

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

(Other instructions on reverse side)

5. Lease Designation and Serial No.

BIA-14-20-603-373

6. If Indian, Allottee or Tribe Name

Navajo Tribe

7. Unit Agreement Name

N/A

8. Farm or Lease Name

Jeep Federal

9. Well No.

#1

10. Field and Pool, or Wildcat

Wildcat

11. Sec., T., R., M., or Blk. and Survey or Area

Sec. 5, T42S - R25E

12. County or Parish 13. State

San Juan 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 303/759-3303

1777 S. Harrison St., PH 1

Raymond T. Duncan

Denver, CO 80210

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

750' FNL and 1400' FEL

At proposed prod. zone

NW NE

14. Distance in miles and direction from nearest town or post office*

15 miles southeast of Montezuma Creek, Utah

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

750'

16. No. of acres in lease

+2522

17. No. of acres assigned to this well

40

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

1.1 miles

19. Proposed depth

5600'

20. Rotary or cable tools

Rotary

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

4610' GR

22. Approx. date work will start*

June 1, 1991

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" casing, 12-1/4" casing, and 7-7/8" casing with corresponding weights and depths.

Raymond T. Duncan proposes to drill a well to 5600' to test the Desert Creek formation. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM, BIA and State of Utah requirements.

See Onshore Order No. 1 attached.

This location was staked at non-standard spacing in accordance with the spacing rules for the State of Utah. This location was based on seismic and extreme topography. Raymond T. Duncan is the lease holder of all of Section 5, T42S - R25E. We request your exception to spacing for this well.

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] Title: Consultant for Raymond T. Duncan Date: 5/1/91

(This space for Federal or State office use)

Permit No. Approval Date

Approved by Title Date

Conditions of approval, if any:

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

(Other instructions on reverse side)

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N/A

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Jeep Federal

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#1

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Wildcat (designated) 003

11. Sec., T., R., M., or Bk. and Survey or Area

Sec. 6, T42S - R25E

12. County or Parrish 13. State

San Juan Utah

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PLUG BACK []

b. Type of Well

Oil Well [X]

Gas Well []

Other []

Single Zone [X]

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+25.22

17. No. of acres assigned to this well

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1.1 miles

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5600' DSCR

20. Rotary or cable tools

Rotary

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

4610' GR

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June 1, 1991

23.

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24.

Signed: [Signature]

Title: Consultant for Raymond T. Duncan

Date: 5/1/91

(This space for Federal or State office use)

Permit No. 43-037-31125

Approval Date

APPROVED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING

Approved by: Conditions of approval, if any:

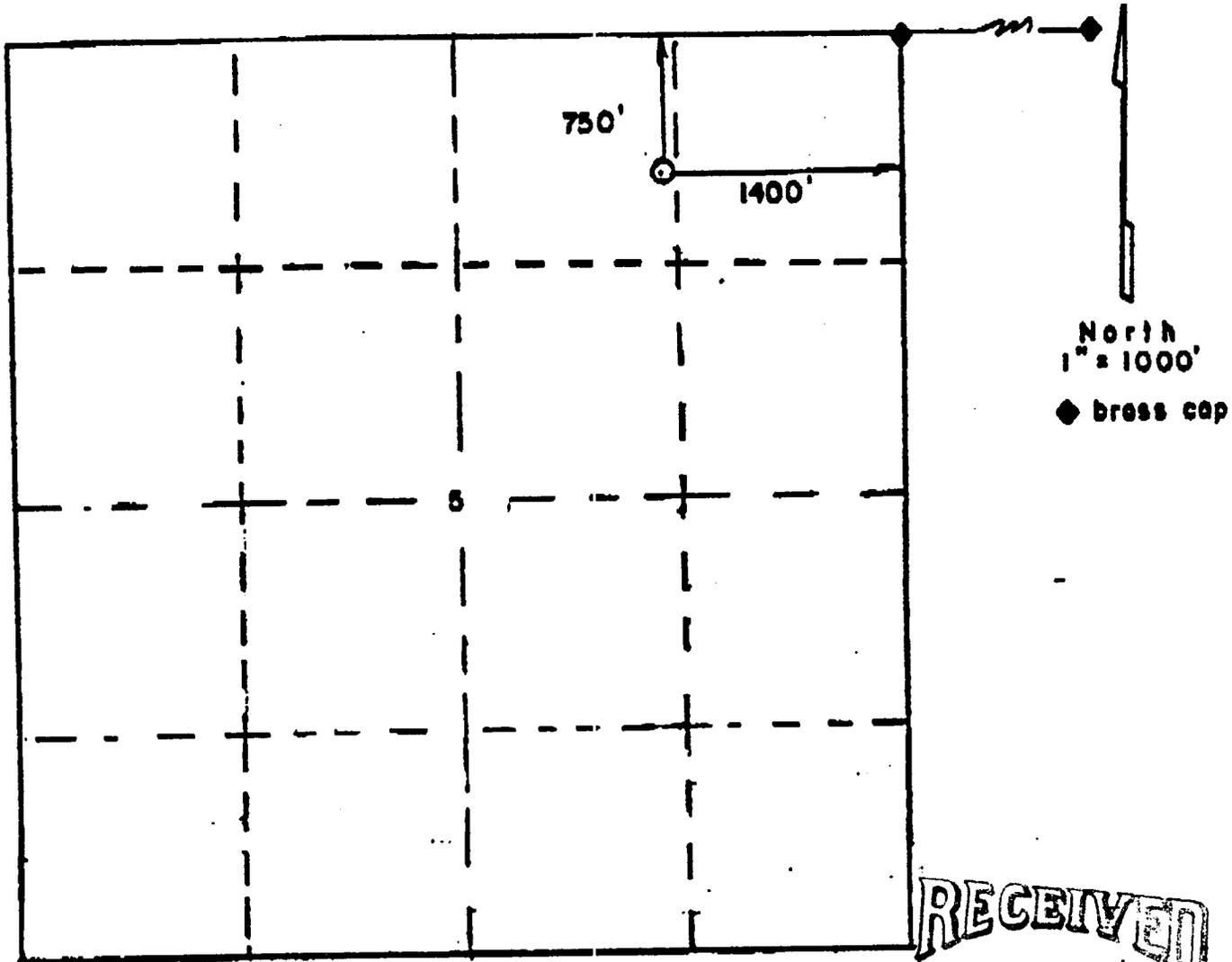
Title:

DATE: 5-10-91 BY: [Signature]

*See Instructions On Reverse Side WELL SPACING: 615-3-3

PLAT #1

WELL LOCATION PLAT



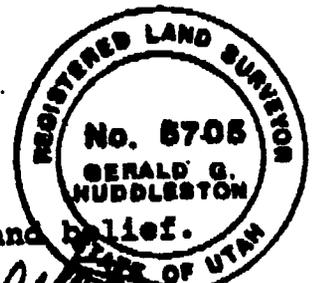
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MAY 03 1991

DIVISION OF OIL GAS & MINING

WELL LOCATION DESCRIPTION:

R.T. Duncan, Jeep Federal #1
750' FNL & 1400' FEL
Section 5, T.42 S., R.25 E., SLM
San Juan County, UT
4610' ground elevation



The above is true and correct to my knowledge and belief.

20 April 1991

Gerald G. Huddleston
Gerald G. Huddleston, LS
Utah LS 5705

213 East Montezuma Avenue - Cortez, Colorado 81321 - 303-565-3310

CONFIDENTIAL - TIGHT HOLE

ONSHORE OIL & GAS ORDER NO. 1

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

JEEP FEDERAL #1
750' FNL and 1400' FEL
NW NE Sec. 5, T42S - R25E
San Juan County, Utah

Prepared For:

RAYMOND T. DUNCAN

By:

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

RECEIVED

MAY 03 1991

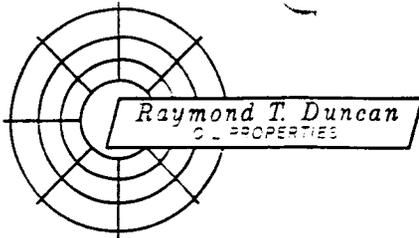
DIVISION OF
OIL GAS & MINING

Copies Sent To:

- 4 - BLM - Farmington, N.M.
- 1 - Div. of Oil, Gas & Mining - SIC, Utah
- 3 - Raymond T. Duncan - Denver, CO



Permitco Incorporated
A Petroleum Permitting Company



1777 SOUTH HARRISON STREET • PENTHOUSE ONE
TELEPHONE (303) 759-3303 • DENVER, COLORADO 80210

April 10, 1991

U. S. Department of the Interior
Bureau of Land Management
1235 La Tala Hwy.
Farmington, New Mexico 87401

RE: Jeep Fed. # 5
NW NE Sec. 5
T42S-R25E
San Juan County, Utah

Gentlemen:

This letter is to inform you that Permitco Inc. is authorized to act as Agent and to sign documents on behalf of Duncan Energy Company when necessary for filing County, State, and Federal permits including Onshore Order No. 1, Right-of-Way applications, etc. for the above captioned well.

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

Duncan Energy Company agrees to accept full responsibility for operations conducted in order to drill, complete and produce the above captioned well.

Sincerely,

RAYMOND T. DUNCAN

C. B. Willard
Operations Superintendent

CW/plc

SELF CERTIFICATION

Be advised that Raymond T. Duncan is considered to be the operator of Well Jeep Federal #1 located as follows:

NW NE Sec. 5, T42S - R25E
San Juan County, Utah

and is responsible under the terms and conditions of the lease for the operations conducted on the leased lands.

Bond coverage for this well is provided by Bond. No. WY-0271. The principal is Raymond T. Duncan via surety consent as provided for in 43 CFR 3104.2.

This office will hold the aforementioned operator and bond liable until the provisions of 43 CFR 3106.7-2 continuing responsibility are met.

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Raymond T. Duncan
Jeep Federal No. 1
750' FNL and 1400' FEL
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DRILLING PROGRAM

Page 1

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 Orders, 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 to the field representative to ensure compliance.

1. The surface formation and estimated formation tops to be encountered are as follows:

<u>Formation</u>	<u>Depth</u>	<u>Subsea</u>
Dakota	Surface	+5303'
DeChelly	2411'	+2209'
Hermosa/Honaker Trail	4346'	+ 274'
Ismay	5181'	- 561'
Gothic Shale	5333'	- 713'
Desert Creek	5355'	- 735'
Chimney Rock Shale	5517'	- 897'
Akah	5547'	- 927'
T.D.	5600'	- 980'

2. The estimated depths at which oil, gas, water or other mineral bearing zones are expected to be encountered are as follows:

<u>Substance</u>	<u>Formation</u>	<u>Anticipated Depth</u>
Oil	Desert Creek	5355'

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

3. Pressure control equipment will consist of a 10", 3000# BOP. (See BOP Diagram attached.)



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ONSHORE ORDER NO. 1
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 San Juan County, Utah

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DRILLING PROGRAM

Page 2

BOP systems will be consistent with API RP 53. Pressure tests will be conducted before drilling out from under all casing strings which are 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 recorded on the daily drilling report. Preventers will be pressure tested before drilling casing cement plugs.

4. a. Casing

The proposed casing program is as follows:

<u>Purpose</u>	<u>Depth</u>	<u>Hole Size</u>	<u>O.D.</u>	<u>Wt.</u>	<u>Grade</u>	<u>Type</u>	<u>New or Used</u>
Conductor	0-200'	17-1/2"	13-3/8"	48#	H-40	ST&C	New
Surface	0-1550'	12-1/4"	8-5/8"	24#	J-55	ST&C	New
Produc.	0-5600'	7-7/8"	5-1/2"	15.5#	J-55	LT&C	New

b. Cement

The cementing program will be as follows:

<u>Conductor</u> 0-120'	<u>Type and Amount</u> 250 sx or sufficient to circulate to surface
<u>Surface</u> 0-1550'	<u>Type and Amount</u> 800 sx or sufficient to circulate to surface.
<u>Production</u>	<u>Type and Amount</u> To surface w/800 sx. DV tool at 4300'.

Anticipated cement tops will be reported as to depth, not the expected number of sacks.

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DRILLING PROGRAM

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c. Auxiliary Equipment will be as follows:

1. Upper kelly cock with handle available.
2. Float above the bit. ✓
3. A sub with a full opening valve will be on the floor when the kelly is not in use.

5. Drilling fluid will be as follows:

<u>Interval</u>	<u>Mud Type</u>	<u>Mud Wt.</u>	<u>Visc.</u>	<u>F/L</u>	<u>PH</u>
0-3900'	Natural	9.0-9.2	35	10-20	--
3900-T.D.	Chem. Gel	9.2-9.5	45	15 thru pays	

Operations will be conducted in accordance with ONSHORE OIL & GAS ORDER NO. 2; DRILLING OPERATIONS, except where advance approval for a variance has been obtained.

6. Coring, logging and testing programs are as follows:

- a. No cores are anticipated.
- b. The logging program will consist of the following: A DLL/MSFL and BHC Acoustic will be run from T.D to base of surface casing. A Density Neutron will be run from 4200' to T.D.
- c. One drill stem test will be run in the Desert Creek formation if shows are present.

Whether the well is completed as a dry hole or as a producer, "Well Completion or Recompletion Report and Log" (Form 3160-4) will be submitted to the District Office not later than thirty (30) days after completion of the well or after completion of operations being performed, in accordance with 43 CFR 3162.4-1(b). Two copies of all logs, core descriptions, core analyses, well test data, geologic summaries, sample descriptions, and all other surveys or data obtained and compiled during the drilling, workover, and/or

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DRILLING PROGRAM

Page 4

completion operations, will be filed with Form 3160-4. Samples (cuttings, fluids, and/or gases) will be submitted when requested by the Farmington District Manager.

7. Abnormal conditions, bottom hole pressures and potential hazards.
 - a. The maximum bottom hole pressure to be expected is 2100 psi.

8. Anticipated Starting Dates and Notifications of Operations
 - a. Raymond T. Duncan plans to spud the Jeep Federal #1 on June 1, 1991, and intends to complete the well within approximately one month after the well has reached T.D.
 - b. Full compliance with all applicable laws, regulations, and Onshore Orders, with the approved Permit to Drill, and with the approved Surface Use and Operations Plan is required. Lessees and/or operators are fully accountable for the actions of their contractors and subcontractors.
 - c. Each well shall have a well sign in legible condition from spud date to final abandonment. The sign will show the operator's name, lease serial number, or unit name, well number, location of well, and whether the lease is Tribal or allotted, (see 43 CFR 3162.6(b)).
 - d. A complete copy of the approved Application for Permit to Drill along with any conditions of approval, shall be available to authorized personnel at the drillsite whenever active drilling operations are under way.
 - e. For wildcat wells only, a drilling operations progress report is to be submitted weekly from spud date until the well is completed and the Well Completion Report (Form 3160-4) is filed). The report should be on 8-1/2 x 11 inch paper, and each page should identify the well by operator's name, well number location and lease number.
 - f. As soon as practical, notice is required of all blowouts, fires and accidents involving life-threatening injuries or loss of life (See NTL-3A).



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DRILLING PROGRAM

Page 5

- g. Prior approval by the BLM-Authorized Officer (Drilling and Production Section) is required for variance from the approved drilling program and before commencing plugging operations, plug back work, casing repair work, corrective cementing operations, or suspending drilling operations indefinitely. Emergency approval may be obtained orally, but such approval is contingent upon filing of a notice of intent (on a Sundry Notice, Form 3160-5) within three business days (original and three copies on Federal leases and an original and four copies on Indian leases).
- h. The Area Manager's Office (Inspection and Enforcement Section, phone number is 505/326-6201 is to be notified at least 24 hours in advance of any cementing or plugging operations so that a BLM representative may witness the operations.
- i. Unless drilling operations are commenced within one year, approval of the Application for Permit to Drill will expire. A written request for a six month extension may be grated if submitted prior to expiration.
- j. From the time drilling operations are initiated and until drilling operations are completed, a member of the drilling crew or the the toolpusher shall maintain rig surveillance at all times, unless the well is secured with blowout preventers or cement plugs.
- k. For reporting purposes, all leases, communitization agreements or unit agreements are to be referenced by the numbers and prefixes affixed to the respective contract documents by the issuing agency at the time of issue.
- l. The following reports shall be filed with the BLM-Authorized Officer within 30 days after the work is completed:
 1. Original and three copies on Federal and original and four copies on Indian leases of Sundry Notice (Form 3160-5), giving complete information concerning:

ONSHORE ORDER NO. 1
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NW NE Sec. 5, T42S - R25E
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DRILLING PROGRAM

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- a. Setting of each string of casing. Show size and depth of hole, grade and weight of casing, depth set, depth of any and all cementing tools that are used, amount (in cubic feet) and types of cement used, whether cement circulated to surface and all cement tops in the casing annulus, casing test method and results, and the date work was done. Show spud date on first report submitted.
 - b. Intervals tested, perforated (include: size, number and location of perforations), acidized, or fractured; and results obtained. Show date work was done (a Sundry Notice is not required if a Completion Report is submitted within 30 days of the operation).
 - c. Subsequent Report of Abandonment, showing the manner in which the well was plugged, including depths where casing was cut and pulled, intervals (by depths) where cement plugs were placed and dates of the operations.
2. Well completion Report (Form 3160-4) will be submitted within 30 days after the well has been completed.
 3. Two copies of all electrical and open-hole logs run (two copies of the mud log are required if no open hole electric logs are run.
 4. A cement evaluation log if cement is not circulated to surface.
- m. The following shall be entered in the daily driller's log:
1. Blowout preventer pressure tests, including test pressures and results.
 2. Blowout preventer tests for proper functioning.
 3. Blowout prevention drills conducted.

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DRILLING PROGRAM

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4. Casing run, including size, grade, weight and depth set.
 5. How pipe was cemented, including amount of cement, type, whether cement circulated to surface, location of cementing tools, etc.
 6. Waiting on cement time for each casing string.
 7. Casing pressure tests after cementing, including test pressure and results.
 8. Estimated amounts of oil and gas recovered and/or produced during drillstem tests.
- n. Gas produced from this well may not be vented or flared beyond an initial authorized test period of 30 days, unless a longer test period specifically is approved by the authorized officer. The 30 day period begins when the casing is first perforated for cased holes, and when Total Depth (T.D.) is reached for open hole completion. Should gas be vented or flared without approval beyond the test period authorized above, or 50 MMcf, whichever occurs first, you 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 you 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.
- o. All rig heating stoves are to be of the explosion-proof type.
- p. Rig safety lines are to be installed.
- q. Hard hats must be utilized.
- r. Any change of plans required in order to mitigate unanticipated conditions encountered during drilling operations, will require approval as set forth above.
- s. If the well is dry, it is to be plugged in accord with 43 CFR 3162.3-4, approval of the proposed plugging program is required as set forth above. The report should show the total

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depth reached, the reason for plugging, and the proposed intervals, by depths, where cement plugs are to be placed, type of plugging mud, etc. A Subsequent Report of Abandonment is required as set forth above.

- t. Unless a well has been properly cased and cemented, or properly plugged, the drilling rig must not be moved from the drillsite without prior approval from the BLM-Authorized Officer.
- u. 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 continuing each month until the well is physically plugged and abandoned. This report will be filed directly with Minerals Management Service.
- v. Immediate Report: Spills, blowouts, fires, leaks, accidents, or any other unusual occurrences shall be promptly reported to the Resource Area in accordance with requirements of NTL-3A.
- w. Should the well be successfully completed for production, the District Manager will be notified when the well is placed in producing status. Such notification will be sent by telegram or other written communication, not later than five (5) business days following the date on which the well is placed on production.
- x. A Subsequent Report of Abandonment" (Form 3160-5) will be filed with the District Manager within thirty (30) days following completion of the well for abandonment. This report will indicate where plugs were placed and the current status of surface restoration. Final abandonment will not be approved until the surface reclamation work required by the approved APD or approved abandonment notice has been completed to the satisfaction of the Area Manager or his representative, or the appropriate surface managing agency.
- y. Upon completion of approved plugging, a regulation marker will be erected in accordance with 43 CFR 3162.6(d) and Onshore Oil and Gas Order No. 2.



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DRILLING PROGRAM

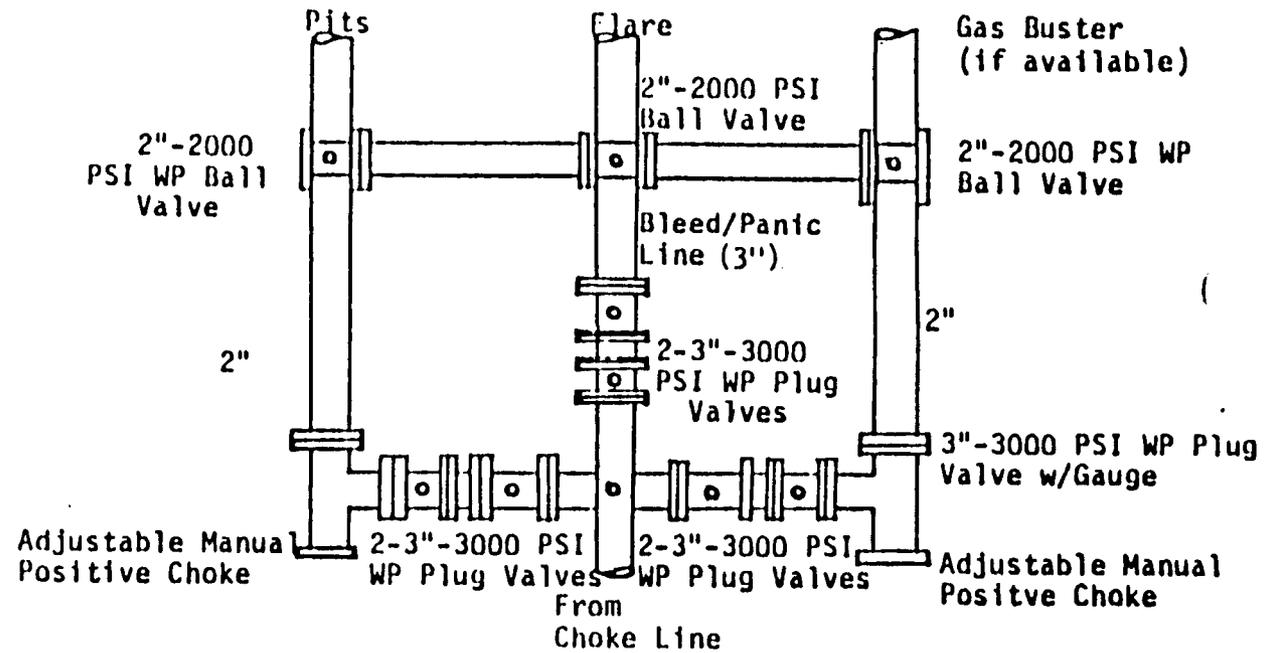
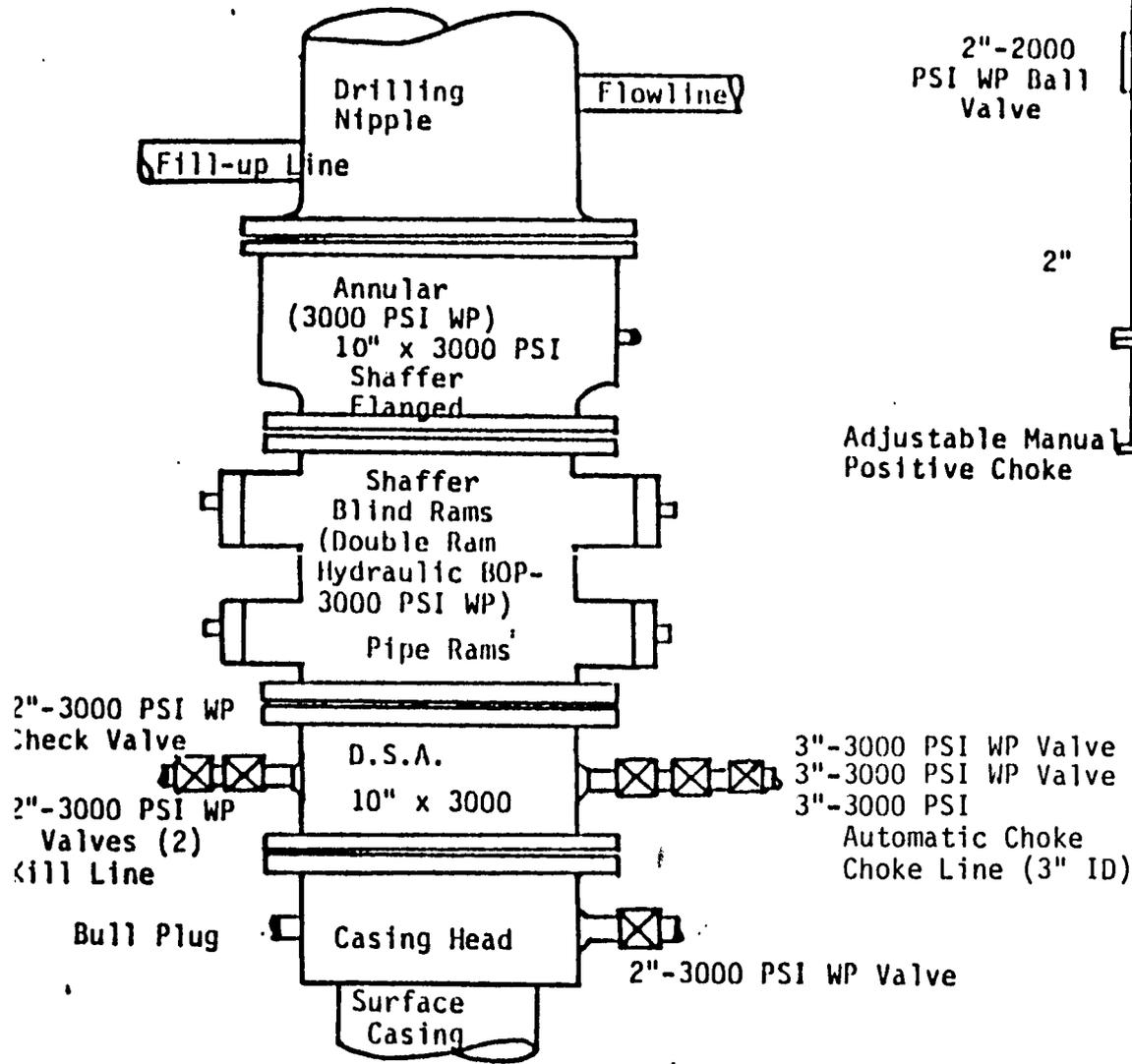
Page 9

- z. The following minimum information will be permanently placed on the marker with a plate, cap, or beaded-on with a welding torch:

Well name and number, location by 1/4 1/4 section, township and range, Lease number and operator.

BOP SCHEMATIC
3000 PSI WORKING PRESSURE

PLAN VIEW CHOKER MANIFOLD



The hydraulic closing unit will be located more than 30' from the wellhead. Choke & bleed/panic lines will go to the pit and flare. All connections in choke line and manifold will be flanged or welded. All flang should be ring joint gasket type. All turns in lines shall be constructed using targeting 90° tees or block ells. All lines shall be anchored.

SURFACE USE PLAN

Page 1

Thirteen Point Surface Use Plan

1. Existing Roads

- a. The proposed well site is located 14 miles southeast of Montezuma Creek, Utah.
- b. Directions to the location from Montezuma Creek are as follows:

From the intersection of Highway 262 and Main St. in Montezuma Creek, go west on the Red Mesa Highway for 7/10 mile. Turn left onto Red Mesa #406 (County Road) and go South for 1.2 miles. Turn left onto a rough gravel road and go southwesterly for 9.6 miles to a fork in the road. Turn left and proceed southeast for approximately 6/10 mile. Turn right and proceed southwesterly along an old trail for 1/2 mile to the location.

- c. For roads within a 2-mile radius - See Map #1 and #2.
- 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.

2. Planned Access Roads

- a. There will be approximately 1/2 mile of existing trail to be upgraded.
- b. The maximum total disturbed width will be 30 feet.
- c. The maximum grade will be 4%.
- d. No turnouts are deemed necessary.
- e. Culverts of sufficient size will be placed on all drainage crossings of the access road where determined necessary.

SURFACE USE PLAN

Page 2

- f. 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 by the surface owner.
 - g. Minimum upgrading of the road will be done at this time until it has been determined if the well is a producer.
 - h. Prior to crossing, using or paralleling any improvement on public land, the operator shall contact the owner of the improvement to obtain mitigating measures to prevent damage to improvements.
3. Location of Existing Wells Within a 1-Mile Radius of the Proposed Location.
- a. Water Wells - none
 - b. Injection or disposal wells - none
 - c. Producing Wells - none
 - d. Drilling Wells - none
4. Location of Tank Batteries and Production Facilities.
- a. All permanent structures (onsite for six months or longer) will be painted a neutral, nonreflective, color (Brown 595a - 30318) to blend into the surrounding area, except for those required to comply with the Occupational Safety and Health Act (OSHA) or written company safety manual or documents.
 - b. It is anticipated that the production facilities will be constructed on the proposed wellpad. If a tank battery is constructed, it will be surrounded by a dike of sufficient capacity to contain 1-1/2 times the storage capacity of the largest tank; all load lines and valves will be placed inside the dike surrounding the tank battery.

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Confidential - Tight Hole

SURFACE USE PLAN

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- c. Any necessary pits will be properly fenced to prevent any wildlife entry.
- d. Berms or firewalls will be constructed around all storage facilities sufficient in size to contain 1-1/2 times the storage capacity of tanks.
- e. No production flowlines nor gas sales lines will be constructed until the right-of-way/easements are inspected and approved by the surface management agency.
- f. Any flowline (surface/subsurface) will be constructed paralleling new and existing road right of ways.
- g. The proposed use of pesticide, herbicide or other possible hazardous chemical on BLM land shall be cleared for use prior to application.

5. Location and Type of Water Supply

- a. All water needed for drilling purposes will be obtained from the the reserve pit at the Mesa Top #1 (dry hole), located in the SW NE Sec. 6, T42S - R25E. If additional water is required, it will be obtained will be from the San Juan River at a point located near the foot bridge south of Aneth in the NW NW Sec. 21, T41S - R25E, San Juan County, Utah.
- b. Water will be pumped or hauled from the existing reserve pit at the Mesa Top #1. Additional water may be hauled from the San Juan River over the approved access roads.
- c. No water well is to be drilled on this lease.
- d. Use of water for this operation will approved by obtaining a temporary use permit from the Navajo Tribe, Water Resources Division.



Permitco Incorporated
A Petroleum Permitting Company

SURFACE USE PLAN

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6. Source of Construction Material

- a. Road surfacing material will be obtained from on-site and in place materials.
- b. Any gravel will be purchased from a commercial source. The use of materials under BLM jurisdiction will conform to 43 CFR 3610.
- c. No gravel or other related minerals from new or existing pits on Federal land will be used in construction of roads, wellsites, etc., without prior approval from the Surface Managing Agency.

7. Methods for Handling Waste Disposal

- a. The reserve pit will be constructed with 100 percent of the capacity in cut material and will be lined to prevent seepage from occurring.
- b. Produced waste water will be confined to the reserve pit for a period not to exceed ninety (90) days after initial production. During the 90-day period, an application for approval of a permanent disposal method and location, along with the required water analysis, will be submitted for the District Manager's approval pursuant to NTL-2B.
- c. All liquid waste, completion fluids and drilling products associated with oil and gas operations will be contained and then buried in place, or removed and deposited in an approved disposal site.
- d. Trash cages will be used for all solid waste and removed from location to an approved solid waste disposal site. No solid waste shall be put in reserve pit before, during or after drilling operations.

