

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK PLUG BACK		<b>RECEIVED</b> JUN - 8 1992 OIL CON. DIV. DIST. 9	5. LEASE NUMBER SF-078813	
1b. TYPE OF WELL GAS			6. IF INDIAN, ALL. OR TRIBE NAME	
2. OPERATOR Southland Royalty Co			7. UNIT AGREEMENT NAME	
3. ADDRESS & PHONE NO. OF OPERATOR P.O. BOX 4289 FARMINGTON, NM 87499 (505) 326-9700			8. FARM OR LEASE NAME COOPER	
4. LOCATION OF WELL 1810' FSL 860' FEL		9. WELL NO. #3E		
14. DISTANCE IN MILES FROM NEAREST TOWN		10. FIELD, POOL, OR WILDCAT UND. GALLUP		
15. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE.		11. SEC. T. R. M OR BLK. I SEC. 6, T29N, R11W		
16. ACRES IN LEASE		12. COUNTY SAN JUAN		
17. ACRES ASSIGNED TO WELL 320.00 160		13. STATE NM		
18. DISTANCE FROM PROPOSED LOCATION TO NEAREST WELL DR. COMPL., OR APPLIED FOR ON THIS LEASE.		20. ROTARY OR CABLE TOOLS		
21. ELEVATIONS (DF, FT, GR, ETC.) 5777' GL		22. APPROX. DATE WORK WILL START		
23. PROPOSED CASING AND CEMENTING PROGRAM				
*SEE OPERATIONS PLAN				
24. AUTHORIZED BY: <i>[Signature]</i> (PMP) REGULATORY AFFAIRS		5-28-92 DATE		

PERMIT NO. \_\_\_\_\_ APPROVAL DATE \_\_\_\_\_

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_

NOTE: THIS FORMAT IS ISSUED IN LIEU OF US BLM FORM 3160-3. APPROVED  
(NO ADDITIONAL DIRT WORK WILL BE REQUIRED) AS AMENDED

10404 1992  
Ken Townsend  
for AREA MANAGER

## OIL CONSERVATION DIVISION

STATE OF NEW MEXICO  
OIL AND MINERALS DEPARTMENT

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

Form C-102  
Revised 10-

All distances must be from the outer boundaries of the Section.

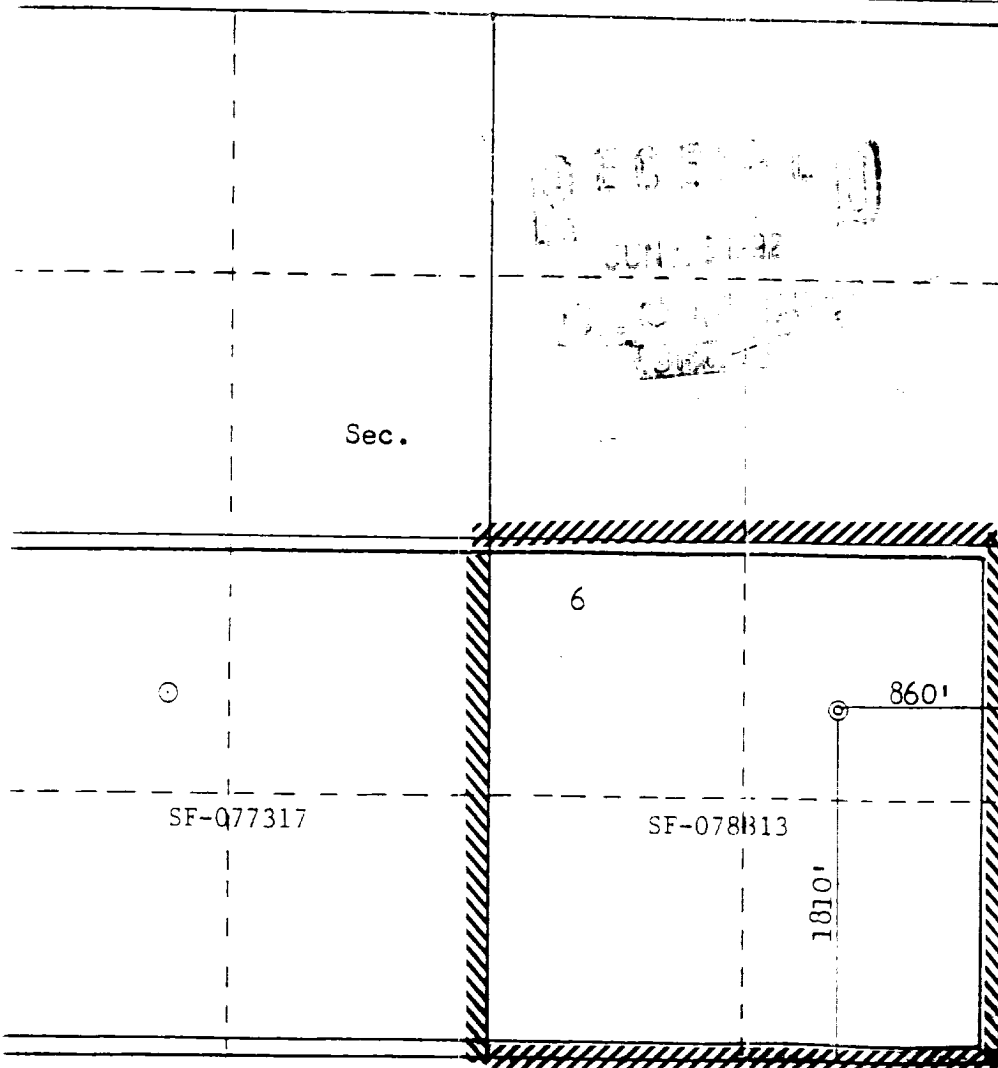
Operator SOUTHLAND ROYALTY COMPANY			Lease COOPER		Well No. 3E
Section Letter -	Section 6	Township 29N	Range 11W	County San Juan	
Well Footage Location of Well: 1810 feet from the South line and 860 feet from the East line					
Surface Level Elev. 5777	Producing Formation Gallup		Pool Undes.	Dedicated Acreage: 160 Acres	

1. Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation \_\_\_\_\_

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) \_\_\_\_\_

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



Scale: 1"=1000'

## CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name  
Peggy Bradfield

Position  
Regulatory Affairs

Company  
Southland Royalty Company

Date  
5-28-92

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed  
January 8, 1981

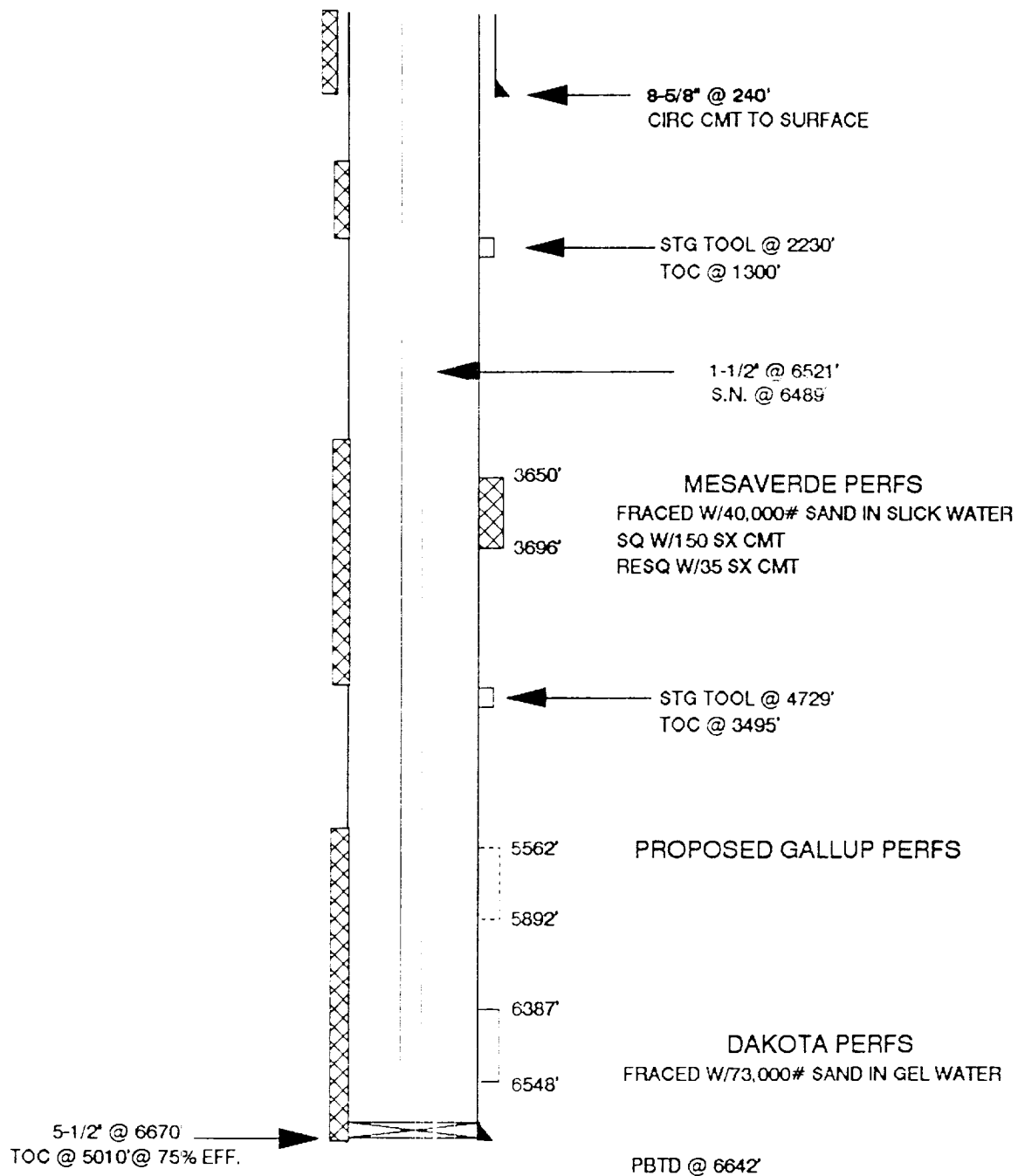
Registered Professional Engineer  
and Land Surveyor

