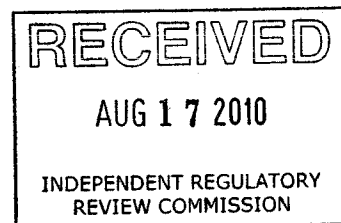


**From:** David\_W\_Reynolds@nps.gov  
**Sent:** Monday, August 09, 2010 5:38 PM  
**To:** EP, RegComments  
**Cc:** Rick\_Harris@nps.gov; Michael\_Reynolds@nps.gov; Holly\_Salazer@nps.gov; Pat\_O'Dell@nps.gov  
**Subject:** National Park Service Comments on Proposed Pennsylvania DEP Rulemaking on Oil and Gas Wells  
**Attachments:** pic03329.jpg

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United States Department of the Interior

NATIONAL PARK SERVICE  
Northeast Region  
200 Chestnut Street  
Philadelphia, PA 19106

IN REPLY REFER TO:

L2427(4531/NER)

August 9, 2010

Environmental Quality Board  
P.O. Box 8477  
Harrisburg, PA 17105-8477

Dear Chairman Hanger:

The U.S. National Park Service (NPS) has reviewed the Pennsylvania Department of Environmental Protection's (Department) "Proposed Rulemaking: Oil and Gas Wells (25 PA, Code Chapter 78)" as announced in the July 10, 2010, Pennsylvania Bulletin. We appreciate the opportunity to provide comments to the Department on these important proposed rule changes.

The NPS technical review found that, if properly implemented, the proposed regulations should meet the stated objectives of protecting people and fresh groundwater from the threat of gas migration within and emanating from a wellbore. However, some of the proposed regulations

need clarification to ensure the operators carry out proper implementation. We have identified those points of clarification below.

#### General Comments

Our technical review of casing and cementing requirements was based on an industry recognized standard that a quality casing and cementing program will aim to place a properly designed cement slurry around a centered casing in a borehole of adequate size from which mud and mud cake has been removed.

#### Specific Comments

Placement of Casing Centralizers (§78.83(c)). The proposed requirement for centralizers (i.e., 1 centralizer every 150 feet) should provide good pipe centralization in non-deviated wellbores.

The NPS offers the following suggestions:

First, in considering that the bottom of the casing string is the most critical in terms of getting the best possible cement coverage to provide isolation of fresh water zones, Federal Onshore Order No. 2 requires closer spacing of centralizers at the bottom of the surface casing. The language from Onshore Order No. 2, §III.B.1.f is: "Surface casing shall have centralizers on the bottom 3 joints of the casing (a minimum of 1 centralizer per joint, starting with the shoe joint)."

Second, in deviated wellbores, additional centralizers would be needed to provide adequate standoff throughout the deviated section. While it is preferable to have the surface casing section a straight hole, there may be instances where a shallow kickoff point is necessary to meet drilling objectives. A statement in the regulation to alert operators of the need could simply read: "In deviated holes, the operator shall provide additional centralization."

Lastly, we suggest the regulation state that all centralizers shall meet API Spec 10D specifications.

§78.83(c). The section allows drilling beyond fresh groundwater into brackish and salt water zones prior to running and cementing surface casing if there are no current drinking water sources within 1000' of the well.

Given a regulatory responsibility to protect sources of drinking water, we don't believe the qualifier that there should be a current utilization of a drinking water source is appropriate. If the purpose of the section is to provide a situation for considering surface casing setting depths notably deeper than the lowest freshwater zone, we suggest a case-by-case approval.

There may be valid reasons (e.g., well control, geologic considerations) where surface casing setting depths need to be deeper, but the reasons can be considered on an individual well or local field basis. Example language could be: "In no case is surface casing to be set deeper than 200 feet below the deepest freshwater zone without prior approval."

§78.83(f). We assume that "20 feet" is a typographical error. "200 feet" makes more sense.

§78.83a - Casing and Cementing Plan. Recognizing there are procedures that are part of a casing and cementing program that are proven and accepted practices for achieving a quality surface casing and cementing program for the protection of fresh water zones, the NPS suggests an additional item to the list of plan requirements entitled "Wellbore conditioning and cementing procedures" that would list the following:

Lost Circulation. Operators should provide the hole conditioning steps taken prior to and after running casing. Lost circulation can be defined as loss of whole mud in quantity to the formation. Lost circulation

zones, if not taken care of, can seriously compromise the ability to achieve a quality cement job.

Hole and mud conditioning prior to cementing. Operators should provide the proposed steps taken to ensure a properly conditioned and stable hole is evidenced by a clean shaker, stable pump pressure and strokes at a constant throttle, and stable drag trends. This requirement recognizes that in order to ensure that the entire annulus space is filled with cement, the cement must totally displace the drilling mud, which previously occupied the space. Good hole and mud conditioning are central to achieving high mud displacement efficiency. It may be advisable to include a separate trip for conditioning the hole and mud prior to running casing. Once casing is in place, include additional hole and mud conditioning. We suggest defining a conditioned hole using hole stability rather than a predetermined circulation volume.

Pipe movement (reciprocation) during hole conditioning and cementing. We suggest including provisions to reciprocate surface casing during conditioning and cementing provided conditions allow. This is due to the fact that casing reciprocation during hole conditioning and cementing is a commonly used method to considerably improve removal of gelled mud from the hole prior to and during cementing. It is a relatively easy undertaking in most single stage cementing jobs.

Preflush design. This item is important because, in addition to providing a spacer between the mud and cement, preflushes can be designed to considerably improve mud removal ahead of the cement. Contact time (the time it takes for the preflush to pass any point in the annulus) and flow regime are important considerations in designing a good preflush. Turbulent flow is best for mud removal. A ten-minute contact time is recommended. Pre-flushes may need to be weighted to ensure well control.

§78.84(a-c). This comment relates to used casing. The objective is that used casing meet the same service requirements as new casing. We suggest that it is better to ensure used casing will meet the minimum specifications for new casing prior to running and cementing it in the hole. Tests that are conducted on the casing once it is cement should be the same for new or used since the objective is to make sure the service requirements are accomplished. The NPS suggests the Department considers a requirement for testing of used casing prior to installation.

The following are examples of proposed regulatory text:

From Onshore Order No. 2, §III.B.1.a: All casing, except the conductor casing, shall be new or reconditioned and tested casing. All casing shall meet or exceed API standards for new casing. The use of reconditioned and tested used casing shall be subject to approval by the authorized officer:

approval will be contingent upon the wall thickness of any such casing being verified to be at least 87 1/2 percent of the nominal wall thickness of new casing.

From Texas Railroad Commission Statewide Rule 3.13, (b)(1)(A): All casing cemented in any well shall be steel casing that has been hydrostatically pressure tested with an applied pressure at least equal to the maximum pressure to which the pipe will be subjected in the well. For new pipe, the mill test pressure may be used to fulfill this requirement. As an alternative to hydrostatic testing, a full length electromagnet, ultrasonic, radiation thickness gauging, or magnetic particle inspection may be employed.

Thank you for the opportunity to comment. Please direct any questions to Patrick O'Dell, National Park Service. Pat is an Engineer in the NPS Geologic Resources Division and can be contacted at 303-969-2013 or by email at pat\_o'dell@nps.gov. As a Professional Engineer in Petroleum Engineering, California State Board of Registration for Professional Engineers (Certification Number 1529), Pat is one of the best qualified persons in the NPS to consult on this issue.

Sincerely,

David W. Reynolds  
Chief, Natural Resources and Science  
for

Rick L. Harris  
Associate Regional Director  
Natural Resources, Science, Conservation  
and Recreation Assistance