8. Ancillary Facilities

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

SURFACE USE PLAN

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9. Well Site Layout

- a. See Diagram #1 for rig layout. See Diagram #2 for cross section of drill pad. See Diagram #3 for cuts and fills.
- b. The location of mud tanks; reserve, trash cage; pipe racks; living facilities and soil stockpiles will be shown on Diagrams #1 and #3.
- c. Due to the eroded nature of the wellpad, no topsoil is available to be saved.
- d. An earthen berm (24 inches high) will be constructed around the perimeter of the wellpad, except on the cut side of the wellpad.
- e. A diversion ditch will be constructed below the cut slope diverting any runoff to the West.
- f. The wash will be diverted around the south side of the wellpad.
- g. The construction work conducted at this location will be inspected by the BIA before the drill rig is moved on the location.
- h. Access to the well pad will be as shown on Maps #1 and #2.
- i. The well area and lease premises will be maintained in a workmanlike manner with due regard to safety, conservation and appearance.
- j. Mud pits and blow pits will be constructed so as not to leak, break or allow discharge of liquids or produced solids.
- k. All unguarded pits (reserve/production/blow pits) containing liquids will be fenced with woven wire. Drilling pits will be fenced on three sides and once the rig leaves location, the fourth side will be fenced. All fencing must be a legal fence in accordance with N.M. State law. Liquids in pits will be allowed to evaporate, or be properly disposed of, before pits are filled and recontoured. (This office will be notified 24



SURFACE USE PLAN

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hours prior to fluid hauling). Under no circumstances will pits be cut and drained. Aeration of pit fluids must be confined within the pit area.

10. Reclamation

- a. After drilling operations are completed, the location and surrounding area will be cleared of all remaining debris, materials, and junk not required for production.
- b. As soon as the reserve pit has dried it will be backfilled. The location will then be recontoured as much as possible.
- c. Compacted areas will be plowed or ripped to a depth of 12 to 16 inches before reseeding. Seed will be drilled to a depth of .5 to .75 inch or broadcast and followed by a drag or packer. If broadcast, the recommended seed mix will be applied at 150% of the recommended rate. The following seed mix will be used:
 - 3 lbs/acre Shadscale
 - 2 lbs/acre Alkali Sacaton
 - 3 lbs/acre Fourwing saltbush (dewinged)
- d. Access roads not needed for through traffic will be barricaded and reseeded in accordance with the above stipulation. Water bars will be constructed to the following specifications.

<u>% Slope</u>	<u>Slope Distance</u>
Less than 1%	300 feet
1% - 5%	200 feet
5%-15%	100 feet
Greater than 15%	50 feet

11. a. Surface Ownership
Navajo Tribe
- b. Mineral Ownership
Navajo Tribe

SURFACE USE PLAN

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12. Other Information

- a. There will be no deviation from the proposed drilling and/or workover program without prior approval from the District Manager. Safe drilling and operating practices must be observed. All wells, whether drilling producing, suspended, or abandoned and/or separate facilities, will be identified in accordance with 43 CFR 3162.6.
- b. "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 3162.6.
- c. The dirt contractor will be provided with an approved copy of the surface use plan.
- d. ALL CHANGES/DEVIATIONS MADE FROM THE APPROVED APD MUST BE CLEARED AND APPROVED BY THE SURFACE MANAGEMENT AGENCY. THE SURFACE MANAGEMENT AGENCY CAN BE CONTACTED AT 505/368-4427, EXT. 352.
- e. An archeological study was conducted by the Navajo Nation Archeological Department. No significant cultural resources were found and clearance is recommended. A copy of this report will be submitted directly to the appropriate agencies by the Navajo Nation Archeological Department.
- f. EMERGENCY DISCOVERY IN THE ABSENCE OF MONITORING: This stipulation applies in emergency discovery situations where monitoring for cultural resources was not being performed because the presence of cultural resources could not have been anticipated. If, in its operations, discovers any historic or prehistoric ruin, monument, or site, or any object of antiquity subject to the Antiquities Act of 1979, and 43 CFR Part 3, then work will be suspended and the discovery promptly reported to the BLM Area Manager. The BLM will then specify what action is to be taken. The BLM will evaluate the discovery, evaluate its significance, and consult with the State Historic Preservation Officer. Minor recordation, stabilization, or date recovery may be performed by BLM. However, more significant mitigation shall be carried out by a

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qualified, permitted archeologist. It is BLM's responsibility to ensure that such mitigation is carried out in accordance with 36 CFR Par 800.11. Given the timeframes involved in BLM's budgeting process, operators are strongly encouraged to fund such required mitigation. Further damage to significant cultural resources and operations in its vicinity will not be allowed until any required mitigation is successfully completed.

- g. **DISCOVERY OF CULTURAL RESOURCES DURING MONITORING:** This stipulation applies to situations where archeological monitoring was taking place because local geologic conditions favored the presence of subsurface archeological sites in the project area. If monitoring confirms the presence of subsurface sites, all work will cease in the site area. The monitor will immediately report this find to BLM Area Manager. BLM will specify what further steps must be taken to assess the damage to the site and to mitigate any adverse effects to it. Monitoring in these circumstances is considered to be a form of inventory and the operator will be responsible for obtaining at his/her expense a qualified permitted archeologist to complete a damage assessment report and to carry out any mitigation required by the BLM.
- h. **DAMAGE TO PREVIOUSLY IDENTIFIED SITE:** This stipulation applies to situations where operations have damaged a previously identified archeological site that was visible on the surface. If, in its operations, the operator damages, or is found to have damaged, any historic or prehistoric ruin, monument, or site, or any object of antiquity subject of the Antiquities Act of 1906, the Archeological Resources Protection Act of 1979, and 32 CFR Par 3, the grantee will prepare and implement a data recovery plan at his/her expense. The grantee will obtain at his/her expense, a qualified permitted archeologist to carry out the specific instruction of BLM.
- i. 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.

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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

RAYMOND T. DUNCAN
1777 S. Harrison St.
Penthouse One
Denver, CO 80210
303/759-3303 (W) -
303/733-3604 (H) - John Bettridge

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 Raymond T. Duncan and its contractors and subcontractors in conformity with the plan and the term and conditions under which it is approved.

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

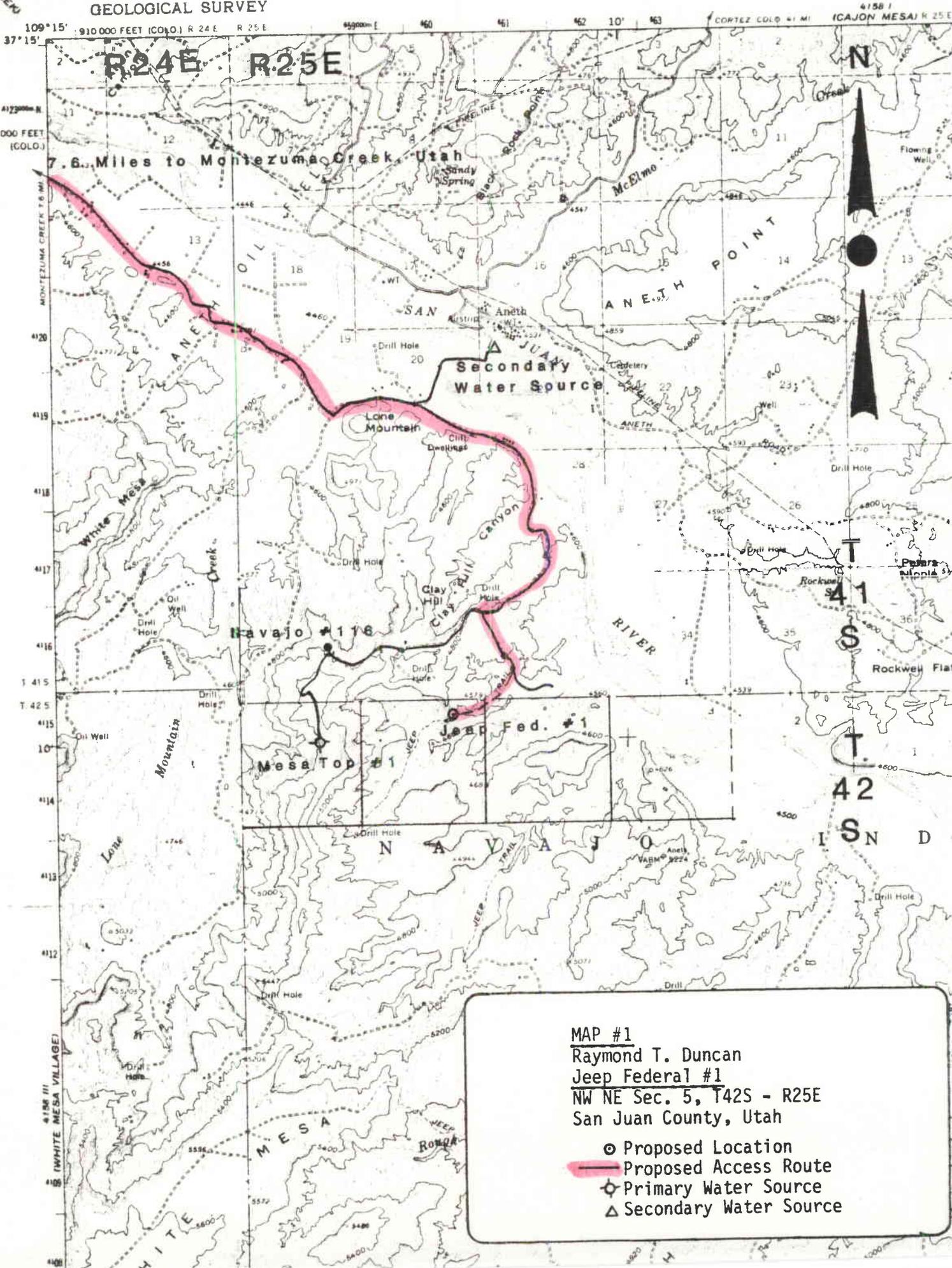
May 1, 1991
Date: _____



Lisa L. Smith - PERMITCO INC.
Authorized Agent for:
RAYMOND T. DUNCAN

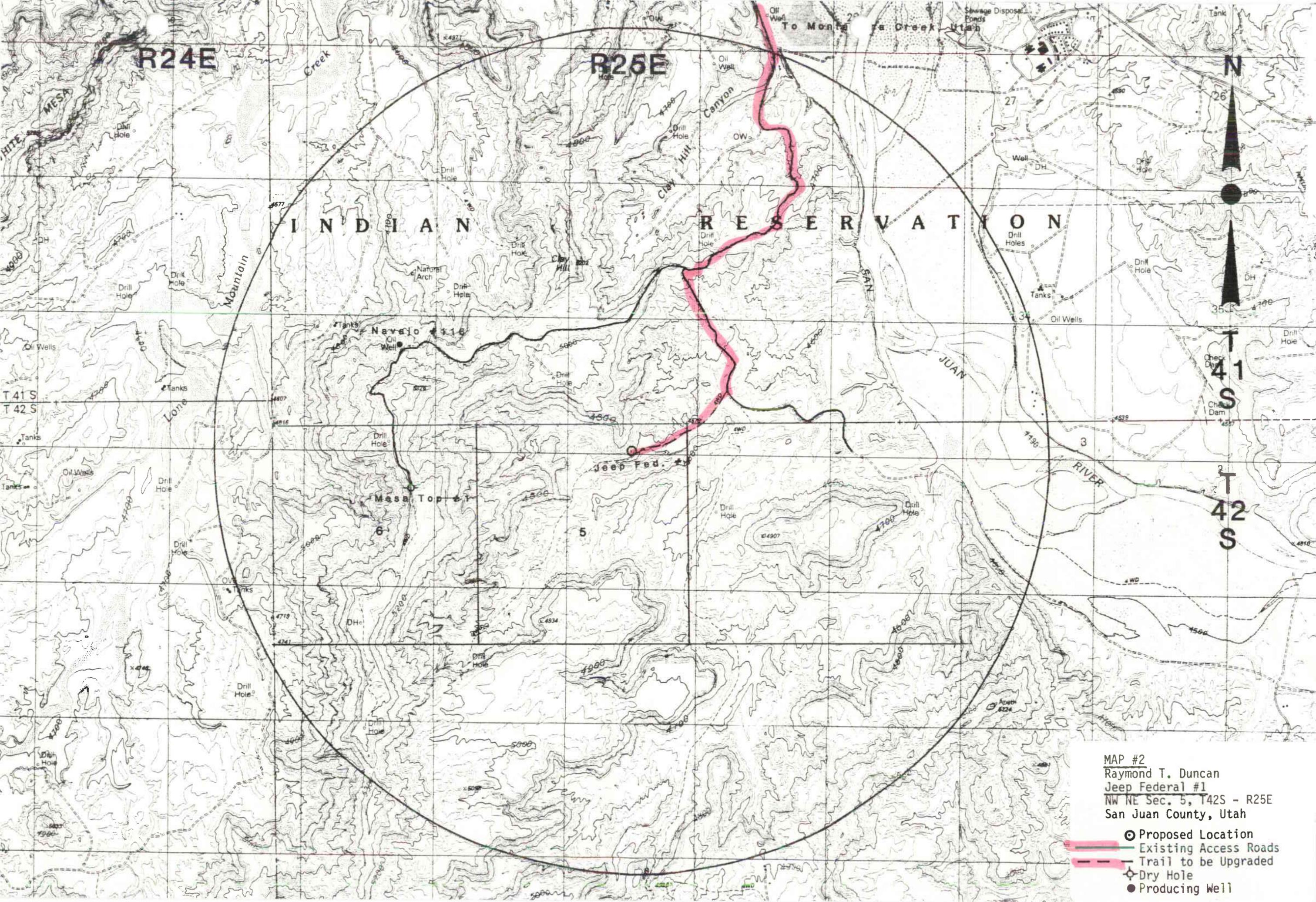


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



MAP #1
Raymond T. Duncan
Jeep Federal #1
NW NE Sec. 5, T42S - R25E
San Juan County, Utah

- Proposed Location
- Proposed Access Route
- ◇ Primary Water Source
- △ Secondary Water Source



R24E

R25E

INDIAN RESERVATION

T41S
T42S

MAP #2
Raymond T. Duncan
Jeep Federal #1
NW NE Sec. 5, T42S - R25E
San Juan County, Utah

- Proposed Location
- Existing Access Roads
- - - Trail to be Upgraded
- ◇ Dry Hole
- Producing Well

Scale: 1" - 50'

DIAGRAM #1 - Rig Layout
Raymond T. Duncan
Jeep Federal #1
NW NE Sec. 5, T42S - R25E
San Juan County, Utah

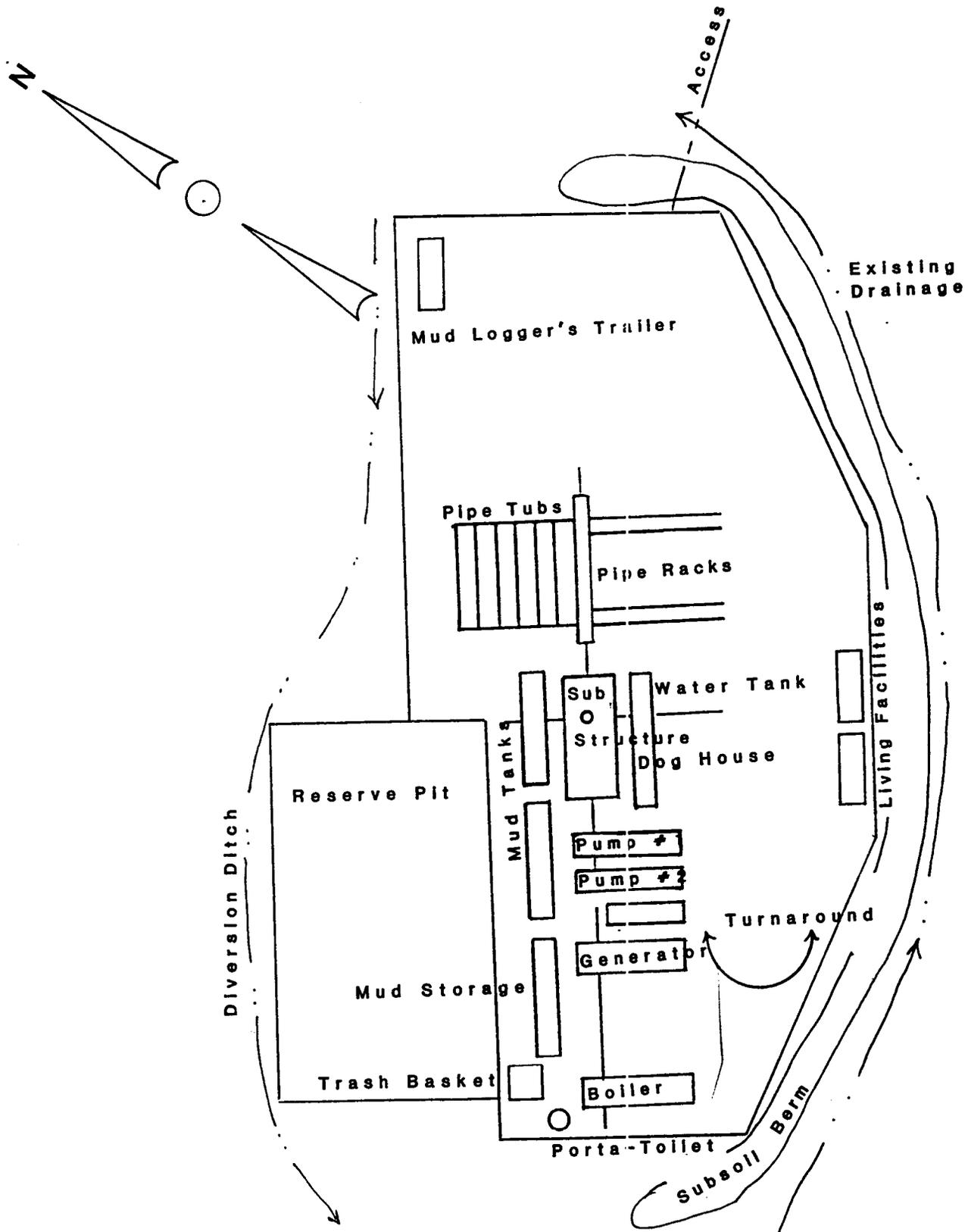


DIAGRAM #2

Jeep Federal # 1

Raymond T. Duncan
NW NE Sec. 5, T42S - R25E
San Juan County, Utah

CROSS SECTION

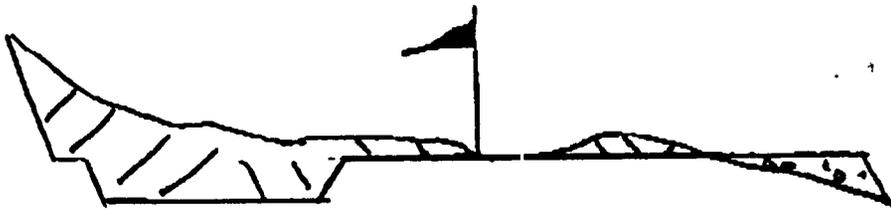
Cut **/////**
Fill **~~~~~**

1"=50' vert. & horz.



c

c'



b

b'



a

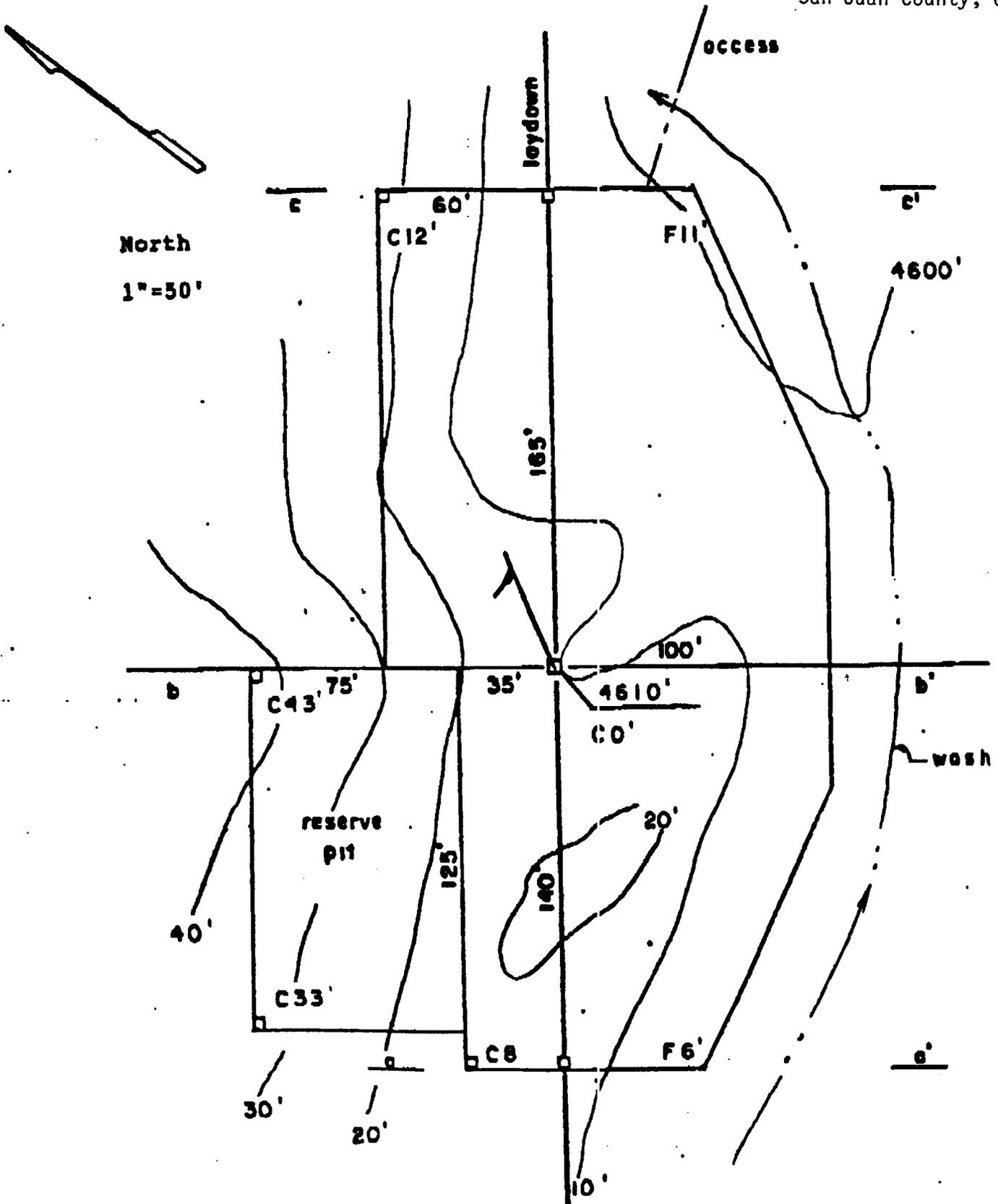
a'

DIAGRAM #3

Jeep Federal # 1

Raymond T. Duncan
NW NE Sec. 5, T42S - R25E
San Juan County, UT

PLANVIEW SKETCH



FILING FOR WATER IN THE STATE OF UTAH

RECEIVED

SEP 04 1990

AUG 30 1990

Rec. by [Signature] Fee Rec. [Signature] Receipt # 29211 Microfilmed [] TS Roll # []

APPLICATION TO APPROPRIATE WATER RIGHTS PRICE

For the purpose of acquiring the right to use a portion of the unappropriated water of the State of Utah, application is hereby made to the State Engineer, based upon the following showing of facts, submitted in accordance with the requirements of the Laws of Utah.

* WATER RIGHT NO. 09 - 1733

* APPLICATION NO. A T64918

1. *PRIORITY OF RIGHT: August 30, 1990 * FILING DATE: August 30, 1990

2. OWNER INFORMATION

Name(s): Raymond T. Duncan * Interest: %

Address: 1777 S. Harrison St., Penthouse 1

City: Denver State: CO Zip Code: 80210

Is the land owned by the applicant? Yes No XX

(If "No", please explain in EXPLANATORY section.)

3. QUANTITY OF WATER: cfs and/or 2.6 ac-ft

4. SOURCE: San Juan River * DRAINAGE:

which is tributary to

which is tributary to

POINT(S) OF DIVERSION: COUNTY: San Juan

700' south of the north line and 500' east of the west line of Section 21, T41S- R25E, San Juan County.

(S. 700 ft. & E. 500 ft. from NW Cor. Sec. 21, T41S, R25E, SLB&M)

Description of Diverting Works: 80 Bbl. Enclosed Pump Truck

* COMMON DESCRIPTION: Aneth Aneth Quad

5. POINT(S) OF REDIVERSION

The water will be rediverted from None at a point:

Description of Rediverting Works:

6. POINT(S) OF RETURN

The amount of water consumed will be cfs or 2.6 ac-ft

The amount of water returned will be cfs or -0- ac-ft

The water will be returned to the natural stream/source at a point(s): Not applicable

7. STORAGE

Reservoir Name: N/A Storage Period: from to

Capacity: ac-ft. Inundated Area: acres

Height of dam: feet

Legal description of inundated area by 40 acre tract(s):

* These items are to be completed by the Division of Water Rights

8. List any other water rights which will supplement this application None

9. NATURE AND PERIOD OF USE

Irrigation:	From _____ to _____
Stockwatering:	From _____ to _____
Domestic:	From _____ to _____
Municipal:	From _____ to _____
Mining:	From _____ to _____
Power:	From _____ to _____
Other: Oil/Gas Well Drilling	From <u>10/1/90</u> to <u>11/1/90</u>

10. PURPOSE AND EXTENT OF USE

Irrigation: N/A acres. Sole supply of _____ acres.
 Stockwatering (number and kind): _____
 Domestic: _____ Families and/or _____ Persons
 Municipal (name): _____
 Mining: _____ Mining District in the _____ Mine
 Ores mined: _____
 Power: Plant name: _____ Type: _____ Capacity: _____
 Other (describe): Water will be used to drill an oil well.

11. PLACE OF USE

Legal description of place of use by 40 acre tract(s): _____
The Mesa Top #1 oil well will be drilled in the SW NE Sec. 6, T42S -
R25E, San Juan County, Utah.
(S. 1445 ft. & W. 1640 ft. from NE Cor. Sec. 6, T42S, R25E, S1B&M).

12. EXPLANATORY

The following is set forth to define more clearly the full purpose of this application. (Use additional pages of same size if necessary): _____
The water source as well as the proposed oil well site are located on
Tribal Trust lands of the Navajo Nation. An application has been filed
with the Navajo Environmental Protection Administration for use of this
water. See attached.
\$30.00 application fee attached.

 The applicant(s) hereby acknowledges that he/she/they are a citizen(s) of the United States of America or intends to become such a citizen(s). The quantity of water sought to be appropriated is limited to that which can be beneficially used for the purposes herein described. The undersigned hereby acknowledges that even though he/she/they may have been assisted in the preparation of the above-numbered application through the courtesy of the employees of the Division of Water Rights, all responsibility for the accuracy of the information contained herein, at the time of filing, rests with the applicant(s).

Lisa L. Smith
 Signature of Applicant(s)

Lisa L. Smith - Consultant for
 Raymond T. Duncan

TEMPORARY

STATE ENGINEER'S ENDORSEMENT

WATER RIGHT NUMBER: 09 - 1733

APPLICATION NO. T64918

1. August 30, 1990 Application received by MP.
 2. August 30, 1990 Application designated for APPROVAL by MP and KLJ.
 3. Comments:
-
-

Conditions:

This application is hereby APPROVED, dated September 14, 1990, subject to prior rights and this application will expire on September 14, 1991.


Robert L. Morgan, P.E.
State Engineer

RAYMOND T DUNCAN
JEEP FEDERAL #1
SECTION 5, T42S, R25E
SAN JUAN COUNTY, UTAH

GEOLOGIC REPORT

BY

DAVE MEADE

ROCKY MOUNTAIN GEO-ENGINEERING COMPANY

CONFIDENTIAL

T A B L E O F C O N T E N T S

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WELL SUMMARY

OPERATOR: RAYMOND T. DUNCAN

WELL NAME: JEEP FEDERAL #1.

