

New Mexico Oil Conservation Division, District I
1625 N. French Drive
Hobbs, NM 88240

Form 3160-3
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No 1004-0137
Expires July 31, 2010

5. Lease Serial No.
SL NMLE 105887 BHL Fee
6. If Indian, Allottee or Tribe Name

N/A
7. If Unit or CA Agreement, Name and No.
N/A

8. Lease Name and Well No.
Orion Federal #1H com (36805)

9. API Well No.
30-005-27978

10. Field and Pool, or Exploratory
Undesignated Wolfcamp

11. Sec., T. R. M. or Blk. and Survey or Area
Section 13, T15S, R31E

12. County or Parish
Chaves Co.
13. State
NM

1a. Type of work: ☒ DRILL ☐ REENTER
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

2. Name of Operator COG Operating, LLC

3a. Address 550 West Texas, Suite 1300
Midland, TX 79701

3b. Phone No. (include area code)
(432)- 685-9158

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface 1980' FNL & 330' FEL, Unit H

At proposed prod. zone 1980' FNL & 330' FWL, Unit E

ROSWELL CONTROLLED WATER BASIN

14. Distance in miles and direction from nearest town or post office*
Approx 15 miles North of Maljamar, New Mexico

15. Distance from proposed* location to nearest property or lease line, ft
(Also to nearest drig unit line, if any)
330

16. No. of acres in lease
640

17. Spacing Unit dedicated to this well
160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft
N/A

19. Proposed Depth
13450' MD
8915' TVD

20. BLM/BIA Bond No. on file
NMB 000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
4353' GL

22. Approximate date work will start*
10/15/2007

23. Estimated duration
45 Days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No 1, must be attached to this form:

1. Well plat certified by a registered surveyor.

2. A Drilling Plan.

3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).

5. Operator certification

6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature

Name (Printed/Typed)

Date

Dwaine Moore

09/12/2007

Title

Agent for COG Operating LLC

Approved by (Signature)

/s/ Angel Mayes

Name (Printed/Typed)

/s/ Angel Mayes

Date

OCT 23 2007

Title

Assistant Field Manager,
Lands And Minerals

Office

ROSWELL FIELD OFFICE

APPROVED FOR 2 YEARS

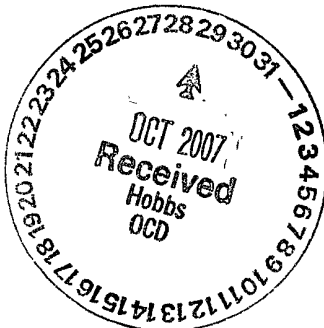
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)



APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS ATTACHED

Exhibit "A"

DISTRICT I

1626 N. French Dr., Hobbs, NM 88240

DISTRICT II

1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources DepartmentForm C-102
Revised October 12, 2005Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 CopiesOIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-005-27978	Pool Code /	Pool Name Undesignated Wolfcamp
Property Code 36805	Property Name ORION FEDERAL	Well Number 1H
OGRID No. 229137	Operator Name C.O.G. OPERATING L.L.C.	Elevation 4352'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	13	15 S	31 E		1980	NORTH	330	EAST	CHAVES

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	13	15 S	31 E		1980	NORTH	330	WEST	CHAVES

Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

		OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or undivided mineral interest in the land including the proposed bottom hole location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature: <i>[Signature]</i> Date: 9/12/07 Printed Name: Dawnie Malone Agent For COG	
BOTTOM HOLE LOCATION LAT.: N 33°01'04.1" LONG.: W103°46'57.5" SPC- N.: 734455.42 E.: 710136.68 (NAD-83)		SURFACE LOCATION LAT.: N 33°01'04.35" LONG.: W103°46'03.16" SPC- N.: 734506.0 E.: 714761.3 (NAD-83)	
SEPTEMBER 13, 2007 Date Surveyed Signature & Seal of Professional Surveyor 		Certificate No. Gary L. Jones 7977 BASIN SURVEYS	

<u>Hole size</u>	<u>Interval</u>	<u>OD of Casing</u>	<u>Weight</u>	<u>Cond.</u>	<u>Collar</u>	<u>Grade</u>
17-1/2"	0' - +/-400'	13-3/8"	48#	New	STC	H40
Collapse sf – 3.78, Burst sf – 7.20, Tension sf – 15.72						
12 1/4"	0' - 4000'	9-5/8"	40#	New	STC	J-55
Collapse sf – 1.285, Burst sf – 1.17, Tension sf – 3.25						
8-3/4"	0' – 8500'	5-1/2"	17#	New	LTC	P-110
Collapse sf – 1.754, Burst sf – 2.42, Tension sf – 2.94						
7-7/8"	8500' – 13450'	5-1/2"	17#	New	BTC	P-110
Collapse sf – 1.68, Burst sf – 2.39, Tension sf – 79.28						

7. Cement Program

13 3/8" Surf. Csg. Set at +/- 400', Circ to Surf with +/- 400 sx Class "C" w/ 2% CaCl₂, 1.35 yd.

9 5/8" Intrmd. Csg. Set at +/- 4000'. Circ to Surf with +/- 800 sx 35/65 Poz "C", 2.05 yd. & 200 sx Class "C" w/ 2% CaCl₂, 1.35 yd.

5 1/2" Prod. Csg. Set at +/- 13450' MD. Cement casing with +/- 200 sx. 50/50/2 "C", 1.37 yd & +/- 900 sx Class "H", 1.18 yd. Est. TOC @ 8500'.

8. Pressure Control Equipment:

After setting 13 3/8" casing and installing 3000 psi casing head, NU 13 5/8" 3000 psi annular BOP. Test annular BOP, casing and manifold with clear fluid to 800 psi w/ rig pump. After setting 9 5/8" casing and installing 3000 psi casing spool, NU 3000 psi double ram BOP and 3000psi annular BOP. Test double ram BOP and manifold to 3000# with clear fluid and annular to 1500 psi using an independent tester and used continuously until TD is reached. Blind rams will be operationally checked on each trip out of hole. Pipe rams will be operationally checked each 24 hour period. These checks will be noted on daily tour sheets. Other accessories to the BOP equipment include a Kelly cock and floor safety valves, choke lines and choke manifold with 3000 psi WP rating.

9. Proposed Mud Circulating System

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - 400'	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
400' - 4000'	9.1	30	NC	Cut brine mud, lime for PH and paper for seepage and sweeps.
4000' - 7500'	9.1	29	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal.
7500' - 13450'	9.5	36	10	Drill pilot hole, curve and horizontal section with XCD polymer / cut brine / starch.

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept at the well site at all times.

10. Auxiliary Well Control and Monitoring Equipment

- A. Kelly cock will be kept in the drill string at all times.
- B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
Orion Federal # 1H
Page 3 of 3

11. Production Hole Drilling Summary:

Drill 8-3/4" Pilot hole thru Wolfcamp, run open hole logs. Spot 150 sx. "H" Kick off plug from +/- 9000' to +/-8500'. Time drill and kick off 7-7/8" hole at +/- 8500', building curve over +/- 475' to horizontal at 8915' TVD. Drill horizontal section in a westerly direction for +/-4500' lateral. Run production casing and cement.

12. Logging, Testing and Coring Program:

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be ran from T.D. in vertical pilot hole to 9 5/8" casing shoe.
- B. The mud logging program will consist of lagged 10' samples from intermediate casing point to T.D. in vertical pilot hole and from Kick off point to TD in Horizontal hole.
- C. Drill Stem test is not anticipated.
- D. No conventional coring is anticipated.
- E. Further testing procedures will be determined after the 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

13. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 3860 psig. Low levels of Hydrogen sulfide have been monitored in producing wells in the area, so H2S may be present while drilling of the well. An H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

14. Anticipated Starting Date

Drilling operations will commence approximately on October 15, 2007 with drilling and completion operations lasting approximately 45 days.

