



CPUC Emergency Response Workshop

September 26, 2011

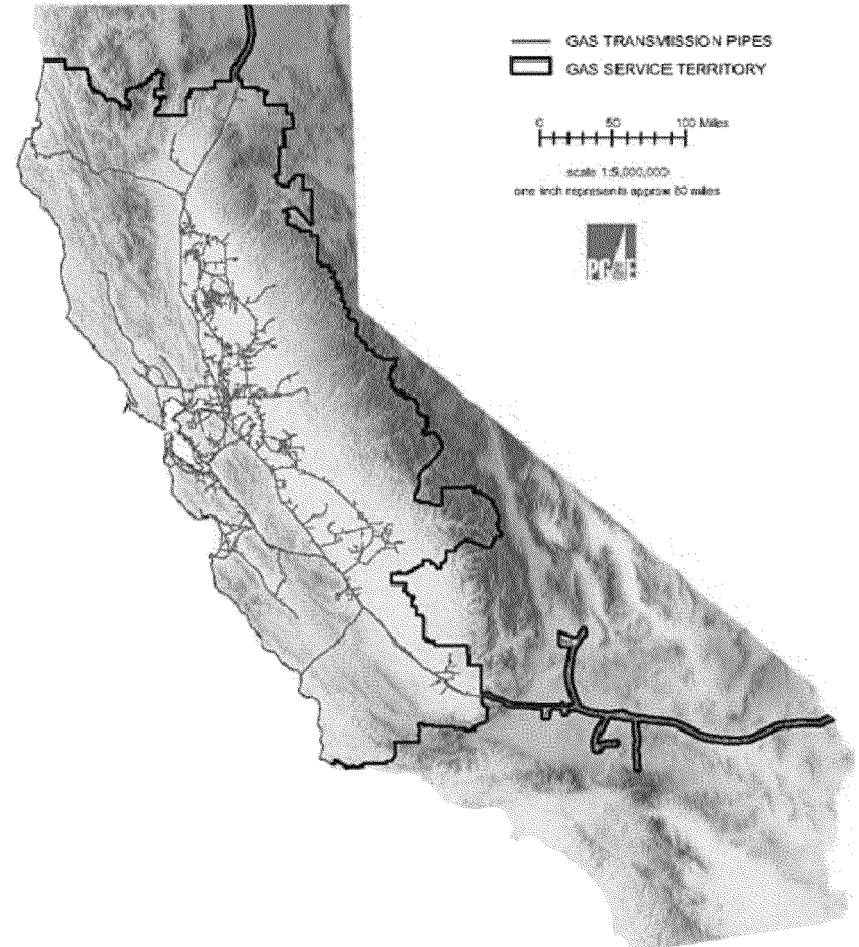


CPUC Emergency Response Workshop

- PG&E System Overview
- Gas Control, System Monitoring
- Pipeline Segment Isolation
- Pipeline Mapping
- Pipeline Marking & Damage Prevention
- Gas Leak, Detection & Repair

- Pacific Gas and Electric Company, one of the largest combination natural gas and electric utilities in the United States.
- The company provides natural gas and electric service to approximately 15 million people throughout a 70,000-square-mile service area in northern and central California.

PG&E GAS TRANSMISSION PIPES



Gas Statistics

- 6,760 miles of gas transmission pipeline operating above (> 60 psig)
- 5,785 mile of gas transmission pipe, DOT
- Approx. 42,2000 miles of gas distribution pipe
- 4.3 million natural gas customer accounts
- Deliver 970 BCF/year (2.6 BCF/daily average)



PG&E Backbone Transmission

Redwood Path- Lines 400 & 401

- From Malin, OR to Panoche
- Canadian and Rocky Mountain source gas
- Connects to TransCanada's GTN & Ruby Pipelines
- 2.2 Bcf/d capacity
- 36" & 42" parallel pipes (730 miles)

Baja Path – Line 300

- From Topock, AZ to Milpitas
- Southwest and Rocky Mountain source gas
- Connects to El Paso, Transwestern, Kern River & Questar
- 1.1 Bcf/d capacity
- Two 34" parallel pipes (1,000 miles)





