

**ARCO Oil and Gas Company** ◆

600 North Marienfeld Street  
Post Office Box 1810  
Midland Texas 79702  
Telephone 915 688 5200

Western District

July 30, 1993

Bureau of Land Management  
170 S. 500 E.  
Vernal, Utah 84078

**SUBJECT: Willow Creek #1 Sec. 8-T6S-R24E**

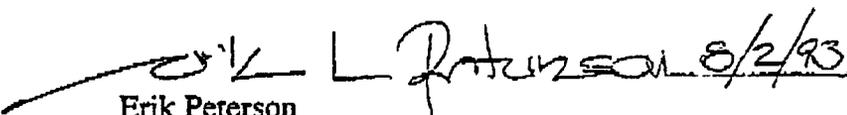
Gentlemen:

This letter is to inform you that Permitco Inc. is authorized to act as Agent and to sign documents on behalf of Arco Oil & Gas Company when necessary for filing county, state and federal permits including Onshore Order No. 1, Right-of-Way applications, etc., for the above mentioned well.

It should be understood that Permitco Inc. is acting as Agent only in those matters stated above and is not responsible for drilling, completion, production or compliance with regulations.

Arco Oil & Gas Company agrees to accept full responsibility for operations conducted in order to drill, complete and produce the above mentioned well.

Sincerely,

 Erik Peterson

Drilling Team Leader  
Western District Drilling Department

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

**CONFIDENTIAL - TIGHT HOLE**

5. Lease Designation and Serial No.  
**U-70237**

6. If Indian, Allottee or Tribe Name  
**N/A**

7. Unit Agreement Name  
**N/A**

8. Farm or Lease Name  
**Willow Creek**

9. Well No.  
**#1-8**

10. Field and Pool, or Wildcat  
**Wildcat**

11. Sec., T., R., M., OR Bk. and Survey or Area  
**Sec. 8, T6S - R24E**

12. County or Parish  
**Uintah**      13. State  
**Utah**

**APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK**

1a. Type of Work      **DRILL**       **DEEPEN**       **PLUG BACK**

b. Type of Well  
 Oil Well       Gas Well       Other       Single Zone       Multiple Zone

2. Name of Operator      **915/688-5200**      **P.O. Box 1610**  
**ARCO Oil & Gas Company**      **Midland, TX 79702**

3. Address of Operator      **303/452-8888**      **13585 Jackson Drive**  
**Permitco Inc. - Agent**      **Denver, CO 80241**

4. Location of Well (Report location clearly and in accordance with any State requirements.)\*  
 At surface      **1623' FSL and 220' FEL**  
 At proposed prod. zone      **NE SE Sec. 8**

14. Distance in miles and direction from nearest town or post office\*  
**20.4 miles southeast of Vernal, UT**

15. Distance from proposed location to nearest property or lease line, ft.  
 (Also to nearest drig. line, if any)      **220'**

16. No. of acres in lease      **560.00**

17. No. of acres assigned to this well      **40 - or statewide spacing**

18. Distance from proposed location to nearest well, drilling, completed, or applied for, on this lease, ft.  
**None**

19. Proposed depth      **11,000'**

20. Rotary or cable tools      **Rotary**

21. Elevations (Show whether DF, RT, GR, etc.)  
**5101' GR**

22. Approx. date work will start\*  
**Upon approval of this application**

**23. PROPOSED CASING AND CEMENTING PROGRAM**

Size of Hole	Size of Casing	Weight per Foot	Setting Depth	Quantity of Cement
17-1/2"	13-3/8"	54.5#	500'	300 sx - circ to surf.
12-1/4"	9-5/8"	40.0#	2500'	650 sx - circ to surf.
8-3/4"	5-1/2"	17.0#	11000'	500 sx or suffic to cover zones of interest.

ARCO Oil & Gas Company proposes to drill a well to 11000' to test the Phosphoria and Weber formations. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM and State of Utah requirements.  
 See Onshore Order No. 1 attached.

This location was staked at non-standard footages in accordance with Utah spacing. This location was selected based on topography and seismic interpretation. ARCO Oil & Gas Company is the lease holder of all lands within a 460 foot radius of the proposed site. We, therefore, request administrative approval of this location at non-standard spacing.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, 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.

24. Signed *[Signature]*

Consultant for:  
 Title ARCO Oil & Gas Co.      Date 08/4/93

(This space for Federal or State office use)  
 Permit No. 43-047-30444  
 Approved by \_\_\_\_\_  
 Conditions of approval, if any: \_\_\_\_\_

Approval Date \_\_\_\_\_  
 Title \_\_\_\_\_  
**APPROVED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING**  
 DATE: 8/19/93  
 BY: [Signature]  
 \*See Instructions On Reverse Side  
 WELL SPACING: 649-3-3

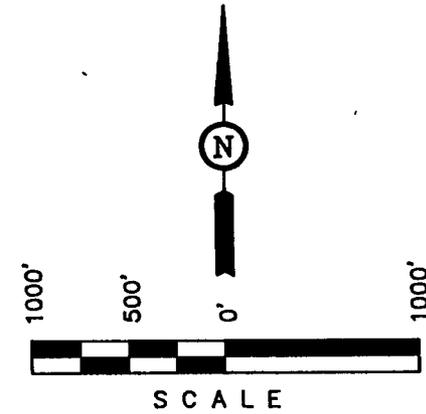
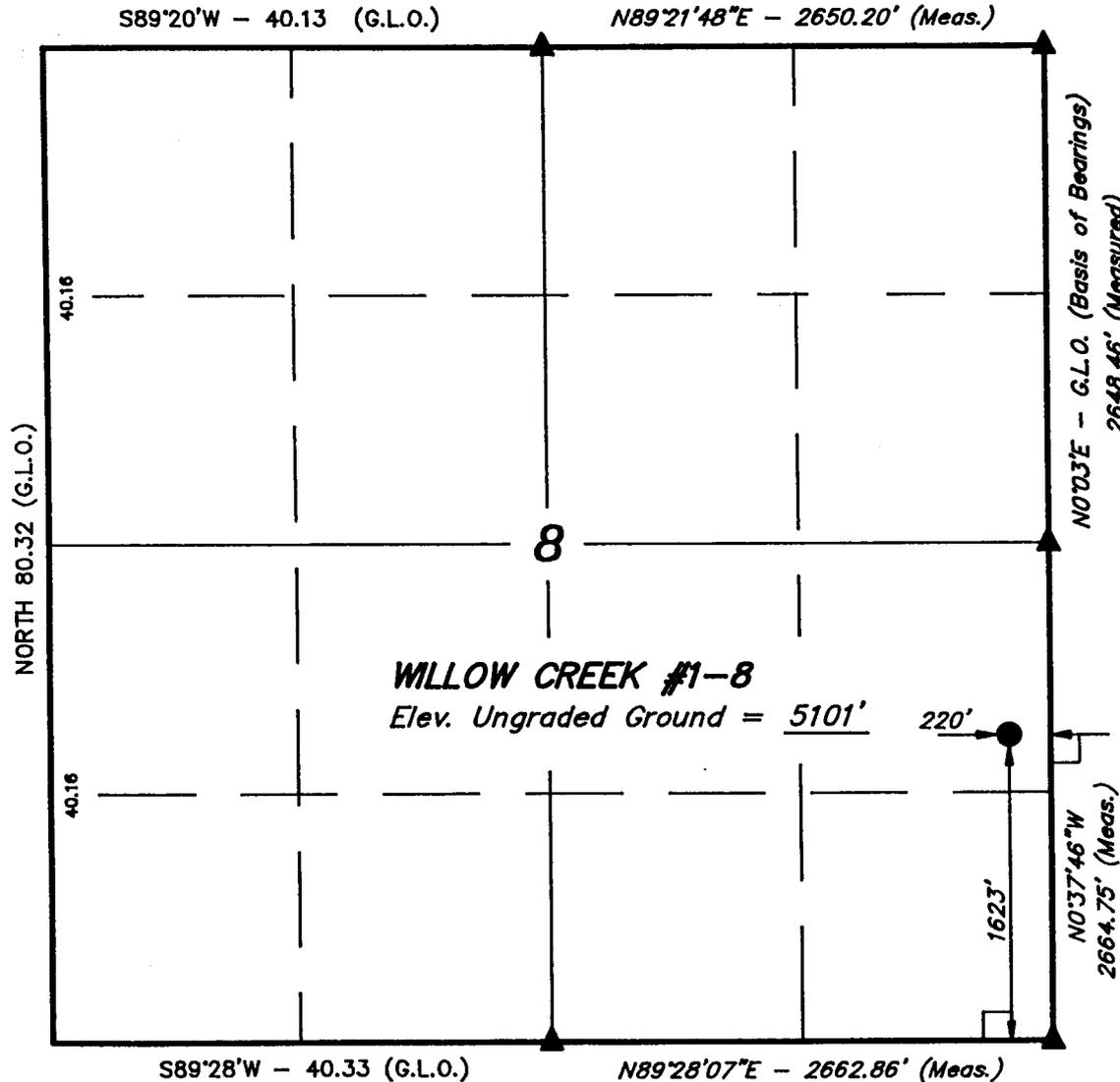
# T6S, R24E, S.L.B.&M.

## ARCO OIL & GAS CO.

Well location, WILLOW CREEK #1-8, located as shown in the NE 1/4 SE 1/4 of Section 8, T6S, R24E, S.L.B.&M. Uintah County, Utah.

### BASIS OF ELEVATION

BENCH MARK 26EAM LOCATED IN THE NE 1/4 OF SECTION 8, T6S, R24E, S.L.B.&M. TAKEN FROM THE CLIFF RIDGE QUADRANGLE, 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 5091 FEET.



**CERTIFICATE**  
 THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.  
*Robert L. Kay*  
 REGISTERED LAND SURVEYOR  
 REGISTRATION NO. 5700  
 STATE OF UTAH

REVISED: 6-24-93 T.D.H.  
 REVISED: 6-23-93 R.E.H.

#### LEGEND:

- └─┘ = 90° SYMBOL
- = PROPOSED WELL HEAD.
- ▲ = SECTION CORNERS LOCATED. (*Brass Caps*)

**SURFACE LOCATION**  
 1927 N.A.D.  
UTAH CENTRAL ZONE  
 X - 2,632,396  
 Y - 728,911

<b>UINTAH ENGINEERING &amp; LAND SURVEYING</b>		
85 SOUTH 200 EAST - VERNAL, UTAH 84078		
(801) 789-1017		
SCALE 1" = 1000'	DATE SURVEYED: 6-8-93	DATE DRAWN: 6-17-93
PARTY G.S. J.J. J.D.G.	REFERENCES G.L.O. PLAT	
WEATHER HOT	FILE ARCO OIL & GAS CO.	

**CONFIDENTIAL - TIGHT HOLE**

**ONSHORE OIL & GAS ORDER NO. 1**

**Approval of Operations on Onshore  
Federal and Indian Oil & Gas Leases**

**WILLOW CREEK #1-8  
1623' FSL and 220' FEL  
NE SE Sec. 8, T6S - R24E  
Uintah County, Utah**

**RECEIVED**  
AUG 06 1993  
DIVISION OF  
OIL GAS & MINING

**Prepared For:**

**ARCO OIL & GAS COMPANY**

**By:**

**PERMITCO INC.  
13585 Jackson Drive  
Denver, Colorado 80241  
303/452-8888**

**Copies Sent To:**

- 3 - BLM - Vernal, Utah**
- 1 - Utah Division of Oil, Gas & Mining - SLC, UT**
- 4 - Arco Oil & Gas Company - Midland, TX**



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**ONSHORE OIL & GAS ORDER NO. 1  
 Approval of Operations on Onshore  
 Federal and Indian Oil and Gas Leases**

All lease and/or unit operations will be conducted in such a manner that full compliance is made with applicable laws, regulations (43 CFR 3100), Onshore Oil and Gas Order No. 1, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors. A copy of these conditions will be furnished the field representative to insure compliance.

1. The estimated tops of important geologic markers are as follows:

<u>Formation</u>	<u>Depth</u>	<u>Subsea</u>
Mancos	Surface	
Frontier	1200'	+4000'
Navajo	2450'	+2750'
Weber	4600'	+ 600'
Morgan	5725'	- 525'
Fault	7390'	-2190'
Navajo	7900'	-2700'
Phosphoria	9400'	-4200'
Weber	9600'	-4400'
T.D.	11000'	-5800'

2. The estimated depths at which the top and bottom of the anticipated water, oil, gas or other mineral bearing formations are expected to be encountered are as follows:

<u>Substance</u>	<u>Formation</u>	<u>Depth</u>
Oil	Phosphoria	9400'
Oil	Weber	9600'
Water	N/A	
Other Mineral Zones	N/A	



All fresh water prospectively valuable minerals encountered during drilling, will be recorded by depth and adequately protected. All oil and gas shows will be tested to determine commercial potential.

3. ARCO Oil & Gas Company's minimum specifications for pressure control equipment are as follows:

Ram Type: 11" & 13-5/8" Hydraulic double with annular, 3000-5000 psi w.p.

Ram type preventers and associated equipment shall be tested to approved stack working pressure if isolated by test plug or to 70 percent of internal yield pressure of casing. Pressure shall be maintained for at least 10 minutes or until requirements of test are met, whichever is longer. If a test plug is utilized, no bleed-off pressure is acceptable. For a test not utilizing a test plug, if a decline in pressure of more than 10 percent in 30 minutes occurs, the test shall be considered to have failed. Valve on casing head below test plug shall be open during test of BOP stack.

Annular type preventers (if used) shall be tested to 50 percent of rated working pressure. Pressure shall be maintained at least 10 minutes or until provisions of test are met, whichever is longer.

As a minimum, the above test shall be performed:

- a. when initially installed;
- b. whenever any seal subject to test pressure is broken
- c. following related repairs; and
- d. at 30-day intervals

Valves shall be tested from working pressure side during BOPE tests with all down stream valves open.

When testing the kill line valve(s) the check valve shall be held open or the ball removed.

Annular preventers shall be functionally operated at least weekly.

Pipe and blind rams shall be activated each trip, however, this function need not be performed more than once a day.

A BOPE pit level drill shall be conducted weekly for each drilling crew.

Pressure tests shall apply to all related well control equipment.

All of the above described tests and/or drills shall be recorded in the drilling log.

BOP systems shall be consistent with API RP53. Pressure tests will be conducted before drilling out from under casing strings which have been set and cemented in place. Blowout preventer controls will be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned. Preventers will be inspected and operated at least daily to ensure good mechanical working order, and this inspection will be recorded on the daily drilling report. Preventers will be pressure tested before drilling casing cement plugs.

The District Office should be notified, with sufficient lead time, in order to have the BLM representative on location during pressure testing.

- a. The size and rating of the BOP stack is shown on the attached diagram. Although a rig has not been chosen to drill this well, most of the equipment for this depth of hole in the area use a 10", 3000 psi working pressure blowout preventor.
- b. A choke line and a kill line are to be properly installed. The kill line is not to be used as a fill-up line.
- c. The accumulator system shall have a pressure capacity to provide for repeated operation of hydraulic preventers.
- d. Drill string safety valve(s), to fit all tools in the drill string, are to be maintained on the rig floor while drilling operations are in progress.

4. a. **The proposed casing and cementing program shall be conducted as approved to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. Determination of casing setting depth shall be based on all relevant factors, including; presence/absence of hydrocarbons; fracture gradients; usable water zones; formation pressures; lost circulation zones; other minerals; or other unusual characteristics. All indications of usable water shall be reported.**
- b. **Casing design shall assume formation pressure gradients of 0.44 to 0.50 psi per foot for exploratory wells (lacking better data).**
- c. **Casing design shall assume fracture gradients from 0.70 to 1.00 psi per foot for exploratory wells (lacking better data)**
- d. **Casing collars shall have a minimum clearance of 0.422 inches of all sides in the hole/casing annulus, with recognition that variances can be granted for justified exceptions.**
- e. **All waiting on cement times shall be adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.**
- f. **All casing except the conductor casing, shall be new or reconditioned and tested used casing that meets or exceeds API standards for new casing.**
- g. **The surface casing shall be cemented back to surface either during the primary cement job or by remedial cementing.**
- h. **All indications of usable water shall be reported to the authorized officer prior to running the next string of casing or before plugging orders are requested, whichever occurs first.**



- i. **Surface casing shall have centralizers on every fourth joint of casing starting with the shoe joint and up to the bottom of the cellar.**
- j. **Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a suitable preflush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.**
- k. **All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string length or 1500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.**
- l. **On all exploratory wells, and on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.**

m. **The proposed casing program will be as follows:**

<u>Purpose</u>	<u>Depth</u>	<u>Hole Size</u>	<u>O.D.</u>	<u>Weight</u>	<u>Grade</u>	<u>or</u> <u>Type</u>	<u>Used</u>
Surface	0-500'	17-1/2"	13-3/8"	54.5#	K-55	ST&C	New
Intermed.	0-2500'	12-1/4"	9-5/8"	40.0#	L-80	LT&C	New
Produc.	-11000'	8-3/4"	5-1/2"	17.0#	L-80	LT&C	New

n. **Casing design subject to revision based on geologic conditions encountered.**

o. **The cement program will be as follows:**

<u>Surface</u>	<u>Type and Amount</u>
0-500'	$\pm$ 300 sx Class "G"+ 2% CaCl <sub>2</sub> + 1/4#/sk flocele or sufficient volume to circulate to surface.