Pathfinder Energy Planning Report

Company: COG Operating Company LLC. Date: 09/11/2007 Time: 10:54:01 Page: 1
Field: Orion Federal Co-ordinate(NE) Reference Site: Orion Federal #1H, Grid North
Site: Orion Federal #1H Vertical (TVD) Reference: SITE 4374.0
Well: Orion Federal #1H Section (VS) Reference: Well (0 00N,0.00E,269.34Azi)
Wellpath: OH Plan: Plan #1 9-10-07

Field: Orion Federal

Map System US State Plane Coordinate System 1983
Geo Datum GRS 1980
Sys Datum: Mean Sea Level

Site: Orion Federal #1H

Site Position:	Northing:	734506.00 ft	Latitude:	33	1	4.331 N
From: Map	Easting:	714759.40 ft	Longitude:	103	46	3.199 W
Position Uncertainty:	0.00 ft		North Reference:			Grid
Ground Level:	4353.00 ft		Grid Convergence:			0.31 deg

Well: Orion Federal #1H

Well Position:	+N/-S	0.00 ft	Northing:	734506.00 ft	Latitude:	33	1	4.331 N
	+E/-W	0.00 ft	Easting :	714759.40 ft	Longitude:	103	46	3.199 W
Position Uncertainty:		0.00 ft						

Wellpath: OH

Current Datum:	SITE	Height	4374.00 ft	He-on Depth:	0.00 ft
Magnetic Data:	09/10/2007			Above System Datum:	Mean Sea Level
Field Strength:	49500 nT			Declination:	8.18 deg
Vertical Section: Depth From (TVD)		Mag Dip Angle:			60.99 deg
	ft	+N/-S	ft	+E/-W	Direction
				ft	deg
	0.00	0.00	0.00		269.34

Plan: Plan #1 9-10-07

Principal: No

Plan Section Information

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8425.00	0.00	0.00	8425.00	0.00	0.00	0.00	0.00	0.00	0.00	
9178.98	90.00	269.34	8905.00	-5.53	-479.97	11.94	11.94	0.00	269.34	
9211.56	90.98	269.33	8904.72	-5.91	-512.54	3.00	3.00	-0.02	-0.31	
13299.58	90.98	269.33	8835.00	-53.36	-4599.69	0.00	0.00	0.00	0.00	PBHL

Survey

[illegible]

Planning Report

Plan: Plan #1 9-10-07

[illegible]

Pathfinder Energy Planning Report

Company: COG Operating Company LLC.
Field: Orion Federal
Site: Orion Federal #1H
Well: Orion Federal #1H
Wellpath: OH

Date: 09/11/2007 Time: 10:54:01 Page: 3
Co-ordinate(NE) Reference: Orion Federal #1H, Grid North
Vertical (TVD) Reference: SITE 4374.0
Section (VS) Reference: Well (0.00N,0.00E,269 34Azi)
Plan: Plan #1 9-10-07

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
7000.00	0.00	0.00	7000.00	0.00	0.00	0.00	0.00	0.00	0.00	
7100.00	0.00	0.00	7100.00	0.00	0.00	0.00	0.00	0.00	0.00	
7200.00	0.00	0.00	7200.00	0.00	0.00	0.00	0.00	0.00	0.00	
7300.00	0.00	0.00	7300.00	0.00	0.00	0.00	0.00	0.00	0.00	
7400.00	0.00	0.00	7400.00	0.00	0.00	0.00	0.00	0.00	0.00	
7500.00	0.00	0.00	7500.00	0.00	0.00	0.00	0.00	0.00	0.00	
7600.00	0.00	0.00	7600.00	0.00	0.00	0.00	0.00	0.00	0.00	
7700.00	0.00	0.00	7700.00	0.00	0.00	0.00	0.00	0.00	0.00	
7800.00	0.00	0.00	7800.00	0.00	0.00	0.00	0.00	0.00	0.00	
7900.00	0.00	0.00	7900.00	0.00	0.00	0.00	0.00	0.00	0.00	
8000.00	0.00	0.00	8000.00	0.00	0.00	0.00	0.00	0.00	0.00	
8100.00	0.00	0.00	8100.00	0.00	0.00	0.00	0.00	0.00	0.00	
8200.00	0.00	0.00	8200.00	0.00	0.00	0.00	0.00	0.00	0.00	
8300.00	0.00	0.00	8300.00	0.00	0.00	0.00	0.00	0.00	0.00	
8400.00	0.00	0.00	8400.00	0.00	0.00	0.00	0.00	0.00	0.00	
8425.00	0.00	0.00	8425.00	0.00	0.00	0.00	0.00	0.00	0.00	
8500.00	8.95	269.34	8499.70	-0.07	-5.85	5.85	11.94	11.94	0.00	KOP @ 8425' MD, Begin Bui
8600.00	20.89	269.34	8596.15	-0.36	-31.55	31.55	11.94	11.94	0.00	
8700.00	32.83	269.34	8685.20	-0.88	-76.64	76.64	11.94	11.94	0.00	
8800.00	44.76	269.34	8763.00	-1.60	-139.17	139.18	11.94	11.94	0.00	
8900.00	56.70	269.34	8826.18	-2.49	-216.45	216.46	11.94	11.94	0.00	
9000.00	68.64	269.34	8872.02	-3.51	-305.12	305.14	11.94	11.94	0.00	
9100.00	80.57	269.34	8898.52	-4.62	-401.35	401.37	11.94	11.94	0.00	
9178.98	90.00	269.34	8905.00	-5.53	-479.97	480.00	11.94	11.94	0.00	
9200.00	90.63	269.34	8904.88	-5.77	-500.98	501.02	3.00	3.00	-0.02	EOC @ 9179' MD, Begin Bui
9211.56	90.98	269.33	8904.72	-5.91	-512.54	512.57	3.00	3.00	-0.02	
9300.00	90.98	269.33	8903.21	-6.93	-600.96	601.00	0.00	0.00	0.00	EOB @ 9212' MD, 90.98° Ir
9400.00	90.98	269.33	8901.51	-8.09	-700.94	700.99	0.00	0.00	0.00	
9500.00	90.98	269.33	8899.80	-9.25	-800.92	800.97	0.00	0.00	0.00	
9600.00	90.98	269.33	8898.10	-10.42	-900.90	900.96	0.00	0.00	0.00	
9700.00	90.98	269.33	8896.39	-11.58	-1000.88	1000.95	0.00	0.00	0.00	
9800.00	90.98	269.33	8894.69	-12.74	-1100.86	1100.93	0.00	0.00	0.00	
9900.00	90.98	269.33	8892.98	-13.90	-1200.84	1200.92	0.00	0.00	0.00	
10000.00	90.98	269.33	8891.28	-15.06	-1300.81	1300.90	0.00	0.00	0.00	
10100.00	90.98	269.33	8889.57	-16.22	-1400.79	1400.89	0.00	0.00	0.00	
10200.00	90.98	269.33	8887.86	-17.38	-1500.77	1500.87	0.00	0.00	0.00	
10300.00	90.98	269.33	8886.16	-18.54	-1600.75	1600.86	0.00	0.00	0.00	
10400.00	90.98	269.33	8884.45	-19.70	-1700.73	1700.84	0.00	0.00	0.00	
10500.00	90.98	269.33	8882.75	-20.86	-1800.71	1800.83	0.00	0.00	0.00	
10600.00	90.98	269.33	8881.04	-22.02	-1900.69	1900.81	0.00	0.00	0.00	
10700.00	90.98	269.33	8879.34	-23.18	-2000.67	2000.80	0.00	0.00	0.00	
10800.00	90.98	269.33	8877.63	-24.35	-2100.64	2100.79	0.00	0.00	0.00	
10900.00	90.98	269.33	8875.93	-25.51	-2200.62	2200.77	0.00	0.00	0.00	
11000.00	90.98	269.33	8874.22	-26.67	-2300.60	2300.76	0.00	0.00	0.00	
11100.00	90.98	269.33	8872.51	-27.83	-2400.58	2400.74	0.00	0.00	0.00	
11200.00	90.98	269.33	8870.81	-28.99	-2500.56	2500.73	0.00	0.00	0.00	
11300.00	90.98	269.33	8869.10	-30.15	-2600.54	2600.71	0.00	0.00	0.00	
11400.00	90.98	269.33	8867.40	-31.31	-2700.52	2700.70	0.00	0.00	0.00	
11500.00	90.98	269.33	8865.69	-32.47	-2800.50	2800.68	0.00	0.00	0.00	
11600.00	90.98	269.33	8863.99	-33.63	-2900.47	2900.67	0.00	0.00	0.00	
11700.00	90.98	269.33	8862.28	-34.79	-3000.45	3000.65	0.00	0.00	0.00	
11800.00	90.98	269.33	8860.58	-35.95	-3100.43	3100.64	0.00	0.00	0.00	
11900.00	90.98	269.33	8858.87	-37.12	-3200.41	3200.63	0.00	0.00	0.00	

Pathfinder Energy

Planning Report

Company: COG Operating Company LLC.

