

**UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**

**APPLICATION FOR PERMIT TO DRILL OR DEEPEN**

1a. TYPE OF WORK <b>DRILL</b> <input type="checkbox"/> <b>DEEPEN</b> <input type="checkbox"/>		5. Lease designation and serial number <b>U-0803</b>	
b. TYPE OF WELL Oil <input type="checkbox"/> Gas <input checked="" type="checkbox"/> Single <input type="checkbox"/> Multiple <input type="checkbox"/> Well <input type="checkbox"/> Well <input checked="" type="checkbox"/> Other <input type="checkbox"/> Zone <input type="checkbox"/> Zone <input type="checkbox"/>		6. If Indian, Allottee or Tribe name <b>UTE INDIAN TRIBE</b>	
2. Name of Operator <b>EOG RESOURCES, INC.</b>		7. Unit Agreement Name	
3. Address and Telephone Number <b>P.O. BOX 1815, VERNAL, UT 84078 (435)789-0790</b>		8. Farm or lease name, well no. <b>NORTH DUCK CREEK</b>	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface <b>1980' FSL &amp; 660' FWL                      NW/SW                      4438824 N</b> At proposed prod. Zone <b>623914 E</b>		9. API Well No. <b>NDC 109-27</b>	
14. Distance in miles and direction from nearest town or post office <b>7.64 MILES SOUTHEAST OF OURAY, UTAH</b>		10. Field and pool, or wildcat and survey or area <b>WASATCH - Natural Buttes</b>	
15. Distance from proposed location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) <b>660'</b>		16. No. of acres in lease <b>1280</b>	17. No. of acres assigned to this well
18. Distance from proposed location to nearest well, drilling, completed, or applied for, on this lease, ft.		19. Proposed depth <b>7415'</b>	20. Rotary or cable tools <b>ROTARY</b>
21. Elevations (show whether DF, RT, GR, etc.) <b>4765.3 FEET GRADED GROUND</b>		22. Approx. date work will start <b>UPON APPROVAL</b>	

23. PROPOSED CASING AND CEMENTING PROGRAM				
SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
11"	8 5/8"	24#	200' - 220'	100-150 SX CLASS "G" + 2%
or 12 1/4"	9 5/8"	32.30#	200 - 220'	CaCl2 + 1/4 #/SX CELLOFLAKE.
7 7/8"	4 1/2"	10.50#	7415'	50/50 POXMIX + 2% GEL + 10%

SEE ATTACHMENTS FOR:

- 8 POINT PLAN
- BOP SCHEMATIC
- SURFACE USE AND OPERATING PLAN
- LOCATION PLAT
- LOCATION LAYOUT
- TOPOGRAPHIC MAPS "A", "B", AND "C"
- GAS SALES PIPELINE—MAP "D"
- FACILITY DIAGRAM

CONFIDENTIAL

EOG RESOURCES, INC. WILL BE THE DESIGNATED OPERATOR OF THE SUBJECT WELL UNDER BOND #NM 2308

Pc: UTAH DIVISION OF OIL, GAS, AND MINING  
BUREAU OF INDIAN AFFAIRS

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

SIGNED *Ed L. [Signature]* TITLE Agent DATE 5-31-2001

(This space for Federal or State office use)

PERMIT NO. 43-047-34105 APPROVAL DATE \_\_\_\_\_  
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:  
APPROVED BY \_\_\_\_\_ TITLE Oil, Gas and Mining DATE APR 01 2001

*Federal Approval of this Action Is Necessary*

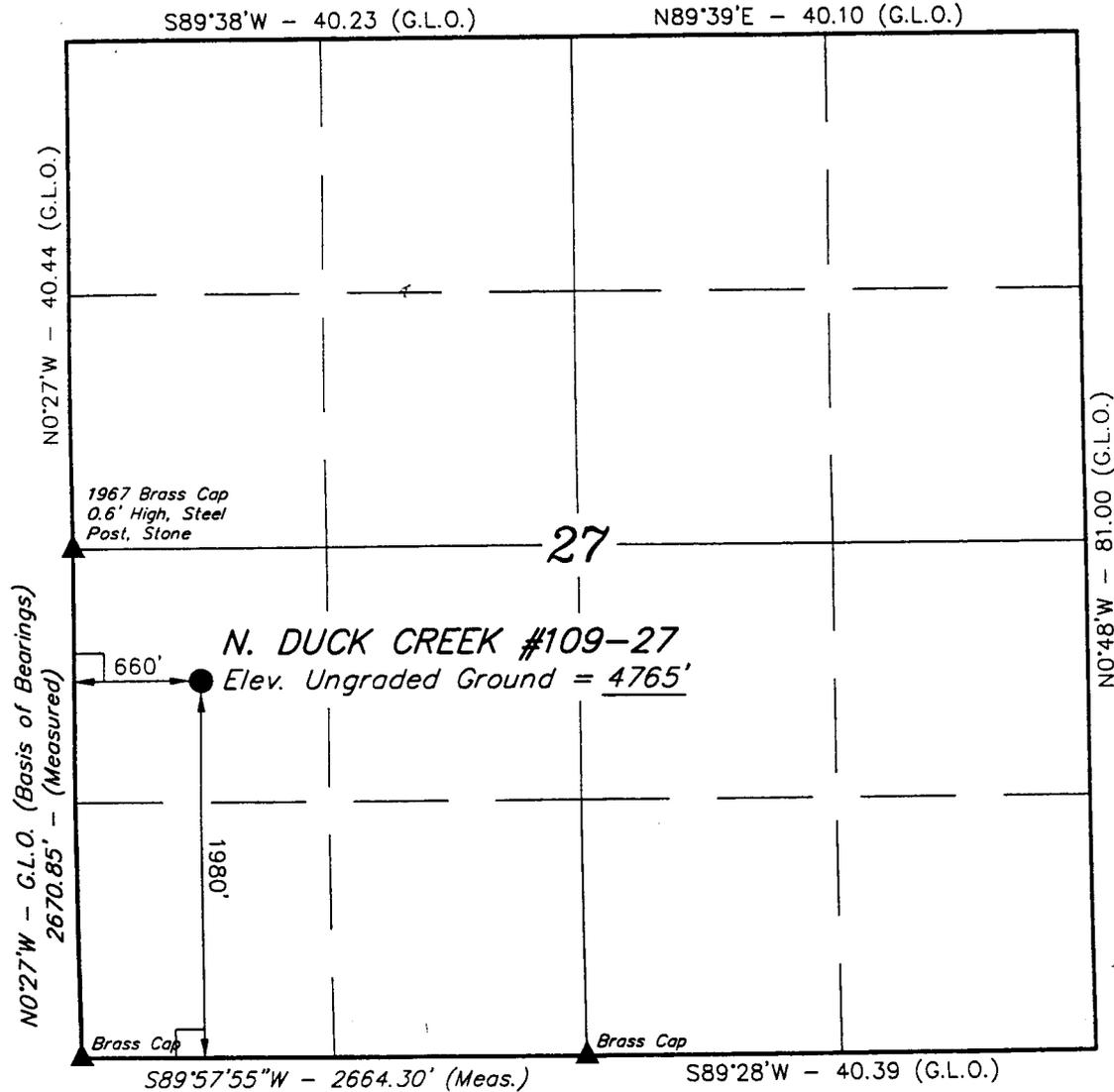
Date: 6-7-01 DIVISION OF OIL, GAS AND MINING  
By: *[Signature]*

**RECEIVED**

# T8S, R21E, S.L.B.&M.

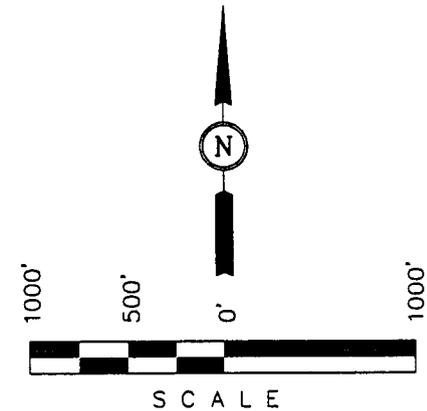
EOG RESOURCES, INC.

Well location, N. DUCK CREEK #109-27, located as shown in the NW 1/4 SW 1/4 of Section 27, T8S, R21E, S.L.B.&M. Uintah County, Utah.



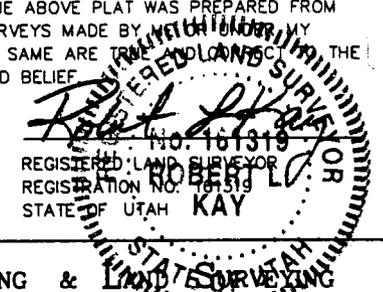
## BASIS OF ELEVATION

SPOT ELEVATION LOCATED IN THE NW 1/4 NE 1/4 OF SECTION 28, T8S, R21E, S.L.B.&M. TAKEN FROM THE OURAY SE, QUADRANGLE, UTAH, UINTAH COUNTY 7.5 MINUTE QUAD. (TOPOGRAPHIC MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED AS BEING 4796 FEET.



## CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



**UINTAH ENGINEERING & LAND SURVEYING**  
 85 SOUTH 200 EAST - VERNAL, UTAH 84078  
 (435) 789-1017

## LEGEND:

- = 90° SYMBOL
- = PROPOSED WELL HEAD.
- = SECTION CORNERS LOCATED.

LATITUDE = 40°05'32"  
 LONGITUDE = 109°32'47"

SCALE 1" = 1000'	DATE SURVEYED: 01-10-00	DATE DRAWN: 01-13-00
PARTY J.F. B.H. D.COX	REFERENCES G.L.O. PLAT	
WEATHER COLD	FILE EOG RESOURCES, INC.	

**EOG Resources, Inc.**  
**P.O. Box 250**  
**Big Piney, WY 83113**

May 31, 2001

Utah Division of Oil, Gas, & Mining  
1594 West North Temple  
Box 145801  
Salt Lake City, UT 84114-5801

**RE: APPLICATION FOR PERMIT TO DRILL  
NORTH DUCK CREEK 109-27  
NW/4SW/4, SEC. 27, T8S, R21E  
UINTAH COUNTY, UTAH  
LEASE NO.: U-0803  
UTE INDIAN TRIBE LANDS**

Enclosed please find a copy of the Application for Permit to Drill and associated attachments for the referenced well.

Please address further communication regarding this matter (including approval) to:

Ed Trotter  
P.O. Box 1910  
Vernal, UT 84078  
Phone: (435)789-4120  
Fax: (435)789-1420

Sincerely,



Ed Trotter  
Agent  
EOG Resources, Inc.

Attachments

RECEIVED

MAY 31 2001

DIVISION OF  
OIL, GAS AND MINING

**EIGHT POINT PLAN**

**NORTH DUCK CREEK 109-27**  
**NW/SW, SEC. 27, T8S, R21E, S.L.B.&M.**  
**UINTAH COUNTY, UTAH**

**1. & 2. ESTIMATED TOPS & ANTICIPATED OIL, GAS, & WATER ZONES:**

<b>FORMATION</b>	<b>DEPTH</b>	<b>TYPE ZONES</b>	<b>MAXIMUM PRESSURE</b>
Green River	2308		
Oil Shale	2308		
"H" Marker	3953		
"J" Marker	4371		
Base "M" Marker	5301		
Wasatch	5735		
Peters Point	5735	GAS	
Chapita Wells	6470	GAS	
Buck Canyon	7215	GAS	

EST. TD: 7415

Anticipated BHP 3200 PSI

**3. PRESSURE CONTROL EQUIPMENT: BOP Schematic Diagram attached.**

**4. CASING PROGRAM:**

<b><u>HOLE SIZE</u></b>	<b><u>INTERVAL</u></b>	<b><u>LENGTH</u></b>	<b><u>SIZE</u></b>	<b><u>WEIGHT</u></b>	<b><u>GRADE</u></b>	<b><u>THREAD</u></b>	<b><u>MINIMUM SAFETY FACTOR</u></b>		
							<b><u>COLLAPSE</u></b>	<b><u>BURST</u></b>	<b><u>TENSILE</u></b>
11	0' - 220'	200' - 220'	8 5/8	24.0 #	J-55	ST&C	1370 PSI	2950 PSI	263,000#
or									
12 1/4	0' - 220'	200' - 220'	9 5/8	32.3 #	H-40	ST&C	1370 PSI	2270 PSI	254,000#
7 7/8	0' - 7415'	7415'	4 1/2	10.5 #	J-55	ST&C	4010 PSI	4790 PSI	146,000#

If conductor drive pipe is used, it will be left in place if its total length is less than 20 feet below the surface. If the total length of the drive pipe is equal to or greater than 20 feet, it will be pulled prior to cementing surface casing, or it will be cemented in place. The minimum diameter of the conductor drive pipe will be 13 3/8".

All casing will be new or inspected.

**5. MUD PROGRAM**

<b><u>INTERVAL</u></b>	<b><u>MUD TYPE</u></b>
0' - 220'	Air
240' - 4000'	Air/Mist & Aerated Water
4000' - TD	Air/3% KCL water or KCL substitute

Lost circulation probable from 1500' to 3000'+/-.

**EIGHT POINT PLAN**

**NORTH DUCK CREEK 109-27**  
**NW/SW, SEC. 27, T8S, R21E, S.L.B.&M.**  
**UINTAH COUNTY, UTAH**

Sufficient mud inventory will be maintained on location during drilling to handle any adverse conditions that may arise.

**6. VARIANCE REQUESTS:**

- A. EOG Resources, Inc. requests a variance to regulations requiring a straight run blooie line (Where possible, a straight run blooie line will be used).
- B. EOG Resources, Inc. requests a variance to regulations requiring an automatic ignitor or continuous pilot light on the blooie line. (Not required on aerated water system).
- B. EOG Resources, Inc. requests a variance to regulations requiring the blooie line to be 100' in length. To reduce location excavation, the blooie line will be 75' in length.

**7. EVALUATION PROGRAM:**

Logs: Schlumberger Platform Express

AIT-GR-SP-Cal

T.D. to base of surface casing

FDC-CNL-GR-Cal-PE

T.D. to 5100'

Cores: None Programmed

DST: None Programmed

Completion: To be submitted at a later date.

Note: If hole conditions prevent the running of open hole logs, a cased hole Dipole Sonic/Neutron/Gr will be run in lieu of open hole logs.

**8. ABNORMAL CONDITIONS:**

None anticipated.

**9. STANDARD REQUIRED EQUIPMENT:**

- A. Choke Manifold
- B. Kelly Clock
- C. Stabbing Valve
- D. Visual Mud Monitoring

**EIGHT POINT PLAN**

**NORTH DUCK CREEK 109-27**  
**NW/SW, SEC. 27, T8S, R21E, S.L.B.&M.**  
**UINTAH COUNTY, UTAH**

**10. HAZARDOUS CHEMICALS:**

No chemicals subject to reporting under SARA title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the drilling of this well. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the drilling of this well.

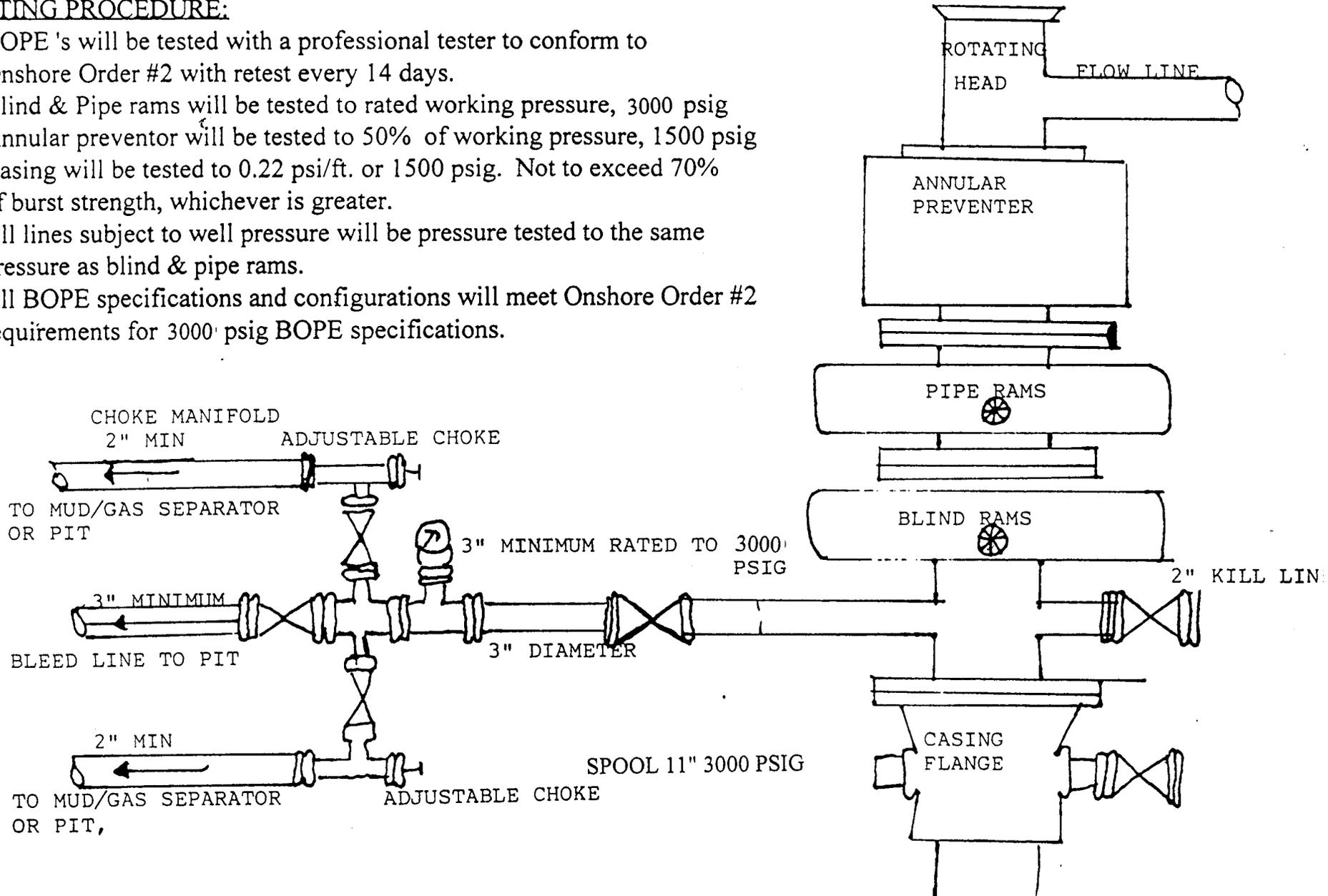
(Attachment: BOP Schematic Diagram)

## 3000 PSIG DIAGRAM

ANNULAR PREVENTOR AND BOTH RAMS ARE 3000 RATED.  
 CASING FLANGE IS 11" 3000 PSIG RATED.  
 BOPE 11" 3000 PSIG

### TESTING PROCEDURE:

1. BOPE 's will be tested with a professional tester to conform to Onshore Order #2 with retest every 14 days.
2. Blind & Pipe rams will be tested to rated working pressure, 3000 psig
3. Annular preventor will be tested to 50% of working pressure, 1500 psig
4. Casing will be tested to 0.22 psi/ft. or 1500 psig. Not to exceed 70% of burst strength, whichever is greater.
5. All lines subject to well pressure will be pressure tested to the same pressure as blind & pipe rams.
6. All BOPE specifications and configurations will meet Onshore Order #2 requirements for 3000 psig BOPE specifications.



**CONDITIONS OF APPROVAL  
FOR THE SURFACE USE PROGRAM OF THE  
APPLICATION FOR PERMIT TO DRILL**

Company/Operator: EOG Resources, Inc.  
Well Name & Number: North Duck Creek 109-27  
Lease Number: U-0803  
Location: 1980' FSL & 660' FWL, NW/SW, Sec.27,  
T8S, R21E, S.L.B.&M., Uintah County  
Surface Ownership: Ute Indian Tribe

**NOTIFICATION REQUIREMENTS**

Location Construction - forty-eight (48) hours prior to construction of location and access roads.

Location Completion - prior to moving on the drilling rig.

Spud Notice: - at least twenty-four (24) hours prior to spudding the well.

Casing String and Cementing - twenty-four (24) hours prior to running casing and cementing all casing strings.

BOP and related Equipment Tests - twenty-four (24) hours prior to running casing and tests.

First Production Notice well - within five (5) business days after new well begins or production resumes after well has been off production for more than ninety (90) days.

For more specific details on notification requirements, please check the Conditions of Approval for Notice to Drill and Surface Use Program.

## **THIRTEEN POINT SURFACE USE PROGRAM**

### **1. EXISTING ROADS**

- A. See attached Wellsite Plats showing directional reference stakes on location, and attached TOPO Map "B" showing access to location from existing roads.
- B. The proposed well site is located approximately 7.64 miles southeast of Ouray, Utah - See attached TOPO Map "A" .
- C. Refer to attached Topographic Map "A" showing labeled access route to location.
- D. Existing roads will be maintained and repaired as necessary. No off lease Right-of-Way will be required.

### **2. PLANNED ACCESS ROAD**

- A. The access road will be approximately 200 feet in length. See attached TOPO Map "B".
- B. The access road has a 30 foot ROW w/ 18 foot running surface.
- C. Maximum grade on access road will be 8%.
- D. No turnouts will be required.
- E. Road drainage crossings shall be of the typical dry creek drainage crossing type.
- F. No culverts, bridges, or major cuts and fills will be required.
- G. The access road will be dirt surface.
- H. No gates, cattleguards, or fences will be required or encountered.

New or reconstructed roads will be centerlined - flagged at time of location staking.

All travel will be confined to existing access road Right-of-Way. Access roads and surface disturbing activities will conform to standards outlined in the Bureau of Land Management and Forest Service Publication: Surface Operating Standards For Oil & Gas Exploration and Development, (1989).

The road shall be upgraded to meet the standards of the anticipated traffic flow and all-weather road requirements. Upgrading shall include ditching, drainage, graveling, crowning, and capping the roadbed as necessary to provide a well-constructed safe road. Prior to upgrading, the road shall be cleared of any snow cover and allowed to dry completely. Traveling off the 30 foot Right-of-Way will not be allowed.

Road drainage crossings shall be of the typical dry creek drainage crossing type. Crossings shall be designed so they will not cause siltation or accumulation of debris in the drainage crossings nor shall the drainages be blocked by the roadbed. Erosion of

drainage ditches by run off water shall be prevented by diverting water off at frequent intervals by means of cutouts. Upgrading shall not be allowed during muddy conditions. Should mud holes develop, they shall be filled in and detours around them avoided.

As operator, EOG Resources, Inc. shall be responsible for all maintenance on cattleguards, or gates associated with this oil and/or gas operation.

**3. LOCATION OF EXISTING WELLS WITHIN A ONE MILE RADIUS OF PROPOSED WELL LOCATION**

**A. Producing wells - 5\***

(\*See attached TOPO map "C" for location)

**4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES**

**A. ON WELL PAD**

1. Production facilities will be set on location if the well is successfully completed for production. Facilities will consist of well head valves, separator, dehy, 210 Bbl condensate tank, meter house, and attached piping.