Fred B. Kerr Jr.

Certificate No.  
3950

# COOPER #3E DK

UNIT I SECTION 6 T29N R11W  
SAN JUAN COUNTY, NEW MEXICO



COOPER #3E DK  
Procedure  
I 06 29 11 NM

1. Comply to all NMOCED, BLM, & MOI, rules & regulations. MOL and RU completion rig. NU 6" 900 series BOP with flow tee and stripping head. Test operation of rams. NU blooie line and 2-7/8" relief line. Blow well down.
2. TOH & lay down 199 JTS 1-1/2" tbg.
3. Run 5-1/2" csg scrapper to 6421' on new 2-3/8" tbg. Run 5-1/2" cmt ret on 2-3/8" tbg & set @ 6421'. Pull tbg into test position, & test tbg to 3000 psi. Sting out of cmt ret & test csg to 1000 psi. Sting back into cmt ret, est. rate, & sq Dakota perfs w/ 30 sx cmt. This will fill Dakota perfs & 5-1/2" csg w/100% excess cmt. Sting out of ret & dump 5 sx cmt on top ret. Spot mud up to 6000': 15# sodium bentonite w/non-fermenting polymer, 9# gal weight, & 50 qs vis or greater. TOH.
4. Run CBL 6421'-5400'. Apply 1000 psi, if necessary, to clarify bonding. Set 5-1/2" top drillable bridge plug @ 6000'. Initiate sq procedures if cmt bond across proposed Gallup perfs are insufficient or if csg did not hold pressure test.
5. Fill 3 - 400 bbl. frac tanks with 2% KCL water. Filter all water to 25 microns. Two tanks will be for gel, & one tank for 2% KCL water for breakdown. Gel water required for frac is 472 bbls.
6. TIH w/2-3/8" open ended tbg to 5900' & spot 200 gal 7-1/2" HCL acid across proposed perfs (5892'-5778'). Acid to contain same additives as breakdown. Perf w/3-1/8" HCG w/10 gr Owen 316 charges which have an average penetration in Berea of 14.7" & average perf diameter of 0.28" @ 5778', 90', 98', 5804', 12', 18', 26', 34', 41', 48', 57', 64', 76', 92'. Total 14 holes.
7. TIH w/5-1/2" pkr on 2-3/8" tbg & set @ 5600'. Breakdown & attempt to balloff Gallup perfs w/2000 gal 15% HCL acid & 28 perf balls. Max pressure = 5000 psi. Acid to contain 1 gal/1000 aqua flow, 2 gal/1000 LT-21 (clay & silt suspenders) 5 gal/1000 XA-2L (Fe control), and 2 gal/1000 I17 (corrosion inhibitor). Lower pkr to 5900' to knock off balls. TOH.
8. Run 5-1/2" pkr on 3-1/2" 9.3# P-110 w/shaved collars (4.25" O.D. 2.992" I.D.) rental frac string & set @ 5700'. With 1000 psi held on backside & recorded, frac Gallup with 100,000# 20/40 Arizona sand in 64,000 Gal. 70 quality foam using 19,200 gals 30# guar gel as base fluid. Pump at 30 BPM. Monitor bottomhole and surface treating pressures, rate, & sand concentration, with computer van. All sand to be tagged with 0.4 mCi/1000# Ir-192 tracer. Max. pressure is 6000 psi and estimated treating pressure is 4290 psi. Treat per the following schedule:

<u>Stage</u>	<u>Foam Vol.</u> <u>(Gals.)</u>	<u>Gel Vol.</u> <u>(Gals.)</u>	<u>Sand Vol.</u> <u>(lbs.)</u>	<u>Sand</u> <u>Mesh</u>
Pad	25,000	7,500	----	----

COOPER #3E - GALLUP RECOMPLETION PROCEDURE  
Page 2

1.0 ppg	10,000	3,000	10,000	20/40
2.0 ppg	10,000	3,000	20,000	20/40
3.0 ppg	10,000	3,000	30,000	20/40
4.0 ppg	5,000	1,500	20,000	20/40
5.0 ppg	4,000	1,200	20,000	20/40
Flush	<u>2,100</u>	<u>630</u>	<u>----</u>	<u>----</u>
Totals	64,000	19,200	100,000#	

Treat frac fluid with the following additives per 1000 gallons:

- \* 35# Guar (Base Gel)
- \* 1.0 gal. Aqua-Flow (Non-ionic Surfactant)
- \* 1.0# B-11 (Enzyme Breaker)
- \* 1.0# B-5 (Breaker)
- \* 0.35# Frac-cide 20 (Bacteriacide)

Shut well in after frac for six hours in an attempt to obtain closure pressure and allow the gel to break.

9. Open well through choke manifold & monitor flow. Flow @ 20 bbl/hr, or less if sand is observed. When well ceases to flow, TOH w/frac string & pkr.
10. TIH w/4-3/4" bit on 2-3/8" tbg & C.O. to 5900' w/air/mist. Take pitot gauges when possible. When wellbore is sufficiently clean, TOH.
11. Set top drillable BP @ 5750' on wireline. Load hole w/2% KCL water & pressure test to 1000 psi.
12. Fill 3 - 400 bbl. frac tanks with 2% KCL water. Filter all water to 25 microns. Two tanks will be for gel, & one tank for 2% KCL water for breakdown. Gel water required for frac is 475 bbls.
13. TIH w/2-3/8" tbg to 5740' & spot 200 gal 7-1/2" HCL acid across proposed perfs (5738'-5562'). Acid to contain same additives as breakdown. Perf w/3-1/8" HCG w/10 gr Owen 316 charges which have an average penetration in Berea of 14.7" & average perf diameter of 0.28" @ 5562', 68', 78', 88', 5613', 26', 36', 48', 56', 80', 88', 5708', 20', 30', 38'. Total 15 holes.
14. TIH w/5-1/2" pkr on 2-3/8" tbg & set @ 5400'. Breakdown & attempt to balloff Gallup perfs w/2000 gal 15% HCL acid & 28 perf balls. Max pressure = 5000 psi. Acid to contain 1 gal/1000 aqua flow, 2 gal/1000 LT-21 (clay & silt suspenders), 5 gal/1000 XA-2L (Fe control), and 2 gal/1000 I17 (corrosion inhibitor). Lower pkr to 5740' to knock off balls. TOH.
15. Run 5-1/2" pkr on 3-1/2" 9.3# P-110 w/shaved collars (4.25" O.D. 2.992" I.D.) rental frac string & set @ 5500'. With 1000 psi held on backside & recorded, frac Gallup with 100,000# 20/40 Arizona sand in 64,000 Gal. 70 quality foam using 19,200 gals 30# guar gel as base fluid. Pump at 30 BPM. Monitor bottomhole and surface treating pressures, rate, & sand concentration, with computer van. All sand to be tagged with 0.4 mCi/1000# Ir-192 tracer. Max. pressure is 6000 psi and estimated treating pressure is 4290 psi. Treat per the following schedule:

COOPER #3E - GALLUP RECOMPLETION PROCEDURE  
Page 3

<u>Stage</u>	<u>Foam Vol. (Gals.)</u>	<u>Gel Vol. Gals.)</u>	<u>Sand Vol. (lbs.)</u>	<u>Sand Mesh</u>
Pad	25,000	7 500	----	----
1.0 ppg	10,000	3 000	10,000	20/40
2.0 ppg	10,000	3 000	20,000	20/40
3.0 ppg	10,000	3 000	30,000	20/40
4.0 ppg	5,000	1 500	20,000	20/40
5.0 ppg	4,000	1 200	20,000	20/40
Flush	<u>2,050</u>	<u>750</u>	----	----
Totals	64,000	19 200	100,000#	

Treat frac fluid with the following additives per 1000 gallons:

- \* 35# Guar (Base Gel)
- \* 1.0 gal. Aqua-Flow (Non-ionic Surfactant)
- \* 1.0# B-11 (Enzyme Breaker)
- \* 1.0# B-5 (Breaker)
- \* 0.35# Frac-cide 20 (Bacteriacide)

Shut well in after frac for six hours in an attempt to obtain closure pressure and allow the gel to break.