Date: 09/11/2007

Time: 10:54:01

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Field: Orion Federal

Co-ordinate(NE) Reference: Orion Federal #1H, Grid North

Site: Orion Federal #1H

Vertical (TVD) Reference: SITE 4374.0

Well: Orion Federal #1H

Section (VS) Reference: Well (0.00N,0.00E,269.34Azi)

Wellpath: OH

Plan:

Plan #1 9-10-07.

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
12000.00	90.98	269.33	8857.16	-38.28	-3300.39	3300.61	0.00	0.00	0.00	
12100.00	90.98	269.33	8855.46	-39.44	-3400.37	3400.60	0.00	0.00	0.00	
12200.00	90.98	269.33	8853.75	-40.60	-3500.35	3500.58	0.00	0.00	0.00	
12300.00	90.98	269.33	8852.05	-41.76	-3600.32	3600.57	0.00	0.00	0.00	
12400.00	90.98	269.33	8850.34	-42.92	-3700.30	3700.55	0.00	0.00	0.00	
12500.00	90.98	269.33	8848.64	-44.08	-3800.28	3800.54	0.00	0.00	0.00	
12600.00	90.98	269.33	8846.93	-45.24	-3900.26	3900.52	0.00	0.00	0.00	
12700.00	90.98	269.33	8845.23	-46.40	-4000.24	4000.51	0.00	0.00	0.00	
12800.00	90.98	269.33	8843.52	-47.56	-4100.22	4100.49	0.00	0.00	0.00	
12900.00	90.98	269.33	8841.81	-48.72	-4200.20	4200.48	0.00	0.00	0.00	
13000.00	90.98	269.33	8840.11	-49.88	-4300.18	4300.47	0.00	0.00	0.00	
13100.00	90.98	269.33	8838.40	-51.05	-4400.15	4400.45	0.00	0.00	0.00	
13200.00	90.98	269.33	8836.70	-52.21	-4500.13	4500.44	0.00	0.00	0.00	
13299.58	90.98	269.33	8835.00	-53.36	-4599.69	4600.00	0.00	0.00	0.00	PBHL

Targets

Name	Description Dip. Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude --->			<--- Longitude --->		
PBHL		8835.00	-53.36	-4599.69	734452.64	710159.71	33	1	4.045 N	103	46	57.223 W

Annotation

MD ft	TVD ft	
8425.00	8425.00	KOP @ 8425' MD, Begin Build @ 11.94°/100'
9178.98	8905.00	EOC @ 9179' MD, Begin Build @ 3°/100'
9211.56	8904.72	EOB @ 9212' MD, 90.98° Inc, Hold to TD
13299.57	8835.00	TD @ 13300' MD

COG Operating Company LLC.

PATHFINDER

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
2	8425 00	0 00	0 00	8425 00	0 00	0 00	0 00	0 00	0 00	
3	9178 98	90 00	269 34	8905 00	-5 53	-479 97	11 94	269 34	480 00	
4	9211 56	90 98	269 33	8904 72	-5 91	-512 54	3 00	-0 31	512 57	
5	13299 58	90 98	269 33	8835 00	-53 36	-4599 69	0 00	0 00	4600 00	PBHL

Field: Orion Federal
 Site: Orion Federal #1H
 Well: Orion Federal #1H
 Wellpath: OH
 Plan: Plan #1 9-10-07

SITE DETAILS

Orion Federal #1H

Site Centre Northing 734506 00
 Easting: 714759 40

Ground Level 4353 00
 Positional Uncertainty 0 00
 Convergence 0 31

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
PBHL	8835 00	-53.36	-4599 69	Point

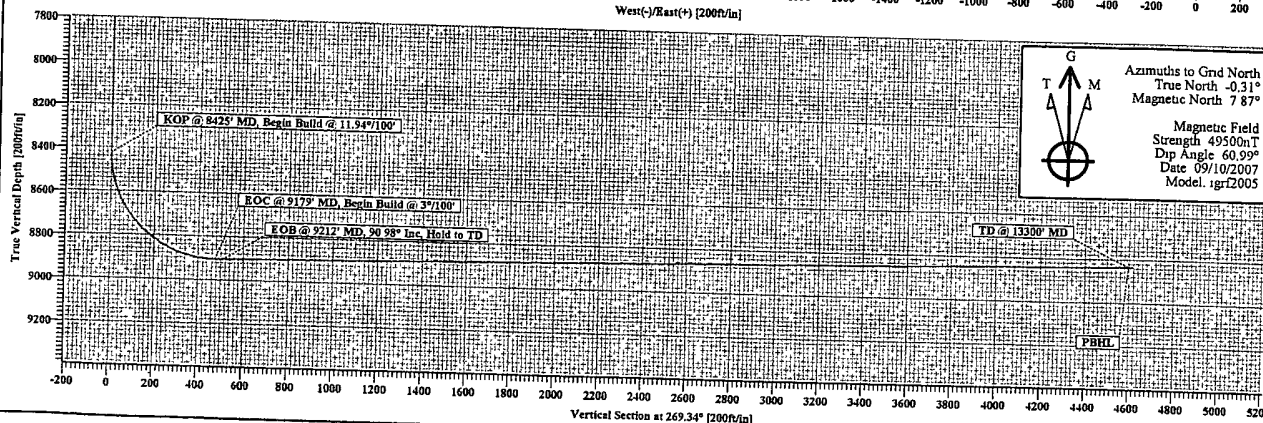
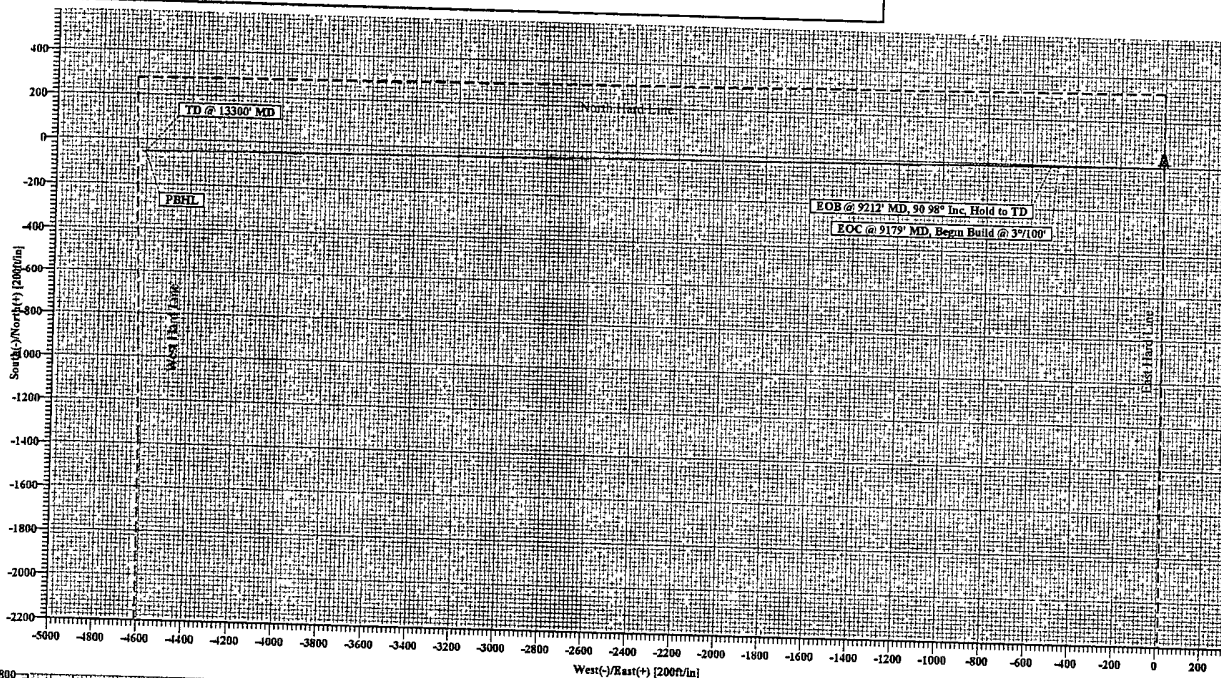
WELLPATH DETAILS

OH

Ref. Datum	Rtg.	SITE	4374 00N
V Section Angle	Origin +N/-S	Origin +E/-W	Starting From TVD
269 34°	0 00	0 00	0 00