See attached facility diagram.

2. Gas gathering lines - A 3" gathering line will be buried from dehy to the edge of the location.

**B. OFF WELL PAD**

1. Proposed location of attendant off pad flowlines shall be flagged prior to archaeological clearance.
2. A 3" OD steel above ground natural gas pipeline will be laid approximately 330' from proposed location to a point in the NW/SW of Section 27, T8S, R21E, where it will tie into Questar Pipeline Co.'s existing line. Proposed pipeline crosses BIA administered lands, thus a Right-of-Way grant will be required.
3. Proposed pipeline will be a 3" OD steel, welded line laid on the surface.
4. Protective measures and devices for livestock and wildlife will be taken and/or installed where required.

If storage facilities/tank batteries are constructed on this lease, the facility/battery or the well pad shall be surrounded by a containment dike of sufficient capacity to contain, at a minimum, the entire contents of the largest tank within the facility/battery, unless more stringent protective requirements are deemed necessary by the authorized officer.

The production facilities will be placed on the Northeast corner of the location.

All permanent (on site for six months or longer) structures constructed or installed (including pumping units) will be painted a flat, non-reflective, earthtone color to match one of the standard environmental colors, as determined by the Rocky Mountain Five State Interagency Committee. All facilities required will be painted within 6 months of installation. Facilities required to comply with O.S.H.A. (Occupational Safety and Health Act) will be excluded.

The required paint color is Carlsbad Canyon.

If at any time the facilities located on public land and authorized by the terms of the lease are no longer included in the lease (due to a construction in the unit or other lease or unit boundary change), the BIA will process a change in authorization to the appropriate rental or other financial obligation as determined by the authorized officer.

#### **5. LOCATION & TYPE OF WATER SUPPLY**

- A. Water supply will be from the Ouray Brine Plant at Ouray, Utah, and/or Target Trucking Inc.'s water source in the SW/SW, Sec. 35, T9S, R22E, Uintah County, Utah (State Water Right #49-1501). Produced water from the Chapita Wells and Stagecoach Units will also be used.
- B. Water will be hauled by Target Trucking Inc..
- C. No water well will be drilled on lease.

#### **6. SOURCE OF CONSTRUCTION MATERIAL**

- A. All construction material for this location and access road will be of native borrow and soil accumulated during the construction of the location.
- B. All construction material will come from Tribal Land.
- C. No mineral materials will be required.

#### **7. METHODS OF HANDLING WASTE DISPOSAL**

##### **A. METHODS AND LOCATION**

- 1. Cuttings will be confined in the reserve pit.
- 2. A portable toilet will be provided for human waste during the drilling and completion of the well. Disposal will be at the Vernal sewage disposal plant.
- 3. Burning will not be allowed. Trash and other waste material will be contained in a wire mesh cage and disposed of at the Uintah County landfill.
- 4. Produced wastewater will be confined to a lined pit or storage tank for a period not to exceed 90 days after initial production. After the 90

day period, the produced water will be stored in a tank on location and then disposed of at one of the following three locations: Natural Buttes Unit 21-20B SWD, Ace Disposal, or EOG Resources, Inc. drilling operations (Chapita Wells Unit, Natural Buttes Unit & Stagecoach Unit).

5. All chemicals will be disposed of at an authorized disposal site. Drip pans and absorbent pads will be used on the drilling rig to avoid leakage of oil to the pit.
- B. Water from drilling fluids and recovered during testing operations will be disposed of by either evaporating in the reserve pit or be removed and disposed of at an authorized disposal site. Introduction of well bore hydrocarbons to the reserve pit will be avoided by flaring them off in the flare pit at the time of recovery.

**On BIA administered land:**

The reserve pit will be constructed so as not to leak, break, or allow discharge.

The reserve pit shall be lined.

**8. ANCILLARY FACILITIES**

- A. No airstrips or camps are planned for this well.

**9. WELLSITE LAYOUT**

- A. Refer to attached well site plat for related topography cuts and fills and cross sections.
- B. Refer to attached well site plat for rig layout and soil material stockpile location as approved on On-site.
- C. Refer to attached well site plat for rig orientation, parking areas, and access road.

The reserve pit will be located on the West side of the location. The flare pit will be located downwind of the prevailing wind direction on the West side of the location, a minimum of 100 feet from the well head and 30 feet from the reserve pit fence.

The stockpiled topsoil will be stored between Corners #2 and #9.

Access to the well pad will be from the South.

**FENCING REQUIREMENTS:**

All pits will be fenced according to the following minimum standards:

- A. Thirty-nine inch net wire shall be used with at least one strand of barbed wire on top of the net wire. (Barbed wire is not necessary if pipe or some type of reinforcement rod is attached to the top of the entire fence).

- B. The net wire shall be no more than 2 inches above the ground. The barbed wire strand shall be 3 inches above the net wire. Total height of the fence shall be at least 42 inches.
- C. Corner posts shall be cemented and/or braced in such a manner as to keep the fence tight at all times.
- D. Standard steel, wood, or pipe posts shall be used between the corner braces. Maximum distance between any two posts shall be no greater than 16 feet.
- E. All wire shall be stretched by using a stretching device before it is attached to the corner posts.

The reserve pit fencing will be on the three sides during drilling operations and on the fourth side when the rig moves off the location. Pits will be fenced and maintained until clean-up.

Each existing fence to be crossed by the access road shall be braced and tied off before cutting so as to prevent slacking of the wire. The opening shall be closed temporarily as necessary during construction to prevent the escape of livestock, and, upon completion of construction, the fence shall be repaired to BIA or SMA specifications. A cattleguard with an adjacent 16 foot gate shall be installed in any fence where a road is to be regularly traveled. If the well is a producer, the cattleguards (shall/shall not) be permanently mounted on concrete bases. Prior to a new road, crossing any fence located on Tribal land, or any fence between Tribal land and private land, the operator will contact the BIA, who will in turn contact the grazing permittee or owner of said fence and offer him/her the opportunity to be present when the fence is cut in order to satisfy himself/herself that the fence is adequately braced and tied off.

## **10. PLANS FOR RESTORATION OF SURFACE**

### **A. PRODUCING LOCATION**

Immediately upon well completion, the location and surrounding area will be cleared of all unused tubing, equipment, debris, materials, trash, and junk not required for production.

Immediately upon well completion, any hydrocarbons on the pit shall be removed in accordance with CFR 3162.7-1.

If a plastic nylon reinforced liner is used, it shall be torn and perforated before backfilling of the reserve pit.

The reserve pit and that portion of the location not needed for production facilities/operations will be re-contoured to the approximate natural contours. The reserve pit will be reclaimed within 12 months from the date of well completion. Before any dirt work takes place, the reserve pit will be completely dry and all cans, barrels, pipe, fluid, and hydrocarbons, will be removed.

Contact appropriate surface management agency for required seed mixture.

**B. DRY HOLE/ABANDONED LOCATION**

At such time as the well is plugged and abandoned, the operator will submit a subsequent report of abandonment and the BIA will attach the appropriate surface rehabilitation conditions of approval.

**11. SURFACE OWNERSHIP**

Access road: Tribal

Location: Tribal

**12. OTHER INFORMATION**

A. EOG Resources, Inc. will inform all persons in the area who are associated with this project that they are subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator will immediately stop work that might further disturb such materials, and contact the AO. Within five working days the AO will inform the operator as to:

-whether the materials appear eligible for the National Register of Historic Places;

-the mitigation measures the operator will likely have to undertake before the site can be used.

-a time frame for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wished, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials that may be required. Otherwise, the operator will be responsible for mitigation costs.

The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that required mitigation has been completed, the operator will then be allowed to resume construction.

B. As operator, EOG Resources, Inc. will control noxious weeds along Right-of-Ways for roads, pipelines, well sites, or other applicable facilities. A list of noxious weeds will be obtained from the BIA, or the appropriate County Extension Office. On BIA administered land, a Pesticide Use proposal shall be submitted, and given approval, prior to the application of herbicides or other pesticides or possible hazardous chemicals.

C. Drilling rigs and/or equipment used during drilling operations on this well site will not be stacked or stored on Tribal Lands after the conclusion of drilling operations or at any other time without BIA authorization. However, if BIA authorization is obtained, it is only a temporary measure to allow time to make arrangements for permanent storage on commercial facilities. (The BIA does not seek to compete with private industry. There are commercial facilities available for stacking and storing drilling rigs.)

**Additional Surface Stipulations**

None

**LESSEE'S OR OPERATOR'S REPRESENTATIVE AND CERTIFICATION**

EOG Resources, Inc.	EOG Resources, Inc.	Ed Trotter
P.O. Box 250	P.O. Box 1815	P.O. Box 1910
Big Piney, WY 83113	Vernal, UT 84078	Vernal, UT 84078
Jim Schaefer	George McBride	Telephone: (435)789-4120
Telephone (307)276-3331	Telephone (435)789-0790	Fax: (435)789-1420

All lease or unit operations will be conducted in such a manner that full compliance is made with all applicable laws, regulations, Onshore Oil and Gas Orders, the approval plan of operations, and any applicable Notice to Lessees. EOG Resources, Inc. is fully responsible for the actions of their subcontractors. A copy of these conditions will be furnished to the field representative to insure compliance.

A copy of the approved APD and ROW grant, if applicable, shall be on location during construction of the location and drilling activities.

The BIA office shall be notified upon site completion prior to moving on the drilling rig.

**Certification**

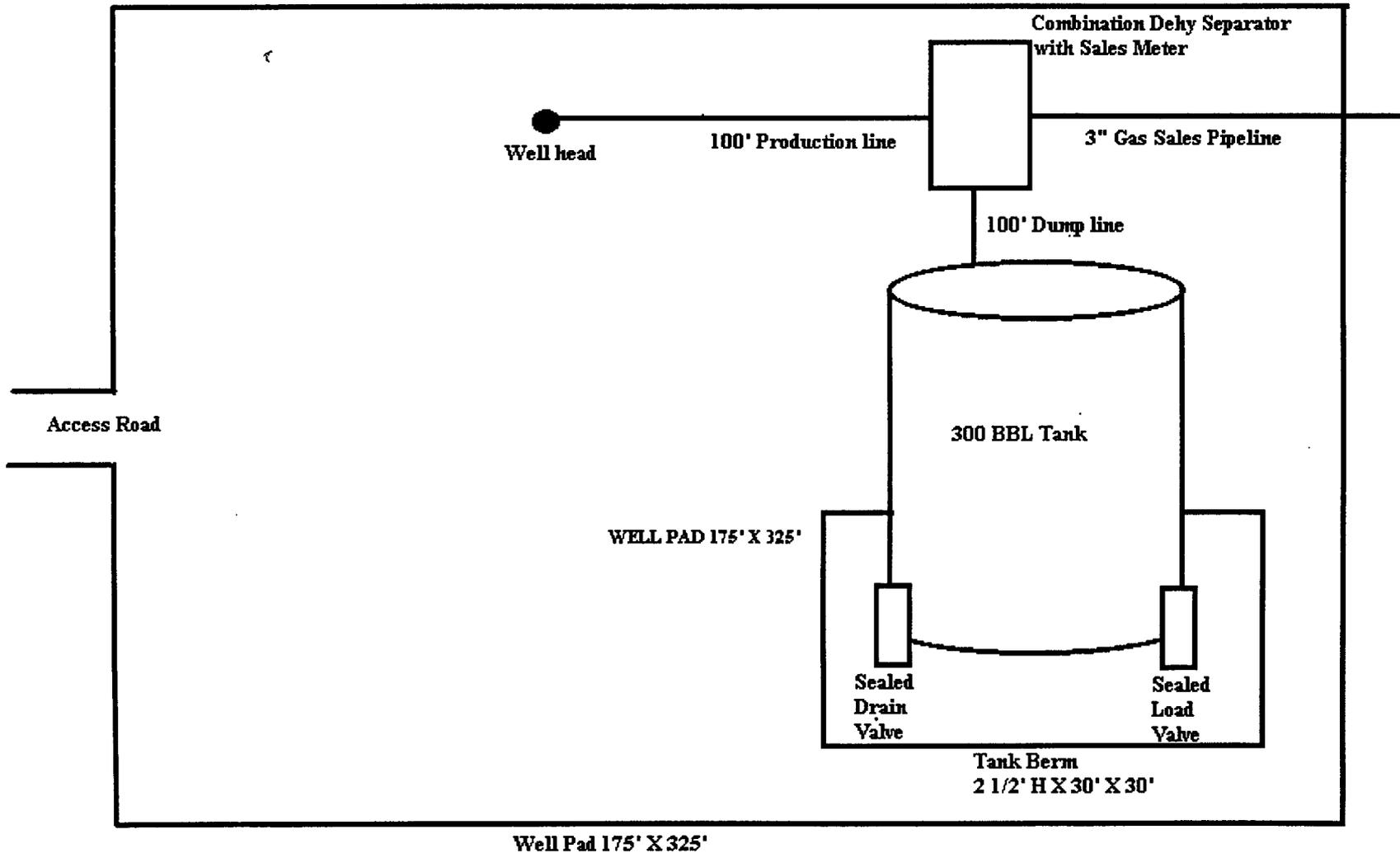
I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that presently exist; that the statements made in the Plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by EOG Resources, Inc. and its contractors and subcontractors in conformity with this Plan and the terms and conditions under which it is approved.

5-31-2001  
Date

  
Agent

**SITE FACILITY DIAGRAM  
NORTH DUCK CREEK 109-27  
SECTION 27, T8S, R21 E, NW/4SW/4  
UINTAH COUNTY, UTAH  
FEDERAL LEASE NO. U-0803**

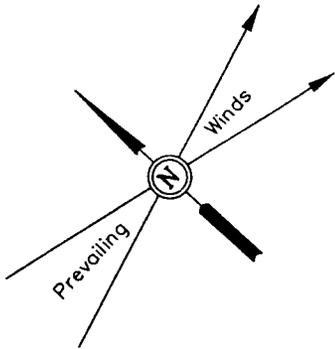
(Site Security Plan is on file at EOG Resources, Inc.'s Vernal Office)



EOG RESOURCES, INC.

LOCATION LAYOUT FOR

N. DUCK CREEK #109-27  
SECTION 27, T8S, R21E, S.L.B.&M.  
1980' FSL 660' FWL



SCALE: 1" = 50'  
DATE: 01-13-00  
Drawn By: D.COX

NOTE:  
Flare Pit is to be located a min. of 100' from the Well Head.

C-0.3'  
El. 65.6'

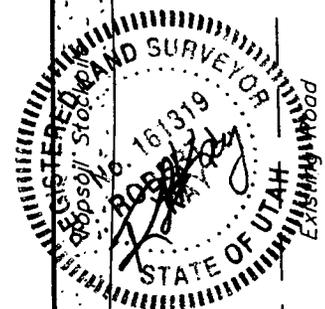
C-0.2'  
El. 65.5'

F-0.8'  
El. 64.5'

Sta. 3+25

NOTE:  
Earthwork Calculations Require a Fill of 0.2' @ the Location Stake For Balance. All Fill is to be Compacted to a Minimum of 95% of the Maximum Dry Density Obtained by AASHTO Method t-99.

Approx. Toe of Fill Slope



El. 64.2'  
C-6.9'  
(btm. pit)  
FLARE PIT

Subsoil Stockpile

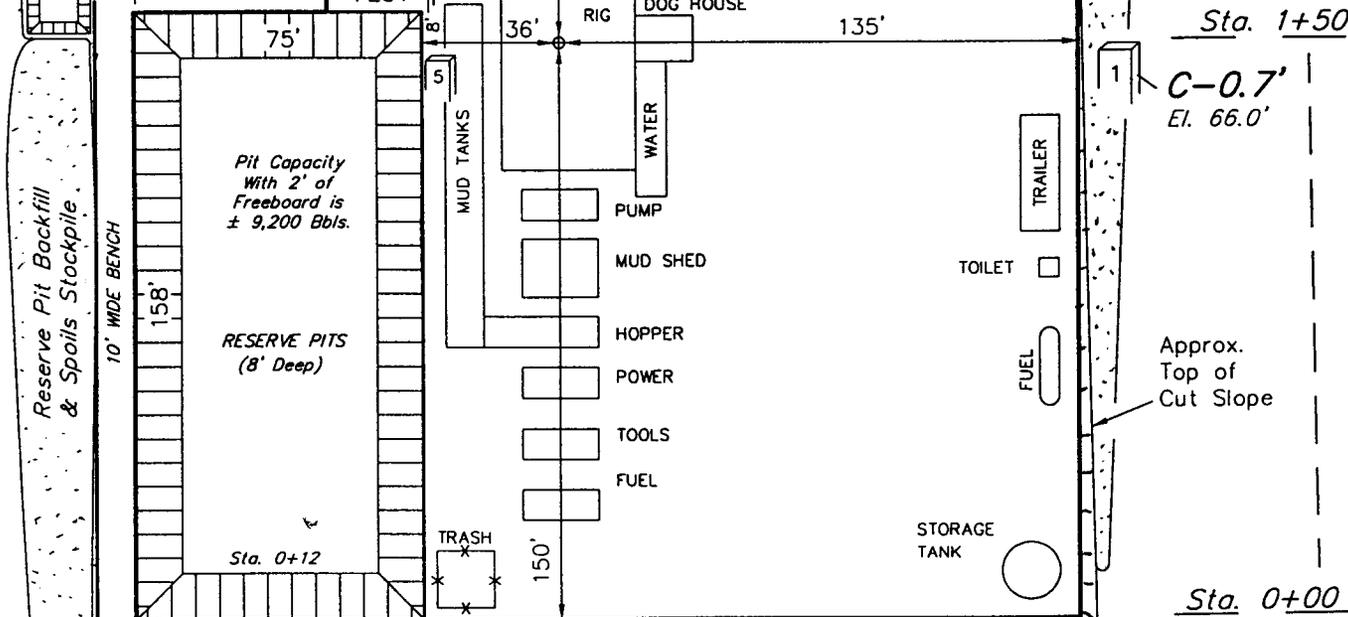
F-1.4'  
El. 63.9'

F-0.7'  
El. 64.6'

F-0.2'  
El. 65.1'

Sta. 1+50

C-0.7'  
El. 66.0'



Approx. Top of Cut Slope

Sta. 0+00

C-2.9'  
El. 68.2'

El. 66.3'  
C-9.0'  
(btm. pit)

El. 67.8'  
C-2.5'

C-2.3'  
El. 67.6'

Proposed Access Road

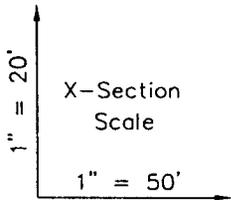
Elev. Ungraded Ground at Location Stake = 4765.1'  
Elev. Graded Ground at Location Stake = 4765.3'

UINTAH ENGINEERING & LAND SURVEYING  
85 So. 200 East • Vernal, Utah 84078 • (435) 789-1017

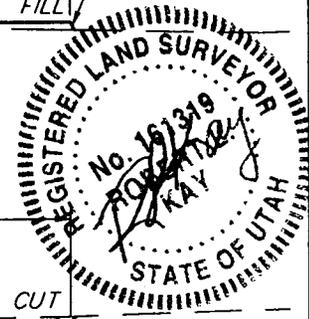
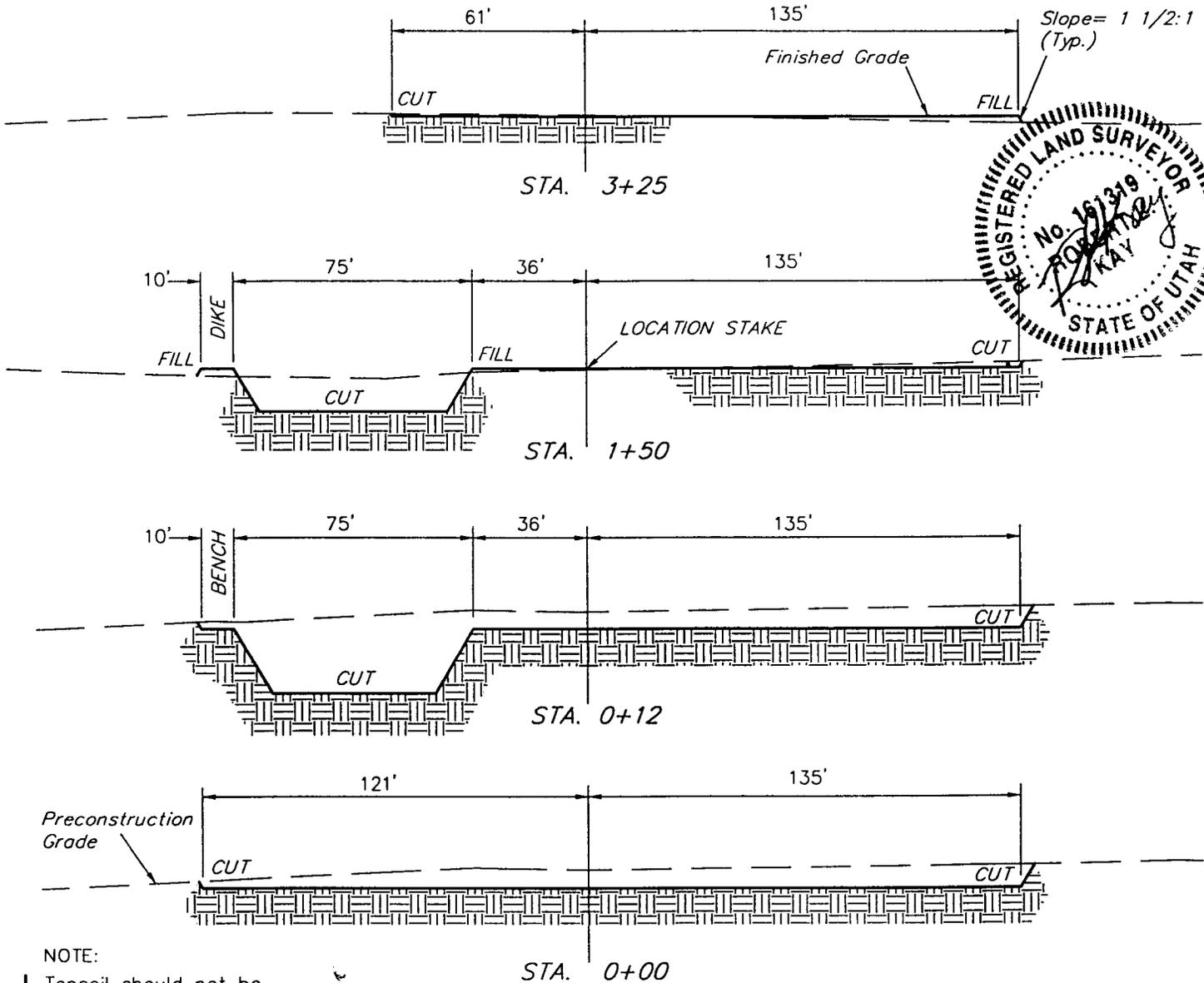
EOG RESOURCES, INC.