LOCATION: SEC. 5, T42S, R25E

COUNTY: SAN JUAN

STATE: UTAH

ELEVATION: GL-4610' KB-4624'

SPUD DATE: 7/28/91

COMPLETION DATE: 8/15/91

DRILLING ENGINEER: ROBERT NIEWOEHNER

WELLSITE GEOLOGY: ROCKY MOUNTAIN GEO-ENGINEERING COMPANY
GEOLOGIST: DAVE MEADE

MUDLOGGING COMPANY: ROCKY MOUNTAIN GEO-ENGINEERING COMPANY
ENGINEER: DAVE MEADE MARVIN ROANHORSE

CONTRACTOR: ARAPAHOE DRILLING CO. RIG #4

TOOL PUSHER: TOM SCHRUM

HOLE SIZE: 17 1/2" 0-218'; 12 1/4" 218'-1460'; 7 7/8" 1460'-TD
CASING RECORD: 13 3/8" CONDUCTOR SET @216'; 8 5/8" CASING SET @1406'

DRILLING MUD COMPANY: BAROIDE MUD
MUD ENGINEER: BILL WETHERINGTON
DRILLING MUD: 0'-2700' FRESH WATER/GEL; 2700'-TD DISPERSED
CHEMICAL MUD

ELECTRIC LOGGING CO.: SCHLUMBERGER
ENGINEER: RICHEY/JASZKOWIAK
TYPES OF LOGS: BHC/GR/CAL/DLL/FDC-CNL/MICRO-SFL/MICRO LOG

CORES: NONE

TESTS: HALLIBURTON

TOTAL DEPTH: DRILLER-5512' LOGGER-5511'

STATUS: WAITING ON DECISIONS

RAYMOND T. DUNCAN
 JEEP FEDERAL #1
 SECTION 5, T42S, R25E
 SAN JUAN COUNTY, UTAH

WELL CHRONOLOGY

DATE & # DAYS	MDNT DEPTH	FOOTAGE PER DAY	DAILY OPERATION
7/27/91 (0)	0'	0'	MOVE RIG-RIG UP-W.O. SPUD MUD
7/28/91 (01)	0'	149'	W.O. SPUD MUD-MIX SPUD MUD-DRLG RAT & MOUSE HOLES-SPUD 12 1/4" PILOT HOLE-TOH-TIH W/BIT #2-REAM 17 1/2" HOLE-SURVEY-TOH-TIH W/BIT #1 DLRG 12 1/4" PILOT HOLE-TOH- TIH W/BIT #2-REAM 17 1/2" HOLE- SURVEY-DLRG 17 1/2" HOLE
7/29/91 (02)	149'	69'	DRLG-SURVEY-DRLG-CIR-SURVEY-TOH RUN 13 3/8" CONDUCTOR PIPE-CIR- W.O.DOWELL-CEMENT-W.O.CEMENT-TIH W/BIT #3-DLRG PLUG & CEMENT
7/30/91 (03)	218'	1047'	DRLG CEMENT-DRLG 12 1/4" HOLE- SURVEY-DRLG-TOH-TIH W/BIT #4- DRLG
7/31/91 (04)	1265'	195'	DRLG-CIR-TOH-RUN 8 5/8"CASING- CEMENT-W.O.C.-CEMENT BACKSIDE THRU 1"-W.O.C.-NIPPLE UP-W.O. TESTER
8/01/91 (05)	1460'	745'	REDRILL MOUSE HOLE -PRES TEST-TIH W/BIT #5-TAG CEMENT @ 1378'-DRLG- CEMENT, PLUG & SHOE-DLRG 7 7/8" HOLE-DRLG-SURVEY-DRLG
8/02/91 (06)	2205'	670'	DRLG-SURVEY-WRK ON PUMP-DRLG-RIG REPAIRS-DRLG-SURVEY-DRLG-BEGIN MUD UP
8/03/91 (07)	2875'	369'	DRLG-SURVEY-DRLG-SURVEY-DRLG
8/04/91 (08)	3244'	310'	DRLG-SURVEY-DRLG-RIG REPAIRS-DRLG SURVEY-TOH-TIH W/BIT #6
8/05/91 (09)	3554'	340'	TIH W/BIT #6-WASH & REAM 90' TO BTM-DRLG

RAYMOND T. DUNCAN
JEEP FEDERAL #1

8/06/91 (10)	3894'	339'	DRLG-SURVEY-DRLG-SURVEY-DRLG
8/07/91 (11)	4233'	192'	DRLG-SURVEY-DRLG-SURVEY-TOH-TIH W/BIT #7-DRLG-LOST PUMP PRES.- TOH FOR BLOWN JET-TIH 35 STDS & CHECK PRES. @ BIT-TIGHTEN SWIVEL TIH-DRLG
8/08/91 (12)	4425'	304'	DRLG-SURVEY-DRLG
8/09/91 (13)	4729'	214'	DRLG-SURVEY-DRLG-WRK ON PUMP-DRLG
8/10/91 (14)	4950'	167'	DRLG-PUMP SLUG-DROP SURVEY-TOH- REPAIR COMPOUND CHAIN-TIH W/BIT #8-DRLG
8/11/91 (15)	5117'	256'	DRLG-CIR. ANHYDRITE CONTAMINATED MUD-DRLG-CIR. SAMPLES-CIR. & COND MUD
8/12/91 (16)	5373'	30'	CIR. & COND MUD FOR DST #1-TOH 10 STDS-CIR & COND MUD FOR DST-W.O. TESTER-TIH 10 STDS-CIR FOR DST #1-TOH-FOR DST-DST CANCELED-TIH W/BIT #9-DRLG-CIR SPLS-TOH 1 STD CIR & COND MUD FOR DST#1-TIH 1 STD-PUMP SLUG-TOH FOR DST #1
8/13/91 (17)	5403'	0'	TOH TO 1451 (PULLED TIGHT @2381') TIH 10 STDS-CIR & COND MUD-TIH TO TD-CIR & COND MUD-TOH-REPLACE MASTER DRUM CLUTCH-PICK UP TEST TOOL-TIH-HIT BRIDGE @ 2381'-PUT 20K ON STRING COULDN'T GET THRU- TOH-LAY DOWN TEST TOOL-PICK UP BIT-TIH-DRILL OUT BRIDGE-TIH TO BTM-CIR & COND MUD FOR DST-TOH FOR DST #1
8/14/91 (18)	5403'		TOH-PICK UP TEST TOOLS-TIH-DST #1-TOH-LAY DOWN TEST TOOLS-TIH DRLG
8/15/91 (19)			DRLG-CIR BTMS UP-CIR & COND HOLE FOR "E" LOGS-TOH-RIG UP LOGGERS- LOGGING

ROCKY MOUNTAIN GEO-ENGINEERING CO.
BIT RECORD - FT PER/DAY - DEVIATION

WELL NAME:	Jeep Fed. #1	ELEVATION:	GL - 4610' KB - 4724
COMPANY:	Raymond T. Duncan	SECTION:	Sec. 5, T42S, R25E
CONTRACTOR:	Arapahoe Rig #4	COUNTY & STATE:	San Juan, Utah
SPUD DATE:	7/28/91	T.D. DATE:	8/16/91

BIT RECORD								FT PER/DAY			DEVIATION	
RUN	SIZE	MAKE	TYPE	OUT	FTG	HOURS	FT/HR	DATE	DEPTH	FT	DEPTH	DEV.(DEG)
1	12.25	STC	F-3	70	70	5/14	13.3	7/28/91	0	149	62	3/4
2	17.5	HTC	X22	80	80	10	8	7/29	149	69	80	1
1	12.25	STC	F-3	111	31	7	4.4	7/30	218	1047	122	3/4
2	17.5	HTC	X22	218	218	5.5	39.6	7/31	1265	195	218	1/2
3	12.25	SEC	S84F	1198	980	17.5	56	8/1	1460	745	509	3/4
4	12.25	STC	F-3	1460	262	8.5	30.8	8/2	2205	670	808	3/4
5	7.875	VTC	517	3554	2094	81.25	25.8	8/3	2875	369	1118	miss run
6	7.875	W.McD	52F	4400	846	57.75	14.6	8/4	3244	310	1140	3/4
7	7.875	VTC	527	4982	582	53.5	10.9	8/5	3554	340	1460	1/2
8	7.875	HTC	ATJ33	5373	391	35.75	10.9	8/6	3894	339	1768	miss run
9	7.875	W.McD	527	5403	30	2.25	13.3	8/7	4233	192	1810	3/4
10	7.875	HTC	ATJ33	5512	14	14	7.7	8/8	4425	304	2110	1/4
								8/9	4729	241	2358	1/4
								8/10	4950	167	2679	1
								8/11	5117	256	2986	1
								8/12	5373	30	3274	3/4
								8/13	5403	108	3514	1/4
								8/14	5512		3880	miss run
								8/15			3900	1/2
								8/16			4200	3/4
											4400	3/4
											4700	1/4
											4980	3/4
											5333	3/4

ROCKY MOUNTAIN GEO-ENGINEERING CO.

COMPANY NAME: RAYMOND T. DUNCAN

MUD RECORD: 1

WELL NAME: JEEP FEDERAL #1

DATE	DEPTH	WEIGHT	MUD GRADIENT	FUNNEL VIS	PLASTIC VIS	YIELD POINT	GEL STRENGTH	PH	FILTRATE API	CAKE	ALKALINITY FILTRATE	CHLORIDE PPM	CALCIUM PPM	SAND % CONTENT	SOLIDS % CONTENT	OIL % CONTENT	WATER % CONTENT	% KCL	CHROMATE % PPM
7/27/91	0	SPUD	MUD																
7/30	462	8.4		29	WATER /	GEL													
7/31	1445	8.4		28	WATER /	GEL		7			.0/4	2000	120						
8/1	1460	8.3		28	WATER /	GEL													
8/2	2478	9.9		48	19	7	12/30	11	12	2	1/1.6	2100	80	0.25	11		89		
8/3	2958	9.6		36	11	8	5/17	11	12	2	.6/1.0	2500	80	0.25	9		91		
8/4	3310	9.9		38	13	9	12/28	10	12	2	.2/7	2500	400	0.5	11		89		
8/5	3590	9.7		43	17	10	14/22	11	11	2	.2/6	2500	480	0.5	9.5		89.5		
8/6	3973	9.8		33	9	7	12/30	10	15	2	.05/3	1800	480	0.25	10		90		
8/7	4286	9.8		33	8	4	3/10	12	9	2	3.4/4.3	1800	220	0.25	10		90		
8/8	4488	9.9		33	9	4	4/10	11	11	2	.6/1.4	1700	8	0.25	11		89		
8/9	4771	9.6		34	9	6	4/12	12	10	2	.45/1.3	1700	8	0.25	9		91		
8/10	4980	9.7		36	11	9	12/28	11.5	11	2	.45/1.3	2200	8	0.25	10		90		
8/11	5182	9.7		41	13	11	13/28	12		2	.9/1.6	2200	8	0.25	10		90		
8/12	5372	10.1		48	21	18	12/30	12	9	2	.8/1.5	2200	20	0.25	12.5		87.5		
8/13	5403	10.2		50	243	19	10/32	12	8	2	.5/1.9	2200	200	0.25	13.5		86.5		
8/14	5403	10.1		50	24	18	12/30	12	7	2	.7/1.7	2800	120	0.25	12.5		87.5		
8/15	5463	10.2		56	25	19	16/35	11.5	7	2		2400	280	0.25	13		87		

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 JEEP FEDERAL #1
 SECTION 5, T42S, R25E
 SAN JUAN COUNTY, UTAH

SAMPLE DESCRIPTION

4200-4210	60%	SH	redorng, gygn-gn, v col, sbblky-sbplty, sft-frm, rthy-sbwxy, n-sl calc, mica ip, sl slty, w/tr ANHY incl
	30%	LS	tan, orng, gy, mot ip, crpxl, micxl ip, sft-mhd, rthy-cln, v arg-sl slty, dns, tt
	10%	SLTST	lt brn-brn, redbrn, fri-frm, lmy, arg, v sl mica, v sl sdy
4210-4220	40%	SH	AA, pred gn-brn
	40%	LS	AA incr tan
	10%	SLTST	AA
	10%	ANHY	AA
4220-4230	50%	SH	AA, pred v col
	30%	LS	AA, v shy ip, dns, tt
	20%	ANHY	AA, pred wh, sft
4230-4240	70%	SH	AA gn-gygn, redorng-redbrn, w/tr ANHY incl
	20%	LS	tan, brn, redbrn, AA, v arg-cln
	10%	ANHY	wh, trnsl ip, xl-amor, sft-sl frm
	TR	SLTST	brn, gygn, redorng ip, fri-frm, v arg-shy, sl-n calc, mica, sl sdy
4240-4250	60%	SH	AA, gy-gygn, incr n calc, sl bent, sft-mfrm
	20%	LS	AA
	10%	ANHY	AA
	10%	SLTST	AA, v col
4250-4260	70%	SH	gn, redorng, occ brn-redbrn-gygn, sbblky-sbplty, sft-mfrm, sl-n calc, sl mica, slty ip, wxy-sbwxy, rthy ip
	20%	LS	wh-tan, occ pk-orng, crpxl, frm, dns, arg, v sl slty, rthy
	10%	SLTST	gn, v col, AA
	TR	ANHY	AA
4260-4270	70%	SH	AA, bent ip
	20%	LS	wh-tan-brn, AA, chk, sl anhy
	10%	SLTST	AA
	TR	SS	clr-trnsl, f gr, sbang-sbrd, w srt, p cmt, n calc cly cmt, arg, v sl mica, NFSOC
	TR	ANHY	wh-trnsl, amor-xl, sft-sl frm
4270-4280	60%	SH	AA, incr gygn, redorng, v mica ip, sl-n calc, w/occ intbd ANHY
	20%	LS	AA, occ gybrn, slty
	20%	SLTST	gygn-redorng, AA
	TR	ANHY	AA
4280-4290	70%	SH	redorng, gn-gygn, gy, v col, blky-sbplty, sft-frm, rthy-sbwxy, sl-n calc, mica, sl slty, bent ip, w/occ intbd ANHY
	20%	LS	tan-wh, gybrn, redorng-pk, crpxl, frm, rthy-cln, sl slty, arg, anhy, dns, tt
	10%	ANHY	wh-trnsl, xl, sft-sl frm

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4290-4300 60% LS pred wh, occ tan-brn, crpxl, sft-mhd, cln-rthy, chk, sl slty, v arg ip, sl chty, fos ip, dns, tt
 30% SH AA, bcmg lt-mgy, occ sl carb, w/occ thn ANHY incl
 10% SLTST gy-gygn, occ gybrn-redorng, fri-sl frm, mica, sl-n calc, shy, arg, v sl sdy
 TR CHT trnsl

4300-4310 70% LS wh, trnsl, tan, occ ltgybrn, crpxl, sft-frm, cln-rthy, chk, arg ip, shy-slty ip, dns, tt
 20% SH redorng-brn, lt-mgy, sbplty-sbblky, sft-frm, sl-n calc, rthy, sl mica
 10% SLTST m-dkgy, occ redorng, fri, sl sdy, calc, sl mica
 TR CHT trnsl

4310-4320 80% LS AA, pred wh-bf
 10% SH orngbrn-gybrn, plty-sbblky, frm-fri, sl calc, slty ip
 10% SLTST orngbrn-brn, fri-frm, shy ip, calc

4320-4330 80% LS AA, pred gy-gybrn, brn, arg ip
 10% SH AA, pred orngbrn-redorng
 10% SLTST AA
 TR CHT bf-smky ip

4330-4340 70% LS wh-offwh, bf, occ m-ltgy, micxl-occ vfxl, frm-sft, shy ip, rthy, chk, occ ANHY xl incl
 20% SH redorng-redbrn, brn, sft-frm, arg ip, sdy-slty, sl calc
 10% SLTST redorng, ltgy-ltgygn, fri, grdg to MUDST

4350-4360 70% LS brn-gybrn, bf, occ offwh, micxl-vfxl, frm-mhd, rthy, occ cln, chk, arg ip, dns, tt
 20% SH orngbrn, redbrn, sft-frm, sbblky-sbplty, slty-sdy ip, v calc, occ gy strk app, grdg to CLYST
 10% SLTST dkbrn, redorng, gybrn, fri, sdy ip, sl calc

4360-4370 40% LS wh-offwh, gybrn-gy, micxl-crpxl, sft-frm, rthy-arg ip
 30% SH AA
 20% SS clr, vf gr, sbrd-sbang, wsert, p-mcmt, calc cmt, p-n POR, NFSOC
 10% SLTST AA, pred redbrn-redorng

4370-4380 40% SH orngbrn-redbrn, lt-mgy, brn, sbplty-sbblky, sft-fr, sdy, occ grdg to CLYST, rthy, arg ip, calc ip
 30% LS wh-offwh-brn, gy, occ tan, micxl-crpxl, sft-frm, rthy, slty-shy ip
 20% SLTST orngbrn-redbrn, occ brn, fri, sl calc
 10% SS AA

4380-4390 ABNT LCM (CEDAR FIBER) & CVGS
 50% SH incr lt-dkgy, AA, carb ip
 30% LS AA, sdy ip
 10% SLTST AA
 10% SS clr-wh, vf gr, sbang-sbrd, wsert, p-wcmt, calc cly-LS cmt, v sl mica, sl glau, arg, tt, NFSOC

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4390-4400 ABNT CVGS AFTER TRIP P SPL
60% SH v col, gn, redorng, lt-mgy, sbblky-sbplty, sft frm, calc-n calc, sl bent, mica-sl slty, rthy-sbwxy, occ sl carb
20% LS wh-tan, brn, crpxl, sft-mhd, cln-rthy, chk ip, sl chty, sl slty, v sl sdy ip, occ anhy, tt
10% SLTST tan-brn, occ gybrn, fri-mfrm, mica ip, calc, sl sdy, arg ip
10% SS AA, v lmy

4400-4410 ABNT CVGS AFTER TRIP
60% SH AA v col
30% LS AA incr tan-brn, slty-sdy ip
10% SLTST AA
TR SS AA

4410-4420 DECR CVGS
40% SH AA incr dkgy-blk, pred v col
30% LS pred tan-brn, AA, v slty ip, occ grdg to lmy SLTST, chty
30% SLTST tan-brn, occ gybrn, fri-frm, sl sdy, mica ip, arg, lmy, grdg to slty LS ip
TR CHT trnsl-clr
TR ANHY CVGS

4420-4430 DECR CVGS FR SPL
40% LS wh-tan-brn, crpxl, micxl ip, sft-mhd, rthy-chk, occ cln-dns, sl slty, v sl fos, anhy
30% SH v col, lt-dkgy ip, occ blk, sbblky-sbplty, sft-frm, mica ip, rthy-sbwxy, calc-sl calc, slty ip, carb ip
20% SLTST AA
10% CHT trnsl-clr, bf-mgybrn

4430-4440 G SPL
70% LS wh-tan, occ brn, crpxl, occ micxl, mfrm-mhd, rthy-chk, sl fos ip, v sl slty, chty, occ cln, dns, tt
20% SH AA
10% CHT clr-bf
TR SLTST AA

4440-4450 INCR CVGS
60% LS AA, v chty ip
30% SH AA, incr vcol cvgs
10% SLTST AA
TR CHT AA, pred clr

4450-4460 INCR CVGS FR SPL TR METAL FRAG
60% LS wh-tan, occ brn-gybrn, crpxl, occ micxl, sft-mhd, rthy-cln, chk, sl slty, chty ip, occ anhy-ANHY incl, sl fos, dns, tt
30% SH AA incr dkgy-blk, pred vcol
10% SLTST AA gn, brn, occ gybrn
TR CHT trnsl-clr

4460-4470 ABNT SH CVGS P SPL TR METAL FRAG
60% SH redorng-gn, vcol, occ lt-dkgy, sbblky-sbplty, sft-frm, rthy-wxy, sl slty, mica ip, occ bent, calc-sl calc, carb ip
30% LS AA
10% SLTST redorng-lav, AA, v lmy ip
TR CHT AA

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4470-4480 ABNT CVGS TR METAL FRAG
 70% SH AA
 20% LS AA, occ pk-redorng cvgs
 10% SLTST brn-redbrn, gybrn ip, occ gygn, fri-mfrm, lmy, mica, arg-
 v shy ip, sl sdy
 TR CHT wh-trnsl, occ clr

4480-4490 ABNT CVGS TR METAL FRAG
 70% SH AA, pred orng-redorng, gn
 20% LS AA redbrn, fos
 10% SLTST AA

4490-4500 ABNT CVGS P SPL TR METAL
 50% SH AA
 30% SLTST pred brn-ltorngbrn, occ tan, AA, sl sdy
 20% LS AA

4500-4510 60% SH redbrn-orngbrn, gy, occ bf, sbblky-plty, sft-frm, slty-
 sdy, sl-v calc
 30% SLTST brn, bf, redorng-orngbrn, sft-shy ip, sl-v calc
 10% LS gy, gybrn, occ wh, micxl-crpxl, frm-hd, rthy, shy ip,
 chk, dull yel-orng murl FLOR, NSOC

4510-4520 50% SH brn-redbrn, mgy, gybrn, frm-sft, plty-sbblky, slty, sl
 calc
 30% SLTST AA, incr shy
 20% LS wh, offwh, brn-bf, occ gy, micxl-crpxl, frm-mhd, rthy,
 shy ip, chk, NFSOC

4520-4530 50% LS wh, offwh, bf, occ gy, micxl-crpxl, frm-hd, rthy, arg,
 shy ip, chk
 30% SH orngbrn, redbrn, occ dkgy-gy, frm-sft, sbblky-sbplty, sl
 v calc, slty-sdy ip
 20% SLTST redorng, brn, orngbrn, sft-frm, sl shy ip, sl calc
 TR CHT trnsl-bf

4530-4540 40% SH brn, redbrn, orngbrn, plty-sbblky, frm-brit, slty-sdy ip,
 sl-v calc
 40% LS brn, redbrn, w/occ gy strks, m-dkgy, occ wh, micxl-crpxl
 mfrm-mhd, v-sl arg, chk, rthy ip, shy ip
 20% SLTST redbrn, orngbrn, brn. fri-frm, sl calc, shy ip

4540-4550 50% SH AA, incr mica
 40% LS AA, decr wh, incr brn-redbrn
 10% SLTST AA

4550-4560 60% SH brn, gy-dkgy, gygn, plty-sbblky, frm-brit, slty-lmy ip
 sl mica
 30% LS bf-brn, tan, wh, crpxl-micxl, sft-frm, rthy-sl chk, arg,
 sdy-slty, occ shy ip
 10% SLTST AA

4560-4570 70% LS wh, offwh, bf-tan, crpxl-micxl, occ vfxl, frm, cln, dns,
 sdy, w/ incl qtz gr, occ shy, rr chty, w/redbrn str
 20% SH AA, w/occ gy-gygn strk in brn
 10% SLTST AA
 TR CHT bf-trnsl

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4570-4580	60%	LS	AA, w/occ gy-gybrn
	30%	SH	AA
	10%	SLTST	AA
	TR	CHT	AA
4580-4590	60%	LS	gy-mgy, gybrn, bf, occ wh, micxl-crpxl, occ vfxl, frm-hd, cln, dns, chk, rthy, arg, sl chty ip
	30%	SH	gy-gybrn, brn, orngbrn-redbrn, plty-sbblky, frm-brit, lmy-slty ip, sl-v calc ip
	10%	SLTST	gy-mgy, brn, orngbrn-redorng, sl blky, fri, sdy-shy ip, calc
	TR	CHT	trns1-smky
4590-4600	60%	LS	offwh-wh, tan, gy-gybrn, micxl-crpxl, rr vfxl, sft-frm, cln, dns, chk, rthy, arg, chty ip, shy ip
	30%	SH	AA
	10%	SLTST	AA
	TR	CHT	AA
4600-4610	60%	LS	gy, gybrn, tan, wh-offwh, bf, crpxl-vfxl, frm-mhd, rthy arg, slty-sdy ip
	30%	SH	gy-gybrn, brn, sbplty-sbblky, frm, wxy, occ rthy, slty-sdy ip, calc
	10%	SLTST	mgy-gygn, brn-redbrn, fri, sdy-shy, sl-v calc ip
4610-4620	50%	LS	mgy-gybrn, brn, wh, occ tan, crpxl-micxl, frm, rthy, arg, occ cln, dns, chk, shy-sl slty ip
	40%	SH	brn, gy, gybrn, sft-mfrm, sdy, slty ip, sl rthy, calc
	10%	SLTST	orngbrn-brn, frm, sdy, calc
	TR	CHT	trns1
4620-4630	60%	LS	lt-mgy, gybrn, occ wh-offwh, tan, crpxl-micxl, occ vfxl, frm-hd, rthy, arg, chk, occ intxl qtz, slty-sdy ip
	30%	SH	brn-tan, gy, occ blk, mfrm-brit, sbwxy, slty ip, sl-v calc
	10%	SLTST	gygn, brn, fri, sdy-shy ip, sl mica, sl-v calc
	TR	CHT	trns1-smky
4630-4640	80%	LS	wh-offwh, ltgy, occ bf, crpxl-micxl, occ vfxl, frm-mhd, cln-dns, occ rthy-sl slty, arg ip, chk, sdy ip, occ chty
	10%	SH	AA
	10%	SLTST	AA, w/occ redbrn cvgs
	TR	CHT	AA
4640-4650	90%	LS	AA, pred wh-offwh, ltgy
	10%	SH	AA
	TR	SLTST	AA
4650-4660	FR-G	SPL	
	60%	LS	wh-tan, occ gy-gybrn, crpxl-micxl, sft-mhd, rthy-chk, sl slty, chty, arg-sl shy, dns, tt
	20%	SH	orng-redorng, lt-mgy ip, occ ltgygn, sbblky-sbplty, sft frm, sl mica, calc, sl slty, carb ip, rthy
	10%	SLTST	tan-gybrn, occ gygn, fri-frm, mica, calc, sl sdy, shy
	10%	CHT	orng-bf, trns1
4660-4670	40%	LS	AA, incr gy, pel ip
	30%	SH	AA, occ brn
	30%	SLTST	AA, pred gybrn
	TR	CHT	AA

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4670-4680 40% LS pred wh-tan, crpxl, AA, v chty-v chk, sl anhy
 20% SH AA, bri orng ip
 20% SLTST AA, grdg to slty LS
 20% CHT trnsl-bf, occ clr

4680-4690 70% LS tan-brn, occ wh, dkbrn-gybrn ip, micxl-vfxl, frm-mhd,
 rthy-slty, chty ip, occ chk, tt-v rr intxl POR, NFSOC
 10% SH AA
 10% SLTST AA
 10% CHT AA, spec orng ip

4690-4700 80% LS AA, incr gybrn, sl anhy, tr Cor fos
 20% SH vcol, ltgy, sbblky-sbplty, sft-frm, calc, mica, sl
 slty, rthy, occ cvgs
 TR SLTST AA, occ v sdy, grdg to slty SS ip
 TR CHT clr-trnsl, tan, occ pale orng

4700-4710 80% LS pred tan-brn, occ wh-gy-gybrn, crpxl-micxl, occ vfxl,
 sft-mhd, rthy-slty, chk, fos, occ cln, shy-arg ip, sl
 mica, dns, tt
 20% SH AA, incr lt-mgy, dkgyp ip
 TR SLTST AA
 TR CHT AA

4710-4720 60% LS AA, incr gybrn-gy, shy, occ grdg to lmy MRLST
 30% SH pred lt-mgy, AA, calc, mica, slty, mrly
 10% SLTST gy-gybrn, fri-frm, sl sdy, mica, arg, v lmy ip, occ grdg
 to v slty LS
 TR CHT trnsl-clr

4720-4730 INCR REDORNG-GN CH CVGS
 50% LS brn-tan-gybrn, occ wh-gy, micxl-crpxl, occ vfxl, sft-mhd,
 rthy, slty, cln-dns, occ chk, chty, shy ip, v sl fos,tt
 30% SH AA, w/incr vcol cvgs
 10% SLTST AA
 10% CHT trnsl-bf-brn

4730-4740 ABNT LCM IN SPL
 50% SH lt-mgy, gygn, w/vcol cvgs, sbblky-sbplty, sft-frm, sl
 slty, mica, calc-sl calc, occ carb
 40% LS AA, wh ip
 10% SLTST AA
 TR CHT trnsl-clr

4740-4750 ABNT LCM
 50% LS AA
 50% SH AA, pred cvgs
 TR SLTST AA
 TR CHT AA

4750-4760 DECR SH CVGS & LCM
 70% LS tan, gy-gybrn, occ wh, micxl, occ crpxl, frm-mhd, cln-
 slty, rthy, occ chk, chty ip, dns, tt, v sl fos
 20% SH ltgy, occ mgy, sbblky-sbplty, sft-mfrm, mica, calc,sl
 slty, v sl carb
 10% SLTST gybrn, fri, calc, mica, sl sdy, arg
 TR CHT bf

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4760-4770 INCR SH CVGS
60% LS AA, incr brn-gybrn, sl fos, cln, mrly ip
40% SH AA
TR CHT trnsl-bf

4770-4780 INCR GN-REDORNG-REDBRN SH CVGS
60% LS wh-tan-brn-gybrn, crpxl-micxl, mfrm-mhd, cln-rthy, occ slty, chk ip, sl chty, occ arg, fos ip, mrly, occ grdg to lmy SH
40% SH lt-mgy, dkgy ip, occ gygn, sbblky-plty, sft-frm, calc, sl slty, mica ip, lmy, mrly
TR SLTST gybrn, gy, occ ltbrn, fri-mfrm, sl mica, lmy, arg-shy, sl sdy ip
TR CHT trnsl-bf

4780-4790 ABNT SH CVGS
70% LS wh, gybrn, tan, brn, crpxl-micxl, frm-hd, chk, rthy, sl suc, arg, mrly, grdg to lmy SH
30% SH lt-mgy, occ dkgy, sbblky-sbplty, plty, sft-brit, calc, grdg to shy SLTST ip, sl mica

4790-4800 ABNT VCOL SH CVGS
60% LS gybrn-gy, tan, wh, crpxl-micxl, mfrm-mhd, sl chk, rthy, chty, arg, sl mrly, cgrg to lmy SLTST ip
40% SH m-dkgy, occ blk, plty-sbblky, sft-brit, mica, rthy, sl slty, lmy
TR CHT

4810-4820 SL DECR VCOL SH CVGS
70% LS tan, brngy, wh, brn, crpxl-micxl, mfrm-mhd, arg, rthy, sl slty ip, arg, chk, chty, mrly, dns, tt
30% SH lt-mgy, occ gygn, plty-sbblky, sft-brit, calc, mica, sl slty, occ mrly

4820-4830 VCOL SH CVGS P SPL
70% LS AA, incr tan, gybrn, chty
20% SH AA
10% CHT trnsl-bf

4830-4840 DECR CVGS P-FR SPL
70% LS brn, bf, gybrn, gy, occ wh, crpxl-micxl, mfrm-mhd, rthy, arg ip, v chk, chty, mrly, slty ip, dns, tt
20% SH lt-dkgy, occ gygn, plty-sbplty, occ sbblky, sft-frm, sl wxy, rthy, sl-v calc, sl slty ip, mica
10% CHT trnsl-bf

4840-4850 VCOL SH CVGS P-FR SPL
70% AA, occ vfxl, v rr intxl PCR, NFSOC
20% SH AA
10% CHT AA

4850-4860 INCR VCOL SH CVGS
60% LS gybrn, mgy, tan, brn, wh-offwh, crpxl-micxl, mfrm-mhd, rthy, arg, occ cln, dns, occ slty-mrly ip
30% SH dkgy-gy, gygn, occ blk, sbblky-sbplty, sft, occ rthy, v-sl calc, grdg to shy SLTST ip
10% SLTST dkgy, fri, lmy, shy, mica
TR CHT AA

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4860-4870 DECR VCOL SH CVGS
70% LS tan, gybrn-gy-mgy, brn, micxl-crpxl, occ vfxl, sft-mhd,
chk, arg, slty-mrly, occ chk
20% SH dk-mgy, sbblky, plty ip, sft-frm, occ brit, rthy, slty,
sl mica, calc-grdg to shy LS ip
10% SLTST gy, fri, calc, occ shy-lmy ip
TR CHT bf, trnsl

4870-4880 DECR CVGS
70% LS AA, incr gy-mgy-gybrn
20% SH AA
10% SLTST AA, incr lmy-shy
TR CHT bf

4880-4890 INCR CVGS
70% LS gybrn-mgy, wh-offwh, tan, brn, micxl-crpxl, mfrm-mhd,
chk, arg, mrly-sl slty, occ chty
20% SH ltgy, gygn, tan, plty-sbblky, brit-sft, rthy, occ wxy,
slty, mrly ip, calc
10% SLTST gygn, mgy, fri, calc, mica

4890-4900 DECR CVGS
80% LS tan, wh-offwh, brn, gybrn, micxl-crpxl, mfrm-mhd,chk, arg
mrly-sl slty, occ chty
20% SH gy-dkgy, plty-sbblky, mfrm-brit, rthy, slty ip, calc,
sl mica

4900-4910 ABNT CVGS P-FR SPL
60% LS pred gybrn-tan, ltgy, occ wh, AA, cln-slty, arg, v sl
fos, anhy ip
30% SH ltgy, occ m-dkgy, AA, frm, slty-lmy
10% SLTST gy-gybrn, tan, fri, sl sdy, arg, mica, v lmy
TR CHT trnsl-bf

4910-4920 ABNT REDORNG-REDBRN-GN SH CVGS P SPL
60% LS gy-gybrn, tan-brn, occ wh, crpxl-micxl, occ v fxl, sft-
mhd, rthy-slty, chk ip, sl anhy, fos ip, occ cln, tt-v
rr intxl POR, NFSOC
20% SH lt-mgy, sbblky-sbplty, mfrm-sft, mica, calc, slty, sl
carb, occ grdg to shy LS
20% SLTST gy-gybrn, ltbrn ip, fri-mfrm, sdy, mica, arg-shy, lmy,
grdg to slty LS
TR CHT trnsl-clr

4920-4930 ABNT SH CVGS
40% LS AA, v slty ip
30% SH AA, occ dkgy-blk, incr carb-sooty
30% SLTST AA, pred gy
TR CHT AA

4930-4940 DECR CVGS FR-G SPL
70% LS wh-tan, occ brn-gy, micxl-crpxl, sft-mhd, rthy-chk, v sl
slty, fos ip, anhy, occ cln, dns, tt
20% SH AA
10% SLTST AA

4940-4950 ABNT VCOL SH CVGS V P SPL
50% SH lt-dkgy, sbplty-sbblky, sft-mfrm, calc, mica, slty, occ
carb-sooty, mrly ip
40% LS AA
10% SLTST AA, occ gygn ip, v sdy-v mica ip
TR CHT trnsl-clr

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4950-4960 ABNT VCOL SH CVGS V P SPL
60% LS wh-tan, gy-gybrn, brn, micxl-crpxl, sft-mhd, rthy, slty,
occ cln, chk ip, sl fos, anhy ip, sl chty, tt
40% SH ltgy, occ mgy-ltgybrn, plty-sbblky, sft-frm, mica, sl
slty, carb ip, arg, lmy, mrly ip
TR SLTST AA

4960-4970 SL DECR CVGS P-FR SPL
60% LS AA, incr gy, bcmg shy ip
30% SH AA
10% SLTST gybrn-ltbrn, gy ip, fri-mfrm, sl mica, arg, v sl sdy ip
v lmy, grdg to slty LS ip
TR CHT trnsl-clr, bf ip

4970-4980 DECR CVGS P-FR SPL
50% LS pred tan-brn, crpxl, AA, cln, fos
40% SH AA lt-mgy
10% SLTST AA
TR CHT trnsl-clr

4980-4990 ABNT VCOL SH CVGS P-FR SPL
50% SH tan, gy-gybrn, brn, wh, micxl-crpxl, mfrm-mhd, rthy, sl
shy, arg, occ cln, chk, chty ip
40% LS m-ltgy, occ dkgy, occ gybrn, sft-frm, sl mica, arg-rthy
sl calc occ grdg to shy LS
10% SLTST m-dkgy, fri-frm, arg, occ chk, sl sdy, sl calc
TR CHT bf-trnsl

4990-5000 ABNT VCOL SH CVGS V P SPL
50% LS lt-mgy, occ dkgy, crpxl-micxl, occ vfxl, mfrm-mhd, rthy
chk, chty, sl arg
40% SH m-ltgy, occ gygn, plty-sbblky, fri, rthy, sl calc-calc,
occ grdg to shy SLTST
10% SLTST gybrn, occ brn, fri, sl sdy, lmy