16. Open well through choke manifold & monitor flow. Flow @ 20 bbl/hr, or less if sand is observed. When well ceases to flow, TOH w/frac string & pkr.
17. TIH w/4-3/4" bit on 2-3/8" tbg & C.O. to BP @ 5750' w/air/mist. When wellbore is sufficiently clean, take pitot gauges when possible & drill BP @ 5750' w/air/mist. C.O. to 6000'. Take pitot gauges when possible. When wellbore is sufficiently clean, TOH.
18. Run after frac GR log 6000'-5000'.
19. TIH with 2-3/8" tbg with standard seating nipple one joint off bullplugged perf jt. Land tbg @ 5850'. Take final pitot gauges, water samples, and gas and oil samples.
20. Replace bad valves on wellhead w/rebuilt valves. ND BOP and NU wellhead. Run 2" X 1-1/4" insert pump on 3800'-5/8" & 2050'-3/4" rod string. Rig down & release rig. Initiate pumping.

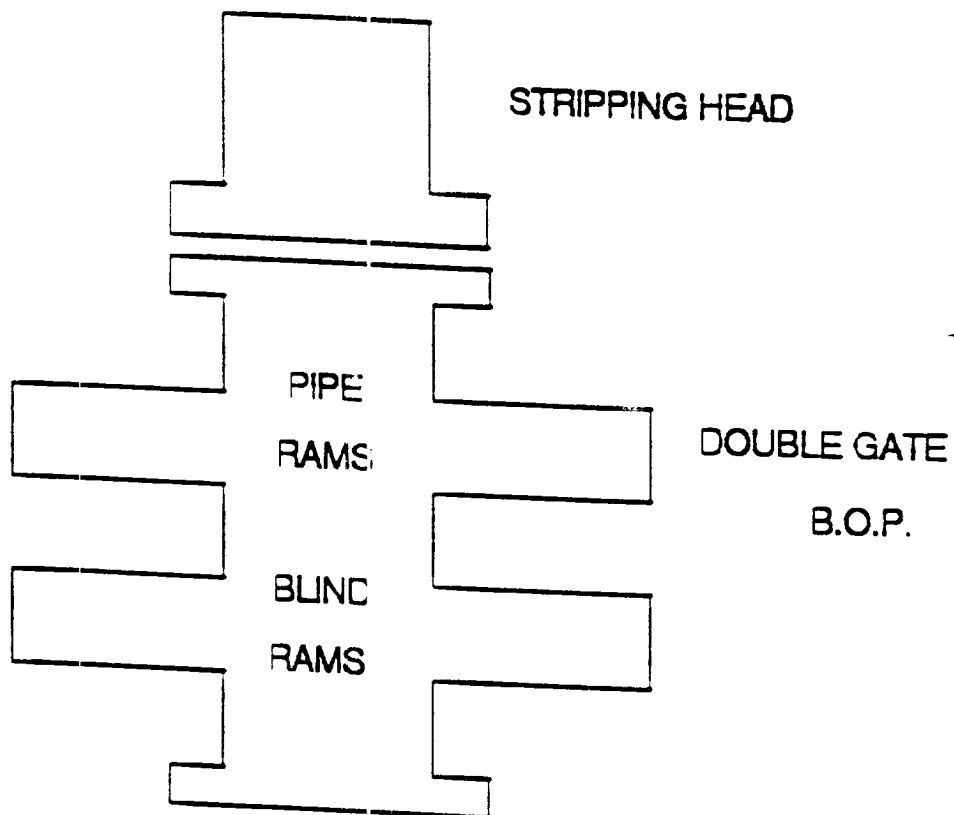
Approved: \_\_\_\_\_  
J. A. Howieson

VENDORS:

Wireline:	Blue Jet	325-5584
Frac & Cmt:	Western	325-5096
RA Tagging:	Pro-Technics	326-7133
Frac String:	Oil Field Rental	327-4421

PMP

# WORKOVER / RECOMPLETION B.O.P. SCHEMATIC



MINIMUM: 6" 2000 PSI DOUBLE GATE B.O.P.  
MAXIMUM ANTICIPATED SHUT-IN WELLHEAD  
PRESSURE IS LESS THAN 2000 PSI