TYPICAL CROSS SECTIONS FOR

N. DUCK CREEK #109-27  
SECTION 27, T8S, R21E, S.L.B.&M.  
1980' FSL 660' FWL



DATE: 01-13-00  
Drawn By: D.COX

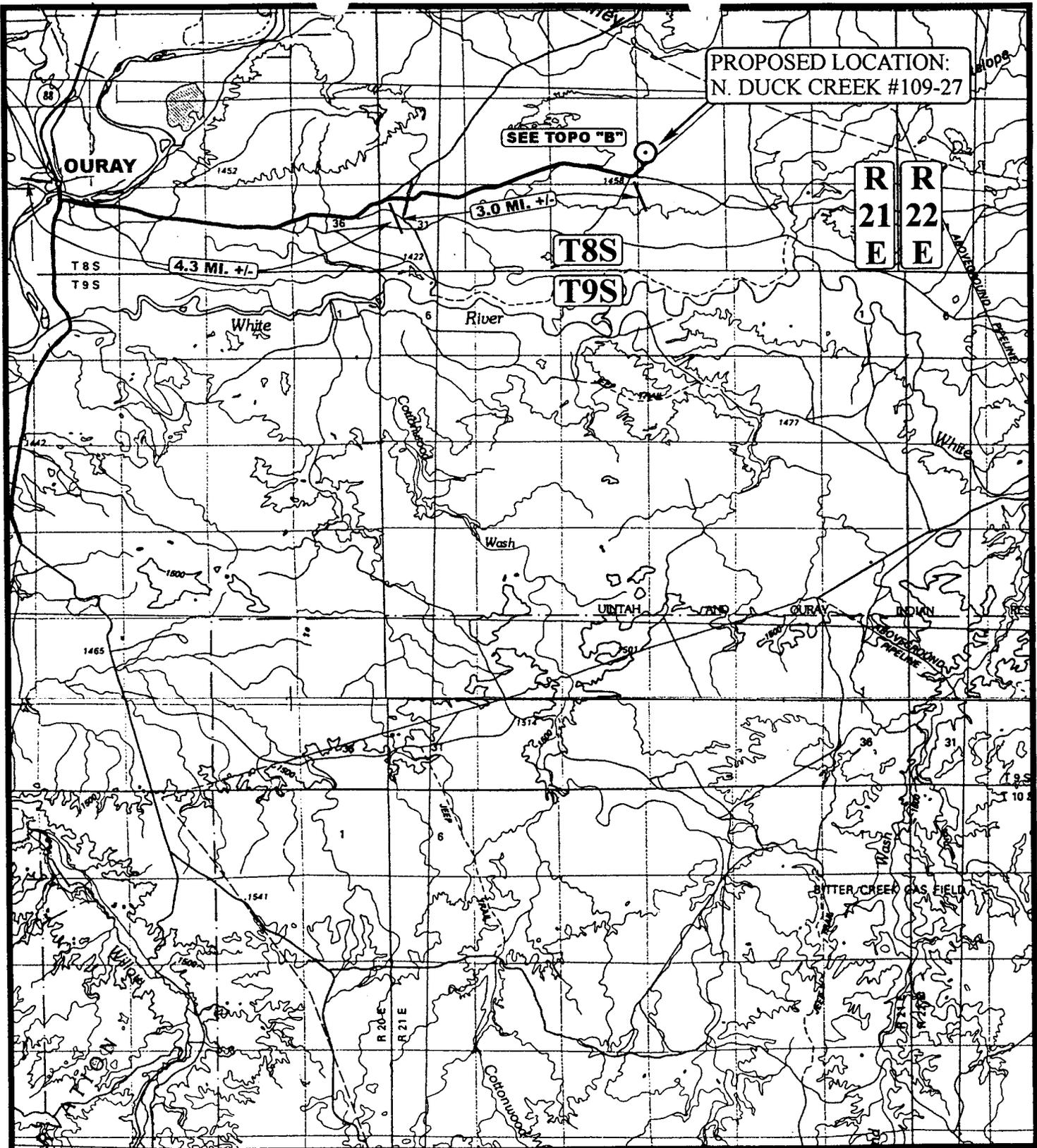


NOTE:  
Topsoil should not be Stripped Below Finished Grade on Substructure Area.

APPROXIMATE YARDAGES

(12") Topsoil Stripping	= 2,770 Cu. Yds.
Remaining Location	= 3,000 Cu. Yds.
<b>TOTAL CUT</b>	<b>= 5,770 CU.YDS.</b>
<b>FILL</b>	<b>= 1,550 CU.YDS.</b>

EXCESS MATERIAL AFTER 5% COMPACTION	= 4,140 Cu. Yds.
Topsoil & Pit Backfill (1/2 Pit Vol.)	= 4,140 Cu. Yds.
EXCESS UNBALANCE (After Rehabilitation)	= 0 Cu. Yds.



PROPOSED LOCATION:  
N. DUCK CREEK #109-27

SEE TOPO "B"

R  
21  
E  
R  
22  
E

OURAY

T8S  
T9S

T8S

T9S

4.3 MI. +/-

3.0 MI. +/-

White

River

Wash

UTAH

OURAY

ROMA

BITTER CREEK GAS FIELD

**LEGEND:**

○ PROPOSED LOCATION

**EOG RESOURCES, INC.**

N. DUCK CREEK #109-27  
SECTION 27, T8S, R21E, S.L.B.&M.  
1980' FSL 660' FWL



**Uintah Engineering & Land Surveying**  
85 South 200 East Vernal, Utah 84078  
(435) 789-1017 \* FAX (435) 789-1813

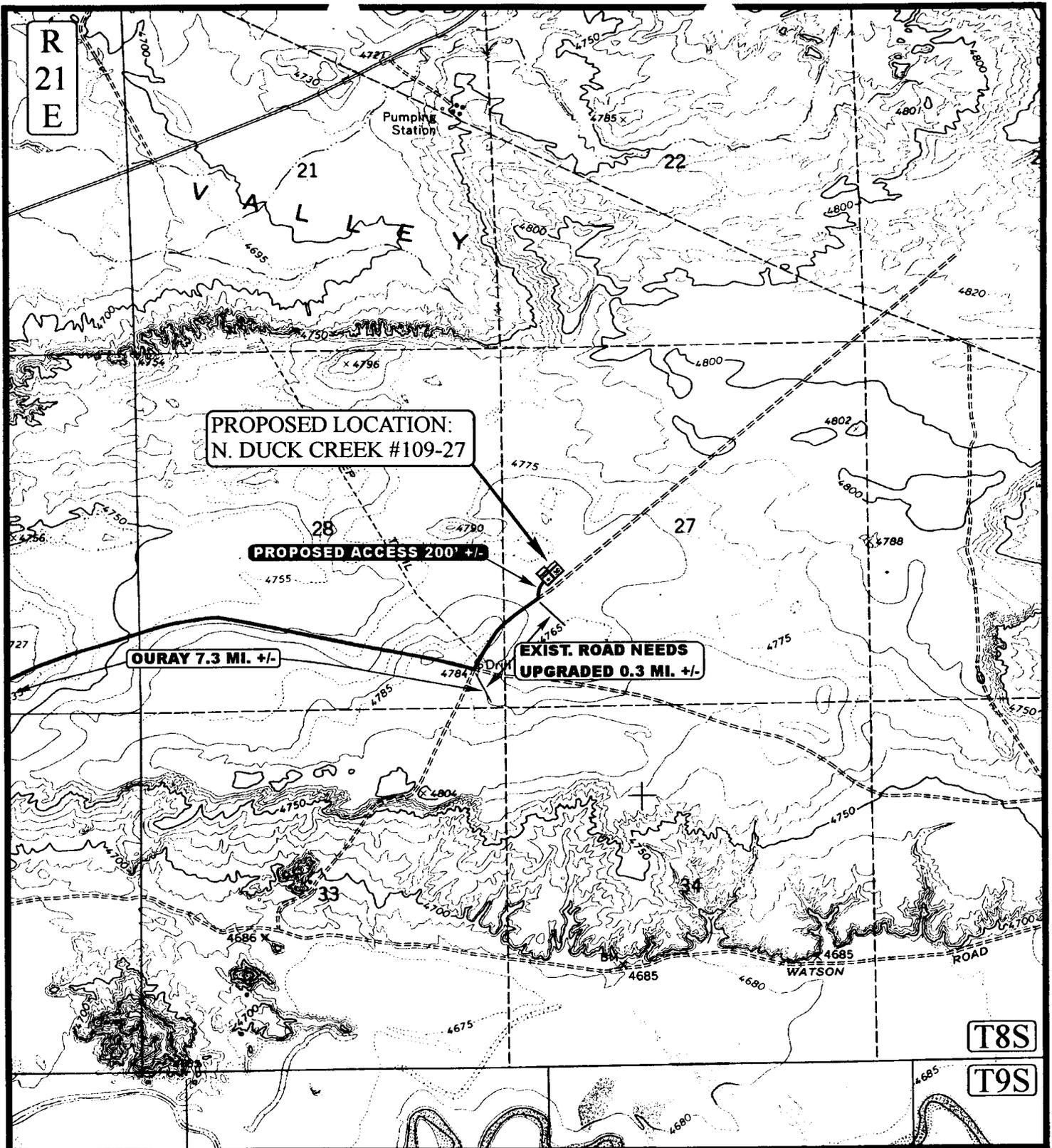


TOPOGRAPHIC  
MAP

<b>1</b>	<b>10</b>	<b>00</b>
MONTH	DAY	YEAR



SCALE: 1:100,000 DRAWN BY: J.L.G. REVISED: 00-00-00



**LEGEND:**

- PROPOSED ACCESS ROAD
- EXISTING ROAD



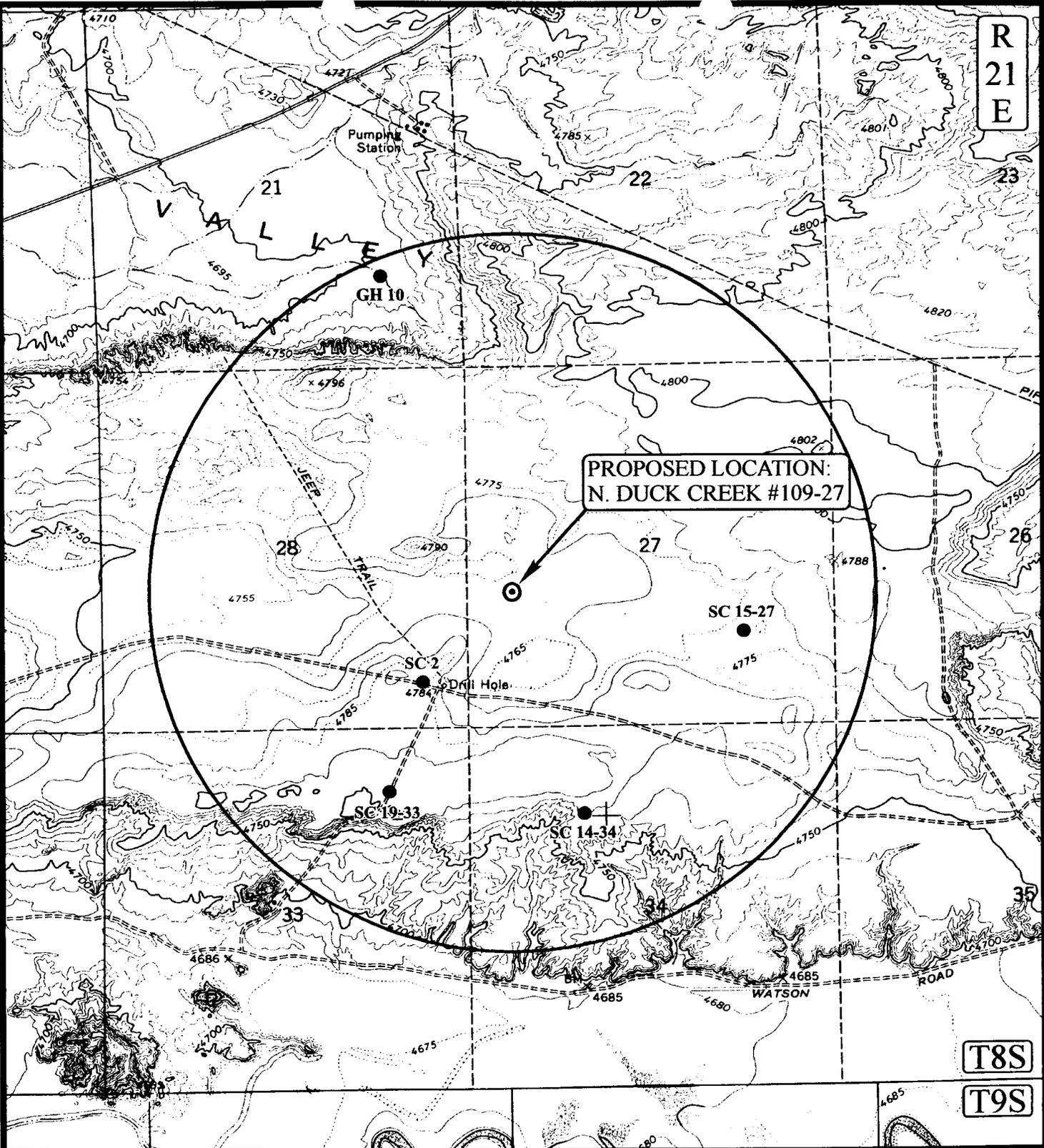
**EOG RESOURCES, INC.**

N. DUCK CREEK #109-27  
 SECTION 27, T8S, R21E, S.L.B.&M.  
 1980' FSL 660' FWL

**UELS**  
 Uintah Engineering & Land Surveying  
 85 South 200 East Vernal, Utah 84078  
 (435) 789-1017 \* FAX (435) 789-1813

<b>TOPOGRAPHIC MAP</b>	<b>1</b>	<b>13</b>	<b>00</b>	<b>B TOPO</b>
	MONTH	DAY	YEAR	
SCALE: 1" = 2000'	DRAWN BY: I.L.G.		REVISED: 00-00-00	

R  
21  
E



PROPOSED LOCATION:  
N. DUCK CREEK #109-27

T8S

T9S

LEGEND:

- ∅ DISPOSAL WELLS
- PRODUCING WELLS
- SHUT IN WELLS
- ⊕ WATER WELLS
- ABANDONED WELLS
- TEMPORARILY ABANDONED

EOG RESOURCES, INC.

N. DUCK CREEK #109-27  
 SECTION 27, T8S, R21E, S.L.B.&M.  
 1980' FSL 660' FWL



Uintah Engineering & Land Surveying  
 85 South 200 East Vernal, Utah 84078  
 (435) 789-1017 \* FAX (435) 789-1813

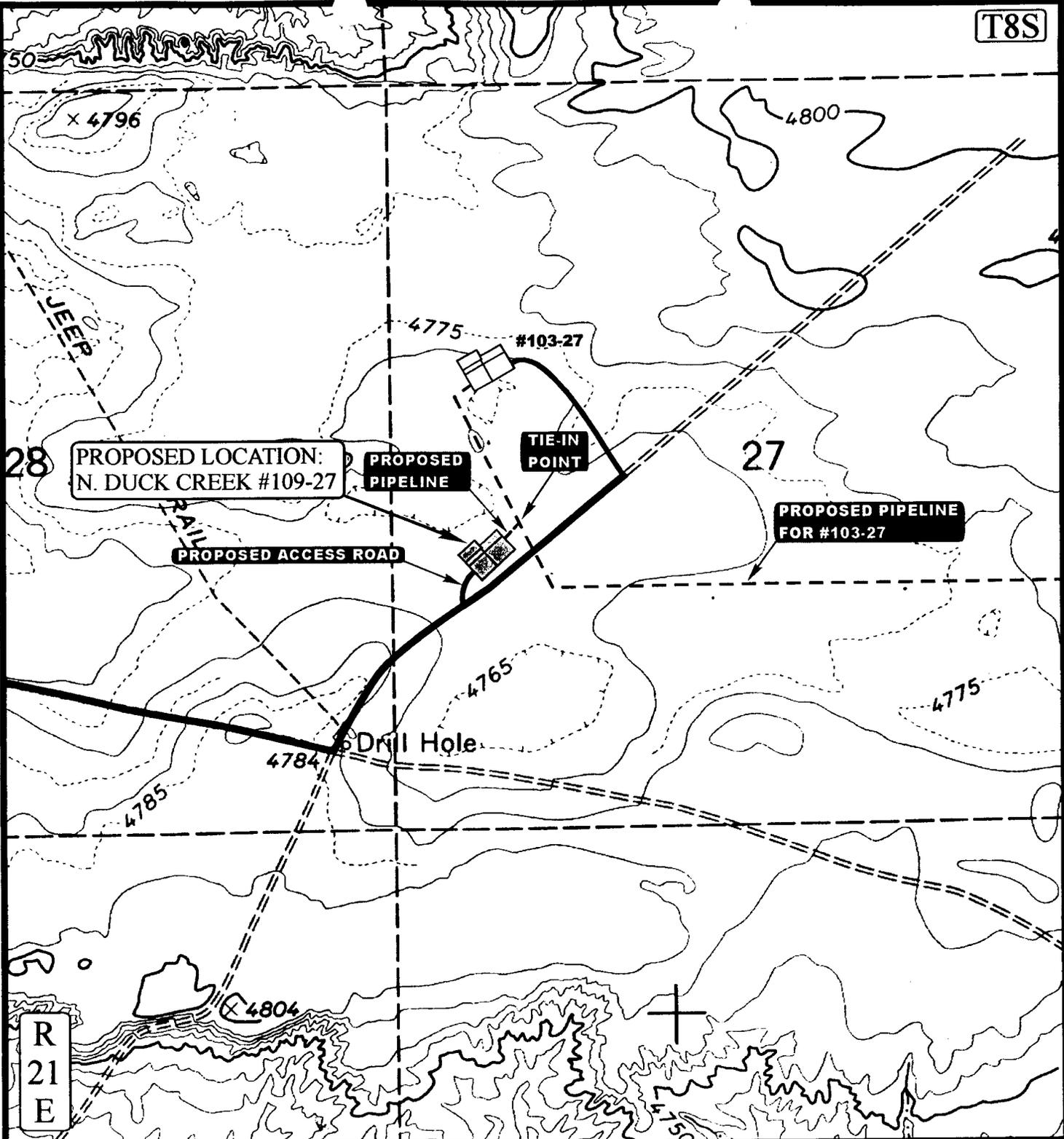
TOPOGRAPHIC  
 MAP

1 13 00  
 MONTH DAY YEAR

SCALE: 1" = 2000' DRAWN BY: J.L.G. REVISED: 00-00-00



T8S



APPROXIMATE TOTAL PIPELINE DISTANCE = 330' +/-

LEGEND:

- EXISTING PIPELINE
- - - PROPOSED PIPELINE
- PROPOSED ACCESS



EOG RESOURCES, INC.

N. DUCK CREEK #109-27  
 SECTION 27, T8S, R21E, S.L.B.&M.  
 1980' FSL 660' FWL



Uintah Engineering & Land Surveying  
 85 South 200 East Vernal, Utah 84078  
 (435) 789-1017 \* FAX (435) 789-1813

TOPOGRAPHIC  
 M A P

1	13	00
MONTH	DAY	YEAR

SCALE: 1" = 1000' DRAWN BY: J.L.G. REVISED: 00-00-00



**WORKSHEET  
APPLICATION FOR PERMIT TO DRILL**

APD RECEIVED: 06/01/2001

API NO. ASSIGNED: 43-047-34105
--------------------------------

WELL NAME: NDC 109-27  
 OPERATOR: EOG RESOURCES INC ( N9550 )  
 CONTACT: ED TROTTER, AGENT

PHONE NUMBER: 435-789-4120

PROPOSED LOCATION:  
 NSW 27 080S 210E  
 SURFACE: 1980 FSL 0660 FWL  
 BOTTOM: 1980 FSL 0660 FWL  
 UINTAH  
 NATURAL BUTTES ( 630 )

INSPECT LOCATN BY: / /		
Tech Review	Initials	Date
Engineering		
Geology		
Surface		

LEASE TYPE: 1 - Federal  
 LEASE NUMBER: U-0803  
 SURFACE OWNER: 2 - Indian

PROPOSED FORMATION: WSTC

RECEIVED AND/OR REVIEWED:

- Plat
- Bond: Fed[1] Ind[] Sta[] Fee[]  
(No. NM-2308 )
- Potash (Y/N)
- Oil Shale (Y/N) \*190-5 (B) or 190-3
- Water Permit  
(No. MUNICIPAL )
- RDCC Review (Y/N)  
(Date: \_\_\_\_\_ )
- Fee Surf Agreement (Y/N)

LOCATION AND SITING:

- R649-2-3. Unit \_\_\_\_\_
- R649-3-2. General  
Siting: 460 From Qtr/Qtr & 920' Between Wells
- R649-3-3. Exception
- Drilling Unit  
Board Cause No: 173-16  
Eff Date: 1-13-2000  
Siting: \*Gen. St.
- R649-3-11. Directional Drill

COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

STIPULATIONS: 1-Federal Approval  
 \_\_\_\_\_  
 \_\_\_\_\_





State of Utah  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt  
Governor

Kathleen Clarke  
Executive Director

Lowell P. Braxton  
Division Director

1594 West North Temple, Suite 1210  
PO Box 145801  
Salt Lake City, Utah 84114-5801  
801-538-5340  
801-359-3940 (Fax)  
801-538-7223 (TDD)

June 7, 2001

EOG Resources, Inc.  
PO Box 1815  
Vernal, UT 84078

Re: North Duck Creek 109-27 Well, 1980' FSL, 660' FWL, NW SW, Sec. 27, T. 8 South,  
R. 21 East, Uintah County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. § 40-6-1 *et seq.*, Utah Administrative Code R649-3-1 *et seq.*, and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-047-34105.

Sincerely,

A handwritten signature in black ink that reads "John R. Baza".

John R. Baza  
Associate Director

er

Enclosures

cc: Uintah County Assessor  
Bureau of Land Management, Vernal District Office

**Operator:** EOG Resources, Inc.  
**Well Name & Number** North Duck Creek 109-27  
**API Number:** 43-047-34105  
**Lease:** U 0803

**Location:** NW SW      **Sec.** 27      **T.** 8 South      **R.** 21 East

### Conditions of Approval

1. General

Compliance with the requirements of Utah Admin. R. 649-1 *et seq.*, the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

2. Notification Requirements

Notify the Division within 24 hours of spudding the well.

- Contact Carol Daniels at (801) 538-5284.

Notify the Division prior to commencing operations to plug and abandon the well.

- Contact Dan Jarvis at (801) 538-5338

3. Reporting Requirements

All required reports, forms and submittals will be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

4. State approval of this well does not supersede the required federal approval, which must be obtained prior to drilling.

**UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**

**APPLICATION FOR PERMIT TO DRILL OR DEEPEN**

1a. TYPE OF WORK <b>DRILL</b> <input type="checkbox"/> <b>DEEPEN</b> <input type="checkbox"/> b. TYPE OF WELL Oil <input type="checkbox"/> Gas <input type="checkbox"/> Single <input type="checkbox"/> Multiple <input type="checkbox"/> Well <input type="checkbox"/> Well <input type="checkbox"/> Other <input type="checkbox"/> Zone <input type="checkbox"/> Zone <input type="checkbox"/>		5. Lease designation and serial number <b>U-0803</b> 6. If Indian, Allottee or Tribe name <b>UTE INDIAN TRIBE</b> 7. Unit Agreement Name  8. Farm or lease name, well no. <b>NORTH DUCK CREEK</b> 9. API Well No. <b>NDC 109-27</b> 10. Field and pool, or wildcat <b>WASATCH</b> 11. Sec., T., R., M., or BLK. and survey or area <b>SEC. 27, T8S, R21E</b>
2. Name of Operator <b>EOG RESOURCES, INC.</b>		
3. Address and Telephone Number <b>P.O. BOX 1815, VERNAL, UT 84078 (435)789-0790</b>		
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface <b>1980' FSL &amp; 660' FWL                      NW/SW</b> At proposed prod. Zone		
14. Distance in miles and direction from nearest town or post office <b>7.64 MILES SOUTHEAST OF OURAY, UTAH</b>		
15. Distance from proposed location to nearest property or lease line, ft. <b>660'</b> (Also to nearest drig. Unit line, if any)	16. No. of acres in lease <b>1280</b>	
18. Distance from proposed location to nearest well, drilling, completed, or applied for, on this lease, ft.	19. Proposed depth <b>7415'</b>	
20. Rotary or cable tools <b>ROTARY</b>		
21. Elevations (show whether DF, RT, GR, etc.) <b>4765.3 FEET GRADED GROUND</b>		
22. Approx. date work will start <b>UPON APPROVAL</b>		

**23. PROPOSED CASING AND CEMENTING PROGRAM**

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
11"	8 5/8"	24#	200' - 220'	100-150 SX CLASS "G" + 2%
or 12 1/4"	9 5/8"	32.30#	200 - 220'	CaCl2 + 1/4 #/SX CELLOFLAKE.
7 7/8"	4 1/2"	10.50#	7415'	50/50 POXMIX + 2% GEL + 10% SALT TO 400' ABOVE ALL ZONES OF INTEREST (+10% EXCESS). LIGHT CEMENT (11PPG+) + LCM TO 200' ABOVE OIL SHALE OR FRESH WATER INTERVALS (+ 5% EXCESS).

SEE ATTACHMENTS FOR:

- 8 POINT PLAN
- BOP SCHEMATIC
- SURFACE USE AND OPERATING PLAN
- LOCATION PLAT
- LOCATION LAYOUT
- TOPOGRAPHIC MAPS "A", "B", AND "C"
- GAS SALES PIPELINE—MAP "D"
- FACILITY DIAGRAM

CONFIDENTIAL

EOG RESOURCES, INC. WILL BE THE DESIGNATED OPERATOR OF THE SUBJECT WELL UNDER BOND #NM 2308

RECEIVED  
MAY 31 2001

Pc: UTAH DIVISION OF OIL, GAS, AND MINING  
BUREAU OF INDIAN AFFAIRS

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

SIGNED *[Signature]* TITLE Agent DATE 5-31-2001

(This space for Federal or State office use)

PERMIT NO. \_\_\_\_\_ APPROVAL DATE \_\_\_\_\_ **NOTICE OF APPROVAL**  
 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:  
 APPROVED BY *[Signature]* TITLE Assistant Field Manager DATE 07/03/2001  
Mineral Resources

**CONDITIONS OF APPROVAL ATTACHED**

CONDITIONS OF APPROVAL  
APPLICATION FOR PERMIT TO DRILL

Company/Operator: EOG Resources Inc.

Well Name & Number: NORTH DUCK CREEK 109-27

API Number: 43-047-34105

Lease Number: U - 0803

Location: NWSW Sec. 27 T.08S R. 21E

Agreement: N/A

For more specific details on notification requirements, please check the Conditions of Approval for Notice to Drill and Surface Use Program.

## CONDITIONS OF APPROVAL FOR NOTICE TO DRILL

Approval of this application 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.

Be aware fire restrictions may be in effect when location is being constructed and/or when well is being drilled. Contact the appropriate Surface Management Agency for information.

### A. DRILLING PROGRAM

#### 1. Estimated Depth at Which Oil, Gas, Water, or Other Mineral Bearing Zones are Expected to be Encountered

Report ALL water shows and water-bearing sands to this office **prior to setting the next casing string or requesting plugging orders**. Faxed copies of State of Utah form OGC-8-X are acceptable. If noticeable water flows are detected, submit samples to this office along with any water analyses conducted.

All usable water and prospectively valuable minerals (as described by BLM at onsite) encountered during drilling, will be recorded by depth and adequately protected. All oil and gas shows will be tested to determine commercial potential.

#### 2. Pressure Control Equipment

The BOP and related equipment shall meet the minimum requirements of Onshore Oil and Gas Order No. 2 for equipment and testing requirements, procedures, etc., for a **3M** system and individual components shall be operable as designed. Chart recorders shall be used for all pressure tests.

Test charts, with individual test results identified, shall be maintained on location while drilling and shall be made available to a BLM representative upon request.

If an air compressor is on location and is being utilized to provide air for the drilling medium while drilling, the special drilling requirements in Onshore Oil and Gas Order No. 2, regarding air or gas drilling shall be adhered to. If a mist system is being utilized then the requirement for a deduster shall be waived.

#### 3. Casing Program and Auxiliary Equipment

Surface casing shall have centralizers on the bottom three joints, with a minimum of one centralizer per joint. Surface casing setting depths are based on ground level elevations only.

As a minimum, the usable water shall be isolated and/or protected by having a cement top for the production casing at least 200 ft. above the top of the Green River Formation, identified at  $\pm 2,285$  ft. If gilsonite is encountered while drilling, it shall be isolated and/or protected via the cementing program.

#### 4. Mud Program and Circulating Medium

Hazardous substances specifically listed by the EPA as a hazardous waste or demonstrating a characteristic of a hazardous waste will not be used in drilling, testing, or completion operations.

No chromate additives will be used in the mud system on Federal and Indian lands without prior BLM approval to ensure adequate protection of fresh water aquifers.

5. Coring, Logging and Testing Program

Daily drilling and completion progress reports shall be submitted to this office on a weekly basis.

All Drill Stem tests (DST) shall be accomplished during daylight hours, unless specific approval to start during other hours is obtained from the AO. However, DSTs may be allowed to continue at night if the test was initiated during daylight hours and the rate of flow is stabilized and if adequate lighting is available (i.e., lighting which is adequate for visibility and vaporproof for safe operations). Packers can be released, but tripping should not begin before daylight unless prior approval is obtained from the AO.

A cement bond log (CBL) will be run from the production casing shoe to top of the cement and shall be utilized to determine the bond quality for the production casing. Submit a field copy of the CBL to this office.

Whether the well is completed as a dry hole or as a producer, "Well Completion and Recompletion Report and Log" (Form 3160-4) will be submitted not later than 30 days after completion of the well or after completion of operations being performed, in accordance with 43 CFR 3164. Two copies of all logs, core descriptions, core analyses, well-test data, geologic summaries, sample description, and all other surveys or data obtained and compiled during the drilling, workover, and/or completion operations, will be filed with Form 3160-4. Samples (cuttings, fluids, and/or gases) will be submitted when requested by the AO.

6. Notifications of Operations

No location will be constructed or moved, no well will be plugged, and no drilling or workover equipment will be removed from a well to be placed in a suspended status without prior approval of the AO. If operations are to be suspended, prior approval of the AO will be obtained and notification given before resumption of operations.

Operator shall report production data to MMS pursuant to 30 CFR 216.5 using form MMS/3160.

Immediate Report: Spills, blowouts, fires, leaks, accidents, or any other unusual occurrences shall be promptly reported in accordance with the requirements of NTL-3A or its revision.

If a replacement rig is contemplated for completion operations, a "Sundry Notice" (Form

3160-5) to that effect will be filed, for prior approval of the AO, and all conditions of this approved plan are applicable during all operations conducted with the replacement rig. The date on which production is commenced or resumed will be construed for oil wells as the date on which liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank, and for which a run ticket is required to be generated or, the date on which liquid hydrocarbons are first produced into a permanent storage facility, whichever first occurs; and, for gas wells as the date on which associated liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank, and for which a run ticket is required to be generated or, the date on which gas is first measured through permanent metering facilities, whichever first occurs.

Should the well be successfully completed for production, the AO will be notified when the well is placed in a producing status. Such notification will be sent by telegram or other written communication, not later than five (5) days following the date on which the well is placed on production.

Gas produced from this well may not be vented or flared beyond an initial authorized test period of 30 days or 50 MMCF following its completion, whichever occurs first, without the prior written approval of the Authorized Officer. Should gas be vented or flared without approval beyond the authorized test period, the operator may be directed to shut-in the well until the gas can be captured or approval to continue venting or flaring as uneconomic is granted and the operator shall be required to compensate the lessor for that portion of the gas vented or flared without approval which is determined to have been avoidably lost.

A schematic facilities diagram as required by 43 CFR 3162.7-5(d) shall be submitted to the appropriate Field Office within 60 days of installation or first production, whichever occurs first. All site security regulations as specified in Onshore Oil & Gas Order No. 3 shall be adhered to. All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed in accordance with 43 CFR 3162.7-5 (1).

No well abandonment operations will be commenced without the prior approval of the AO. In the case of newly drilled dry holes or failures, and in emergency situations, oral approval will be obtained from the AO. A "Subsequent Report of Abandonment" Form 3160-5, will be filed with the AO within thirty (30) days following completion of the well for abandonment. This report will indicate where plugs were placed and the current status of surface restoration. Final abandonment will not be approved until the surface reclamation work required by the approved APD or approved abandonment notice has been completed to the satisfaction of the AO or his representative, or the appropriate Surface Managing Agency.

7. Other Information

All loading lines will be placed inside the berm surrounding the tank battery.

All off-lease storage, off-lease measurement, or commingling onlease or off-lease will have prior written approval from the AO.

The oil and gas measurement facilities will be installed on the well location. The oil and

gas meters will be calibrated in place prior to any deliveries and tested for meter accuracy at least quarterly thereafter. The AO will be provided with a date and time for the initial meter calibration and all future meter proving schedules. A copy of the meter calibration reports will be submitted to the Vernal District Office. All meter measurement facilities will conform with Onshore Oil & Gas Order No. 4 for liquid hydrocarbons and Onshore Oil & Gas Order No. 5 for natural gas measurement.

The use of materials under BLM jurisdiction will conform to 43 CFR 3610.2-3.

There will be no deviation from the proposed drilling and/or workover program without prior approval from the AO. Safe drilling and operating practices must be observed. All wells, whether drilling, producing, suspended, or abandoned will be identified in accordance with 43 CFR 3162.

"Sundry Notice and Report on Wells" (Form 3160-5) will be filed for approval for all changes of plans and other operations in accordance with 43 CFR 3162.3-2.

Section 102(b)(3) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provisions of the operating regulations at Title 43 CFR 3162.4-1(c), requires that "not later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed."

If you fail to comply with this requirement in the manner and time allowed, you shall be liable for a civil penalty of up to \$10,000 per violation for each day such violation continues, not to exceed a maximum of 20 days. See Section 109(c)(3) of the Federal Oil and Gas Royalty Management Act of 1982 and the implementing regulations at Title 43 CFR 3162.4-1(b)(5)(ii).

APD approval is valid for a period of one (1) year from the signature date. An extension period may be granted, if requested, prior to the expiration of the original approval period.

In the event after-hours approvals are necessary, you must contact one of the following individuals:

Ed Forsman                   (435) 789-7077 (HOME)           (435) 646-1685 (PAGER)  
Petroleum Engineer

Kirk Fleetwood           (435) 789-6858 (HOME)           (435) 646-1678 (PAGER)  
Petroleum Engineer

Jerry Kenczka           (435) 781-1190 (HOME)           (435) 646-1676 (PAGER)  
Petroleum Engineer

BLM FAX Machine   (435) 781-4410

EPA'S LIST OF NONEXEMPT EXPLORATION AND PRODUCTION WASTES

While the following wastes are nonexempt, they are not necessarily hazardous.

Unused fracturing fluids or acids

Gas plant cooling tower cleaning wastes

Painting wastes

Oil and gas service company wastes, such as empty drums, drum rinsate, vacuum truck rinsate, sandblast media, painting wastes, spent solvents, spilled chemicals, and waste acids

Vacuum truck and drum rinsate from trucks and drums, transporting or containing nonexempt waste

Refinery wastes

Liquid and solid wastes generated by crude oil and tank bottom reclaimers

Used equipment lubrication oils

Waste compressor oil, filters, and blowdown

Used hydraulic fluids

Waste solvents

Waste in transportation pipeline-related pits

Caustic or acid cleaners

Boiler cleaning wastes

Boiler refractory bricks

Incinerator ash

Laboratory wastes

Sanitary wastes

Pesticide wastes

Radioactive tracer wastes

Drums, insulation and miscellaneous solids.

**SURFACE USE PROGRAM  
CONDITIONS OF APPROVAL (COAs)**

EOG Resources, INC. (EOG) will assure the Ute Tribe that any/all contractors and subcontractors have acquired a current Tribal Business License and have updated "Access Permits" prior to construction. All EOG personnel, contractors and subcontractors will have these permits in their vehicles at all times. Companies that have not complied with this COA will be in violation of the Ute Tribal Business License Ordinance, and will be subject to fines and penalties.

EOG employees, representatives, and/or authorized personnel (subcontractors) shall not carry firearms on their person or in their vehicles while working on the Uintah and Ouray Indian Reservation.

EOG employees and/or authorized personnel (subcontractors) in the field will have approved applicable APDs and/or ROW permits/authorizations on their person(s) during all phases of construction.

EOG will notify the Ute Tribe and Bureau of Indian Affairs (BIA) in writing of any requested modification of APDs or Rights-Of Way (ROW). EOG shall receive written notification of authorization or denial of the requested modification. Without authorization, EOG will be subject to fines and penalties.

The Ute Tribe Energy & Minerals Department shall be notified in writing 48 hours in advance of any construction activity. The Ute Tribal office is open Monday through Thursday. A Tribal Technician is to routinely monitor construction. EOG shall make arrangements with the Ute Energy & Minerals Department for all monitoring that will exceed regular working hours for Tribal Technicians. A qualified Archaeologist accompanied by a Tribal Technician will monitor any trenching required for the construction of the pipeline. EOG is to inform contractors to maintain construction of the pipelines within approved 30 foot right of ways.

A ROW, 30 feet wide, shall be granted for the pipeline and a ROW, 30 feet wide, shall be granted for the access road. The constructed travel width of the access road will be limited to 18 feet. Upon authorization by the Ute Tribe Energy & Minerals Department, the ROW may be wider where sharp curves; deep cuts and fills occur; or, where intersections with other roads are required.

Upon completion of the pertinent APD and ROWs, EOG will notify the Ute Tribe Energy & Minerals Department for a Tribal Technician to verify the Affidavit of Completion.

Production waters, oil, and other byproducts shall not be placed on access roads or the well pad.

All vehicular traffic, personnel movement, construction and restoration operations will be confined to the areas examined and approved and to the existing roadways and/or evaluated access routes.

EOG will implement "Safety and Emergency Plan" and ensure plan compliance.

EOG shall stop construction activities and notify personnel from the Ute Tribe Energy & Minerals Department and BIA if cultural remains including paleontologic resources (vertebrate fossils) are exposed or identified during construction. The Ute Tribe Department of Cultural Rights and Protection and the BIA will provide mitigation measures prior to allowing construction.

EOG employees and/or authorized personnel (subcontractors) will not be allowed to collect artifacts and paleontologic fossils. No significant cultural resources shall be disturbed.

EOG will control noxious weeds on the well site and ROWs. EOG will be responsible for noxious weed control if weeds spread from the project area onto adjoining land.

Reserve pits will be lined with an impervious synthetic liner. About 17 rods of fence will be constructed around the reserve pit until it is backfilled. Prior to backfilling the reserve pit, all fluids will be pumped from the pit into trucks and hauled to approved disposal sites. When the reserve pits are backfilled, the surplus oil and mud, etc., will be buried a minimum of 3 feet below the surface of the soil.

A closed system will be used during production. This means that production fluids will be contained in leak-proof tanks. All production fluids will be disposed of at approved disposal sites.

Surface pipelines will be constructed to lay on the soil surface. The ROW will not be bladed or cleared of vegetation without authorization of the BIA. Where surface pipelines do not parallel roads but cross country between stations, they shall be welded in place at well sites or on access roads. They shall be pulled between stations with suitable equipment. Vehicles shall not use pipeline ROWs as access roads unless specifically authorized.

Before the site is abandoned, EOG will be required to restore the well site and ROWs to near their original state. The disturbed areas will be reseeded with desirable perennial vegetation.

Soil erosion will be mitigated by reseeded all disturbed areas.

**UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**

FORM APPROVED

Bureau No. 1004-0135  
Expires September 30, 1990

**CONFIDENTIAL**

**SUNDRY NOTICE AND REPORTS ON WELLS**

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.  
Use "APPLICATION FOR PERMIT --" for such proposals

**SUBMIT IN TRIPLICATE**

**1. Type of Well**

Oil  WELL      Gas  Well      Other

PERMIT TO OPERATOR  
NO. 5-13-02  
DATE CHD

**2. Name of Operator**

**EOG Resources, Inc.**

**3. Address and Telephone No.**

**P.O. BOX 1815, VERNAL, UT 84078      (435) 789-0790**

**4. Location of Well (Footage, Sec., T., R., M., or Survey Description)**

**1980' FSL 660' FWL (NW/SW)  
SECTION 27, T8S, R21E**

**5. Lease Designation and Serial No.**

**U-0803**

**6. If Indian, Allottee or Tribe Name**

**UTE INDIAN TRIBE**

**7. If Unit or C.A., Agreement Designation**

**8. Well Name and No.**

**NORTH DUCK CREEK 109-27**

**9. API Well No.**

**43-047-34105**

**10. Field and Pool or Exploratory Area**

**WASATCH**

**11. County      State**

**UINTAH,      UTAH**

**12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

**TYPE OF SUBMISSION**

NOTICE OF INTENT  
 SUBSEQUENT REPORT  
 FINAL ABANDONMENT NOTICE

**TYPE OF ACTION**

ABANDONMENT       CHANGE OF PLANS  
 RECOMPLETION       NEW CONSTRUCTION  
 PLUGGING BACK       NON-ROUTINE FRACTURING  
 CASING REPAIR       WATER SHUT-OFF  
 ALTERING CASING       CONVERSION TO INJECTION  
 OTHER: Requesting extension of permit to drill

(Note: Report results of multiple completion on Well Completions or Recompletion Report and Log Form.)

**13. Describe Proposed or Completed Operations (Clearly state all pertinent details and give pertinent dates, including estimated date of starting any proposed work if well is directionally drilled give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work).**

**EOG Resources, Inc. is requesting that the APD for the subject well be extended for one year.**

**Approved by the  
Utah Division of  
Oil, Gas and Mining**  
Date: 05-09-02  
By: [Signature]

**14. I hereby certify that the foregoing is true and correct**

SIGNED [Signature]

TITLE **Agent**

DATE **5/6/2002**

(This space for Federal or State office use)

**APPROVED BY**

**TITLE**

**DATE**

**CONDITIONS OF APPROVAL, IF ANY:**

Title 18 U.S.C. Section 1001, makes 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.

**RECEIVED**  
**MAY 18 2002**  
**DIVISION OF  
OIL, GAS AND MINING**

UNITED STATES  
DEPARTMENT THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
Budget Case No. 1004-0135  
Expires September 30, 1990

SUNDRY NOTICE AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.

Use "APPLICATION FOR PERMIT --" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well

Oil WELL  Gas Well  Other

2. Name of Operator

EOG Resources, Inc.

3. Address and Telephone No.

P.O. BOX 1815, VERNAL, UT 84078 (435) 789-0790

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

1980' FSL 660' FWL (NW/SW)  
SECTION 27, T8S, R21E

5. Lease Designation and Serial No.  
U-0803

6. If Indian, Allottee or Tribe Name  
UTE INDIAN TRIBE

7. If Unit or C.A., Agreement Designation

8. Well Name and No.  
NORTH DUCK CREEK 109-27

9. API Well No.  
43-047-34105

10. Field and Pool or Exploratory Area  
WASATCH

11. County State  
UINTAH, UTAH

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

TYPE OF ACTION

NOTICE OF INTENT  
 SUBSEQUENT REPORT  
 FINAL ABANDONMENT NOTICE

ABANDONMENT  
 RECOMPLETION  
 PLUGGING BACK  
 CASING REPAIR  
 ALTERING CASING  
 OTHER: Requesting extension of permit to drill  
 CHANGE OF PLANS  
 NEW CONSTRUCTION  
 NON-ROUTINE FRACTURING  
 WATER SHUT-OFF  
 CONVERSION TO INJECTION

(Note: Report results of multiple completion on Well Completions  
or Recompletion Report and Log Form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details and give pertinent dates, including estimated date of starting any proposed work if well is directionally drilled give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work).

EOG Resources, Inc. is requesting that the APD for the subject well be extended for one year.

RECEIVED  
MAY 06 2002

CONDITIONS OF APPROVAL ATTACHED

14. I hereby certify that the foregoing is true and correct

SIGNED *[Signature]* TITLE Agent DATE 5/6/2002

(This space for Federal or State office use)

APPROVED BY *[Signature]* TITLE Petroleum Engineer DATE 6/6/02

CONDITIONS OF APPROVAL, IF ANY:

RECEIVED

Title 18 U.S.C. Section 1001, makes 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.

JUN 12 2002

DIVISION OF  
OIL, GAS AND MINING

DOGM

EOG Resources, Inc.  
APD Extension

Well: CWU 109-27

Location: NWSW Sec. 27, T8S, R21E

Lease: UTU 0803

**Conditions of Approval**

An extension for the referenced APD is granted with the following condition(s):

1. The extension will expire 7/03/03
2. No other extensions beyond that period will be granted or allowed.

If you have any other questions concerning this matter, please contact Kirk Fleetwood at (435) 781-4486.

