Issue No. 3&4

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
TECHNICAL PEER REVIEW DOCUMENT

This Section to be Completed by Issue Initiator

TITLE OR ISSUE

Regional Underground Injection Control (UIC) Inspectors, permit writers, and operators do not have written guidance on what "continuous" means in the context of monitoring and recording specific parameters. In addition, it is not clear that electronic monitoring and recording systems will satisfy "continuous" monitoring and recording requirements.

DOCUMENT INITIATED BY (Name/Office/Phone Number)	**DATE**
James Clark /E.I. DuPont de Nemours & Co., Inc.	6/9/1999

ISSUE DESCRIPTION

The current UIC regulations require continuous recording devices for disposal well injection pressure, flow rate, total volume, and annulus pressure (30 TAC §331.64(c)). In addition, the injected fluids must be analyzed with sufficient frequency to yield data representative of the characteristics of the fluids (30 TAC §331.64(a)(3)). The permit to construct and operate a Class I well is required to specify the limits on the parameters to be monitored and the frequency that yields representative data. The required monitoring can include, where appropriate, continuous monitoring.

Analog control and indicator systems were the standard when the above rules were promulgated. These analog systems included chart recorders which inked uninterrupted lines for each of the parameters requiring monitoring. Many facilities are replacing or have replaced the analog devices with more accurate and dependable electronic devices. Most of the time these electronic devices are coupled to computers as part of a distributed control system. Each electronic device's signal is sampled by the computer at regular intervals for the purpose of monitoring the parameter and controlling the parameter based on a set point. The sampling frequency is a programmable function as well as the frequency for recording the parameter value to a data disk. Chart recorders are maintained primarily to satisfy these rules. It is not clear in this age of electronics as to what constitutes a continuous recording device and continuous monitoring.

The monitoring of the chemical and physical characteristics of the injected stream is set by permit. The issue of chemical characterization of the injected stream is addressed in Program Issue No. 11. The question of what constitutes continuous monitoring of the physical characteristics of pH and specific gravity is also considered in this document.

WHO'S AFFECTED?

Class I UIC Well Operators, I&HW UIC Section permit writers, Enforcement, and Regional Inspectors.

This Section to be Completed by Peer Review Team

FACTORS CONSIDERED

Permit, operation, siting, and construction requirements placed on Class I UIC disposal wells are generally intended to prevent contamination of USDW 's. Monitoring of specific parameters allows for proper operation of the disposal well to be maintained, including injection pressure, flow rate, volume, annulus pressure, specific gravity, and pH. Recording of each of these parameters allows a TNRCC inspector to verify that a Class I well has operated within the permit limits specified for these items. Retrieving from and maintaining electronic data storage media (tapes and/or discs) is more efficient than a paper system but still can be burdensome if excessive amounts of data are stored.

The question becomes what is defined as "continuous"? Black's Law Dictionary, 5th Edition, defines continuous as "uninterrupted; unbroken; not intermittent or occasional; so persistently repeated at short intervals as to constitute virtually an unbroken series. Connected, extended, or prolonged without cessation or interruption of sequence". The Merriam Webster Dictionary, Home and Office Edition, defines continuous as "continuing without interruption" where continue is defined as "to maintain without interruption".

FINDING(S) AND RECOMMENDATION(S)

The frequency of monitoring and recording which meets the definition of "continuous", should be a function of (1)instrument technology, (2)the interval sufficient to maintain proper operation of the disposal well while providing sufficient historical indication of this proper operation, and (3)how to satisfy the intent of the UIC regulations to protect the nearest USDW. The following guidance satisfies these requirements:

1. Pneumatic or analog controllers, monitoring instruments and recording devices remain as acceptable technology for satisfying the continuous monitoring and recording requirements.

2. For continuous monitoring of well operating parameters that involves periodic sampling of an electronic signal for the purpose of control and/or recording, the minimum sampling frequency is once every 15 seconds.

3. All monitored points whose value exceeds a permit parameter must be recorded. The following are the minimums for electronic recording devices which will satisfy the "continuous recording" requirements:

    a. The minimum recording frequency of the average or instantaneous value is once every 15 minutes.
    b. Electronic data recording devices should record based on a deviation of greater than ± 4%from the previously monitored value (based on typical accuracy of electronic instrumentation, see Program Policy Point No.1 for details). If no deviation occurs, the minimum recording frequency for this type of device is once per hour.

4. Where Class I non-commercial disposal well permits do not address the frequency for monitoring of pH and specific gravity, the minimum measurement frequency which satisfies continuous monitoring is once per day as long as there is little variation in these characteristics. More frequent monitoring is in order for streams whose characteristics can change quickly.

5. If primary monitoring system failure occurs due to power failure or other reasons, an operator should perform manual monitoring and record keeping at least every 15 minutes for a well in service, or at least every hour for a well that is out of service. Instances of manual monitoring should be reported on the quarterly self reporting forms (monthly forms for commercial wells).

COMMENTS			
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