Underground Gas Storage

3rd Party Storage Operators

Wild Goose Storage

- 700 MMcf/d withdrawal
- 450 MMcf/d injection

Lodi Storage

- 750 MMcf/d withdrawal
- 650 MMcf/d injection

Gill Ranch Storage

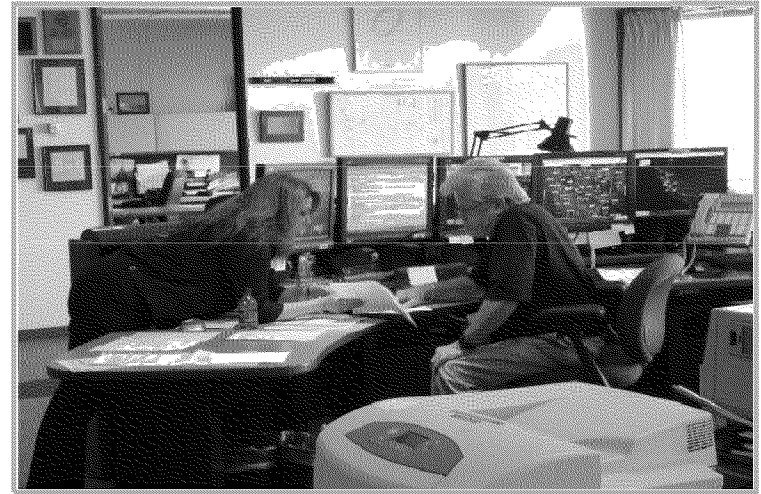
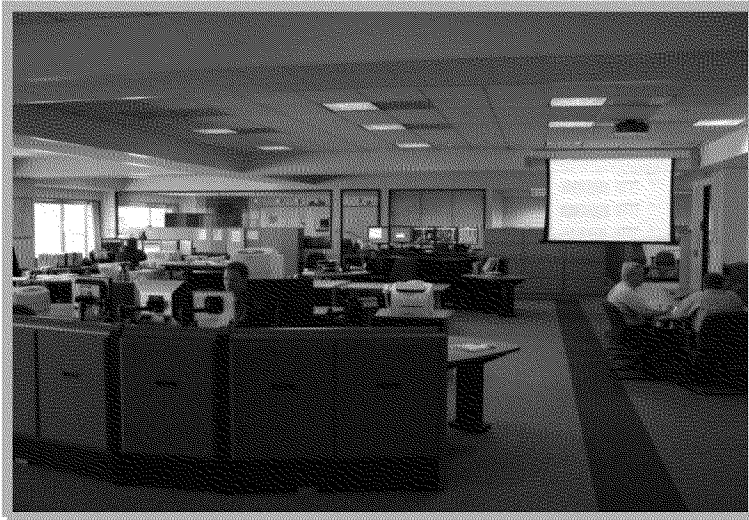
- 650 MMcf/d withdrawal
- 650 MMcf/d injection





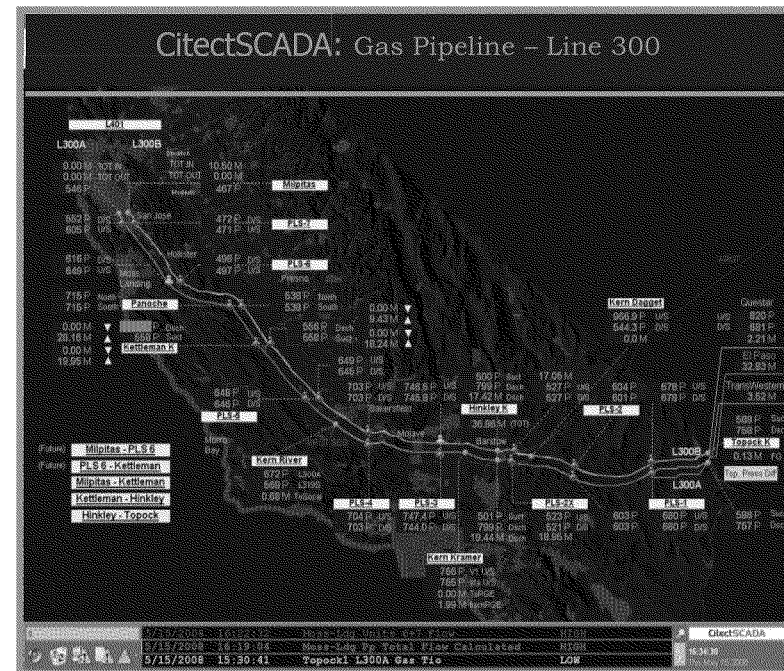
Gas Control, System Monitoring

- Directs and controls the transmission & distribution of gas, 24 hrs/365 days
- Oversee key transmission and distribution points to ensure system safety and reliability
- Respond first to emergencies
- Forecast daily system supply-demand
- Fully-redundant online backup
- 4 to 6 employees on shift
- Clearance center for all key pipeline maintenance



What is the current, and anticipated, ability to monitor pipeline facilities, in general (transmission and distribution), from the respective control rooms?