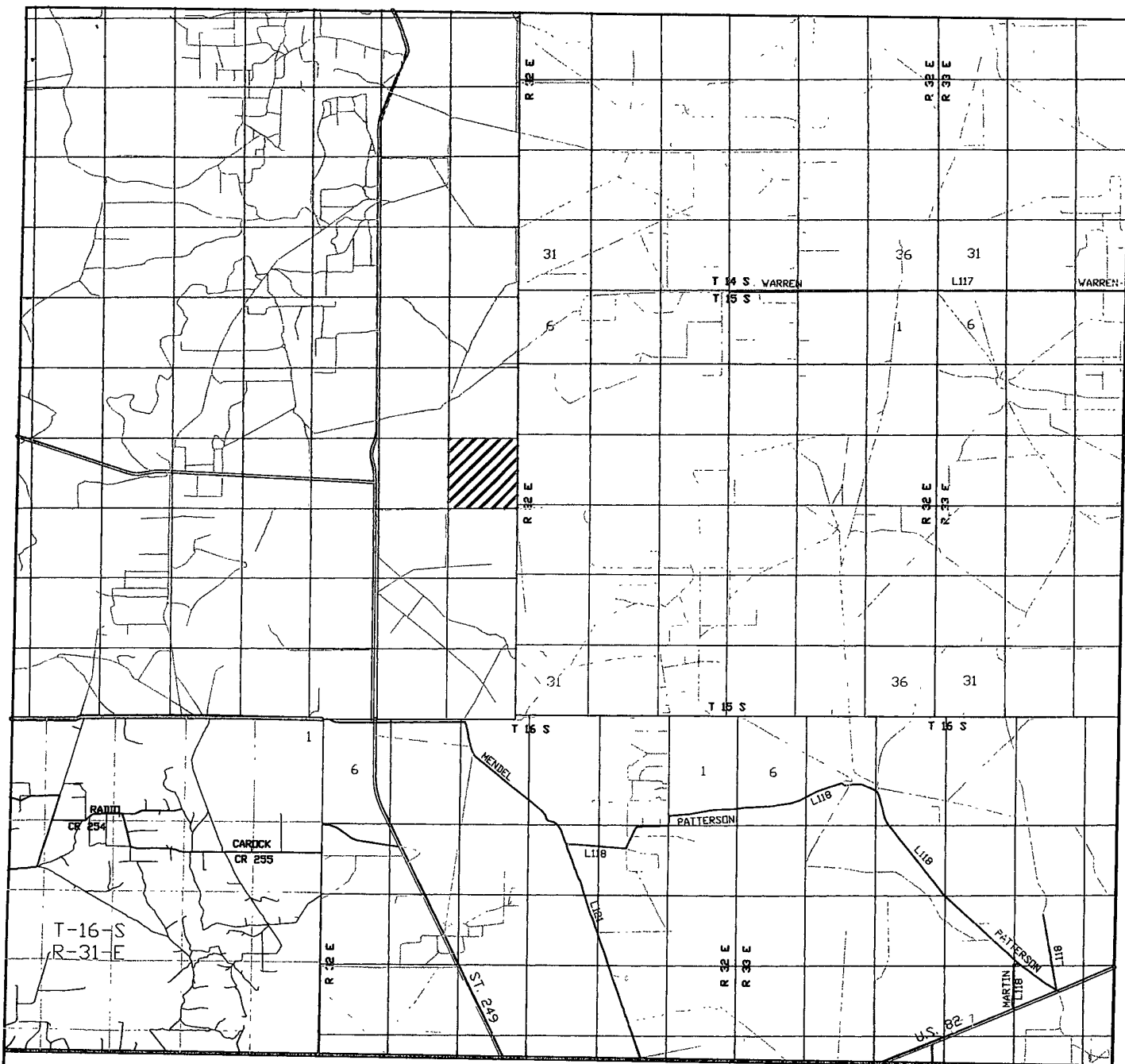
ANNOTATIONS

No	TVD	MD	Annotation
1	8425 00	8425 00	KOP @ 8425' MD, Begin Build @ 11.94°/100'
2	8905 00	9178 98	EOC @ 9179' MD, Begin Build @ 3°/100'
3	8904 72	9211 56	EOB @ 9212' MD, 90.98° Inc. Hold to TD
4	8835 00	13299 57	TD @ 13300' MD



Azimuths to Grd North
 True North -0.31°
 Magnetic North 7.87°

Magnetic Field
 Strength 49500nT
 Dip Angle 60.99°
 Date 09/10/2007
 Model: igr2005



ORION FEDERAL #1H
 Located at 1980' FNL and 330 FEL
 Section 13, Township 15 South, Range 31 East,
 N.M.P.M., Chaves County, New Mexico.

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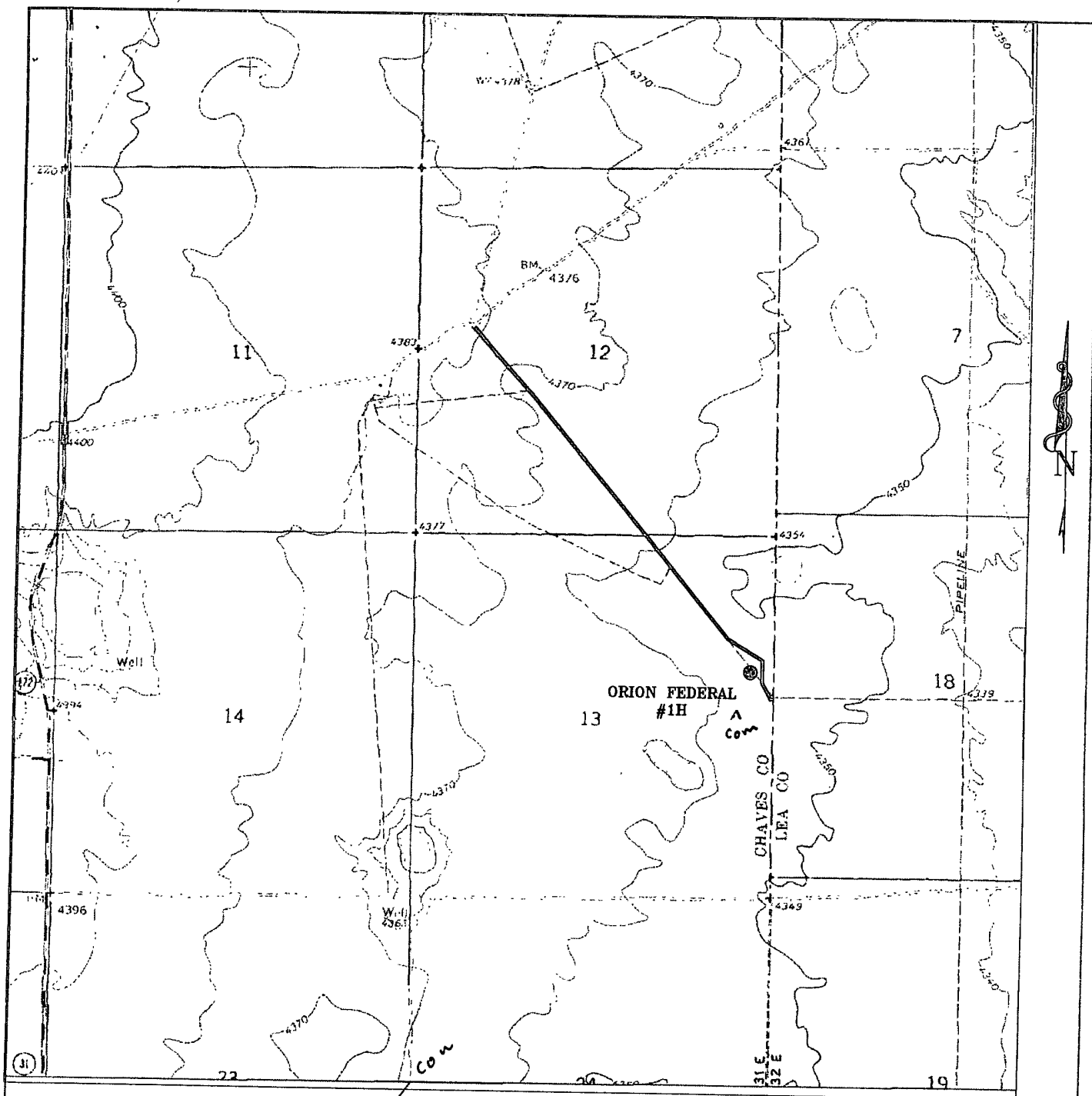
W.O. Number: JMS 18579TR

Survey Date: 09-13-2007

Scale: 1" = 2 MILES

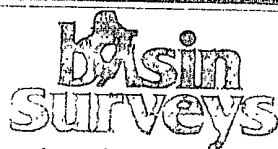
Date: 09-14-2007

C.O.G.
 OPERATING
 L.L.C.



