting, Valve, or Cap has keywords: “bad,” “leaking,” “frozen,” “broken,” or words that indicate the Regulator, Meter, Fitting, Valve, Tee Cap or O-Ring itself is leaking then Cause = Equipment.
    - i. NOTE: An “old valve” isn’t necessarily enough information to change Cause to Equipment.
    - ii. NOTE: A “leak at valve” doesn’t necessarily mean that the valve itself is leaking; the valve threads could be leaking. Look at the rest of the data and make sure that the leak is “ON” the valve or that the “valve is leaking” or “valve leaking” or “leaking valve,” etc.
  - b. If the repair is replacing a Regulator, Fitting, Valve, Tee Cap or O-Ring and does not have any of the keywords mentioned above then Cause = Other.
    - i. If leak is on AND below the valve, leave Cause = Other, as it is unknown whether leak on the valve or below the valve is the actual cause. Unless there is data that indicates the valve itself is “bad,” “leaking,” “broken,” or “frozen,” etc.
4. Cause: Remarks Include “replumb”
- a. When replumbing occurs, it usually means new pipe was installed since plumbing is typically pipe-related.
  - b. The Cause should remain as whatever is pre-populated, unless data as a whole indicates otherwise.
5. Cause: Equipment – “Greasing” and “Tightening”
- a. If the Repair Description and Remarks allude to “greasing” or “tightening” anything, with or without doping, the Cause will be Equipment.
6. Cause: Other – “Dope, redope, doped”
- a. If the repair is strictly “dope”, “redope”, “doped” then the Cause will be Other.
7. Cause: Equipment – Tighten Valve Packing
- a. Any remark containing “Tighten Valve Packing” then, Cause = Equipment.
8. Cause: Equipment – If IGIS Cause: Corrosion – Tighten/Dope/Replace
- a. Any repair or remark such as “Tighten Service Valve” “Re-dope & Tighten Valve” or “Replace Service Valve” which DOES have an IGIS Cause of Atmospheric, External or Internal Corrosion or Remarks indicating Corrosion – Cause = Corrosion.
9. Cause: Equipment – If IGIS Cause: No Corrosion – Tighten/Dope/Replace
- a. Any repair or remark such as “Tighten Service Valve” “Re-dope & Tighten Valve” or “Replace Service Valve” which DOES NOT have an IGIS Cause of Atmospheric, External or Internal Corrosion or Remarks indicating Corrosion – Cause = Other (exceeded service life) “Replace Service Valve” = EQUIPMENT.
10. Cause: Corrosion and Material or Weld

- a. If in the Remarks “pitted,” “corroded,” “rust” or “deteriorated pipe/fitting,” etc. – select Corrosion for the Cause.
- b. If in the Remarks you see “defect”, “cracked”, “broken,” “failed,” “bad permasert/fitting,” etc. – select Material or Weld for the Cause.

11. Cause: IGIS Cause – Construction Defects

- a. If Cause = Construction Defect, look at Source, Repair Code, and Remarks. If it is tightening, greasing, doping, replacing valve, replacing cap, replacing plug, etc there is probably a better Cause such as Equipment.
  - i. Construction Defects are usually either Material or Weld, Equipment, or Incorrect Operation.
- b. If Reported Cause = Construction Defect then Cause should be:
  - i. All Valve = Equipment
  - ii. “Replace Tee” = Material or Weld
  - iii. “Install Aldyl A Cap” = Material or Weld
  - iv. “Replace Tee Cap” = Equipment
  - v. “Replace Fitting” (general) = Material or Weld
  - vi. “Replace Coupling” (general) = Material or Weld
  - vii. “Restabbed” = Incorrect Operation

12. Cause: Other Outside Force v. Excavation

- a. For leaks that are the result of 3<sup>rd</sup> party damage where the leak is below ground, select Excavation as the cause unless there is evidence indicating the damage occurred above ground, in which case the cause is Other Outside Force.
  - i. Damage by 3<sup>rd</sup> Party on Below Ground Facility = Excavation
  - ii. Damage by 3<sup>rd</sup> Party on Above Ground Facility = Other Outside Force

13. Cause: IGIS Cause – Previously Damaged

- a. Pay close attention to the Remarks and Repair Location for comments that can point to one of the other 7 causes (rather than entering Other).

