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January 31, 2017

Submitted via email to:
Alisocomments@conservation.ca.gov

Attn: Aliso Canyon Comprehensive Safety Review
Department of Conservation
Division of Oil, Gas, and Geothermal Resources
801 K Street, MS 24-02
Sacramento, California 95814

Re: Comments on the Findings from the Gas Storage Well Safety Review and the Proposed Pressure Limits for the Aliso Canyon Storage Facility

The opinions expressed in this document are those of the Porter Ranch Neighborhood Council, and not necessarily those of the City of Los Angeles

To Department of Conservation:

The Porter Ranch Neighborhood Council (PRNC) appreciates the opportunity to submit these comments to the Department of Conservation on the Safety Review completed by the Division of Oil, Gas, and Geothermal Resources (DOGGR) for the Aliso Canyon gas storage facility operated by the Southern California Gas Company (SoCalGas). The PRNC is comprised of 11 publicly elected representatives of the Porter Ranch community within the City of Los Angeles. As you are well aware, Porter Ranch is the community of 30,000 citizens of the State of California who endured through four months of the worst gas blowout accident in the United States, and who continue to endure through episodes of uncontrolled gas releases from the Aliso Canyon gas facility.

The PRNC has reviewed the documents released by DOGGR on Tuesday, January 17, 2017, regarding the Safety Review and wishes to address four main areas of concern regarding the findings:

1. The adequacy of the testing conducted
2. The risk of a seismically-induced failure
3. The determination of the maximum field pressure
4. Acceptable Methane Release

We ask that you seriously consider our concerns and do the right thing by the people of our community.

Adequacy of Well Integrity Testing

The document titled *Requirements of Comprehensive Safety Review of the Aliso Canyon Natural Gas Storage Facility* describes the well integrity testing that was required by DOGGR in accordance with the requirements of SB380. Table 1 lists the tests conducted, and the defect that each test is designed to detect.

Table 1 – Names and Functions of Tests Conducted under the Requirements of SB380

Test	Name	What it Detects
1	Temperature Log	This test is designed to detect gas leaking out of the well casing during the course of the test
2	Noise Log	This test is designed to detect gas leaking out of the well casing during the course of the test
3	Casing Wall Thickness Test	As its name indicates, this test looks for thinning of the casing along its depth.
4	Cement Bond Log	This is sonic test designed to detect loss of bonding between cement and the steel casing, as well as between the cement anchor and the cap rock over the reservoir.
5	Multi-arm caliper inspection	This test looks for deformations in the wall geometry and shape on the inside casing wall.
6	Pressure Test	This test includes pressurizing the interior tubing and the casing annulus space with water and monitor loss of pressure over time.

At first glance, these tests appear impressive. However, we draw your attention to the fact that *none of these tests has any ability to detect a hairline fracture or a corrosion pit in the casing, especially if the fracture or pit does not propagate the full thickness of the casing wall*. Even if the hairline fracture propagates the full thickness of the casing, the pressure test was conducted with water, which does not have the sensitivity required to quantify gas leak across the casing. In other words, gas can pass through cracks that water takes much longer to pass through, which would not register as a loss of pressure during the pressure- test.

Therefore, while these tests are better than what was required before, they fall very short of the goal of ensuring the safety of these wells. These casings have gone through decades of stresses from earth movement over multiple earthquakes that we know about, and numerous seismic activities that we don't even know about. We should also not forget the reckless practice of withdrawing gas through the annular space between the casing and the tubing over decades of operation. It is our understanding that this practice is actually not

allowed in gas production wells, but somehow that requirement did not extend to gas storage wells until the SS25 well failure.

We are hoping that the root-cause analysis would be able to determine if such stresses are in the casing. For this reason, it is imperative that the root-cause analysis be completed before the wells are used for any gas injection or withdrawal from the field.

Seismic Integrity

Seismic standards are typically limited to facilities and structures whose failure could result in direct harm to the public, and/or the loss of critical facilities. Ironically, they do not apply to gas wells. For the Aliso Canyon facility, while the seismic hazard remains unchanged, the seismic risk has increased dramatically since the opening of the facility in 1972. Not only due to the severe aging of the wells, but also because of the significant urban development around the facility and the impact of seismic field failure on the community.

