Gas Pipeline Mapping System

Active Gas Pipelines: pre-rulemaking discussion

Mark Steinhilber
Facilities and Pipeline Program Manager
DOGGR Long Beach Office

Michael O’Neill
GIS Services Supervisor
DOGGR Sacramento Office

Workshop Dates

June 19, 2019 1-4pm
• Bakersfield ABC Facility
  • 19466 Flightpath Way

June 20, 2019 9am – 12pm
• Long Beach DOGGR District Office
  • 3780 Kilroy Airport Way

Other dates to be determined

Workshop Goals

1. Operators are familiar with relevant history and DOGGR authority.
2. Operators see the draft regulations and data specifications.
3. Operators get a general sense for the process of how and when submissions happen.
4. Operators get a general sense for how data files are prepared.
5. Operators know there are multiple options for how to gather their data.
6. DOGGR receives feedback about draft regulation and data standard.

Workshop Agenda

- Introductions, workshop goals/values/benefits (Mark, Mike)
- Audience polling (Sarah Rubin)
- History and DOGGR authority (Mark)
- Introduce draft regulation (Mark)
- Examples of real-world pipeline scenarios (Mark)
- Explaining the mapping specifications. (Mike)
- How operators gather and prepare data files. (Mike)
- How operators submit data to DOGGR. (Mike)
- What happens after submissions from operators. (Mike)
- Next steps. (Mark)

Modernizing DOGGR

- Easier submissions
  • Digital – “electronic data delivery”
  • B2G – “business 2 government”
- Easier notification and coordination
- Greater transparency
- Faster reviews
- Better reporting

http://www.conservation.ca.gov/dog/Pages/RenewalPlan.aspx
http://wellstar.conservation.ca.gov

Audience Poll

QUESTION:
Which category fits you the best?
A. Large size operator
B. Medium size operator
C. Small size operator
D. Oil and gas service provider
E. Other
Audience Poll

**QUESTION:**

What concerns do you have regarding the pipeline mapping regulations?

---

**Relevant Statutes and Regulations**

<table>
<thead>
<tr>
<th>Description</th>
<th>Assembly Bill 1420</th>
<th>PRC 3270.5 / 3270.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline Construction and Maintenance.</td>
<td>§1774*</td>
<td>3270.5 / 3270.6</td>
</tr>
<tr>
<td>Pipeline Inspection and Testing.</td>
<td>§1774.1*</td>
<td></td>
</tr>
<tr>
<td>Pipeline Management Plans (PMP).</td>
<td>§1774.2*</td>
<td></td>
</tr>
<tr>
<td>Gas Pipeline Data Submissions.</td>
<td>§1774.3**</td>
<td></td>
</tr>
</tbody>
</table>

* Denotes new or recently updated regulations.  
** Denotes pending new regulation. Formal rule making to come in future.

---

**§1774.3. Gas Pipeline Data Submissions.**

(a) Operators of active gas pipelines within sensitive areas shall create and maintain up-to-date mapping, locational, and other descriptive data that correctly represents their active gas pipelines within sensitive areas. Operators shall create, maintain, and submit the data in accordance with the specifications in DOGGR Publication No. M14 "Gas Pipeline Mapping System: Data Specifications and Submission Requirements," dated [TBD].

(b) By January 31 of each year, operators of active gas pipelines within sensitive areas shall provide up-to-date data, as specified under subdivision (a), describing the pipelines as configured as of December 31 the prior calendar year. Alternatively, if the operator has previously submitted data in compliance with this section and there have been no significant modifications to the operator’s pipelines, then the operator may submit a certification to the division that, as of December 31 of the prior calendar year, the data previously submitted by the operator was up-to-date and compliant with the requirements of this section. For the purposes of this section, “significant modification” to an active gas pipeline includes the abandonment, addition, removal, replacement, or relocation of any active gas pipeline within a sensitive area.

(c) Until January 1, 2023, geographic data required under this section shall have a horizontal location accuracy of plus or minus 100 feet. By January 1, 2023, operators shall update geographic data as necessary to ensure horizontal location accuracy of plus or minus ten feet. Subsequent to January 1, 2023, all geographic data required under this section shall have a horizontal location accuracy of plus or minus ten feet.

(d) Upon notification from the Division that a data submission does not meet the requirements of subdivisions (a), (b), and (c), the operator shall correct the data submission and resubmit it to the Division within 30 days of notification.