14. Cause: “bad fusion”, etc. – Incorrect Operation

- a. If remarks indicate “bad fusion”, “service was hammered together without a weld”, etc. choose Cause: Incorrect Operation.

15. Cause: “Cut” and/or “Thread”

- a. Leave the cause as whatever was pre-populated, unless evidence says otherwise.
  - i. Ex. Leak Cause: Construction Defect. Cause: Material or Weld. Remarks: “cut and thread riser. replaced valve.” Here, the Cause would remain Material or Weld.

16. Cause and Leak Source: Replace/Deactivate Entire/Partial Service

- a. For the most part if the Repair Description is Replace Entire, Replace Partial service or Deactivate: Leak Source will be Pipe. Obviously if a specific fitting is mentioned, it’s more likely Fitting. Look for Remarks like “replaced ½” pl” or “inserted/replaced svc or pipe” or “replace

partial service” all of those are alluding to pipe. Really you are looking at what the controlling/main repair was. This can be tricky – Cause can be different than repair. Replace Entire Service can fix just about any Cause. Look for the Remark that gives a clue as to the Cause.

17. Cause: IGIS Cause – Root Damage

- a. If the Cause is truly root damage (look at Remarks and Repair Loc to help verify), Cause will be Natural Forces.

18. Cause: IGIS Cause – Rodents

- a. If the Cause is truly a rodent (look at Remarks and Repair Loc to help verify), Cause will be Other Outside Force.

**E. MATERIAL ISSUES**

1. Material: Corrosion

- a. Corrosion = Steel.
  - i. When Cause is Corrosion and reported material is non-metallic, final Material = Steel (unless another metal is noted).

2. Material: Plastic Tee Cap

- a. If installing/repairing Aldyl A Cap/Overcap:
  - i. If Material is Steel – Leave Leak Source As-Is
  - ii. If Material is Plastic – Change Leak Source to Plastic Tee Cap
- b. Plastic Tee Caps that are Above Ground Facility should remain as Plastic.

3. Material: Casing

- a. “Casing” is not actually a material so it is an invalid choice. If “Casing” is chosen, Change Material to “Unknown”.

**X. Leak Data Normalization Batch Reassembly**

Once the review of the batches is complete, the batches are reassembled into one large file for QC and a final deliverable.

- 1. Unhide all columns. Clear all filters. Unfreeze all panes. Combine all reviewed batches.
  - a. Make sure the total matches # OF LEAKS TO BE REVIEWED in the Tracking log.
  - b. Filter the REVIEW column. Quick review of any records that have been changed to “NO”, Verify records are not reportable for this project and remove those records from the data set.

**XI. Leak Data Normalization QC and Deliverable Finalization**

The following is used as a guide to perform a quality control (QC) review of the reassembled batches (Section X) after the first pass review. In item number 3, *Leak Source Check*, each record’s Leak Source is checked by looking at all record data to make sure the entries are correct. In doing so, the Line Use, Cause and Material are also verified. Item numbers 4-13 are more specific checks for those respective issues; in

doing so, those issues are reviewed for a third time. If there is a conflict of interpretations between the first pass review and the QC, the record is discussed among the review team using the *Leak Data Normalization Review* (Section VIII) and *Leak Data Normalization Interpretations* (Section IX) until a consensus is reached.

This QC review is intended to identify additional changes that should be made, based on the available data, some of which may not have been made during the first pass. This QC review was performed primarily by one reviewer, who was also responsible for completing a portion of the first pass review batches.