Considering the consequence of a well failure in the absence of a down-hole blow-off preventer valve, some reasonable seismic code must be applied. At a minimum, there should be an evaluation of how much lateral load a casing and tubing can withstand, and how much of an up-thrust can they tolerate before they fail. A "straw" that is 6,000 ft long, whether 8-inches or 3-inches in diameter, could not possibly withstand the lateral force in any seismic zone, let alone in California. Indeed, the National Labs team stated in their report to DOGGR in relation to casing strain as a result of formation deformation from seismic activities that "*The South Belridge Field near Bakersfield, California has undergone significant compaction and has a high percentage of wells that have failed from casing deformation.*" The National Labs team then states that "*…a more granular review of the site-specific ground shaking hazard associated with the Santa Susana fault system will provide better insight into the seismic hazard at Aliso Canyon*". Finally, the National Labs team states that "*We…believe that detailed structural analysis of the Aliso Canyon wellbore designs incorporating the results from a PSHA and PFDA of the Santa Susana Fault System will better inform the risk management process for operation of Aliso Canyon*". With the above statements, we do not see how the facility can be allowed to reopen and resume operation before a seismic risk analysis is completed. Anything short of such analysis is playing "Russian Roulette" with the health of the people in our community.

We urge you not to ignore this fact, and to commission a seismic analysis of the wells before they are used for gas injection or withdrawal. Just because this is not "typically" done, does not mean it is not the right thing to do.

It is our understanding that there will be fluid in the annular space between the tubing and the casing, and that it will hold down the gas if there is a failure at the bottom. At 2,926 psi, it takes a water column of 6,700 ft to exert an equal amount of downward pressure. We realize there are chemical additives to the liquid to make it heavier, so we do not know how

far lower the required depth will be. However, we want to draw your attention to the fact that this liquid pressure only prevents the gas from lifting the plug at the bottom if gas is released below the plug. However, it does not prevent the gas from escaping into the annular space if there is a break in the tubing anywhere above the plug. Once this occurs, the casing will be under the full pressure of the field, and there will be nothing that can be done to release that pressure without repairing the tubing. A more catastrophic failure that results in the failure of both the tubing and the casing, such as a seismic event, would also result in other uncontrolled gas blowouts identical to that of SS25. Therefore, the heavy liquid will do nothing to prevent gas release in a seismic event. This is another reason why a down-hole blow-off preventer valve is absolutely necessary.

Determination of Maximum Field Pressure

In determining the maximum field pressure, DOGGR relied on the report by GeoMechanics Technologies, which was commissioned by SoCalGas. It is noted that GeoMechanics Technologies did not do a single test of any sample of the cap rock, or any numerical modeling of the stresses under various field gas storage volumes and repeated injection and withdrawal that has happened over the decades. They simply relied on information from injection tests data conducted in past years, and stated that, since the pressure applied during these tests was higher than the 3,000 psi pressure under which the field had operated in the past, then a 3,000 psi operating pressure is acceptable. In essence, *since the field operated at 3,000 psi in the past, there is no reason not to continue operating it at the same pressure*. We note that the report by GeoMechanics Technologies, Inc. has the following statement at the beginning of it:

> "*Neither GeoMechanics Technologies, members of GeoMechanics Technologies, nor any person acting on behalf of GeoMechanics Technologies makes any warranty or representation, express or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report.*"

Basically, the single entity that did the study was paid by the Gas Company to do it, did not have a single sample of anything to work with, and then put a disclaimer to disavow themselves from anything that comes out of their analysis and refuse to stand behind the *accuracy, completeness, and usefulness* of anything they have in their report. We do not understand how DOGGR accepts this standard for its decision.

We also find it immensely disappointing that the National Labs team simply followed the same rationale and concurred with the same number without any further analysis. The National Labs are experts at conducting Risk Analysis on natural and man-made systems. We do not understand how the National Labs would completely ignore the Risk Analysis component to this decision.

