40-8907

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

via Facsimile and Certified Mail
Return-Receipt Requested

June 9, 2003

Roy S. Blickwedel
GE Corporate Environmental Programs
General Electric Company
640 Freedom Business Center
King of Prussia, PA 19406

Re: Proposed Hydraulic Fracture Testing for Zone 3
United Nuclear Corporation Church Rock Site
Gallup, New Mexico

Dear Mr. Blickwedel:

The United States Environmental Protection Agency (EPA) has completed its review of the General Electric Corporation's (GE's) May 21, 2003 submittal entitled "Proposed Hydraulic Fracture Testing for Zone 3" for the above-referenced site. The EPA has also coordinated its review with those performed by the United States Nuclear Regulatory Commission (NRC) and the New Mexico Environment Department (NMED). Overall, the proposed hydraulic fracture testing is acceptable and GE may therefore proceed with the project. However, in performing such testing, GE must take every precaution to ensure the following: (1) the test does not damage the tailing disposal areas or evaporation ponds and (2) the test does not influence contaminant plume flow.

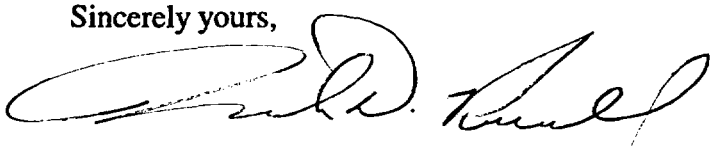
Enclosed with this letter are some additional comments submitted to the EPA by NMED. Please address these comments as a written response to this letter.

Finally, please provide adequate advance notice of all field activities associated with the hydraulic fracture testing so that representatives of the EPA and the other regulatory agencies may be present to observe the testing.

LRMSS01

If you have any questions, please contact me by telephone at 214-665-6707 or by electronic mail at purcell.mark @ epa.gov

Sincerely yours,



Mark D. Purcell
Remedial Project Manager
Superfund Division

Enclosure

cc: B. vonTill, NRC
R. Brown, NMED
D. Malone, NNEPA

State of New Mexico
ENVIRONMENT DEPARTMENT
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DEPUTY SECRETARY

June 4, 2003

Mr. Mark Purcell
Remedial Project Manager
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200 (6SF-LP)
Dallas, Texas 75202-2733

Re: Review of May 19, 2003 Memorandum from Roy Blickwedel concerning Pilot Test Procedures, Stimulation of Vertical Wells, at the UNC Church Rock Site in New Mexico.

Dear Mr. Purcell:

Thank you for providing the New Mexico Environment Department (NMED) with the opportunity to comment on the May 19, 2003 memorandum from Roy Blickwedel proposing hydraulic fracture testing for zone 3 at the UNC Church Rock Superfund Site near Church Rock, New Mexico. NMED submits the following comments:

NMED's main concern with hydraulic fracturing technology is that the fractures may propagate vertically and then cause compounds to migrate to or from different aquifer zones. The May 19 memorandum states that horizontal propagation is more likely than vertical propagation at shallow depths, but NMED's review of the literature does not confirm this. NMED would like to know the literature source for this statement. David V. Vance (2002, http://2the4.net/hydrofrac.htm) states that fracture direction is dependent on the degree of consolidation of the matrix and that fracturing in materials with higher levels of consolidation tend to be horizontal; fracturing in less consolidated deposits tend to propagate vertically or dip steeply. If EPA or MACTEC have access to articles that discuss results from hydraulic fracturing in matrices similar to zone 3, NMED requests that they provide our staff with the citation so that we can review the articles.

The memorandum does not discuss the consequences of fractures propagating vertically to other units below or above zone 3. NMED requests that GE address this issue, particularly the possibility that fracturing causes mobilization of oil from naturally oil-bearing zones to non oil-bearing zones.

NMED requests that the EPA or MACTEC address how they will determine whether or not the fractures propagate into a different geologic unit than zone 3. Gordon H. Bures (1998, http://www.fracrite.ca/pdf/NAITPaper.pdf) states that use of tilt meters can determine shape, thickness, orientation, and extent of fractures. Will the tilt meter help determine in which geologic units the new fractures are located?

UNC and MACTEC should make absolutely certain that the test is not going to influence contaminated plume flow. The proposed location of the test boring, fracing hole, and water production wells are not made clear in the memorandum. The first figure in the memorandum does show the proposed fracing drill hole location, but does not show Wells 405 and 637B; the memorandum states that test well is to be located approximately half way between monitoring wells 405 and 637B

If the hydraulic conductivity of Zone 3 is greater than $1x10^{-6}$ m/s, then hydraulic fracturing may not enhance remediation. Gordon H. Bures (1998, http://www.fracrite.ca/pdf/NAITPaper.pdf) states that environmental fracturing has been shown to effectively enhance remediation in matrices with less than $1X10^{-6}$ m/s conductivity." NMED's estimates from the transmissivity values stated in the 1988 UNC Church Rock site Remedial Investigation report that hydraulic conductivity may range from 10^{-5} to 10^{-6} m/s in zone 3. If EPA or MACTEC have information indicating that the hydraulic conductivity is lower or that hydraulic fracturing has been shown to be effective in matrices with higher hydraulic conductivities, please provide the information to NMED.

Please keep NMED informed on the status of hydraulic fracture testing. If these tests are going to be performed, please let us know the dates well in advance so that NMED staff may be present to observe the testing.

Sincerely,

Robin Brown
Geoscientist
Superfund Oversight Section

CC: Kevin Myers, Mining Environmental Compliance Section, GWQB