



Updates on CA Pipeline Safety Program



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Mission

“To ensure that intrastate natural gas and liquefied petroleum gas (LPG) pipeline systems are designed, constructed, operated, and maintained according to safety standards set by the CPUC and the federal government”





Jurisdictional Metrics

- ❖ 2017 Transmission Mileage: 10,400 miles
- ❖ 2017 Distribution Mileage: 200,466 miles
- ❖ 2017 Number of Services: 8,820,745
- ❖ Total Number of Operators: 11, 2415
MHP / 651 Propane System
- ❖ 12 NG Storage Fields





September 9, 2010

- ❖ Pipeline Failure of 30" Transmission Line in San Bruno, CA
- ❖ 8 Fatalities, numerous injuries
- ❖ Pipeline had MAOP established under 49 CFR §192.619C
- ❖ NTSB Accident Report identified exemptions for pre-code pipelines from pressure testing as a contributing factor to the failure





Safety Assurance Actions Post – San Bruno

PUC Code §958

- ❖ Required Intrastate NG Transmission Operators to submit a plan to either Pressure Test or Replace all segments that were not pressure tested or that lack sufficient records of pressure testing





PG&E

- ❖ Pipeline Safety Enhancement Program (PSEP)
 - Hydrostatic Test: 1115 pipeline miles
 - Failures: 12 Ruptures & 18 Leaks
 - Replacement: 270 pipeline miles
 - Valves Automation: 298





PG&E

- ❖ 2017 General Transmission Rate Case
 - Hydrostatic Test: 252 pipeline miles
 - Failures: 2 ruptures & 1 leak
 - Replacement: 43 pipeline miles
 - ILI 308 pipeline miles





Sempra

- ❖ Pipeline Safety Enhancement Program (PSEP)
 - Hydrostatic Test: 93.4 pipeline miles
 - Replacement: 89.3 pipeline miles
 - Remaining:
 - ❑ Phase 1A: 22.7 miles (Test: 19.9; Replace: 2.75)
 - ❑ Phase 1B: 178.1 miles (Test: 2.6; Replace: 175.5)
 - ❑ Phase 2A: 700 miles approximately





Sempra

- ❖ 2017 O&M and Pipeline Integrity
 - ILI (In Line Inspection):
 - ❑ SCG: 177 pipeline miles
 - ❑ SDG&E: 30 pipeline miles





SouthWest Gas

- ❖ PSEP – Pipeline Safety Enhancement Program
 - Hydrostatic Test: N/A
 - Replacement: 7.1 miles
 - PSEP completed on December 30, 2015





Large Scale Incidents

1. First Responders
2. Make Safe – Stop the flow of gas and conduct a leak migration survey
3. Set up a perimeter and stay off the scene until CPUC completes its investigation
4. Chain of Custody Procedures





CPUC's MHP Upgrade Program 1997 Legislation

- ❖ CA Public Utilities Code §2791-2799
 - All MHPs built after 1/1/1997 shall provide directly metered gas and electricity to homes
 - MHP owners may transfer existing master meter systems to utility ownership
 - Costs of transfer process shall not be passed through to residents.





1997-2014

- ❖ Between 1997 and 2014, less than 1% of the existing master metered spots in CA had opted to convert to direct utility service
- ❖ 2011 CPUC's MHP - OIR process began





Pilot Program (2014-2018)

- ❖ Decision D.14-03-021 established a pilot program to convert more MHP spaces
 - Authorizes cost recovery by utilities for to-the-meter and beyond-the-meter
 - MHP Applications accepted on January 1, 2015
 - Goal was to convert 10% MHP spaces within 3 years





Pilot Program Results

- ❖ Over 1800 parks applied to the program
- ❖ 2015-2017: 17,390 MHP spaces were converted (about 4.5% of the total spaces in CA)
- ❖ Before Pilot: 216 spaces per year (average for 1997-2014)
- ❖ During the Pilot: 5,796 spaces per year (average for 2015-2017)





Next Steps – Permanent Program

- ❖ New OIR will create a permanent upgrade program
 - SED encourages operators to grow from pilot and take on more conversions by applying CPUC approved risk based criteria and convert master meters more efficiently
 - Goal to convert 50% of all master metered spaces by 2030





