



FACILITIES PLUG CLASS I DISPOSAL WELLS

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During the past few months, a total of four Class I underground injection control disposal wells were plugged at two facilities. The actual plugging and abandonment process for these wells is fairly complex. The first step is to submit a plan to KDHE for review and consideration for approval. The initial step in the



plugging procedure is to conduct a mechanical integrity test (MIT). Once a successful MIT is completed, the injection tubing and packer are removed from the well. A cement bond and gamma ray neutron log must then be conducted to ensure that adequate cement is located behind the longstring casing. If significant voids are identified, perforation of the casing and squeezing of cement behind the casing may be required. Once the cement bond and any required remediation has been accomplished, a cement retainer is set as near to the bottom of the well casing as possible. The cement retainer allows cement to be placed into the openhole Arbuckle disposal zone by stinging into the retainer with workstring and pumping the cement through the

workstring. Squeezing cement into the injection zone is typically the most difficult phase of the plugging operation as the Arbuckle is a very permeable formation. Typically, a plug is placed in the Arbuckle by slowly staging in batches of the cement calculated as needed to fill the entire openhole formation. Once a pressure buildup at the surface is noted, the Arbuckle can be assumed to have been adequately squeezed. The next step involves placing a cement plug on top of the cement retainer and then pressure testing the casing/cement after the cement has cured. Once this plug has been placed, the rest of the casing is filled with cement to the surface by pumping cement through the workstring as the workstring is gradually brought to the surface. Typically, the cement will fall back from the surface once the workstring is removed and will need to be topped off before the casing is sealed with a metal plate indicating the well's UIC permit number and date of plugging. The well casing should be left above the ground surface or brought to the surface in the case of a well with a cellar. A survey map of the well location and elevation must then be submitted to KDHE with the final plugging report within 30 days of the plugging activities.