**Intermediate**  
**0-2500'**

**Type and Amount**

**Lead w/500sx 65/35/6 poz + 1% CaCl<sub>2</sub> + 1/4#/sk flocele. Tail w/ 150 sx Class "G" + 2% CaCl<sub>2</sub> + 1/4#/sk flocele or sufficient to circulate to surface.**

**Production**

**Type and Amount**

**500 sx Class "G" + 1% CFR-3 + 35% SSA-1 + .5% Hal. 24 + .1% HR5, or sufficient to cover zones of interest.**

- p. Anticipated cement tops will be reported as to depth; not the expected number of sacks of cement to be used. The District Office should be notified, with sufficient lead time, in order to have a BLM representative on location while running all casing strings and cementing.**
- q. After cementing but before commencing any test, the casing string shall stand cemented until the cement has reached a compressive strength of at least 500 psi at the shoe. WOC time shall be recorded in the driller's log.**
- r. The following reports shall be filed with the District Manager within 30 days after the work is completed.**
  - 1. Progress reports, Form 3160-5 (formerly 9-331) "Sundry Notices and Reports on Wells", must include complete information concerning:**
    - a. Setting of each string of casing, showing the size, grade, weight of casing set, hole size, setting depth, amounts and type of cement used, whether cement circulated or the top of the cement behind the casing, depth of cementing tools used, casing test method and results, and the date work was done. Show the spud date on the first reports submitted.**



- b. Temperature or bond logs must be submitted for each well where the casing cement was not circulated to the surface.
- s. Auxiliary equipment to be used is as follows:
  - 1. Kelly cock
  - 2. No bit float is deemed necessary.
  - 3. A sub with a full opening valve.
- 5. a. The proposed circulating mediums to be employed in drilling are as follows:

<u>Interval</u>	<u>Mud Type</u>	<u>Standby</u>	<u>Mud Wt.</u>	<u>Visc.</u>	<u>F/L</u>	<u>PH</u>
0-500'	Air/Air mist	FW LSND	8.5-9.0	35-40	N/C	10-11
500-2500'	Air/Air mist	FW LSND	8.8-9.2	35-45	N/C	10-11
2500-T.D.	Air/Air mist	FW LSND	8.8-9.4	35-45	6-10	10-11

There will be sufficient mud on location to control a blowout should one occur.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, static filtration loss, and Ph.

- b. Mud monitoring equipment to be used is as follows:
  - 1. Periodic checks will be made each tour of the mud system. The mud level will be checked visually.
- c. No chromate additives will be used in the mud system on Federal and/or Indian lands without prior BLM approval to ensure adequate protection of fresh water aquifers.



6. The anticipated type and amount of testing, logging and coring are as follows:

- a. Drill stem tests are anticipated in the Phosphoria (1) at approximately 9400'. Two DST's are possible in the Weber formation at 9600-9800'.

If DST's are run, the following requirements will be adhered to:

Initial opening of drill stem test tools shall be restricted to daylight hours unless specific approval to start during other hours is obtained from the authorized officer. However, DST's 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 vapor-proof for safe operations). Packers can be released, but tripping shall not begin before daylight, unless prior approval is obtained from the authorized officer. Closed chamber DSTs may be accomplished day or night.

A DST that flows to the surface with evidence of hydrocarbons shall be either reversed out of the testing string under controlled surface conditions, or be displaced into the formation prior to pulling the test tool. This would involve providing some means for reverse circulation.

Separation equipment required for the anticipated recovery shall be properly installed before a test starts.

All engines within 100 feet of the wellbore that are required to "run" during the test shall have spark arresters or water cooled exhausts.

- b. The logging program will consist of a Sonic (BHC)/GR/DIL/MSFL/VSP and a Density/Neutron/GR/Caliper/Dipmeter from 500' to T.D. An FMS and SWC's will be run from 9400' to T.D. A mud logger will also be on location from 500' to T.D. Logging package may be reduced on the intermediate hole for correlation purposes only.
- c. No cores are anticipated.

- d. 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 authorized officer (AO).
  - e. The anticipated completion program is as follows:  
Set 5-1/2" casing at T.D. Perforate and acidize Weber w/possible frac w/100M gallons and 100M# sand. Complete as flowing oil/gas well.
- 7.
- a. The expected bottom hole pressure is 4500 psi.
  - b. No hydrogen sulfide gas is anticipated.
- 8.
- a. Drilling will commence immediately upon approval of this application.
  - b. It is anticipated that the drilling of this well will take approximately 35 days.
  - c. The BLM in Vernal, Utah shall be notified of anticipated date of location construction commencement and of anticipated spud date.
  - d. 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.
  - e. The spud date will be reported orally to the AO within 48 hours after spudding. If the spudding occurs on a weekend or holiday, the report will be submitted on the following regular work day. The oral report will be



followed up with a Sundry Notice.

- f. In accordance with Onshore Oil and Gas Order No. 1, this well will be reported on Form 3160-6 "Monthly Report of Operations", starting with the month in which operations commence and continue each month until the well is physically plugged and abandoned. This report will be filed with the Vernal BLM District Office, 170 South 500 East, Vernal, UT 84078.
- g. 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.
- h. 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.
- i. 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 communications, not later than 5 days following the date on which the well is placed on production.
- j. Pursuant to NTL-2B, with the approval of the District Engineer, produced water may be temporarily disposed of into unlined pits for a period of up to 90 days. During the period so authorized, an application for approval of the permanent disposal method, along with the required water analysis and other information, must be submitted to the District Engineer.
- k. Pursuant to NTL-4A, lessees or operators are authorized to vent/flare gas during initial well evaluation tests, not exceeding a period of 30 days or the production of 50 MMCF of gas, whichever occurs first. An application must be filed with the District Engineer and approval received, for any venting/flaring of gas beyond the initial 30 day or authorized test period.
- l. A schematic facilities diagram as required by 43 CFR 3162.7-2, 3162.7-3 and 3162.7-4 shall be submitted to the appropriate District Office within 30 days



of installation or first production, whichever occurs first. All site security regulations as specified in 43 CFR 3162.7 shall be adhered to. All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed in accordance with 43 CFR 3162.7-4.

- m. A first production conference will be scheduled within 15 days after receipt of the first production notice.
- n. 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 SO. A "Subsequent Report of Abandonment" Form 3160-5, will be filed with the AO within 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.
- o. Pursuant to Onshore Oil and Gas Order No. 1, lessees and operators have the responsibility to see that their exploration, development, production, and construction operations are conducted in a manner which conforms with applicable Federal laws and regulations and with State and local laws and regulations to the extent that such State and local laws are applicable to operations on Federal or Indian lands.

**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.



**ONSHORE ORDER NO. 1**  
**ARCO Oil & Gas Company**  
**Willow Creek #1-8**  
**1623' FSL and 220' FEL**  
**NE SE Sec. 8, T6S - R24E**  
**Uintah County, Utah**

**CONFIDENTIAL - TIGHT HOLE**

**DRILLING PROGRAM**

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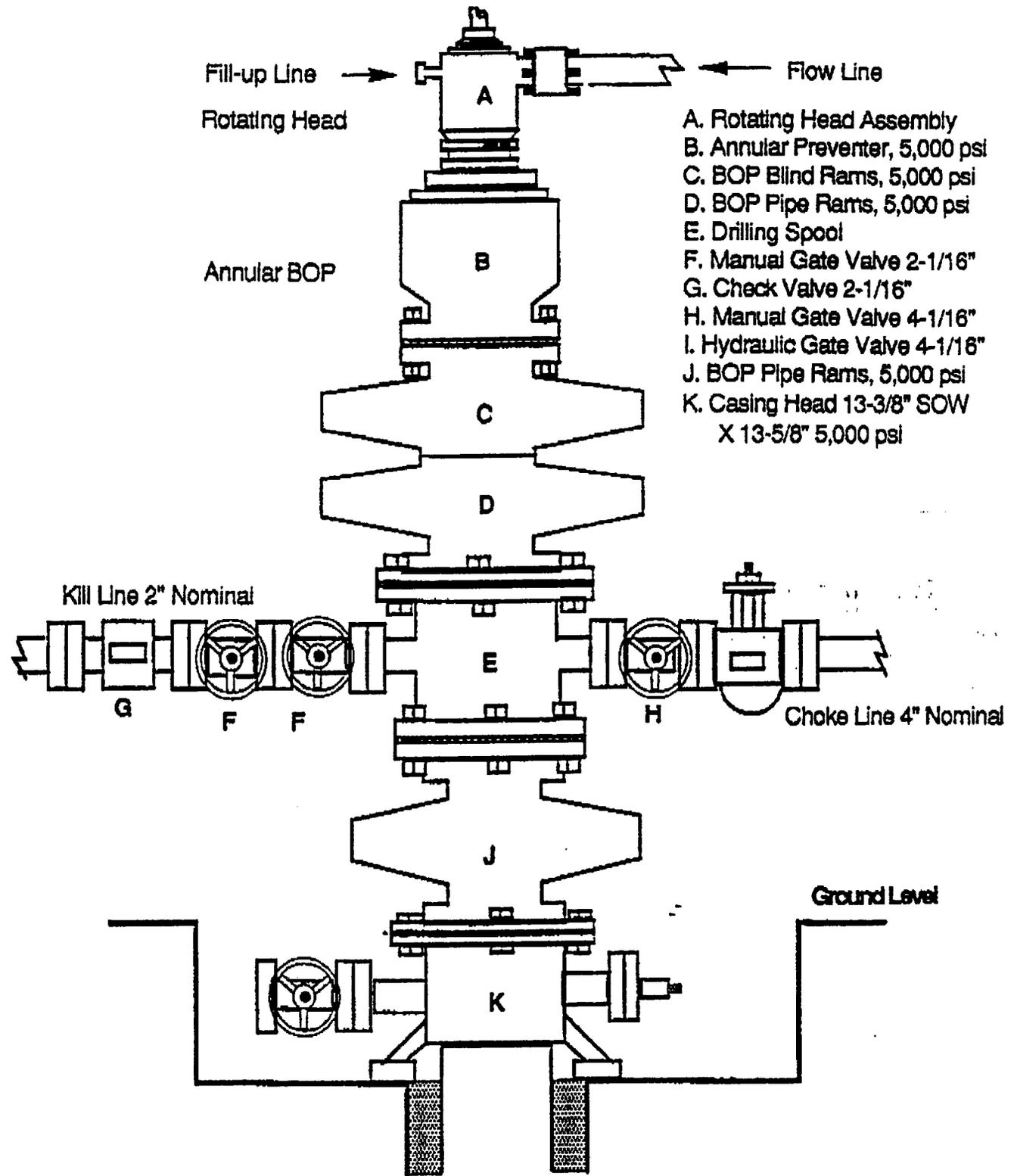
- Casing String and Cementing** - **twenty-four (24) hours prior to initiating pressure tests.**
  
- BOP and Related Equipment Tests** - **twenty-four (24) hours prior to initiating pressure tests.**
  
- First Production Notice** - **within five (5) business days after new well begins or production resumes after well has been off production for more than ninety (90) days.**



**Permitco Incorporated**  
A Petroleum Permitting Company

**EXHIBIT "B-1"**  
**BOP Stack Arrangement for 12-1/4" Hole**

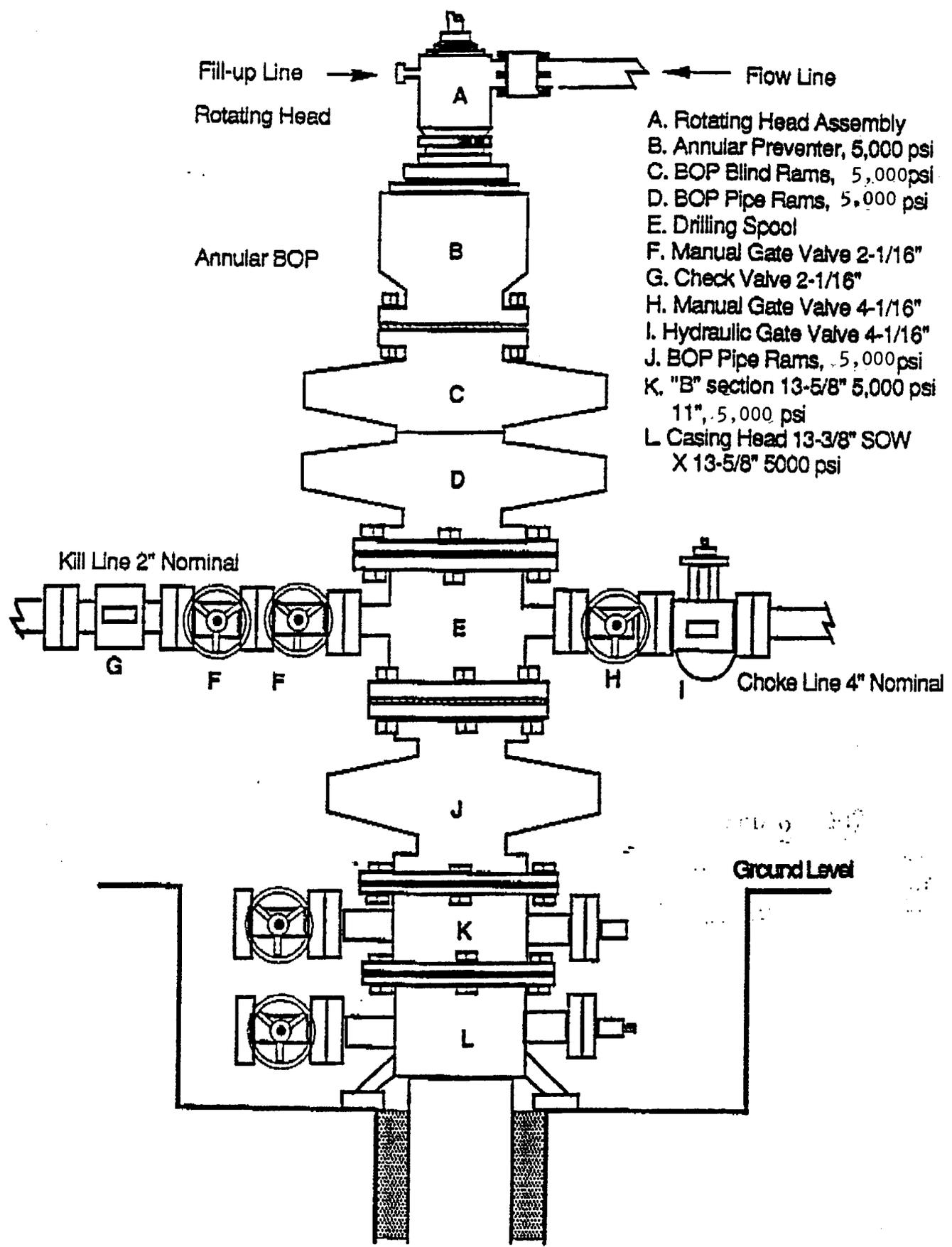
**13-5/8" 5,000 or 3,000 psi Stack**  
**12-1/4" Hole Section**