5000-5010 ABNT CVGS V P SPL
70% LS lt-mgy, gybrn, brn, wh-offwh, crpxl-vfxl, mfrm-mhd, chk-
rthy, chty, tt, occ grdg to lmy SLTST
20% SH m-dkgy, gygn, plty-sbblky, splty ip, sft-brit, rthy, occ
wxy ip, sl slty-sl sdy ip, sl-v calc
10% SLTST gy, gybrn, bf, gygn, fri-frm, arg, lmy
TR CHT trnsl-bf

5010-5020 DECR VCOL SH CVGS FR SPL
80% LS lt-dkgy, bf, gybrn, wh-offwh, crpxl-micxl, occ vfxl,
mfrm-mhd, cln, dns, rthy, arg, chk, chty ip, slty, mrly
ip, tt
20% SH AA
TR ANHY wh, amor

5020-5030 DECR CVGS FR-G SPL
80% LS lt-mgy, wh-offwh, gybrn, brn, bf, crpxl-vfxl, sft-mhd,
cln, dns, occ rthy, arg ip, v chk, sl chty ip, occ mrly,
occ grdg to lmy SLTST, tt
10% SH gy-dkgy, plty-splty, sft-brit, rthy, occ wxy, slty
10% ANHY wh, amor

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5030-5040	G SPL		
	80%	LS	AA, w/occ ANHY incl
	10%	SH	AA
	10%	ANHY	AA
		TR	CHT trnsl-bf
5040-5050	80%	LS	dk-mgy, occ ltgy, gybrn-brn, crpxl-micxl, occ vfxl, m frm-mhd, rthy, wh, cak ip, arg, sdy-mrly ip, tt
	10%	SH	m-dkgy, plty, frm-brit, rthy, lmy ip, calc
	10%	SLTST	m-dkgy, fri, mica ip, v lmy, sl shy
5050-5060	60%	LS	tan-gy, gybrn, occ brn-offwh, wh ip, crpxl-micxl, sft-m hd, rthy, arg, sl fos, occ cln, shy, v sl slty, anhy ip v mrly ip, sl chty
	30%	SH	lt-mgy, occ dkgy, sbblky-plty, frm, brit ip, lmy, sl slty, occ mica, sl dol, v sl carb, grdg to MRLST ip
	10%	SLTST	gybrn-ltbrn, fri, sl sdy, v arg-shy, lmy, grdg to slty LS ip, occ mica
		TR	CHT trnsl-clr
5060-5070	70%	LS	pred wh-tan, occ brn-gybrn, crpxl-micxl, mfrm-mhd, rthy- chk, v sl slty, occ arg, v sl fos, chty ip, dns, tt
	20%	SH	AA
	10%	CHT	AA
		TR	SLTST AA
5070-5080	70%	LS	AA
	20%	CHT	trnsl-clr
	10%	SH	ltgy, occ mgy-mgybrn, sbblky-sbplty, sft-frm, sl mica, sl slty ip, calc, sl carb, v sl dol
		TR	SLTST AA
5080-5090	INCR CVGS	Fair SPL	
	80%	LS	tan-brn, gybrn-brn, occ wh, crpxl, occ micxl, frm-mhd, cln-sl rthy, occ sl slty, v sl anhy, chty, v sl fos, occ sl mrly, tt
	10%	SH	AA
	10%	CHT	trnsl-clr, occ bf
		TR	SLTST brn-gybrn, fri, shy, sl mica, arg, lmy, grdg to slty LS
5090-5100	70%	LS	AA, sl dol
	20%	SH	ltgy, occ m-dkgy, sbblky, plty ip, sft-frm, sl mica, sl slty, rthy, calc-v sl dol, carb ip
	10%	CHT	AA
		TR	SLTST AA
5100-5110	70%	LS	tan-brn-gy, occ wh, gybrn ip, crpxl-micxl, mfrm-mhd, cln- rthy, occ chk, sl slty-shy, v sl chty, tr CRIN fos, mrly tr styol, sl anhy, tt
	20%	SH	AA, mrly, incr carb
	10%	SLTST	AA
		TR	CHT AA
5110-5120	60%	SH	ltmgy, occ gybrn, sbblky-sbplty, sft-frm, calc, carb ip, sl slty, occ mica, v sl dol, occ grdg to v shy LS
	30%	LS	AA, v shy, v mrly
	10%	SLTST	gy-gybrn, occ wh ip, fri-frm, lmy, shy, sl mica, v sl sdy
		TR	CHT trnsl-clr

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5120-5130	50%	LS	AA, incr tan, wh ip, occ cln, chk, pred dns, tt
	40%	SH	AA
	10%	SLTST	AA
	TR	CHT	AA
5130-5140	70%	LS	tan-offwh, brn-gybrn ip, crpxl-micxl, sft-mhd, rthy-chk, sl arg, v sl slty, chty, fos ip, dns, tt, v sl anhy, n vis por, v rr bri yel flor, n vis stn, v p slow dif cut
	20%	SH	lt-dkgy, occ blk, sbblky-sbplty, sft-brit, calc, v sl dol, carb, slty ip, occ mica
	10%	CHT	bf-smky gybrn
	TR	SLTST	AA, pred lt gybrn
5140-5150	60%	LS	tan-brn, occ wh-offwh, gybrn ip, crpxl-vfxl, sft-mhd, v slty, sl arg, rthy-chk ip, v sl fos, occ grdg to lmy SLTST, tr CRIN fos, tt-n vis por, v rr bri yel flor, n vis stn, v p v slow dif cut
	30%	SLTST	offwh-tan, gybrn ip, fri-frm, sl mica, arg, v sl sdy, v lmy, grdg to slty ls ip
	10%	SH	AA
	TR	CHT	trnsl-bf, occ smky gybrn
5150-5160	60%	LS	wh-tan, occ offwh-lt-brn, ltgy ip, crpxl-micxl, sft-mhd rthy-chk, cln ip, sl slty, v sl fos, chty ip, tt, nfsoc
	20%	SLTST	AA
	10%	SH	lt-mgy, occ dkgy-blk, sbblky, sft-frm, sl slty, mica, calc-sl dol, carb
	10%	CHT	trnsl
5160-5170	90%	LS	tan, ltbrn, occ offwh, crpxl, occ micxl, mhd, sft ip, dns-cln, occ rthy-chk, occ chty, v sl anhy, v rr frac, v rr brn stn, NFOC
	10%	SH	lt-dkgy, sbblky-sbplty, sft-frm, sl mica, calc-sl dol, carb, sooty ip, v sl slty
	TR	CHT	AA
5170-5180	100%	LS	AA, rr frac, rr dd o stn, NFOC
	TR	SH	AA
	TR	CHT	AA
	TR	DOL	dkbrn, micxl-crpxl, mhd, lmy, occ cln, sl rthy-shy, dns tt
5180-5190	80%	LS	tan-offwh, occ ltgy-brn, wh ip, crpxl-micxl, frm-mhd, cln-rthy, occ chk, v sl slty, occ v sl anhy, chty ip, sl dol, occ mrly, tt-v rr intxl-frac por, n vis flor, rr dd o stn, n-v rr p cut
	10%	SH	dkgy-blk, occ mgy, sbblky-sbplty, sft-mfrm, calc-sl dol carb, sooty, sl slty, mica ip
	10%	CHT	tan-brn, occ dkgy, trnsl ip
	TR	DOL	AA
5190-5200	80%	LS	tan, offwh, gybrn, occ ltgy, wh ip, crpxl-micxl, frm-mhd rthy, occ chk, sl mrly ip, grdg to sl slty, chty ip, sl dol, tt-v rr intxl-frac por, rr dd o STN, no FLOR, n-v rr v p slow dif CUT
	10%	SH	m-dkgy-blk, sbblky-sbplty, sft-brit, rthy, slty, grdg to shy MRLST, mica ip
	10%	CHT	tan-brn, dkgy, trnsl-smky
	TR	DOL	AA

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5200-5210	80%	LS	brn-gybrn, m-dkgy, occ wh-offwh, tan, crpxl-micxl, frm-mhd, rthy, occ chk, sl slty, chty ip, sl dol, sl shy, NFSOC
	10%	SH	AA
	10%	CHT	AA
		TR	DOL AA
5210-5220	80%	LS	brn-gybrn, lt-mgy, occ mot, wh-offwh, crpxl-micxl, frm-mhd, rthy, occ chk, v sl anhy, chty, sl dol, occ grdg to MRLST, tt, NFSOC
	10%	SH	blk, dkgybrn, plty-sbblky, frm-brit, calc-sl dol, carb, slty ip, sl mica, occ sooty, tr CRIN fos
	10%	CHT	brn, trnsl-smky
5220-5230	80%	LS	lt-mgy, offwh, occ mot gybrn-brn, crpxl-micxl, sft-mhd, rthy, cln-dns, chty ip, fos, NFSOC
	20%	SH	m-dkgy, occ blk, sbplty-blky, rthy, sl arg-lmy, carb, sl mica
		TR	CHT tan-trnsl
5230-5240	60%	LS	gybrn, lt-mgy, tan, cffwh-wh, occ mot, crpxl-micxl, sft-mhd, rthy, cln, dns, arg-mrly ip, chty, occ dull orng mnrl flor, NSOC
	40%	SH	blk, dk-mgy, sbplty-plty, occ splty, sft-frm, rthy ip, v calc-sl dol, carb, sl slty
		TR	CHT tan-smky
		TR	ANHY wh, sft, amor
5240-5250	60%	LS	AA, pred gybrn, tan, brn, v sl dol
	40%	SH	dk-mgy, occ blk, sbplty-sbblky, frm-brit, rthy, carb, calc-dol
		TR	CHT tan-smky
		TR	ANHY AA
5250-5260	60%	LS	lt-mgy, offwh, tan, brn, crpxl-micxl, frm-mhd, rthy, sl chty, dns-cln, mrly ip, fos ip, tt
	20%	DOL	brn-gybrn, crpxl-micxl, frm-mhd, lmy ip, rthy, dns, tt
	10%	SH	dkgy-blk, sbplty-blky, sft-frm, rthy, sl calc, carb, sl dol, mica, sl slty
	10%	ANHY	wh, amor
5260-5270	80%	LS	offwh-wh, tan, brn, mot ip, crpxl-micxl, frm-mhd, rthy-chk, cln, dns, sl mrly ip, sl anhy ip
	20%	SH	m-ltgy, tan, sbplty-plty, sft-frm, rthy, sl calc, lmy ip
5270-5280	90%	LS	offwh-wh, tan, ltgy, brn, crpxl-micxl, frm-mhd, rthy, chk, cln, dns, sl mrly ip, sl chty ip, dull orng mnrl flor, NSOC
	10%	SH	dkgy-blk, sbplty-plty, frm, rthy, sl calc, lmy ip
		TR	CHT smky-brn
5280-5290	50%	LS	AA, pred brn-tan
	50%	SH	AA, incr blk
		TR	CHT AA

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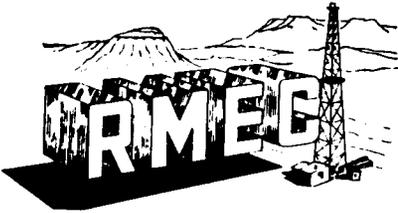
5290-5300	70%	SH	Abnt cvgs, v Col SH & SLTST, p spl blk, dkgy, plty-sbblky, occ splty ip, sft-brit ip, rthy, sl calc
	20%	LS	m-dkgy, occ blk, crpxl-micxl, frm, rthy, chk ip, mrly, bcmg slty ip, NFSOC
	10%	ANHY	wh, amor
5300-5310	60%	LS	v abnt cvgs of vcol SH & SLTST, Due to ANHY lt-mgy, grbrn, brn, occ wh-offwh-tan, crpxl-micxl, frm- mhd, rthy, sl chk, occ mot, occ mrly, slty ip, sl chty ip, NFSOC
	20%	SH	dkmgy, occ blk, sbplty-sbblky, sft-frm, sl rthy ip, sl calc
	10%	DOL	brn, gybrn, crpxl-micxl, mfrm-mhd, sl rthy, sl sdy, grdg to lmy ip
	10%	ANHY	wh, amor
5310-5320	40%	DOL	ltmbrn, micxl, frm, rthy, sl lmy, shy, tr ANHY incl, v sl fos, tr intxl-rr pp vug POR, tr dull-bri yel FLOR, tr- brn STN, p slow dif-mod fast stmg mlky CUT
	30%	LS	AA bf-tan, occ wh, brn ip, crpxl-micxl, sft-mhd, rthy, sl dol, ip, v sl fos, occ sl shy, dns, tt, NFSOC
	20%	ANHY	wh-trnsl, xl, occ amor, sft-mfrm, w/occ tr brn DOL incl
	10%	SH	dkgy-blk, sbblky-sbplty, sft-mfrm, sl mica, slty ip, calc, sl dol, carb, sooty
5320-5330	70%	DOL	tan, brn, gybrn ip, micxl-vfxl, crpxl ip, frm-mhd, rthy- cln, sl slty, lmy ip, ANHY, tr ANHY incl, tr fr intxl POR, tr pp vug POR, tr fr dull-bri yel FLOR, tr brn STN, fr mod fast-fast STMG mlky CUT
	20%	LS	AA tt, NFSOC
	10%	SH	AA
5330-5340	60%	LS	bf-tan, crpxl-micxl, occ v fxl, mfrm-mhd, cln, occ rthy- chk, sl dol, tr st yel, tt-vrr intxl-frac POR, vrr dull yel FLOR, tr dd o STN, vp CUT
	30%	DOL	AA incr gybrn, tr intxl-pp vug POR, rr-tr dull-bri yel FLOR, rr brn STN, tr mod fast STMG CUT
	10%	SH	dkgy-blk, sbblky, frm-brit, carb-calc, sl dol, mica, v sl slty
5340-5350	80%	LS	AA ANHY ip, st yel ip, tt-vrr intxl POR, vrr dull yel FLOR, n vis STN o CUT
	10%	DOL	brn, gybrn, micxl-vfxl, suc ip, frm, rthy-sl slty, occ sl lmy, cln ip occ v sl arg, tr-fr intxl-pp vug POR, fr dull-bri yel FLOR, tr brn STN, fr-g mod fast STMG CUT
	10%	SH	AA
5350-5360	50%	DOL	ltmbrn, micxl-vfxl, suc ip, frm, rthy-cln, v sl slty, v sl lmy, fr-g intxl-pp vug POR, fr-dull-bri yel FLOR, tr ltbrn STN, fr-mod fast STMG mlky CUT
	50%	LS	aa TT, NFSOC
5360-5370	80%	LS	tan-ltbrn, crpxl, occ micxl, frm-mhd, cln, sl DOL, v sl ANHY-vrr ANHY incl, sl fos, occ sl rthy, dns, tt, NFSOC
	20%	DOL	AA POR AA, vrr dull yell FLOR, tr ltbrn, STN, rr fr slow STMG CUT
	Tr	SH	blk, sbblky, frm-brit, calc-DOL, carb, sooty, v sl slty

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5370-5380	50%	DOL	gy, occ bf-brn, crpxl, micxl-vfxl ip, v sl suc, frm-mhd, dns cln, v sl rthy, lmy ip, v sl fos, st yel, tt-vrr frac POR, tr dd o STN NFOC
	40%	LS	tan, occ offwh-gy, crpxl, occ mica, sl suc ip, mfrm-mhd, cln-dns occ rthy-chk, v sl chty, sl fos-gast, sl DOL, tr ANHY incl, tt-rr frac occ dd o STN NFOC
	10%	SH	ltdkgy, dkgrbrn-blk ip, sbblky-sbpty, frm, calc-dol, mica ip, carb-sooty, v sl slty
5380-5390	60%	DOL	AA tt-vrr intxl POR, abnt dull yel orng mnrl FLOR, NSOC
	40%	LS	AA, tt, n vis POR, NFSOC
	Tr	SH	AA
5390-5403	50%	DOL	tan-offwh, ltgy-gy, crpxl-micxl, frm-mhd, cln-sl rthy, occ v sl slty, occ lmy, sl ANHY-rr ANHY incl, dns, tt, dull orng mnrl FLOR NSOC
	40%	LS	tan-ltbrn, occ wh crpxl-micxl, sft-mhd, cln-rthy, occ chk, sl ANHY, dol ip, dns, tt, NFSOC
	10%	ANHY	wh-trnsl, xl, occ amor, mfrm-sft
5403-5410			NO SAMPLE
5410-5420	70%	CUGS	
	20%	LS	tan, crm, gy, crpxl-micxl, frm-hd, dns dol ip, NFSOC
	10%	DOL	tan, ltgy, gy, crpxl-micxl, frm-hd, arg ip, dns, NFSOC
5420-5430	80%	LS	ltgy, gy, tan, crm, crpxl-micxl, frm-hd, dns, dol ip, anhy ip-ANHY incl, NFSOC
	20%	DOL	tan, crm, ltgy, micxl-crpxl, frm-hd, lmy ip anhy ip, dns, dull yel mnrl FLOR NSOC
5430-5440	70%	DOL	crm, gy, ltgy, tan, micxl-crpxl, frm-hd, dns, ANHY incl lmy ip, dull yel mnrl FLOR NSOC
	30%	LS	tan, ltbn, crm, micxl-crpxl, dns, tt, anhy-ANHY incl dol ip
5440-5450	50%	DOL	tan, crm, ltgy-gy, micxl-crpxl, frm-hd, lmy ip, anhy dns, dull yell mnrl FLOR, NSOC
	50%	LS	AA
5450-5460	50%	DOL	v ltgy, gy, tan, micxl-crpxl, dns, anhy, lmy ip, frm-hd
	50%	LS	tan, ltbrn, crm, crpxl-micxl, dns, ANHY incl, DOL ip, sft-hd dns
5460-5470	70%	LS	tan, crm, ltbrn, ltgy-gy, micxl-crpxl, sft-hd, dns, ANHY incl anhy, dol ip
	30%	SH	dkgy, gy, lmy-dol, blk, frm-hd, carb
5470-5480	50%	LS	AA
	40%	SH	dkgy, dkbrngy, sbfis-sbblky, frm-hd, carb, lmy-dol
	10%	DOL	ltgy, gy, micxl-crpxl, frm-hd, lmy, anhy, lmy dns, tt
5480-5490	50%	SH	dkgy, gy, blk, blk-sbplty, frm-mhd, rthy, sl calc
	40%	LS	tan, crm, ltgy, gy, occ offwh, micxl-crpxl, sft-hd, dns, cln, occ mot, tt
	10%	DOL	AA
	Tr	CHT	tan

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JEEP FEDERAL #1

5490-5500	60%	LS	ltbrn, gy, gy, offwh, tan, occ brn, micxl-crpxl, sft-mhd dns, cln, occ mot, sl shy-sdy ip, tt
	40%	SH	AA
	Tr	DOL	AA
	Tr	ANHY	wh, amor
5500-5510	60%	LS	AA
	40%	SH	dkgy, gy, blkyy-sbplty, frm-hd, carb, rthy calc, dol
	Tr	DOL	
	Tr	ANHY	



ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL SITE GEOLOGY — MUD LOGGING

2450 INDUSTRIAL BLVD.

PHONE (303) 243-3044

GRAND JUNCTION, CO 81505

COMPANY Duncan

WELL NO. Jeep Federal #1

LOCATION Sec. 5, T42S, R25E

ZONE OF INTEREST NO. 1

INTERVAL: From 5353 To 5359

DRILL RATE: Abv 4 1/2 Thru 3/4-1 Below 5

MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C ₁	C ₂	C ₃	C ₄	C ₅	OTHER
Before	4	432	120	68	TR		
During	200	9360	2800	1575	800		
After	5	960	320	180	80		

Type gas increase: Gradual Sharp

Gas variation within zone: Steady Erratic Increasing Decreasing

CARBIDE HOLE RATIO: $\frac{\text{GRAMS}}{\text{READING}}$ X Min. in Peak = _____ Sensitivity: Poor Fair Good

FLUO: Mineral Even Spotty CUT: None Streaming
 None % in total sample 50 Poor Slow
 Poor Fair Mod
 Fair % in show lithology 60 Good Fast
 Good COLOR: dull-bri yel COLOR: mlky yel

STAIN: None Poor Fair Good Live Dead Residue Even Spotty Lt. Dk.

POROSITY: Poor Fair Good Kind intxl-pp vug

LITHOLOGY DOL-lt-mbrn, micxl-vfxl, suc up, cln-sl rthy, v sl slty lmy ip

SAMPLE QUALITY GOOD

NOTIFIED Bob Lentz @ 12:00 HRS. DATE: 8/11/91

REMARKS Leak flushed in spls

ZONE DESCRIBED BY D. Meade

DST NUMBER: 1

INTERVAL TESTED: 5,312 to 5,403 feet

BHT: 128°

PSI

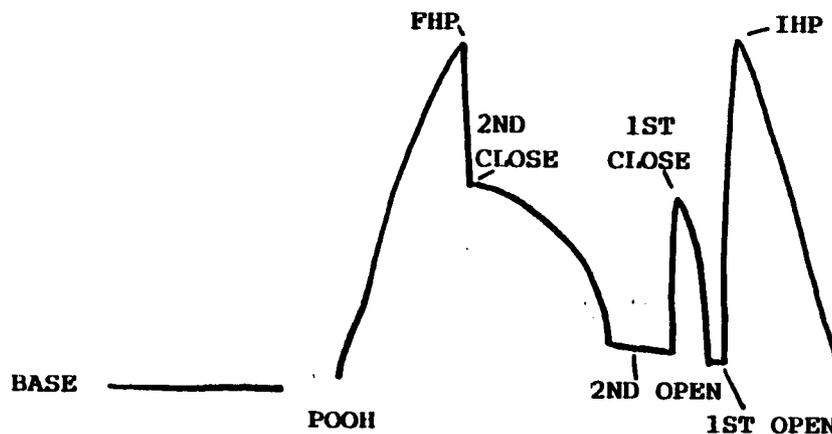
TIME

Initial Hydrostatic:	<u>2,769</u>	
Initial Flow:	<u>78/78</u>	<u>15 MIN.</u>
Initial Shut In:	<u>1,799</u>	<u>30 MIN.</u>
Final Flow:	<u>105/131</u>	<u>85 M I.</u>
Final Shut In:	<u>1,930</u>	<u>170 MIN.</u>
Final Hydrostatic:	<u>2,756</u>	

Remarks: 100 feet heavily gas cut mud

Sampler Data: pressure 75 psi, total liquid 2100 cc, 2100 cc mud, .07 cu ft gas

Chart:



RAYMOND T. DUNCAN
 JEEP FEDERAL #1
 SECTION 5, T42S, R25E
 SAN JUAN COUNTY, UTAH

FORMATION	FORMATION TOPS		GL-4610'	KB-4624'
	SAMPLE TOP	SUBSEA DATUM	E LOG	SUBSEA DATUM
CUTLER	----	-----	2606'	(+2019')
HERMOSA	4292'	(+332')	4288'	(+336')
UPPER ISMAY	5132'	(-508')	5120'	(-496')
HOVENWEEP SHALE	5233'	(-609')	5224'	(-600')
LOWER ISMAY	5242'	(-618')	5228'	(-604')
GOTHIC SHALE	5282'	(-658')	5265'	(-641')
DESERT CREEK	5293'	(-669')	5284'	(-660')
DESERT CREEK POROSITY	5316'	(-692')	5311'	(-687')
CHIMNEY ROCK SHALE	5460'	(-836')	5458'	(-834')
AKAH	5472'	(-848')	5470'	(-846')
PARADOX SALT	5510'	(-886')	5509'	(-885')
TOTAL DEPTH	5512'	(-888')	5511'	(-887')

GEOLOGIC SUMMARY
AND
ZONES OF INTEREST

The Raymond T. Duncan, Jeep Federal #1 well, located in Section 5, T42S, R25E, in San Juan County, Utah was spudded in the Morrison Formation on July 28, 1991. 13 3/8" conductor pipe was run on July 29th, and drilling of a 12 1/4" hole was begun. Surface casing was run and cemented on July 31th at 1460', and drilling was resumed with a 7 7/8" hole on August 1, 1991. Drilling continued to a depth of 5373' where a trip was made on August 12th, at which time Drill Stem Test #1 was to be run, but due to timing problems, the test was postponed until the 13th and an additional 30' was drilled. On August 13th tight hole conditions were encountered and a master drum clutch had to be replaced on the drilling rig, causing the test to be postponed again. DST #1 was finally run on August 14, 1991. The well was circulated again at 5512' on August 15th prior to running electric logs.

The well was drilled to a total depth of 5812, 2 feet into the Paradox Salt, on August 15, 1991. Geological coverage was begun on August 6, 1991 at 4200' in the upper Hermosa Formation. All tops used in this report are electric log tops.

CUTLER 2606'-4288' (+2019')

The basal Cutler or basal Cedar Mesa is of Permian age and consisted predominantly of redorange to redbrown to brown, very colored non-slightly calcareous, slightly sandy, micaceous siltstone with interbedded varicolored silty, micaceous, slightly calcareous shale, with an occasional interbedded crystalline anhydrite; and white to tan to buff, orange to orangebrown cryptocrystalline, earthy, chalky, dense limestone.

The basal Cutler Formation overlies the Hermosa with a gradational contact. The Cutler in this well was of no economic interest.

HERMOSA 4288'-5120' (+337')

The Hermosa Formation is of upper Pennsylvanian age and consisted predominately of a light gray to white to brown, cryptocrystalline to microcrystalline earthy to clean limestone with interbedded varicolored, slightly to noncalcareous, occasionally bentonitic shale; varicolored, slightly calcareous, sandy siltstone; scattered clear to translucent to buff cherts in the upper half of the Hermosa.

The lower half of the Hermosa was predominately a white to brown, cryptocrystalline to microcrystalline, occasionally very finely crystalline, slightly fossiliferous, slightly anhydritic, occasionally marly, and occasionally cherty limestone. There were interbedded, calcareous, carbonaceous, silty, marly, light to dark gray shale; gray to brown, limy, shaley, micaceous, slightly sandy siltstone; and scattered, clear to black cherts and very thin anhydrites. The sample quality was fair throughout. The Hermosa limes were first seen in abundance at 4290'.

The Hermosa was 832' thick in this well and overlays the Upper Ismay with

RAYMOND T. DUNCAN
JEEP FEDERAL #1

sharp contact between the overlaying shale at the base of the Hermosa and the carbonate of the Upper Ismay. There was no gas shows while drilling the Hermosa Formation. The Hermosa is of no economic interest in this well.

UPPER ISMAY 5120'-5224' (-495')

The Upper Ismay was predominately a tan to light brown, occasionally white cryptocrystalline to microcrystalline, slightly silty, clean to slightly argillaceous, slightly anhydritic, cherty, slightly fossiliferous tight limestone. The top of the Upper Ismay is picked at the contact between the basal shale of the Hermosa and the carbonate at the top of the Upper Ismay. The Upper Ismay was 104' thick and lays gradationally over the Hovenweep Shale.

No gas significant increases were noted while drilling the upper Ismay. The Upper Ismay is of no economic interest in this well.

HOVENWEEP SHALE 5224'-5228' (-599')

The Hovenweep Shale is a dark gray to black carbonaceous, slightly limy to dolomitic, silty shale. The Hovenweep shale is the source rock for hydrocarbon production in the Upper Ismay where it is better developed. The Hovenweep was 4' thick in this well. The shale overlays the Lower Ismay with a sharp contact between the shale and the carbonate of the upper Lower Ismay. The Hovenweep Formation is of no economic interest in this area.

LOWER ISMAY 5228'-5275' (-603')

The Lower Ismay was 47' thick was predominately a white to graybrown to tan cryptocrystalline to very finely crystalline, clean to slightly earthy limestone, with scattered interbedded brown to tan, microcrystalline to very finely crystalline, earthy, slightly silty dolomite. No significant gas increases were noted while drilling the lower Ismay.

The Lower Ismay overlays the Gothic Shale with a gradational contact between the shaley, limey dolomites and earthy, dirty limestones of the Lower Ismay and the dolomitic, calcareous carbonaceous shales of the Gothic Shale.

GOTHIC SHALE 5275'-5284' (640')

The Gothic Shale is a dark gray to black, carbonaceous, limy to dolomitic, silty shale. The Gothic Shale was 19' thick and is the source rock for hydrocarbon production in the Lower Ismay. The Gothic Shale overlays the Desert

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Creek with a sharp contact between the shale and the carbonate of the upper Desert Creek.

The Gothic Shale Formation is of no economic interest in this area.

DESERT CREEK 5284'-5458' (-659')

The Desert Creek Formation was 174' thick in this well and was dark gray-brown, microcrystalline, tight, earthy to silty limestone in the upper 3', above an 22' thick amorphous to crystalline dense anhydrite. From 5309' to 5360' the Desert Creek was a light to dark brown, microcrystalline to very finely crystalline, earthy to silty, slightly anhydritic, dolomite with fair intercrystalline to a trace of pin point vuggy porosity; and interbedded thin, dark gray to black, carbonaceous shale and tan, cryptocrystalline to very finely crystalline, clean to earthy, slightly stylitic, tight to very rare intercrystalline to fractured porosity with no to very rare fluorescence or stain, and no to very poor cut. Show #1 was reported from 5353' to 5359' in an earthy, micro to very finely crystalline dolomite that had fair to good intercrystalline to fair pin point vuggy porosity with a gas increase from 4 units to 200 units and C₁ to C₄ on the chromatograph and a good sample show.

The Desert Creek from 5360' to 5458' was a dark brown to gray cryptocrystalline, earthy, tight dolomite with no fluorescence, stain or cut and a tan to brown cryptocrystalline, tight, clean, slightly anhydritic limestone, with no visible porosity and no fluorescence stain or cut.

DST #1 was run over the Desert Creek from 5312' to 5403' over Show #1 and showed the zone to be tight.

For further details on Show #1 and DST #1 see the show and drill stem reports included in this report.

There was only one good sample show noted while drilling the Desert Creek Formation. The Desert Creek overlays the Chimney Rock Shale with a gradational contact between the dolomitic shale at the base of the Desert Creek and the carbonaceous shale of Chimney Rock.

The Desert Creek Formation in this well is of very poor economical potential in this well.

CHIMNEY ROCK SHALE 5458'-5470' (-833')

The Chimney Rock Shale was a dark gray to black carbonaceous, slightly limy to dolomitic, silty shale. The Chimney Rock Shale was 13' thick in this well. The shale is the source rock for hydrocarbon production in the Desert Creek.

The Chimney Rock overlays the Akah with a sharp contact between the shale of the Chimney Rock and the carbonate and the anhydrite of the Akah Formation and is of no economic interest in this area.

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AKAH 5470'-5510' (-845')

The Akah Formation consisted predominately of a brown, microcrystalline, occasionally banded dolomite; a dense, white to clear, amorphous to crystalline anhydrite; and thin, interbedded, black, carbonaceous shales and dolomite bands. Also interbedded in the Akah was thin, tight, tan limestone. The Akah Formation overlays the Paradox Salt with a very sharp contact between the massive anhydrite at the base of the Akah and the massive salt of the middle Paradox Formation. The Akah is of no economic interest in this well.

PARADOX SALT 5510'-? (-884')

The Paradox Salt is a massive, clear to translucent bed of crystalline salt, with lenses of interbedded, black, carbonaceous shale; brown, microcrystalline, earthy dolomite; and white to translucent, dense anhydrite. The Raymond T. Duncan, Jeep Federal #1 well was drilled to a total depth of 5512', 2' into the Paradox Salt Formation.

The Paradox Salt is of no economic interest in this area.

At the time of this report completion or abandonment procedures are still pending for this well.