ORION FEDERAL #1H

Located at 1980' FNL and 330' FEL
 Section 13, Township 15 South, Range 31 East,
 N.M.P.M., Chaves County, New Mexico.



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W.O. Number: JMS 18579T

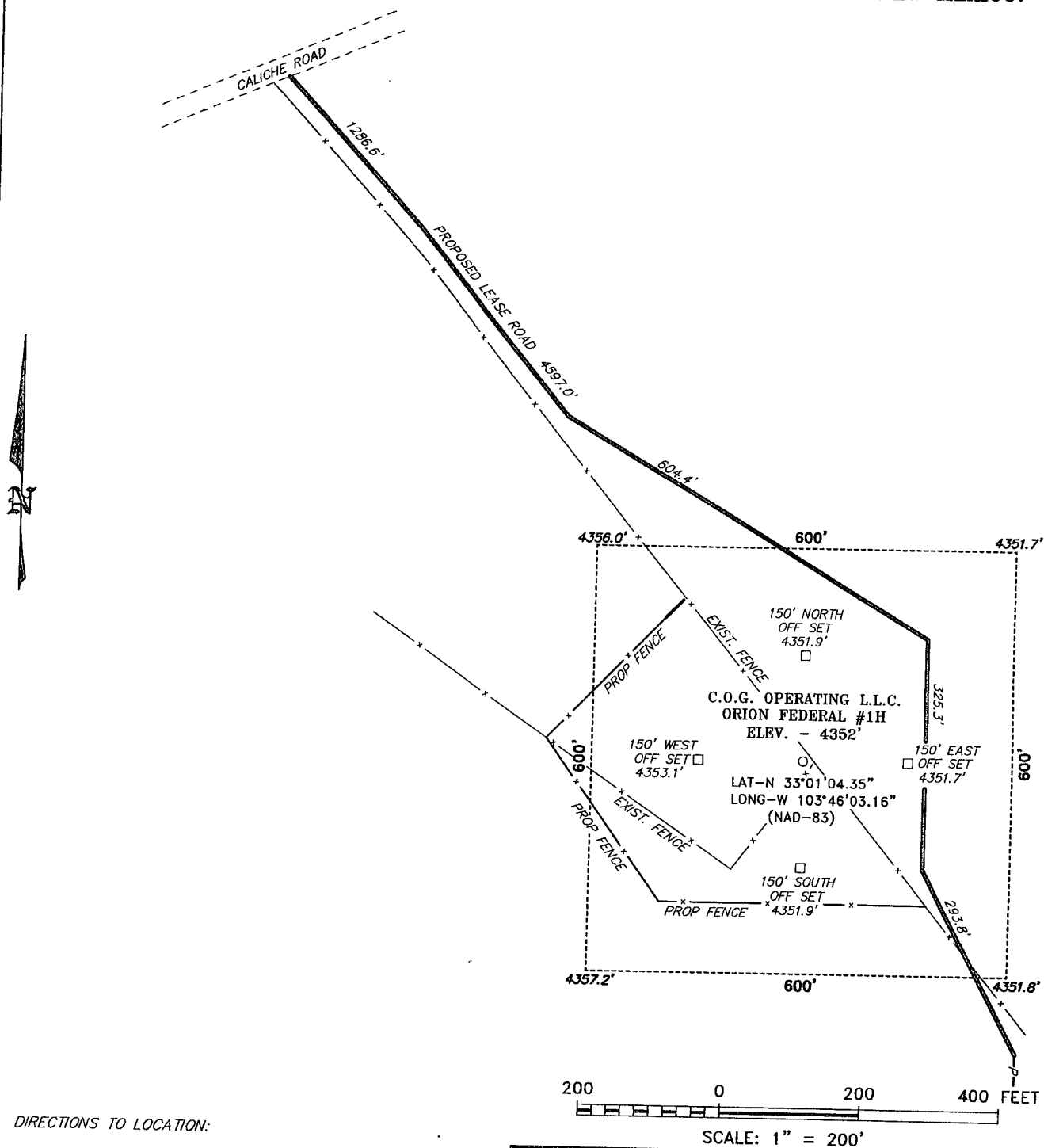
Survey Date: 09-13-2007

Scale: 1" = 2000'

Date: 09-14-2007

**C.O.G.
 OPERATING
 L.L.C.**

SECTION 13, TOWNSHIP 15 SOUTH, RANGE 31 EAST, N.M.P.M.,
CHAVES COUNTY, NEW MEXICO.



DIRECTIONS TO LOCATION:

FROM THE JUNCTION OF U.S. HWY 82 AND STATE HWY 249, GO NORTH 11.0 MILES TO CO. RD. 172, CONTINUE NORTH ON CO. RD. 172 FOR 0.9 MILES TO RANCH ROAD, FOLLOW RANCH ROAD EASTERLY 1.3 MILES TO PROPOSED LEASE ROAD.

BASIN SURVEYS

P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 18579

Drawn By: J. M. SMALL

Date: 09-14-2007

Disk: JMS 18579W

C.O.G. OPERATING L.L.C.

REF: ORION FEDERAL #1H / Well Pad Topo

THE ORION FEDERAL #1H LOCATED 1980' FROM

THE NORTH LINE AND 330' FROM THE EAST LINE OF

SECTION 13, TOWNSHIP 15 SOUTH, RANGE 31 EAST,

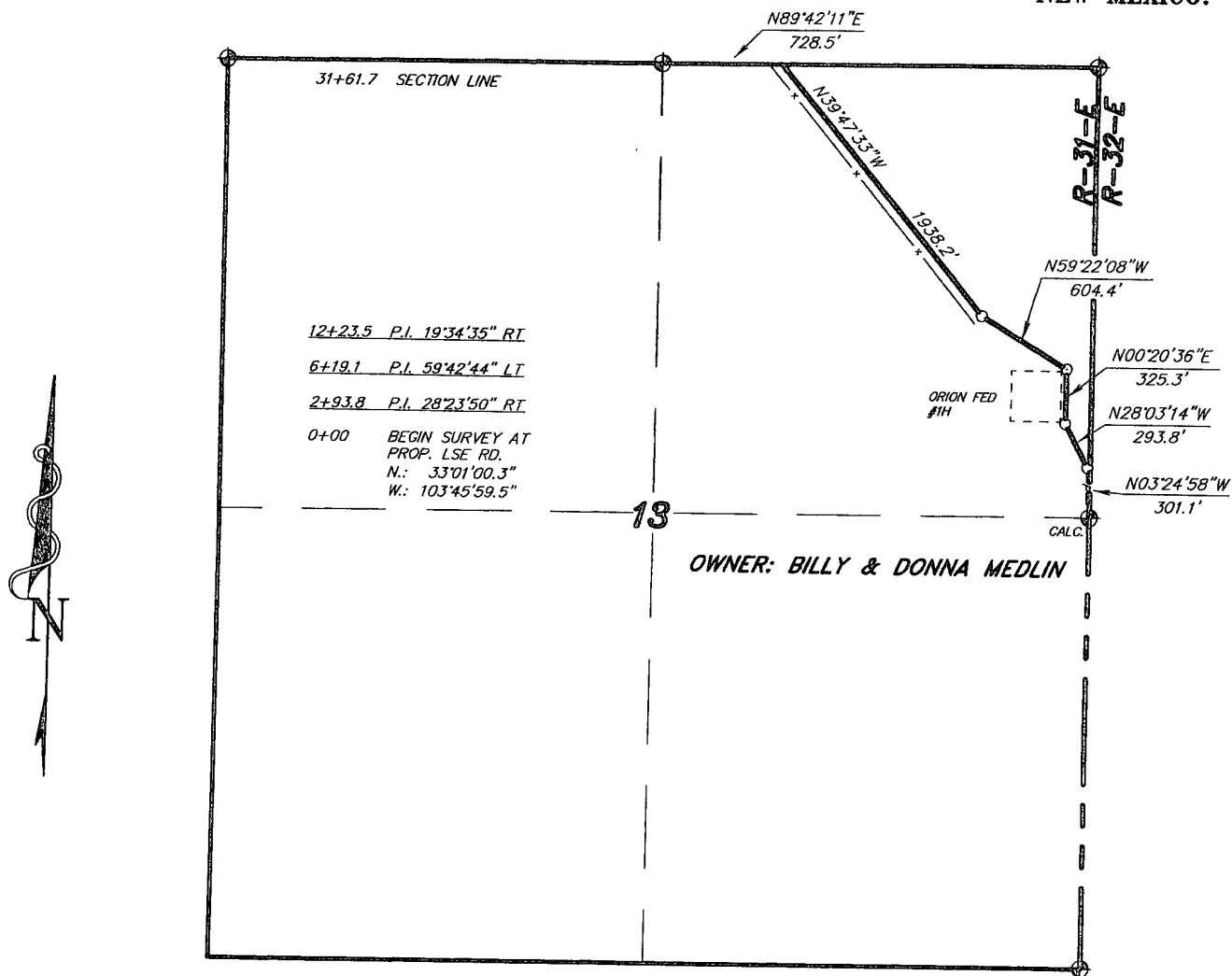
N.M.P.M., CHAVES COUNTY, NEW MEXICO.