ALL WELLS

**EXHIBIT "B-2"**  
**BOP Stack Arrangement for 8-3/4" Hole**

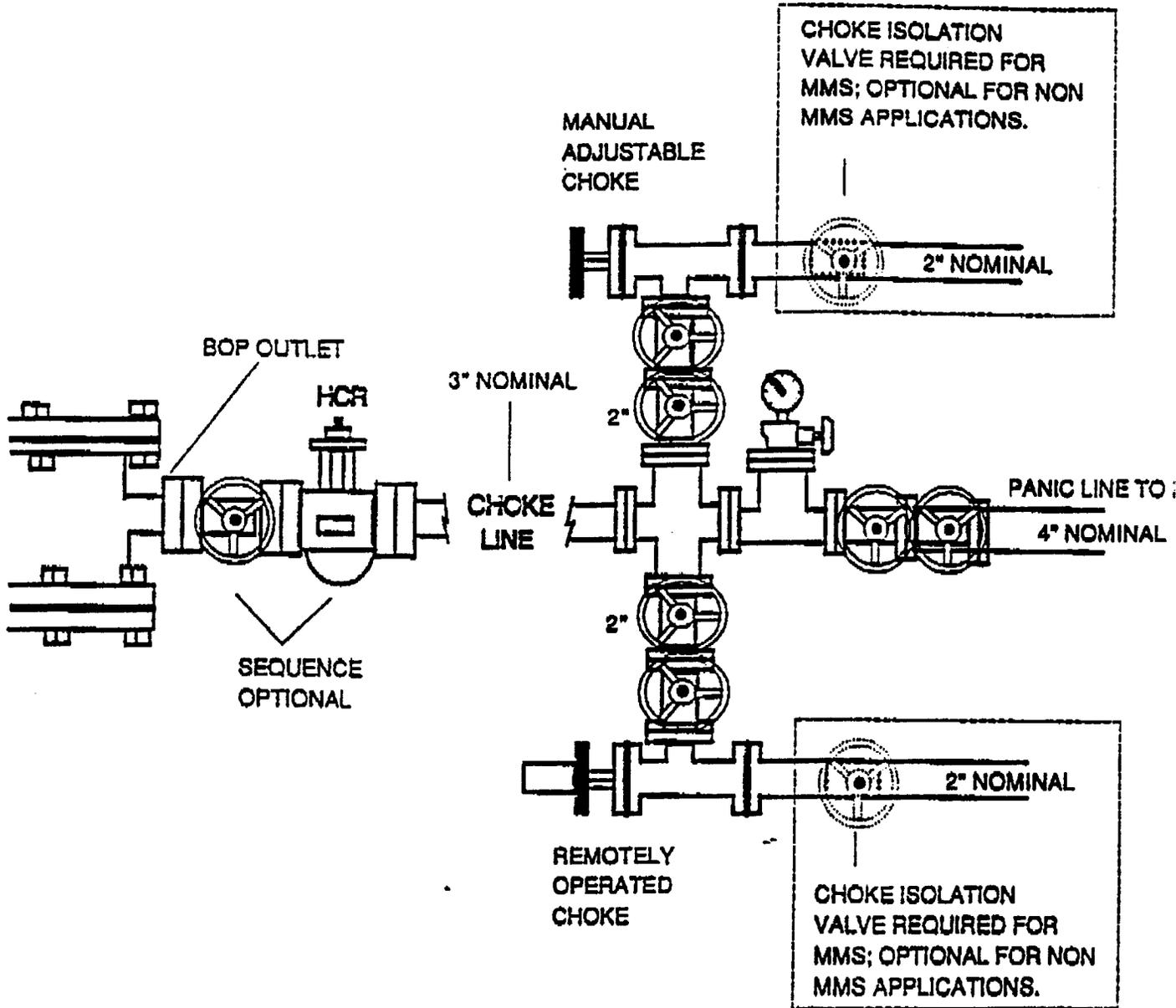
**11" BOP Stack 5,000 psi**  
**8-3/4" Hole Section**



- A. Rotating Head Assembly
- B. Annular Preventer, 5,000 psi
- C. BOP Blind Rams, 5,000psi
- D. BOP Pipe Rams, 5,000 psi
- E. Drilling Spool
- F. Manual Gate Valve 2-1/16"
- G. Check Valve 2-1/16"
- H. Manual Gate Valve 4-1/16"
- I. Hydraulic Gate Valve 4-1/16"
- J. BOP Pipe Rams, 5,000 psi
- K. "B" section 13-5/8" 5,000 psi  
11", 5,000 psi
- L. Casing Head 13-3/8" SOW  
X 13-5/8" 5000 psi

**EXHIBIT "B-3"**  
**5M Choke Manifold Arrangement**

**DRILLING OPERATIONS**  
**CHOKE MANIFOLD**  
**5M SERVICE**



ONSHORE OIL & GAS ORDER NO. 1

Thirteen Point Surface Use Plan

The onsite inspection for the above mentioned well was conducted on Wednesday, June 23, 1993 at approximately 9:15 a.m. Weather conditions were warm and breezy. Present at the onsite inspection were the following individuals:

Byron Tolman	Natural Resource Protection	BLM
Jean Sinclair	Natural Resource Specialist	BLM
Robert Kay	Surveyor	UELS
Lisa Smith	Permitting Consultant	Permitco Inc.

1. Existing Roads

a. The proposed well site is located approximately 20.4 miles southeast of Vernal, Utah.

b. Directions to the location from Vernal, Utah are as follows:

From Vernal, Utah proceed southeasterly on Highway 40 for approximately 20.4 miles. Turn right onto new access road (flagged) and proceed southwesterly for approximately 0.2 miles to the location.

c. For location of access roads within a 2-Mile radius, see Maps A & B.

d. Improvement to the existing access will not be necessary.

e. All existing roads will be maintained and kept in good repair during all drilling and completion operations associated with this well.

f. Existing roads and newly constructed roads on surface under the jurisdiction of any Surface Managing Agency shall be maintained in accordance with the standards of the SMA.



2. Planned Access Roads

- a. There will be approximately 0.2 miles of new access road to be constructed. The new road will be crowned and ditched with a running surface of 18 feet and a maximum disturbed width of 30 feet. Appropriate water control will be installed to control erosion.
- b. The maximum grade will be approximately 8%.
- c. No turnouts are planned.
- d. No culverts and/or bridges will be required, however, appropriate drain dips or water turnouts will be installed as necessary to control erosion.
- e. The access road was centerline flagged at the time of staking.
- f. Surfacing material may be necessary depending on weather conditions.
- g. One cattleguard will be installed in the highway right of way fenceline.
- h. Surface disturbance and vehicular travel will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.
- i. 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 and Gas Exploration and Development, (1989).
- j. The road will be constructed to meet the standards of the anticipated traffic flow and all weather road requirements. Construction/upgrading shall include ditching, draining, graveling, crowing 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 crossing nor shall the drainages be blocked by the roadbed. Erosion of drainage ditches by runoff 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.

- k. A road right of way application will not be required as the new access is within the lease boundaries.

3. Location of Existing Wells Within a 1-Mile Radius of the Proposed Location.

- a. Water wells - none
- b. Injection wells - none
- c. Producing wells - none
- d. Drilling wells - none
- e. Shut-in wells - none
- f. Temporarily abandoned wells - none
- g. Disposal wells - none
- h. Dry Holes - six

4. Location of Tank Batteries and Production Facilities.

- a. All permanent structures (onsite for six months or longer) constructed or installed (including oil well pump jacks) will be painted Desert Tan (10YR6/3). All facilities will be painted within six months of installation. Facilities required to comply with the Occupational Safety and Health Act (OSHA) will be excluded. The required paint color is Desert Brown.



- b. If storage facilities/tank batteries are constructed on this lease, the facility/battery or the wellpad shall be surrounded by a containment dike of sufficient capacity to contain at a minimum, the entire content of the largest tank within the facility/battery, unless more stringent protective requirements are deemed necessary by the authorized officer.
- c. A Sundry Notice will be submitted showing placement of all production facilities prior to construction.
- d. 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 contraction in the unit or other lease or unit boundary change), BLM will process a change in authorization to the appropriate statute. The authorization will be subject to appropriate rental or other financial obligation as determined by the authorized officer.
- e. Any necessary pits will be properly fenced to prevent any wildlife entry.
- f. All site security guidelines identified in 43 CFR 3162.7 regulations will be adhered to.
- g. All off-lease storage, off-lease measurement, or commingling on-lease or off-lease will have prior written approval from the District Manager.
- h. All access roads will be maintained as necessary to prevent erosion and accommodate year-round traffic.
- i. The road will be maintained in a safe useable condition.

5. Location and Type of Water Supply

- a. All water needed for drilling purposes will be obtained from the Vernal City water supply (Ashley Valley Water and Sewer) at Dalbo's office located at 355 South, 1000 East, Vernal, Utah.
- b. Water will be hauled to location over the roads marked on Maps A and B.



- c. No water well is to be drilled on this lease.

6. Source of Construction Material

- a. Surface and subsoil materials in the immediate area will be utilized.
- b. Any gravel used will be obtained from a commercial source.
- c. The use of materials under BLM jurisdiction will conform with 43 CFR 3610.2.3. Construction material will not be located on lease.
- d. No construction materials will be removed from Federal land.

7. Methods of Handling Waste Disposal

- a. The reserve pit will be constructed so as not to leak, break, or allow discharge.
- b. After the reserve pit has been constructed, it will be reviewed by the BLM to determine the need for a pit liner. If a plastic liner is used, it will be a minimum of 10 mil thickness with sufficient bedding (either straw or dirt) to cover any rocks. The liner will overlap the pit walls and be covered with dirt and/or rocks to hold it in place. No trash, scrap pipe, etc., that could puncture the liner will be disposed of in the pit. More stringent protective requirements may be deemed necessary by the A.O.
- c. Burning will not be allowed. All trash will be contained in a trash cage and its contents removed at the end of drilling operations and hauled to an approved disposal sight.
- d. After first production, produced waste water will be confined to a unlined pit or storage tank for a period not to exceed ninety (90) days. During the 90-day period, in accordance with NTL-2B, an application for approval of a permanent disposal method and location, along with the required water analysis, will be submitted for the AO's approval. Failure to file an application within the time allowed will be considered an incident of



noncompliance.

- e. Drill cuttings are to be contained and buried in the reserve pit.
- f. Any salts and/or chemicals which are an integral part of the drilling system will be disposed of in the same manner as the drilling fluid.
- g. A chemical porta-toilet will be furnished with the drilling rig.
- h. The produced fluids will be produced into a test tank until such time as construction of production facilities is completed. Any spills of oil, gas salt water or other produced fluids will be cleaned up and removed.

8. Ancillary Facilities

There are no airstrips, camps, or other facilities planned during the drilling of the proposed well.

9. Well Site Layout

- a. The reserve pit will be located on the southeast side of the location.
- b. The flare pit will be located downwind of the prevailing wind direction on the northeast side, a minimum of 100 feet from the well head and 30 feet from the reserve pit fence.
- c. The stockpiled topsoil (first six inches) will be stored along the east and west sides of the location as shown on the attached rig layout.
- d. Access to the wellpad will be from the northeast as shown on Map "B".
- e. See Location Layout for orientation of rig, cross section of drill pad and cuts and fills.
- f. The location of mud tanks; reserve pit, trash cage; pipe racks; living facilities and soil stockpiles will be shown on the Location Layout.



- g. During construction, any brush will be removed from the wellpad and access road and stockpiled separately from the topsoil.
- h. All pits will be fenced according to the following minimum standards:
  - 1. 39 inch net wire shall be used with at least one strand or 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).
  - 2. The net wire shall be no more than 2-inches above the ground. The barbed wire shall be 3-inches above the net wire. Total height of the fence shall be at least 42-inches.
  - 3. Corner posts shall be cemented and/or braced in such a manner to keep the fence tight at all times.
  - 4. 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.
  - 5. All wire shall be stretched, by using a stretching device, before it is attached to the corner posts.
- i. The reserve pit fencing will be on three sides during drilling operations and on the fourth side when the rig moves off the location. Pits will be fenced and maintained until cleanup.

10. Plans for Restoration of Surface

Producing Location

- a. 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.



- b. Immediately upon well completion, any hydrocarbons on the pit shall be removed in accordance with 43 CFR 3162.7-1.
- c. If a plastic nylon reinforced liner is used, it shall be torn and perforated before backfilling of the reserve pit.
- d. The reserve pit and that portion of the location not needed for production facilities/operations will be recontoured to the approximate natural contours. The reserve pit will be reclaimed within 120 days from the date of well completion. Before any dirt work takes place, the reserve pit must have all fluids and hydrocarbons removed and all cans, barrels, pipe, etc., will be removed.
- e. The reclaimed portion of the production pad will be reseeded with the following seed mixture:

<u>Species</u>	<u>Lbs./Acre</u>
Fairway Crested Wheatgrass	4
Russian Wildrye	4
Fourwing Saltbrush	4
Yellow Sweetclover	1/2

The appropriate surface management agency should be contact for required seed mixture for final abandonment.

Dry Hole

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

11. Surface Ownership

**Access Roads** - All existing roads maintained by the State Highway Dept. The new access road will be located on BLM lands.

**Wellpad** - The well pad is located on lands managed by the BLM.

12. Other Information

- a. A Class III archeological survey was conducted by Sagebrush Archaeological Consultants. No significant cultural resources were found and clearance has been recommended. A copy of this report is attached.
- b. The operator is responsible for informing all persons in the areas who are associated with this project that they will be 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 is to immediately stop work that might further disturb such materials, and contact the authorized officer (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 (assuming in-situ preservation is not necessary); and
  - 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 wishes, 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 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.
- c. The operator will control noxious weeds along right-of-ways for roads, pipelines, well sites, or other applicable facilities. A list of noxious weeds may be obtained from the BLM, or the appropriate County Extension Office. On BLM administered land it is required that a Pesticide Use Proposal shall be submitted, and given approval, prior to the application of herbicides or other pesticides or possible hazardous chemicals.



- d. Drilling rigs and/or equipment used during drilling operations on this wellsite will not be stacked or stored on Federal Lands after the conclusion of drilling operations or at any other time without BLM authorization. However, if BLM authorization is obtained, it is only a temporary measure to allow time to make arrangements for permanent storage on commercial facilities. (The BLM does not seek to compete with private industry. There are commercial facilities available for stacking and storing drilling rigs.)**
- e. All lease and/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 approved plan of operations, and any applicable Notice to Lessees. The operator is fully responsible for the actions of his subcontractors. A copy of these conditions will be furnished the field representative to insure compliance.**
- f. A complete copy of the approved APD shall be on location during construction of the location and drilling activities.**
- g. This permit will be valid for a period of one year from the date of approval. After permit termination, a new application will be filed for approval for any future operations.**
- h. The operator or his contractor shall contact the BLM Offices at 801/789-1362 48 hours prior to construction activities.**
- i. The BLM Office shall be notified upon site completion prior to moving on the drilling rig.**

13. Lessee's or Operator's Representative and Certification

Permit Matters  
PERMITCO INC.  
Lisa L. Smith  
13585 Jackson Drive  
Denver, CO 80241  
303/452-8888

Drilling & Completion Matters  
ARCO Oil & Gas Company  
P.O. Box 1610  
Midland, TX 79702  
915/688-5200 - Main Number  
915/688-5567 - Bob Meize  
915/688-5676 - Erik Peterson

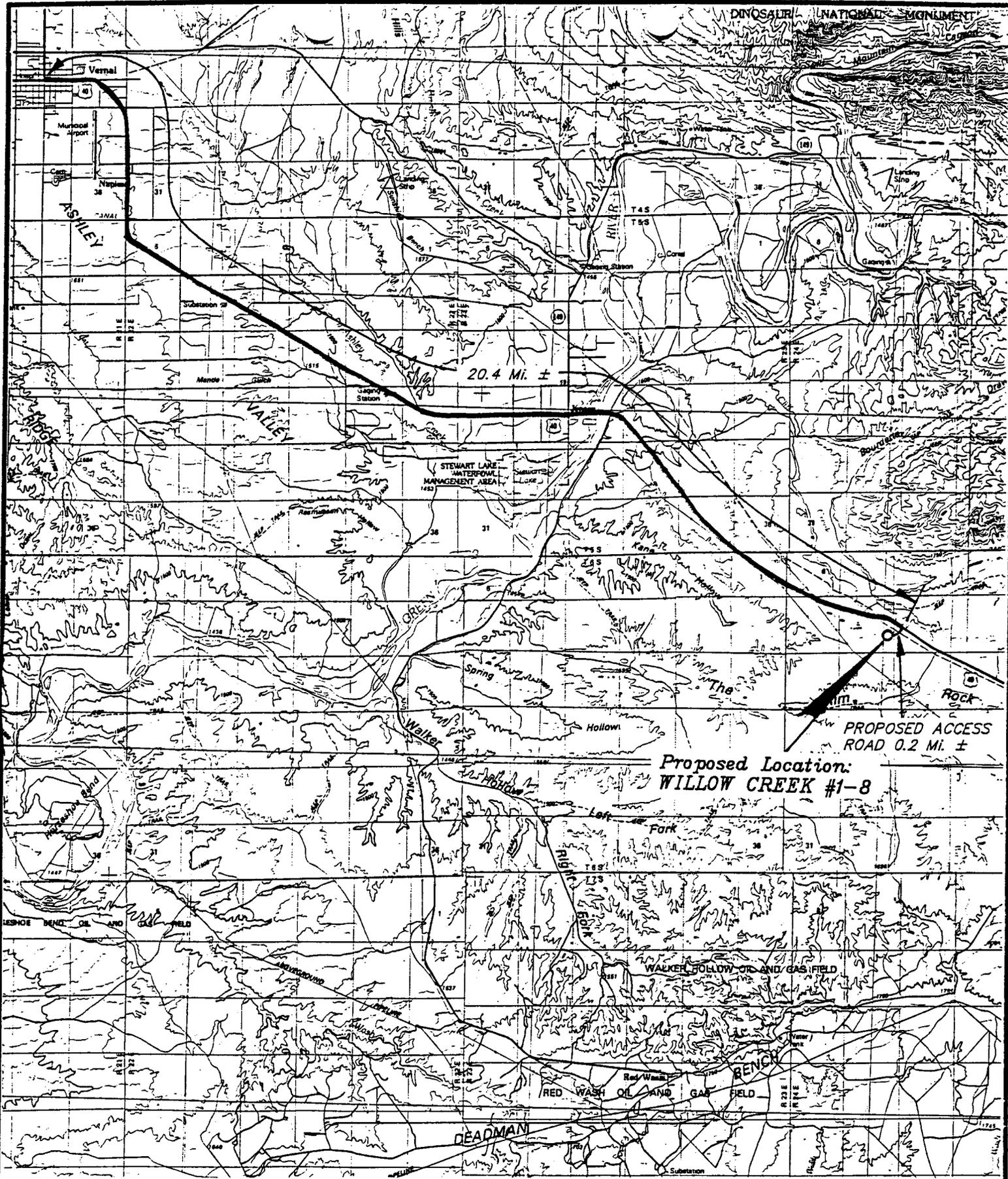
Certification

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 which presently exist; that the statements made in this 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 ARCO Oil & Gas Company and its contractors and subcontractors in conformity with the plan and the terms and conditions under which it is approved.