To that end, we strongly disagree with the one-dimensional approach to this decision, and urge DOGGR to step out of its typical engineering approach, and implement a risk analysis approach to this question that goes beyond the *fracture gradient* calculation, and asks the question about the "*cost of being wrong*". In other words, this determination is not supposed to be limited to an engineering calculation, but should also include a Risk Analysis component that assesses the impact of failure on the surrounding community. This must be an integral part of this decision. The outcome of this analysis is then to be incorporated into the satefy factor required under SB380.

Per Figure 2 in the GeoMechanics Technologies Report, a pressure of 2,926 psi corresponds to a storage of about 86 Bcf in Aliso Canyon! This means that DOGGR is giving the green light to SoCalGas to store as much as 86 Bcf of gas in the reservoir if they so choose, which is the full capacity of the reservoir! This finding seems to have been made with complete and utter disregard to the fact that there was a catastrophic well failure just over a year ago. It is as if nothing has happened. We remind DOGGR that this analysis was not supposed to be just about the caprock, but also about the wells and the pressure that the wells can withstand. We fail to understand how DOGGR accepts the notion that the wells can be operated at the same maximum pressure under which they were operated before the well blowout.

Another factor not considered is the potential impact of past (and possibly ongoing) fracking practices in the field on the caprock and overlaying ground cover.

Acceptable Methane Release

In the letter from Mr. Ken Harris of DOGGR to Mr. Rodger Schwecke of SoCalGas dated January 17, 2017, attachment 1 includes 23 requirements for the SoCalGas to implement. Requirement #23, in essence, states that the CPUC and DOGGR accept the release of gas from the facility into the atmosphere at a rate as high as 250 Kg of methane per hour, which translates into 6 tons of methane gas a day. The PRNC strongly objects to this allowance. The Community cannot tolerate ANY release from the facility, and we do not understand why we even have to make this statement. If SoCalGas cannot prevent any release from the facility, then we expect the CPUC and DOGGR to conclude that this facility should not be allowed to operate.

Summary

The PRNC urges DOGGR to consider the following:

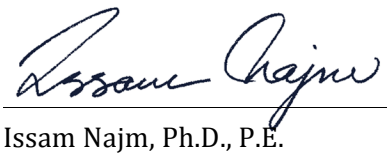
1. The tests conducted on the wells, while they represent an improvement over past requirements, they fall far short of securing and ensuring the safety and integrity of the wells against another blowout.

2. DOGGR should commission a thorough structural and seismic analysis to quantify the risk of seismic failure and its consequences. It is imperative that a seismic analysis of the wells and the formation be completed before the field is allowed to resume operation.
3. DOGGR should not limit the pressure determination to an engineering calculation, but should also include a thorough Risk Analysis. Without the Risk Analysis component, the pressure limit determination is incomplete.
4. The PRNC categorically rejects the notion that as much as 6 tons of methane can be released into the community every day from the Aliso Canyon facility. We do not understand how this can be acceptable to the CPUC and DOGGR. If this facility cannot contain its gas release, this should be a clear indication to the CPUC and DOGGR that this facility cannot be allowed to operate, and must be retired.

In the final analysis, the Porter Ranch Neighborhood Council finds DOGGR's willingness to give the Gas Company the green light to refill the Aliso Canyon facility with 100% of its capacity to be completely unacceptable, and a slap in the face to the people who lived through the well rupture disaster. We ask that DOGGR takes this decision back to the drawing board and incorporate a Risk Analysis component to it based on the history of the field, the age of the field, and the impact of potential failure on the people who are in the unenviable position of living next to this facility.

Respectfully Yours,

Porter Ranch Neighborhood Council



Issam Najm, Ph.D., P.E.
President

cc: The Honorable Edmund G. Brown, Jr., Governor, State of California
Mr. Timothy Sullivan, Executive Director, California Public Utilities Commission
Senator Henry Stern, California 27th District
Mr. Dante Acosta, California Assembly Member, 38th District
Ms. Kathryn Barger, Supervisor, Los Angeles County Board of Supervisors
Mr. Mitchell Englander, Councilman, Los Angeles City Council
Mr. Eric Garcetti, Mayor, City of Los Angeles
Mr. Steve Knight, United States Representative, CA-25
Mr. Brad Sherman, United States Representative, CA-30