



## DOE/NARUC Natural Gas Infrastructure Modernization Partnership Webinar Summary

### “Aliso Canyon and Underground Natural Gas Storage Issues”

March 28, 2017

Just over a year after the Aliso Canyon leak was successfully contained after nearly four months of releasing methane into the atmosphere, the conversation over risks associated with natural gas storage continues. The NARUC/DOE Natural Gas Infrastructure Modernization Partnership invited DOE and PHMSA officials to speak about the state of underground natural gas storage, lessons learned from Aliso Canyon, and regulatory actions from the federal government and states to address risks associated with storage. PHMSA released an [interim final rule](#) on underground gas storage in December 2016 and discussed the implementation of new safety regulation over the next two years.

Commissioner Diane X. Burman of the New York PSC, chair of NGIMP, co-vice chair of the NARUC Gas Committee, and chair of the Pipeline Safety Voluntary Information-Sharing System Working Group with PHMSA introduced the webinar. James Bradbury, senior advisor in DOE’s Office of Energy Policy and Systems Analysis, summarized the DOE/PHMSA task force and gave a brief introduction to gas storage capacity in the U.S.

Grant Bromhal, senior technical advisor at NETL, followed with a discussion of DOE’s wellbore integrity work relating to the Aliso Canyon leak. The leak itself began on October 23, 2015. Beginning the day after and continuing through December 22, 2015, eight increasingly aggressive top kill attempts were made, all of which were unsuccessful and had

the end result of eroding and expanding the vent. Drilling began on a relief well on December 4 and was completed on February 17, 2016.

A DOE-led task force was initiated in April 2016 pursuant to the Protecting Our Infrastructure of Pipelines and Enhancing Safety Act of 2016 (PIPES Act). A well integrity team was formed with NETL membership. Dr. Bromhal described the well that leaked and the ongoing root cause analysis being conducted by the California Public Utilities Commission.

Currently, SoCal Gas is petitioning the California Division of Oil, Gas, and Geothermal Resources to reopen part of the Aliso Canyon field for injections. Of the 114 wells in the facility, 41 have passed pressure tests and are being continuously monitored. The field is expected to reopen at a diminished capacity well under the 86 billion cubic feet capacity prior to the leak.

Aliso Canyon is the first major gas storage facility incident since a 2004 failure in Texas. However, infrastructure is aging and the potential for future leaks persists. Approximately 15 percent of wells are more than 95 years old; 80 percent are more than 35 years old. Dr. Bromhal discussed a July 2016 well integrity [workshop](#) that discussed this aging infrastructure in more detail. Dr. Bromhal’s team made recommendations for gas storage operators in three topic areas: well

The Aliso Canyon leak lasted from October 23, 2015 through February 17, 2016 and released 109,000 tons of methane into the atmosphere, the annual emissions equivalent of 440,000 cars.



integrity, risk management, and research and data gathering.

David Meyer, senior advisor in the DOE Office of Electricity Delivery and Energy Reliability, covered electric reliability issues associated with Aliso Canyon and gas leaks. DOE directed staff at the Argonne National Lab to review operating underground gas storage facilities to estimate the likelihood of sudden losses of functionality and the impacts of a loss. The report is available [here](#). Argonne collected data on safety incidents at storage facilities and found 135 documented incidents. In general, state incident data was limited. In its preliminary research, Argonne found that 60 underground storage facilities have some potential to affect generation capacity if they were lost, but only 12 have the potential to affect at least 2 GW of capacity. (NERC asserted that a loss of less than 2 GW can be easily addressed by generation owners and system operators.) Dr. Meyer called Aliso Canyon a “wake-up call” for the risks associated with increasing gas/electric interdependence. DOE, Argonne, and NERC are continuing their collaboration to address the reliability implications of underground gas storage facility incidents with plans to release results in March 2018.