This statement is subject to the provisions of 18.U.S.C. 1001 for the filing of a false statement.

August 4, 1993  
Date:

  
\_\_\_\_\_  
Lisa L. Smith - Permitco Inc.  
Authorized Agent for:  
ARCO Oil & Gas Company



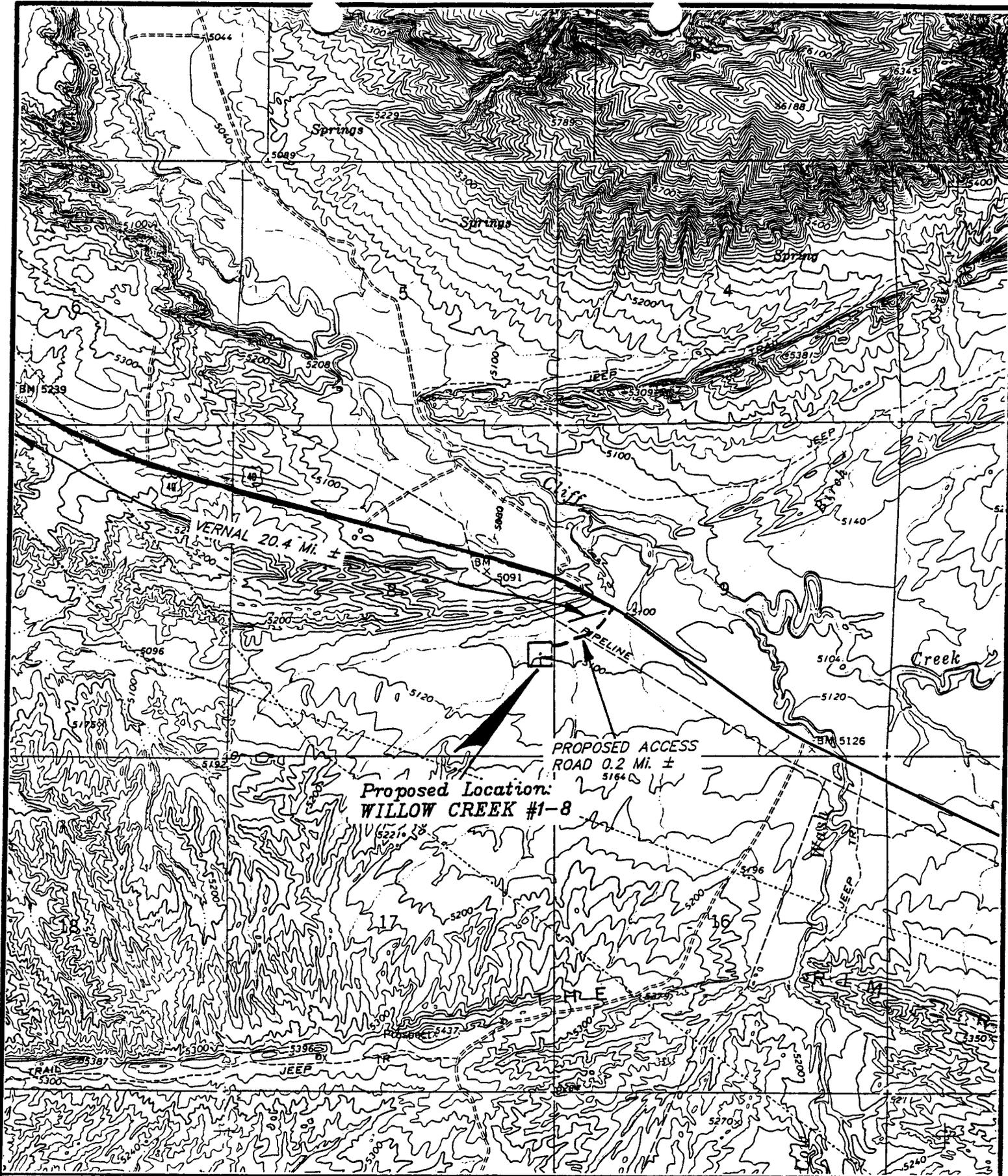
PROPOSED ACCESS ROAD 0.2 Mi. ±

Proposed Location:  
WILLOW CREEK #1-8

REVISED: 6-22-93 J.L.G.  
 TOPOGRAPHIC  
 MAP "A"  
 DATE: 6-17-93 J.L.G.



ARCO OIL & GAS CO.  
 WILLOW CREEK #1-8  
 SECTION 8, T6S, R24E, S.L.B.&M.  
 1623' FSL 220' FEL



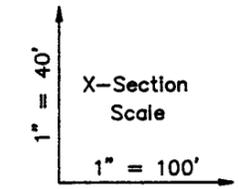
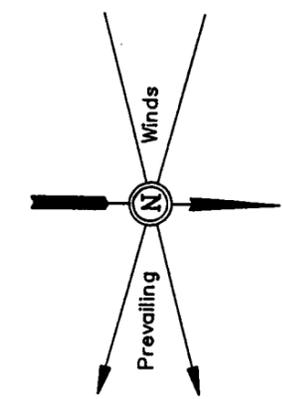
REVISED: 6-22-93 J.L.G.  
 TOPOGRAPHIC  
 MAP "B"  
 SCALE: 1" = 2000'  
 DATE: 6-17-93 J.L.G.



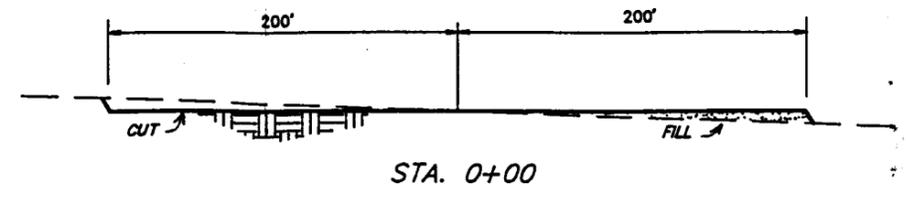
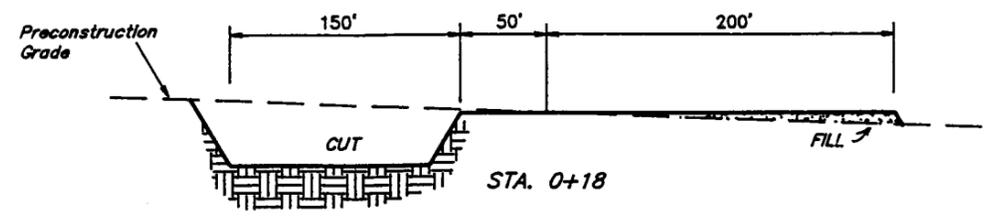
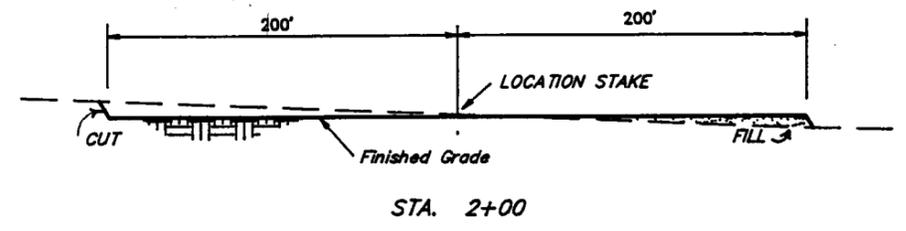
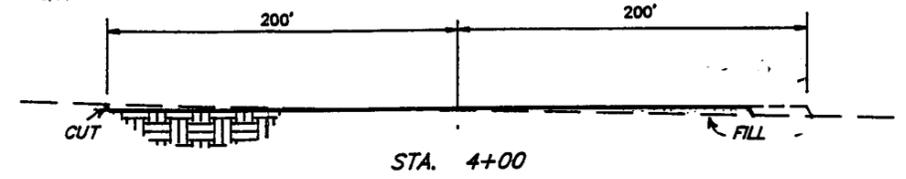
ARCO OIL & GAS CO.  
 WILLOW CREEK #1-8  
 SECTION 8, T6S, R24E, S.L.B.&M.  
 1623' FSL 220' FEL

ARCO OIL & GAS CO.

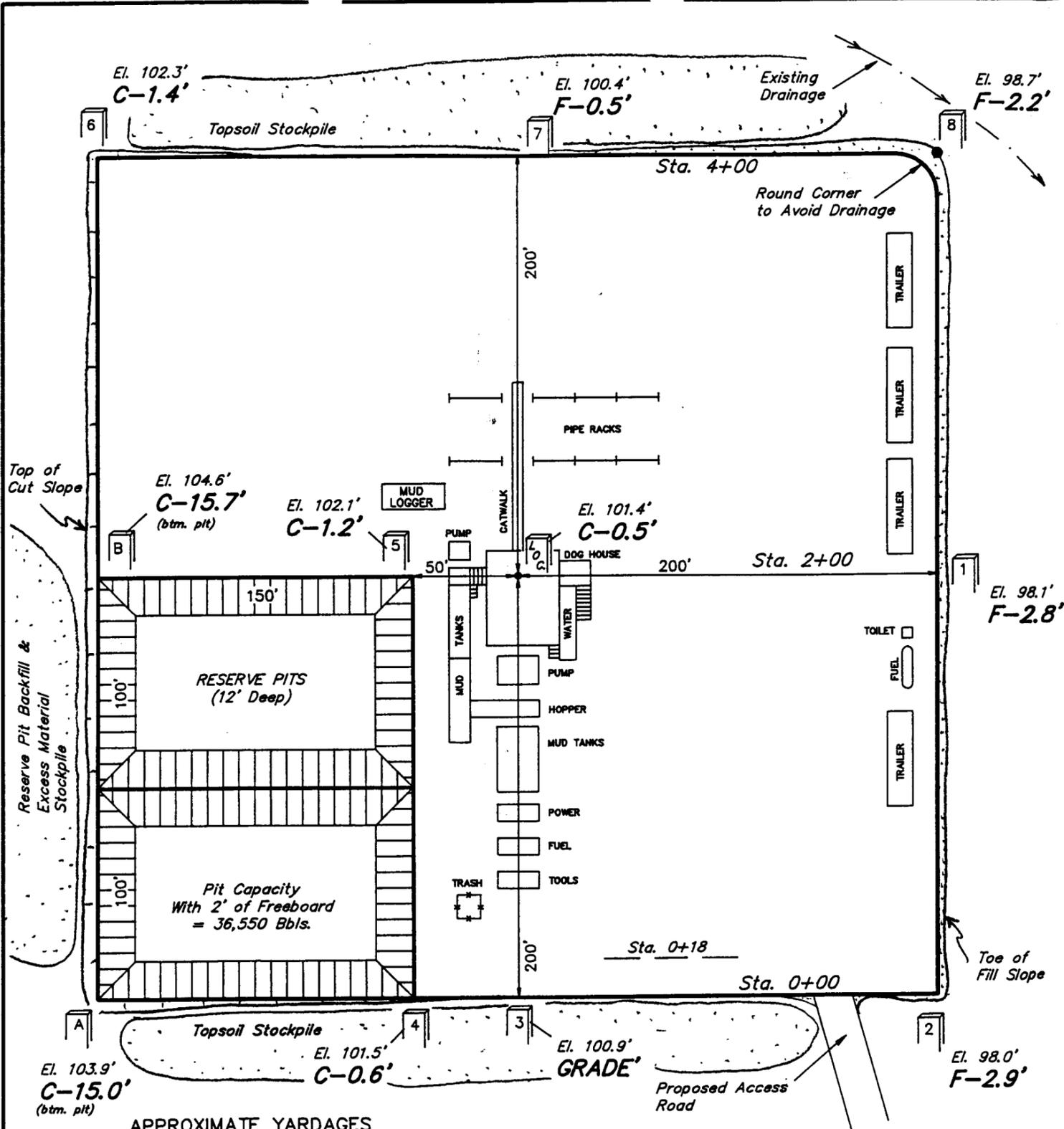
LOCATION LAYOUT FOR  
 WILLOW CREEK #1-8  
 SECTION 8, T6S, R24E, S.L.B.&M.  
 1623' FSL 220' FEL



SCALE: 1" = 60'  
 DATE: 6-22-93  
 DRAWN BY: R.E.H.  
 Revised: 6-23-93



TYP. LOCATION LAYOUT  
 TYP. CROSS SECTIONS



APPROXIMATE YARDAGES

CUT		EXCESS MATERIAL AFTER	
(6") Topsoil Stripping	= 2,960 Cu. Yds.	5% COMPACTION	= 9,950 Cu. Yds.
Remaining Location	= 12,900 Cu. Yds.	Topsoil & Pit Backfill	= 7,820 Cu. Yds.
		(1/2 Pit Vol.)	
<b>TOTAL CUT</b>	<b>= 15,860 CU.YDS.</b>	EXCESS UNBALANCE	= 2,130 Cu. Yds.
FILL	= 5,610 CU.YDS.	(After Rehabilitation)	

Elev. Ungraded Ground at Location Stake = 5101.4'

Elev. Graded Ground at Location Stake = 5100.9'

**There are no federal stipulations at this time.**



**A CULTURAL RESOURCES SURVEY OF AN ALTERNATE LOCATION FOR  
ARCO'S WILLOW CREEK WELL #1-8 AND ITS ACCESS ROAD,  
UINTAH COUNTY, UTAH**

by

**Heather M. Weymouth  
Archaeologist**

Prepared for:

**ARCO Oil and Gas Company  
P.O. Box 1610  
Midland, Texas 79702**

Prepared by:

**Sagebrush Archaeological Consultants  
3670 Quincy Avenue, Suite 203  
Ogden, Utah 84403**

**Under Authority of Cultural Resources Use Permit No. 92-UT-54630**

and

**Utah State Antiquities Permit No. U-93-SJ-283b**

**Archaeological Report No. 600**

**June 23, 1993**

## INTRODUCTION

In June 1993, Permitco of Denver, Colorado and ARCO Oil and Gas Company (ARCO) of Midland, Texas requested that Sagebrush Archaeological Consultants (Sagebrush) conduct a cultural resources inventory of an alternate location for ARCO's Willow Creek Well #1-8 and its access road in Uintah County, Utah.

The alternative location for the well and its access road is located in T. 6S., R. 24E., S. 8 NE¼SE¼ on lands controlled by the Bureau of Land Management (BLM). Footages for the well location are as follows: 1623' FSL, 220' FEL. The project area lies on the USGS 7.5' Quadrangle Cliff Ridge, Utah (1968; PI 1978)(Figure 1). The field inspection was carried out by the author on June 22, 1993 under authority of Cultural Resources Use Permit No. 92-UT-54630 and Utah State Antiquities Permit No. U-93-SJ-283b.