**RECEIVED**

JUN 12 2002

DIVISION OF  
OIL, GAS AND MINING

**STATE OF UTAH**  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 9

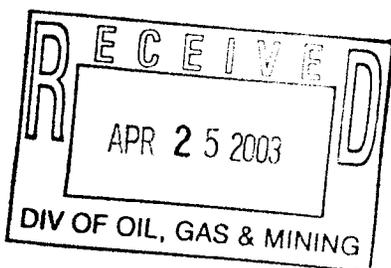
<b>SUNDRY NOTICES AND REPORTS ON WELLS</b>		5. LEASE DESIGNATION AND SERIAL NUMBER: <b>U-0803</b>
Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		6. IF INDIAN, ALLOTTEE OR TRIBE NAME: <b>UTE INDIAN TRIBE</b>
1. TYPE OF WELL OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER _____		7. UNIT or CA AGREEMENT NAME:
2. NAME OF OPERATOR: <b>EOG Resources, Inc.</b>		8. WELL NAME and NUMBER: <b>North Duck Creek 109-27</b>
3. ADDRESS OF OPERATOR: <b>P.O. Box 1910</b> CITY <b>Vernal</b> STATE <b>UT</b> ZIP <b>84078</b>		9. API NUMBER: <b>047-34105</b>
4. LOCATION OF WELL FOOTAGES AT SURFACE: <b>1980 FSL, 660 FWL</b>		10. FIELD AND POOL, OR WILDCAT: <b>Natural Buttes</b>
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: <b>NWSW 27 8S 21E</b>		COUNTY: <b>Uintah</b>
		STATE: <b>UTAH</b>

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: _____	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
<input type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion: _____	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input checked="" type="checkbox"/> OTHER: <b>Extend APD</b>
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

**EOG RESOURCES, INC.** requests that the APD for the subject well be extended for one year.



**Approved by the  
Utah Division of  
Oil, Gas and Mining**

Date: 05-01-03  
By: [Signature]

NAME (PLEASE PRINT) Ed Trotter TITLE Agent  
SIGNATURE [Signature] DATE 4/23/2003

(This space for State use only)

COPY SENT TO OPERATOR  
Date: 05-03-03  
Initials: CHD

CONFIDENTIAL

**DIVISION OF OIL, GAS AND MINING**

**SPUDDING INFORMATION**

Name of Company: EOG RESOURCES INC

Well Name: NDC 109-27

Api No: 43-047-34105 Lease Type: FEDERAL

Section 27 Township 08S Range 21E County UINTAH

Drilling Contractor CRAIGS ROUST-ABOUT SERVICES RIG # RATHOLE

**SPUDDED:**

Date 07/03/03

Time 2:00 PM

How DRY

**Drilling will commence:** \_\_\_\_\_

Reported by ED TROTTER

Telephone # 1-435-789-4120

Date 07/08/2003 Signed: CHD

**STATE OF UTAH**  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

FORM 9

5. LEASE DESIGNATION AND SERIAL NUMBER:  
**U-0803**

**SUNDRY NOTICES AND REPORTS ON WELLS**

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:  
**UTE INDIAN TRIBE**

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

7. UNIT or CA AGREEMENT NAME:

1. TYPE OF WELL      OIL WELL       GAS WELL       OTHER \_\_\_\_\_

8. WELL NAME and NUMBER:  
**NORTH DUCK CREEK 109-27**

2. NAME OF OPERATOR:  
**EOG RESOURCES, INC.**

9. API NUMBER:  
**4304734105**

3. ADDRESS OF OPERATOR:  
**P.O. BOX 1910**      CITY **VERNAL**      STATE **UT**      ZIP **84078**

PHONE NUMBER:  
**(435) 789-4120**

10. FIELD AND POOL, OR WILDCAT:  
**NATURAL BUTTES**

4. LOCATION OF WELL  
FOOTAGES AT SURFACE: **1980 FSL, 660' FWL**

COUNTY: **UINTAH**

QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: **NWSW 27 8S 21E S**

STATE: **UTAH**

11. **CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> <b>NOTICE OF INTENT</b> (Submit in Duplicate) Approximate date work will start: _____	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
<input type="checkbox"/> <b>SUBSEQUENT REPORT</b> (Submit Original Form Only) Date of work completion: _____	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input checked="" type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> OTHER: _____
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

See attachments for revised drilling program and BOP diagram.

**Accepted by the  
Utah Division of  
Oil, Gas and Mining  
FOR RECORD ONLY**

NAME (PLEASE PRINT) Ed Trotter      TITLE Agent  
SIGNATURE *Ed Trotter*      DATE 7/11/2003

(This space for State use only)

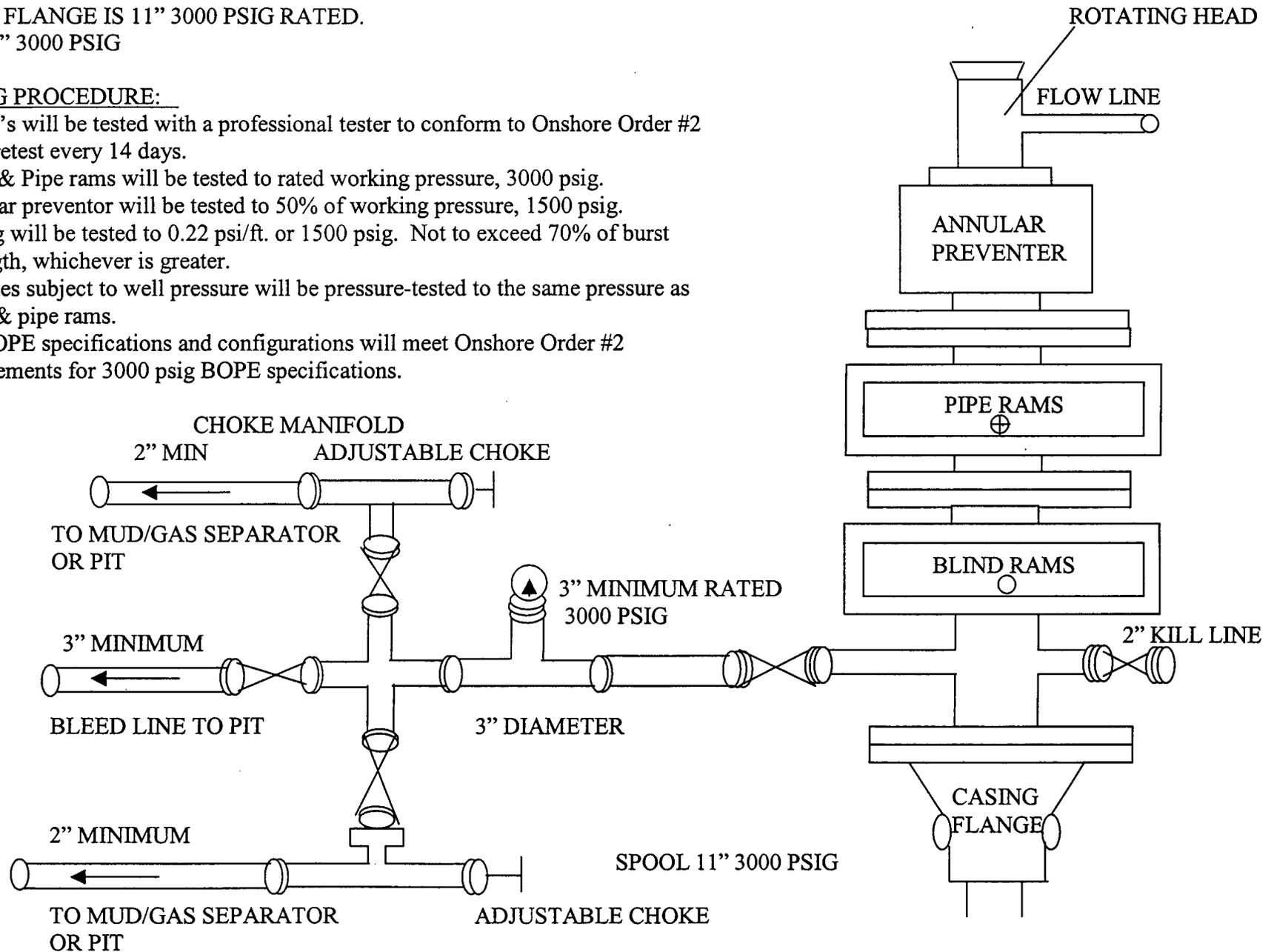
RECEIVED  
**JUL 17 2003**  
DIV. OF OIL, GAS & MINING

## 3000 PSIG DIAGRAM

ANNULAR PREVENTOR AND BOTH RAMS ARE 3000 PSIG RATED.  
 CASING FLANGE IS 11" 3000 PSIG RATED.  
 BOPE 11" 3000 PSIG

### TESTING PROCEDURE:

1. BOPE's will be tested with a professional tester to conform to Onshore Order #2 with retest every 14 days.
2. Blind & Pipe rams will be tested to rated working pressure, 3000 psig.
3. Annular preventer will be tested to 50% of working pressure, 1500 psig.
4. Casing will be tested to 0.22 psi/ft. or 1500 psig. Not to exceed 70% of burst strength, whichever is greater.
5. All lines subject to well pressure will be pressure-tested to the same pressure as blind & pipe rams.
6. All BOPE specifications and configurations will meet Onshore Order #2 requirements for 3000 psig BOPE specifications.



**EIGHT POINT PLAN**

**NORTH DUCK CREEK 109-27**  
**NW/SW, SEC. 27, T8S, R21E, S.L.B.&M.**  
**UINTAH COUNTY, UTAH**

**1. & 2. ESTIMATED TOPS & ANTICIPATED OIL, GAS, & WATER ZONES:**

<b>FORMATION</b>	<b>DEPTH (KB)</b>
Green River	2,215'
Green River Mahogany	3,147'
Green River D-Zone	3,207'
Green River E-Zone	3,367'
Green River F-Zone	3,587'
"H" Marker	4,037'

EST. TD: 4100

Anticipated BHP 1800 PSI

**3. PRESSURE CONTROL EQUIPMENT: BOP Schematic Diagram attached.**

**4. CASING PROGRAM:**

<b><u>HOLE SIZE</u></b>	<b><u>INTERVAL</u></b>	<b><u>LENGTH</u></b>	<b><u>SIZE</u></b>	<b><u>WEIGHT</u></b>	<b><u>GRADE</u></b>	<b><u>THREAD</u></b>	<b><u>RATING FACTOR</u></b>		
							<b><u>COLLAPSE</u></b>	<b><u>BURST</u></b>	<b><u>TENSILE</u></b>
12 1/4"	0' - 250'+/- KB	250' +/-	8 5/8"	24.0 #	J-55	ST&C	1370 PSI	2950 PSI	244,000#
7 7/8"	250' - TD +/-KB	4100' +/-	4 1/2"	11.6 #	J-55	ST&C	4960 PSI	5350 PSI	184,000#

All casing will be new or inspected.

**5. Float Equipment:**

**Surface Hole Procedure (0-250' Below GL):**

- Guide Shoe
- Insert Baffle
- Wooden wiper plug
- Centralizers: 1 – 5-10' above shoe, every collar for next 3 joints (4 total).

**Production Hole Procedure (250'-TD'):**

- Texas-Pattern shoe, short casing shoe joint ( $\pm 20'$ ), Float Collar, and balance of casing to surface.
- Run short casing joint ( $< 38'$ ) at  $\pm 2,100'$  (**1,000' above projected top of Green River Mahogany**). Centralize 5' above shoe on joint #1, top of joint #2, then every 4th joint to  $\pm 2,700'$  (**400' above Green River Mahogany top - 10 total**).

**6. MUD PROGRAM**

**Surface Hole Procedure (0-250' below GL):**

- Air – Air Water Mist

**EIGHT POINT PLAN**

**NORTH DUCK CREEK 109-27**  
**NW/SW, SEC. 27, T8S, R21E, S.L.B.&M.**  
**UINTAH COUNTY, UTAH**

**MUD PROGRAM (Continued):**

**Production Hole Procedure (500'-TD):**

250' - 1,700': Water (circulate through reserve pit). Anco-Drill sweeps for hole cleaning, Paper sweeps to seal off loss zones. Add LIME to reserve pit to keep clear.

1,700' – TD: Continue as above as far as possible. Should it become necessary to trip for a bit prior to reaching TD, either slug drill pipe and fill hole with brine or with 9.2-ppg mud (pre-mixed in rig mud tanks) to control gas. Once back on bottom after trip, turn flow back and re-circulate through reserve pit to resume drilling ahead. Stay on as clear of fluid as long as possible. Try to control any fluid losses if drilling on clear fluid with paper LCM. Add LIME and Gyp if needed to control alkalinities.

**7. VARIANCE REQUESTS:**

- A. EOG Resources, Inc. requests a variance to regulations requiring a straight run blooie line (Where possible, a straight run blooie line will be used).
- B. EOG Resources, Inc. requests a variance to regulations requiring an automatic ignitor or continuous pilot light on the blooie line. (Not required on aerated water system).
- B. EOG Resources, Inc. requests a variance to regulations requiring the blooie line to be 100' in length. To reduce location excavation, the blooie line will be 75' in length.

**8. EVALUATION PROGRAM:**

Logs: **Open Hole Logs: Schlumberger Platform Express TD** – Surface Casing, with Di-pole Sonic from TD to surface in 1 run. Rotary sidewall cores as needed and based upon results from first log run.

**9. CEMENT PROGRAM:**

**Surface Hole Procedure (0-250' Below GL):**

**Lead:** 180 sx. (100% excess volume) Class 'G' cement with 2% S1 (CaCl<sub>2</sub>) & 0.25 pps D29 (cellophane flakes), mixed at 15.8 ppg, 1.18 cu. ft./sk., 4.95 gps water.

**Top Out:** Top out with Class 'G' cement with 2% S1 (CaCl<sub>2</sub>) in mix water, 15.8 ppg, 1.15 cu. ft./sk., 4.95 gps via 1" tubing set at 25' if needed.

**Production Hole Procedure (250' to TD):**

**Attempt to bring lead cement to 1000' and tail cement to ± 2,700' (400' above top of Green River Mahogany).**

**EIGHT POINT PLAN**

**NORTH DUCK CREEK 109-27**  
**NW/SW, SEC. 27, T8S, R21E, S.L.B.&M.**  
**UINTAH COUNTY, UTAH**

**9. CEMENT PROGRAM Production Hole Procedure (250' to TD) (Continued):**

**Lead:** Class 'G' lead cement with 5% D44 (Salt), 12% D20 (Bentonite), 1% D79% (Extender), 0.25% D112 (Fluid Loss Additive), 0.2% D46 (Anti-Foamer) & 0.25 pps D29 (Cellophane flakes) mixed at 11.0 ppg, 3.91 ft<sup>3</sup>/sk., 24.5 gps water.

**Tail:** 50:50 Poz G w/ 2% D20 (Bentonite), 10% D44 (Salt), mixed at 14.1 ppg, 1.35 cu. ft./sk., 5.0 gps water.

**10. ABNORMAL CONDITIONS:**

**PRODUCTION HOLE (250'-TD)**

Lost circulation, asphaltic, black oil and large Trona water flows may be encountered in the Green River, beginning at  $\pm$  1,700'.

**11. STANDARD REQUIRED EQUIPMENT:**

- A. Choke Manifold
- B. Kelly Cock
- C. Stabbing Valve
- D. Visual Mud Monitoring

**12. HAZARDOUS CHEMICALS:**

No chemicals subject to reporting under SARA title III in an amount equal to or greater than 10,000 pounds will be used, produced, stored, transported, or disposed of annually in association with the drilling of this well. Furthermore, no extremely hazardous substances, as defined in 40 CFR 355, in threshold planning quantities, will be used, produced, stored, transported, or disposed of in association with the drilling of this well.

(Attachment: BOP Schematic Diagram)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB No. 1004-0135  
Expires: January 31, 2004

**SUNDRY NOTICES AND REPORTS ON WELLS**  
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.*

5. Lease Serial No.  
U 0803

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.  
NORTH DUCK CREEK 109-27

9. API Well No.  
43-047-34105

10. Field and Pool, or Exploratory Area  
NORTH DUCK CREEK/GREEN RIVER

11. County or Parish, State  
UINTAH, UTAH

**SUBMIT IN TRIPLICATE - Other instructions on reverse side**

1. Type of Well  
 Oil Well  Gas Well  Other

2. Name of Operator  
EOG RESOURCES, INC.

3a. Address  
P.O. BOX 250, BIG PINEY, WYOMING 83113

3b. Phone No. (include area code)  
(307) 276-4842

4. Location of Well (Footage, Sec., T, R., M., or Survey Description)  
1980' FSL - 600' FWL (NW/SW)  
SECTION 27, T8S, R21E

**12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other <u>SPUD</u>
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

3. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

EOG Resources, Inc. spud 12-1/4" surface hole at the subject location 7/03/2003. The constructor was Craig's Air Rig. Ed Forsman of the Vernal BLM office and Carol Daniels of the Utah Division of Oil, Gas & Mining were notified of spud 7/03/2003.

**RECEIVED**  
**JUL 21 2003**  
DIV. OF OIL, GAS & MINING

14. I hereby certify that the foregoing is true and correct  
Name (Printed/Typed)  
KATY CARLSON

Title REGULATORY ANALYST

Signature *Katy Carlson*

Date JULY 17, 2003

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by (Signature)

Name (Printed/Typed)

Title

Office

Date

Conditions of approval, if any, are attached. Approval of this notice 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.

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 next page)

STATE OF UTAH  
DIVISION OF OIL, GAS AND MINING

OPERATOR: EOG Resources, Inc.  
ADDRESS: P.O. BOX 250  
BIG PINEY, WYOMING 83113

OPERATOR ACCT. NO. 9550  
FAX: EARLENE RUSSELL  
(801) 359-3940

ENTITY ACTION FORM - FORM 6

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	LOCATION				COUNTY	SPUD DATE	EFFECTIVE DATE
					QQ	SEC.	TP	RG			
A	99999	13845	43- <sup>P19</sup> -31397	HORSE POINT 1-34	NW/SE	34	15	23	GRAND	7/16/2003	7/31/03
END											
A	99999	13846	43-047-34105	NORTH DUCK CREEK 109-27	NW/SW	27	8S	21E	UINTAH	7/3/2003	7/31/03
GRRU WSTC CONFIDENTIAL											

ACTIONS CODES (See Instructions on back of form)

- A - Establish new entity for new well (single well only)
- B - Add new well to existing entity (group or unit well)
- C - Re-assign well from one existing entity to another existing entity
- D - Re-assign well from one existing entity to a new entity
- E - Other (explain in comments section)

NOTE: Use COMMENT section to explain why each Action Code was selected.

*Kate Carlson*  
\_\_\_\_\_  
Signature  
Regulatory Analyst  
Title

7/30/2003  
\_\_\_\_\_  
Date

Phone No. (307) 276-4842

RECEIVED

JUL 31 2003

DIV. OF OIL, GAS & MINING

Jul-31-03 07:27am From=EOG - B Big Piney, WY. 3072769395 T-438 P.01/01 F-612

2

2

(3/89)

Form 3160-5  
(August 1999)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB No. 1004-0135  
Expires November 30, 2000

**SUNDRY NOTICES AND REPORTS ON WELLS**  
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.*

5. Lease Serial No.  
U-0803

6. If Indian, Allottee or Tribe Name  
Ute Indian Tribe

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

8. Well Name and No.  
North Duck Creek 109-27

9. API Well No.  
43-047-34105

10. Field and Pool, or Exploratory Area  
North Duck Creek

11. County or Parish, State  
Utah County, UT

**SUBMIT IN TRIPLICATE - Other instructions on reverse side**

1. Type of Well  
 Oil Well  Gas Well  Other

2. Name of Operator  
EOG Resources, Inc.

3a. Address  
600 17th Street, Suite 1100N, Denver, CO 80202

3b. Phone No. (include area code)  
(303) 824-5574

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
1980' FSL & 660' FWL  
NWSW, Section 27-T8S-R21E

CONFIDENTIAL

**12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other _____
	<input checked="" type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

3. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

EOG Resources, Inc. requests authorization to deepen the referenced well to a depth of 7700' in the Wasatch Formation since no perspective pay was encountered in the Green River Formation.

Please note that the casing program will be the same as described in the original APD.

Approved by the  
Utah Division of  
Oil, Gas and Mining

Date: 07-31-03  
By: [Signature]

RECEIVED  
JUL 31 2003  
DIV. OF OIL, GAS & MINING

COPY SENT TO OPERATOR  
Date: 8-4-03  
Initials: GHO

14. I hereby certify that the foregoing is true and correct

Name (Printed/Typed) \_\_\_\_\_ Title Regulatory Coordinator

Signature Sheila Bremer Date 7/31/03

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

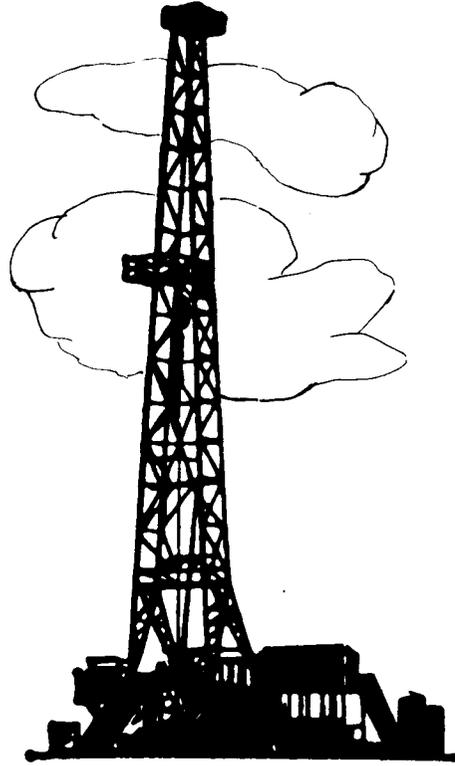
Approved by (Signature) \_\_\_\_\_ Name (Printed/Typed) \_\_\_\_\_ Title \_\_\_\_\_

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would enable the applicant to conduct operations thereon.

Office \_\_\_\_\_ Date \_\_\_\_\_

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(Continued on next page)



# ***REBEL TESTING, INC.***

## **Drill Stem Test Report**

**Accepted by the  
Utah Division of  
Oil, Gas and Mining  
FOR RECORD ONLY**

**RECEIVED  
AUG 01 2003  
DIV. OF OIL, GAS & MINING**

Box 296  
Gillette, WY 82716

Phone  
(307) 682-9626

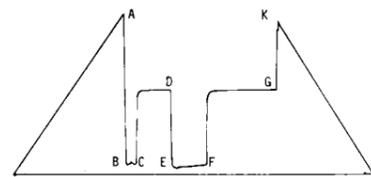
COMPANY E.O.G. RESOURCES, INC.  
LEASE NAME & NO NORTH DUCK CREEK UNIT #109-27  
INTERVAL TESTED 3221'-3310'

COUNTY UTAH  
STATE UTAH  
FORMATION GREEN RIVER "D"

DATE 07-28-2003  
TICKET # 2165  
TEST # 1

# GUIDE TO INTERPRETATION AND IDENTIFICATION OF DST CHARTS

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.