CA - Gas Storage Fields

Year Established	Field	Working Gas (BCF)
1941	La Goleta	21.5
1942	Playa Del Rey	2.4
1973	Aliso Canyon	86.0
1975	Honor Rancho	24.2
1975	Kirby Hills	15.0
1976	McDonald Island	82.0
1979	Los Medanos	18.0
1979	Pleasant Creek	2.3
1997	Wild Goose	75.0
2001	Lodi	17.0
2010	Princeton	11.0
2010	Gill Ranch	20.0
	Total	385.4





CA Wildfires

Utility Lessons Learned





CA Wildfires

Utility Lessons Learned





CA Wildfires

Utility Lessons Learned





CA Wildfires

Utility Lessons Learned





CA Wildfires

Utility Lessons Learned



A firefighter stands on the roof of a house submerged in mud and rocks, Jan. 10, 2018, in Montecito, Calif.





CA Wildfires

Utility Lessons Learned



SoCalGas crew inspects gas line in area heavily impacted by mudslides.





CA Wildfires

Utility Lessons Learned

- ❖ SoCal Gas – Thomas Fire and Santa Barbara County mudslides
 - Enhancing current Incident Command System (ICS) compatible structure to be more in aligned with First Responders' ICS structure
 - Training to include Federal Emergency Management Agency (FEMA) both ICS 100 and ICS 200 for management employees who either support or respond to incidents





CA Wildfires

Utility Lessons Learned

- ❖ Enhancing emergency response plan to incorporate
 - Relocation of the Incident Command Team and various support services closer to the incident rather than at our regional headquarters
 - This improvement allowed for quicker decision making, stronger communication and the ability to secure proper resources to support the incident





CA Wildfires

Utility Lessons Learned

- ❖ Enhancing Incident Command System structure to include a branch for Data Management under the Planning Chief
 - This enhancement allowed the centralization and management of data increasing situational awareness and the accuracy of communications.





CA Wildfires

Utility Lessons Learned

- ❖ Acquiring communication mobile command centers assets and network systems to support emergency response. SoCalGas identified a need to obtain alternative communication equipment (e.g., mobile hotspots, walkie talkie phones, etc.) to provide contingencies when regular means of communications become unavailable or unreliable.





CA Wildfires

Utility Lessons Learned

- ❖ Improving SoCalGas company internal gas mapping system (GIS) to include standardized mapping conventions with counties and agencies.
 - During the recent mudslide incident, SoCalGas identified challenges with aligning to various agency maps, especially when the boundaries or nomenclature were frequently changing.





PG&E





PG&E

- ❖ Rohnert Park base camp October 2017
Northern California Wildfires
- ❖ First time PG&E operated a combined
gas and electric camp.
- 100 acres, 1,800 people working including
mutual aid and contractors, 40 tents and
48 sleeper trailers





PG&E – Lessons Learned

- ❖ Carr Fire improvements based on lessons learned from the October 2017 Northern California Wildfires:
- ❖ Better communication between PG&E Field Services, first responders, and customers during gas restoration efforts and re-lights





PG&E – Lessons Learned

- ❖ More efficient base camp design and operations.
- ❖ PG&E established records management with quality control at base camp to track work packages returning from the field
- ❖ Better coordination between Gas and Electric Operations incident organizations,





PG&E – Lessons Learned

- ❖ Developed a methodology to assess system damage, both structure and gas assets, to guide cut and cap activities.
- ❖ Developed tracking systems at the service point level to monitor each phase of work through system restoration
- ❖ Collected and analyzed samples of risers to confirm heat damage was limited to above ground assets.





