NOTICE TO OPERATORS
2020-02

JANUARY 7, 2020

MORATORIUM ON NEW APPROVALS OF CYCLIC STEAM ABOVE FRACTURE PRESSURE

New regulations effective April 1, 2019, expressly prohibit surface expressions resulting from injection operations. [1] Despite that prohibition, high-pressure cyclic-steam operations have been linked to recent surface expressions in the Cymric and Midway-Sunset oil fields in Kern County. These uncontrolled and unpredictable spills pose a significant threat to human health and the environment.

Accordingly, the Geologic Energy Management Division or CalGEM has placed a moratorium on approving new high-pressure cyclic steam operations pending a review of the practice in consultation with experts from the Lawrence Livermore National Laboratory. Until CalGEM, in consultation with the National Labs, has determined that projects using cyclic-steam injection above fracture pressure can be implemented safely, new proposed projects using this process will not be approved. CalGEM's action conforms with its mandate to protect life, public health, property, and natural resources.[2]

The moratorium applies to new projects and wells that inject steam underground at high pressure to break rock formation and allow oil production. This practice, referred to as cyclic steam above fracture pressure, is correlated with surface expressions observed this summer and fall in the Cymric and Midway-Sunset fields. CalGEM has issued notices of violations to operators associated with these spills. This moratorium does not affect proposed projects that use cyclic steaming at pressures that are demonstrated, in accordance with the regulations, to take place below fracture pressure.

During this moratorium, CalGEM and the National Labs will review the practice of high-pressure cyclic steam operations above the fracture pressure to determine whether it can be performed safely and if so, to identify specific criteria to comply with recent regulations. These recent regulations prohibit surface expressions and generally require that maximum allowable surface pressure must be below fracture pressure, as

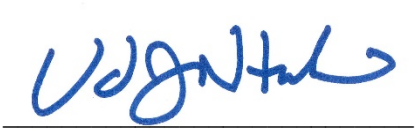
[1] "Surface expression" is defined in CalGEM's regulations as a "flow, movement, or release from the subsurface to the surface of fluid or other material such as oil, water, steam, gas, formation solids, formation debris, material, or any combination thereof, that is outside of a wellbore and that appears to be caused by injection operations." (Cal. Code Regs., tit. 14, § 1720.1, subd. (n).)

[2] Public Resources Codes sections 3011 and 3106.

determined based on step-rate test results (Cal. Code Regs., tit. 14, § 1724.10.3.).[3] This review may result in new safety requirements for cyclic steam above the fracture pressure, updated regulations, or an indefinite halt on new projects using this practice.

As part of its review, CalGEM and the National Labs will continue to evaluate operations and underlying conditions in the Cymric and Midway-Sunset fields where surface expressions have occurred. This review will also examine records and physical conditions in oil fields where cyclic-steam injection above fracture pressure has been conducted without resulting in surface expressions or other violations. This broad assessment can help to determine whether geological and engineering conditions exist under which this practice can be conducted safely and in full compliance with CalGEM's regulations.

Once this review is completed, CalGEM will use its findings to inform consideration of new and pending permit applications. If CalGEM and National Labs determines that the practice can be implemented appropriately in certain locations under certain conditions, then new permits for operations meeting these criteria can be cleared for this practice and monitored, while new proposed permits for this practice in other locations remain under review.



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[3] These recent regulations allow steam injections with maximum allowable surface pressure above fracture pressure only where information demonstrates that it can be performed safely, that fluid will remain confined to an approved injection zone, that the injection will not initiate fractures outside of that approved injection zone, and that injection at the higher pressure is necessary for effective resource production. (Cal. Code Regs., tit. 14, § 1724.10.3, subd. (b).)