1. Unhide all columns. Clear all filters. Unfreeze all panes.
2. All “Unknowns” and “Yellow Highlights” (any column)
  - a. Resolve when you can. More on Material: Unknown below.
3. Leak Source Check
  - a. Filter Leak Source column for each possible entry to make sure they are correct.
    - i. For Pipes, make sure the clamps aren’t on a riser. Filter Leak Source for “Body of Pipe” and filter out “Pipe” from Leak Source to see why Leak Source is not pipe.
    - ii. For Riser, make sure it is actually the riser and not a valve, fitting, etc.
    - iii. For Valves, make sure there isn’t “clamp on riser”. Also look for words “cut and thread” in Repair Location and Remarks. If “cut and thread” pertains to riser or pipe, change the Leak Source respectively.
    - iv. For Plastic Tee Caps, make sure material is plastic.
  - b. Sort Repair Description to QC in groups.
  - c. Text Filter Repair Location column for “Riser Threads” especially concerning clamps. If it’s just clamping or clamped on a riser change Leak Source to Riser.
4. Leak Source and Cause – “Repair Description”
  - a. Look at Leak Source and Cause columns (if other than “Equipment”)
  - b. Filter Repair Description column for:
    - i. “Clamps” and “Valve” (easier if you do this in two separate tasks) – Look to see if either have been Replaced. If a Clamp or a Valve has been replaced:
      1. For both. Text Filter Repair Location and Remarks columns for “tighten”, “riser”, and “replace”.
      2. “Clamps” – Leak Source: “Fitting”, Cause: “Equipment” (unless other Cause is appropriate).
        - a. Also Filter Leak Source column for “Clamp” and do the same check.
      3. “Valves” – Leak Source: “Valve”, Cause: “Equipment” (unless other Cause is appropriate).
    - ii. “Tighten Cap/Bolt – Fitting” and “Greased”.
      1. Leak Source: Whatever is tightened/greased (i.e. Fitting, Valve, etc.)
      2. Cause: “Equipment”
    - iii. “Other”
      1. Scan through these and see if Leak Source or Cause needs to change.

5. Aldyl-A Check
  - a. Filter Cause column for “Equipment”.
    - i. Text Filter Repair Location and Remarks columns for: “overcap”, “overmelt”, “electrofusion”, “fused” and “aldyl”.
      1. Make sure they aren’t replacing an “Aldyl-A Tee Cap”. If an Aldyl-A cap is being replaced, change Cause to whatever was originally there or respective causes based on data. Cause should not be “Equipment”.
  - b. Filter the Material (Inspection) and Material (As Is) columns for “Aldyl-A”.
    - i. Make sure they aren’t replacing an “Aldyl-A Tee Cap”. If an Aldyl-A cap is being replaced, change Cause to whatever was originally there or respective causes based on data. Cause should not be “Equipment”.
  - c. Filter Repair Description column for “Aldyl A Overcap – Plastic” then filter for “Tee Fused over Defect – Plastic” then “Replace Plastic Tee Cap – Plastic”.
    - i. Do the same check as above.
6. Cause: Other
  - a. Filter Cause for “Other” see if there is a more specific cause.
7. Cause: IGIS “Previously Damaged”
  - a. Filter Leak Cause for “Previously Damaged” then filter Cause for “Other”.
    - i. Are there any other causes associated? If there are any comments on the previous damage, this may be a clue for a cause different than “Other”.
8. Cause: “Other Outside Force” v. “Excavation”
  - a. Filter Leak Cause column for “Damage by 3<sup>rd</sup> Party”, then
    - i. Filter Cause column for “Other Outside Force Damage”, then
    - ii. Filter out “Above Ground Facility” in the Line Use column
      1. Change the Cause to “Excavation” unless there is evidence otherwise
      2. In short the Cause will usually be Excavation, but may be something else
  - b. Filter Cause for “Excavation”, then
    - i. Filter Line Use for “Above Ground Facility”
    - ii. Make sure it is truly an “Above Ground Facility” i.e. a riser.
9. Cause: “Corrosion”
  - a. Filter Cause column for “Corrosion”, then filter Material column for “Plastic”. Try to reconcile, if Corrosion/Material are right.
  - b. Filter out “Corrosion” from the Cause column
    - i. Text Filter Repair Location and Remarks columns for: “pitted”, “rust”, “corrosion”, “corroded”, “deteriorated”, “rotten”, “rotted”. Change Cause to Corrosion where necessary
  - c. Filter IGIS Leak Cause for: “Atmospheric Corrosion”, “External Corrosion”, “Internal Corrosion”, and “Stress Corrosion Cracking”