Next, Alan Mayberry, associate administrator, Byron Coy, senior technical advisor, and Zach Barrett, director of state programs represented PHMSA. Mr. Mayberry reiterated the role of underground natural gas storage in the U.S. energy supply portfolio and the current size of the gas storage industry. The PIPES Act directed PHMSA to establish regulations and inspection of all underground natural gas storage facilities. The agency’s December 2016 IFR incorporated industry best practices and began developing

inspection criteria and training for federal and state inspectors.

Mr. Coy followed with further discussion of the sources and objectives for the new inspection program. PHMSA will recover the cost of the program from user fees on operators. In the short term, the agency wants to compare American Petroleum Institute (API) Recommended Practices (RPs) 1170 and 1171 with guidance material from the Interstate Oil and Gas Compact Commission. In the remainder of 2017, the agency will continue to develop the program by completing industry safety assessments, awarding research projects, conducting prototype inspections, running a public workshop, and developing training. The program will launch in the first quarter of 2018 with initial training and inspections.

Mr. Barrett discussed the state certification process. State certification allows states to inspect facilities and enforce PHMSA and state regulations for intrastate facilities. PHMSA will begin accepting state certifications in September 2017 for the 2018 inspection year. Mr. Barrett expects states to take advantage of certification and he is heading up outreach efforts to expand the program. He anticipates a successful program to be modeled after PHMSA’s existing state partner program for horizontal top-side pipe. He emphasized that the inspection program has been closely coordinated with PHMSA leadership, and the IFR does not impact any permitting or certificates currently in place.

In the Q&A portion of the webinar, the Massachusetts Department of Public Utilities asked about the seriousness of the four major gas storage facility incidents over the last 15 years. Given the substantial amount of time that has passed since the incidents, it is

Twelve underground gas storage facilities have the potential to affect at least 2 GW of generation capacity.

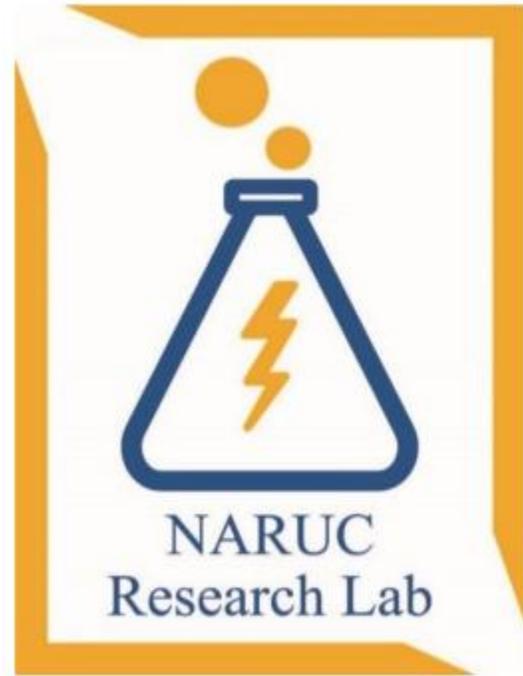


difficult for DOE and PHMSA to conduct detailed reviews. He also asked about the definition of a “major” incident, which has not been well defined but has generally been interpreted as an incident causing significant loss of life or property, or affecting more than 2 GW of generation – the cut-off that Argonne National Lab used in its analysis of electric reliability issues.

Massachusetts also asked about low-cost sensing technologies currently available. One technology developed under ARPA-E’s MONITOR program is commercially available, and the remaining ten are in varying stages of development.

In response to a question about expanding training offerings, PHMSA confirmed that inspection training will continue to be offered at PHMSA’s existing facility in Oklahoma City. While the program is considering the use webinars to offer remote training, the Oklahoma City facility will continue to be the main option for state inspectors. PHMSA expects to obtain quality data from the program on its performance once it begins in 2018.

The Utah Department of Environmental Quality followed up with a question on whether operators are responsible for meeting API RP 1170 requirements, as her agency is trying to draw the line between state and PHMSA responsibilities. PHMSA responded by saying that the IFR should not interrupt any state permitting authority and continued to address the question offline.



Please address questions to NARUC’s Research Lab staff, whose details are online at [www.naruc.org/lab](http://www.naruc.org/lab).

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