- *Mission critical system* used to remotely control major stations and other pipeline equipment in real-time
- *Provides accurate real-time operating data*
 - 9,500 analog + digital, points
 - 900 supervisory control points
- *Communication paths*
 - 356 field Remote Terminal Units (RTU's)
 - Radio – Microwave – Mountain tops
 - Wire – Lease lines
- *Retains historical operating data*



SCADA = Supervisory Control And Data Acquisition



Pipeline Segment Isolation

PG&E's ability to isolate transmission lines in the event of a breach or rupture? (Detect, Decide, Isolation, Vent)

49CFR Part 192.179 Transmission Line Valve, requirements

- Class Location 1,2,3,4

Manual Operation, Remote Control (RCV), Automatic Shut-off Valve (ASV)

- 1,000's of mainline isolation valves, (taps, cross-ties)
- 360 RCV's (open/closed)
- Approximately 1/3 of the RCV's provide transmission pipeline isolation
- 10 ASV's in operation

Enhancement Plan (Valve Automation)

- Prioritization: Class location, PIR (potential impact radius), HCA
- Phase 1 (2011-2014) : 228 valves (200 RCV + 28 ASV's)
- Phase 2 (2015 +): 330 additional valves



Pipeline Mapping

Current level of mapped facilities, the forms in which they are available (i.e., hard copy, electronic, etc.) and the forms in which they are available to various staff (i.e., mobile form to mark and locate):

- Gas Transmission pipelines & pipeline facilities are mapped in an electronic Geographic Information System (GIS).
- Gas Distribution mains and gas services are mapped in Auto-Cad, drawings are saved as TIF files (hard & soft copies).
- Mark & locate employees: Use mobile tablets that contain GIS and TIF files, Earth-net Software (USA Tags)
- Leak Surveyors: Use hard copy maps
- Construction crews: Use hard copy maps, request TIF file maps for operations.
- First Responders: online internet access showing the location of gas transmission pipelines and shut-off valves.



Pipeline Marking & Damage Prevention

Where pipeline facilities are generally marked, how they are marked, and where physical markers are not used, how is the location of facilities conveyed to the public (i.e., excavators, cities, and first responders)?

Pipeline markers 49CFR Part 192.707

- Install markers as close as practical over buried gas transmission pipelines and gas mains.
- At each public road and railroad crossing
- Where necessary to identify the location (e.g. river crossing, spans, angle points).
- Marker warnings/decals, operators name, contact number
- Types of pipeline markers;
 - Paddle, Composite DAS

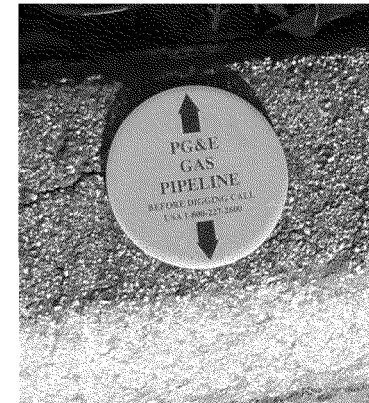
Damage prevention, One-call system (811)

- 2010, number of excavation tickets received (distribution), 470,254 (approx. 1,300/day)
- 2010, number of excavation damages (distribution)/year: 1,645

Marker warnings/decals, operators name, contact number

Types of pipeline markers:

- Paddle, Composite DAS





Gas Leak, Detection & Repair

Grade one leaks, by distribution and transmission, received through the call center/dispatch vs. those found during operations activities (i.e., leak surveys, patrols, etc.)?

- Gas Leakage Survey, 192.706
 - Leak Survey Frequency (Class location, T&D)
 - Leak Grading & Repair
 - Hazardous leaks, require immediate repair

2010 Repaired Gas Leaks (2010 PHMSA Report)						
Grade	1 (Hazardous)	2+	2	3	Total	% of total
Transmission	29	32	17	19	97	0.7%
Distribution	7,427	4,299	1,692	147	13,565	99.3%
Total	7,456	4,331	1,709	166	13,662	100%

- 7,456 hazardous gas Leaks were repaired in 2010 (20 * 365 days)
- 99% of the identified & repaired gas leaks were on gas distribution
 - Gas Distribution leaks repaired (83% services, 17% mains)
- 75% of the repaired gas leaks were identified by PG&E (leak survey)
- 25% of the repaired gas leaks were customer call-in



Questions?