- i. Filter out “Corrosion” in Cause to see why entries are other than Corrosion
10. Cause: “Material or Weld”
  - a. Filter out “Material or Weld” from the Cause column
    - i. Text Filter Repair Location and Remarks columns for: “broken”, “cracked”, “bad”, “defect”, “fail”, “crckd”, “crak”, “weld”. Change Cause to Material or Weld where necessary
    - ii. Filter TEE\_CAP\_CRACKING column for “Y” to help determine if Cause is Material or Weld
  - b. Filter IGIS Leak Cause for: “Compression Coupling”, “Construction Defect”, “Material Failure”, “Plastic Crack Failure”, “Plastic Embrittlement” and “Weld Failure”
    - i. Filter out “Material or Weld” in Cause to see why entries are other than Material or Weld
11. Cause: General
  - a. Text Filter Repair Location and Remarks columns for “Repair”. Sort by Cause
    - i. If repair isn’t specified, and just says “repair/ed \_\_\_\_\_” keep Cause “as-is”
12. “Leak Cause” – Filter column for:
  - a. “Previously Damaged” (see if there are more specific causes than Other), “Construction Defect”, “Material Defect”, “Other” – Those Causes need more interpretation.
  - b. “Dig/In Excavation” – Might leave that cause, unless explicitly another cause.
13. Material: Filter column for “Unknown”
  - a. If “Repaired” and “Inspection” are other, you can leave as Unknown.
  - b. When Inspection and Repaired are different, make sure the type indicated in Inspection unless “Casing” is indicated in the Inspection, in which case the Repaired should be used.
14. Final Deliverable Data Checks
  - a. Make sure only Leak Data Normalization Allowable Entries (Section VII) have been populated
  - b. Unhide all columns. Clear all filters. Unfreeze all panes.
  - c. Format the columns based on the Final Field Format (Section XII).
  - d. Enter “NULL” in all blank cells
    - i. Select all cells. Ctrl+H. Replace: blanks with “NULL”
15. Add Latitude/Longitude Coordinates to Final Deliverable
  - a. IGIS Technical Support provided a spreadsheet of coordinates titled “2012 leak repair coordinates.xlsx”.
  - b. Added the X,Y Coordinates to the Final Deliverable via VLOOKUP.



## XII. IGIS Data Fields for DIMP

Workbook Column	Original Column Name	Final Column Name	Field Data Source	Final Field Format
A	LEAKNO	Leak Number	A-Form Initial Data	Number
B	Division	Division Number		Number
C	Division Name	Division Name		Text
D	District	District Number		Number
E	District Name	District Name		Text
F	City	City	A-Form Initial Data	Text
G	Map	Map	A-Form Mapping Data	Number
H	Plat	Plat	A-Form Mapping Data	Number
I	Block	Block	A-Form Mapping Data	Number
J		DMP		Number
K	CPAREA	CP Area	A-Form Mapping Data	Number
L	LINE_USE	Line Use Code		Text
M	Line Use of Inspected Pipe	Line Use of Inspected Pipe	A-Form Pipe Data	Text
N	YEARCON	Year Installed	A-Form Mapping Data	Number
O	Grade	Grade	A-Form Initial Data	Number
P		Cause		Text
Q		Cause Change ?		
R	CAUSE	Reported Cause Code		Text
S	Leak Cause	Reported Cause	A-Form Pipe Data	Text
T		Line Use		Text
U		Line Use Change ?		
V		Leak Source		Text
W		Leak Source Change ?		
X	SOURCE	Reported Leak Source Code		Text
Y	Leak Source	Reported Leak Source	A-Form Pipe Data	Text
Z	TEE_CAP_CRACKING	Tee Cap Cracking	A-Form Plastic Pipe Condition	Text
AA		Material		Text
AB		Material Change ?		
AC	MAT_CODE	Line Material Code (Repaired)		Text
AD	Line Material	Line Material (Repaired)	A-Form Pipe Data	Text
AE	Line Material	Line Material (Inspection)	A-Form General Inspection Data)	Text
AF	PRES_CODE	Pressure	A-Form Mapping Data	Text
AG	MOP	MOP	A-Form Mapping Data	Number
AH	DIAMETER	Diameter (Repaired)	A-Form Pipe Data	Number
AI	DIAMETER	Diameter (Inspection)	A-Form General Inspection Data)	Number
AJ	Surface Over Pipe	Surface Over Pipe	A-Form General Inspection Data)	Text