RAYMOND T DUNCAN
JEEP FEDERAL #1
SECTION 5, T42S, R25E
SAN JUAN COUNTY, UTAH

GEOLOGIC REPORT

BY

DAVE MEADE

ROCKY MOUNTAIN GEO-ENGINEERING COMPANY

CONFIDENTIAL

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WELL SUMMARY

OPERATOR: RAYMOND T. DUNCAN

WELL NAME: JEEP FEDERAL #1

LOCATION: SEC. 5, T42S, R25E

COUNTY: SAN JUAN

STATE: UTAH

ELEVATION: GL-4610' KB-4624'

SPUD DATE: 7/28/91

COMPLETION DATE: 8/15/91

DRILLING ENGINEER: ROBERT NIEWOEHNER

WELLSITE GEOLOGY: ROCKY MOUNTAIN GEO-ENGINEERING COMPANY
GEOLOGIST: DAVE MEADE

MUDLOGGING COMPANY: ROCKY MOUNTAIN GEO-ENGINEERING COMPANY
ENGINEER: DAVE MEADE MARVIN ROANHORSE

CONTRACTOR: ARAPAHOE DRILLING CO. RIG #4

TOOL PUSHER: TOM SCHRUM

HOLE SIZE: 17 1/2" 0-218'; 12 1/4" 218'-1460'; 7 7/8" 1460'-TD
CASING RECORD: 13 3/8" CONDUCTOR SET @216'; 8 5/8" CASING SET @1406'

DRILLING MUD COMPANY: BAROIDE MUD
MUD ENGINEER: BILL WETHERINGTON
DRILLING MUD: 0'-2700' FRESH WATER/GEL; 2700'-TD DISPERSED
CHEMICAL MUD

ELECTRIC LOGGING CO.: SCHLUMBERGER
ENGINEER: RICHEY/JASZKOWIAK
TYPES OF LOGS: BHC/GR/CAL/DLL/FDC-CNL/MICRO-SFL/MICRO LOG

CORES: NONE

TESTS: HALLIBURTON

TOTAL DEPTH: DRILLER-5512' LOGGER-5511'

STATUS: WAITING ON DECISIONS

RAYMOND T. DUNCAN
 JEEP FEDERAL #1
 SECTION 5, T42S, R25E
 SAN JUAN COUNTY, UTAH

WELL CHRONOLOGY

DATE & # DAYS	MDNT DEPTH	FOOTAGE PER DAY	DAILY OPERATION
7/27/91 (0)	0'	0'	MOVE RIG-RIG UP-W.O. SPUD MUD
7/28/91 (01)	0'	149'	W.O. SPUD MUD-MIX SPUD MUD-DRLG RAT & MOUSE HOLES-SPUD 12 1/4" PILOT HOLE-TOH-TIH W/BIT #2-REAM 17 1/2" HOLE-SURVEY-TOH-TIH W/BIT #1 DLRG 12 1/4" PILOT HOLE-TOH- TIH W/BIT #2-REAM 17 1/2" HOLE- SURVEY-DLRG 17 1/2" HOLE
7/29/91 (02)	149'	69'	DRLG-SURVEY-DRLG-CIR-SURVEY-TOH RUN 13 3/8" CONDUCTOR PIPE-CIR- W.O.DOWELL-CEMENT-W.O.CEMENT-TIH W/BIT #3-DLRG PLUG & CEMENT
7/30/91 (03)	218'	1047'	DRLG CEMENT-DRLG 12 1/4" HOLE- SURVEY-DRLG-TOH-TIH W/BIT #4- DRLG
7/31/91 (04)	1265'	195'	DRLG-CIR-TOH-RUN 8 5/8"CASING- CEMENT-W.O.C.-CEMENT BACKSIDE THRU 1"-W.O.C.-NIPPLE UP-W.O. TESTER
8/01/91 (05)	1460'	745'	REDRILL MOUSE HOLE -PRES TEST-TIH W/BIT #5-TAG CEMENT @ 1378'-DRLG- CEMENT, PLUG & SHOE-DLRG 7 7/8" HOLE-DRLG-SURVEY-DRLG
8/02/91 (06)	2205'	670'	DRLG-SURVEY-WRK ON PUMP-DRLG-RIG REPAIRS-DRLG-SURVEY-DRLG-BEGIN MUD UP
8/03/91 (07)	2875'	369'	DRLG-SURVEY-DRLG-SURVEY-DRLG
8/04/91 (08)	3244'	310'	DRLG-SURVEY-DRLG-RIG REPAIRS-DRLG SURVEY-TOH-TIH W/BIT #6
8/05/91 (09)	3554'	340'	TIH W/BIT #6-WASH & REAM 90' TO BTM-DRLG

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8/06/91 (10)	3894'	339'	DRLG-SURVEY-DRLG-SURVEY-DRLG
8/07/91 (11)	4233'	192'	DRLG-SURVEY-DRLG-SURVEY-TOH-TIH W/BIT #7-DRLG-LOST PUMP PRES.- TOH FOR BLOWN JET-TIH 35 STDS & CHECK PRES. @ BIT-TIGHTEN SWIVEL TIH-DRLG
8/08/91 (12)	4425'	304'	DRLG-SURVEY-DRLG
8/09/91 (13)	4729'	214'	DRLG-SURVEY-DRLG-WRK ON PUMP-DRLG
8/10/91 (14)	4950'	167'	DRLG-PUMP SLUG-DROP SURVEY-TOH- REPAIR COMPOUND CHAIN-TIH W/BIT #8-DRLG
8/11/91 (15)	5117'	256'	DRLG-CIR. ANHYDRITE CONTAMINATED MUD-DRLG-CIR.SAMPLES-CIR.& COND MUD
8/12/91 (16)	5373'	30'	CIR.& COND MUD FOR DST #1-TOH 10 STDS-CIR & COND MUD FOR DST-W.O. TESTER-TIH 10 STDS-CIR FOR DST #1-TOH-FOR DST-DST CANCELED-TIH W/BIT #9-DRLG-CIR SPLS-TOH 1 STD CIR & COND MUD FOR DST#1-TIH 1 STD-PUMP SLUG-TOH FOR DST #1
8/13/91 (17)	5403'	0'	TOH TO 1451 (PULLED TIGHT @2381') TIH 10 STDS-CIR & COND MUD-TIH TO TD-CIR & COND MUD-TOH-REPLACE MASTER DRUM CLUTCH-PICK UP TEST TOOL-TIH-HIT BRIDGE @ 2381'-PUT 20K ON STRING COULDN'T GET THRU- TOH-LAY DOWN TEST TOOL-PICK UP BIT-TIH-DRILL OUT BRIDGE-TIH TO BTM-CIR & COND MUD FOR DST-TOH FOR DST #1
8/14/91 (18)	5403'		TOH-PICK UP TEST TOOLS-TIH-DST #1-TOH-LAY DOWN TEST TOOLS-TIH DRLG
8/15/91 (19)			DRLG-CIR BTMS UP-CIR & COND HOLE FOR "E" LOGS-TOH-RIG UP LOGGERS- LOGGING

ROCKY MOUNTAIN GEO-ENGINEERING CO.
BIT RECORD - FT PER/DAY - DEVIATION

WELL NAME:	Jeep Fed. #1	ELEVATION:	GL - 4610' KB - 4724
COMPANY:	Raymond T. Duncan	SECTION:	Sec. 5, T42S, R25E
CONTRACTOR:	Arapahoe Rig #4	COUNTY & STATE:	San Juan, Utah
SPUD DATE:	7/28/91	T.D. DATE:	8/16/91

BIT RECORD								FT PER/DAY			DEVIATION	
RUN	SIZE	MAKE	TYPE	OUT	FTG	HOURS	FT/HR	DATE	DEPTH	FT	DEPTH	DEV.(DEG)
1	12.25	STC	F-3	70	70	5/14	13.3	7/28/91	0	149	62	3/4
2	17.5	HTC	X22	80	80	10	8	7/29	149	69	80	1
1	12.25	STC	F-3	111	31	7	4.4	7/30	218	1047	122	3/4
2	17.5	HTC	X22	218	218	5.5	39.6	7/31	1265	195	218	1/2
3	12.25	SEC	S84F	1198	980	17.5	56	8/1	1460	745	509	3/4
4	12.25	STC	F-3	1460	262	8.5	30.8	8/2	2205	670	808	3/4
5	7.875	VTC	517	3554	2094	81.25	25.8	8/3	2875	369	1118	miss run
6	7.875	W.McD	52F	4400	846	57.75	14.6	8/4	3244	310	1140	3/4
7	7.875	VTC	527	4982	582	53.5	10.9	8/5	3554	340	1460	1/2
8	7.875	HTC	ATJ33	5373	391	35.75	10.9	8/6	3894	339	1768	miss run
9	7.875	W.McD	527	5403	30	2.25	13.3	8/7	4233	192	1810	3/4
10	7.875	HTC	ATJ33	5512	14	14	7.7	8/8	4425	304	2110	1/4
								8/9	4729	241	2358	1/4
								8/10	4950	167	2679	1
								8/11	5117	256	2986	1
								8/12	5373	30	3274	3/4
								8/13	5403	108	3514	1/4
								8/14	5512		3880	miss run
								8/15			3900	1/2
								8/16			4200	3/4
											4400	3/4
											4700	1/4
											4980	3/4
											5333	3/4

ROCKY MOUNTAIN GEO-ENGINEERING CO.

COMPANY NAME: RAYMOND T. DUNCAN

MUD RECORD: 1

WELL NAME: JEEP FEDERAL #1

DATE	DEPTH	WEIGHT	MUD GRADIENT	FUNNEL VIS	PLASTIC VIS	YIELD POINT	GEL STRENGTH	PH	FILTRATE API	CAKE	ALKALINITY FILTRATE	CHLORIDE PPM	CALCIUM PPM	SAND % CONTENT	SOLIDS % CONTENT	OIL % CONTENT	WATER % CONTENT	% KCL	CHROMATE % PPM
7/27/91	0	SPUD	MUD																
7/30	462	8.4		29	WATER /	GEL													
7/31	1445	8.4		28	WATER /	GEL		7			.0/4	2000	120						
8/1	1460	8.3		28	WATER /	GEL													
8/2	2478	9.9		48	19	7	12/30	11	12	2	1/1.6	2100	80	0.25	11		89		
8/3	2958	9.6		36	11	8	5/17	11	12	2	.6/1.0	2500	80	0.25	9		91		
8/4	3310	9.9		38	13	9	12/28	10	12	2	.2/7	2500	400	0.5	11		89		
8/5	3590	9.7		43	17	10	14/32	11	11	2	.2/6	2500	480	0.5	9.5		89.5		
8/6	3973	9.8		33	9	7	12/30	10	15	2	.05/3	1800	480	0.25	10		90		
8/7	4286	9.8		33	8	4	3/10	12	9	2	3.4/4.3	1800	220	0.25	10		90		
8/8	4488	9.9		33	9	4	4/10	11	11	2	.6/1.4	1700	8	0.25	11		89		
8/9	4771	9.6		34	9	6	4/12	12	10	2	.45/1.3	1700	8	0.25	9		91		
8/10	4980	9.7		36	11	9	12/28	11.5	11	2	.45/1.3	2200	8	0.25	10		90		
8/11	5182	9.7		41	13	11	13/28	12		2	.9/1.6	2200	8	0.25	10		90		
8/12	5372	10.1		48	21	18	12/30	12	9	2	.8/1.5	2200	20	0.25	12.5		87.5		
8/13	5403	10.2		50	243	19	10/32	12	8	2	.5/1.9	2200	200	0.25	13.5		86.5		
8/14	5403	10.1		50	24	18	12/30	12	7	2	.7/1.7	2800	120	0.25	12.5		87.5		
8/15	5463	10.2		56	25	19	16/35	11.5	7	2		2400	280	0.25	13		87		

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SAMPLE DESCRIPTION

4200-4210	60%	SH	redorng, gygn-gn, v col, sbblky-sbplty, sft-frm, rthy-sbwxy, n-sl calc, mica ip, sl slty, w/tr ANHY incl
	30%	LS	tan, orng, gy, mot ip, crpxl, micxl ip, sft-mhd, rthy-cln, v arg-sl slty, dns, tt
	10%	SLTST	lt brn-brn, redbrn, fri-frm, lmy, arg, v sl mica, v sl sdy
4210-4220	40%	SH	AA, pred gn-brn
	40%	LS	AA incr tan
	10%	SLTST	AA
	10%	ANHY	AA
4220-4230	50%	SH	AA, pred v col
	30%	LS	AA, v shy ip, dns, tt
	20%	ANHY	AA, pred wh, sft
4230-4240	70%	SH	AA gn-gygn, redorng-redbrn, w/tr ANHY incl
	20%	LS	tan, brn, redbrn, AA, v arg-cln
	10%	ANHY	wh, trnsl ip, xl-amor, sft-sl frm
	TR	SLTST	brn, gygn, redorng ip, fri-frm, v arg-shy, sl-n calc, mica, sl sdy
4240-4250	60%	SH	AA, gy-gygn, incr n calc, sl bent, sft-mfrm
	20%	LS	AA
	10%	ANHY	AA
	10%	SLTST	AA, v col
4250-4260	70%	SH	gn, redorng, occ brn-redbrn-gygn, sbblky-sbplty, sft-mfrm, sl-n calc, sl mica, slty ip, wxy-sbwxy, rthy ip
	20%	LS	wh-tan, occ pk-orng, crpxl, frm, dns, arg, v sl slty, rthy
	10%	SLTST	gn, v col, AA
	TR	ANHY	AA
4260-4270	70%	SH	AA, bent ip
	20%	LS	wh-tan-brn, AA, chk, sl anhy
	10%	SLTST	AA
	TR	SS	clr-trnsl, f gr, sbang-sbrd, w srt, p cmt, n calc cly cmt, arg, v sl mica, NFSOC
TR	ANHY	wh-trnsl, amor-xl, sft-sl frm	
4270-4280	60%	SH	AA, incr gygn, redorng, v mica ip, sl-n calc, w/occ intbd ANHY
	20%	LS	AA, occ gybrn, slty
	20%	SLTST	gygn-redorng, AA
	TR	ANHY	AA
4280-4290	70%	SH	redorng, gn-gygn, gy, v col, blky-sbplty, sft-frm, rthy-sbwxy, sl-n calc, mica, sl slty, bent ip, w/occ intbd ANHY
	20%	LS	tan-wh, gybrn, redorng-pk, crpxl, frm, rthy-cln, sl slty, arg, anhy, dns, tt
	10%	ANHY	wh-trnsl, xl, sft-sl frm

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4290-4300	60%	LS	pred wh, occ tan-brn, crpxl, sft-mhd, cln-rthy, chk, sl slty, v arg ip, sl chty, fos ip, dns, tt
	30%	SH	AA, bcmg lt-mgy, occ sl carb, w/occ thn ANHY incl
	10%	SLTST	gy-gygn, occ gybrn-redorng, fri-sl frm, mica, sl-n calc, shy, arg, v sl sdy
	TR	CHT	trnsl
4300-4310	70%	LS	wh, trnsl, tan, occ ltgybrn, crpxl, sft-frm, cln-rthy, chk, arg ip, shy-slty ip, dns, tt
	20%	SH	redorng-brn, lt-mgy, sbplty-sbblky, sft-frm, sl-n calc, rthy, sl mica
	10%	SLTST	m-dkgy, occ redorng, fri, sl sdy, calc, sl mica
	TR	CHT	trnsl
4310-4320	80%	LS	AA, pred wh-bf
	10%	SH	orngbrn-gybrn, plty-sbblky, frm-fri, sl calc, slty ip
	10%	SLTST	orngbrn-brn, fri-frm, shy ip, calc
4320-4330	80%	LS	AA, pred gy-gybrn, brn, arg ip
	10%	SH	AA, pred orngbrn-redorng
	10%	SLTST	AA
	TR	CHT	bf-smky ip
4330-4340	70%	LS	wh-offwh, bf, occ m-ltgy, micxl-occ vfxl, frm-sft, shy ip, rthy, chk, occ ANHY xl incl
	20%	SH	redorng-redbrn, brn, sft-frm, arg ip, sdy-slty, sl calc
	10%	SLTST	redorng, ltgy-ltgygn, fri, grdg to MUDST
4350-4360	70%	LS	brn-gybrn, bf, occ offwh, micxl-vfxl, frm-mhd, rthy, occ cln, chk, arg ip, dns, tt
	20%	SH	orngbrn, redbrn, sft-frm, sbblky-sbplty, slty-sdy ip, v calc, occ gy strk app, grdg to CLYST
	10%	SLTST	dkbrn, redorng, gybrn, fri, sdy ip, sl calc
4360-4370	40%	LS	wh-offwh, gybrn-gy, micxl-crpxl, sft-frm, rthy-arg ip
	30%	SH	AA
	20%	SS	clr, vf gr, sbrd-sbang, wart, p-mcmt, calc cmt, p-n POR, NFSOC
	10%	SLTST	AA, pred redbrn-redorng
4370-4380	40%	SH	orngbrn-redbrn, lt-mgy, brn, sbplty-sbblky, sft-fr, sdy, occ grdg to CLYST, rthy, arg ip, calc ip
	30%	LS	wh-offwh-brn, gy, occ tan, micxl-crpxl, sft-frm, rthy, slty-shy ip
	20%	SLTST	orngbrn-redbrn, occ brn, fri, sl calc
	10%	SS	AA
4380-4390	ABNT	LCM (CEDAR FIBER) & CVGS	
	50%	SH	incr lt-dkgy, AA, carb ip
	30%	LS	AA, sdy ip
	10%	SLTST	AA
	10%	SS	clr-wh, vf gr, sbang-sbrd, wart, p-wcmt, calc cly-LS cmt, v sl mica, sl glau, arg, tt, NFSOC

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4390-4400 ABNT CVGS AFTER TRIP P SPL
60% SH v col, gn, redorng, lt-mgy, sbblky-sbplty, sft-frm, calc-n calc, sl bent, mica-sl slty, rthy-sbwxy, occ sl carb
20% LS wh-tan, brn, crpxl, sft-mhd, cln-rthy, chk ip, sl chty, sl slty, v sl sdy ip, occ anhy, tt
10% SLTST tan-brn, occ gybrn, fri-mfrm, mica ip, calc, sl sdy, arg ip
10% SS AA, v lmy

4400-4410 ABNT CVGS AFTER TRIP
60% SH AA v col
30% LS AA incr tan-brn, slty-sdy ip
10% SLTST AA
TR SS AA

4410-4420 DECR CVGS
40% SH AA incr dkgly-blk, pred v col
30% LS pred tan-brn, AA, v slty ip, occ grd to lmy SLTST, chty
30% SLTST tan-brn, occ gybrn, fri-frm, sl sdy, mica ip, arg, lmy, grd to slty LS ip
TR CHT trnsl-clr
TR ANHY CVGS

4420-4430 DECR CVGS FR SPL
40% LS wh-tan-brn, crpxl, micxl ip, sft-mhd, rthy-chk, occ cln-dns, sl slty, v sl fos, anhy
30% SH v col, lt-dkgly ip, occ blk, sbblky-sbplty, sft-frm, mica ip, rthy-sbwxy, calc-sl calc, slty ip, carb ip
20% SLTST AA
10% CHT trnsl-clr, bf-mgybrn

4430-4440 G SPL
70% LS wh-tan, occ brn, crpxl, occ micxl, mfrm-mhd, rthy-chk, sl fos ip, v sl slty, chty, occ cln, dns, tt
20% SH AA
10% CHT clr-bf
TR SLTST AA

4440-4450 INCR CVGS
60% LS AA, v chty ip
30% SH AA, incr vcol cvgs
10% SLTST AA
TR CHT AA, pred clr

4450-4460 INCR CVGS FR SPL TR METAL FRAG
60% LS wh-tan, occ brn-gybrn, crpxl, occ micxl, sft-mhd, rthy-cln, chk, sl slty, chty ip, occ anhy-ANHY incl, sl fos, dns, tt
30% SH AA incr dkgly-blk, pred vcol
10% SLTST AA gn, brn, occ gybrn
TR CHT trnsl-clr

4460-4470 ABNT SH CVGS P SPL TR METAL FRAG
60% SH redorng-gn, vcol, occ lt-dkgly, sbblky-sbplty, sft-frm, rthy-wxy, sl slty, mica ip, occ bent, calc-sl calc, carb ip
30% LS AA
10% SLTST redorng-lav, AA, v lmy ip
TR CHT AA

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4470-4480 ABNT CVGS TR METAL FRAG
70% SH AA
20% LS AA, occ pk-redorng cvgs
10% SLTST brn-redbrn, gybrn ip, occ gygn, fri-mfrm, lmy, mica, arg-
v shy ip, sl sdy
TR CHT wh-trnsl, occ clr

4480-4490 ABNT CVGS TR METAL FRAG
70% SH AA, pred orng-redorng, gn
20% LS AA redbrn, fos
10% SLTST AA

4490-4500 ABNT CVGS P SPL TR METAL
50% SH AA
30% SLTST pred brn-ltorngbrn, occ tan, AA, sl sdy
20% LS AA

4500-4510 60% SH redbrn-orngbrn, gy, occ bf, sbblky-pty, sft-frm, slty-
sdy, sl-v calc
30% SLTST brn, bf, redorng-orngbrn, sft-shy ip, sl-v calc
10% LS gy, gybrn, occ wh, micxl-crpxl, frm-hd, rthy, shy ip,
chk, dull yel-orng mnrl FLOR, NSOC

4510-4520 50% SH brn-redbrn, mgy, gybrn, frm-sft, pty-sbblky, slty, sl
calc
30% SLTST AA, incr shy
20% LS wh, offwh, brn-bf, occ gy, micxl-crpxl, frm-mhd, rthy,
shy ip, chk, NFSOC

4520-4530 50% LS wh, offwh, bf, occ gy, micxl-crpxl, frm-hd, rthy, arg,
shy ip, chk
30% SH orngbrn, redbrn, occ dkgy-gy, frm-sft, sbblky-sbpty, sl
v calc, slty-sdy ip
20% SLTST redorng, brn, orngbrn, sft-frm, sl shy ip, sl calc
TR CHT trnsl-bf

4530-4540 40% SH brn, redbrn, orngbrn, pty-sbblky, frm-brit, slty-sdy ip,
sl-v calc
40% LS brn, redbrn, w/occ gy strks, m-dkgy, occ wh, micxl-crpxl
mfrm-mhd, v-sl arg, chk, rthy ip, shy ip
20% SLTST redbrn, orngbrn, brn, fri-frm, sl calc, shy ip

4540-4550 50% SH AA, incr mica
40% LS AA, decr wh, incr brn-redbrn
10% SLTST AA

4550-4560 60% SH brn, gy-dkgy, gygn, pty-sbblky, frm-brit, slty-lmy ip
sl mica
30% LS bf-brn, tan, wh, crpxl-micxl, sft-frm, rthy-sl chk, arg,
sdy-slty, occ shy ip
10% SLTST AA

4560-4570 70% LS wh, offwh, bf-tan, crpxl-micxl, occ vfxl, frm, cln,dns,
sdy, w/ incl qtz gr, occ shy, rr chty, w/redbrn str
20% SH AA, w/occ gy-gygn strk in brn
10% SLTST AA
TR CHT bf-trnsl

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4570-4580	60%	LS	AA, w/occ gy-gybrn
	30%	SH	AA
	10%	SLTST	AA
	TR	CHT	AA
4580-4590	60%	LS	gy-mgy, gybrn, bf, occ wh, micxl-crpxl, occ vfxl, frm-hd,cln, dns, chk, rthy, arg, sl chty ip
	30%	SH	gy-gybrn, brn, orngbrn-redbrn, plty-sbblky, frm-brit, lmy-slty ip, sl-v calc ip
	10%	SLTST	gy-mgy, brn, orngbrn-redorng, sl blky, fri, sdy-shy ip, calc
	TR	CHT	trnsl-smky
4590-4600	60%	LS	offwh-wh, tan, gy-gybrn, micxl-crpxl, rr vfxl, sft-frm, cln, dns, chk, rthy, arg, chty ip, shy ip
	30%	SH	AA
	10%	SLTST	AA
	TR	CHT	AA
4600-4610	60%	LS	gy, gybrn, tan, wh-offwh, bf, crpxl-vfxl, frm-mhd, rthy arg, slty-sdy ip
	30%	SH	gy-gybrn, brn, sbplty-sbblky, frm, wxy, occ rthy, slty-sdy ip, calc
	10%	SLTST	mgy-gygn, brn-redbrn, fri, sdy-shy, sl-v calc ip
4610-4620	50%	LS	mgy-gybrn, brn, wh, occ tan, crpxl-micxl, frm, rthy, arg, occ cln, dns, chk, shy-sl slty ip
	40%	SH	brn, gy, gybrn, sft-mfrm, sdy, slty ip, sl rthy, calc
	10%	SLTST	orngbrn-brn, frm, sdy, calc
	TR	CHT	trnsl
4620-4630	60%	LS	lt-mgy, gybrn, occ wh-offwh, tan, crpxl-micxl, occ vfxl, frm-hd, rthy, arg, chk, occ intxl qtz, slty-sdy ip
	30%	SH	brn-tan, gy, occ blk, mfrm-brit, sbwxy, slty ip, sl-v calc
	10%	SLTST	gygn, brn, fri, sdy-shy ip, sl mica, sl-v calc
	TR	CHT	trnsl-smky
4630-4640	80%	LS	wh-offwh, ltgy, occ bf, crpxl-micxl, occ vfxl, frm-mhd, cln-dns, occ rthy-sl slty, arg ip, chk, sdy ip, occ chty
	10%	SH	AA
	10%	SLTST	AA, w/occ redbrn cvgs
	TR	CHT	AA
4640-4650	90%	LS	AA, pred wh-offwh, ltgy
	10%	SH	AA
	TR	SLTST	AA
4650-4660	FR-G	SPL	
	60%	LS	wh-tan, occ gy-gybrn, crpxl-micxl, sft-mhd, rthy-chk, sl slty, chty, arg-sl shy, dns, tt
	20%	SH	orng-redorng, lt-mgy ip, occ ltgygn, sbblky-sbplty, sft frm, sl mica, calc, sl slty, carb ip, rthy
	10%	SLTST	tan-gybrn, occ gygn, fri-frm, mica, calc, sl sdy, shy
	10%	CHT	orng-bf, trnsl
4660-4670	40%	LS	AA, incr gy, pel ip
	30%	SH	AA, occ brn
	30%	SLTST	AA, pred gybrn
	TR	CHT	AA

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4670-4680 40% LS pred wh-tan, crpxl, AA, v chty-v chk, sl anhy
 20% SH AA, bri orng ip
 20% SLTST AA, grdg to slty LS
 20% CHT trnsl-bf, occ clr

4680-4690 70% LS tan-brn, occ wh, dkbrn-gybrn ip, micxl-vfxl, frm-mhd,
 rthy-slty, chty ip, occ chk, tt-v rr intxl POR, NFSOC
 10% SH AA
 10% SLTST AA
 10% CHT AA, spec orng ip

4690-4700 80% LS AA, incr gybrn, sl anhy, tr Cor fos
 20% SH vcol, ltgy, sbblky-sbpty, sft-frm, calc, mica, sl
 slty, rthy, occ cvgs
 TR SLTST AA, occ v sdy, grdg to slty SS ip
 TR CHT clr-trnsl, tan, occ pale orng

4700-4710 80% LS pred tan-brn, occ wh-gy-gybrn, crpxl-micxl, occ vfxl,
 sft-mhd, rthy-slty, chk, fos, occ cln, shy-arg ip, sl
 mica, dns, tt
 20% SH AA, incr lt-mgy, dkgy ip
 TR SLTST AA
 TR CHT AA

4710-4720 60% LS AA, incr gybrn-gy, shy, occ grdg to lmy MRLST
 30% SH pred lt-mgy, AA, calc, mica, slty, mrlly
 10% SLTST gy-gybrn, fri-frm, sl sdy, mica, arg, v lmy ip, occ grdg
 to v slty LS
 TR CHT trnsl-clr

4720-4730 INCR REDORNG-GN CH CVGS
 50% LS brn-tan-gybrn, occ wh-gy, micxl-crpxl, occ vfxl, sft-mhd,
 rthy, slty, cln-dns, occ chk, chty, shy ip, v sl fos, tt
 30% SH AA, w/incr vcol cvgs
 10% SLTST AA
 10% CHT trnsl-bf-brn

4730-4740 ABNT LCM IN SPL
 50% SH lt-mgy, gygn, w/vcol cvgs, sbblky-sbpty, sft-frm, sl
 slty, mica, calc-sl calc, occ carb
 40% LS AA, wh ip
 10% SLTST AA
 TR CHT trnsl-clr

4740-4750 ABNT LCM
 50% LS AA
 50% SH AA, pred cvgs
 TR SLTST AA
 TR CHT AA

4750-4760 DECR SH CVGS & LCM
 70% LS tan, gy-gybrn, occ wh, micxl, occ crpxl, frm-mhd, cln-
 slty, rthy, occ chk, chty ip, dns, tt, v sl fos
 20% SH ltgy, occ mgy, sbblky-sbpty, sft-mfrm, mica, calc, sl
 slty, v sl carb
 10% SLTST gybrn, fri, calc, mica, sl sdy, arg
 TR CHT bf

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4760-4770 INCR SH CVGS
60% LS AA, incr brn-gybrn, sl fos, cln, mrly ip
40% SH AA
TR CHT trnsl-bf

4770-4780 INCR GN-REDORNG-REDBRN SH CVGS
60% LS wh-tan-brn-gybrn, crpxl-micxl, mfrm-mhd, cln-rthy, occ slty, chk ip, sl chty, occ arg, fos ip, mrly, occ grdg to lmy SH
40% SH lt-mgy, dkgy ip, occ gygn, sbblky-plty, sft-frm, calc, sl slty, mica ip, lmy, mrly
TR SLTST gybrn, gy, occ ltbrn, fri-mfrm, sl mica, lmy, arg-shy, sl sdy ip
TR CHT trnsl-bf

4780-4790 ABNT SH CVGS
70% LS wh, gybrn, tan, brn, crpxl-micxl, frm-hd, chk, rthy, sl suc, arg, mrly, grdg to lmy SH
30% SH lt-mgy, occ dkgy, sbblky-sbplty, plty, sft-brit, calc, grdg to shy SLTST ip, sl mica

4790-4800 ABNT VCOL SH CVGS
60% LS gybrn-gy, tan, wh, crpxl-micxl, mfrm-mhd, sl chk, rthy, chty, arg, sl mrly, grrg to lmy SLTST ip
40% SH m-dkgy, occ blk, plty-sbblky, sft-brit, mica, rthy, sl slty, lmy
TR CHT

4810-4820 SL DECR VCOL SH CVGS
70% LS tan, brngy, wh, brn, crpxl-micxl, mfrm-mhd, arg, rthy, sl slty ip, arg, chk, chty, mrly, dns, tt
30% SH lt-mgy, occ gygn, plty-sbblky, sft-brit, calc, mica, sl slty, occ mrly

4820-4830 VCOL SH CVGS P SPL
70% LS AA, incr tan, gybrn, chty
20% SH AA
10% CHT trnsl-bf

4830-4840 DECR CVGS P-FR SPL
70% LS brn, bf, gybrn, gy, occ wh, crpxl-micxl, mfrm-mhd, rthy, arg ip, v chk, chty, mrly, slty ip, dns, tt
20% SH lt-dkgy, occ gygn, plty-sbplty, occ sbblky, sft-frm, sl wxy, rthy, sl-v calc, sl slty ip, mica
10% CHT trnsl-bf

4840-4850 VCOL SH CVGS P-FR SPL
70% AA, occ vfxl, v rr intxl POR, NFSOC
20% SH AA
10% CHT AA

4850-4860 INCR VCOL SH CVGS
60% LS gybrn, mgy, tan, brn, wh-offwh, crpxl-micxl, mfrm-mhd, rthy, arg, occ cln, dns, occ slty-mrly ip
30% SH dkgy-gy, gygn, occ blk, sbblky-sbplty, sft, occ rthy, v-sl calc, grdg to shy SLTST ip
10% SLTST dkgy, fri, lmy, shy, mica
TR CHT AA

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4860-4870 DECR VCOL SH CVGS
70% LS tan, gybrn-gy-mgy, brn, micxl-crpxl, occ vfxl, sft-mhd,
chk, arg, slty-mrly, occ chk
20% SH dk-mgy, sbblky, plty ip, sft-frm, occ brit, rthy, slty,
sl mica, calc-grdg to shy LS ip
10% SLTST gy, fri, calc, occ shy-lmy ip
TR CHT bf, trnsl