DOGGR Update - Regulations

- ❖ California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)
- ❖ Regulator of vertical piping from the Wellhead to the tubulars/wellbore (from the demarcation valves to Wellhead down to the production/injection zones)





DOGGR's Regulations

❖ DOGGR's APPLICABLE RULES AND REGULATIONS:

- California Laws for the Conservation of Oil, Gas, and Geothermal Resources (CA Public Resources Code Sections 3013, 3106, 3180...)
- California Code of Regulations (Title 14, Division 2, Chapters 2, 3 and 4)
- Emergency Regulations Orders





DOGGR's REGULATIONS FOR DEPLETED HYDROCARBON OR AQUIFER RESERVOIR

❖ DOGGR'S New REGULATIONS:

Approved and Effective Oct 1, 2018

- Risk Management Plans
- Emergency Response Plans
- MIT to detect an anomaly before it becomes an integrity issue
- Well design and construction
- Casing Diagrams





DOGGR'S REGULATIONS FOR DEPLETED HYDROCARBON OR AQUIFER RESERVOIR

DOGGR'S REGULATIONS

- Monitoring Requirements
- Inspections and Records Management
- Geology and Engineering Records
 - ❑ records must demonstrate to DOGGR's satisfaction that stored gas will be confined to the approved zone or zones of injection
- Leak Detection Reporting
 - ❑ Infrared imaging to spot leaks and daily inspections of gas storage wellheads.





Elements of DOGGR's Risk Management Plans

❖ Risk Management Plans

- Identify potential threats and hazards
- Ongoing verification of well mechanical integrity
- Ongoing verification of reservoir integrity
- Corrosion monitoring and evaluation
- Protocols for evaluation of wells and facilities
- Prioritization of risk mitigations effort
- Earthquakes, HAZMAT, sabotage, explosions, fires. Topography, wind patterns, and nearby infrastructure and development must also be considered





DOGGR's REGULATION IMPLEMENTATION TIMELINE

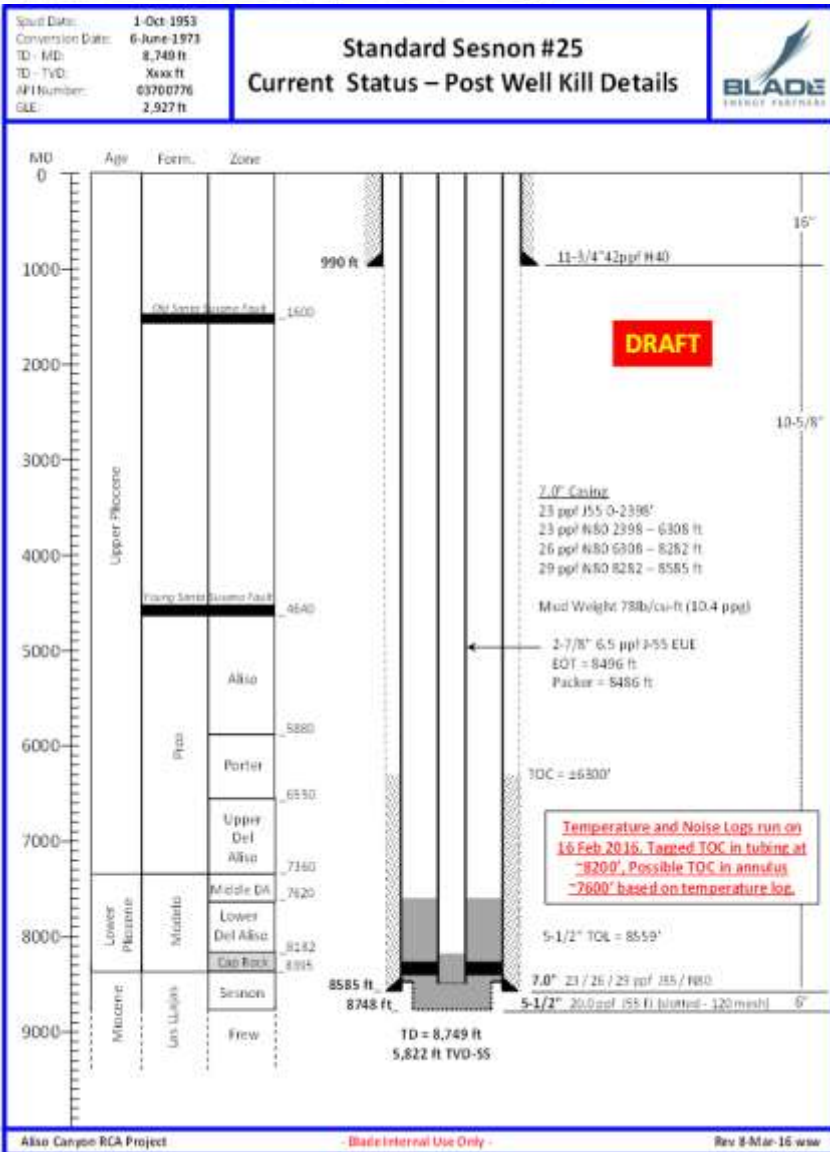
- ❖ Regulation Approved and Effective Oct 1, 2018
- ❖ Operators' Risk Management Plan Due 4/1/19
- ❖ Emergency Response Plan Due 4/1/19
- ❖ Mechanical Integrity Testing (MIT) Completed by October 1, 2020
- ❖ Well Construction Standard (no single point failure)
 - Complete 1st 10% by October 1, 2019
 - Complete 15% every subsequent year
 - Total Completion in 7 years





