				5-07-12.5
OCD-H	HOBBS			
Form 3160-3 (April 2004)	· .		OMB No.	PPROVED 1004-0137 arch 31, 2007
UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT			5. Lease Serial No.	10789872
APPLICATION FOR PERMIT TO DRI		6	5. If Indian, Allotee	or Tribe Name
Ia. Type of work: 🖌 DRILL REENTER		7	If Unit or CA Agree	ment, Name and No.
Ib. Type of Well: 🖌 Oil Well 🛄 Gas Well 🛄 Other	Single Zone Multip	ble Zone	8 Lease Name and W Federal 1-17 #2	
2. Name of Operator Range Operating New Mexico, Inc.	<22758	8>	9. API Well No. 30 - 021	5- 38361
Fait Main St., Stc. 600	Phone No. (include area code) 817-810-1916	•	D. Field and Pool, or E	•
4. Location of Well (Report location clearly and in accordance with any State At surface 2310' FSL & 1650' FWL At surface 2310' FSL & 1650' FWL	e requirements." CONTROLLED WAT	ER BASIN	Sec., T. R. M. or Bl	k. and Survey or Area
At proposed prod. zone 2310' FSL & 1650' FWL	Unit K			
<ol> <li>Distance in miles and direction from nearest town or post office*</li> <li>2.5 miles SW from Eunice, NM</li> </ol>		1	2. County or Parish Lea	13. State NM
15. Distance from proposed*       1650       16.         location to nearest       property or lease line, ft.       44         (Also to nearest drig, unit line, if any)       44	No. of acres in lease	17. Spacing U 40	Init dedicated to this w	ell State of Ress
	Proposed Depth	20. BLM/BIA NM2399	Bond Xo, bn file	TC 22
21. Elevations (Show whether DF, KDB, RT, GL, etc.)       22.         3395	Approximate date work will sta	rt* 2	3. Estimated duration	232
24	4. Attachments		10 29	4 CO 22
<ol> <li>The following, completed in accordance with the requirements of Onshore Oil</li> <li>Well plat certified by a registered surveyor.</li> <li>A Drilling Plan.</li> <li>A Surface Use Plan (if the location is on National Forest System Land SUPO-shall be filed with the appropriate Forest Service Office).</li> </ol>	<ol> <li>Bond to cover t Item 20 above).</li> <li>the 5. Operator certific 6. Such other site authorized offic</li> </ol>	he operations t cation specific inform	unless covered by any	existing bond on file (see may be required by the
25. Signature	Name (Printed/Typed) Paula Hale			Date 02/09/2007
Title Sr. Reg. Sp.				
Approved by (Signature) /s/ James Stovall	Name (P Intel Typed) SI James	Stovall		Date MAR 1 8 201
FARE FIELD MANAGER	Office CARLSB	AD FIEI	D OFFICE	l .
Application approval does not warrant or certify that the applicant holds leg conduct operations thereon. Conditions of approval, if any, are attached.	al or equitable title to those right	its in the subjec	PPROVAL	FOR 1 YEA

\*(Instructions on page 2)

SEE ATTACHED FOR CONDITIONS OF APPROVAL APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED





**Range Operating New Mexico** Federal 1-17 #2 Lea County, NM **Drilling Program** 

Prepared 2/08/07

**PROPOSED DEPTH:** 4,300MD / 4,300TVD **GROUND ELEVATION:** 3,395' KB: 17'

LOCATION: 2310' FSL & 1650' FWL, Section 17-T22S-R37E, Lea County, NM

**ANTICIPATED PRODUCTIVE FORMATION: San Andres** 

API NO:

### **GENERAL:**

The Federal 1-17 #2 will be a 4,300' San Andres test in Lea County, New Mexico drilled on a daywork basis by United Rig #28. A 12-1/4" surface hole will be drilled to +/-1200'. A string of 8-5/8" casing will be run and cemented to surface.