4870-4880 DECR CVGS
70% LS AA, incr gy-mgy-gybrn
20% SH AA
10% SLTST AA, incr lmy-shy
TR CHT bf

4880-4890 INCR CVGS
70% LS gybrn-mgy, wh-offwh, tan, brn, micxl-crpxl, mfrm-mhd,
chk, arg, mrly-sl slty, occ chty
20% SH ltgy, gygn, tan, plty-sbblky, brit-sft, rthy, occ wxy,
slty, mrly ip, calc
10% SLTST gygn, mgy, fri, calc, mica

4890-4900 DECR CVGS
80% LS tan, wh-offwh, brn, gybrn, micxl-crpxl, mfrm-mhd, chk, arg
mrly-sl slty, occ chty
20% SH gy-dkgy, plty-sbblky, mfrm-brit, rthy, slty ip, calc,
sl mica

4900-4910 ABNT CVGS P-FR SPL
60% LS pred gybrn-tan, ltgy, occ wh, AA, cln-slty, arg, v sl
fos, anhy ip
30% SH ltgy, occ m-dkgy, AA, frm, slty-lmy
10% SLTST gy-gybrn, tan, fri, sl sdy, arg, mica, v lmy
TR CHT trnsl-bf

4910-4920 ABNT REDORNG-REDBRN-GN SH CVGS P SPL
60% LS gy-gybrn, tan-brn, occ wh, crpxl-micxl, occ v fxl, sft-
mhd, rthy-slty, chk ip, sl anhy, fos ip, occ cln, tt-v
rr intxl POR, NFSOC
20% SH lt-mgy, sbblky-sbplty, mfrm-sft, mica, calc, slty, sl
carb, occ grdg to shy LS
20% SLTST gy-gybrn, ltbrn ip, fri-mfrm, sdy, mica, arg-shy, lmy,
grdg to slty LS
TR CHT trnsl-clr

4920-4930 ABNT SH CVGS
40% LS AA, v slty ip
30% SH AA, occ dkgy-blk, incr carb-sooty
30% SLTST AA, pred gy
TR CHT AA

4930-4940 DECR CVGS FR-G SPL
70% LS wh-tan, occ brn-gy, micxl-crpxl, sft-mhd, rthy-chk, v sl
slty, fos ip, anhy, occ cln, dns, tt
20% SH AA
10% SLTST AA

4940-4950 ABNT VCOL SH CVGS V P SPL
50% SH lt-dkgy, sbplty-sbblky, sft-mfrm, calc, mica, slty, occ
carb-sooty, mrly ip
40% LS AA
10% SLTST AA, occ gygn ip, v sdy-v mica ip
TR CHT trnsl-clr

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4950-4960 ABNT VCOL SH CVGS V P SPL
60% LS wh-tan, gy-gybrn, brn, micxl-crpxl, sft-mhd, rthy, slty,
occ cln, chk ip, sl fos, anhy ip, sl chty, tt
40% SH ltgy, occ mgy-ltgybrn, plty-sbblky, sft-frm, mica, sl
slty, carb ip, arg, lmy, mrly ip
TR SLTST AA

4960-4970 SL DECR CVGS P-FR SPL
60% LS AA, incr gy, bcmg shy ip
30% SH AA
10% SLTST gybrn-ltbrn, gy ip, fri-mfrm, sl mica, arg, v sl sdy ip
v lmy, grdg to slty LS ip
TR CHT trnsl-clr, bf ip

4970-4980 DECR CVGS P-FR SPL
50% LS pred tan-brn, crpxl, AA, cln, fos
40% SH AA lt-mgy
10% SLTST AA
TR CHT trnsl-clr

4980-4990 ABNT VCOL SH CVGS P-FR SPL
50% SH tan, gy-gybrn, brn, wh, micxl-crpxl, mfrm-mhd, rthy, sl
shy, arg, occ cln, chk, chty ip
40% LS m-ltgy, occ dkgy, occ gybrn, sft-frm, sl mica, arg-rthy
sl calc occ grdg to shy LS
10% SLTST m-dkgy, fri-frm, arg, occ chk, sl sdy, sl calc
TR CHT bf-trnsl

4990-5000 ABNT VCOL SH CVGS V P SPL
50% LS lt-mgy, occ dkgy, crpxl-micxl, occ vfxl, mfrm-mhd, rthy
chk, chty, sl arg
40% SH m-ltgy, occ gygn, plty-sbblky, fri, rthy, sl calc-calc,
occ grdg to shy SLTST
10% SLTST gybrn, occ brn, fri, sl sdy, lmy

5000-5010 ABNT CVGS V P SPL
70% LS lt-mgy, gybrn, brn, wh-offwh, crpxl-vfxl, mfrm-mhd, chk-
rthy, chty, tt, occ grdg to lmy SLTST
20% SH m-dkgy, gygn, plty-sbblky, splty ip, sft-brit, rthy, occ
wxy ip, sl slty-sl sdy ip, sl-v calc
10% SLTST gy, gybrn, bf, gygn, fri-frm, arg, lmy
TR CHT trnsl-bf

5010-5020 DECR VCOL SH CVGS FR SPL
80% LS lt-dkgy, bf, gybrn, wh-offwh, crpxl-micxl, occ vfxl,
mfrm-mhd, cln, dns, rthy, arg, chk, chty ip, slty, mrly
ip, tt
20% SH AA
TR ANHY wh, amor

5020-5030 DECR CVGS FR-G SPL
80% LS lt-mgy, wh-offwh, gybrn, brn, bf, crpxl-vfxl, sft-mhd,
cln, dns, occ rthy, arg ip, v chk, sl chty ip, occ mrly,
occ grdg to lmy SLTST, tt
10% SH gy-dkgy, plty-splty, sft-brit, rthy, occ wxy, slty
10% ANHY wh, amor

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5030-5040	G SPL		
	80%	LS	AA, w/occ ANHY incl
	10%	SH	AA
	10%	ANHY	AA
	TR	CHT	trnsl-bf
5040-5050	80%	LS	dk-mgy, occ ltgy, gybrn-brn, crpxl-micxl, occ vfxl, m frm-mhd, rthy, wh, chk ip, arg, sdy-mrly ip, tt
	10%	SH	m-dkgy, plty, frm-brit, rthy, lmy ip, calc
	10%	SLTST	m-dkgy, fri, mica ip, v lmy, sl shy
5050-5060	60%	LS	tan-gy, gybrn, occ brn-offwh, wh ip, crpxl-micxl, sft-m hd, rthy, arg, sl fos, occ cln, shy, v sl slty, anhy ip v mrly ip, sl chty
	30%	SH	lt-mgy, occ dkgy, sbblky-plty, frm, brit ip, lmy, sl slty, occ mica, sl dol, v sl carb, grdg to MRLST ip
	10%	SLTST	gybrn-ltbrn, fri, sl sdy, v arg-shy, lmy, grdg to slty LS ip, occ mica
	TR	CHT	trnsl-clr
5060-5070	70%	LS	pred wh-tan, occ brn-gybrn, crpxl-micxl, mfrm-mhd, rthy- chk, v sl slty, occ arg, v sl fos, chty ip, dns, tt
	20%	SH	AA
	10%	CHT	AA
	TR	SLTST	AA
5070-5080	70%	LS	AA
	20%	CHT	trnsl-clr
	10%	SH	ltgy, occ mgy-mgybrn, sbblky-sbplty, sft-frm, sl mica, sl slty ip, calc, sl carb, v sl dol
	TR	SLTST	AA
5080-5090	INCR	CVGS	Fair SPL
	80%	LS	tan-brn, gybrn-brn, occ wh, crpxl, occ micxl, frm-mhd, cln-sl rthy, occ sl slty, v sl anhy, chty, v sl fos, occ sl mrly, tt
	10%	SH	AA
	10%	CHT	trnsl-clr, occ bf
	TR	SLTST	brn-gybrn, fri, shy, sl mica, arg, lmy, grdg to slty LS
5090-5100	70%	LS	AA, sl dol
	20%	SH	ltgy, occ m-dkgy, sbblky, plty ip, sft-frm, sl mica, sl slty, rthy, calc-v sl dol, carb ip
	10%	CHT	AA
	TR	SLTST	AA
5100-5110	70%	LS	tan-brn-gy, occ wh, gybrn ip, crpxl-micxl, mfrm-mhd, cln- rthy, occ chk, sl slty-shy, v sl chty, tr CRIN fos, mrly tr styol, sl anhy, tt
	20%	SH	AA, mrly, incr carb
	10%	SLTST	AA
	TR	CHT	AA
5110-5120	60%	SH	ltmgy, occ gybrn, sbblky-sbplty, sft-frm, calc, carb ip, sl slty, occ mica, v sl dol, occ grdg to v shy LS
	30%	LS	AA, v shy, v mrly
	10%	SLTST	gy-gybrn, occ wh ip, fri-frm, lmy, shy, sl mica, v sl sdy
	TR	CHT	trnsl-clr

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5120-5130	50%	LS	AA, incr tan, wh ip, occ cln, chk, pred dns, tt
	40%	SH	AA
	10%	SLTST	AA
	TR	CHT	AA
5130-5140	70%	LS	tan-offwh, brn-gybrn ip, crpxl-micxl, sft-mhd, rthy-chk, sl arg, v sl slty, chty, fos ip, dns, tt, v sl anhy, n vis por, v rr bri yel flor, n vis stn, v p slow dif cut
	20%	SH	lt-dkgy, occ blk, sbblky-sbplty, sft-brit, calc, v sl dol, carb, slty ip, occ mica
	10%	CHT	bf-smky gybrn
	TR	SLTST	AA, pred lt gybrn
5140-5150	60%	LS	tan-brn, occ wh-offwh, gybrn ip, crpxl-vfxl, sft-mhd, v slty, sl arg, rthy-chk ip, v sl fos, occ grdg to lmy SLTST, tr CRIN fos, tt-n vis por, v rr bri yel flor, n vis stn, v p v slow dif cut
	30%	SLTST	offwh-tan, gybrn ip, fri-frm, sl mica, arg, v sl sdy, v lmy, grdg to slty ls ip
	10%	SH	AA
	TR	CHT	trnsl-bf, occ smky gybrn
5150-5160	60%	LS	wh-tan, occ offwh-ltbrn, ltgy ip, crpxl-micxl, sft-mhd rthy-chk, cln ip, sl slty, v sl fos, chty ip, tt, nfsoc
	20%	SLTST	AA
	10%	SH	lt-mgy, occ dkgy-blk, sbblky, sft-frm, sl slty, mica, calc-sl dol, carb
	10%	CHT	trnsl
5160-5170	90%	LS	tan, ltbrn, occ offwh, crpxl, occ micxl, mhd, sft ip, dns-cln, occ rthy-chk, occ chty, v sl anhy, v rr frac, v rr brn stn, NFOC
	10%	SH	lt-dkgy, sbblky-sbplty, sft-frm, sl mica, calc-sl dol, carb, sooty ip, v sl slty
	TR	CHT	AA
5170-5180	100%	LS	AA, rr frac, rr dd o stn, NFOC
	TR	SH	AA
	TR	CHT	AA
	TR	DOL	dkbrn, micxl-crpxl, mhd, lmy, occ cln, sl rthy-shy, dns tt
5180-5190	80%	LS	tan-offwh, occ ltgy-brn, wh ip, crpxl-micxl, frm-mhd, cln-rthy, occ chk, v sl slty, occ v sl anhy, chty ip, sl dol, occ mrly, tt-v rr intxl-frac por, n vis flor, rr dd o stn, n-v rr p cut
	10%	SH	dkgy-blk, occ mgy, sbblky-sbplty, sft-mfrm, calc-sl dol carb, sooty, sl slty, mica ip
	10%	CHT	tan-brn, occ dkgy, trnsl ip
	TR	DOL	AA
5190-5200	80%	LS	tan, offwh, gybrn, occ ltgy, wh ip, crpxl-micxl, frm-mhd rthy, occ chk, sl mrly ip, grdg to sl slty, chty ip, sl dol, tt-v rr intxl-frac por, rr dd o STN, no FLOR, n-v rr v p slow dif CUT
	10%	SH	m-dkgy-blk, sbblky-sbplty, sft-brit, rthy, slty, grdg to shy MRLST, mica ip
	10%	CHT	tan-brn, dkgy, trnsl-smky
	TR	DOL	AA

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5200-5210	80%	LS	brn-gybrn, m-dkgy, occ wh-offwh, tan, crpxl-micxl, frm-mhd, rthy, occ chk, sl slty, chty ip, sl dol, sl shy, NFSOC
	10%	SH	AA
	10%	CHT	AA
		TR	DOL AA
5210-5220	80%	LS	brn-gybrn, lt-mgy, occ mot, wh-offwh, crpxl-micxl, frm-mhd, rthy, occ chk, v sl anhy, chty, sl dol, occ grdg to MRLST, tt, NFSOC
	10%	SH	blk, dkgybrn, plty-sbblky, frm-brit, calc-sl dol, carb, slty ip, sl mica, occ sooty, tr CRIN fos
	10%	CHT	brn, trnsl-smky
5220-5230	80%	LS	lt-mgy, offwh, occ mot gybrn-brn, crpxl-micxl, sft-mhd, rthy, cln-dns, chty ip, fos, NFSOC
	20%	SH	m-dkgy, occ blk, sbplty-blky, rthy, sl arg-lmy, carb, sl mica
		TR	CHT tan-trnsl
5230-5240	60%	LS	gybrn, lt-mgy, tan, offwh-wh, occ mot, crpxl-micxl, sft-mhd, rthy, cln, dns, arg-mrly ip, chty, occ dull orng mnrl flor, NSOC
	40%	SH	blk, dk-mgy, sbplty-plty, occ splty, sft-frm, rthy ip, v calc-sl dol, carb, sl slty
		TR	CHT tan-smky
		TR	ANHY wh, sft, amor
5240-5250	60%	LS	AA, pred gybrn, tan, brn, v sl dol
	40%	SH	dk-mgy, occ blk, sbplty-sbblky, frm-brit, rthy, carb, calc-dol
		TR	CHT tan-smky
		TR	ANHY AA
5250-5260	60%	LS	lt-mgy, offwh, tan, brn, crpxl-micxl, frm-mhd, rthy, sl chty, dns-cln, mrly ip, fos ip, tt
	20%	DOL	brn-gybrn, crpxl-micxl, frm-mhd, lmy ip, rthy, dns, tt
	10%	SH	dkgy-blk, sbplty-blky, sft-frm, rthy, sl calc, carb, sl dol, mica, sl slty
	10%	ANHY	wh, amor
5260-5270	80%	LS	offwh-wh, tan, brn, mot ip, crpxl-micxl, frm-mhd, rthy-chk, cln, dns, sl mrly ip, sl anhy ip
	20%	SH	m-ltgy, tan, sbplty-plty, sft-frm, rthy, sl calc, lmy ip
5270-5280	90%	LS	offwh-wh, tan, ltgy, brn, crpxl-micxl, frm-mhd, rthy, chk, cln, dns, sl mrly ip, sl chty ip, dull orng mnrl flor, NSOC
	10%	SH	dkgy-blk, sbplty-plty, frm, rthy, sl calc, lmy ip
		TR	CHT smky-brn
5280-5290	50%	LS	AA, pred brn-tan
	50%	SH	AA, incr blk
		TR	CHT AA

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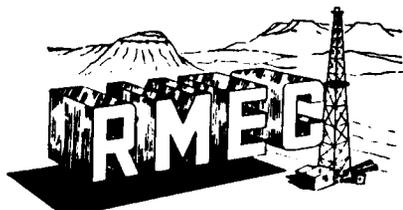
5290-5300	70%	SH	Abnt cvgs, v Col SH & SLTST, p spl blk, dkg, plty-sbblky, occ splty ip, sft-brit ip, rthy, sl calc
	20%	LS	m-dkg, occ blk, crpxl-micxl, frm, rthy, chk ip, mrly, bcmg slty ip, NFSOC
	10%	ANHY	wh, amor
5300-5310	60%	LS	v abnt cvgs of vcol SH & SLTST, Due to ANHY lt-mgy, grbrn, brn, occ wh-offwh-tan, crpxl-micxl, frm- mhd, rthy, sl chk, occ mot, occ mrly, slty ip, sl chty ip, NFSOC
	20%	SH	dkmgy, occ blk, sbplty-sbblky, sft-frm, sl rthy ip, sl calc
	10%	DOL	brn, gybrn, crpxl-micxl, mfrm-mhd, sl rthy, sl sdy, grdg to lmy ip
	10%	ANHY	wh, amor
5310-5320	40%	DOL	ltmbrn, micxl, frm, rthy, sl lmy, shy, tr ANHY incl, v sl fos, tr intxl-rr pp vug POR, tr dull-bri yel FLOR, tr- brn STN, p slow dif-mod fast stmg mlky CUT
	30%	LS	AA bf-tan, occ wh, brn ip, crpxl-micxl, sft-mhd, rthy, sl dol, ip, v sl fos, occ sl shy, dns, tt, NFSOC
	20%	ANHY	wh-trnsl, xl, occ amor, sft-mfrm, w/occ tr brn DOL incl
	10%	SH	dkgy-blk, sbblky-sbplty, sft-mfrm, sl mica, slty ip, calc, sl dol, carb, sooty
5320-5330	70%	DOL	tan, brn, gybrn ip, micxl-vfxl, crpxl ip, frm-mhd, rthy- cln, sl slty, lmy ip, ANHY, tr ANHY incl, tr fr intxl POR, tr pp vug POR, tr fr dull-bri yel FLOR, tr brn STN, fr mod fast-fast STMG mlky CUT
	20%	LS	AA tt, NFSOC
	10%	SH	AA
5330-5340	60%	LS	bf-tan, crpxl-micxl, occ v fxl, mfrm-mhd, cln, occ rthy- chk, sl dol, tr st yel, tt-vrr intxl-frac POR, vrr dull yel FLOR, tr dd o STN, vp CUT
	30%	DOL	AA incr gybrn, tr intxl-pp vug POR, rr-tr dull-bri yel FLOR, rr brn STN, tr mod fast STMG CUT
	10%	SH	dkgy-blk, sbblky, frm-brit, carb-calc, sl dol, mica, v sl slty
5340-5350	80%	LS	AA ANHY ip, st yel ip, tt-vrr intxl POR, vrr dull yel FLOR, n vis STN o CUT
	10%	DOL	brn, gybrn, micxl-vfxl, suc ip, frm, rthy-sl slty, occ sl lmy, cln ip occ v sl arg, tr-fr intxl-pp vug POR, fr dull-bri yel FLOR, tr brn STN, fr-g mod fast STMG CUT
	10%	SH	AA
5350-5360	50%	DOL	ltmbrn, micxl-vfxl, suc ip, frm, rthy-cln, v sl slty, v sl lmy, fr-g intxl-pp vug POR, fr-dull-bri yel FLOR, tr ltbrn STN, fr-mod fast STMG mlky CUT
	50%	LS	aa TT, NFSOC
5360-5370	80%	LS	tan-ltbrn, crpxl, occ micxl, frm-mhd, cln, sl DOL, v sl ANHY-vrr ANHY incl, sl fos, occ sl rthy, dns, tt, NFSOC
	20%	DOL	AA POR AA, vrr dull yell FLOR, tr ltbrn, STN, rr fr slow STMG CUT
	Tr	SH	blk, sbblky, frm-brit, calc-DOL, carb, sooty, v sl slty

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5370-5380	50%	DOL	gy, occ bf-brn, crpxl, micxl-vfvl ip, v sl suc, frm-mhd, dns cln, v sl rthy, lmy ip, v sl fos, st yel, tt-vrr frac POR, tr dd o STN NFOC
	40%	LS	tan, occ offwh-gy, crpxl, occ mica, sl suc ip, mfrm-mhd, cln-dns occ rthy-chk, v sl chty, sl fos-gast, sl DOL, tr ANHY incl, tt-rr frac occ dd o STN NFOC
	10%	SH	ltdkgy, dkgrbrn-blk ip, sbblky-sbpty, frm, calc-dol, mica ip, carb-sooty, v sl slty
5380-5390	60%	DOL	AA tt-vrr intxl POR, abnt dull yel orng mnrl FLOR, NSOC
	40%	LS	AA, tt, n vis POR, NFSOC
	Tr	SH	AA
5390-5403	50%	DOL	tan-offwh, ltgy-gy, crpxl-micxl, frm-mhd, cln-sl rthy, occ v sl slty, occ lmy, sl ANHY-rr ANHY incl, dns, tt, dull orng mnrl FLOR NSOC
	40%	LS	tan-ltbrn, occ wh crpxl-micxl, sft-mhd, cln-rthy, occ chk, sl ANHY, dol ip, dns, tt, NFSOC
	10%	ANHY	wh-trnsl, xl, occ amor, mfrm-sft
5403-5410			NO SAMPLE
5410-5420	70%	CUGS	
	20%	LS	tan, crm, gy, crpxl-micxl, frm-hd, dns dol ip, NFSOC
	10%	DOL	tan, ltgy, gy, crpxl-micxl, frm-hd, arg ip, dns, NFSOC
5420-5430	80%	LS	ltgy, gy, tan, crm, crpxl-micxl, frm-hd, dns, dol ip, anhy ip-ANHY incl, NFSOC
	20%	DOL	tan, crm, ltgy, micxl-crpxl, frm-hd, lmy ip anhy ip, dns, dull yel mnrl FLOR NSOC
5430-5440	70%	DOL	crm, gy, ltgy, tan, micxl-crpxl, frm-hd, dns, ANHY incl lmy ip, dull yel mnrl FLOR NSOC
	30%	LS	tan, ltbn, crm, micxl-crpxl, dns, tt, anhy-ANHY incl dol ip
5440-5450	50%	DOL	tan, crm, ltgy-gy, micxl-crpxl, frm-hd, lmy ip, anhy dns, dull yell mnrl FLOR, NSOC
	50%	LS	AA
5450-5460	50%	DOL	v ltgy, gy, tan, micxl-crpxl, dns, anhy, lmy ip, frm-hd
	50%	LS	tan, ltbrn, crm, crpxl-micxl, dns, ANHY incl, DOL ip, sft-hd dns
5460-5470	70%	LS	tan, crm, ltbrn, ltgy-gy, micxl-crpxl, sft-hd, dns, ANHY incl anhy, dol ip
	30%	SH	dkgy, gy, lmy-dol, blk, frm-hd, carb
5470-5480	50%	LS	AA
	40%	SH	dkgy, dkbrngy, sbfis-sbblky, frm-hd, carb, lmy-dol
	10%	DOL	ltgy, gy, micxl-crpxl, frm-hd, lmy, anhy, lmy dns, tt
5480-5490	50%	SH	dkgy, gy, blk, blk-sbpty, frm-mhd, rthy, sl calc
	40%	LS	tan, crm, ltgy, gy, occ offwh, micxl-crpxl, sft-hd, dns, cln, occ mot, tt
	10%	DOL	AA
	Tr	CHT	tan

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5490-5500	60%	LS	ltbrn, gy, gy, offwh, tan, occ brn, micxl-crpxl, sft-mhd dns, cln, occ mot, sl shy-sdy ip, tt
	40%	SH	AA
	Tr	DOL	AA
	Tr	ANHY	wh, amor
5500-5510	60%	LS	AA
	40%	SH	dkgy, gy, blkyl-sbplty, frm-hd, carb, rthy calc, dol
	Tr	DOL	
	Tr	ANHY	



ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL SITE GEOLOGY — MUD LOGGING

2450 INDUSTRIAL BLVD.

PHONE (303) 243-3044

GRAND JUNCTION, CO 81505

COMPANY Duncan

WELL NO. Jeep Federal #1

LOCATION Sec. 5, T42S, R25E

ZONE OF INTEREST NO. 1

INTERVAL: From 5353 To 5359

DRILL RATE: Abv 4 1/2 Thru 3/4-1 Below 5

MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C ₁	C ₂	C ₃	C ₄	C ₅	OTHER
Before	4	432	120	68	TR		
During	200	9360	2800	1575	800		
After	5	960	320	180	80		

Type gas increase: Gradual Sharp

Gas variation within zone: Steady Erratic Increasing Decreasing

CARBIDE HOLE RATIO: $\frac{\text{GRAMS}}{\text{READING}}$ X Min. in Peak = _____ Sensitivity: Poor Fair Good

FLUO: Mineral Even Spotty CUT: None Streaming
 None % in total sample 50 Poor Slow
 Poor Fair Mod
 Fair % in show lithology 60 Good Fast
 Good COLOR: dull-bri yel COLOR: mlky yel

STAIN: None Poor Fair Good Live Dead Residue Even Spotty Lt. Dk.

POROSITY: Poor Fair Good Kind intxl-pp vug

LITHOLOGY DOL-lt-mbrn, micxl-vfxl, suc up, cln-sl rthy, v sl slty lmy ip

SAMPLE QUALITY GOOD

NOTIFIED Bob Lentz @ 12:00 HRS. DATE: 8/11/91

REMARKS Leak flushed in spls

ZONE DESCRIBED BY D. Meade

RAYMOND T. DUNCAN
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 SECTION 5, T42S, R25E
 SAN JUAN COUNTY, UTAH

FORMATION	FORMATION TOPS:		GL-4610'	KB-4624'
	SAMPLE TOP	SUBSEA DATUM	E LOG	SUBSEA DATUM
CUTLER	----	-----	2606'	(+2019')
HERMOSA	4292'	(+332')	4288'	(+336')
UPPER ISMAY	5132'	(-508')	5120'	(-496')
HOVENWEEP SHALE	5233'	(-609')	5224'	(-600')
LOWER ISMAY	5242'	(-618')	5228'	(-604')
GOTHIC SHALE	5282'	(-658')	5265'	(-641')
DESERT CREEK	5293'	(-669')	5284'	(-660')
DESERT CREEK POROSITY	5316'	(-692')	5311'	(-687')
CHIMNEY ROCK SHALE	5460'	(-836')	5458'	(-834')
AKAH	5472'	(-848')	5470'	(-846')
PARADOX SALT	5510'	(-886')	5509'	(-885')
TOTAL DEPTH	5512'	(-888')	5511'	(-887')

GEOLOGIC SUMMARY
AND
ZONES OF INTEREST

The Raymond T. Duncan, Jeep Federal #1 well, located in Section 5, T42S, R25E, in San Juan County, Utah was spudded in the Morrison Formation on July 28, 1991. 13 3/8" conductor pipe was run on July 29th, and drilling of a 12 1/4" hole was begun. Surface casing was run and cemented on July 31st at 1460', and drilling was resumed with a 7 7/8" hole on August 1, 1991. Drilling continued to a depth of 5373' where a trip was made on August 12th, at which time Drill Stem Test #1 was to be run, but due to timing problems, the test was postponed until the 13th and an additional 30' was drilled. On August 13th tight hole conditions were encountered and a master drum clutch had to be replaced on the drilling rig, causing the test to be postponed again. DST #1 was finally run on August 14, 1991. The well was circulated again at 5512' on August 15th prior to running electric logs.

The well was drilled to a total depth of 5812, 2 feet into the Paradox Salt, on August 15, 1991. Geological coverage was begun on August 6, 1991 at 4200' in the upper Hermosa Formation. All tops used in this report are electric log tops.

CUTLER 2606'-4288' (+2019')

The basal Cutler or basal Cedar Mesa is of Permian age and consisted predominantly of redorange to redbrown to brown, very colored non-slightly calcareous, slightly sandy, micaceous siltstone with interbedded varicolored silty, micaceous, slightly calcareous shale, with an occasional interbedded crystalline anhydrite; and white to tan to buff, orange to orangebrown cryptocrystalline, earthy, chalky, dense limestone.

The basal Cutler Formation overlies the Hermosa with a gradational contact. The Cutler in this well was of no economic interest.

HERMOSA 4288'-5120' (+337')

The Hermosa Formation is of upper Pennsylvanian age and consisted predominately of a light gray to white to brown, cryptocrystalline to microcrystalline earthy to clean limestone with interbedded varicolored, slightly to noncalcareous, occasionally bentonitic shale; varicolored, slightly calcareous, sandy siltstone; scattered clear to translucent to buff cherts in the upper half of the Hermosa.

The lower half of the Hermosa was predominately a white to brown, cryptocrystalline to microcrystalline, occasionally very finely crystalline, slightly fossiliferous, slightly anhydritic, occasionally marly, and occasionally cherty limestone. There were interbedded, calcareous, carbonaceous, silty, marly, light to dark gray shale; gray to brown, limy, shaley, micaceous, slightly sandy siltstone; and scattered, clear to black cherts and very thin anhydrites. The sample quality was fair throughout. The Hermosa limes were first seen in abundance at 4290'.

The Hermosa was 832' thick in this well and overlays the Upper Ismay with

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sharp contact between the overlaying shale at the base of the Hermosa and the carbonate of the Upper Ismay. There was no gas shows while drilling the Hermosa Formation. The Hermosa is of no economic interest in this well.

UPPER ISMAY 5120'-5224' (-495')

The Upper Ismay was predominately a tan to light brown, occasionally white cryptocrystalline to microcrystalline, slightly silty, clean to slightly argillaceous, slightly anhydritic, cherty, slightly fossiliferous tight limestone. The top of the Upper Ismay is picked at the contact between the basal shale of the Hermosa and the carbonate at the top of the Upper Ismay. The Upper Ismay was 104' thick and lays gradationally over the Hovenweep Shale.

No gas significant increases were noted while drilling the upper Ismay. The Upper Ismay is of no economic interest in this well.

HOVENWEEP SHALE 5224'-5228' (-599')

The Hovenweep Shale is a dark gray to black carbonaceous, slightly limy to dolomitic, silty shale. The Hovenweep shale is the source rock for hydrocarbon production in the Upper Ismay where it is better developed. The Hovenweep was 4' thick in this well. The shale overlays the Lower Ismay with a sharp contact between the shale and the carbonate of the upper Lower Ismay. The Hovenweep Formation is of no economic interest in this area.

LOWER ISMAY 5228'-5275' (-603')

The Lower Ismay was 47' thick was predominately a white to graybrown to tan cryptocrystalline to very finely crystalline, clean to slightly earthy limestone, with scattered interbedded brown to tan, microcrystalline to very finely crystalline, earthy, slightly silty dolomite. No significant gas increases were noted while drilling the lower Ismay.

The Lower Ismay overlays the Gothic Shale with a gradational contact between the shaley, limey dolomites and earthy, dirty limestones of the Lower Ismay and the dolomitic, calcareous carbonaceous shales of the Gothic Shale.

GOTHIC SHALE 5275'-5284' (640')

The Gothic Shale is a dark gray to black, carbonaceous, limy to dolomitic, silty shale. The Gothic Shale was 19' thick and is the source rock for hydrocarbon production in the Lower Ismay. The Gothic Shale overlays the Desert

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Creek with a sharp contact between the shale and the carbonate of the upper Desert Creek.

The Gothic Shale Formation is of no economic interest in this area.

DESERT CREEK 5284'-5458' (-659')

The Desert Creek Formation was 174' thick in this well and was dark gray-brown, microcrystalline, tight, earthy to silty limestone in the upper 3', above an 22' thick amorphous to crystalline dense anhydrite. From 5309' to 5360' the Desert Creek was a light to dark brown, microcrystalline to very finely crystalline, earthy to silty, slightly anhydritic, dolomite with fair intercrystalline to a trace of pin point vuggy porosity; and interbedded thin, dark gray to black, carbonaceous shale and tan, cryptocrystalline to very finely crystalline, clean to earthy, slightly styolitic, tight to very rare intercrystalline to fractured porosity with no to very rare fluorescence or stain, and no to very poor cut. Show #1 was reported from 5353' to 5359' in an earthy, micro to very finely crystalline dolomite that had fair to good intercrystalline to fair pin point vuggy porosity with a gas increase from 4 units to 200 units and C₁ to C₄ on the chromatograph and a good sample show.

The Desert Creek from 5360' to 5458' was a dark brown to gray cryptocrystalline, earthy, tight dolomite with no fluorescence, stain or cut and a tan to brown cryptocrystalline, tight, clean, slightly anhydritic limestone, with no visible porosity and no fluorescence stain or cut.