Survey Date: 09-13-2007

Sheet 1 of 1 Sheets

4com

**SECTION 13, TOWNSHIP 15 SOUTH, RANGE 31 EAST, N.M.P.M.,
CHAVES COUNTY, NEW MEXICO.**



LEGAL DESCRIPTION

A STRIP OF LAND 20.0 FEET WIDE, LOCATED IN SECTION 13, TOWNSHIP 15 SOUTH, RANGE 31 EAST, N.M.P.M., CHAVES COUNTY, NEW MEXICO AND BEING 10.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY. BEGINNING AT A POINT WHICH LIES N.03°24'58\"W, 301.1 FEET FROM THE EAST QUARTER CORNER OF SAID SECTION 13; THENCE N.28°03'14\"W, 293.8 FEET; THENCE N.00°20'36\"E, 325.3 FEET; THENCE N.59°22'08\"W, 604.4 FEET; THENCE N.39°47'33\"W, 1938.2 FEET TO A POINT ON THE NORTH SECTION LINE WHICH LIES N.89°42'11\"E, 728.5 FEET FROM THE NORTH QUARTER CORNER OF SAID SECTION 13. SAID STRIP OF LAND BEING 3161.7 FEET OR 191.62 RODS IN LENGTH.

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF A PERSONAL SURVEY AND MEETS OR EXCEEDS THE REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.



GARY L. JONES
TEXAS P.L.S. No. 7977
No. 5074

1000 0 1000 2000 FEET

C.O.G. OPERATING L.L.C.

REF: PROP. LEASE ROAD TO THE ORION FEDERAL #1H

A LEASE ROAD CROSSING FEE LAND IN
SECTION 13, TOWNSHIP 15 SOUTH, RANGE 31 EAST,
N.M.P.M., CHAVES COUNTY, NEW MEXICO.

BASIN SURVEYS P.O. BOX 1786—HOBBS, NEW MEXICO

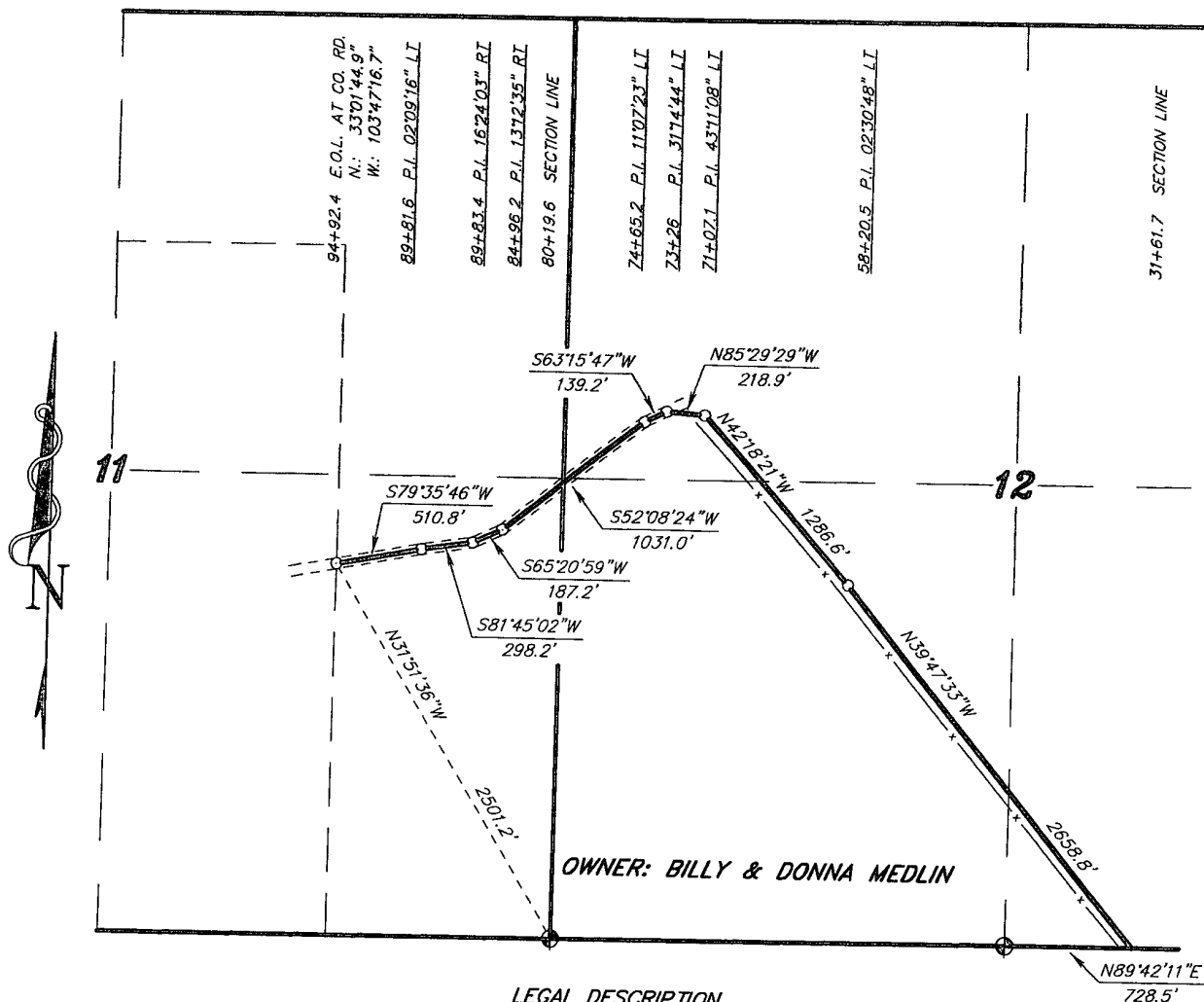
W.O. Number: 18579 Drawn By: J. M. SMALL

Date: 09-17-2007 Disk: JMS 18579R

Survey Date: 09-13-2007 Sheet 1 of 2 Sheets

KCOM

**SECTIONS 11&12, TOWNSHIP 15 SOUTH, RANGE 31 EAST, N.M.P.M.,
CHAVES COUNTY, NEW MEXICO.**



I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.



GARY L. J. SMALL P.L.S. No. 7977
No. 5074

1000 0 1000 2000 FEET

C.O.G. OPERATING L.L.C.

REF: PROP. LEASE ROAD TO THE ORION FEDERAL #1H

A LEASE ROAD CROSSING FEE LAND IN
SECTIONS 11&12, TOWNSHIP 15 SOUTH, RANGE 31 EAST,
N.M.P.M., CHAVES COUNTY, NEW MEXICO.