Nipple up BOPs and test same, drilling will continue with a 7-7/8" hole to a total depth of 4,400'. Actual TD will be spaced so that casing will be landed where the casing head can be screwed on. After electric-logging the open-hole interval, a string of that casing will be landed where the casing nead can be screwed on this closer to a state of the state of the screwed on the state of the state of the state of the screwed of the state of the state of the screwed of the sc

# ESTIMATED FORMATION TOPS: (Log Depths)

Upper Permian Rustler Fm	+2325 ft	1080 ft MD
	<b>#7#8</b> A	2657 ft MD
Upper Permian 7 Rivers Fm	+550 ft	2855ft MD
	Hand a	3305 (P.100)
Upper Permian PS Fm	-50 ft	3455 ft MD +
		3 <b>385 7 380</b>
Upper Permian San Andres	-460 ft	3865 ft MD *
Fm		
DTD	905 A	4200 A MD
PTD	-895 ft	4300 ft MD

\*= Primary Reservoir Targets

+= Secondary Reservoir Targets

## DETAILED DRILLING PROCEDURE

### TIMES AND EVENTS TO NOTE ON DRILLING REPORT:

- A. SPUD (date and time)
- B. TD (each interval date and time)
- C. CEMENT IN PLACE (date and time)
- D. RIG RELEASE (date and time)

# **BOTTOM HOLE ASSEMBLIES**

- BHA #1: (0-1200') Bit, (2) 8" DC, (10) 6.25" DC's
- BHA #2: (1200'-4500') Bit, (24) 6.25" DC's

# USE OF RT TOOL

No RT tools in use.

## MUD PROGRAM

PI Fluid Loss	FUNNEL VIS.	MUD WEIGHT	INTERVAL
NC	32-34	8.4 - 9.4	0' - 1200'
NC	28	10.0	1200' - 4500'

- 1) Level and build an all-weather location and access road.
- 2) MIRU United Rig #24. Perform rig safety inspection and ensure that everything is in proper working order prior to spudding well.
- 3) Notify NMOCD of intent to spud, run casing and cement each 24 hours in advance 505-748-1283.
- 4) Spud well with 12-1/4" mill tooth bit. Drill to +/- 1200' with surveys at 500' and 1000' (Actual depth will be determined by the length of the casing). Circulate hole clean. Sweep and condition hole to run casing. Pull out of hole, lay down BHA.

Fresh water based mid will be used to drill the surface Casing well bore.

- NOTE: Mud through this interval will be a native spud mud supplemented with Bentonite. Lime may be used to flocculate the mud and increase the yield point to clean the hole. Mix paper for seepage control. Utilize all solids control equipment to control drill solids. Run as fine of mesh shaker screens as possible. Use water to control mud weight and viscosity. Maintain mud weight at 8.4 9.0 ppg.
- 5) Rig up casing crew and run 8-5/8", 24#, J-55 casing as follows:

1-8-5/8" Texas Pattern Shoe 1-8-5/8" Insert Float Collar 1-8-5/8" x 11" Centralizer 10' above shoe 1-8-5/8" x 11" Centralizer every other joint 1-8-5/8" Stop Ring

- 6) Circulate for at least bottoms up plus one casing volume with mud prior to cementing. Cement surface casing according to cement recommendation. NOTE: Have field bin, cement, and circulating equipment on location prior to casing job.
  - a) Review rates, pressures, displacement volumes and casing pressure rating with Service Company and rig personnel. All cement slurries are to be lab tested; both a pilot test and a test of the actual field blend. Report results, including 24 hour compressive strengths, to the office. (See Cement Testing Requirements below). Also keep two samples of each dry cement in the event that a problem is encountered while cementing. Discard this sample if all indications are positive.
  - b) Cement well as follows: Pump 20 bbl fresh water followed by 200 sks of Lead: 35/65 POZ:Class C + 6% D020 + 5% (BWOW) D044 + 1 pps D130, @ 12.8 ppg, followed by 180 sks Tail: Class C + 1% S001 + 0.1 pps D130 @ 14.8 ppg. Displace with fresh water, bump plug with w/ 500 psi over final pump pressure.
  - c) If cement is not circulated to surface, contact the office and the NMOCD and prepare to run 1" pipe and top out cement. Have 1" pipe on location for possible top-out.
  - d) If cement falls, fill 12-1/4" X 8-5/8" annulus with cement.
- 7) Release pressure and check for flow back. Set casing on bottom. If float is holding, base nipple up of wellhead and BOP on the surface cement samples. Well must stand at least 8 hours total before any testing of casing is performed as per NMOCD.
- After cementing casing, weld on 8-5/8" flange type casing head. Test BOP blind rams & choke manifold to 250# low & 3000# high. Pick up Bit #2 (7-7/8") & BHA, trip in hole, test BOP pipe rams to 250# low & 3000#. <u>Pressure test casing to 1000 psi for 30 minutes prior to drilling out shoe.</u> Clearly report this test information of the daily drilling report.