Aliso Canyon RCA update from Blade Energy Partners





Up to 60 metric tonnes/hr of methane*

* Conley et al in *Science* AAAS 18th March 2016, Vol 351 Issue 6279





RCA – Blade Energy Partners

- ❖ Root Cause and Contributing factors
 - Initial leak on SS 25
 - Initial leak growing to a larger leak; and then transitioning to a full fledged blow out.





RCA – Blade Energy Partners

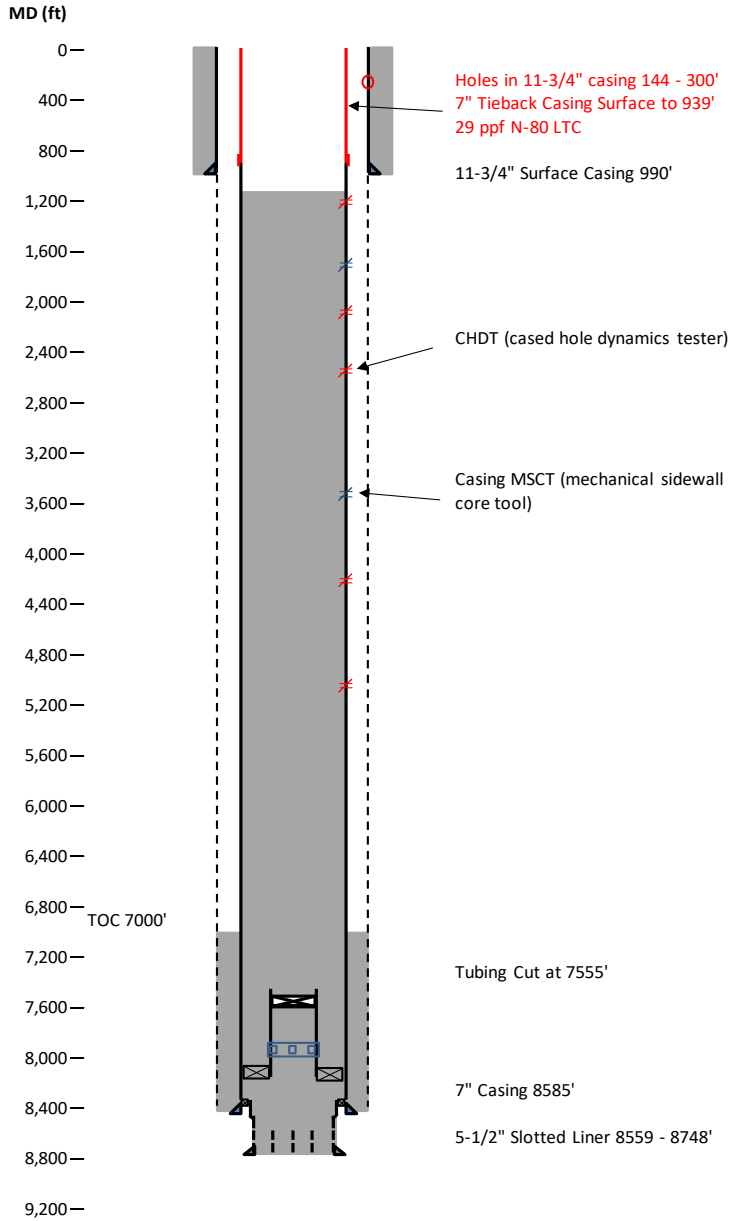
❖ Data Driven Process

- Rationalize through data and analyses (modeling) obtained from observations: drilling/completion/workover reports, kill attempts, adjacent wells, logging and shallow geology results, Logging, metallurgical analyses, Liquid/Solids analyses and other observations