## LEAK REPAIR DATA NORMALIZATION DOCUMENTATION

<b>AK</b>	WALL2WALL	Wall-Wall	A-Form General Inspection Data)	Text
<b>AL</b>	Leak Location	Leak Location	A-Form Initial Data	Text
<b>AM</b>	ABOVE-GRND	Pipe Exposed	A-Form Pipe Data	Text
<b>AN</b>	REPORTBY	Reported By Code		Text
<b>AO</b>	Reported By	Reported By	A-Form Initial Data	Text
<b>AP</b>	DATE_REPTD	Reported	A-Form Initial Data	Date
<b>AQ</b>	REPAIRED	Repaired	A-Form Repair Data	Date
<b>AR</b>		Response Time		Number
<b>AS</b>	HIGH_CONSEQUENCE_AREA	HCA	A-Form High Consequence Area	Text
<b>AT</b>	NEARPUBLIC	Near Public Assembly	A-Form General Inspection Data)	Text
<b>AU</b>	FEDRL_LAND	Federal Land	A-Form Mapping Data	Text
<b>AV</b>	EMP_INJURY	Injury Employee	A-Form Gas Quarterly Incident Data	Number
<b>AW</b>	OTH_INJURY	Injury Other	A-Form Gas Quarterly Incident Data	Number
<b>AX</b>	DAMAGE	Damage (\$)	A-Form Gas Quarterly Incident Data	Number
<b>AY</b>	EMP_FATAL	Fatality Employee	A-Form Gas Quarterly Incident Data	Number
<b>AZ</b>	OTH_FATAL	Fatality Other	A-Form Gas Quarterly Incident Data	Number
<b>BA</b>	INCI_CAUSE	Incident Cause		Text
<b>BB</b>	USA_DATE	USA Date	A-Form Initial Data	Date
<b>BC</b>	USA_CALLED	USA Called	A-Form Initial Data	Text
<b>BD</b>	YEAR_MAIN_CON	Year Main Installed	A-Form Mapping Data	Number
<b>BE</b>		X Coordinate	From Dennis Marenberg	Number
<b>BF</b>		Y Coordinate	From Dennis Marenberg	Number

## XIII. PHMSA F 7100.1-1 (Rev.01/11) Form Instructions

**INSTRUCTIONS FOR COMPLETING FORM PHMSA F 7100.1-1 (Rev. 01/11) ANNUAL REPORT FOR CALENDAR YEAR 2010 GAS DISTRIBUTION SYSTEM**

**Note: The Gas Distribution System Annual Report has been revised for calendar year 2010. Please read the form and instructions carefully.**

All section references are to Title 49 of the Code of Federal Regulations. Reporting requirements are contained in Part 191, "Transportation of Natural and Other Gas by Pipeline; Annual Reports, Incident Reports and Safety Related Condition Reports." Except as provided in §191.11(b), each operator of a gas distribution pipeline (see definitions below) must submit an annual report Form PHMSA F 7100.1-1 for the preceding calendar year not later than **March 15th**. Be sure to report TOTAL miles of main pipeline and services in the system at the end of the reporting year, including additions to the system during the year. The annual reporting period is on a calendar year basis ending on December 31st of each year.

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**ONLINE SUBMISSION IS REQUIRED UNLESS AN ALTERNATIVE REPORTING METHOD IS GRANTED BY PHMSA.**

If electronic reporting imposes an undue burden and hardship, an operator may submit a written request for an alternative reporting method to the Information Resources Manager, Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, PHP-20, 1200 New Jersey Avenue, SE Washington DC 20590. The request must describe the undue burden and hardship. PHMSA will review the request and may authorize, in writing, an alternative reporting method. An authorization will state the period for which it is valid, which may be indefinite. An operator must contact PHMSA at 202-366-8075, or electronically to [informationresourcesmanager@dot.gov](mailto:informationresourcesmanager@dot.gov) or make arrangements for submitting a report that is due after a request for alternative reporting is submitted but before an authorization or denial is received.

Operators should request and receive authorization from PHMSA prior to the use of alternative reporting methods.

**Online Submissions:**Online Submission Registration Requirements:

The following two requirements must be fulfilled prior to submitting data online:

1. You must have an Office of Pipeline Safety (OPS) provided Operator ID and Personal Identification Number (PIN)/password. If you do not have one, please complete and submit the form located on the OPS Online Data Entry and Operator Registration System New Operator Registration web site at [http://opsweb.phmsa.dot.gov/cfdocs/opsapps/pipes/new\\_operator.cfm](http://opsweb.phmsa.dot.gov/cfdocs/opsapps/pipes/new_operator.cfm) to obtain one.
2. You must have a Username and Password obtained by registering through the PHMSA Portal. If you have an OPS Operator ID and PIN/password, you may obtain a Username and Password through the PHMSA Portal. Each Operator, without an Operator ID, should plan accordingly and allow for several weeks prior to the due date of the report to obtain their Operator ID.