# MUD NOTES: See Mud Program for details

After cementing 8-5/8" casing circ pit with brine water. Mix paper for seepage control. Utilize pre-hydrated Gel/Lime sweeps for flushing the hole. Run all available solids control equipment to control weight. Add brine water as needed to maintain volume. Add LCM to system only as needed. Use batch LCM treatment if losses occur and maintain as needed.

- 9) Drill ahead with brine water in 7-7/8" hole taking deviation surveys every ± 500' or nearest bit run per NMOCD rules. Use sweeps as needed to clean hole. Drill to ± 4400; exact TD will be determined by the length of the casing. Sweep and condition hole in preparation for logging. Spot a 50 bbl, 40-42 visc pill prior to POOH for logs. Strap out of hole.
- 10) RU Wireline Truck and Tools. Log well as instructed by Range Operating NM. Rotary sidewall cores may be required along with RFT's.

- 11) Make a conditioning trip prior to running casing. Trip into hole with BHA and drill pipe, break circulation at 4500'. Ream last two stands to bottom. Circulate and condition hole. Maintain viscosity of 28. TOH laying down 4-1/2" drill pipe and drill collars. Clear floor and prepare to run casing.
- 12) Rig up casing crew and run 5-1/2", 17#, J-55, LT&C as follows:
  - a) Float shoe (thread-lock)
  - b) 1 jt. 5-1/2", 17#, J-55, LT&C casing (thread-lock)
  - c) Float collar (thread-lock)
  - d) 5-1/2", 17#, J-55, LT&C Casing to surface.

The two bottom joints of 5-1/2" casing and the float shoe and float collar should be thread-locked (do not weld pipe). Run 1 centralizer 5' above shoe with limit clamp, one on the next collar, one just below the float collar with limit clamp and one per joint up to 3300'.

- 13) Circulate mud for at least bottoms up plus one casing volume prior to cementing.
- 14) Cement the production casing as follows. Re-figure cement volumes on a basis of: caliper + 20% + 50 sx. Precede cement with 20 bbl fresh water, 500 gals superflush, 20 bbl fresh water.

## Lead (3,500' to 1,000'):

 450 sacks

 Slurry: 35:65 Poz : Class C + 6% D20 + 5% D44 + 0.3% S1 + 4 pps D42 + 0.1 pps D130

 Slurry Weight: 12.5 ppg
 Slurry Yield: 2.16 cuft/sk
 Water: 11.6 gals/sk

## Tail (4,500' to 3,500');

<u>250 sacks</u> Slurry: 50:50 Poz : Class C + 2% D20 + 5% D44 Slurry Weight: 14.2 ppg Slurry Yield: 1.36 cuft/sk Water: 6.33 gals/sk

Review rates, pressures, displacement volumes and casing pressure rating with Service Company and rig personnel. All cement slurries are to be lab tested; both a pilot test and a test of the actual field blend. Report results, including 24 hour compressive strengths, to the office. (See Cement Testing Requirements below). Also keep two samples of each dry cement.