- A - Initial Hydrostatic
- B - First Initial Flow
- C - First Final Flow
- D - Initial Shut-in
- E - Second Initial Flow
- F - Second Final Flow
- G - Second Shut-in
- H - Third Initial Flow
- I - Third Final Flow
- J - Third Shut-in
- K - Final Hydrostatic

## NOMENCLATURE

Symbol	Definition	DST Unit
k	permeability	millidarcys (md)
h	pay thickness	feet (ft.)
u	viscosity	centipoise
T	reservoir temperature	°Rankin (°R)
Z	gas compressibility factor at average condition	
q <sub>sc</sub>	gas production rate	MCF/d
M	Horner slope for liquid analysis	PSI/Cycle
Mg	Horner slope for (P <sup>2</sup> ) gas analysis	PSI <sup>2</sup> /Cycle
P <sub>i</sub>	initial static reservoir pressure	PSI
P <sub>wf</sub>	flowing bottom hole pressure	PSI
φ	porosity	(fraction)
r <sub>w</sub>	well bore radius	ft.
S	skin factor	
AOF	absolute open flow	MCF/d
D R	damage ratio	
r <sub>e</sub>	external drainage radius	ft.
ISIP	initial shut-in pressure	PSI
FSIP	final shut-in pressure	PSI
b	approx. radius of investigation	ft.
t	flowing time	hrs.
B	formation volume factor	
q	liquid production rate	bbls/day
c	gas compressibility	1/PSI
c	liquid compressibility	1/PSI

### Build-Up Analysis Equations

**Pressure Analysis**

$$kh = \frac{162.6 Q \mu \beta}{M}$$

$$S = 1.151 \left[ \frac{P_{iw} - P_{wf}}{M} - \log \left( \frac{k}{\phi \mu c_{iw}^2} \right) + 3.23 \right]$$

$$\Delta P_{Skin} = \frac{141.2 Q \mu \beta S}{kh}$$

$$L = \sqrt{\frac{0.000148 k \Delta x^2}{\phi \mu c_i}}$$

$$\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$$

**Type Curve P Method**

$$kh = 141.2 Q \mu \beta \frac{P_{wo}}{\Delta P}$$

$$S = \frac{1}{2} \ln \left[ \frac{C_D e^{2s}}{2.637 \times 10^4 k \Delta t} \right]$$

$$\Delta P_{Skin} = \frac{141.2 Q \mu \beta S}{kh}$$

$$\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$$

**Pseudo-Pressure Analysis**

$$kh = \frac{1.632 \times 10^4 Q_g T}{M}$$

$$S = 1.151 \left[ \frac{\psi_{iw} - \psi_{wf}}{M} - \log \left( \frac{k}{\phi \mu c_{iw}^2} \right) + 3.23 \right]$$

$$\Delta \psi_{Skin} = \frac{1422 Q_g T S}{kh}$$

$$L = \sqrt{\frac{0.000148 k \Delta x^2}{\phi \mu c_i}}$$

$$\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$$

**Type Curve P Method**

$$kh = 141.2 Q \mu \beta \frac{P_{wo}}{\Delta P}$$

$$S = \frac{1}{2} \ln \left[ \frac{C_D e^{2s}}{2.637 \times 10^4 k \Delta t} \right]$$

$$\Delta P_{Skin} = \frac{141.2 Q \mu \beta S}{kh}$$

$$\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$$

### Fall-Off Analysis Equations

**Semi-Log Analysis**

Eq. (3.9)  $kh = \frac{162.6 Q \mu \beta}{M}$

Eq. (3.10)  $S = 1.151 \left[ \frac{P_{iw} - P_{wf}}{M} - \log \left( \frac{k}{\phi \mu c_{iw}^2} \right) + 3.23 \right]$

**Log-Log Analysis**

Eq. (4.4)  $kh = 141.2 Q \mu \beta \frac{P_{wo}}{\Delta P}$

Eq. (3.10)  $S = \frac{1}{2} \ln \left[ \frac{C_D e^{2s}}{2.637 \times 10^4 k \Delta t} \right]$

Pressure drop due to skin

Eq. (2.9)  $\Delta P_{Skin} = \frac{141.2 Q \mu \beta S}{kh}$

Flow Efficiency  $FE = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$  Eq. (2.12)

Investigation radius = 0.029  $\sqrt{\frac{k \Delta t}{\phi \mu c_i}}$  Eq. (2.41)

Skin due to Partial Perforations

Eq. (2.20)  $S_p = \left( \frac{h_i}{h_p} - 1 \right) \left[ \ln \left( \frac{h_i}{h_p} \sqrt{\frac{k_w}{k_p}} \right) - 2 \right]$

Advances in Well Test Analysis  
Robert C. Earlougher Jr.

Well Testing  
John Lee

Monograph Volume 5 of the Henry L. Doherty Series

SPE Textbook Series Vol 1



# REBEL TESTING, INC.

Gillette WY  
Ph (307) 682-9626

Technical Services  
(928) 505-8389

<b>Contractor</b>	Key Energy	<b>Surface Choke</b>	1/4"	<b>Mud Type</b>	LSND
<b>Rig No.</b>	942	<b>Bottom Choke</b>	3/4"	<b>Weight</b>	8.7
<b>Spot</b>	NW/SW	<b>Hole Size</b>	7 7/8"	<b>Viscosity</b>	38
<b>Sec</b>	27	<b>Core Hole Size</b>		<b>Water Loss</b>	9.6
<b>Twp</b>	8 S	<b>DP Size &amp; Wt</b>	4 1/2" 20.00	<b>Filter Cake</b>	
<b>Rng</b>	21 E	<b>WT Pipe</b>		<b>RW</b>	3.0 @ 93 Deg F
<b>Field</b>	Wasatch	<b>ID of DC</b>	2 1/4"		1,385 Ppm
<b>County</b>	Uintah	<b>Length of DC</b>	240'	<b>B.H.T.</b>	107.6
<b>State</b>	Utah	<b>Total Depth</b>	3310'		
<b>Elevation</b>		<b>Type of Test</b>	Conventional	<b>Co. Rep.</b>	Hubert Hays
<b>Formation</b>	Green River "D"	<b>Interval</b>	3221'- 3310'	<b>Tester</b>	Bob Hammond

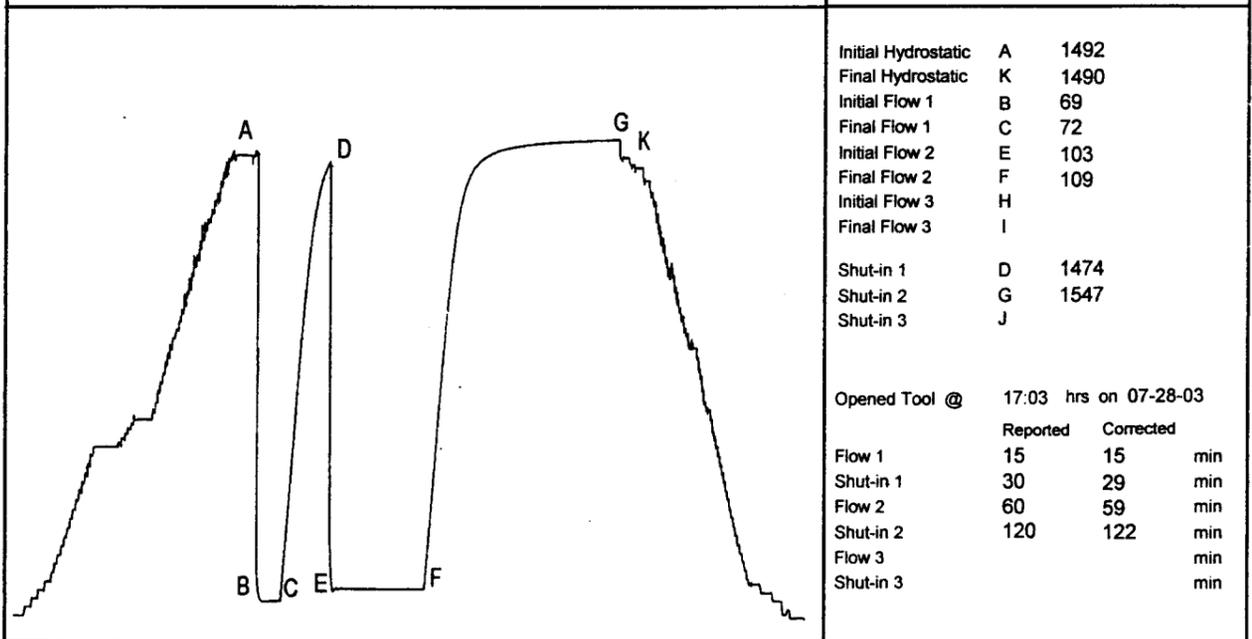
Pipe recovery:  
245' Slightly gas cut mud = 1.2 bbl.

Top rw: 1.8 @ 88 deg f/2,501 ppm NaCl.  
Middle rw: 1.5 @ 90 deg f/2,965 ppm NaCl.  
Bottom rw: 1.5 @ 88 deg f/3,031 ppm NaCl.

<b>Pressure in Sampler</b>	1450	psig
<b>Volume of Sampler</b>	2150	cc
<b>Volume of Sample</b>	No fluid	cc
<b>Oil:</b>	0	cc
<b>Water:</b>	0	cc
<b>Mud:</b>	0	cc
<b>Gas:</b>	9.24	cu ft
<b>Other:</b>	0	

Gas/Oil Ratio  
Gravity API @ 60 Deg F

<b>Gauge Type</b>	Sunada Electronic	
<b>No.</b>	30091	Cap 10000 psi
<b>Depth</b>	3201	
<b>Inside</b>	X	Outside



<b>Opened Tool @</b>	17:03 hrs on 07-28-03
	Reported Corrected
Flow 1	15 15 min
Shut-in 1	30 29 min
Flow 2	60 59 min
Shut-in 2	120 122 min
Flow 3	
Shut-in 3	

Drill-Stem-Test Reporting By:

*Michael Hudson*  
DATA REPORTING SERVICES

P.O. Box 722 Ph. (520) 505-8389  
LAKE HAVASU CITY, AZ 86405

COMPANY  
E.O.G. RESOURCES, INC.  
LEASE NAME & NO  
NORTH DUCK CREEK UNIT #109-27  
INTERVAL TESTED 3221'- 3310'

COUNTY  
UTAH  
STATE  
GREEN RIVER "D"

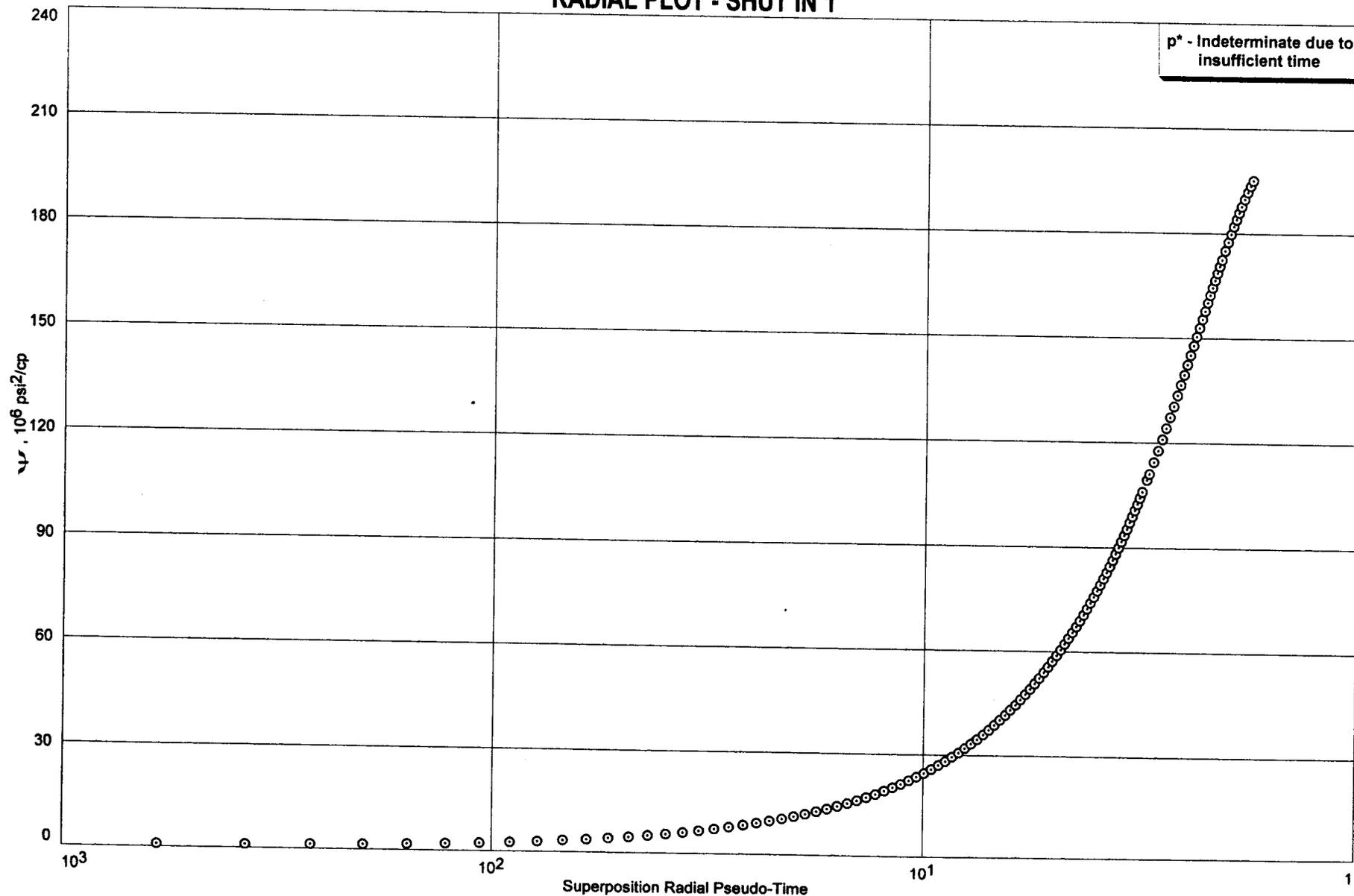
DATE  
07-28-2003  
TICKET #  
2165  
TEST #  
1





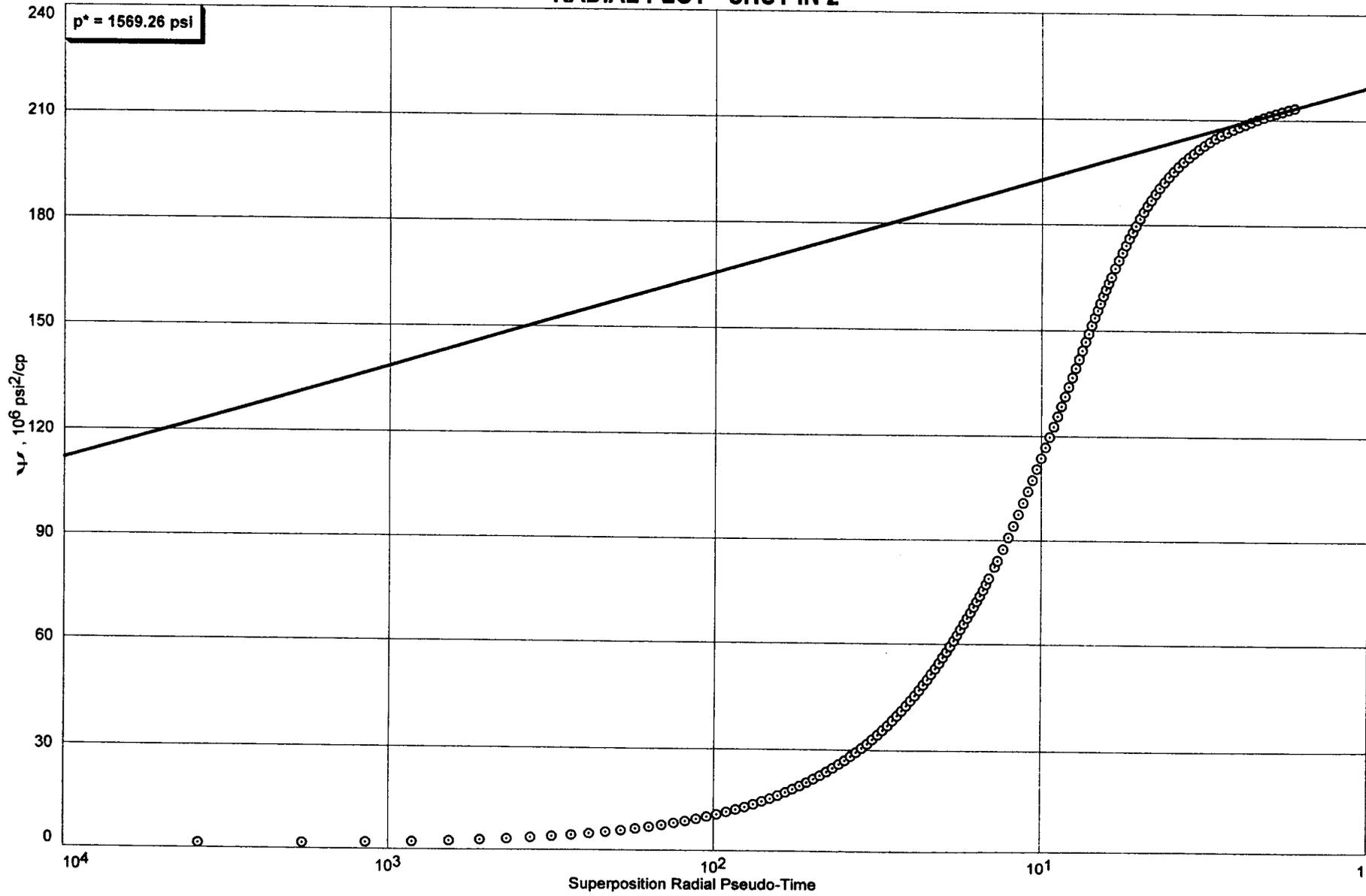
E.O.G. Resources  
North Duck Creek Unit 109-27, Dst 1  
Gauge 30091

### RADIAL PLOT - SHUT IN 1



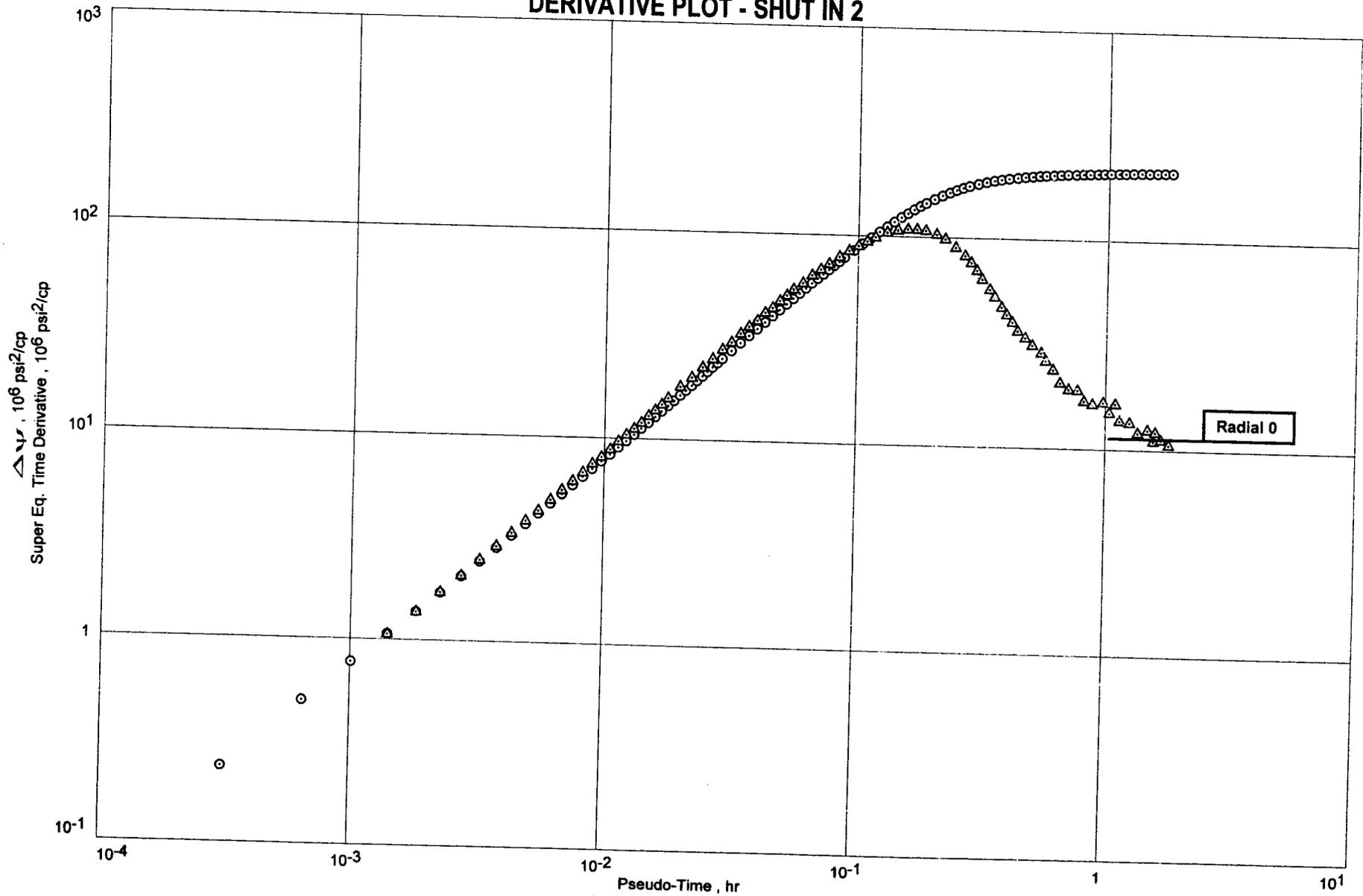
E.O.G. Resources  
North Duck Creek Unit 109-27, Dst 1  
Gauge 30091

