

Benterra Corporation
New Mexico Pilot Demonstration Plan
(DRAFT - 8/22/01)

25 Wells

Start Date: August 29th +/-

General Plan:

Set all 25 bottom plugs (approx. 2 weeks)

Complete remaining plugs/cavity shots/casing pulls (3 weeks)

Lump pipe pulls together and do when rig available

Lump Cavity shots together

Return approx end of November to complete 10 top plugs and 4 wells with upper plugs left out

Complete wellhead cut-off end of November on 20 wells used to monitor pressure

Reports/Feedback Sessions:

Reports will be submitted by Benterra to OCD every 2 weeks through November 30th documenting:

Progress of work

Problems encountered and how addressed

Monitoring results

Feedback meetings will be held in Hobbs every 2 weeks during field operations to receive input from inspectors

Conclusion:

Pilot completed November 30th unless significant problems encountered.

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Demonstration Goals	Proposed Method	Timeframe
a. Ability to place bentonite at desired depth (and show they stay there)	<ol style="list-style-type: none"> 1. Tag bottom plugs when set 2. Tag bottom plugs when return to wells 3. Tag remaining plugs when set 4. Leave top and/or fresh water plugs out of <u>10</u> wells & tag end Nov. 	Program weeks 1 and 2 Program weeks 3 through 5 Program weeks 3 through 5 End of November
b. Ability to form a hydraulically solid seal (and demonstrate they don't degrade with time)	<ol style="list-style-type: none"> 1. Fill ten wells to surface (after bottom plugs hydrate) 2. Recheck fluid levels when return to wells 3. Leave 4 wells full with bottom plugs only for long term test 4. Leave wellheads on <u>20 of 25 wells & check pressures twice/month</u> 	Program weeks 1 and 2 Program weeks 3 through 5 Check Monthly thru end of Nov. Check pressures 2xmo thru end of Nov.
c. A hydrated bentonite plug is homogeneous and uniform in make-up	<ol style="list-style-type: none"> 1. Complete wellhead cut-off on 5 of the 25 wells. 2. Visually inspect all 5 for <u>homogeneity</u> 	Program week 5 Program week 5
d. A hydrated bentonite plug is less permeable than cement	<ol style="list-style-type: none"> 1. Core and analyze 1 well from above for perm in lab 	Program week 5
e. Cavity shots and pulling casing can be used to place bentonite in areas without cement behind casing	<ol style="list-style-type: none"> 1. Direct observation by inspectors and officials 	Program weeks 3 through 5
f. A more environmentally friendly methodology	<ol style="list-style-type: none"> 1. In <u>15 wells</u>, use partial filling of casing to ensure adequate hydration <u>without over displacing wellbore</u> <i>Aug power & hydrants</i> 	Program weeks 2 through 5
g. Safer work environment	<ol style="list-style-type: none"> 1. Direct observation of process by inspectors and officials 	Program weeks 1 through 5