Online Submission Instructions:

1. Navigate to PHMSA's, Office of Pipeline Safety web site, Pipeline Safety Community, located at <http://www.phmsa.dot.gov/pipeline>.
2. Click the "**Online Data Entry**" hyperlink listed in the first column. This takes you to the OPS Online Data Entry and Operator Registration System.
3. Click on the "**Gas Distribution System Annual Report**" hyperlink under the *Gas Distribution Systems* subtitle. This takes you to the PHMSA Portal login screen.
4. Enter your "Username" and "Password" and click on "**Login**".
5. Create or modify record:
  - a. To create a new *Gas Distribution System Annual Report*, click "**Submit New**". Enter the "Calendar Year" for which the report is being filed
  - OR**
  - b. To modify an existing *Gas Distribution System Annual Report*, locate the report using the "Search" function. Once the report is located, click "**Create Supplemental**" and make the necessary changes.
6. Follow the detailed instructions below to complete Parts A – I.
7. Click "**Save**" when finished.
8. A copy of the report can be printed or downloaded in PDF format.

9. For distribution pipelines subject to the jurisdiction of a State agency pursuant to certification under 49 U.S.C. § 60105, send a copy of the report to the State agency no later than March 15<sup>th</sup>.

### **Alternative Reporting Submissions:**

\*\*\**Authorization from PHMSA is needed to submit the form using an alternative reporting method*\*\*\*

Form PHMSA F 7100.1-1 and instructions are available for download on the Office of Pipeline Safety web site, Pipeline Safety Community, located at <http://www.phmsa.dot.gov/pipeline>. Click on the “**Library**” hyperlink and then the “**Forms**” hyperlink under the *Mini-Menu* subtitle. If you have questions about this report or these instructions, please call (202) 366-8075.

Please type or print all entries when submitting forms by mail or fax.

### Alternative Reporting Submission Instructions:

1. Check new or modified report:
  - a. If this is the first time this *Gas Distribution System Annual Report* is being submitted, check **Initial Report**.  
OR
  - b. If an initial report has already been filed but that report needs to be modified check **Supplemental Report**. Only submit Parts B, C, D, E, F, G, and H as needed for which the information is being modified.
2. Enter the Calendar Year for which the report is being filed.
3. Follow the detailed instructions below to complete Parts A - I.
4. Submit the report via one of the following methods:
  - a. Mail to:
 

DOT/PHMSA Office of Pipeline Safety  
Information Resources Manager,  
1200 New Jersey Ave., SE  
East Building, 2<sup>nd</sup> Floor, (PHP-20)  
Room Number E22-321  
Washington, DC 20590

OR

  - b. Fax to: Information Resources Manager at (202) 366-4566.
5. For distribution pipelines subject to the jurisdiction of a State agency pursuant to certification under 49 U.S.C. § 60105, submit a copy of the report to the State agency no later than March 15<sup>th</sup>.

### GENERAL INSTRUCTIONS

The following definitions are from § 192.3:

1. “Distribution line” means a pipeline other than a gathering or transmission line.
2. “Gathering line” means a pipeline that transports gas from a current production facility to a transmission line or main.
3. “Transmission line” means a pipeline, other than a gathering line, that:
  - a. Transports gas from a gathering line or storage facility to a distribution center, storage facility, or large volume customer that is not downstream from a distribution center;
  - b. Operates at a hoop stress of 20 percent or more of SMYS; or

c. Transports gas within a storage field. A large volume customer may receive similar volumes of gas as a distribution center, and includes factories, power plants, and institutional users of gas.

4. “Operator” means a person who engages in the transportation of gas.

Make an entry in each block for which data are available. Estimate data if necessary. Avoid entering any data in the **UNKNOWN** columns, if possible. Some companies may have very old pipe for which installation records do not exist. Estimate the total of such mileage in the **UNKNOWN** column of Part B, item 2 “Miles of Main in System at End of Year” and item 3 “Number of Services in System at End of Year”, and item 4 “Miles of Main and Number of Services by Decade of Installation.”