Examples – Operators submitted maps, January 1, 2018

- NTO 2017-11
- 50 operators submitted
- 72 oil and gas fields
- Scans of maps vs. data
  - 2018 → scans
  - 2021+ → data

Location of Active Gas Pipelines in Sensitive Areas

- Coastal District 5% (n=70)
- Inland District 10% (n=144)
- Northern District 9% (n=139)
- Southern District 76% (n=1131)

Examples of Pipeline Mapping Data

- Sensitive Area Polygon
- A pipeline start point from a well
- A pipeline end point to a meter

In a simple gas pipeline system, gas from a well flows to the sale meter directly. This pipeline system has been created with one segment only:
- 1 pipeline having 1 segment
- 1 Sensitive Area shown, could have more

Multi-Segment Pipelines

Sometimes an Operator describes a pipeline by including all segments on a run from start to destination, (2,3,7), with others as separate pipelines (1,4,5,6). Or the Operator may include all segments that serve a lease, or that might be tested together, (1-7) (possibly 8).

Sensitive Segments: 3, 6, 7
Non-sensitive Segments: 1, 2, 4, 5, 8

Audience Poll

QUESTION:

Which attribute(s) define individual pipelines for you?
(e.g. commodity, pressure, function, diameter, start/end points, other)

(Limit each response to 1-4 words, multiple responses allowed)
Example #2 – rural area

Example #3 – urban area

Audience Poll

QUESTION:

Do you list, in your Pipeline Management Plan, your flow lines as separate pipelines?

Yes/no/don’t know

Gas Pipeline Mapping System

About:

DOGGR’s Gas Pipeline Mapping System (GPMS) is a Geographic Information System (GIS). The system contains the location and selected attributes of active gas pipelines, including the sensitive areas near active gas pipelines. Information is supplied by gas pipeline operators. Operators provide annual updates to DOGGR.

Comparing NPMS vs SPMS vs GPMS

<table>
<thead>
<tr>
<th>Items</th>
<th>NPMS</th>
<th>SPMS</th>
<th>DOGGR - GPMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td>Hazardous liquid and gas transmission pipelines (include gathering lines)</td>
<td>Hazardous liquid pipelines (NOT require Natural Gas Lines or Liquefied Natural Gas facilities)</td>
<td>Active gas pipelines in “sensitive areas” (&gt;1 inch)</td>
</tr>
<tr>
<td>GIS Data Requirements</td>
<td>Line + attribute tables</td>
<td>Line, point (start and end node), and event tables with measures of (commodity, diameter, age, and length)</td>
<td>Line, point (nodes show facility type), and polygon (Sensitive area); require more attributes to reflect the needs for PMP, SCP</td>
</tr>
<tr>
<td>Potential Accuracy</td>
<td>± 500 feet</td>
<td>± 100 feet</td>
<td>± 100 feet (minimum initially) ± 10 feet (minimum, 2023)</td>
</tr>
</tbody>
</table>

NPMS = National Pipeline Mapping System, SPMS = California State Pipeline Mapping System

Simple GIS Concepts

3 components = “GIS data”

Geospatial Features

Lines and points that represent the location of pipeline segments, nodes, or sensitive areas.

Attribute Data

Information that describe each pipeline segment, node, or sensitive area.

Metadata

The information about the geospatial and attribute data, including the data quality and projection.
Simple Pipeline Concepts

In a simple gas pipeline system, gas from a well flows to the sale meter directly. This pipeline system has one segment only.

- 1 pipeline having 1 segment
- 2 nodes
- 1 Sensitive area

Pipeline Segment

- A linear feature representing part or all of a pipeline.
- Only two ends.
- No branches are allowed.
- Could be straight line.
- Could be not straight having any number of vertices.
- Must be uniquely identified:
  - Identified by “SID” or “Segment Identifier.”

Node Types

- Pipeline segment node
- Pipeline virtual location at the edge of sensitive areas

Options:
1. Sensitive segment is 1 to 4
2. Sensitive segment is 2 to 3

System of Pipelines

- All parts of a pipeline that transport gases, oil, or oil containing liquids from the commodity’s source to a processing facility, or to the point where it changes custody jurisdiction.
- A pipeline system may have an unlimited number of branches. Each pipeline system must be represented by one or more pipelines, each of which has one or more segments.

Systemization of pipelines is handled in the WellSTAR* application user interface by Operators and/or DOGGR staff.

Another example...

- 3 Pipeline segments
- 2 sensitive areas
- 3 segments
- 4 nodes

Audience Poll

QUESTION:
Will you use virtual nodes?

Yes, No, Maybe
Pipeline segments in a system
Multi-segment pipeline system:
Product flows from multiple wells to the production facility and a sale meter. Each numbered line could be listed as a separate pipeline. This method is observed in some operators' Pipeline Lists in their Pipeline Management Plans.

