

**Division of Oil, Gas, and Geothermal
Resources**

**California's Proposed
Natural Gas Storage
Regulations**

August, 2016



Emergency Regulations

- Governor's Emergency Proclamation
January 6, 2016
- Emergency Regulations mirrored
the Governor's proclamation,
February 5, 2016
- Provided a framework for the
proposed permanent rulemaking



Proposed Regulations

- Approval Process
- Required Data
 - Risk Management Plans
 - Emergency Response Plans
 - Geology and Engineering
 - Casing Diagrams
 - Leak Detection Protocols
- Well Construction Standards
- Mechanical Integrity Testing
- Monitoring
- Inspections



Approval Process

- Project application is submitted by operator with supporting data
- Division evaluates the application and if appropriate, issues a Project Approval Letter with conditions
- Division reviews the project periodically to ensure project poses no threat to life, health, property, or natural resources



Data Required

- Data must support that injected gas will be confined to the intended zone.
- Description of oil and gas reserves prior to start of injection.
- Description of surface and subsurface devices, tests, and precautions to be taken.
- Proposed waste water disposal method.
- Maximum and minimum reservoir pressures.

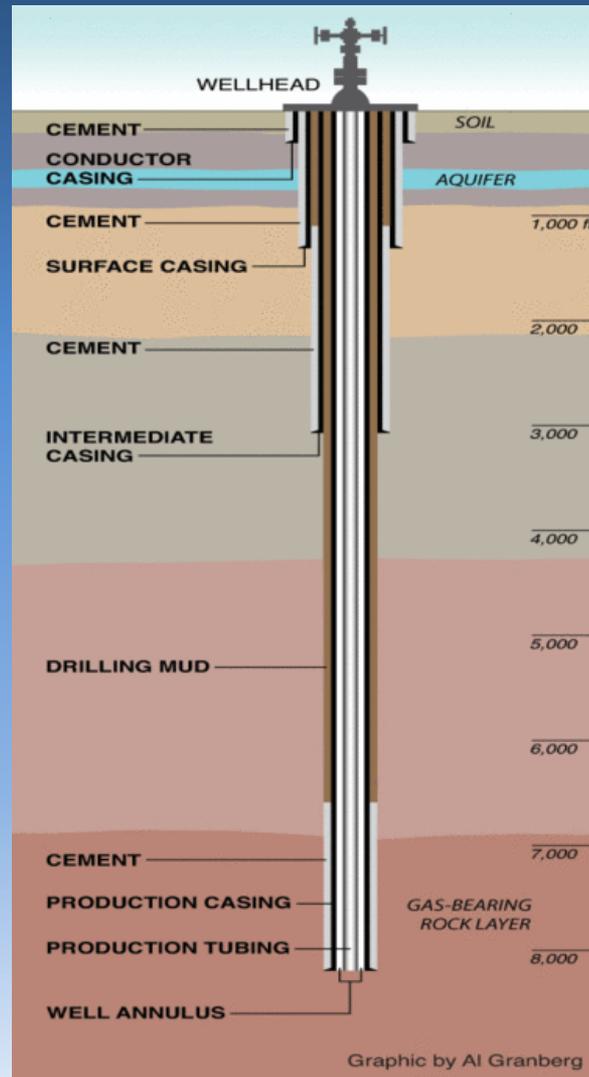


Data Required – cont.

- Engineering and geologic study
- Gas storage injection and withdraw plan
- Identification of all gas storage wells
- Any other data that, in the judgment of the Supervisor, are pertinent and necessary for proper evaluation



Casing Diagrams



Risk Management Plans

Identify potential threats and hazards

- Ongoing verification of well mechanical integrity
- Corrosion monitoring and evaluation
- Protocols for evaluation of wells and facilities
- Ongoing verification of reservoir integrity
- Evaluation of geologic hazards and natural disaster threats
- Prioritization of risk mitigations efforts



Well Construction

The operator shall ensure that a single point of failure does not pose an immediate threat of loss of control of fluids and to make certain that integrity concerns with a gas storage well are identified and addressed before they can become a threat to life, health, property, or natural resources.



Well Construction – cont.

The well has been completed with both primary and secondary mechanical well barriers to isolate the storage gas within the storage reservoir and transfer storage gas from the surface into and out of the storage reservoir.



Well Construction – cont.

At minimum, the primary mechanical barrier shall be comprised of the following elements:

- Production casing to surface with the required integrity to contain reservoir pressure;
- Tubing with packer and production tree with the required integrity to contain reservoir pressure; and
- Surface Controlled Subsurface Safety Valve (SCSSV) or Christmas tree valve with the required integrity to contain reservoir pressure that halts flow through the well.



Well Construction – cont.

At minimum, the secondary mechanical barrier shall be comprised of the following elements:

- Casing cement that overlaps between two concentric casings, with good quality cement bond;
- Wellhead with annular valves and seals and the required integrity to contain reservoir pressure;
- Casing with hanger and seal assembly;
- Tubing hanger with seals; and
- Christmas tree master valve.



Well Construction – cont.

- Casing is designed to project conditions
- Casing is cemented so as to maintain the integrity of the storage zone(s) by providing isolation of the reservoir from communication with other sources of permeability or porosity through the wellbore, and verified by cement bond logs or other methods approved by the Division.



Mechanical Integrity Testing

- Annual temperature and noise log
- Casing wall thickness inspection performed at least every two years to determine if there are possible issues with casing integrity.



Mechanical Integrity Testing – cont.

- Pressure test of the production casing conducted at least every two years. If a pressure test does not indicate a final stabilized pressure and less than 10 percent pressure loss over a minimum 30 minute test, then the well shall not be used for injection or withdrawal without subsequent approval from the Division.
- The Division may require additional testing as needed to demonstrate the integrity of the well.



Monitoring

- Volumes of stored gas
- Real-time data gathering by January 1, 2020
- Leak detection protocols



Inspections

- Testing of surface and subsurface safety valves every 6 months
- Testing of master valve every year
- Inspection of isolation valves
- Inspection of all ports, wellhead assembly, and blind flanges



Emergency Response Plans

- Collisions involving wellheads
- Well fires and blowouts
- Hazardous material spills
- Equipment failures
- Leaks and well failures
- Explosions
- Natural disasters
- Medical emergencies
- Written action plans
- Response measures that outline response activities
- Procedures for notification



Rulemaking Process and Timing

Discussion draft published	July 2016
Public workshops	August 2016
Informal comment period ends	August 2016
Commence rulemaking	September 2016
Public comments hearings	October 2016
Comment period ends	November 2016
Regulations in place	February 2017



Workshops

Northern California

August 9, 2016

1:00pm - 5:00pm

Natural Resources Building Auditorium

1416 Ninth Street, Sacramento, CA 95814

Southern California

August 11, 2016

1:00pm - 5:00pm

Hilton Woodland Hills

6360 Canoga Ave, Woodland Hills, CA 91367



AGENDA

1. Welcome – Introduction
(Ken Harris, State Oil and Gas Supervisor – DOGGR)
2. Brief Overview of the Regulations
(Rob Habel, Special Assistant to Supervisor - DOGGR)
3. Workshop Discussion by Section
 - Approval Process
 - Risk Management Plans
 - Project Data Requirements
 - Casing Diagrams
 - Well Construction Requirements
 - Mechanical Integrity Testing
 - Monitoring Requirements
 - Inspection, Testing, and Maintenance of Wellheads and Valves
 - Emergency Response Plans
4. General Comments
5. Next Steps
6. Closing Comments
(Ken Harris, State Oil and Gas Supervisor – DOGGR)



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For more information go to:
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