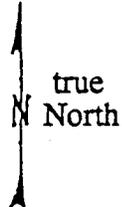
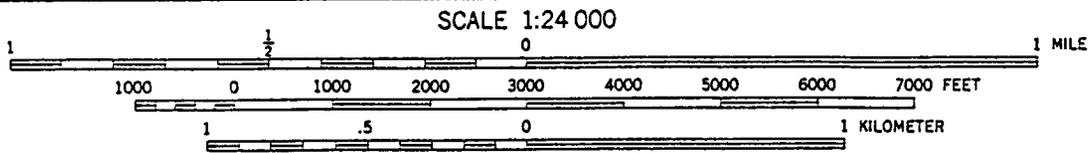
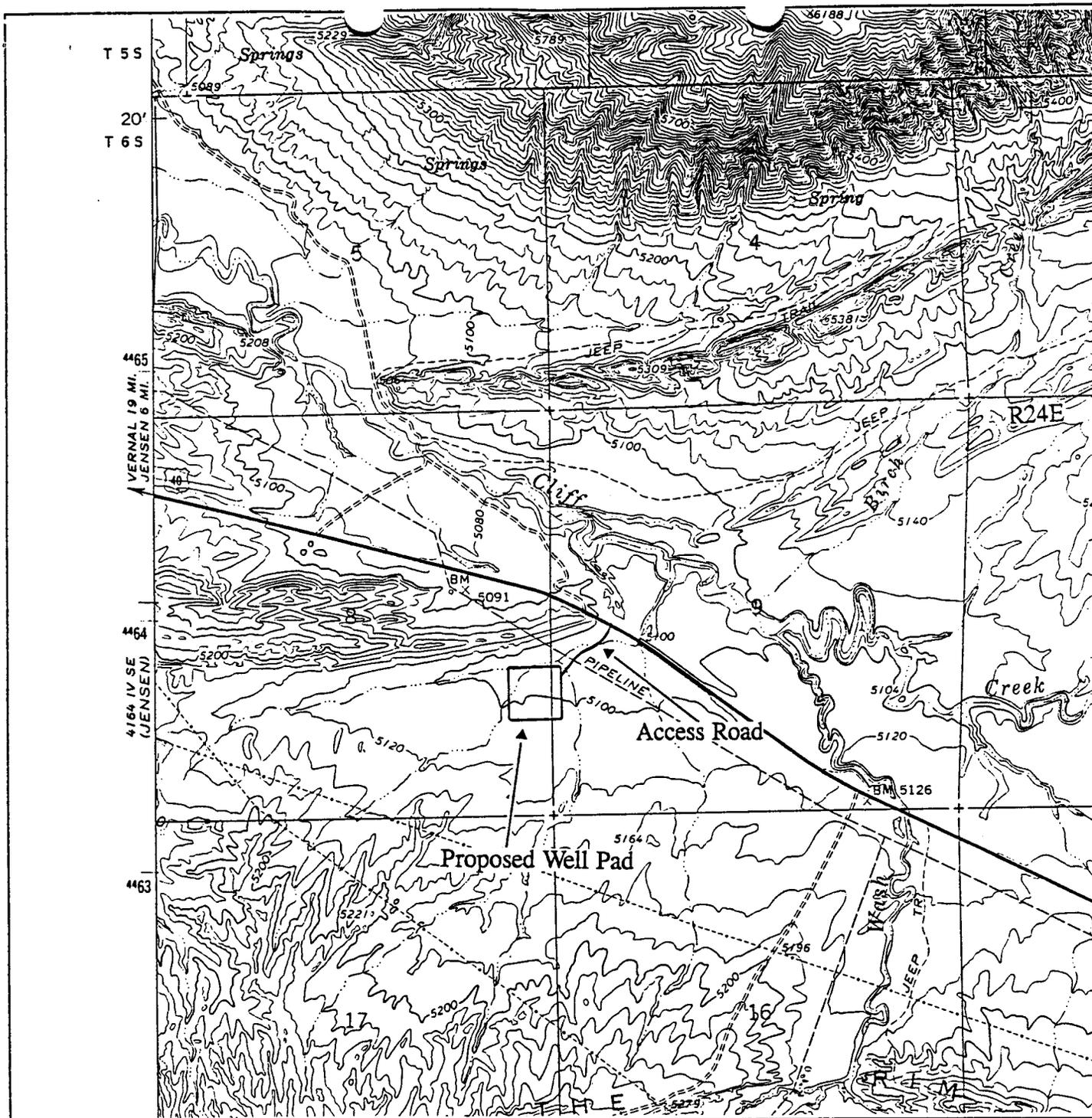
A file search for previously recorded cultural resources sites and paleontological localities near the project area was conducted by the author at the Division of State History, Utah State Historical Society, and at the Utah State Historical Society Library, Salt Lake City on June 11, 1993 to determine if any cultural resources projects had been conducted or sites recorded in the project area. An additional file search was conducted by the author on June 8, 1993 at the Bureau of Land Management, Vernal District Office prior to conducting the fieldwork. The National Register of Historic Places (NRHP) was consulted prior to the commencement of fieldwork for the present project. No NRHP sites were found located in the vicinity of the current project area.

Five previous cultural resources projects and no paleontological localities have been previously recorded in the vicinity of the current project area:

In 1984 Nickens and Associates conducted archaeological investigations along the Chevron CO-2/Po-4 Pipelines in northeastern Utah (Nickens 1986). No sites were located in the vicinity of the current project area during this survey.

In 1984 Woodward-Clyde Consultants and Woods Canyon Archaeological Consultants conducted a joint cultural and paleontological inventory of the Chevron Carbon Dioxide and Phosphate Slurry Pipeline Corridors (Knudsen et al 1985). Five sites (42Un1473-76 and 42Un1478) were recorded near the current project area during these investigations. Site 42Un1473 is described as a lithic scatter/tool manufacture locus with lithic debitage consisting of bifacial thinning flakes, pressure retouch flakes, secondary core reduction and one bifacially worked tool. Site 42Un1474 is a widely dispersed lithic scatter consisting primarily of pressure retouch flakes. Site 42Un1475 is a lithic scatter/campsite consisting of large dense concentrations of lithic debitage, flaked stone tools and ground stone. Site 42Un1476 is described as a lithic scatter/campsite consisting of various stages of flaked debitage, one projectile point and one piece of ground stone. Site 42Un1478 is described as a lithic scatter/tool manufacture locus consisting of lithic debitage and one bifacially worked core. Of these, only site 42Un1474 was determined significant to the NRHP.

In 1985 Sagebrush conducted a cultural resources inventory of a seismic line for Petty-Ray Geophysical (Polk 1985) which passed near the current project area. Additionally, in 1986 Sagebrush conducted a cultural resources survey of seven seismic lines for Western Geophysical (Polk 1986). One of these lines (#117) passed near the current project area. In 1988 Blaine Phillips completed a linear survey for the BLM along Cow Wash. There were no cultural resources sites found in the vicinity of the current project area on any of these surveys.



CONTOUR INTERVAL 20 FEET

Figure 1. Location of the area surveyed for an alternate location for ARCO's Willow Creek well #1-8, Uintah County, Utah. Taken from: USGS 7.5' Quadrangle Cliff Ridge, Utah (1968; PI 1978).

In 1992 James A. Truesdale (Metcalf Archaeological Consulting) carried out a Class III cultural resources inventory on a number of seismic lines for ARCO located along Cliff Creek (Truesdale 1992). One site, 42Un1983, was recorded near the current project area during this inventory. Site 42Un1983 is described as a low density lithic scatter of chipped stone tools and lithic debris, with a number of deflated hearths and fire cracked rock scatters.

A number of sites have been recorded within one mile of the current project area which were unrelated to the projects noted above. Following is a brief description of each of these sites:

42Un33: a habitation/campsite on a low sandy dune consisting of several fire hearths and depressions and one possible rock wall located east of Jensen on the south side of U.S. Highway 40.

42Un146: a petroglyph panel with various figures located east of Jensen on the north side of U.S. Highway 40.

Site 42Un1014: a petroglyph panel composed of eleven figures pecked into a sandstone cliff face located east of Jensen and north of Cliff Creek.

Site 42Un1347: a rock shelter site with one visible lithic flake exposed on the surface of the fill located east of Jensen along Cliff Creek.

Site 42Un1349: a lithic quarry area consisting of various stages of lithic reduction. The materials are eroding out of a low ridge located east of Jensen on the south side of U.S. Highway 40.

Site 42Un1477: a lithic scatter/campsite with non-architectural features located on top of a ridge east of Jensen, Utah. Diagnostic artifacts were located at the site.

Site 42Un1527: a historic period rock art site with an associated low sandstone wall located east of Jensen along Cliff Creek.

Site 42Un1528: a limited activity prehistoric site with lithic debitage and flaked stone tools along with an historic component consisting of metal and glass fragments located east of Jensen along Cliff Creek.

Site 42Un1570: a petroglyph panel consisting of a variety of figures pecked into a vertical sandstone face located east of Jensen along Cliff Creek.

Site 42Un1657: a large prehistoric lithic scatter with heat treated lithic materials, burned stone, and other tools eroding out of the soil near Willow Creek.

Site 42Un1658: a small lithic scatter with fire cracked rock present located near Willow Creek.

Site 42Un1659: a lithic scatter with heat treated lithic materials and three biface preforms located near Willow Creek.

Site 42Un1676: a petroglyph panel with trapezoidal and zoomorphic figures located above Cliff Creek.

Site 42Un1872: a lithic scatter with possible hearth/camp located south of Cliff Creek.

In addition to previously recorded sites, there is a segment of the historic Uintah and White River Ute Trail which passes through T. 6S., R. 24E., S. 8, NE $\frac{1}{4}$ NE $\frac{1}{4}$ ; NW $\frac{1}{4}$ NE $\frac{1}{4}$ ; NE $\frac{1}{4}$ NW $\frac{1}{4}$ ; SE $\frac{1}{4}$ NW $\frac{1}{4}$ ; SW $\frac{1}{4}$ NW $\frac{1}{4}$ . The northern leg of this trail passes through S. 8 on the north side of Cliff Creek. A second leg of the trail branches off to the south at the center

of the S. 5-S. 8 section line and continues southward and then west through the NW¼ of S. 8. These trail segments are visible on the current USGS 7.5' Quadrangle in the form of a jeep trail (northern leg) and an unimproved dirt road (second leg). Neither of these trail segments will be affected by the current project which is located south and east of their locations. These trail segments are a part of the Uintah and White River Ute Trail which extended from Vernal, Utah east to Meeker, Colorado. The trail was used by the Ute Indians in the 1800s and later by shepherders and seismic crews. The trail is shown on the 1880 GLO Plat Map for T. 6S., R. 24E., of the Salt Lake Meridian. Segments of the trail have been recorded in previous surveys, the main portion of the trail has been given the site designation 42Un1555.

## ENVIRONMENT

The well pad and access road lay on a low silty flat six miles east of Jensen on the south side of U.S. Highway 40. The area is characterized by low rolling tablelands dissected by deep drainages and low eroding bedrock outcrops of sandstone. The area surveyed for the well location lies completely on a flat which appears to have been plowed and leveled for agricultural use in recent years. Soils in the area are very fine light tan to gray silty clays which become extremely plastic when wet. The surface sediments are almost entirely gravel free with little evidence of any subsurface material present in eroded areas and animal burrows. The elevation of the area about 5100 feet a.s.l. Vegetation in the area covers approximately 30 percent of the surface and is predominately shadscale community species. Noted species include Halogeton, Broom snakeweed, Claspig pepperweed, greasewood and a low growing spiny plant which closely resembles Camelthorn. The nearest permanent water source is the Green River which is located approximately six miles to the west.

Natural disturbance in the area is primarily sheetwash erosion. Cultural disturbance includes the U.S. Highway 40 right-of-way, an unimproved road which follows the base of a low sandstone outcrop on the north side of the survey area, agricultural use of the parcel itself and an existing pipeline which passes just north of the proposed well pad.

## METHODOLOGY

The survey area covered during this project consists of one 10 acre parcel of land centered on the proposed well head and an access road corridor connecting the well location to U.S. Highway 40. The well pad was inventoried by the author in parallel transects spaced no more than 15 meters apart. The access road, which totals 0.2 miles in length, was walked in two parallel transects spaced 10 meters apart to cover a corridor width of 100 feet (30 meters). The area surveyed on this project (including both the well pad and access road) totaled 12.4 acres.

## RESULTS

No cultural resources sites nor paleontological localities were found as a result of this inventory.

## RECOMMENDATIONS

Since there were no cultural resources nor paleontological resources found, cultural and paleontological clearance is recommended for the proposed project.

This investigation was conducted with techniques which are considered to be adequate for evaluating cultural and paleontological resources which could be adversely affected by the project. However, should such resources be discovered during construction, a report should be made immediately to the BLM District Archaeologist, Vernal District Office, Vernal, Utah.

## REFERENCES CITED

Knudsen, Dr. Ruthann et al

1985 *Cultural and Paleontological Resource Inventory Investigations along the Chevron Carbon Dioxide and Phosphate Slurry Pipeline Corridors, Colorado, Utah and Wyoming.* Woodward-Clyde Consultants, Walnut Creek California.

Nickens, Paul R.

1986 *Results of Archaeological Investigations Along the Chevron CO<sub>2</sub>/PO<sub>4</sub> Pipelines in Northeastern Utah and Northwestern Colorado.* Nickens and Associates, Montrose, Colorado.

Polk, Michael R.

1985 *A Cultural Resources Inventory of Petty-Ray Geophysical's Seismic Line 24c Extension, Uintah County, Utah.* Sagebrush Archaeological Consultants, Archaeological Report No. 169. Ogden.

1986 *Cultural Resources Survey of Seven Western Geophysical Seismic Lines in Uintah County, Utah.* Sagebrush Archaeological Consultants, Archaeological Report No. 203. Ogden.

Truesdale, James A.

1992 *A Class III Cultural Resources Inventory of the Proposed ARCO Oil & Gas Company Seismic Lines along Cliff Creek in Uintah County, Utah.* Metcalf Archaeological Consulting, Eagle, Colorado.

**A Wastewater Permit Application will be filed with the Uintah Basin District Health Department in Vernal once the drilling contractor has been determined.**





August 4, 1993

Utah Dept. of Transportation  
District #6  
825 North 900 West  
P.O. Box 215  
Orem, UT 84057

Re: **ARCO Oil & Gas Company**  
**Willow Creek #1-8**  
**Right of Way Encroachment Permit**  
**Uintah County, Utah**

Gentlemen:

Enclosed please find the original plus three copies of the Application for Right of Way Encroachment Permit.

The proposed approach is required to obtain access to a proposed drillsite located in the NE SE of Section 8, T6S - R24E. The proposed approach has been reviewed and agreed to by the Bureau of Land Management in Vernal, Utah.

Also attached are the required maps and Plan & Profile along with our check in the amount of \$20.00 to cover the application fees. If you should require additional information, please feel free to contact me.

Sincerely,

PERMITCO INC.

**Lisa L. Smith**  
**Consultant for:**  
**ARCO Oil & Gas Company**

Enc.

cc: **ARCO Oil & Gas Company**

**Permitco Incorporated**  
A Petroleum Permitting Company

UTAH DEPARTMENT OF TRANSPORTATION

Application for Right of Way Encroachment Permit

(WORK CANNOT BEGIN UNTIL PERMIT IS APPROVED)

Date 8/4/ , 19 93

To: District Director
UTAH DEPARTMENT OF TRANSPORTATION

\*(1) Application is hereby made by: ARCO Oil & Gas Company

\*(2) Address: P.O. Box 1610 Midland, TX 79702 Tel. No. 915/688-5567

\*(3) for permission to do the following: to construct an access approach to a proposed drill-site located as follows: (Willow Creek #1-8)

\*(4) Location: NE SE Sec. 8, T6S - R24E The approach will leave Highway 40 in the NW SW of Section 9, T6S - R24E on the south side of the highway. (20.4 miles southeast of Vernal, UT) See attached maps.

City County Uintah Highway No. 40 Milepost 167 in accordance with the attached plan \*(5)

\*(6) Construction will begin on or about immediately upon approval of this application and will be completed on or before within 30 days of commencement , 19 .

New underground utility installations crossing highway must be placed by boring. If boring is impossible due to unusual circumstances such as soil conditions, existing utilities, etc., a request for an exception may be made to the District Director and the following information provided:

- a. Type of pavement
b. Excavation will be feet long by feet wide and feet deep.
c. A bond in the amount of \$ has been posted with Tel. No. to run for a term of three [3] years after completion of work to guarantee satisfactory performance.

If this permit is granted, we agree to comply with all conditions, restrictions and regulations contained in the UDOT Policy 08-87 "Accommodation of Utilities on Federal-Aid and Non Federal-Aid Highway Right of Way", and "Special Limitations" required by the District Director or his duly authorized representative.

Surface Owner
Bureau of Land Management Owner
Lisa L. Smith - Permitco Inc. Signature
Authorized Agent for ARCO Oil & Gas Co. Title

\*Refer to Instructions on back

To be filled in by the District Director:

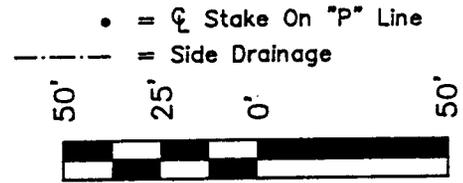
Permit should should not be granted.