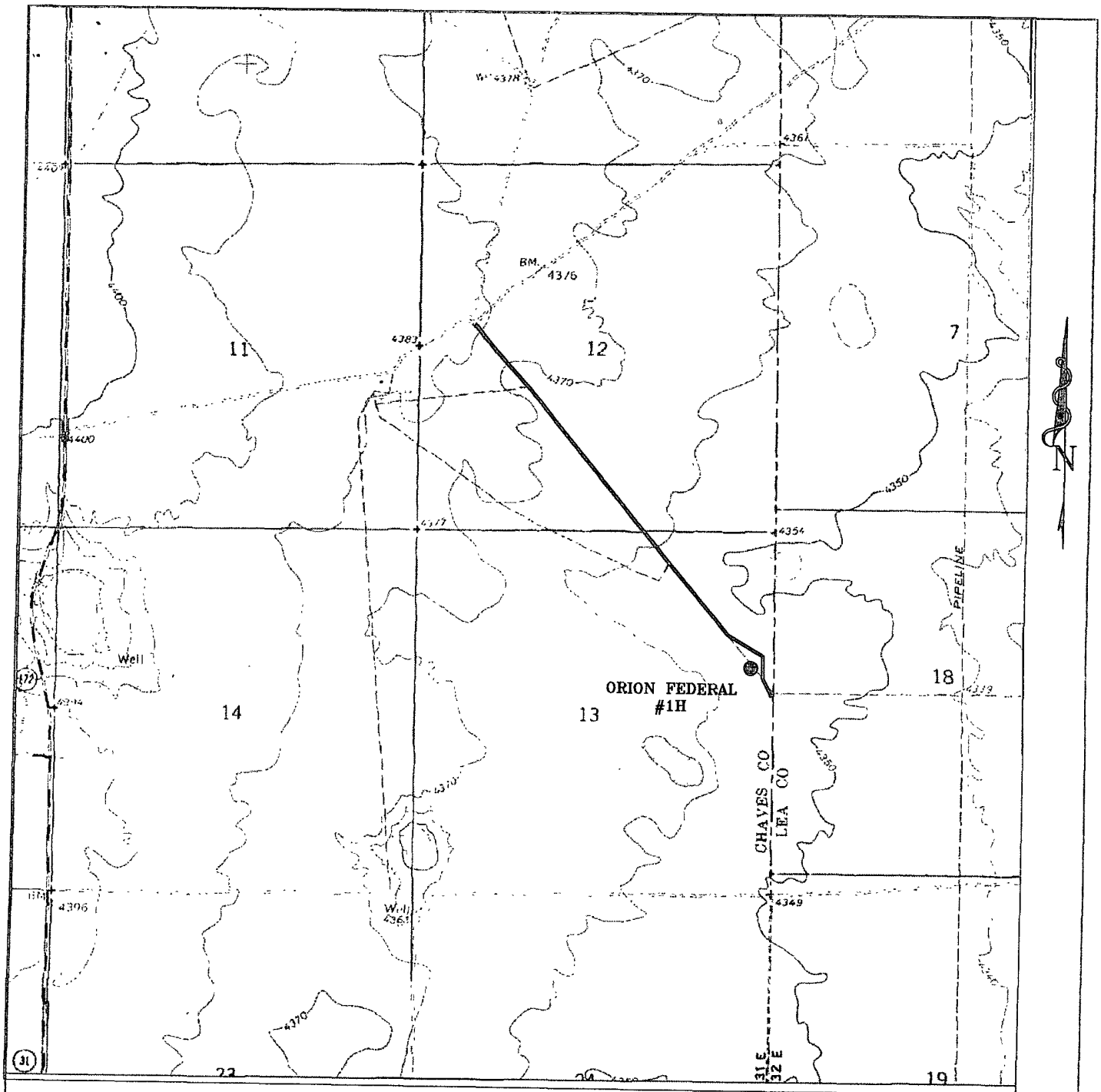
BASIN SURVEYS P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 18579 Drawn By: J. M. SMALL

Date: 09-17-2007 Disk: JMS 18579R

Survey Date: 09-13-2007 Sheet 2 of 2 Sheets

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PROPOSED LEASE ROAD TO THE ORION FEDERAL #1H
 Section 13, Township 15 South, Range 31 East,
 N.M.P.M., Chaves County, New Mexico.

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W.O. Number: JMS 18579TT

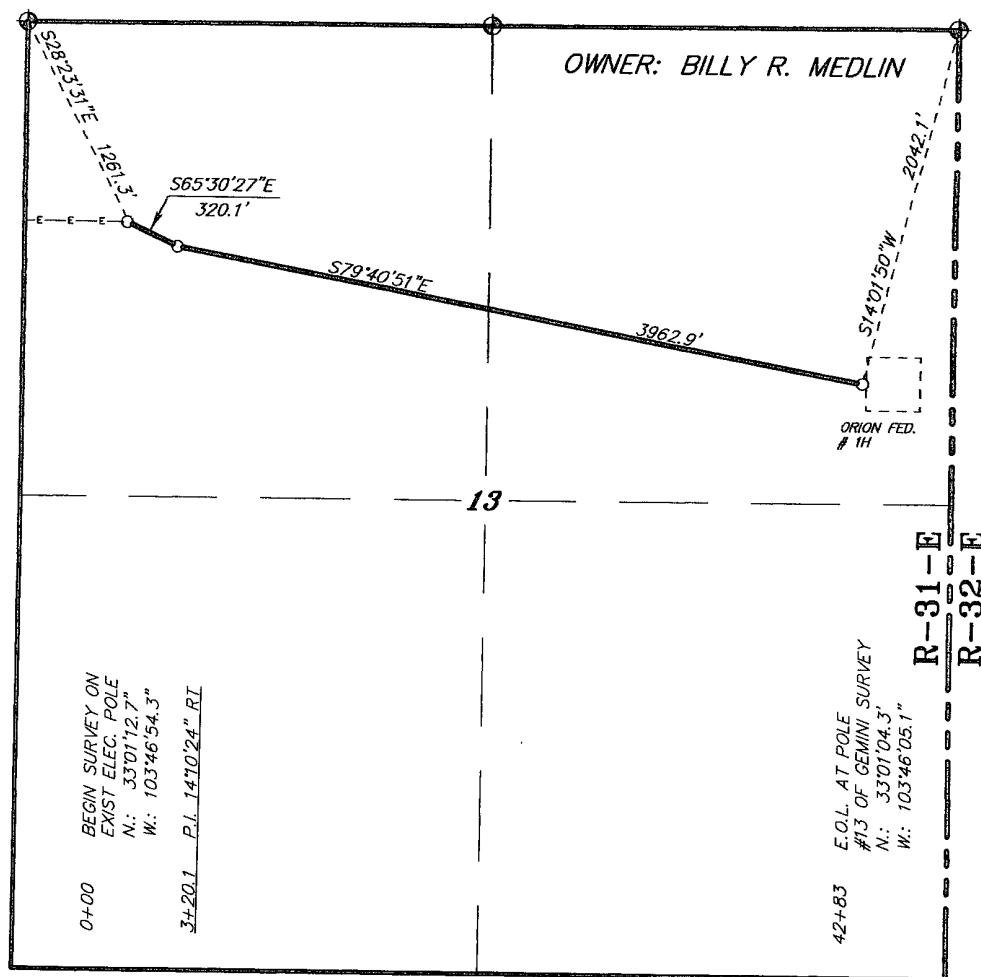
Survey Date: 09-13-2007

Scale: 1" = 2000'

Date: 09-14-2007

C.O.G.
OPERATING
L.L.C.

SECTION 13, TOWNSHIP 15 SOUTH, RANGE 31 EAST, N.M.P.M.,
CHAVES COUNTY, NEW MEXICO.

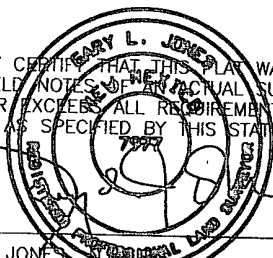


LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 13, TOWNSHIP 15 SOUTH, RANGE 31 EAST, N.M.P.M., CHAVES COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

BEGINNING AT A POINT WHICH LIES S.28°23'31"E., 1261.3 FEET FROM THE NORTHWEST CORNER OF SAID SECTION 13; THENCE S.65°30'27"E., 320.1 FEET; THENCE S.79°40'51"E., 3962.9 FEET TO THE END OF THIS LINE WHICH LIES S.14°01'50"W., 2042.1 FEET FROM THE NORTHEAST CORNER OF SAID SECTION 13. SAID STRIP OF LAND BEING 4283.0 FEET OR 259.58 RODS IN LENGTH.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.



GARY L. JONES No. 7977
TEXAS P.L.S. No. 5074

BASIN SURVEYS P.O. BOX 1786-HOBBS, NEW MEXICO

1000 0 1000 2000 FEET

COG OPERATING, LLC.