Standard Sesnon (SS-25) Wellbore (Proposed)



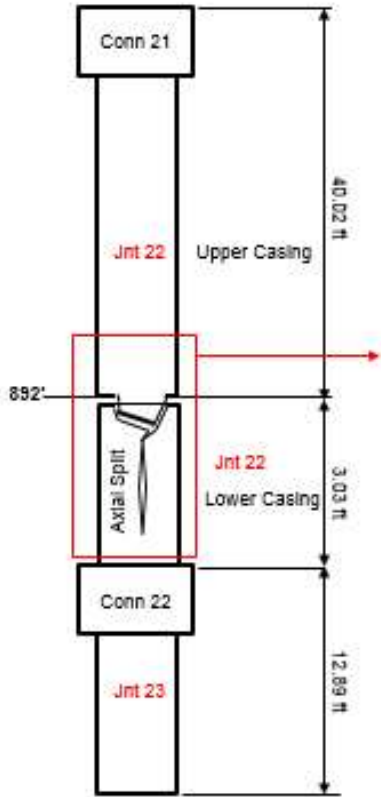
- ❖ Recovered 2 7/8" tubing.
- ❖ Recovered the 7" casing along with failure region.
- ❖ Recovered 7" from 939' to 1024' across the shoe to obtain remaining externally corroded 7"
- ❖ Ongoing:
 - 11 3/4" logging/camera/sampling





- ❖ 7" Casing failed at 892'
 - Casing parted circumferentially
 - Bottom part had an axial split
- ❖ 7" Casing corrosion observations
 - Based on visual observations, OD corrosion
- ❖ Beyond 1022' there appears to be no significant corrosion or anomalies
- ❖ 11-3/4" casing
 - Through wall metal loss (holes) starting around 150' to 300'

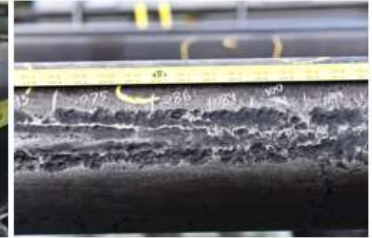




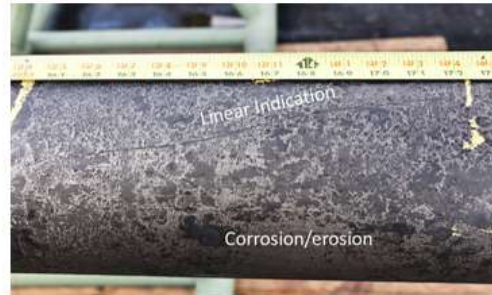
(a) Joint 2 (20.1'-60.6') showing little corrosion



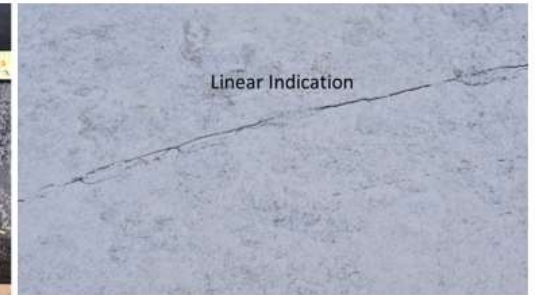
(b) Joint 14 (517.8'-560.4') showing shallow corrosion



(c) Joint 20 (769.7'-810.6') showing a large area of deep corrosion



(a) Oblique Linear Indication on OD surface



(b) Oblique Linear Indication showed by MPI





RCA – Blade Energy Partners

- ❖ Complete the 11 3/4” work including annulus liquid sample and metal samples
- ❖ Collect additional annulus liquid samples from one other well that appears to have similar external corrosion
- ❖ Complete the Metallurgical analyses of SS25 and samples from other analogous wells
- ❖ Complete the liquid/solids analyses and integrate it with the metallurgical work
- ❖ Integrate all the wellbore modeling with the metallurgical and other analyses to identify the cause of the failure





Thank you!
For Additional Information:
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