Sensitive Segments: 3, 6, 7
Non-sensitive Segments: 1, 2, 4, 5, 8

Data Standard – 6 components

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Info</td>
<td>Tabular (non-geographic)</td>
</tr>
<tr>
<td>Pipeline</td>
<td>Tabular (non-geographic)</td>
</tr>
<tr>
<td>Pipeline Segment</td>
<td>LINE feature class (geographic)</td>
</tr>
<tr>
<td>Node</td>
<td>POINT feature class (geographic)</td>
</tr>
<tr>
<td>Sensitive Area</td>
<td>POLYGON feature class (geographic)</td>
</tr>
<tr>
<td>File Attachments</td>
<td>Tabular (non-geographic)</td>
</tr>
</tbody>
</table>

Data: General Information
Not spatial or geographic

1. Contact Name
2. Contact Email
3. Contact Phone
4. Organization Code
5. Facility Type (always "Pipeline")
6. Description *

Data: Pipeline Facility
Not spatial or geographic

1. Operator Link
2. Pipeline ID
3. Facility Name
4. Contact Name *
5. Purpose *
6. Status
7. Commodity
8. Commodity Detail *
9. Odorized
10. Hazardous Material
11. Corrosive Material
12. County
13. Field
14. Location Description *
15. Start Lat/Longitude
16. End Lat/Longitude

Data: Pipeline Segment

1. Operator Link
2. Segment ID
3. Status
4. From Node
5. To Node
6. Jurisdiction *
7. Urban
8. Environmentally Sensitive
9. Sensitive
10. Sensitive Receptors
11. Function
12. Function Other *
13. Diameter
14. Material
15. Material Other *
16. Schedule
17. Pressure Operating
18. Pressure MOP
19. Pressure Design *
20. Original Wall Thickness
21. Grade
22. Routing
23. Length Reported
24. Cathodic Protection
25. Leak Detection
26. Leak Det. Description *
27. Location Quality
28. Install Year

Data: Nodes

1. Operator Link
2. Node ID
3. Name
4. Position
5. Type
6. Latitude
7. Longitude
8. Description

Types of Position
SE=start or end, IE=intermediate, SP=standalone plant

Types of Nodes
C=compressor, D=engineering design property change, F=flange, FL=flange, H=header, I=intersection, M=meter, P=plant, PV=pressure vessel, S=separator, T=tank, TB=tank battery, W=well, V=Valve, VL=virtual location such as at the edge of sensitive areas, O=other.
Data: Sensitive Areas

1. Operator Link
2. Sensitive receptor
3. Description
4. Source description
5. URL of source

Sensitive Receptor:
S-school, H-hospitals, R-residential, B-business, L-historical chronic leaks, N-natural resources, P-wildlife preserve, U-Urban, W-water body, O-Others

Data: File Attachments

1. Identifier
2. File name
3. Description
4. Content Type

Type of Content:
D=drawings, L=list, P=photo

Group Exercise #1

Directions:
• Move around room and group-up based on your organization type.
• Discuss the data attributes:
  • What specific attributes, if any, are challenging to provide to DOGGR?
  • Regarding your challenging data, what makes providing the data challenging? Why?

General Info Tabular (non-geographic)
Pipeline Tabular (non-geographic)
Pipeline Segment LINE feature class (geographic)
Node POINT feature class (geographic)
Sensitive Area POLYGON feature class (geographic)
File Attachments Tabular (non-geographic)

Audience Poll

QUESTION:
What specific attributes, if any, are challenging to provide to DOGGR?

Delivering to DOGGR

Next, let's talk about providing data to DOGGR...
WellISTAR Forms

Question: When might data files be unnecessary?

Answer: The simplest edits or simplest new submissions may be handled via WellISTAR forms.

Some examples:
- Non-spatial attribute change
- Add/remove node
- Simple segment

3 Data Formats

- ESRI “file geodatabase” – preferred
- Shapefile – common standard format
- Text File format, “CSV” – comma separated values

Data Formats

- POINTS in text file format
- LINES in text file format
- ATTRIBUTES in text file format

Group Exercise #2

Directions:
- Move around room and group-up based on your organization type.
- Discuss the example facility:
  - How are your assets similar or different than the example?
  - How would you organize your data for a similar facility?
WellSTAR submission concepts

Two submission pathways...

2. Data file "package" upload into WellSTAR.

Future WellSTAR:
In the future, all pipeline data will be submitted through DOGGR's WellSTAR system. This simplified workflow diagram illustrates the general pattern for operators and DOGGR staff.

Workflow Concept – WellSTAR Release #5

More detailed information to come as needed and appropriate.

Coming in the future...

- More informal workshops
- Formal rule-making process
- Final Regulation, 14 CCR §1774.3

Helping operators to comply:
- Standards document
- Help manual
- Example files
- Talking to DOGGR staff

Final Thoughts?
Thank you