DST #1 was run over the Desert Creek from 5312' to 5403' over Show #1 and showed the zone to be tight.

For further details on Show #1 and DST #1 see the show and drill stem reports included in this report.

There was only one good sample show noted while drilling the Desert Creek Formation. The Desert Creek overlays the Chimney Rock Shale with a gradational contact between the dolomitic shale at the base of the Desert Creek and the carbonaceous shale of Chimney Rock.

The Desert Creek Formation in this well is of very poor economical potential in this well.

CHIMNEY ROCK SHALE 5458'-5470' (-833')

The Chimney Rock Shale was a dark gray to black carbonaceous, slightly limy to dolomitic, silty shale. The Chimney Rock Shale was 13' thick in this well. The shale is the source rock for hydrocarbon production in the Desert Creek.

The Chimney Rock overlays the Akah with a sharp contact between the shale of the Chimney Rock and the carbonate and the anhydrite of the Akah Formation and is of no economic interest in this area.

RAYMOND T. DUNCAN
JEEP FEDERAL #1

AKAH 5470'-5510' (-845')

The Akah Formation consisted predominately of a brown, microcrystalline, occasionally banded dolomite; a dense, white to clear, amorphous to crystalline anhydrite; and thin, interbedded, black, carbonaceous shales and dolomite bands. Also interbedded in the Akah was thin, tight, tan limestone. The Akah Formation overlays the Paradox Salt with a very sharp contact between the massive anhydrite at the base of the Akah and the massive salt of the middle Paradox Formation. The Akah is of no economic interest in this well.

PARADOX SALT 5510'-? (-884')

The Paradox Salt is a massive, clear to translucent bed of crystalline salt, with lenses of interbedded, black, carbonaceous shale; brown, microcrystalline, earthy dolomite; and white to translucent, dense anhydrite. The Raymond T. Duncan, Jeep Federal #1 well was drilled to a total depth of 5512', 2' into the Paradox Salt Formation.

The Paradox Salt is of no economic interest in this area.

At the time of this report completion or abandonment procedures are still pending for this well.

WILEY

OPERATOR Raymond J. Duncan N-0300 DATE 5-9-91

WELL NAME Trap #1

SEC NWNE X5T 40S R 05E COUNTY Langdon

43-037-31005
API NUMBER

Indian (w)
TYPE OF LEASE

CHECK OFF:

- PLAT.
- BOND
- NEAREST WELL
- LEASE
- FIELD SLBM
- POTASH OR OIL SHALE

PROCESSING COMMENTS:

No other well within sec to produce
water permit 09-17.33 / T6418 Mark Page wants and permit issued
Exception location requested

APPROVAL LETTER:

SPACING: R615-2-3 N/A R615-3-2
UNIT

N/A R615-3-3
CAUSE NO. & DATE

STIPULATIONS:

1- water permit needed
cc BIA

CONFIDENTIAL
 PERIOD
 EXPIRED
 ON 3-5-93



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangertter
Governor
Dee C. Hansen
Executive Director
Dianne R. Nielson, Ph.D.
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

May 10, 1991

Raymond T. Duncan
1777 S. Harrison Street, PH. 1
Denver, Colorado 80210

*Approved by the Division of Oil, Gas and Mining
May 10, 1991*

Gentlemen:

Re: Jeep Federal #1 Well, 750 feet from the North line, 1400 feet from the East line,
NW NE, Section 6, Township 42 South, Range 25 East, San Juan County, Utah

Approval to drill the referenced well is hereby granted in accordance with Utah Admin. R.615-3-3, subject to the following stipulation:

1. Prior to commencement of drilling, receipt by the Division of evidence providing assurance of an adequate and approved supply of water as required by Utah Code Ann. Section 73-3, Appropriation.

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

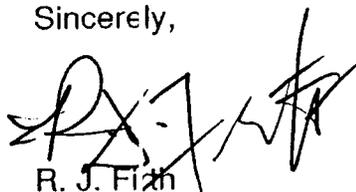
1. Spudding notification within 24 hours after drilling operations commence.
2. Submittal of Entity Action Form 6, within five working days following spudding and whenever a change in operations or interests necessitates an entity status change.
3. Submittal of the Report of Water Encountered During Drilling, Form 7.
4. Prompt notification in the event it is necessary to plug and abandon the well. Notify R. J. Firth, Associate Director, (Office) (801) 538-5340, (Home) 571-6068, or J. L. Thompson, Lead Inspector, (Home) 298-9318.
5. Compliance with the requirements of Utah Admin. R.615-3-20, Gas Flaring or Venting.

Page 2
Raymond T. Duncan
Jeep Federal #1
May 10, 1991

6. Prior to commencement of the proposed drilling operations, plans for facilities for disposal of sanitary wastes at the drill site shall be submitted to the local health department. These drilling operations and any subsequent well operations must be conducted in accordance with applicable state and local health department regulations. A list of local health departments and copies of applicable regulations are available from the Division of Environmental Health, Bureau of Drinking Water/Sanitation, telephone (801) 538-6159.
7. This approval shall expire one (1) year after date of issuance unless substantial and continuous operation is underway or an application for an extension is made prior to the approval expiration date.

The API number assigned to this well is 43-037-31625.

Sincerely,



R. J. Firth
Associate Director, Oil & Gas

tas
Enclosures
cc: Bureau of Land Management
Bureau of Indian Affairs
J. L. Thompson
we14/1-4



May 20, 1991

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

Attn: Tammi Searing

Re: Raymond T. Duncan
Jeep Federal #1
NW NE Sec. 5, T42S - R25E
San Juan County, Utah

43-037-31625

Dear Tammi,

As per our telephone conversation of this morning, I am enclosing corrected copies of the Application for Permit to Drill on the above mentioned location. *Section changed from 4 to 5*

I apologize for typographical error and regret any inconvenience this may have caused your office.

If you should have any questions, please feel free to contact me.

Sincerely,

PERMITCO INC.

A handwritten signature in cursive script that reads 'Lisa L. Smith'.

Lisa L. Smith
Consultant for
Raymond T. Duncan

Enc.

cc: Raymond T. Duncan

A rectangular stamp with the word 'RECEIVED' in a bold, blocky, slightly distressed font.

MAY 22 1991

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

Norman H. Bangert
Governor

Dee C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

June 3, 1991

Raymond T. Duncan
1777 S. Harrison Street, PH 1
Denver, Colorado 80210

Gentlemen:

Re: Amended Approval Jeep Federal #1 Well, 750 feet from the North line, 1400 feet from the East line, NW NE, Section 5, Township 42 South, Range 25 East, San Juan County, Utah

Approval to drill the referenced well is hereby granted in accordance with Utah Admin. R.615-3-3, subject to the following stipulation:

1. Prior to commencement of drilling, receipt by the Division of evidence providing assurance of an adequate and approved supply of water as required by Utah Code Ann. Section 73-3, Appropriation.

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

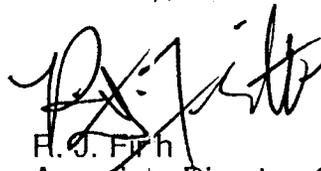
1. Spudding notification within 24 hours after drilling operations commence.
2. Submittal of Entity Action Form 6, within five working days following spudding and whenever a change in operations or interests necessitates an entity status change.
3. Submittal of the Report of Water Encountered During Drilling, Form 7.
4. Prompt notification in the event it is necessary to plug and abandon the well. Notify R. J. Firth, Associate Director, (Office) (801) 538-5340, (Home) 571-6068, or J. L. Thompson, Lead Inspector, (Home) 298-9318.
5. Compliance with the requirements of Utah Admin. R.615-3-20, Gas Flaring or Venting.

Page 2
Raymond T. Duncan
Amended Approval Jeep Federal #1
June 3, 1991

6. Prior to commencement of the proposed drilling operations, plans for facilities for disposal of sanitary wastes at the drill site shall be submitted to the local health department. These drilling operations and any subsequent well operations must be conducted in accordance with applicable state and local health department regulations. A list of local health departments and copies of applicable regulations are available from the Division of Environmental Health, Bureau of Drinking Water/Sanitation, telephone (801) 538-6159.
7. This approval shall expire one (1) year after date of issuance unless substantial and continuous operation is underway or an application for an extension is made prior to the approval expiration date.

The API number assigned to this well is 43-037-31625.

Sincerely,



R. J. Firth
Associate Director, Oil & Gas

tas
Enclosures
cc: Bureau of Land Management
Bureau of Indian Affairs
J. L. Thompson
we14/1-12

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 to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.

BIA-14-20-603-373

6. If Indian, Allottee or Tribe Name

Navajo Tribe

7. If Unit or CA, Agreement Designation

N/A

8. Well Name and No.

Jeep Federal

9. API Well No.

43-027-31625

10. Field and Pool, or Exploratory Area

Wildcat

11. County or Parish, State

San Juan UT

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Raymond T. Duncan

3. Address and Telephone No.

1777 S. Harrison St. P-1 Denver, CO. 80210

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

750' FNL and 1400' FEL NWNE Sec 55 T42S R25E

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 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 data, 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.)*

Raymond T. Duncan spud the subject well on July 28, 1991.
The drilling rig is Arapahoe #4.

RECEIVED

AUG 16 1991

DIVISION OF
OIL GAS & MINING

cc: State of Utah
Oil & Gas Conservation Commission

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

Signed Marie O'Keefe Title Engineering Technician Date August 14, 1991

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

CONFIDENTIAL
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE*
(See other instructions on reverse side)

Form approved. JUN 7 - 1991
Budget Bureau No. 1004-0137
Expires August 31, 1985

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: OIL WELL GAS WELL DRY Other

b. TYPE OF COMPLETION: NEW WELL WORK OVER DEEP-EN PLUG BACK DIFF. RESVR. Other P&A

2. NAME OF OPERATOR
Raymond T. Duncan

3. ADDRESS OF OPERATOR
1777 S. Harrison St. P-1 Denver, CO 80310

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)
At surface 750' FNL & 1400' FEL NWNE Sec 5 T42S R25E
At top prod. interval reported below same
At total depth same

14. PERMIT NO. 43-037-31625
DATE ISSUED 5-10-91

5. LEASE DESIGNATION AND SERIAL NO.
BIA-14-20-603-373

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo Tribe

7. UNIT AGREEMENT NAME
N/A

8. FARM OR LEASE NAME
Jeep Federal

9. WELL NO.
1

10. FIELD AND POOL, OR WILDCAT
Wildcat

11. SEC. T. R., M., OR BLOCK AND SURVEY OR AREA
Sec 5 T42S R25E

12. COUNTY OR PARISH
San Juan

13. STATE
UT

15. DATE SPUNDED 7-29-91
16. DATE T.D. REACHED 8-16-91
17. DATE COMPL. (Ready to prod.) P&A
18. ELEVATIONS (OF. RKB, RT, GR, ETC.)* 4610 GL

20. TOTAL DEPTH, MD & TVD 5510
21. PLUG, BACK T.D., MD & TVD P&A
22. IF MULTIPLE HOW MANY* 8-20-91

23. INTERVALS DRILLED BY
ROTARY TOOLS 10-5510
CABLE TOOLS

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

25. WAS DIRECTIONAL SURVEY MADE
NO

26. TYPE ELECTRIC AND OTHER LOGS RUN
DLL MSFL & ND
BOREHOLE COMPENSATED SONIC
8.21.91

27. WAS WELL CORED
NO

28. 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"	48#	212'	17 1/2"	225 sx Class G & ADD	None
8 5/8"	24#	1454'	12 1/4"	505 sx Class G 65-35 POZ & 300 sx class G & Add.	Add. None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)

31. PERFORATION RECORD (Interval, size and number)
P&A

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED

33.* PRODUCTION

DATE FIRST PRODUCTION
PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)
WELL STATUS (Producing or shut-in)

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO

FLOW. TUBING PRESS. CASING PRESSURE CALCULATED 24-HOUR RATE OIL—BBL. GAS—MCF. WATER—BBL. OIL GRAVITY-API (CORR.)

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)
TEST WITNESSED BY

35. LIST OF ATTACHMENTS
Logs and DST sent by company performing the service.

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

SIGNED Marie O'Keefe TITLE Engineering Technician DATE 8-20-91

*(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
				Ismay	5132'	
				Desert Creek	5294'	
				Upper Desert Creek	5298'	
				Top Desert Crk	5316'	
				Carbonate		
				Chimney Rock	5466'	
				Akiah	5486'	

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 to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.

BIA14-20-603-373

6. If Indian, Allottee or Tribe Name

Navajo Tribe

7. If Unit or CA, Agreement Designation

N/A

8. Well Name and No.

Jeep Federal #1

9. API Well No.

43-037-31625

10. Field and Pool, or Exploratory Area

Wildcat

11. County or Parish, State

San Juan, UT

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other Dry

2. Name of Operator

Raymond T. Duncan

3. Address and Telephone No.

1777 S. Harrison St. Pl Denver, CO 80210

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

750' FNL & 1400' FEL NWNE Sec 5 T42S R25E

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

TYPE OF SUBMISSION

Notice of Intent
 Subsequent Report
 Final Abandonment Notice

TYPE OF ACTION

Abandonment
 Recompletion
 Plugging Back
 Casing Repair
 Altering Casing
 Other _____

Change of Plans
 New Construction
 Non-Routine Fracturing
 Water Shut-Off
 Conversion to Injection
 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.)*

The subject well was plugged on 8-17-91. The rig was released at 4:00 am.

Plugs were set as follows:

5510-5072 260 sx Class "G"
4392-4242 88 sx Class "G"
2461-2361 88 sx Class "G"
1504-1404 58 sx Class "G"
100-surf 30 sx Class "G"

Leonard Bixler w/BLM inspected cmt. The location will be restored per BLM requirements. A sundry notice will be sent once this work is completed.

cc: State of Utah
Oil & Gas Division

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

Signed Maria O'Keefe

Title Engineering Technician

Date 8-20-91

(This space for Federal or State office use)

Approved by _____

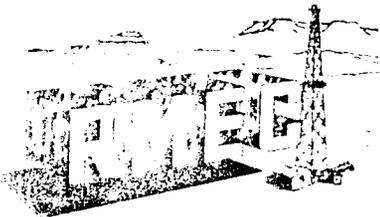
Title _____

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



ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL SITE GEOLOGY & MUD LOGGING

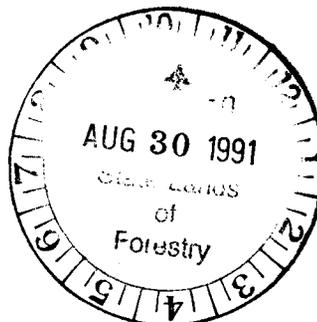
2450 INDUSTRIAL BLVD

DENVER, COLORADO 80202

GRAND CANYON STATE BRIDGE BLVD

August 27, 1991

Bob Lentz
Duncan Energy Company
1777 S. Harrison St. Pl
Denver, CO. 80210



Dear Mr. Lentz:

Enclosed are the final logs and Geology Reports on your Jeep Federal #1 well, located in Section 5, T42S, R25E of San Juan County, Utah.

13-037-31625

We appreciated the opportunity to serve you. If we can be of any further assistance to you in the evaluation of zones encountered, please feel free to contact us.

We are looking forward to working with you again in the near future. Thank you again.

Respectfully,

Andy Kelley
President

AWK:sm

DRY CUTS: 2 sets shipped UPS to State of Utah, and Schalk Development Co.

ENC: 2 Final Logs/Reports

- XCC: 2 Final Sets - STATE OF UTAH; Dept of Natural Res; SLC, UT
- 2 Final Sets - BLM; Mobab, UT
- 2 Final Sets - WARRIOR OIL CO.; J.B. Obering; Dallas, TX
- 1 Final Set - KENNETH E. CARTER; Kilo Charlie Res.; Durango, CO
- 1 Final Set - K.I. DANNEBERG OIL OPER.; Denver, CO
- 1 Final Set - SCHALK DEVELOPMENT CO.; S. Schalk; Albuquerque, NM

CONFIDENTIAL

RECEIVED

SEP 03 1991

DIVISION OF
OIL GAS & MINING

December 23, 1991

Memo to file

Chuska Energy reentered the Jeep Federal # 1 well, API 43-037-31625 section 5 42s 25e San Juan county on 7-19-91, original operator Raymnd T. Duncan. This well was pa'd 8-17-91.

UTAH COMPLETIONS
SAN JUAN COUNTY CONTINUED

PHILLIPS PET 20-41S-24E
20W43 RATHERFORD UNIT NW NE SE
API 43-037-16424-0001 2070 FSL 810 FEL

ANETH GREATER; 5300 DESERT CREEK, (FR 02/18/92FM) OPER ADD: IW
5525 HWY 64 NBU 300-1, FARMINGTON, NM, 87401 PHONE (505) 599-3400; WI
EL: 4814 KB; LOCATION DATA: 18 MI E-SE BLUFF, UT; AMMANN BASE
MAP UT-102, OWWO: OLD INFO: FORMERLY PHILLIPS PET 19 DESERT A.
SPUD 10/22/58. 8 5/8 @ 1541, 5 1/2 @ 5802. LOG TOPS: ISMAY 5429, DESERT
CREEK 5565. TD 5802. COMP 11/21/58. IPF 1066 BOPD. PROD ZONE - DESERT
CREEK 5570-5734(GROSS);

CONTR: NOT RPTD; SPUD: 06/09/64, LNR: 4 @ 5369-5693; TBG: 2 7/8 @ 5428; NO LOGS RUN; LOG TOPS: CHINLE 1537, SHINARUMP 2368,
MOENKOPI 2456, CUTLER 2536, ORGAN ROCK 2850, HERMOSA 4589, ISMAY 5429, DESERT CREEK 5565, DRLG COMMENTS: REPAIRCSG LEAK @
5543. 5802 TD. (DESERT CREEK) (TD REACHED: 06/ 10/64) 5643 PBTD ; PROD TEST(S): PERF (DESERT CREEK) 5570-5618 W/2 PF, ACID
(5570-5618) W/ 14406 GALS. 28% INJ RATE - 158 BWPD @ 350 PSI. 5802 TD, PB 5643. COMP 7/14/64, WTR INJ WELL. INJ RATE - 158 BWPD @
350 PSI. INJ ZONE - DESERT CREEK 5570-5618. NO CORES OR DSTS. FIRST REPORT & COMPLETION

CHUSKA ENERGY 5-42S-25E
5A WEST CLAY HILL SE NW NE
API 43-037-31625-0101 750 FNL 1400 FEL

WILDCAT; CONFIDENTIAL, (FR 12-03-91CN) OPER ADD: 1775 SHERMAN WF
STE 1880, DENVER, CO, 80203 PHONE (303) 863-7021; EL: 4610 GR; D&A
LOCATION DATA: 2 MI SW CLAY HILL FLD(DESERT CREEK) 3 1/4 MI S
ANETH, UT; DIRECTIONALLY DRILLED. ABHL: 730 FNL 960 FEL SW NE
NE 5-42S-25E; AMMANN BASE MAP UT-102, OWRD: OLD INFO: FORMERLY
RAYMOND T DUNCAN 1 JEEP FEDERAL. SPUD 7/28/91. RAN SURF CSG. LOG
TOPS NOT AVAILABLE. TD 5700(APPROX). COMP 8/17/91. D&A;

*Re-entry of Raymond Duncan well
"Jeep Fed 1" No APD*

CONTR: ARAPAHOE DRLG, RIG #7; SPUD: 12/03/91, 5700 TD. (UNKNOWN) (TD REACHED: 12/ 16/91); 5700 TD. COMP 2/5/92(EST), D&A. NO
CORES OR DSTS.

UINTAH COUNTY

COASTAL O&G 3-10S-22E
164 NBU SW NW SE
API 43-047-32055 1475 FSL 2271 FEL
IC 430477013491

NATURAL BUTTES; 6875 WASATCH, (FR 08/09/91CA) OPER ADD: EOX DG
749, DENVER, CO, 80201-0749 PHONE (303) 572-1121; EL: 5234 KB; GAS
LOCATION DATA: 15 1/4 MI E-SE OURAY, UT; AMMANN BASE MAP UT-8.

CONTR: COASTALDRIL, RIG #2; SPUD: 10/02/91, CSG: 8 5/8 @ 263 W/80 SX, 5 1/2 @ 7038 W/1390 SX; LOG TYPES: CBL, CCL, FDC, GRL; CNL
290-6985, DLL 290-6985, LDT 290-6985; LOG TOPS: WASATCH 4406; 7040 TD. (WASATCH) (TD REACHED: 11/ 14/91) 6998 PBTD ; PRODUCING
INTERVAL(S) DATA: PERF (WASATCH) 4818, 4975, 4983, 4992, 5322, 5332, 5582, 5654, 5764, 5771, 6768, 6773, 6779, 6783, 6893, 6898, 6906, 6940,
6945. W/1 PF, ACID (4818-6945) W/ 4000 GALS, 3% KCL WTR & 38 BS. 7040 TD, PB 3998. COMP 11/25/91, IPF 650 MCFGPD, 20/64 CK, FTP 250,
FCP 450. PROD ZONE - WASATCH 4818-6945(GROSS). NO CORES OR DSTS.

*well name change by checker
per PE*

ENTITY ACTION FORM - FORM 6

ADDRESS _____

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
D	99998	11357	43-037-31625	JEEP FEDERAL #1	NWNE	5	42S	25E	SAN JUAN	ORIG 7-28-91	REENTRY 12-3-91
WELL 1 COMMENTS: *OPERATOR FR RAYMOND T. DUNCAN - ORIG APD PA'D 8-17-91 - REENTRY BY CHUSKA 12-3-91. ENTITY ADDED 4-16-92.											
WELL 2 COMMENTS:											
WELL 3 COMMENTS:											
WELL 4 COMMENTS:											
WELL 5 COMMENTS:											

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

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

L. ROMERO (DOGM)
Signature
ADMIN. ANALYST 4-16-92
Title Date
Phone No. () _____

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 to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.
BIA 14-20-603-373

6. If Indian, Allottee or Tribe Name
Navajo Tribe

7. If Unit or CA. Agreement Designation
N/A

8. Well Name and No.
Jeep Federal #1

9. API Well No.
12-037-31625

10. Field and Pool, or Exploratory Area
Wildcat

11. County or Parish, State
San Juan, UT

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other Dry Hole

2. Name of Operator

Duncan Energy Company

3. Address and Telephone No.

1777 S. Harrison St. P-1 Denver, CO 80210

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

750' FNL & 1400' FEL Sec 5 NWNE T42S R25E

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

TYPE OF SUBMISSION

- Notice of Intent
 Subsequent Report
 Final Abandonment Notice

TYPE OF ACTION

- Abandonment
 Recompletion
 Plugging Back
 Casing Repair
 Altering Casing
 Other Notice of Sale
- Change of Plans
 New Construction
 Non-Routine Fracturing
 Water Shut-Off
 Conversion to Injection
 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.)*

Effective November 1, 1991 Duncan Energy Company sold the subject well which was plugged and abandoned on 8-17-91, to Chuska Energy.

RECEIVED

APR 22 1992

DIVISION OF
OIL GAS & MINING

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

Signed Marie O'Keefe

Title Sr. Engineering Technician

Date 4-20-92

(This space for Federal or State office use)

Approved by _____
Conditions of approval, if any:

Title _____

Date _____

Division of Oil, Gas and Mining
OPERATOR CHANGE WORKSHEET

Routing:

1- LCR 7- LCR
2-DPS <i>ZTS</i>
3-VLC ✓
4-RJF
5-RWM ✓
6- LCR

Attach all documentation received by the division regarding this change.
 Initial each listed item when completed. Write N/A if item is not applicable.

- Change of Operator (well sold) Designation of Agent
 Designation of Operator Operator Name Change Only

The operator of the well(s) listed below has changed (EFFECTIVE DATE: 11-1-91)

TO (new operator)	<u>CHUSKA ENERGY COMPANY</u>	FROM (former operator)	<u>DUNCAN, RAYMOND T.</u>
(address)	<u>3315 BLOOMFIELD HWY</u>	(address)	<u>1777 S. HARRISON ST PH #1</u>
	<u>FARMINGTON, NM 87401</u>		<u>DENVER, CO 80210</u>
	<u>LARRY SESSIONS</u>		<u>MARIE O'KEEFE</u>
	phone (<u>505</u>) <u>326-5525</u>		phone (<u>303</u>) <u>759-3303</u>
	account no. <u>N 9290</u>		account no. <u>N 0360</u>

Well(s) (attach additional page if needed):

(14-20-603-373)

Name: <u>JEEP FED #1/PA</u>	API: <u>43-037-31625</u>	Entity: <u>99998</u>	Sec <u>5</u> Twp <u>42S</u> Rng <u>25E</u>	Lease Type: <u>INDIAN</u>
Name: _____	API: _____	Entity: _____	Sec _____ Twp _____ Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____ Twp _____ Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____ Twp _____ Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____ Twp _____ Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____ Twp _____ Rng _____	Lease Type: _____

OPERATOR CHANGE DOCUMENTATION

- LCR 1. (Rule R615-8-10) Sundry or other legal documentation has been received from former operator (Attach to this form). (*Rec'd 4-22-92*)
- N/A 2. (Rule R615-8-10) Sundry or other legal documentation has been received from new operator (Attach to this form).
- N/A 3. The Department of Commerce has been contacted if the new operator above is not currently operating any wells in Utah. Is company registered with the state? (yes/no) _____ If yes, show company file number: _____.
- * 4. (For Indian and Federal Wells ONLY) The BLM has been contacted regarding this change (attach Telephone Documentation Form to this report). Make note of BLM status in comments section of this form. Management review of **Federal and Indian** well operator changes should take place prior to completion of steps 5 through 9 below.
- LCR 5. Changes have been entered in the Oil and Gas Information System (Wang/IBM) for each well listed above. (*4-23-92*)
- LCR 6. Cardex file has been updated for each well listed above. (*4-23-92*)
- LCR 7. Well file labels have been updated for each well listed above. (*4-23-92*)
- LCR 8. Changes have been included on the monthly "Operator, Address, and Account Changes" memo for distribution to State Lands and the Tax Commission. (*4-23-92*)
- LCR 9. A folder has been set up for the Operator Change file, and a copy of this page has been placed there for reference during routing and processing of the original documents.

ENTITY REVIEW

- JCP 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes)/no) ____ (If entity assignments were changed, attach copies of Form 6, Entity Action Form).
- JCP 2. State Lands and the Tax Commission have been notified through normal procedures of entity changes.

BOND VERIFICATION (Fee wells only)

- N/A 1. (Rule R615-3-1) The new operator of any fee lease well listed above has furnished a proper bond.
- N/A 2. A copy of this form has been placed in the new and former operators' bond files.
- JCP 3. The former operator has requested a release of liability from their bond (yes/no) ____.
Today's date _____ 19____. If yes, division response was made by letter dated _____ 19____.

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

- N/A 1. (Rule R615-2-10) The former operator/lessee of any fee lease well listed above has been notified by letter dated _____ 19____, of their responsibility to notify any person with an interest in such lease of the change of operator. Documentation of such notification has been requested.
- N/A 2. Copies of documents have been sent to State Lands for changes involving State leases.

FILMING

- RWM 1. All attachments to this form have been microfilmed. Date: April 29 1992

FILING

- JCP 1. Copies of all attachments to this form have been filed in each well file.
- JCP 2. The original of this form and the original attachments have been filed in the Operator Change file.

COMMENTS

920423 Btm/Moab "Handled through the Farmington, NM office".

920423 Process per administrative decision.

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work
 DRILL Re-entry DEEPEN PLUG BACK

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

2. Name of Operator
 Chuska Energy Company

3. Address of Operator
 3315 Bloomfield Highway, Farmington, N.M. 87401 505-326-5525

4. Location of Well (Report location clearly and in accordance with any State requirements.)
 At surface: 750' ENL, 1400' FEL (Surface) *NWNE*
 At proposed prod. zone: 730' ENL, 960' FEL (Subsurface) *NENE* *43047-31625*

5. Lease Designation and Serial No.
 BIA 14-20-603-373

6. If Indian, Allottee or Tribe Name
 Navajo Tribal

7. Unit Agreement Name
 N/A

8. Farm or Lease Name

9. Well No.
 West Clay Hill 5B(A)

10. Field and Pool, or Wildcat
 Wildcat

11. 30, Sec., T., R., N., or 31k. and Survey or Area
 Sec. 5, T42S, R25E

12. Distance in miles and direction from nearest town or post office*
 15 Miles Southeast of Montezuma Creek, Utah

13. Distance from proposed location* to nearest well, drilling, completed, or applied for, on this lease, ft.
 1,1 miles

14. No. of acres in lease
 +2522

15. No. of acres assigned to this well
 40

16. Distance from proposed location* to nearest well, drilling, completed, or applied for, on this lease, ft.
 5675' ND

17. Rotary or cable tools
 Rotary

18. Elevations (Show whether DF, RT, GR, etc.)
 4612'GR/4625'KB

19. Approx. date work will start*
 11-17-91

PROPOSED CASING AND CEMENTING PROGRAM

Size of Hole	Size of Casing	Weight per Foot	Setting Depth	Quantity of Cement
12 1/4"	I-55 8 5/8"	24#	Surface 1454'	371 sx 'C' + 2% CaCl2
7 7/8"	K-55 5 1/2"	15.5#	5675'	771 sx 'C' 65+35 Poz + 6% gel

* NOTE:
 Well formerly operated by Raymond Duncan
 and known as Jeep Federal 1

REFER TO ATTACHED 10-POINT DRILLING PLAN, ETC.

SFP 0123

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. I hereby certify that this report is true and complete to the best of my knowledge.

Signed: [Signature] Title: OPERATIONS MANAGER Date: 5-27-93
 BARRY A. WELAND

(This space for Federal or State office use)
 APT NO. 43 031-31625 Approval Date _____
 Approval by _____ Title _____ Date _____
 Conditions of approval, if any:

(3/89)
 ELM Approved
 11-15-91
 K644-3.3

*See Instructions On Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK
 DRILL Re-entry DEEPEN

b. TYPE OF WELL
 OIL WELL GAS WELL OTHER SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
 Chuska Energy Company

3. ADDRESS AND TELEPHONE NO.
 3315 Bloomfield Highway, Farmington, NM 87401 1-505-326-5525

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)
 At surface: 750' FNL, 1400' FEL (Surface) *NWNE*
 At proposed prod. zone: 730' FNL, 960' FEL (Subsurface) *NENE*

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
 15 Miles southeast of Montezuma Creek, Utah

15. DISTANCE FROM PROPOSED LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drig. unit line, if any) 1.1 miles

16. NO. OF ACRES IN LEASE
 +2522

17. NO. OF ACRES ASSIGNED TO THIS WELL
 40

18. DISTANCE FROM PROPOSED LOCATION TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.

19. PROPOSED DEPTH
 5675' MD

20. ROTARY OR CABLE TOOLS
 Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.) *This action is subject to technical and procedural review pursuant to 40 CFR 3105.3 and appeal pursuant to 40 CFR 3105.4.*
 4612' GR/4625' KB

22. APPROX. DATE WORK WILL START*
 11/17/91

5. LEASE DESIGNATION AND SERIAL NO.
 BIA 14-20-603-373

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
 Navajo Tribal

7. UNIT AGREEMENT NAME
 N/A

8. FARM OR LEASE NAME, WELL NO.
 West Clay Hill 5B(A)

9. AP WELL NO.
 43-037-31625 *X*

10. FIELD AND POOL, OR WILDCAT
 Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
 5-42S-25E

12. COUNTY OR PARISH
 San Juan

13. STATE
 UT

23. PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	GRADE SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12 1/4"	J-55 8 5/8"	24 lb	Surface-1454'	371 sx 'G' + 2% CaCl ₂
7 7/8"	K-55 5 1/2"	15.5 lb	5675'	771 sx 'G', 65:35 Pcz + 6% gel

CONFIDENTIAL

REFER TO ATTACHED 10-POINT DRILLING PLAN etc.