Special Limitations

District Traffic Engineer

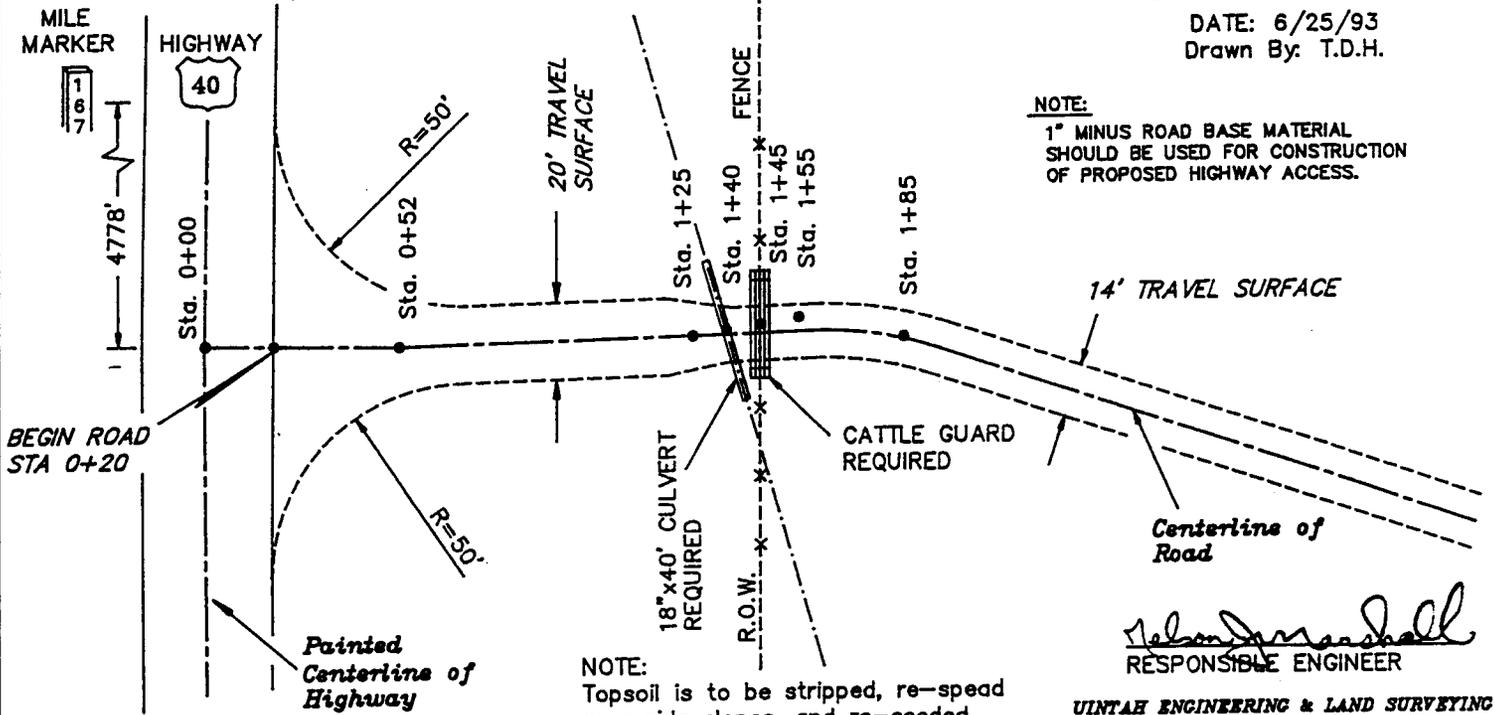
District Director

ARCO OIL & GAS CO.  
 WILLOW CREEK #1-8  
 (Proposed Highway Access)  
 PLAN & PROFILE



BAR SCALE

DATE: 6/25/93  
 Drawn By: T.D.H.



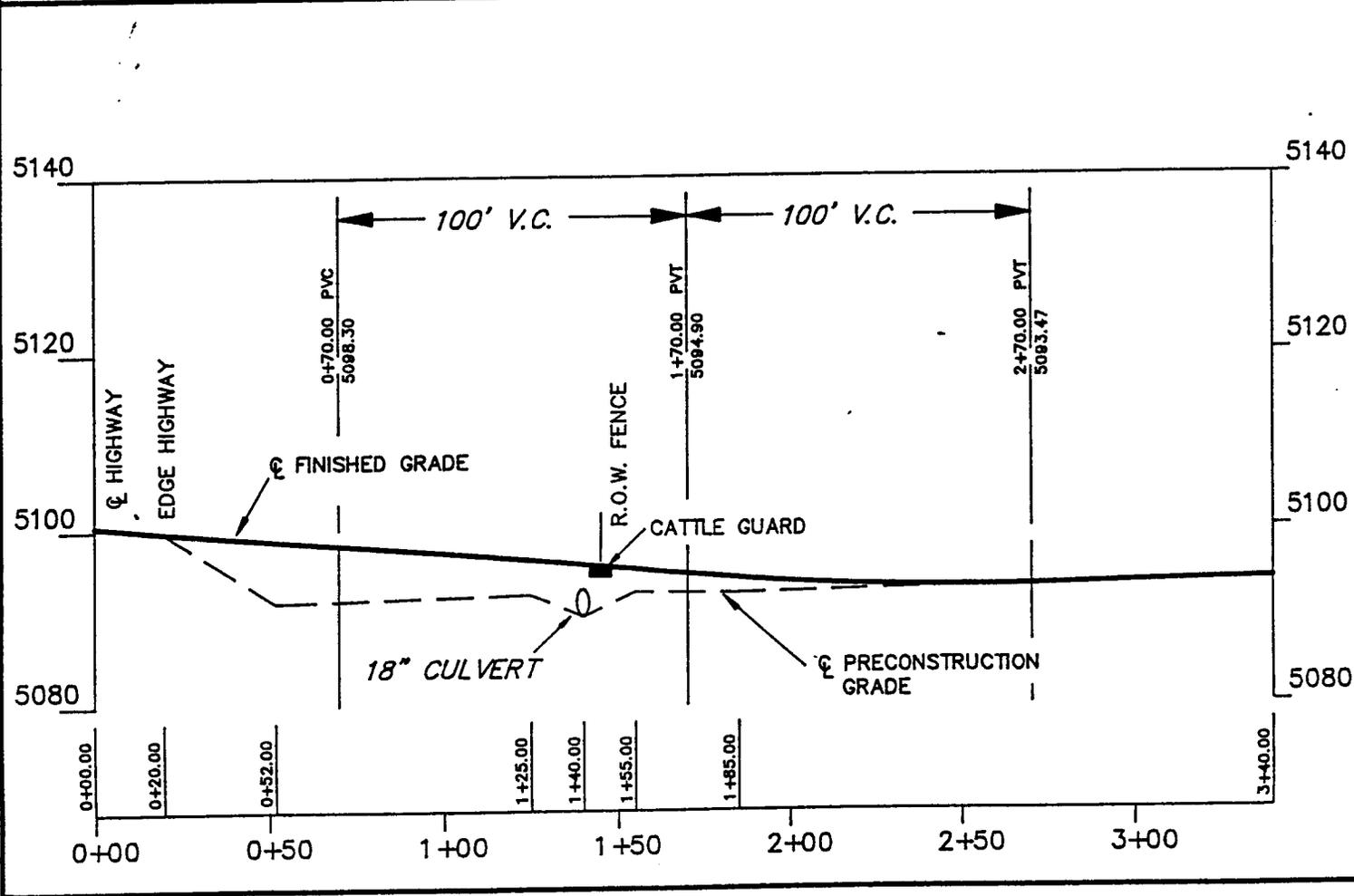
NOTE:  
 1" MINUS ROAD BASE MATERIAL  
 SHOULD BE USED FOR CONSTRUCTION  
 OF PROPOSED HIGHWAY ACCESS.

*Richard Marshall*  
 RESPONSIBLE ENGINEER

UINTAH ENGINEERING & LAND SURVEYING  
 86 So. 200 East Vernal, Utah

NOTE:  
 Topsoil is to be stripped, re-spread  
 over side slopes, and re-seeded.

GRADE %	-3.0	-3.8	+0.9
---------	------	------	------



STATE ACTIONS

Mail to:  
RDCC Coordinator  
116 State Capitol  
Salt Lake City, Utah 84114

- 1. ADMINISTERING STATE AGENCY  
OIL, GAS AND MINING  
355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203
- 2. STATE APPLICATION IDENTIFIER NUMBER:  
(assigned by State Clearinghouse)

3. APPROXIMATE DATE PROJECT WILL START:  
Upon approval

- 4. AREAWIDE CLEARING HOUSE(S) RECEIVING STATE ACTIONS:  
(to be sent out by agency in block 1)  
Uintah Basin Association of Governments

- 5. TYPE OF ACTION:  Lease  Permit  License  Land Acquisition  
 Land Sale  Land Exchange  Other \_\_\_\_\_

- 6. TITLE OF PROPOSED ACTION:  
Application for Permit to Drill

- 7. Arco Oil & Gas Company proposes to drill the Willow Creek #1-8 well (wildcat) on federal lease U-70237 in Uintah County, Utah. This action is being presented to RDCC for consideration of resource issues affecting state interests. The U.S. Bureau of Land Management is the primary administrative agency in this action and must issue approval before operations commence.

- 8. LAND AFFECTED (site location map required) (indicate county)  
NE/4 SE/4, Section 8, Township 6 South, Range 24 East, Uintah County, Utah

- 9. HAS THE LOCAL GOVERNMENT(S) BEEN CONTACTED?

- 10. POSSIBLE SIGNIFICANT IMPACTS LIKELY TO OCCUR:  
See Attachment

- 11. NAME AND PHONE NUMBER OF DISTRICT REPRESENTATIVE FROM YOUR AGENCY NEAR PROJECT SITE, IF APPLICABLE:

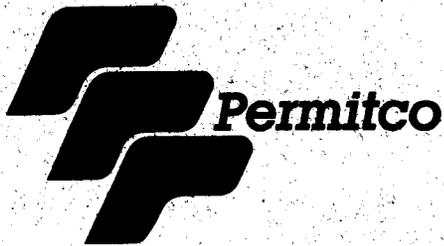
- 12. FOR FURTHER INFORMATION, CONTACT:

Frank R. Matthews  
PHONE: 538-5340

- 13. SIGNATURE AND TITLE OF AUTHORIZED OFFICIAL:

DATE: 8/10/93

  
Petroleum Engineer



August 4, 1993

Utah Division of Oil, Gas & Mining  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Attn: Tammi Searing

Re: ARCO Oil & Gas Company  
Willow Creek #1-8  
NE SE Sec. 8, T6S - R24E  
Uintah County, Utah

Dear Tammi,

Enclosed please find three copies of the Application for Permit to Drill on the above mentioned well, along with the required drilling program and the surface use plan which was filed with the Bureau of Land Management in Vernal, Utah.

Please forward the approved copies to Mr. Erik Peterson, ARCO Oil & Gas Company at the address shown on the A.P.D. Thanks for your assistance in this matter.

Sincerely,

PERMITCO INC.

Lisa L. Smith  
Consultant for:  
ARCO Oil & Gas Company

Enc.

cc: ARCO Oil & Gas Company - Midland, TX

**RECEIVED**  
AUG 06 1993

DIVISION OF  
OIL, GAS & MINING

Permitco Incorporated  
A Petroleum Permitting Company

13585 Jackson Drive Denver, Colorado 80241 (303) 452-8888

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

CONFIDENTIAL - TIGHT HOLE

5. Lease Designation and Serial No.
U-70237

6. If Indian, Allottee or Tribe Name
N/A

7. Unit Agreement Name
N/A

8. Farm or Lease Name
Willow Creek

9. Well No.
#1-8

10. Field and Pool, or Wildcat
Wildcat

11. Sec., T., R., M., OR Bk.
and Survey or Area
Sec. 8, T6S - R24E

12. County or Parish
Uintah
13. State
Utah

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work

DRILL [X]

DEEPEN [ ]

PLUG BACK [ ]

b. Type of Well

Oil

Well [X]

Gas

Well [ ]

Other

Single

Zone [X]

Multiple

Zone [ ]

2. Name of Operator
ARCO Oil & Gas Company
3. Address of Operator
Permitco Inc. - Agent
4. Location of Well (Report location clearly and in accordance with any State requirements. \*)
At surface
1623' FSL and 220' FEL
NE SE Sec. 8
At proposed prod. zone

14. Distance in miles and direction from nearest town or post office\*
20.4 miles southeast of Vernal, UT

15. Distance from proposed\* location to nearest property or lease line, ft.
(Also to nearest drig. line, if any)
220'

16. No. of acres in lease
560.00

17. No. of acres assigned to this well
40 - or statewide spacing

18. Distance from proposed location \* to nearest well, drilling, completed, or applied for, on this lease, ft.
None

19. Proposed depth
11,000'

20. Rotary or cable tools
Rotary

21. Elevations (Show whether DF, RT, GR, etc.)
5101' GR

22. Approx. date work will start\*
Upon approval of this application

23. PROPOSED CASING AND CEMENTING PROGRAM

Table with 5 columns: Size of Hole, Size of Casing, Weight per Foot, Setting Depth, Quantity of Cement. Rows include 17-1/2", 12-1/4", and 8-3/4" casing sizes.

ARCO Oil & Gas Company proposes to drill a well to 11000' to test the Phosphoria and Weber formations. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM and State of Utah requirements. See Onshore Order No. 1 attached.

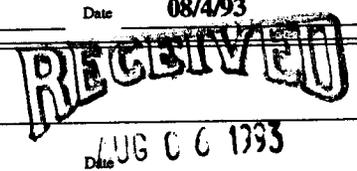
This location was staked at non-standard footages in accordance with Utah spacing. This location was selected based on topography and seismic interpretation. ARCO Oil & Gas Company is the lease holder of all lands within a 460 foot radius of the proposed site. We, therefore, request administrative approval of this location at non-standard spacing.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, 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.

24. Signed [Signature]
(This space for Federal or State office use)

Consultant for:
Title PG & E Resources Co.

Date 08/4/93



Permit No. Approval Date

Approved by Title

Conditions of approval, if any:

\*See Instructions On Reverse Side

DIVISION OF OIL, GAS & MINING

WORKSHEET  
APPLICATION FOR PERMIT TO DRILL

DATE RECEIVED: 08/06/93

OPERATOR: ARCO OIL & GAS COMPANY  
WELL NAME: WILLOW CREEK 1-8

OPERATOR ACCT NO: N- 0080

API NO. ASSIGNED: 43-047-30444

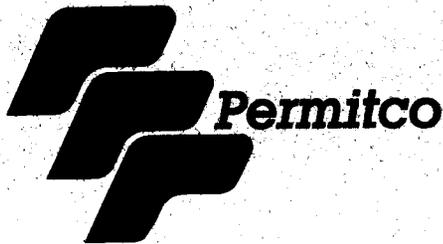
LEASE TYPE: FED LEASE NO: D-70037  
LOCATION: NESE 08 - T06S - R24E UTAH COUNTY  
FIELD: WILDCAT (001) FIELD CODE: 001

RECEIVED AND/OR REVIEWED: <input checked="" type="checkbox"/> Plat <input checked="" type="checkbox"/> Bond (Number <u>federal</u> ) <input checked="" type="checkbox"/> Potash (Y/N) <u>(N)</u> <input checked="" type="checkbox"/> Oil shale (Y/N) <u>(N)</u> <input checked="" type="checkbox"/> Water permit (Number <u>no permit #</u> ) <input checked="" type="checkbox"/> RDCC Review (Y/N) <u>(N)</u> (Date: <u>8-10-93</u> )	LOCATION AND SITING: <input type="checkbox"/> R649-2-3. Unit: _____ <input type="checkbox"/> R649-3-2. General. <input checked="" type="checkbox"/> R649-3-3. Exception. <input type="checkbox"/> Drilling Unit. Board Cause no: _____ Date: _____
---	--

COMMENTS: Exception location requested

CONFIDENTIAL  
PERIOD  
EXPIRES  
ON 11-30-94

STIPULATIONS: ~~Water Permit~~  
cc: Uintah assessor



August 9, 1993

State of Utah  
Division of Oil, Gas & Mining  
3 Triad Center, Suite 350  
Salt Lake City, UT 84180-1203

Attn: Frank Matthews

Re: ARCO Oil & Gas Company  
Willow Creek #1-8  
NE SE Sec. 8, T6S - R24E  
Uintah County, Utah

Dear Frank,

As per our telephone conversation, enclosed please find the "corrected" A.P.D. form for the subject well.

I guess you're getting used to my mistakes by now, but I do apologize! I'm truly not the airhead I appear to be!

Hopefully, next time I'll get one right.

Take care.

Sincerely,

PERMITCO INC.

A handwritten signature in cursive script, appearing to read "Lisa".

Lisa L. Smith  
Consultant for:  
ARCO Oil & Gas Company

RECEIVED

AUG 11 1993

DIVISION OF  
OIL GAS & MINING

Enc.