Please round all mileage to the nearest 3 decimal positions. **DO NOT USE FRACTIONS.** Examples of rounding are as follows: 3/8 should round to 0.375; 3/4 should round to 0.75 and ½ should round to 0.5.

The total miles of main and services reported in Part B sections 1 through 4 **MUST** all sum to the same totals in the appropriate rows. Please do not report miles of main in feet. If necessary, please convert feet into a decimal notation (e.g. 1,320 feet = .25 miles).

## **PART A – OPERATOR INFORMATION**

### Online Submissions:

Items 1, 3, and 4 are auto-populated. If this information is incorrect, please contact PHMSA’s Information Resources Manager at (202) 366-8075.

Item 2: Provide the address where PHMSA can mail information.

Item 5: Enter the **State for which information is being reported. Submit a separate report for each State** in which the company operates a gas distribution pipeline system.

### Alternative Reporting Submissions:

Item 1: Provide the name of the operator.

Item 2: Provide the address where PHMSA can mail information.

Item 3: Provide operators’ ID number. The Pipeline and Hazardous Materials Safety Administration assigns the operator’s five-digit identification number. Contact PHMSA at (202) 366-8075 if you need assistance with determining your operator’s five-digit identification number.

Item 4: Provide the Headquarters’ name and address.

Item 5: Enter the **State for which information is being reported. Submit a separate report for each State** in which the company operates a gas distribution pipeline system.

## **PART B – SYSTEM DESCRIPTION**

“Coated” means pipe coated with any effective hot or cold applied dielectric coating or wrapper.

“PVC” means polyvinyl chloride plastic.

“PE” means polyethylene plastic.

“ABS” means acrylonitrile-butadiene-styrene plastic.

“Cathodically protected” applies to both “bare” and “coated.”

“Other” means a pipe of any material not specifically designated on the form. If you check “other pipe,” describe it in Part I.

“Number of service” is the number of service lines, not the number of customers served.

Provide miles of main and numbers of services by decade installed in Part B, section 4.

If you do not know the decade of installation of the pipe because there are no records containing such information, enter an estimate in the UNKNOWN column. The sum total of mileage and numbers of services reported for Part B, section 4 should match total mileage and numbers of services reported in sections 1, 2, and 3 in Part B.

### **PART C – TOTAL LEAKS AND HAZARDOUS LEAKS ELIMINATED/REPAIRED DURING YEAR**

In the appropriate column, include the total number of leaks and the number of hazardous leaks eliminated by repair, replacement or other action during the reporting year. The number of “hazardous leaks” eliminated or repaired during the year is reported as a performance measure for integrity management per § 192.1007(g). When reporting leaks or hazardous leaks eliminated by replacing or abandoning a segment of pipe, count the leaks that existed in the pipe segment before it was replaced or abandoned. Also include leaks and hazardous leaks reported on form PHMSA 7100.1, “Incident Report Gas Distribution Systems.” A reportable incident is one described in § 191.3. Do not include leaks that occurred during testing.

A “leak” is defined as an unintentional escape of gas from the pipeline. A non-hazardous release that can be eliminated by lubrication, adjustment, or tightening, is not a leak.

A “hazardous leak” means a leak that represents an existing or probable hazard to persons or property and requires immediate repair or continuous action until the conditions are no longer hazardous. A “hazardous leak” which occurs aboveground or belowground is a leak and must be reported.

Operators who do not grade leaks for hazard, but rather repair all leaks when found, need not grade repaired leaks solely for the purpose of this report. Such operators treat all leaks as if hazardous. Operators who do not grade leaks should report the same values for both total and hazardous leaks for each cause.

The “number of known system leaks at the end of the year scheduled for repair” is the total number pipeline system leaks being monitored and scheduled for repair at the end of the calendar year. Monitored leaks also include those leaks which have been temporarily repaired until a permanent repair can be performed. These leaks are non-hazardous unless reclassified following the operator’s operation and maintenance procedures.

#### **Leak causes are classified as:**

**CORROSION:** leak resulting from a hole in the pipe or other component that was caused by galvanic, bacterial, chemical, stray current, or other corrosive action.

**NATURAL FORCES:** leak resulting from earth movements, earthquakes, landslides, subsidence, lightning, heavy rains/floods, washouts, flotation, mudslide, scouring, temperature, frost heave, frozen components, high winds, or similar natural causes.