- a) Have additional water storage on location as necessary for mixing cement. Have water analyzed by cementing company for compatibility with cement and chemicals.
- b) Reciprocate pipe during cement job. Take special care to move pipe very slowly on the down stroke. Pump spacer and cement at 7-8 BPM. When the last cement has been pumped, maintain rate at 7-8 BPM. Displace with fresh water. When reaching displacement to shoe joint minus 10 bbls slow pump rate to 2 barrels per minute or less prior to bumping plug. Bump plug with 500 psi over final displacement pressure and hold pressure for 15 minutes.
- 15) Release pressure and check for flow back. If floats are holding, continue to make preparations to hang 5-1/2" casing one (1) foot off bottom. If floats do not hold, wait 12 hours on cement.
- 16) Set 5-1/2" slips in "A" section with full string weight. Nipple down BOP, Nipple up well head.
- 17) Install cap. Clean mud pits and release rig.

#### **CEMENT TESTING REQUIREMENTS:**

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- Laboratory Blend: Obtain thickening time, rheology, water loss, and compressive strengths of the laboratory cement blend with a water sample of the actual water to be used in cementing for each cement slurry to be pumped.
- Field Blend: Obtain thickening time of the field cement blend with a water sample of the actual water to be used in cementing for each slurry to be pumped. If the thickening time of the field blend is consistent with the thickening time of the laboratory blend, proceed with the cement job. If not, wait on the compressive strength results. Regardless of thickening time results, obtain all of the compressive strengths of field blend to compare with the compressive strengths of the laboratory blend.

Don Robinson	Drilling Manager	(469) 450-2281	(972) 317-8345	(817) 509-1506
Bryan Surles	Area Operations Mngr.	(817) 360-9663	(817) 346-8188	(817) 810-1971
Deanna Poindexter	District Engineer	(817) 422-8378	(432) 638-9718	(817) 509-1518
Martin Emery	Chief Geologist	(817) 366-3693	(817) 430-4861	(817) 870-2601
Paula Hale	Sr. Regulatory Sp.	( 817) 773-6002		(817) 810-1916

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United Rig Company, Artesia, NM	Rig Company	Angel Salazar	(505) 623-7730
United Rig #24			
Nova Mud, Inc - Hobbs, NM	Drlg Mud	Dale Welch	(800) 530-8786
Master Tubulars - Midland, TX	Casing & Tubing	Randy Martin	(800) 682-8996
Suttles Logging, Inc Midland, TX	Mudlogging	Sam Samford	(432) 687-3148
Schlumberger-Artesia, NM	Cementing Service	Lynn Northcutt	(505)748-1392 cell (505) 365-7510
National – Hobbs, NM	Well Heads		(505) 393-9928
Weatherford –Artesia, NM	Float Equipment		
Halliburton Logging –Hobbs, NM	Open Hole Logs	Michael Escriva Tommy Johnson	(505) 392-7543
Allen's Casing Crew -Hobbs, TX	Csg Crew		
National –Hobbs, NM	General Supplies		(505) 393-9928
TFH –Hobbs, NM	Fork Lift		(505) 397-3270
Abbot Brothers	Conductor setting		
RTO Sales & Lease	Satellite Internet		(432) 550-5678



#### RANGE OPERATING NEW MEXICO, INC.

### FEDERAL 1-17 #2 Hydrogen Sulfide Drilling Operation Plan

#### I. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well.

- 1. The hazards an characteristics of hydrogen sulfide (H2S)
- 2. The proper use and maintenance of personal protective equipment and life support systems.
- 3. The proper use of H2S detectors alarms warning systems, briefing areas, evacuation procedures, and prevailing winds.
- 4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

- 1. The effects of H2S on metal components. If high tensile tubular are to be used, personnel will be trained I their special maintenance requirements.
- 2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
- 3. The contents and requirement of the H2s Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. The concentrations of H2S of wells in this area from surface to TD are low enough that a contingency plan is not required.

