

Line 147 Update

PG&E Gas Operations
City of San Carlos
June 17th, 2014

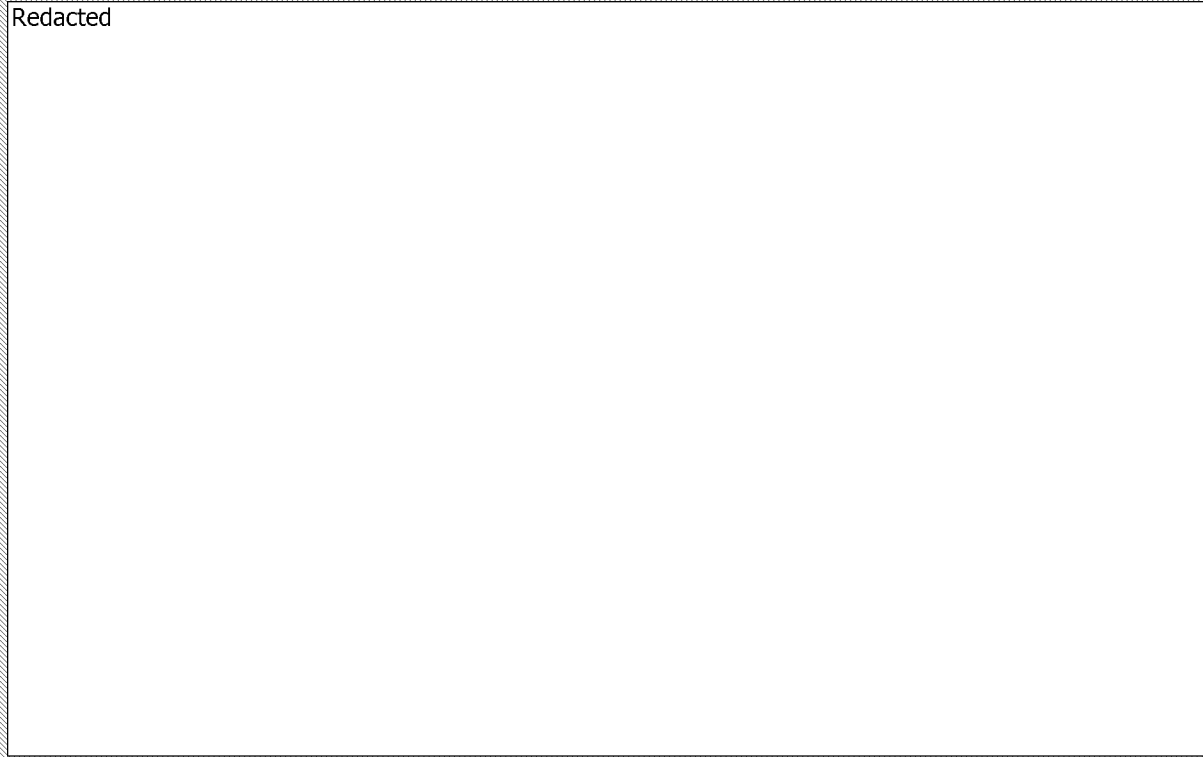
Pipeline Safety Enhancements

Program	Description	Status
Strength Testing	<ul style="list-style-type: none">• Line 147 has been successfully strength tested• Significant portion of the line was tested in 2011	Completed
Valve Automation	<ul style="list-style-type: none">• Redacted	Completed
In-Line Inspection (ILI)	<ul style="list-style-type: none">• Replacement of a bend required prior to ILI• In-Line Inspection runs to be performed	Scheduled in 2014
Routine Maintenance	<ul style="list-style-type: none">• Increased pipeline patrolling and leak survey activities	Ongoing

Pipeline Retrofit

This section of L-147 contains Redacted
Redacted and will require replacement

- Located in Redacted
- Currently in permitting process (started October 2013) with California Department of Fish and Wildlife



In-Line Inspection Tools

Redacted

- In-Line Inspection (ILI) tools are used to assess the integrity of pipelines. A “pig” travels inside the pipe to measure and record irregularities that may indicate the presence of corrosion, deformations (dents, gouges, etc.) or other types of defects.
- ILI tools also provide information regarding pipeline specifications including changes in wall thickness and designation between seam and seamless pipe.

Redacted

Pig Launcher and Receiver

Temporary above-ground piping will need to be installed at the launcher and receiver locations to insert the ILI tools into the pipeline. This piping will remain until the inspection is completed.

Launcher: Redacted




Receiver: Redacted









Redacted

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Project Timeline

Line 147 In-line Inspection Schedule

	Pipeline Modification
	Pressure Increase
	In-Line Inspection

	2014 Q3	2014 Q4	2015 and Beyond
Pipeline retrofit of bend to facilitate ILI			
Prepare launcher and receiver stations for in-line inspection at Redacted Redacted			
Perform Cleaning Run at 310 psig			
Perform Geometry Tool Run at 310 psig			
Determine most successful ILI option			
Preferred Option: Perform MFL Run using traditional tool at current Operating Pressure of 310 psig (MAOP = 330 psig)			
Alternative 1: Perform MFL Run using traditional tool with the vendor requirement of 365 minimum operating pressure (Temp. Pressure Increase required)*			
Alternative 2: Perform non-traditional (robotic) ILI			

*Schedule based on assuming an expedited process for a temporary pressure increase, only for the duration of performing the ILI run, is approved by the CPUC

Traditional ILI

Traditional ILI tools are propelled through the pipeline using the pressure and flow from natural gas.

Benefits	Challenges
Proven technology with extensive PG&E and Industry Experience	ILI vendor recommends minimum pressure of 365 psig (hydraulic limitations)
Minimize pipeline impact – utilizes existing stations at start and end of Line 147	Potentially impacts ability to serve natural gas to customers – Cannot be performed during winter months (hydraulic limitations)
Minimal interruption in ability to serve natural gas to customers.	At lower pressures, the tool performance is compromised and there is a higher potential for tool damage
	Only one tool available on the market for inspection of 20-24" gas pipelines at this pressure

Non-Traditional ILI

Non-traditional ILI tools can also inspect the pipeline. These tools are battery operated and move through the pipeline via robotic crawlers

Benefits

Allows for inspection to be performed without the need for natural gas pressure and flows

Challenges

Potentially impacts ability to serve natural gas to customers – Cannot be performed during winter months (hydraulic limitations)

New Technology with limited PG&E and Industry Experience

Limitations on inspecting bends


Some sections of Line 147 may remain uninspected due to tool limitations

Requires at least 7 excavations for in-line charging, pressure control fittings, and/or short pipe removals

Significant extended project duration

Line 147 Overview Map

Redacted



Thank You