### RADIAL PLOT - SHUT IN 2

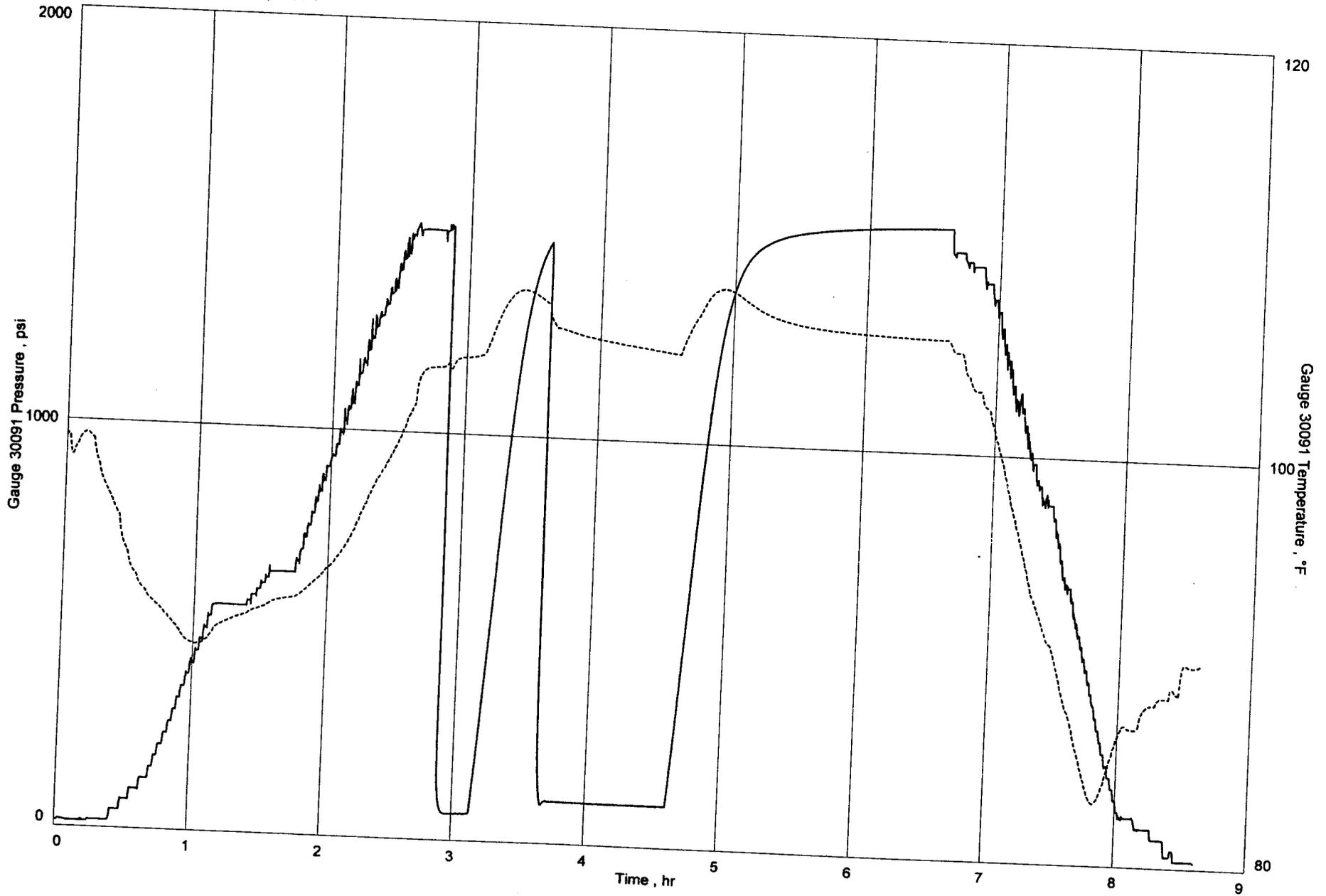


E.O.G. Resources  
North Duck Creek Unit 109-27, Dst 1  
Gauge 30091

### DERIVATIVE PLOT - SHUT IN 2



E.O.G. Resources  
North Duck Creek Unit 109-27, Dst 1



E.O.G. Resources, Inc.  
North Duck Creek Unit #109-27

## DISTRIBUTION OF FINAL REPORTS

Curt Parsons [1 + Disk]  
E.O.G. Resources, Inc.  
Box 250  
Big Piney WY 83113

Linda Munoz [1]  
E.O.G. Resources, Inc.  
600-17th St., Ste 1100 N.  
Denver CO 80202

Delores Montoya [1]  
E.O.G. Resources, Inc.  
600-17th St., Ste 1100 N.  
Denver CO 80202

Tammy Clayton [1]  
E.O.G. Resources, Inc.  
333 Clay St., Ste 4200  
Houston TX 77002

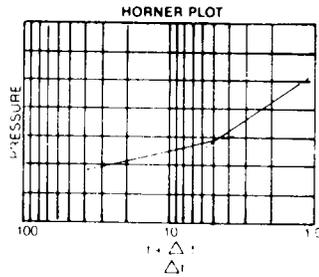
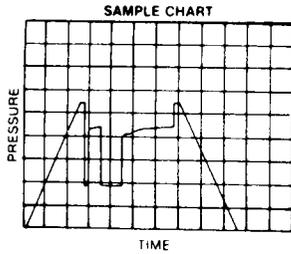
Shenandoah Energy, Inc. [3]  
1050-17th St., Ste 500  
Denver CO 80265

Mike Hackney [1]  
Petroglyph Energy, Inc.  
555 S. Cole Rd.  
Boise ID 83709

Dave Howell [2]  
Bureau of Land Management  
170 S. 500 E.  
Vernal UT 84078

Oil & Gas Supervisor [2]  
Utah Division of Oil, Gas & Mining  
Box 145801  
Salt Lake City UT 84114

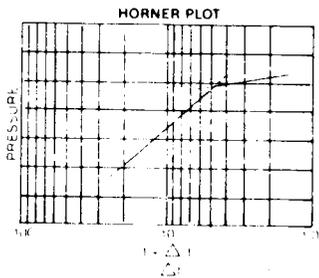
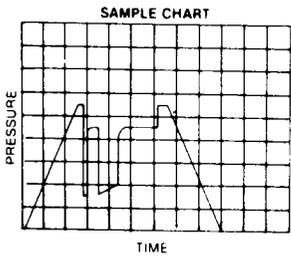
# GUIDE TO DETECTION OF GEOLOGICAL ANOMALIES



### Horner Plot Slope Breaks Upward

#### Possible Causes

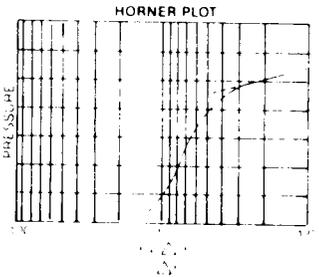
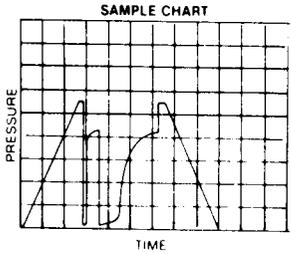
- (1) decrease in pay thickness away from the wellbore
- (2) decrease in permeability away from the wellbore
- (3) increase in viscosity of reservoir fluid (fluid contact)
- (4) barrier within the radius of investigation



### Horner Plot Slope Breaks Downward

#### Possible Causes

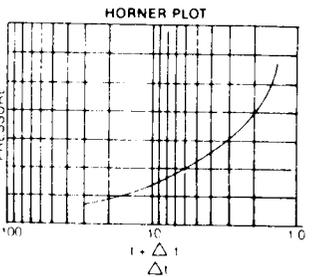
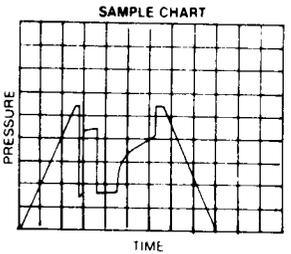
- (1) increase in pay thickness away from the wellbore
- (2) increase in permeability away from the wellbore
- (3) decrease in viscosity away from the wellbore



### Early Time Deviation of Horner Plot

#### Possible Causes

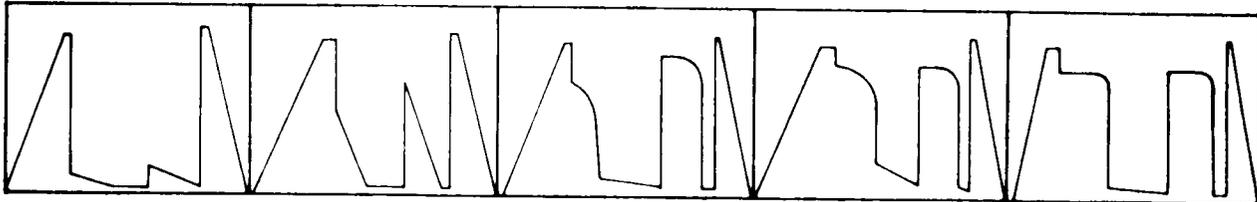
- (1) wellbore damage due to filtrate invasion, drilling solids, etc.
- (2) partial penetration of pay zone
- (3) plugging or choking of perforations (casing test only)
- (4) wellbore storage effects (low permeability gas wells)



### Horner Plot Slope Continually Increasing

#### Possible Causes

- (1) well between two parallel boundaries (channel sand)
- (2) induced hydraulic fractures



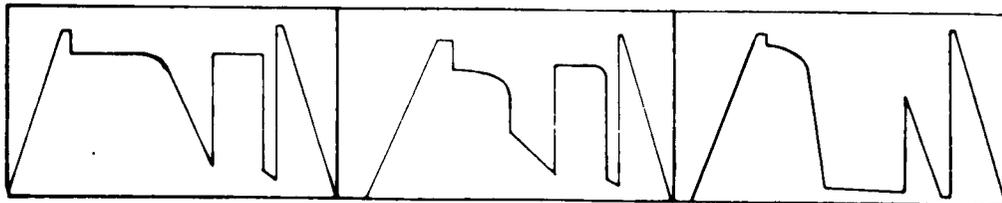
Very low permeability. Usually only mud recovered from interval tested. Virtually no permeability.

Slightly higher permeability. Again usually mud recovered.

Slightly higher permeability. Small recovery, less than 200 ft).

Average permeability. Final and initial shut-ins differ by 50 psi.

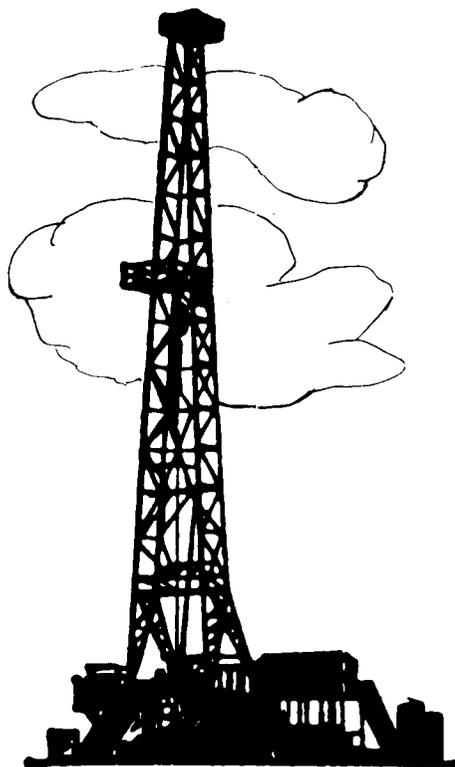
Average permeability. Strong damage effect. High shut-in pressure, low flow pressure.



Excellent permeability where final flow final shut-in pressure.

High permeability where ISIP and FSIP are within 10 psi.

Deep well bore invasion or damage. Final shut-in higher than the initial shut-in.



# ***REBEL TESTING, INC.***

## **Drill Stem Test Report**

**Accepted by the  
Utah Division of  
Oil, Gas and Mining  
FOR RECORD ONLY**

**RECEIVED  
AUG 01 2003  
DIV. OF OIL, GAS & MINING**

Box 296  
Gillette, WY 82716

Phone  
(307) 682-9626

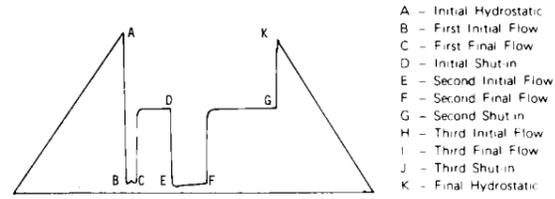
COMPANY E.O.G. RESOURCES, INC.  
LEASE NAME & NO NORTH DUCK CREEK UNIT #109-27  
INTERVAL TESTED 3476'-3519'

COUNTY UTAH  
STATE UTAH  
FORMATION GREEN RIVER "F"

DATE 07-29-2003  
TICKET # 2166  
TEST # 2

# GUIDE TO INTERPRETATION AND IDENTIFICATION OF DST CHARTS

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- I - Third Final Flow
- J - Third Shut-in
- K - Final Hydrostatic

## NOMENCLATURE

Symbol	Definition	DST Unit
k	permeability	millidarcys (md)
h	pay thickness	feet (ft.)
u	viscosity	centipoise
T	reservoir temperature	°Rankin (°R)
Z	gas compressibility factor at average condition	—
q <sub>sc</sub>	gas production rate	MCF/d
M	Horner slope for liquid analysis	PSI/Cycle
Mg	Horner slope for (P <sup>2</sup> ) gas analysis	PSI <sup>2</sup> /Cycle
P <sub>i</sub>	initial static reservoir pressure	PSI
P <sub>wf</sub>	flowing bottom hole pressure	PSI
φ	porosity	(fraction)
r <sub>w</sub>	well bore radius	ft.
S	skin factor	—
AOF	absolute open flow	MCF/d
D, R	damage ratio	—
r <sub>e</sub>	external drainage radius	ft.
ISIP	initial shut-in pressure	PSI
FSIP	final shut-in pressure	PSI
b	approx. radius of investigation	ft.
t	flowing time	hrs.
B	formation volume factor	—
q	liquid production rate	bbbls/day
c	gas compressibility	1/PSI
c	liquid compressibility	1/PSI

### Build-Up Analysis Equations

**Pressure Analysis**

$$kh = \frac{162.6 Q \mu \beta}{M}$$

$$S = 1.151 \left[ \frac{P_{1w} - P_{2w}}{M} - \log \left( \frac{k}{\phi \mu c_t r_w^2} \right) + 3.23 \right]$$

$$\Delta P_{Skin} = \frac{141.2 Q \mu \beta S}{kh}$$

$$L = \sqrt{\frac{0.000148 k \Delta t}{\phi \mu c_t}}$$

$$\text{Efficiency} = \frac{P - P_{2w} - \Delta P_{Skin}}{P - P_{2w}}$$

**Type Curve P Method**

$$kh = 141.2 Q \mu \beta \frac{P_{wo}}{\Delta P}$$

$$S = \frac{1}{2} \ln \left[ \frac{C_D e^{2s}}{2.637 \times 10^4 k \Delta t / (\phi \mu c_t r_w^2 b_0 / C_0)} \right]$$

$$\Delta P_{Skin} = \frac{141.2 Q \mu \beta S}{kh}$$

$$\text{Efficiency} = \frac{P - P_{2w} - \Delta P_{Skin}}{P - P_{2w}}$$

**Pseudo-Pressure Analysis**

$$kh = \frac{1.632 \times 10^4 Q_g T}{M}$$

$$S = 1.151 \left[ \frac{\psi_w - \psi_{2w}}{M} - \log \left( \frac{k}{\phi \mu c_t r_w^2} \right) + 3.23 \right]$$

$$\Delta \psi_{Skin} = \frac{1422 Q_g T S}{kh}$$

$$L = \sqrt{\frac{0.000148 k \Delta t}{\phi \mu c_t}}$$

$$\text{Efficiency} = \frac{P - P_{2w} - \Delta P_{Skin}}{P - P_{2w}}$$

**Type Curve P Method**

$$kh = 141.2 Q \mu \beta \frac{P_{wo}}{\Delta P}$$

$$S = \frac{1}{2} \ln \left[ \frac{C_D e^{2s}}{2.637 \times 10^4 k \Delta t / (\phi \mu c_t r_w^2 b_0 / C_0)} \right]$$

$$\Delta P_{Skin} = \frac{141.2 Q \mu \beta S}{kh}$$

$$\text{Efficiency} = \frac{P - P_{2w} - \Delta P_{Skin}}{P - P_{2w}}$$

### Fall-Off Analysis Equations

**Semi-Log Analysis**

$$\text{Eq. (3.9)} \quad kh = \frac{162.6 Q \mu \beta}{M}$$

$$\text{Eq. (3.10)} \quad S = 1.151 \left[ \frac{P_{1w} - P_{2w}}{M} - \log \left( \frac{k}{\phi \mu c_t r_w^2} \right) + 3.23 \right]$$

**Log-Log Analysis**

$$\text{Eq. (4.4)} \quad kh = 141.2 Q \mu \beta \frac{P_{wo}}{\Delta P}$$

$$\text{Eq. (3.11)} \quad S = \frac{1}{2} \ln \left[ \frac{C_D e^{2s}}{2.637 \times 10^4 k \Delta t / (\phi \mu c_t r_w^2 b_0 / C_0)} \right]$$

**Pressure drop due to skin**

$$\text{Eq. (2.9)} \quad \Delta P_{Skin} = \frac{141.2 Q \mu \beta S}{kh}$$

**Flow Efficiency**

$$\text{Eq. (2.12)} \quad FE = \frac{P - P_{2w} - \Delta P_{Skin}}{P - P_{2w}}$$

**investigation radius**

$$\text{Eq. (2.41)} \quad r = 0.029 \sqrt{\frac{k \Delta t}{\phi \mu c_t}}$$

**Skin due to Partial Perforations**

$$\text{Eq. (2.20)} \quad S_p = \left( \frac{h_t}{h_p} - 1 \right) \left[ \ln \left( \frac{h_t}{h_p} \sqrt{\frac{k_{fp}}{k_w}} \right) - 2 \right]$$

Advances in Well Test Analysis  
Robert C. Earlougher Jr.  
Monograph Volume 5 of  
the Henry L. Doherty Series

Well Testing  
John Lee  
SPE Textbook Series Vol 1

Drill-Stem-Test Reporting By:

*Michael Hudson*  
DATA REPORTING SERVICES

P.O. Box 722 Ph. (520) 505-8389  
LAKE HAVASU CITY, AZ 86405

Gillette WY  
Ph (307) 682-9626



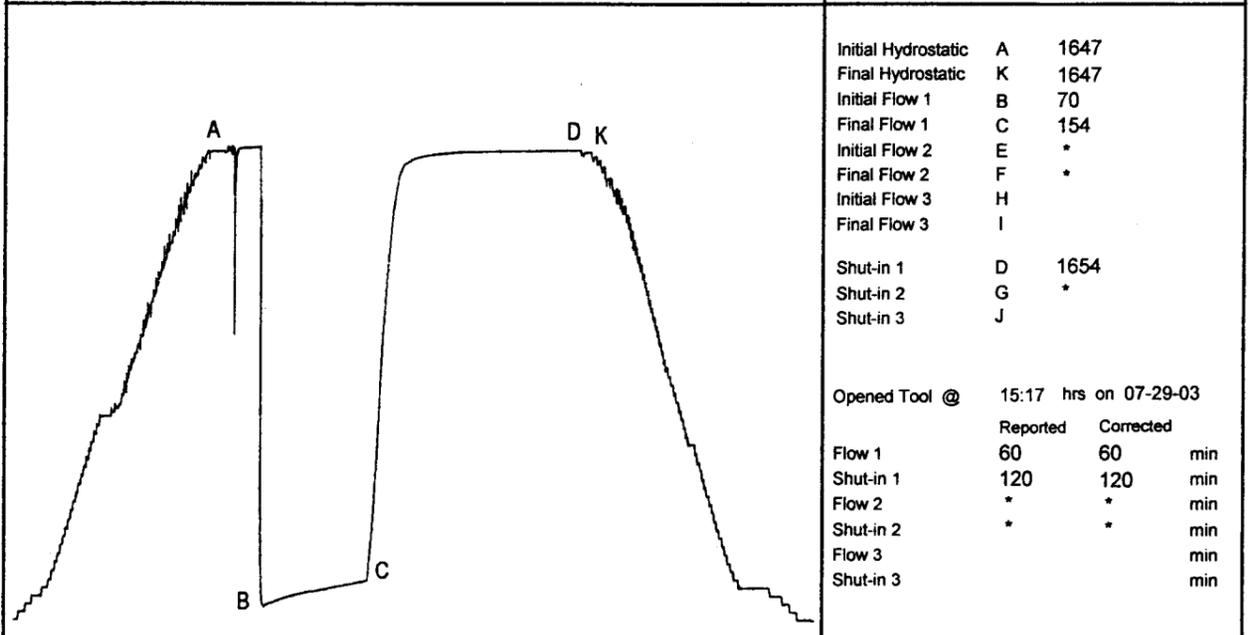
# REBEL TESTING, INC.