# II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S.

#### 1. Well Control Equipment

- A. Flare line.
- B. Choke manifold
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

- D. Auxiliary equipment may include if applicable: annular preventer & rotating head.
- 2. Protective equipment for essential personnel:
  - A. Mark II Survive air 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.
- 3. H2S detection and monitoring equipment:
  - A. 1 portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.
- 4. Visual warning systems:
  - A. Wind direction indicators as shown on well site diagram (Exhibit C).
  - B. Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate.
- 5. Mud program:
  - A. Proper mud weight, safe drilling practices, and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

### 6. Metallurgy:

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2s service.
- B. All elastomers used for packing and seals shall be H2S trim.
- 7. Well testing:

A. There will be no drill stem testing.

### NOTES REGARDING THE BLOWOUT PREVENTERS FEDERAL 1-17 #2 Lea County, New Mexico

- 1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
- 2. Wear ring to be properly installed in head.
- 3. Blowout preventer and all fittings must be in good condition, 3000 psi WP minimum.
- 4. All fittings to be flanged.
- 5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 3000 psi WP minimum.
- 6. All choke and fill lines to be securely anchored especially ends of choke lines.
- 7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
- 8. Kelly cock on Kelly.
- 9. Extension wrenches and hands wheels to be properly installed.

10. Blowout preventer control to be located as close to driller's position as feasible.

11. Blowout preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

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District II     Energy Mi       1301 W. Grand Avenue, Artesia, NM 88210     Oil (       District III     000 Rio Brazos Road, Aztec. NM 87410	appror	Form C-144 June 1, 2004 Filling and production facilities, submit to briate NMOCD District Office.				
District IV 1220	South St. Francis Dr. For do office office	ownstream facilities, submit to Santa Fe				
Pit or Below-Grade Tank Registration or Closure Is pit or below-grade tank covered by a "general plan"? Yes No No Type of action: Registration of a pit or below-grade tank Closure of a pit or below-grade tank						
Operator: <u>Range Operating New Mexico, Inc.</u> Telephon Address: <u>777 Main St., Ste. 800, Ft. Worth, TX 76102</u>	e: <u>817/810-1916</u> e-mail address: phal	e@rangeresources.com				
Facility or well name:       Federal 1-17 #2       API #: 30-025-3836       U/L or Qtr/Qtr       K       Sec       17       T       225       R       37E						
County: Lea Latitude	32.390813 " N Longitude 103.187	829" W NAD: 1927 ⊠ 1983 🗖				
Surface Owner: Federal 🛛 State 🗋 Private 🗋 Indian 🗔						
<u>Pit</u>	Below-grade tank					
	Type:       Drilling       Production       Disposal         Volume:      bbl       Type of fluid:					
Workover Emergency	Construction material:					
	Double-walled, with leak detection? Yes 🗌 If ne	ot, explain why not.				
Liner type: Synthetic Thickness mil Clay						
Pit Volumebbl						
Depth to ground water (vertical distance from bottom of pit to seasonal	Less than 50 feet	(20 points)				
high water elevation of ground water.)	50 feet or more, but less than 100 feet	(10 points)				
	100 feet or more	( 0 points)				
Wellhead protection area: (Less than 200 feet from a private domestic	Yes	(20 points)				
water source, or less than 1000 feet from all other water sources.)	No	( 0 points)				
	Less than 200 feet	(20 points)				
Distance to surface water: (horizontal distance to all wetlands, playas,	200 feet or more, but less than 1000 feet	(10 points)				
irrigation canals, ditches, and perennial and ephemeral watercourses.)	1000 feet or more	( 0 points)				
	Ranking Score (Total Points)					
If this is a pit closure: (1) Attach a diagram of the facility showing the pit's	• • • • • • • • •	•				
your are burying in place) onsite D offsite D If offsite, name of facility		description of remedial action taken including				
remediation start date and end date. (4) Groundwater encountered: No 🗌 Yes 🗋 If yes, show depth below ground surfaceft. and attach sample results.						
(5) Attach soil sample results and a diagram of sample locations and excavations.						
Additional Comments: We will not have a pit. We are using a closed loop system.						
I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines _, a general permit _, or an (attached) alternative OCD-approved plan						
Date: _02-09-07						
Printed Name/Title Paula Hale Signature						
Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or						
otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.						
Approval: Printed Name/Title CHRIS WILLIAMS/DIST. SUPU. Signature Chie Williams Date: 3/23/07						
Printed Namer Fille Date: Da						