Permitco Incorporated  
A Petroleum Permitting Company

13585 Jackson Drive Denver, Colorado 80241 (303) 452-8888

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

5. LEASE DESIGNATION AND SERIAL NO.  
**U-70237**

**APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK**

6. IF INDIAN, ALLOTTEE OR TRIBE NAME  
**N/A**

1a. TYPE OF WORK **DRILL**  **DEEPEN**  **PLUG BACK**   
1b. TYPE OF WELL  
OIL WELL  GAS WELL  OTHER  SINGLE ZONE  MULTIPLE ZONE

7. UNIT AGREEMENT NAME  
**N/A**

8. FARM OR LEASE NAME  
**Willow Creek**

2. NAME OF OPERATOR **915/688-5200 P.O. Box 1610**  
**ARCO OIL & GAS COMPANY Midland, TX 79702**  
3. ADDRESS OF OPERATOR **303/452-8888 13585 Jackson Drive**  
**PERMITCO INC. - Agent Denver, CO 80241**

9. WELL NO.  
**#1-8**

10. FIELD AND POOL OR WILDCAT  
**Wildcat**

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.\*)  
At Surface **1623' FSL and 220' FEL**  
At proposed Prod. Zone **NE SE Sec. 8**

11. SEC., T., R., M., OR BLK.  
AND SURVEY OR AREA  
**Sec. 8, T6S - R24E**

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*  
**20.4 miles southeast of Vernal, UT**

12. COUNTY OR PARISH **Uintah** 13. STATE **Utah**

15. DISTANCE FROM PROPOSED\* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)  
**220'**

16. NO. OF ACRES IN LEASE  
**560.00**

17. NO. OF ACRES ASSIGNED TO THIS WELL  
**40 - Statewide spacing for wildcat oil wells.**

18. DISTANCE FROM PROPOSED LOCATION\* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR ON THIS LEASE, FT.  
**None**

19. PROPOSED DEPTH  
**11,000'**

20. ROTARY OR CABLE TOOLS  
**Rotary**

21. ELEVATIONS (Show whether DF, RT, GR, etc.)  
**5101' GR**

22. APPROX. DATE WORK WILL START\*  
**Upon approval of this application**

23. **PROPOSED CASING AND CEMENTING PROGRAM**

SIZE OF HOLE	SIZE OF CASING	WEIGHT/FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	54.5#	500'	300 sx or suffic to circ to surf.
12-1/4"	9-5/8"	40.0#	2500'	650 sx - circ to surf.
8-3/4"	5-1/2"	17.0#	11000'	500 sx or suffic to cover zones of int.

ARCO Oil & Gas Company proposes to drill a well to 11000' to test the Phosphoria and Weber formations. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM and State of Utah requirements.

See Onshore Order No. 1 attached.

Please be advised that ARCO Oil & Gas Company is considered to be the Operator of the above mentioned well. ARCO Oil & Gas Company agrees to be responsible under the terms and conditons of the lease for the operations conducted upon the lease lands.

Bond coverage for this well is provided by Atlantic Richfield Company under their Nationwide BLM Bond No. U-630642.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, 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.

24. SIGNED *[Signature]* Consultant for: ARCO Oil & Gas Co. TITLE ARCO Oil & Gas Co. DATE 08/04/93  
(This space for Federal or State office use)

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

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

CONDITIONS OF APPROVAL, IF ANY:

**\*See Instructions On Reverse Side**

Title 18 U.S.C. Section 1001, makes it a crime for any persn 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 mater within its jurisdiction.



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

Michael O. Leavitt  
Governor

Ted Stewart  
Executive Director

James W. Carter  
Division Director

355 West North Temple  
3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203  
801-538-5340  
801-359-3940 (Fax)  
801-538-5319 (TDD)

August 19, 1993

ARCO Oil & Gas Company  
P.O. Box 1610  
Midland, Texas 79702

Gentlemen:

Re: Willow Creek #1-8 Well, 1623' FSL, 220' FEL, NE SE, Sec. 8, T. 6 S., R. 24 E.,  
Uintah County, Utah

Pursuant to Utah Admin. R. 649-3-3, Exception to Location and Siting of Wells and Utah Admin. R. 649-3-4, Permitting of Wells to be Drilled, Deepened or Plugged-Back, approval to drill the referenced well is hereby granted.

In addition, the following specific actions are necessary to fully comply with this approval:

1. Compliance with the requirements of Utah Admin. R. 649-1 et seq., Oil and Gas Conservation General Rules.
2. Notification within 24 hours after commencing drilling operations.
3. Submittal of Entity Action Form, Form 6, within five working days following commencement of drilling operations and whenever a change in operations or interests necessitates an entity status change.
4. Submittal of the Report of Water Encountered During Drilling, Form 7.
5. Prompt notification prior to commencing operations, if necessary, to plug and abandon the well. Notify Frank R. Matthews, Petroleum Engineer, (Office) (801)538-5340, (Home) (801)476-8613, or R.J. Firth, Associate Director, (Home) (801)571-6068.
6. Compliance with the requirements of Utah Admin. R. 649-3-20, Gas Flaring or Venting, if the well is completed for production.



Page 2  
ARCO Oil & Gas Company  
Willow Creek #1-8 Well  
August 19, 1993

Trash and sanitary waste should be properly contained and transported to approved disposal locations, not retained in or disposed of in pits on location or downhole. Prior to the commencement of drilling operations, the operator should consult the local/county sanitarian and/or the Department of Environmental Quality, Division of Drinking Water/Sanitation, regarding appropriate disposal of sanitary waste.

This approval shall expire one year after date of issuance unless substantial and continuous operation is underway or a request for an extension is made prior to the approval expiration date. The API number assigned to this well is 43-047-32444.

Sincerely,



R.J. Flith  
Associate Director, Oil and Gas

ldc  
Enclosures  
cc: Bureau of Land Management  
      Uintah County Assessor  
      J.L. Thompson  
WO11

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

5. LEASE DESIGNATION AND SERIAL NO.  
**U-70237**

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

6. IF INDIAN, ALLOTTEE OR TRIBE NAME  
**N/A**

1a. TYPE OF WORK **DRILL**  **DEEPEN**  **PLUG BACK**   
1b. TYPE OF WELL  
**OIL**  **GAS**  **OTHER**   
**WELL**  **WELL**  **WELL**   
**SINGLE**  **MULTIPLE**   
**ZONE**  **ZONE**

7. UNIT AGREEMENT NAME  
**N/A**

8. FARM OR LEASE NAME  
**Willow Creek**

2. NAME OF OPERATOR **915/688-5200** **P.O. Box 1610**  
**ARCO OIL & GAS COMPANY** **Midland, TX 79702**  
3. ADDRESS OF OPERATOR **303/452-8888** **13585 Jackson Drive**  
**PERMITCO INC. - Agent** **Denver, CO 80241**

9. WELL NO.  
**#1-8**

10. FIELD AND POOL OR WILDCAT  
**Wildcat**

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)\*  
At Surface **1623' FSL and 220' FEL**  
At proposed Prod. Zone **NE SE Sec. 8** **43-047-32444 AUG 24 1993**

11. T. & R., M., OR BLK.  
AND SURVEY OR AREA  
**Sec. 8, T6S - R24E**

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*  
**20.4 miles southeast of Vernal, UT**

DIVISION OF

12. COUNTY OR PARISH  
**Uintah**

13. STATE  
**Utah**

15. DISTANCE FROM PROPOSED\* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drig. unit line, if any)  
**220'**

16. NO. OF ACRES IN LEASE  
**560.00**

17. NO. OF ACRES ASSIGNED TO THIS WELL  
**40 - Statewide spacing for wildcat oil wells.**

18. DISTANCE FROM PROPOSED LOCATION\* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR ON THIS LEASE, FT.  
**None**

19. PROPOSED DEPTH  
**11,000'**

20. ROTARY OR CABLE TOOLS  
**Rotary**

21. ELEVATIONS (Show whether DF, RT, GR, etc.)  
**5101' GR**

22. APPROX. DATE WORK WILL START\*  
**Upon approval of this application**

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT/FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	54.5#	500'	300 sx or suffic to circ to surf.
12-1/4"	9-5/8"	40.0#	2500'	650 sx - circ to surf.
8-3/4"	5-1/2"	17.0#	11000'	500 sx or suffic to cover zones of int.

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RECEIVED

See Onshore Order No. 1 attached.

AUG 05 1993

Please be advised that ARCO Oil & Gas Company is considered to be the Operator of the above mentioned well. ARCO Oil & Gas Company agrees to be responsible under the terms and conditons of the lease for the operations conducted upon the lease lands.

Bond coverage for this well is provided by Atlantic Richfield Company under their Nationwide BLM Bond No. U-630642.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, 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.

24. SIGNED [Signature] CONSULTANT FOR: ARCO Oil & Gas Co. TITLE ARCO Oil & Gas Co. DATE 08/04/93

(This space for Federal or State office use)

PERMIT NO. \_\_\_\_\_ APPROVAL DATE \_\_\_\_\_  
APPROVED BY [Signature] TITLE ASSISTANT DISTRICT MANAGER MINERALS DATE AUG 20 1993  
CONDITIONS OF APPROVAL, IF ANY \_\_\_\_\_

NOTICE OF APPROVAL  
See Instructions On Reverse Side

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 mater within its jurisdiction.

Div OG+M  
U+080-3M-080

## WELL LOCATION INFORMATION

Company/Operator: ARCO Oil & Gas Company

API Number: 43-047-

Well Name & Number: Willow Creek 1-8

Lease Number: U-70237

Location: NESE Sec. 8 T. 6S R. 24E

Surface Ownership: Federal Lands administered by BLM

Date NOS Received: June 14, 1993

Date APD Received: August 5, 1993

## **NOTIFICATION REQUIREMENTS**

- |                                 |   |   |
|---------------------------------|---|---|
| Location Construction           | - | at least 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     | - | at least twenty-four (24) hours prior to running casing and cementing all casing strings.   |
| BOP and Related Equipment Tests | - | at least twenty-four (24) hours prior to initiating pressure tests.   |
| First Production Notice         | - | 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.

## 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.

### 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 Tim Ingwell of this office. 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.

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 while drilling the intermediate casing hole. Also, 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 5M system and individual components shall be operable as designed and shall be in place and operational prior to drilling out the intermediate casing shoe. 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.

The Vernal District Office shall be notified, at least 24 hours prior to initiating the pressure tests, in order to have a BLM representative on location during pressure testing.

3. Casing Program and Auxiliary Equipment

Surface casing shall have centralizers on the bottom three joints, with a minimum of one centralizer per joint.

As a minimum, the usable water resources shall be isolated and/or protected by having a cement top for the production casing at least 200 ft. above the top of the Weber Formation, identified at  $\pm$  4,600 ft.

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.

5. Coring, Logging and Testing Program

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

A cement bond log (CBL) will be run from the production casing shoe to  $\pm$  4,400 ft. and shall be utilized to determine the bond quality for the production casing. Submit a field copy of the CBL to this office.

6. Notifications of Operations

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

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.

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.

All site security regulations as specified in Onshore Oil & Gas Order No. 3 shall be adhered to.

7. Other Information

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

Gas meter runs for each well will be located within 500 feet of the wellhead. The gas flowline will be buried or anchored down from the wellhead to the meter and within 500 feet downstream of the meter run or any production facilities. Meter runs will be housed and/or fenced.

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. Tests for meter accuracy will be conducted monthly for the first three months on new meter installations and 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.

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, please contact one of the following individuals:

Gerald E. Kenczka (801) 781-1190  
Petroleum Engineer

Ed Forsman (801) 789-7077  
Petroleum Engineer

BLM FAX Machine (801) 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

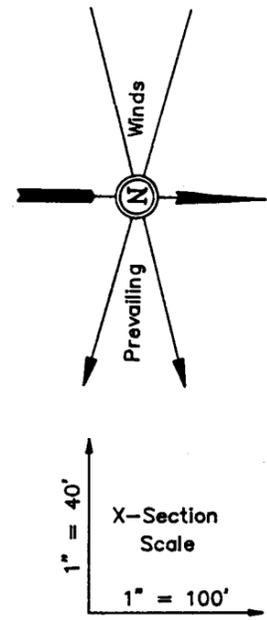
Radioactive tracer wastes

Drums, insulation and miscellaneous solids.

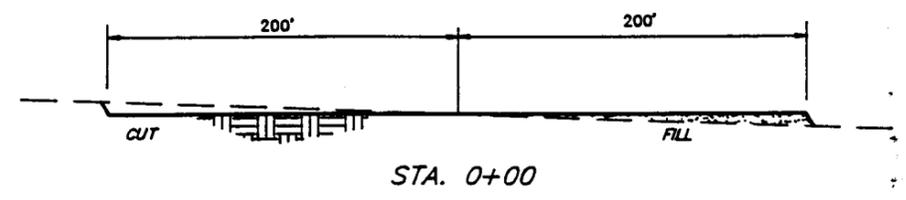
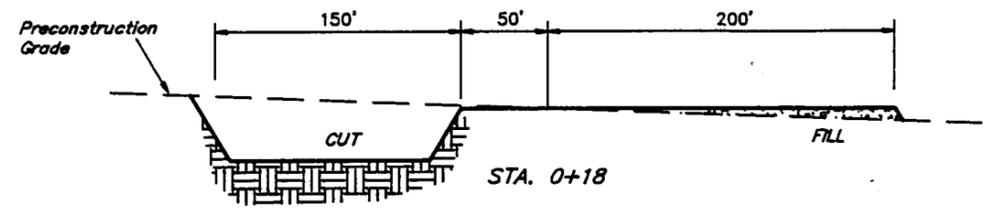
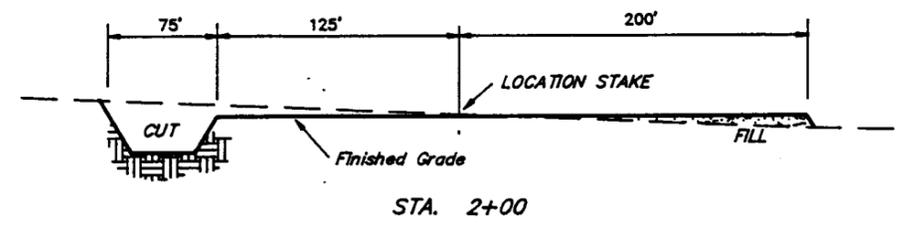
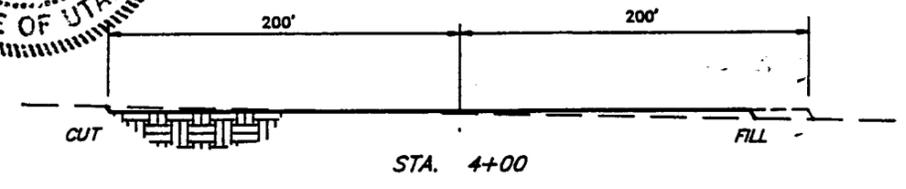
SURFACE USE PLAN OF OPERATION

Windrow topsoil to aid in reclamation of the site when the well is plugged.

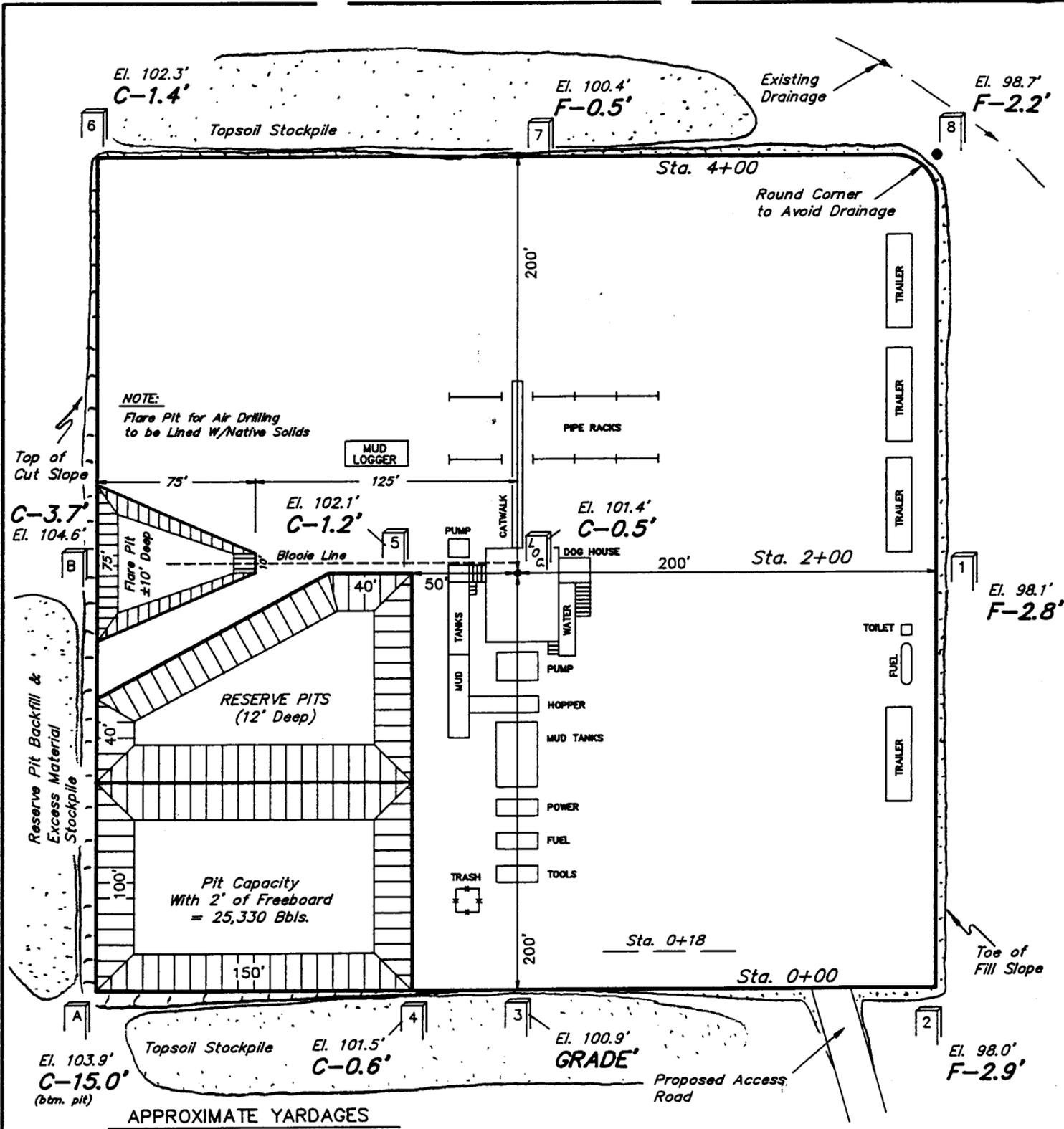
ARCO OIL & GAS CO.  
 LOCATION LAYOUT FOR  
 WILLOW CREEK #1-8  
 SECTION 8, T6S, R24E, S.L.B.&M.  
 1623' ESL 220' FEL  
**RECEIVED**  
 AUG 19 1993



SCALE: 1" = 60'  
 DATE: 6-22-93  
 DRAWN BY: R.E.H.  
 REVISED: 6-23-93  
 REVISED: 8-19-93 T.D.H.