Technical Services  
(928) 505-8389

<b>Contractor</b> Key Energy	<b>Surface Choke</b> 1/4"	<b>Mud Type</b> LSND
<b>Rig No.</b> 942	<b>Bottom Choke</b> 3/4"	<b>Weight</b> 8.8
<b>Spot</b> NW/SW	<b>Hole Size</b> 7 7/8"	<b>Viscosity</b> 38
<b>Sec</b> 27	<b>Core Hole Size</b>	<b>Water Loss</b> 10.0
<b>Twp</b> 8 S	<b>DP Size &amp; Wt</b> 4 1/2" 20.00	<b>Filter Cake</b>
<b>Rng</b> 21 E	<b>Wt Pipe</b>	<b>RW</b> .44 @ 92 Deg F
<b>Field</b> Wasatch	<b>ID of DC</b> 2 1/4"	<b>10,665</b> Ppm
<b>County</b> Uintah	<b>Length of DC</b> 240'	<b>B.H.T.</b> 111.4
<b>State</b> Utah	<b>Total Depth</b> 3519'	<b>Deg F</b>
<b>Elevation</b>	<b>Type of Test</b> Conventional	<b>Co. Rep.</b> Hubert Hays
<b>Formation</b> Green River "F"	<b>Interval</b> 3476'- 3519'	<b>Tester</b> Bob Hammond

<p><b>Pipe recovery:</b> 360' Total fluid = 2.80 bbl., consisting of: 180' Slightly gas cut mud 80' Mud cut water 100' Water</p> <p>Top rw: 0.50 @ 90 deg f/9,506 ppm NaCl. Middle rw: 0.50 @ 90 deg f/9,506 ppm NaCl. Bottom rw: 0.45 @ 90 deg f/10,641 ppm NaCl.</p> <p>*Remarks: The shut-in tool was out of sequence and could not be manipulated as intended. Therefore, this test consisted of one flowing period and one shut-in period.</p>	<p>Pressure in Sampler 50 psig</p> <p>Volume of Sampler 2150 cc</p> <p>Volume of Sample 1850 cc</p> <p>Oil: 0 cc</p> <p>Water: 1850 cc</p> <p>Mud: 0 cc</p> <p>Gas: 0.05 cu ft</p> <p>Other: 0</p> <p>Rw: .42 @ 85 deg f/.33 @ res temp/ 12,131 ppm NaCl., 7,375 ppm Cl.</p> <p>Gas/Oil Ratio</p> <p>Gravity API @ 60 Deg F</p>
---	---

<b>Gauge Type</b> Sunada Electronic
No. 30091 Cap 10000 psi
Depth 3456 ft.
Inside X Outside



Initial Hydrostatic	A	1647
Final Hydrostatic	K	1647
Initial Flow 1	B	70
Final Flow 1	C	154
Initial Flow 2	E	*
Final Flow 2	F	*
Initial Flow 3	H	*
Final Flow 3	I	*
Shut-in 1	D	1654
Shut-in 2	G	*
Shut-in 3	J	*

Opened Tool @ 15:17 hrs on 07-29-03

	Reported	Corrected	min
Flow 1	60	60	
Shut-in 1	120	120	
Flow 2	*	*	
Shut-in 2	*	*	
Flow 3	*	*	
Shut-in 3	*	*	

COMPANY E.O.G. RESOURCES, INC.  
LEASE NAME & NO NORTH DUCK CREEK UNIT #109-27  
INTERVAL TESTED 3476- 3519'

COUNTY UTAH  
STATE UTAH  
FORMATION GREEN RIVER "F"

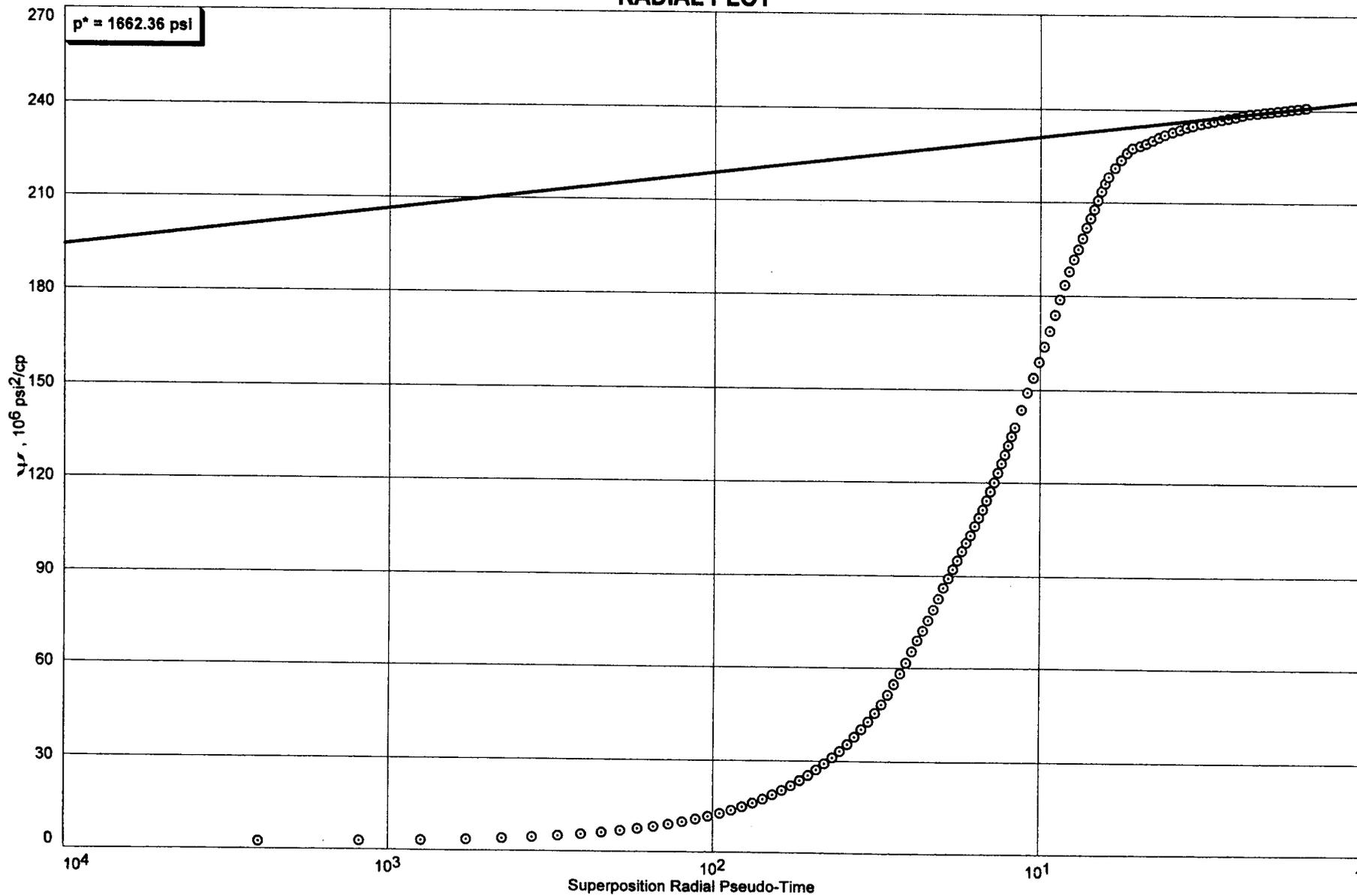
DATE 07-29-2003  
TICKET # 2166  
TEST # 2





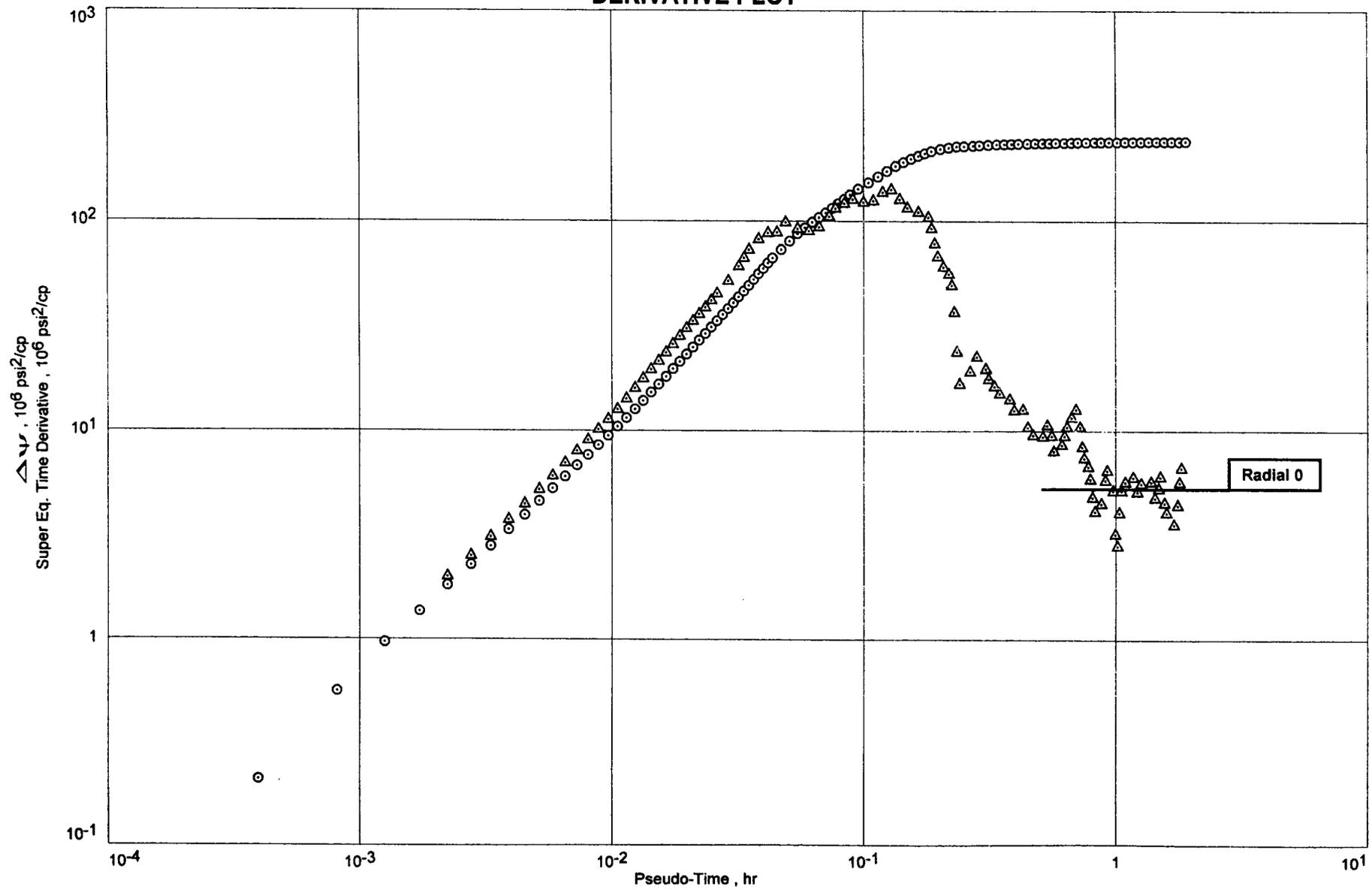
E.O.G. Resources  
North Duck Creek Unit 109-27, Dst 2  
Gauge 30091

### RADIAL PLOT

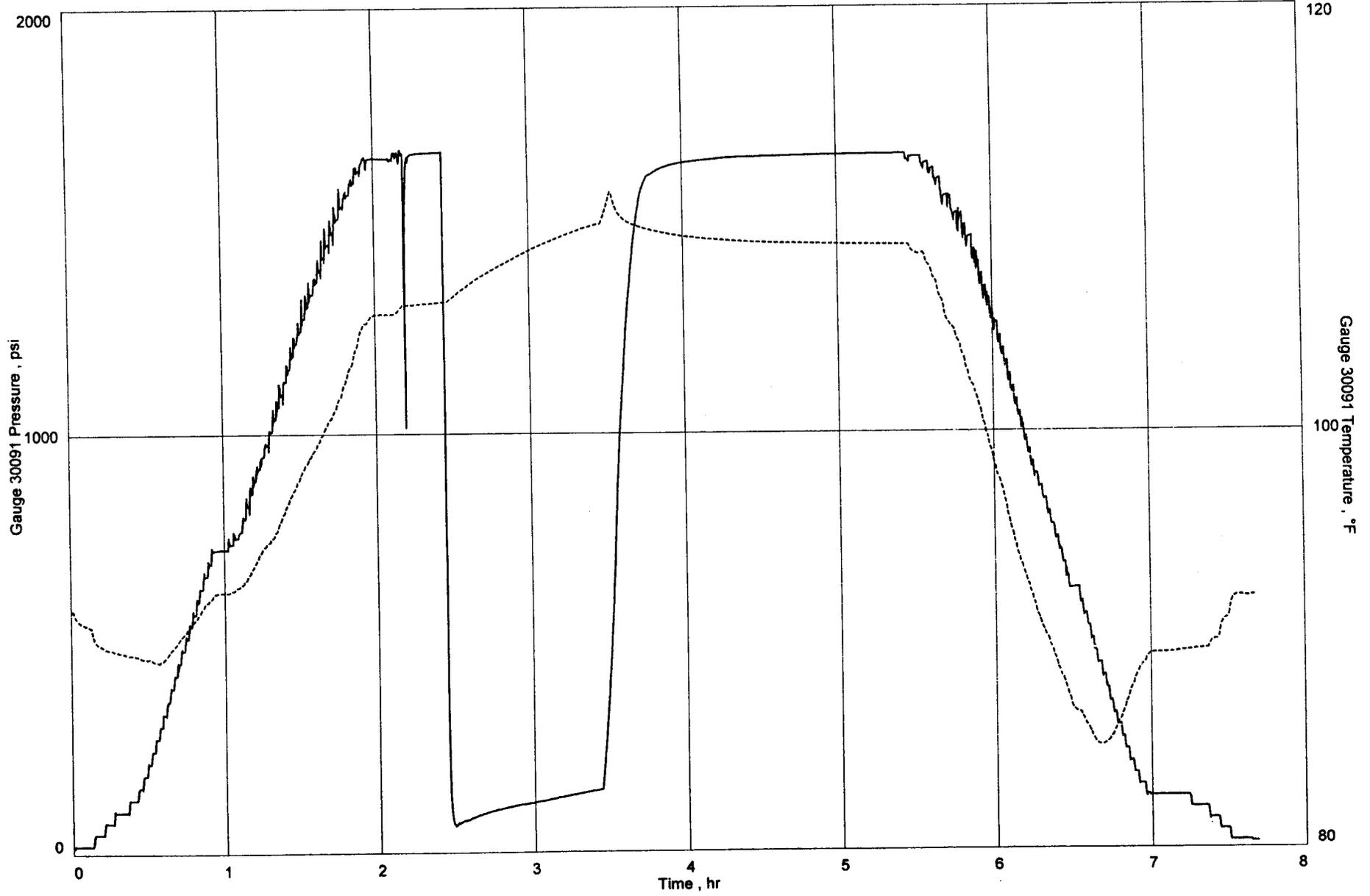


E.O.G. Resources  
North Duck Creek Unit 109-27, Dst 2  
Gauge 30091

### DERIVATIVE PLOT



E.O. G. Resources  
North Duck Creek Unit 109-27, Dst 2



E.O.G. Resources, Inc.  
North Duck Creek Unit #109-27

## DISTRIBUTION OF FINAL REPORTS

Curt Parsons [1 + Disk]  
E.O.G. Resources, Inc.  
Box 250  
Big Piney WY 83113

Linda Munoz [1]  
E.O.G. Resources, Inc.  
600-17th St., Ste 1100 N.  
Denver CO 80202

Delores Montoya [1]  
E.O.G. Resources, Inc.  
600-17th St., Ste 1100 N.  
Denver CO 80202

Tammy Clayton [1]  
E.O.G. Resources, Inc.  
333 Clay St., Ste 4200  
Houston TX 77002

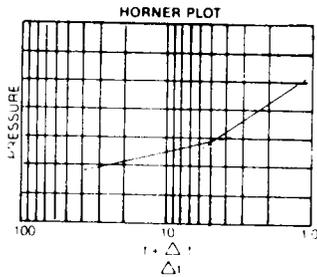
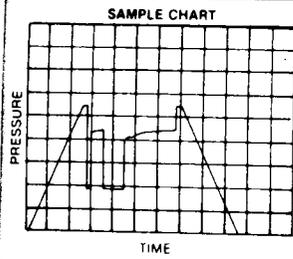
Shenandoah Energy, Inc. [3]  
1050-17th St., Ste 500  
Denver CO 80265

Mike Hackney [1]  
Petroglyph Energy, Inc.  
555 S. Cole Rd.  
Boise ID 83709

Dave Howell [2]  
Bureau of Land Management  
170 S. 500 E.  
Vernal UT 84078

Oil & Gas Supervisor [2]  
Utah Division of Oil, Gas & Mining  
Box 145801  
Salt Lake City UT 84114

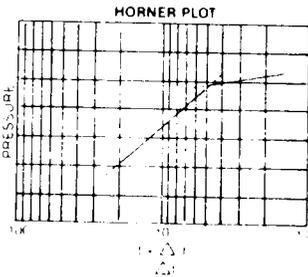
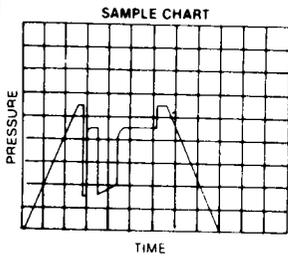
# GUIDE TO DETECTION OF GEOLOGICAL ANOMALIES



### Horner Plot Slope Breaks Upward

#### Possible Causes

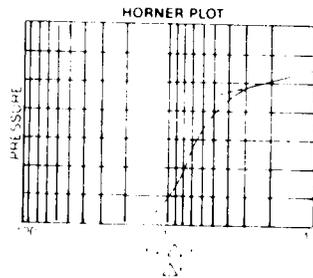
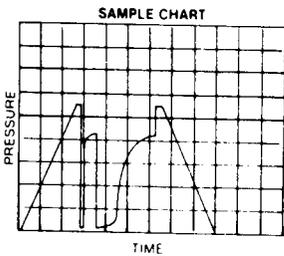
- (1) decrease in pay thickness away from the wellbore
- (2) decrease in permeability away from the wellbore
- (3) increase in viscosity of reservoir fluid (fluid contact)
- (4) barrier within the radius of investigation



### Horner Plot Slope Breaks Downward

#### Possible Causes

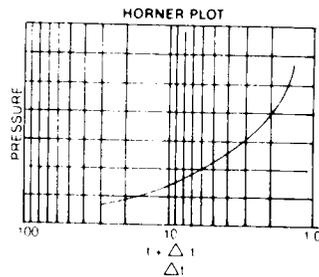
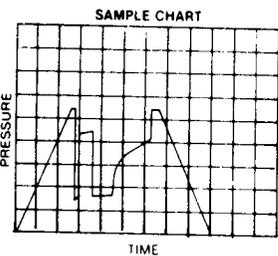
- (1) increase in pay thickness away from the wellbore
- (2) increase in permeability away from the wellbore
- (3) decrease in viscosity away from the wellbore



### Early Time Deviation of Horner Plot

#### Possible Causes

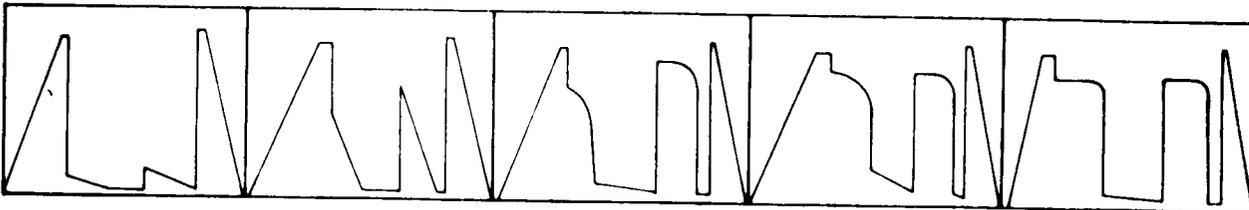
- (1) wellbore damage due to filtrate invasion, drilling solids, etc.
- (2) partial penetration of pay zone
- (3) plugging or choking of perforations (casing test only)
- (4) wellbore storage effects (low permeability gas wells)



### Horner Plot Slope Continually Increasing

#### Possible Causes

- (1) well between two parallel boundaries (channel sand)
- (2) induced hydraulic fractures



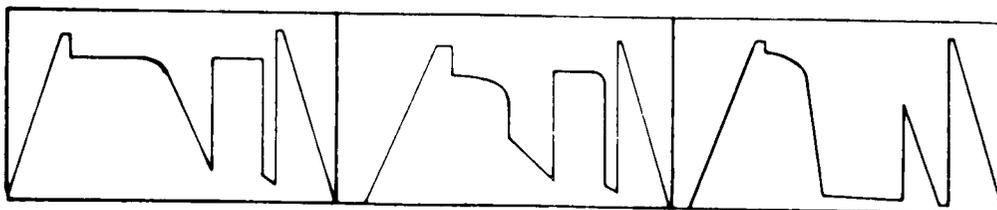
Very low permeability. Usually only mud recovered from interval tested. Virtually no permeability.

Slightly higher permeability. Again usually mud recovered.

Slightly higher permeability. Small recovery, less than 200 ft.

Average permeability. Final and initial shut-ins differ by 50 psi.

Average permeability. Strong damage effect. High shut-in pressure, low flow pressure.



Excellent permeability where final flow final shut-in pressure.

High permeability where ISIP and FSIP are within 10 psi.

Deep well bore invasion or damage. Final shut-in higher than the initial shut-in.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB NO. 1004-0137  
Expires: January 31, 2004

**WELL COMPLETION OR RECOMPLETION REPORT AND LOG**

5. Lease Serial No.  
U-0803

1a. Type of Well  Oil Well  Gas Well  Dry  Other  
 b. Type of Completion:  New Well  Work Over  Deepen  Plug Back  Diff. Resvr.  
 Other \_\_\_\_\_

6. If Indian, Allottee or Tribe Name  
UTE INDIAN TRIBE

2. Name of Operator  
EOG RESOURCES, INC

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

3. Address  
P. O. BOX 250, BIG PINEY WY 83113

3a. Phone No. (include area code)  
(307) 276-3331

8. Lease Name and Well No.  
NORTH DUCK CRK 109-27

4. Location of Well (Report location clearly and in accordance with Federal requirements)  
 At surface 1980' FSL & 660' FWL (NW/SW)  
 At top prod. interval reported below  
 At total depth

**CONFIDENTIAL**  
**PERIOD EXPIRED**  
**ON 10-4-04**

9. API Well No.  
43-047-34105

10. Field and Pool, or Exploratory  
NORTH DUCK CREEK

11. Sec., T., R., M., on Block and Survey or Area  
SECTION 27, T8S, R21E MSLB

12. County or Parish  
UINTAH

13. State  
UT

14. Date Spudded  
7/03/2003

15. Date T.D. Reached  
9/4/2003

16. Date Completed  
 D&A  Ready to Prod.  
9-4-03

17. Elevations (DF, RKB, RT, GL)\*  
4783'

18. Total Depth: MD 6867  
TVD

19. Plug Back T.D.: MD  
TVD

20. Depth Bridge Plug Set: MD  
TVD

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)  
MCD 406 - Rec 9-8-03  
BOREHOLE COMPENSATED SONIC/GR, CNL/GR, CR TRIPLE LITH/GR, HIGH - Rec 8-8-03

22. Was well cored?  No  Yes (Submit analysis)  
 Was DST run?  No  Yes (Submit report)  
 Directional Survey?  No  Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
12.250	8.625/155	24#	0	236		155-CLS G			

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)

25. Producing Intervals

26. Perforation Record

Formation	TOP	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A)						
B)						
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material

**RECEIVED**  
**JAN 16 2004**  
DIV. OF OIL, GAS & MINING

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						PLUGGED AND ABANDONED
Choke Size	Tbg. Press. Flwg. SI	Csg. Press	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas: Oil Ratio	Well Status	
			→					PLUGGED AND ABANDONED (SEE ITEM 32)	

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Call Press	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas: Oil Ratio	Well Status	
			→						

(See instructions and covers for additional data on next page)

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Thg. Press Flwg. SI	Csg. Press	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas: Oil Ratio	Well Status	

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Thg. Press Flwg. SI	Csg. Press	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas: Oil Ratio	Well Status	

29. Disposition of Gas (Sold used for fuel, vented, etc.)

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top
					Meas. Depth

32. Additional remarks (include plugging procedure):

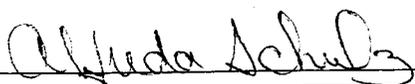
1) SET PLUG #1 FROM 5845-5645' W/110 SX CLASS "G" CEMENT. 2) SET PLUG #2 FROM 2510-2310' W/90 SX CLASS "G" CEMENT. 3) SET PLUG #3 FROM 25' TO SURFACE W/110 SX CLASS "G" CEMENT. 4) CUT OFF CASING 3' BELOW GROUND LEVEL. TOPPED OFF SURFACE PLUG W/10 SX CEMENT. 5) INSTALLED DRY HOLE MARKER 9/4/03. P&A WAS WITNESSED BY BOB ARNOLD OF VERNAL BUREAU OF LAND MANAGEMENT. 6) LOCATION WILL BE REHABED PER BLM SPECIFICATIONS AND A FINAL SUNDRY NOTICE WILL BE SUBMITTED

33. Circle enclosed attachments:

- 1 Electrical/Mechanical Logs (1 full set req'd.)
- 2 Geologic Report
- 3 DST Report
- 4 Directional Survey
- 5 Sundry Notice for plugging and cement verification
- 6 Core Analysis
- 7 Other: \_\_\_\_\_

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)\*

Name (please print) ALFREDA SCHULZ Title SR. REGULATORY ASSISTANT

Signature  Date January 13, 2004

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.