**EXCAVATION DAMAGE:** leak resulting from damage caused by earth moving or other equipment, tools, or vehicles. Include leaks from damage by operator's personnel or contractor or people not associated with the operator.

**OTHER OUTSIDE FORCE DAMAGE:** Include leaks caused by fire or explosion and deliberate or willful acts, such as vandalism.

**MATERIAL OR WELDS:** leak resulting from failure of original sound material from force applied during construction that caused a dent, gouge, excessive stress, or other defect that eventually resulted in a leak. This includes leaks due to faulty wrinkle bends, faulty field welds, and damage sustained in transportation to the construction or fabrication site. Also include leak resulting from a defect in the pipe material, component, or the longitudinal weld or seam due to faulty manufacturing procedures. Leaks from material deterioration, other than corrosion, after exceeding the reasonable service life, are reported under Other.

**EQUIPMENT:** leak resulting from malfunction of control/relief equipment including valves, regulators, or other instrumentation; stripped threads or broken pipe couplings on nipples, valves, or mechanical couplings; or seal failures on gaskets, O-rings, seal/pump packing, or similar leaks.

**INCORRECT OPERATIONS:** leaks resulting from inadequate procedures or safety practices, or failure to follow correct procedures, or other operator error.

**OTHER:** leak resulting from any other cause, such as exceeding the service life, not attributable to the above causes.

#### **PART D – EXCAVATION DAMAGE**

Excavation damages are reported as a measure of the effectiveness of integrity management programs (§ 192.1007(g)).

Report the “Number of Excavation Damages” experienced during the calendar year. For this purpose, “Excavation Damage” means any impact that results in the need to repair or replace an underground facility due to a weakening, or the partial or complete destruction, of the facility, including, but not limited to, the protective coating, lateral support, cathodic protection or the housing for the line device or facility. Report also the “Number of Excavation Tickets” received during the year, (i.e., receipt of information by the operator from the notification center).

#### **PART E – EXCESS FLOW VALVE (EFV) DATA**

Report the number of EFVs installed on single-family residential services during the calendar year. Report the estimated total number of EFVs in the system at the end of the calendar year. (The “Estimated Total

number of EFVs in the system” should include the “Number of EFVs installed on single-family residential services during the calendar year”.)

#### **PART F – TOTAL NUMBER OF LEAKS ON FEDERAL LAND REPAIRED/ELIMINATED OR SCHEDULED FOR REPAIR**

Federal Lands: As defined in 30 U.S.C. §185, federal lands means “all lands owned by the United States except lands in the National Park System, lands held in trust for an Indian or Indian tribe, and lands on the Outer Continental Shelf.” Indicate only those leaks repaired, eliminated, or scheduled for repair during the reporting year, including those incidents reported on Form PHMSA F 7100.1.

#### **PART G – PERCENT OF UNACCOUNTED FOR GAS**

“Unaccounted for gas” is gas lost; that is, gas that the operator cannot account for as usage or through appropriate adjustment. Adjustments are appropriately made for such factors as variations in temperature, pressure, meter-reading cycles, or heat content; calculable losses from construction, purging, line breaks, etc., where specific data are available to allow reasonable calculation or estimate; or other similar factors. State the amount of unaccounted for gas as a percent of total input for the 12 months ending June 30 of the reporting year.

[(Purchased gas + produced gas) minus (customer use + company use + appropriate adjustments)] divided by (purchased gas + produced gas) equals percent unaccounted for.

Do not report “gained” gas. If a net gain of gas is indicated by the calculations, report “0%” here. (Decimal or fractional percentages may be entered.)

#### **PART H – ADDITIONAL INFORMATION**

Include any additional information which will assist in clarifying or classifying the reported data.

#### **PART I - PREPARER AND AUTHORIZED SIGNATURE**

**PREPARER** is the name of the person most knowledgeable about the report or the person to be contacted for more information. Please include the direct phone number and email address as applicable (e-mail address is desired but not required). It should be noted that PHMSA will use your e-mail address to issue correspondence that is normally sent via mass mailings. “Correspondence” includes notifications such as the annual reminder letter for Annual Report filings.

**AUTHORIZED SIGNATURE** may be the preparer, an officer, or other person whom the operator has designated to review and sign reports. Please include the direct phone number. If submitting online your username and password take the place of the Authorized Signature.