



PROCEDURE FOR PLUGGING AND ABANDONMENT OF A CLASS III SALT MINING WELL

Procedure #: UICIII-7

(3/05)

Narrative:

Prior to the plugging and abandonment of a salt solution mining well, the owner/operator shall submit a revised and updated plugging and abandonment plan and proposed schedule to KDHE for review and approval. Plan approval shall be obtained from KDHE before commencing any plugging operation. The schedule for the plugging shall be mutually agreed upon so KDHE can have the opportunity to witness the plugging operation. The well shall be plugged in a manner to prevent fluid migration and to protect the soils and fresh and usable water from pollution. This is best accomplished by filling the casing with cement from bottom to surface. The plan shall include a prognosis and a diagram describing how the well will be plugged. The plan shall include a description of the cement mixture (type, grade, additives), gallons of water per sack, cement slurry weight, slurry volume per sack of cement mixture, number of sacks of cement mixture to be used and estimated compressive strength of the cement. Listed below are guidelines for plugging and abandonment which are to be incorporated in the plugging plan. K.A.R. 28-46-34 establishes the plugging and abandonment requirements. Any permittee may use an alternative method for the plugging of each salt solution mining well if KDHE determines that the alternative method is substantially equivalent to the procedure specified in K.A.R. 28-46-34 and is protective of the public health, safety and the environment.

Procedure:

1. Depressure the well.
2. Remove all tubing from the well.
3. Fill the cavity with brine.
4. Conduct a pressure mechanical integrity test of the casing. This test can be conducted at the time of item #10 of these guidelines upon approval of KDHE. The pressure test must be witnessed by KDHE and the test procedure must follow KDHE guidelines for pressure testing a salt solution mining well (copy attached). If leakage is indicated by the test, the location of the leakage must be identified to evaluate the impact to the environment. Submittal of an environmental remediation plan and implementation schedule and/or a repair plan for the well may be required by KDHE for review and approval. No work shall commence until plan approval has been obtained from KDHE.

5. Conduct a gamma log to determine the position of the cavity roof and the salt top. This log shall be submitted to KDHE for review and approval prior to commencing plugging operations.
6. Conduct a sonar caliper on the cavity if a sonar is due as required by K.A.R. 28-46-30a or if required by KDHE. The sonar results shall be submitted to KDHE for review and approval prior to conducting the any plugging operations.
7. Conduct a cement bond log on the production casing. A gamma ray log and collar locator log should be conducted in tandem with the cement bond log. The cement bond log shall consist of amplitude and travel time curves and an acoustic variable density log. Before proceeding with the plugging operation, submit to KDHE the log and interpretation of the log by a person with the technical expertise to evaluate the log. If the log indicates poor cement bonding requiring remediation, submit a cement remediation plan to KDHE for review and approval. No cement remediation work shall commence until plan approval has been obtained from KDHE.
8. Conduct any additional logs or tests determined necessary by KDHE. The results shall be submitted to KDHE for review and approval prior to conducting plugging operations.
9. Set a mechanical bridge plug as near to the base of the production casing as feasible. The setting depth of the plug shall have the approval of KDHE.
10. It is recommended a hydraulic pressure test of the plug and casing to a minimum of 150 psi be conducted to determine integrity. If leakage is indicated, determine the source of leakage and take necessary remedial action approved by KDHE. If the mechanical integrity test required in item number 4 of this document is conducted during this step in the procedure, then all of the requirements of item number 4 apply at this time.
11. All brine displaced from the well during the plugging operation shall be contained in a tank or a pit lined with a durable liner. The brine shall be disposed in a manner approved by KDHE. Advise KDHE as to how this brine will be disposed.
12. Non-drillable material that would hamper or prevent re-entry of the well shall not be placed in the well during plugging operations. Pipe and unretrievable junk shall not be cemented in the hole during plugging operations without prior approval from KDHE.
13. Fill the casing with cement from the bridge plug to ground surface by pumping cement through the cementing tubing. Cement must circulate to the surface. Withdraw cementing tubing from well. The cement will fall back, therefore, fill casing with cement back to the surface.

14. Leave casing open for 24 hours. Observe the cement level at the end of the 24 hour period. If cement has fallen back, fill with cement to the surface.
15. Leave some casing above ground surface and establish a permanent survey monument on the well casing. Elevations of the wellhead shall continue to be taken annually and reported annually in perpetuity.
16. Flush all input and output lines connected to the well with fresh water (chlorides < 500 ppm) and properly contain the flush fluid. Blind-off the lines. Dispose of the flush fluid in a manner approved by KDHE. Advise KDHE as to how the flush fluid will be disposed.
17. A map showing the tri-coordinate (includes elevation) location of the remaining wellhead shall be prepared by a licensed professional land surveyor or professional engineer licensed to practice in Kansas. The map shall be submitted to KDHE within 30 days following the completion of the plugging operation.
18. A plugging report with related details shall be submitted to KDHE within 30 days of completing the plugging operation on forms provided by KDHE.