TYP. CROSS SECTIONS  
 TYP. LOCATION LAYOUT



**APPROXIMATE YARDAGES**

CUT		EXCESS MATERIAL AFTER	
(6") Topsoil Stripping	= 2,960 Cu. Yds.	5% COMPACTION	= 9,950 Cu. Yds.
Remaining Location	= 12,900 Cu. Yds.	Topsoil & Pit Backfill	= 7,820 Cu. Yds.
		(1/2 Pit Vol.)	
<b>TOTAL CUT</b>	<b>= 15,860 CU.YDS.</b>	EXCESS UNBALANCE	= 2,130 Cu. Yds.
<b>FILL</b>	<b>= 5,610 CU.YDS.</b>	(After Rehabilitation)	

Elev. Ungraded Ground at Location Stake = 5101.4'  
 Elev. Graded Ground at Location Stake = 5100.9'

# CONFIDENTIAL

DIVISION OF OIL, GAS AND MINING

## SPUDDING INFORMATION

NAME OF COMPANY: ARCO 43-047-32444

WELL NAME: WILLOW CREEK 1-8

Section 8 Township 6S Range 24E County UINTAH

Drilling Contractor

Rig #

SPUDDED: Date 9/4/93

Time

How ROTARY

Drilling will commence

Reported by DAVID HACKFORD-DOGM

Telephone #

Date 9/4/93 SIGNED FRM



Lynne N. Koga, CPA  
Office Director  
**Brad T. Barber**  
State Planning Coordinator  
**Rod D. Millar**  
Committee Chairman  
**John A. Harja**  
Executive Director

State of Utah

GOVERNOR'S OFFICE OF PLANNING AND BUDGET  
Resource Development Coordinating Committee

116 State Capitol  
Salt Lake City, Utah 84114  
Phone: (801) 538-1027  
Fax: (801) 538-1547

RECEIVED

SEP 21 1993

DIVISION OF  
OIL, GAS & MINING

September 20, 1993

**Frank R. Matthews**  
Division of Oil, Gas, and Mining  
355 West North Temple  
Salt Lake City, UT 84180-1203

SUBJECT: Drill Permit - Willow Creek #1-8 well  
State Identifier Number: UT930811-010

Dear Mr. Shepherd:

The Resource Development Coordinating Committee, representing the State of Utah, has reviewed this proposal, and has no comments at this time.

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Utah State Clearinghouse at the above address or call Carolyn Wright at (801) 538-1535 or John Harja at (801) 538-1559.

Sincerely,

Brad T. Barber  
State Planning Coordinator

BTB/ar

DRILLING  
WILLIAMS COUNTY  
CONFIDENTIAL

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

FORM APPROVED  
Budget Bureau No. 1004-0135  
Expires: March 31, 1993

**SUNDRY NOTICES AND REPORTS ON WELLS**

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

5. Lease Designation and Serial No. <b>U-70237</b>
6. If Indian, Allottee or Tribe Name <b>N/A</b>
7. If Unit or CA, Agreement Designation <b>N/A</b>
8. Well Name and No. <b>Willow Creek #1-8</b>
9. API Well No. <b>43-47-32444</b>
10. Field and Pool, or Exploratory Area <b>Wildcat</b>
11. County or Parish, State <b>Uintah County, Utah</b>

**SUBMIT IN TRIPLICATE**

1. Type of Well  
 Oil Well     Gas Well     Other    **Plugged & Abandoned**

2. Name of Operator    **915/688-5200**    **P.O. Box 1610**  
**ARCO Oil & Gas Company**    **Midland, TX 79702**

3. Address and Telephone No.    **303/452-8888**    **13585 Jackson Drive**  
**PERMITCO INC. - Agent**    **Denver, CO 80241**

4. Location of Well (Footage, Sec., T., R., m., or Survey Description)  
**1623' FSL and 220' FEL**  
**NE SE Sec. 8 T. 6S, R. 24E**

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

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input checked="" type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input type="checkbox"/> Other _____
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion 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.)\*

**Spud 17-1/2" hole @ 2300 hr., September 4, 1993. Air drill to 515'. Set 13-3/8", 54.5#, K-55 csg @ 503' and cmt. w/700 sx cmt. Circ. 342 sx. to pit. NU BOP and test to 5000 psi (witnessed by Ed Forsman & Jamie Sparter). Pressure test csg. to 2000 psi. Drill out and unload hole w/ air. Air drill to 2102' and hole falling in - fill/ledges. Mud up w/ wtr. base mud. Drill to 2581'. Run 9-5/8" O.D., 40#, L-80 csg. to 2581' and cement w/800 sx Lite + 275 sx "G". Did not circulate cmt. to surface. Run 1" and cmt. to surface. Nipple up BOP and test to 5000 psi. Drill out and test shoe to 11 ppg EMW. Drill 8-3/4" hole to 7047' and log. Drill to 7354'. DST interval 7230-7354'. Recovered 66 Bbl. formation water. No hydrocarbons. Drill to 7500'. Run logs, trip in hole w/open ended drill pipe. Spot cmt. plugs 7250-7050' and tag @ 7043'. Spot cmt. 4910-5010'. Tag @ 4840'. Spot cmt. 4840-4740'. Pump reserve pit down hole (3800 Bbl.). Spot cmt. 4103-3890'. Spot cmt. 2671-2481' & 557-457' and 69' to surface. Nipple down BOP, cut off head, weld on plates and dry hole marker. Well P & A'd October 30, 1993. Plugging as per Ed Forsman (BLM). Plugging witnessed by Ray Arnold, BLM.**

**CONFIDENTIAL - TIGHT HOLE**

- cc: 3 - State of Utah - Division of Oil, Gas & Mining  
1 - ARCO Oil & Gas Company - Midland, TX  
3 - BLM - Vernal, UT

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

Signed *[Signature]* Title ARCO Oil & Gas Company Date 11/16/93

(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.

**\*See Instruction on Reverse Side**

General Purpose Worksheet

Page No.

SUBJECT

Willow Creek 1-8 P&A

FILE

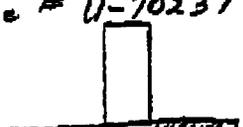
NESE Sec 8, T4S, R-24E Lease # U-70237  
 Utah County, UTAH

By G. Martin

Date 10-30-93

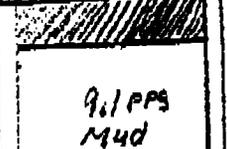
4 1/2" Dry Hole Marker  
 Weld Plate over 1 3/8" casing

26 5/8" CI-G Surface-67'



36 5/8" CI-G

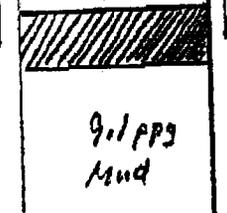
453  
553



1 3/8" 54.5 lb K-55 @ 503  
 700 ft & line to surface

115 5/8" CI-G

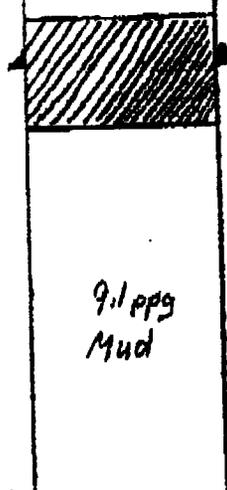
2451'  
2681'



9 5/8" 40 lb K-55 @ 2581  
 1075 5/8" Tag w/ 1" Tag. 180'  
 Topped w/ 205 5/8" CI-G To Surf.

140 5/8" CI-G

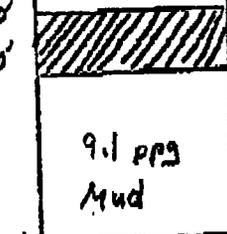
3890'  
4090'



Top of Entrada

130 5/8" CI-G Plug Dip.  
 P&A L.O. 12 1/2" PIN  
 Tag @ 4840'  
 SPOT 65 5/8"  
 Total 195 5/8"

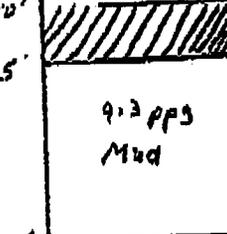
4790'  
5005'



Top of Muvajo

Spotted 100 5/8" CI-G neat  
 Tagged @ 7050'

7050'  
7250'



Top of Weber

9.3 ppg  
 Mud  
 8 3/4" Hole  
 7500' TA

**CONFIDENTIAL**

**SUNDRY NOTICES AND REPORTS ON WELLS**

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

**SUBMIT IN TRIPLICATE**

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other	5. Lease Designation and Serial No. <b>U-70237</b>
2. Name of Operator <b>ARCO Oil &amp; Gas Company</b>	6. If Indian, Allottee or Tribe Name <b>N/A</b>
3. Address and Telephone No. <b>PERMITCO INC. - Agent</b>	7. If Unit or CA, Agreement Designation <b>N/A</b>
4. Location of Well (Footage, Sec., T., R., m., or Survey Description) <b>1623' FSL and 220' FEL NE SE Sec. 8 T6S R24E</b>	8. Well Name and No. <b>Willow Creek #1-8</b>
	9. API Well No. <b>4347-32227 32444</b>
	10. Field and Pool, or Exploratory Area <b>Wildcat</b>
	11. County or Parish, State <b>Uintah County, Utah</b>

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

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input checked="" type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input type="checkbox"/> Other _____
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion 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.)\*

Please be advised that ARCO Oil & Gas Company proposes to abandon the subject well. At the request of the BLM, the access approach off of State Highway 40 will be left in place. In addition, ARCO agrees to leave the existing cattle-guard in place for BLM's future use.

As much water as possible will be removed from the reserve pit and then the pit will be backfilled and recontoured. Excess dirt which was originally placed over the pipelines will be removed and the area reclaimed. Gravel will be salvaged with the scraper and hauled over to the original road. The entire wellpad and new access (other than the approach) will be reseeded with the seed mixture specified in the A.P.D.

If you should have any questions, please contact Erik Peterson (915/688-5676), or Lisa Smith (303/452-8888).

cc: State of Utah - Division of Oil, Gas & Mining  
ARCO Oil & Gas Company - Midland, TX

**RECEIVED**  
NOV 12 1993

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

Signed *Lisa Smith* Consultant for: DIVISION OF OIL, GAS & MINING  
Title ARCO Oil & Gas Company Date 11/09/93

(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.

\*See Instruction on Reverse Side

ACCEPTED BY THE STATE  
DATE: 11/16/93  
BY: *J. Matthews*

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

5. LEASE DESIGNATION AND SERIAL NO.  
**U-70237**

**WELL COMPLETION OR RECOMPLETION REPORT AND LOG\***

6. IF INDIAN, ALLOTTEE OR TRIBE NAME  
**N/A**

1a. TYPE OF WORK  
OIL WELL  GAS WELL  DRY  Other \_\_\_\_\_

7. UNIT AGREEMENT NAME  
**N/A**

1b. TYPE OF WELL  
NEW WELL  WORK OVER  DEEP-EN  PLUG BACK  DIFF. RESVR.  Other \_\_\_\_\_

8. FARM OR LEASE NAME  
**Willow Creek #1-8**

2. NAME OF OPERATOR **915/688-5676** **ARCO Oil & Gas Company**  
3. ADDRESS OF OPERATOR **303/452-8888** **Permitco Inc. - Agent**  
**P.O. Box 1610**  
**Midland, TX 79702**  
**13585 Jackson Drive**  
**Denver, CO 80241**

9. WELL NO.  
**#43-047-32444**

4. LOCATION OF WELL (Report locations clearly and in accordance with any State requirements.\*)  
At Surface **1623' FSL and 220' FEL**

10. FIELD AND POOL OR WILDCAT  
**Wilcat**

At top prod. Interval reported below **Same** **CONFIDENTIAL - TIGHT HOLE**

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA  
**Sec. 8, T6S - R24E**

At total depth **Same**

12. COUNTY OR PARISH  
**Uintah**

13. STATE  
**Utah**

14. PERMIT NO. **43-047-32444** DATE ISSUED **10/26/93**

15. DATE SPUDDED **9/4/93** 16. DATE T.D. REACHED **10/26/93** 17. DATE COMPL. (Ready to prod.) **10/26/93** 18. ELEVATIONS (DF, RKB, RT, GR, ETC.)\* **GL - 5100', RKB - 23.5'** 19. ELEV. CASINGHEAD **5100'**

20. TOTAL DEPTH, MD & TVD **7500'** MD **Surface (P & A)** TVD **Surface (P & A)** 21. PLUG, BACK T.D., MD & TVD **Surface (P & A)** 22. IF MULTIPLE COMPL., HOW MANY\* **N/A (P & A)** 23. INTERVALS DRILLED BY **→** ROTARY TOOLS **0-7500'** CABLE TOOLS **N/A**

24. PRODUCING INTERVAL(S), OF THIS COMPLETION--TOP, BOTTOM, NAME (MD AND TVD)\*  
**N/A (P & A)**

25. TYPE ELECTRIC AND OTHER LOGS RUN  
**FMI 7495-6300'; Sonic 7450-2581'; DIL/SP/GR 7495-2581'; FDC/CNL-CAL 7495-2581'**

25. WAS DIRECTIONAL SURVEY MADE  
**Yes**

27. WAS WELL CORED  
**No**

23. CASING RECORD (Report all strings set in well)						
CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED	
13-3/8"	54.5#	503'	17-1/2"	To Surface	None	
9-5/8"	40.0#	2581'	12-1/4"	To Surface (1" Topout)	None	

29. LINER RECORD					30. TUBING RECORD		
SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
		N/A	(Plugged)			N/A (P & A)	

31. PERFORMANCE RECORD (Interval, size and number)			32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.	
INTERVAL	SIZE	NUMBER	DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
No Perforations. Well P & A'd			N/A	N/A
			P & A Plugs as per attached diagram	

33.* PRODUCTION							
DATE FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping--size and type of pump)				WELL STATUS (Producing or shut-in)	
N/A		N/A				P & A'd 10-30-93	
DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL--BBL.	GAS--MCF.	WATER--BBL.	GAS-OIL RATIO
N/A			---->	0	0		Per sundry 05/11/93
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL--BBL.	GAS--MCF.	WATER--BBL.	OIL GRAVITY-API (CORR.)	
0	0	---->					

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) **None produced on DST** TEST WITNESSED BY **No production test**

35. LIST OF ATTACHMENTS  
**Wellbore schematic / DST Chart and Info.**

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED [Signature] TITLE **Consultant for ARCO Oil & Gas Co.** DATE **11/16/93**

\*(See Instructions and Spaces for Additional Data on Reverse Side)

37. SUMMARY OF POROUS ZONES: (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);

38. GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
				Morrison	1910'	
				Curtis	3920'	
				Entrada	4060'	
				Carmel	4730'	
				Navajo	4900'	
				Chinle	6180'	
				Moenkopi	6400'	
				Phosphoria	7070'	
DST #1	-- Tools stuck and pulled for redress Never made it to the bottom nor DST'd					
DST #2	7230'	7354'	Weber No Cushion IFP = 11 min. IFP - 1046 psi ISIP = 31 min. ISIP - 2977 psi FFP = 180 min. FFP = 1046 psi FSIP = 360 min. FSIP = 3072 psi  Recovery - 1000' watercut mud 5173' formation water  No H2S	Weber	7150'	