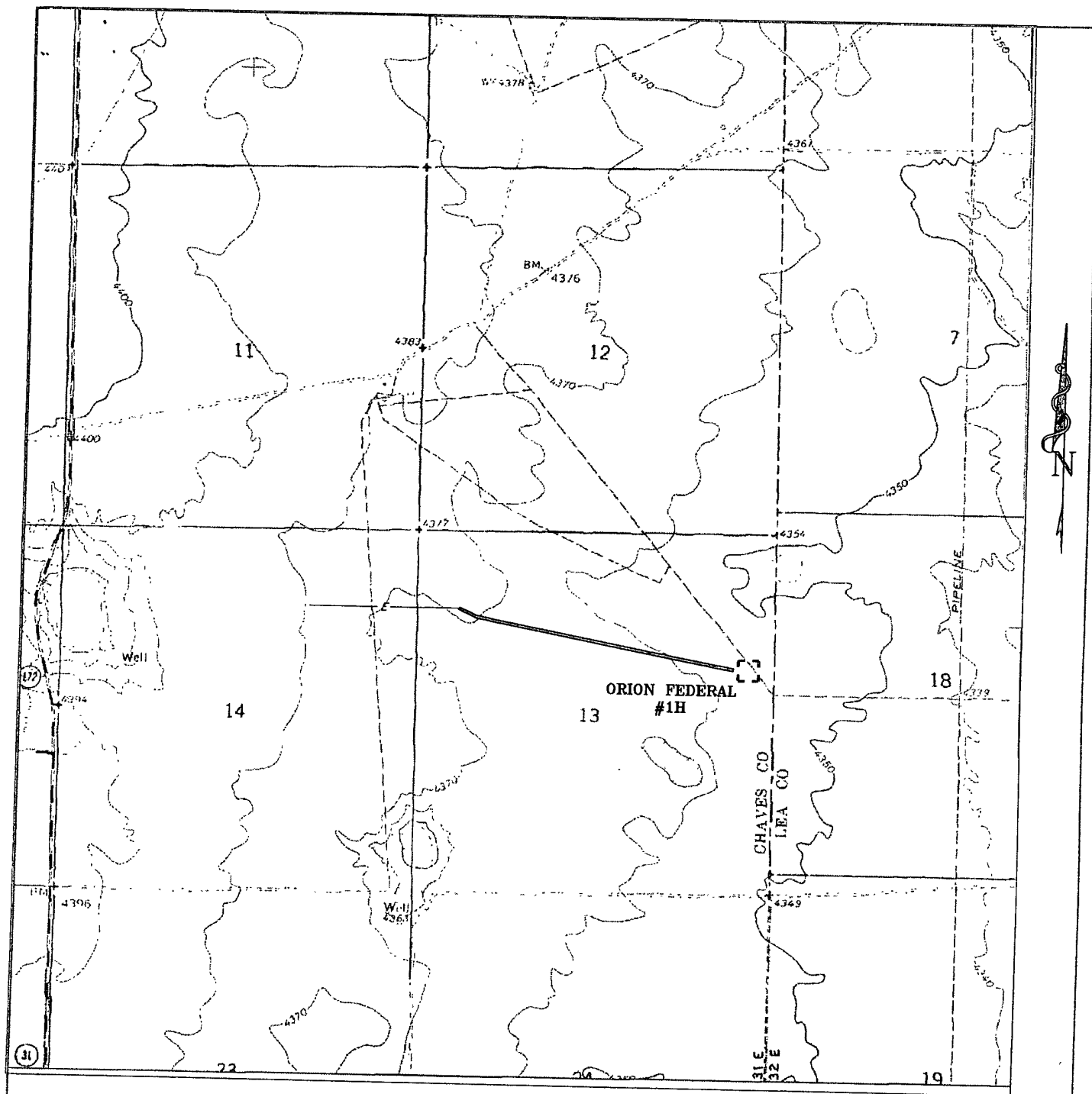
REF: PROPOSED ELEC. LINE FOR THE ORION FEDERAL #1H

AN ELECTRIC LINE CROSSING FEE LAND IN
SECTION 13, TOWNSHIP 15 SOUTH, RANGE 31 EAST,
N.M.P.M., CHAVES COUNTY, NEW MEXICO.

W.O. Number: 18579 Drawn By: J. SMALL

Date: 09-14-2007 Disk: JMS 18579E

Survey Date: 09-13-2007 Sheet 1 of 1 Sheets



PROPOSED ELECTRIC LINE TO THE ORION FEDERAL #1H
 Section 13, Township 15 South, Range 31 East,
 N.M.P.M., Chaves County, New Mexico.

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W.O. Number: JMS 18579TTT

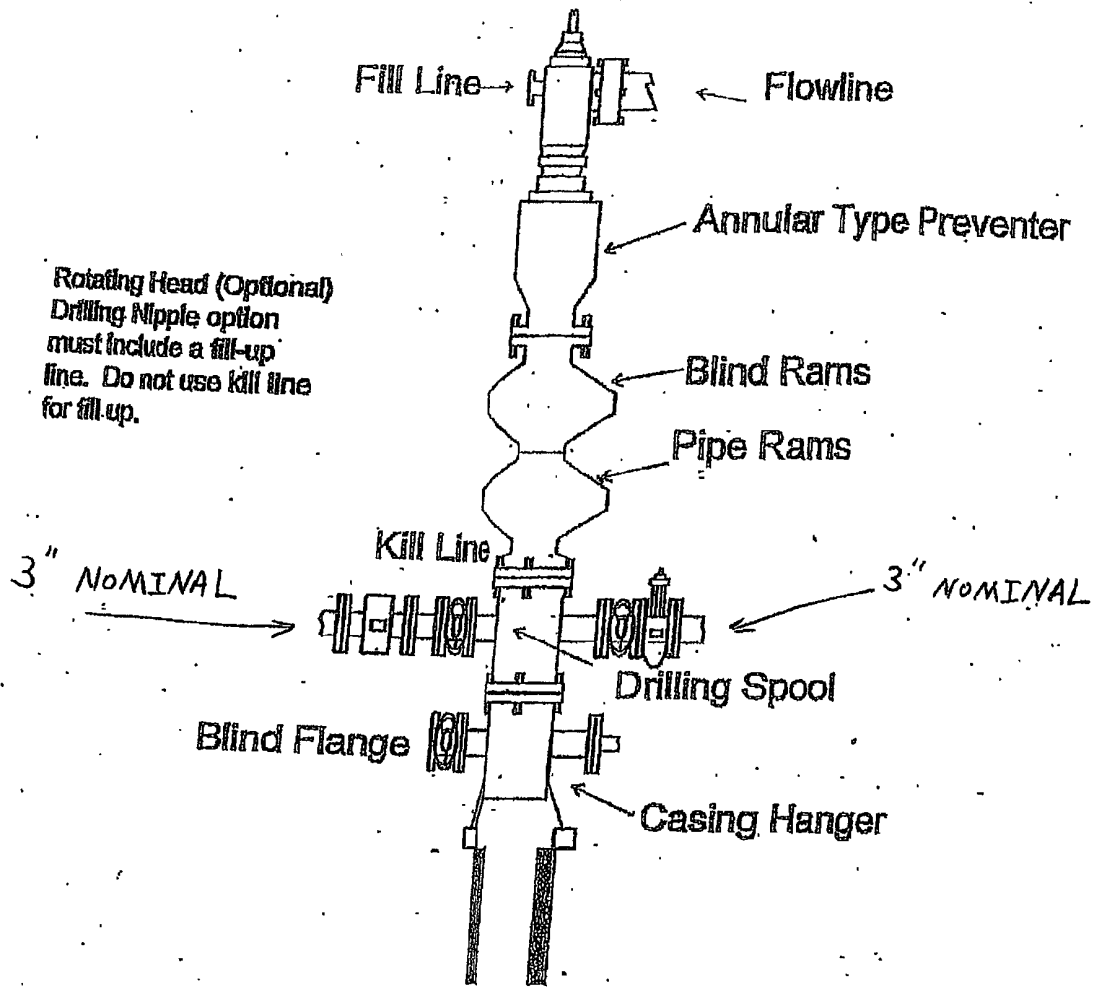
Survey Date: 09-13-2007

Scale: 1" = 2000'

Date: 09-14-2007

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