SEP 10 1993

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

24. SIGNED *[Signature]* TITLE *Landman* DATE *11/17/91*

APPROVED AS AMENDED

PERMIT NO. _____ APPROVAL DATE _____

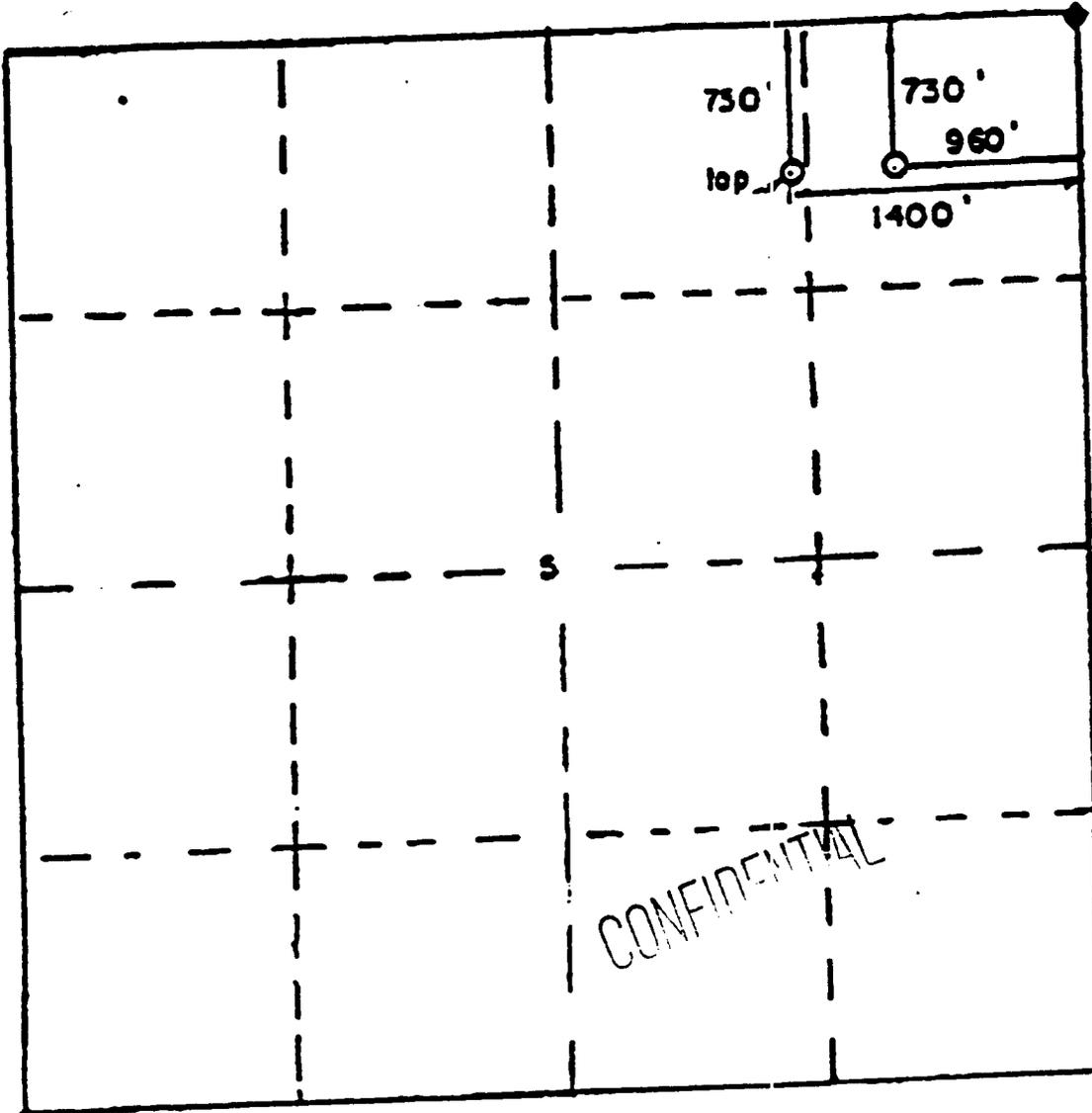
Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would be necessary to conduct operations thereon.

APPROVED BY _____ TITLE _____ DATE _____

[Signature]
AREA MANAGER

*See Instructions On Reverse Side OPERATOR

WELL LOCATION PLAT



North
1" = 1000'

◆ brass cap;
● stone

WELL LOCATION DESCRIPTION:

CHUSKA ENERGY CO., West Clay Hill 5-B (A)
 750' FNL & 1400' FEN (top hole)
 730' FNL & 960' FEN (bottom hole)
 Section 5, T.42 S., R.25 E., SLM
 San Juan County, UT
 4612' ground elevation
 State plane coordinates from seismic control:
 X = 2,672,356 Y = 191,407 (top hole)
 X = 2,672,792 Y = 191,440 (bottom hole)



The above is true and correct to my knowledge and belief.

28 October 1991

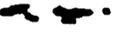
Gerald G. Huddleston
 Gerald G. Huddleston, LS

DIAGRAM #2

CROSS SECTION

Jeep Federal # 1

Raymond T. Duncan
NW NE Sec. 5, T42S - R25E
San Juan County, Utah

Cut 
Fill 

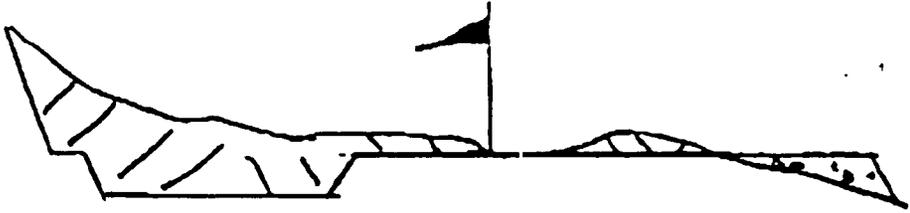
1"=50' vert. & horz.



c

c'

CONFIDENTIAL



b

b'



a

a'

CHUSKA ENERGY COMPANY

REENTRY 10 POINT DRILLING PLAN

WEST CLAY HILL 5-B(A)
SECTION 5, TOWNSHIP 42 SOUTH, RANGE 25 EAST
750' FNL, 1400' FEL (SURFACE)
730' FNL, 960' FEL (SUBSURFACE)
SAN JUAN COUNTY, UTAH

1. SURFACE FORMATION

Geological name of surface formation: Morrison

2. ELEVATION

Surface elevation is 4,612' GR/4,625'KB.

3. ESTIMATED FORMATION TOPS

<u>DEPTH, KB</u> <u>TVD</u>	<u>DEPTH, KB</u> <u>MD</u>	<u>FORMATION</u>	<u>SUB SEA</u> <u>ELEVATION</u>
Surface	Surface	Morrison	+ 4,625'KB
501'	501'	Navajo	+ 4,124'
1,251'	1,251'	Chinle	+ 3,374'
2,391'	2,391'	DeChelly	+ 2,234'
2,541'	2,541'	Organ Rock	+ 2,084'
3,166'	3,166'	Cedar Mesa	+ 1,459'
4,263'	4,320'	Hermosa	+ 362'
5,110'	5,212'	Upper Ismay	- 485'
5,210'	5,317'	Lower Ismay	- 585' POBJ.
5,285'	5,396'	Desert Creek	- 660' SOBJ.
5,455'	5,575'	Akah	- 830'
5,520'	5,675'	Total Depth	- 895'

4. PROPOSED CASING/CEMENTING PROGRAM

	<u>DEPTH</u>	<u>SIZE</u>	<u>WEIGHT</u>	<u>GRADE</u>	<u>COUPLING</u>
Surface	1,454'	8 5/8"	24 lb	J-55	STC
Production	5,675'	5 1/2"	Refer to details below		

Production Casing (5 1/2" O.D.) details:

<u>INTERVAL</u>	<u>WEIGHT</u>	<u>GRADE</u>	<u>COUPLING</u>
0' to T.D.	15.50 lb	K-55	LTC

SURFACE CEMENTING:

N/A: Existing surface casing (re-entry).

PRODUCING CEMENTING:

First Stage

T.D. to 3,500' (stage collar @ +/- 3,500'). Lead with 250 sx Class 'G' cement, 65:35 Pozmix, with 6% gel, and 1/4 lb/sk Celloflake. Weight = 12.7 ppg, yield = 1.85 ft³/sk. Tail with 200 sx Class 'G' cement with 2% CaCl₂. Weight = 15.8 ppg, yield = 1.15 ft³/sk. Total of 693 ft³. Bring Class 'G' slurry to 500' above top of Upper Ismay. Cement volumes calculated at 30% excess in open hole. W.O.C. 4 hours between stages.

Second Stage

3,500' to surface. Lead with 600 sx Class 'G' cement, 65:35 Pozmix with 6% gel and 1/4 lb/sk Celloflake. Weight = 12.7 ppg, yield = 1.85 ft³/sk. Tail with 100 sx Class 'G' cement with 2% CaCl₂. Weight = 15.8 ppg, yield = 1.15 ft³/sk. Total of 1,225 ft³. Cement volumes calculated at 30% excess in open hole.

Note: Exact slurry volumes for the production string will be adjusted according to the caliper log which will be run prior to cementing. Special adjustments may be necessary if significant amounts of salt are drilled.

5. **BLOWOUT PREVENTER** (See attached Schematics)

As abnormal pressure is not anticipated, a 2,000 psi BOP system would be sufficient for the drilling of this well. However, due to availability constraints, a 3,000 psi system will be used, as per the attached Exhibits "A" and "B". This will be a 10" x 900 Series double ram preventer, equipped with a set of pipe and blind rams.

An accumulator system, with a pressure capacity sufficient to operate the rams three complete cycles without rig power, will be required as part of the rig equipment.

6. PROPOSED MUD PROGRAM

Surface to 3,000'

Fresh water, gel, lime and native solids. Weight 8.3 - 8.7 ppg. Gel/lime sweeps as necessary for hole cleaning.

3,000' to T.D.

Low solids, non-dispersed polymer system. Weight 8.6 - 9.5 ppg. Gel/lime sweeps as hole conditions dictate for hole cleaning. Fluid loss to be maintained at 15 - 20 cc. Fluid loss to be further reduced to 15 cc or less prior to coring, logging or DSTs.

7. AUXILIARY EQUIPMENT

- A. A kelly cock will be installed during drilling operations, with handle available on the rig floor.
- B. Floor (stabbing) valves will be available on the rig floor at all times, with necessary subs to fit all of the drilling assemblies.
- C. Mud will be the circulating fluid. No abnormal formation pressures are expected.

8. WELL EVALUATION

Open hole electric logging program will consist of a minimum program of DLL-MSFL-SP-GR-Cal, FDC-CNL-GR-Lithodensity from T.D. to 4,500'.

Coring and/or drill stem testing will be as per the wellsite geologist's recommendations, based on shows. A mud logging unit will be utilized during drilling operations from at least 500' above the Upper Ismay.

9. ABNORMAL PRESSURES/GAS

Abnormal pressures are not anticipated. Monitoring of gas and hydrocarbon shows will be by wellsite mud logging unit. H₂S gas is not anticipated; however, regular checks will be made while drilling the well.

10. TIMING

The drilling and evaluation of this well is estimated to be 15 days. Anticipated spud date is 11-15-91.

EXHIBIT "A"
BLOWOUT PREVENTER

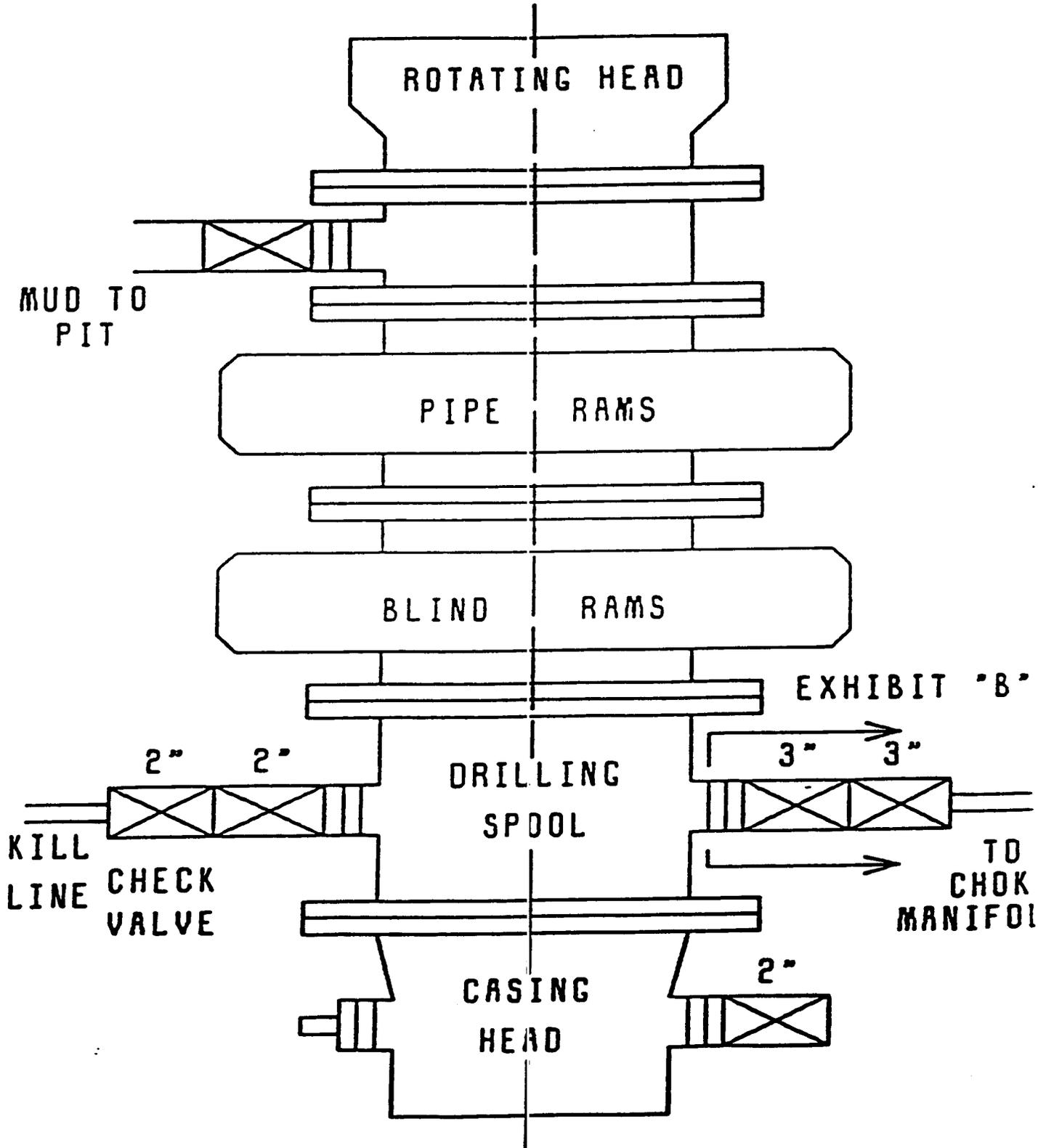
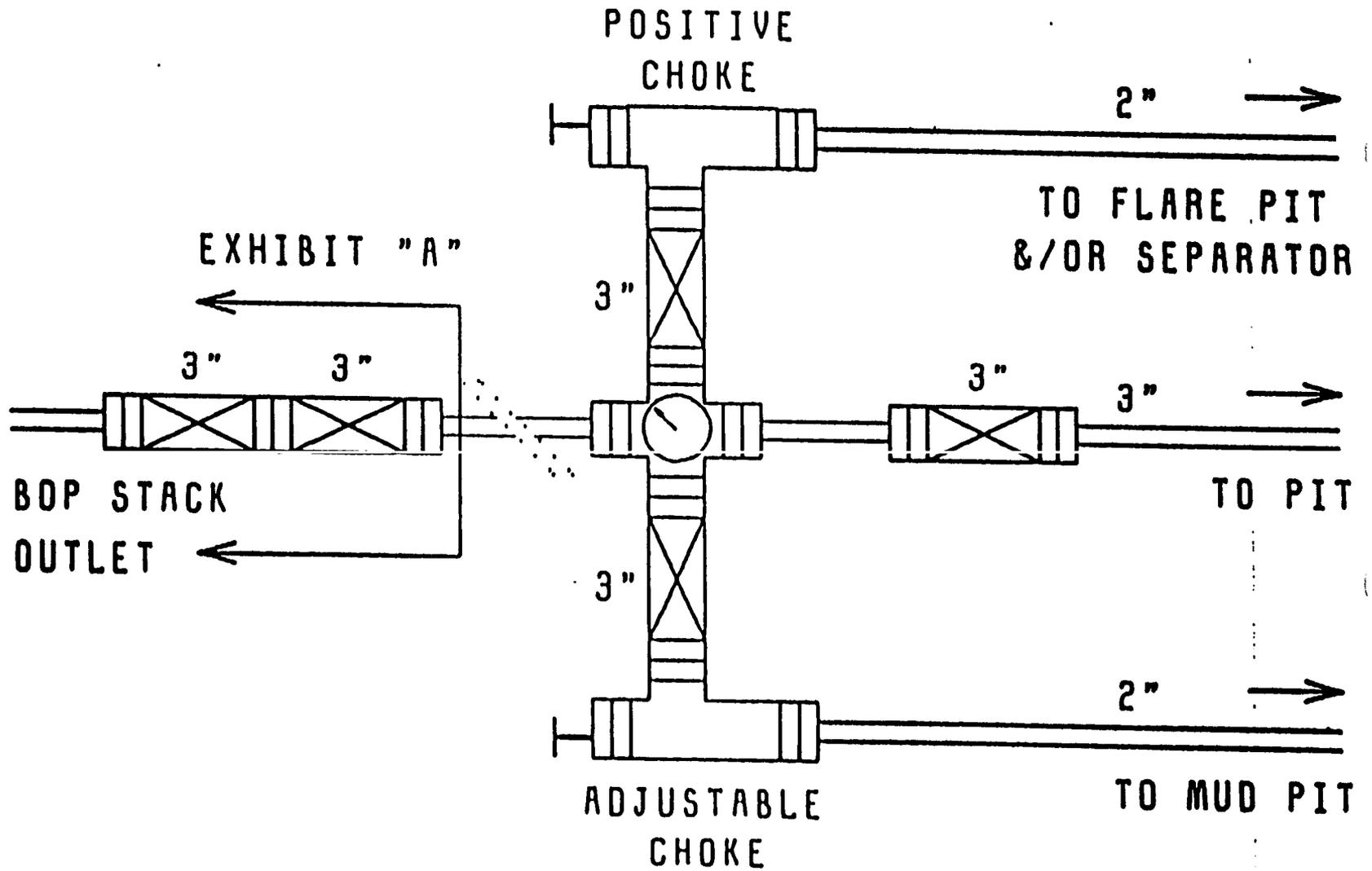


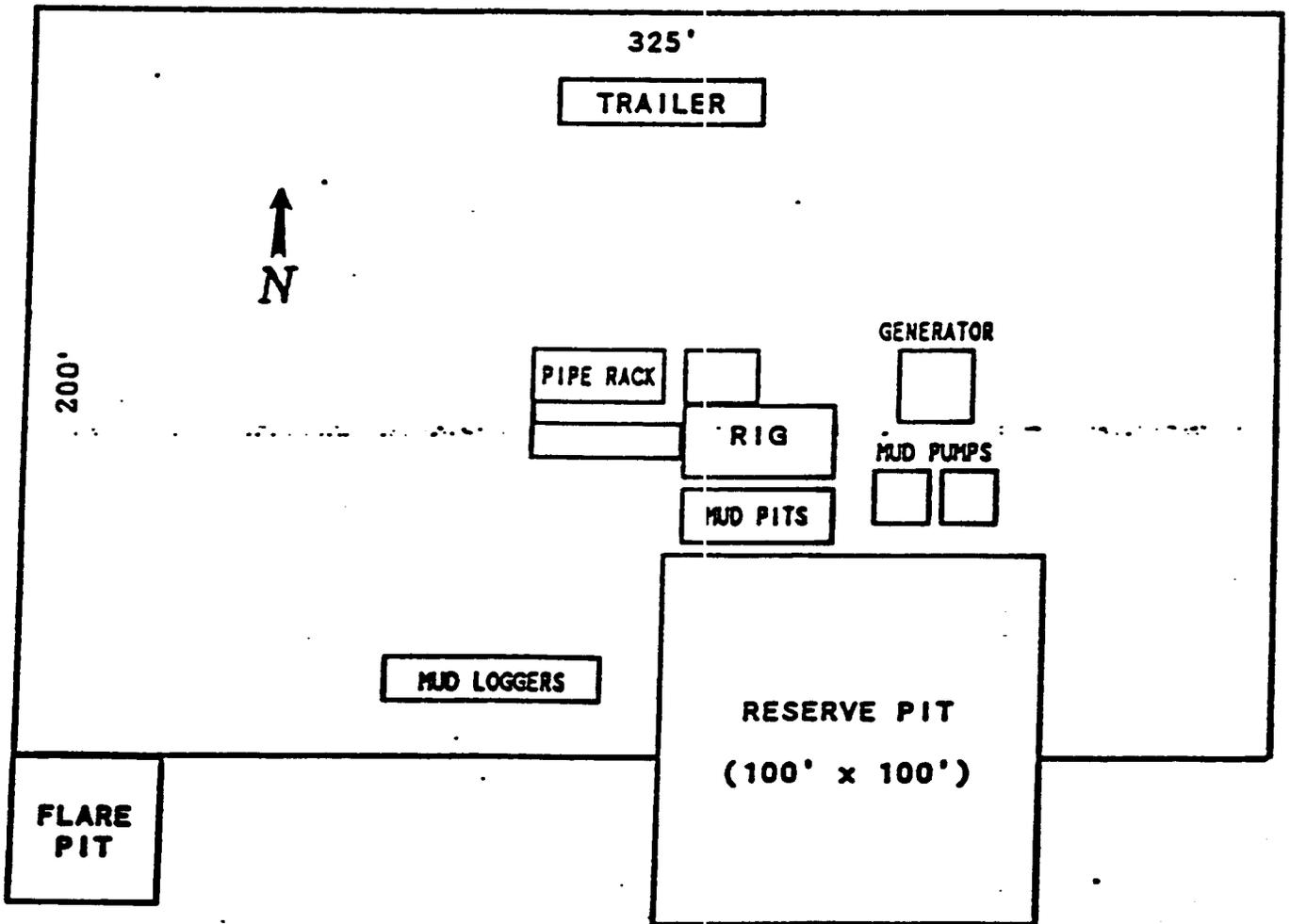
EXHIBIT "B" CHOKE MANIFOLD



CHUSKA ENERGY COMPANY

LOCATION LAYOUT

WEST CLAY HILL 5-B(A)
750' FNL, 1400' FEL (SURFACE LOCATION)
730' FNL, 960' FEL (SUBSURFACE LOCATION)
SECTION 5, TOWNSHIP 42S, RANGE 25E
SAN JUAN COUNTY, UTAH



DETAILED DRILLING PROGRAM

DATE: November 7, 1991

WELL NAME: West Clay Hill WELL NO.: 5B(A)

LOCATION: Section 5, T42S-R25E
750'FNL and 1400'FEL (surface)
730'FNL and 960' FEL (subsurface)
San Juan County, Utah

ELEVATION: 4612'GR/4625'KB

TOTAL DEPTH: 5675'MD/5520'IVD

PROJECTED HORIZON: Primary Target is Lower Ismay at 5317'MD

DRILLING, CASING AND CEMENTING PROGRAM

1. Move in and rig up rotary tools. Notify BLM of time of spud.
2. Drill mouse hole and rat hole. Mix mud prior to spudding well. Weld on csg head to existing 8 5/8 csg and N.U. BOPE. Pressure Test BOPE to 1500 PSI.
3. Re-enter existing wellbore w/ 7 7/8" bit and drill out cement plugs. Clean out to + 3500' and prep to sidetrack.
4. Set cement sidetrack plug from 3000' to 3300' utilizing approximately 100 sxs class 'G' cement. WOC minimum of 12 hrs.
5. P.U. mud motor and directional tools and initiate sidetrack @ + 3100'. Directionally drill a 7 7/8" hole to the bottom hole location specified above.
6. Run open hole logs and evaluate. Coring and/or drill stem testing will be as per wellsite geologist's recommendation.
7. If the well is determined to be productive, run 5 1/2", 15.5 lb/ft, K-55, STC casing to TD. Set stage cementing collar at + 3500'. In addition to placing centralizers over potential production zones, they will also be run to cover the aquifer sands of the Navajo and DeChelly formations, as per BLM stipulations. Cement production casing in two stages as per cementing program in 10-Point Drilling Plan.
8. Nipple down BOPE. Set 5 1/2" casing slips and cut off casing. Install well head. Release drilling rig and

move rig off location.

- 9. If well is non-productive it will be plugged and abandoned as per State, BLM and BIA stipulations.**

**West Clay Hill Well No. 5B(A)
Section 5, T42S-R25E
750' FNL, 1400' FEL (surface)
730' FNL, 960' FEL (subsurface)
San Juan County, Utah**

GENERAL COMPLETION PROCEDURE:

If the well is determined to be productive, move in completion rig. Perforate, acidize, and test each productive porosity zone. Completion work will commence after Sundry Notice approval is received. Detailed procedures will follow.

PLUGGING AND ABANDONMENT:

If the well is determined not to be productive, the well bore will be plugged as per BLM, State and BIA requirements.

West Clay Hill 5B(A)
Section 5-T42S-R25E
750' FNL, 1400' FEL (surface)
730' FNL, 960' FEL (subsurface)
San Juan County, Utah

1. **EXISTING ROADS**

Shown on the attached topographic map are the existing roads in the immediate area. Outlined is the route to be followed to Montezuma Creek. Existing roads will be maintained, as needed, while operations are in progress.

2. **PLANNED ACCESS ROAD**

The access road will be as shown on the attached topographic map. The road is an existing road as maintained by Duncan for the drilling of the 1 Jeep Federal well. The road will be maintained as necessary to prevent excessive damage to the existing terrain. The road will be upgraded if commercial production is established. Owing to the well's proximity to an existing road, no new road will be constructed to the location pad.

3. **LOCATION OF EXISTING WELLS & TANK BATTERIES**

There are no other producing wells or facilities in the immediate area.

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

No production facilities are presently in place. Should the well prove to be productive, facilities (tank battery etc) will be sited on the he drilling location pad.

5. **LOCATION AND TYPE OF WATER SUPPLY**

Water will be acquired from the San Juan River or McElmo Creek and will be hauled using Chuska Energy Company water trucks, under State of Utah Division of Water Rights Permit Numbers 09-1724, (T64796) or 09-1723 (T64795).

6. **SOURCE OF CONSTRUCTION MATERIAL**

The need for additional construction materials is not anticipated. In the event that additional materials are required, they will be acquired either

from private sources or with the approval of the Navajo Nation.

7. METHODS OF HANDLING WASTE MATERIAL

Trash will be contained on location in an enclosed bin. It will be hauled to an approved disposal site or burned on location if a burning permit is granted. The reserve pit will be lined as required, with an approved 7 mil liner, for containing drilling fluids. The pit will also be fenced. All drilling fluids, cuttings and chemical waste will be stored in the reserve pit. Liquid hydrocarbons will be stored in temporary storage tanks and hauled from location to approved sales facilities. The reserve pit will be emptied, back filled and restored to natural terrain status upon completion of drilling operations.

8. ANCILLARY FACILITIES

Chemical portable toilet facilities will be provided on location during drilling and completion operations. No camps or air strips are planned for this well.

9. WELL SITE LAYOUT

Attached is a surveyor's staking plat, cut and fill diagram and a schematic of the proposed rig layout.

10. PLANS FOR RESTORATION OF THE SURFACE

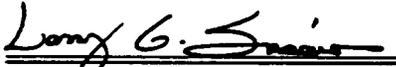
After drilling operations are completed, the location and surrounding area will be cleared of all remaining debris and materials not required for production. Compacted areas will be plowed or ripped to a depth of 12 to 16 inches before reseeding. The existing reserve pit will be used. After drilling operations are complete, drilling fluid in the reserve pit will be allowed to evaporate. All remaining fluid in the pit will be disposed into an approved disposal site. The reserve pit will remain fenced during the evaporation and disposal process. The pit will then be covered and topsoil will be returned to the disturbed area. The terrain will be returned as near to its original condition as possible. Following operations, rehabilitation seeding will be in accordance with APD/BLM/BIA stipulations. There are no residents in the immediate area of the site.

11. OPERATORS REPRESENTATIVE

**CHUSKA ENERGY COMPANY
3315 BLOOMFIELD HIGHWAY
FARMINGTON, NM 87401
LARRY G. SESSIONS**

12. CERTIFICATION

I hereby certify that either I, or persons under my direct supervision have inspected the proposed drill site 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 planned will be performed by Chuska Energy, or its sub-contractors, in conformity with the terms and conditions under which it is approved.


LARRY G. SESSIONS
OPERATIONS MANAGER

5. Access roads not needed for through traffic will be barricaded and reseeded in accordance with #2. Water bars will be constructed to the following specifications.

<u>% Slope</u>	<u>Slope Distance</u>
Less than 1%	300 feet
1% - 5%	200 feet
5% - 15%	100 feet
Greater than 15%	50 feet

6. An earthen berm (24 inches/feet high) will be constructed around the perimeter of the well pad, except on the high/cut side of the well pad.
7. The reserve pit will be lined to prevent seepage from occurring.
8. The reserve pit will be constructed long and narrow (75x150feet) so that the pit can be accommodated and any potential hazards reduced or eliminated.
9. NA Immediately following drilling, the fluids of the reserve pit will be pumped and disposed of per BLM instructions. A sundry notice for this action is required by BLM.
10. Diversion ditch (es) will be constructed on the ___ side of the well pad above (below) (circle one) the cut slope diverting any runoff to the West.
11. The wash (~~oo~~) will be diverted around the S side of the well pad.
12. Culvert(s) of sufficient size will be placed on all drainage crossings of the access road determined necessary during the on-site inspection. _____
13. No production flowlines nor gas sales lines will be constructed until their right-of-ways/easements are inspected and approved by the surface management agency.
14. Any flowline (s) (surface/subsurface) will be constructed paralleling new and existing road right-of-ways, except _____
15. NA The top ___ inches of soil of any subsurface flowline constructed will be rolled/scraped to one side of the bladed line and will be disturbed as little as possible during the actual construction. Immediately following installation, the roll of topsoil salvaged will be redistributed over the bladed line and will be reseeded in accordance with item# 2. In addition to this, all areas disturbed (including the replaced topsoil) will be imprinted with a land imprinter or sheep's foot type roller to create a pattern of small depressions to enhance vegetative regrowth. All drainages crossed by these line (s) will be restored, as near as possible, to their original form. Water bars will be constructed in accordance with item# 5.
16. NA Fence (s) crossed by the access road will be braced and tied off before cutting of the wires to prevent slackening of the fencelines. Both a gate and cattleguard which must be BIA approved will be installed.

17. Storage tank (s) installed on the location will be surrounded by a dike of sufficient capacity to contain $1\frac{1}{2}$ times the storage capacity of the tank (s)
18. The stipulations set forth in the archeological clearance letter dated 7 / will be strictly adhered to. Clearance No. _____
19. NA Upon abandonment, all material brought in to plate the surface of the well pad and/or the access road will be cleaned up and disposed of prior to re-seeding.
20. The construction work conducted at this location will need to be inspected before the drill rig is moved on the location.

ALL CHANGES/DEVIATIONS MADE FROM THE APPROVED APD MUST BE CLEARED AND APPROVED BY THE SURFACE MANAGEMENT AGENCY. THE SURFACE MANAGEMENT AGENCY CAN BE CONTACTED AT (505) 368-4427 ext. 352

OTHER:

91. 10/17 09:4 P01 *



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
NAVAJO AREA OFFICE

P. O. Box 1060
Gallup, New Mexico 87305-1060

IN REPLY
REFER TO:

ARPM/Minerals

OCT 16 1991

Chuska Energy Company
3315 Bloomfield Highway
Farmington, New Mexico 87401

Gentlemen:

Pursuant to your letter dated October 10, 1991, you may accept this letter as authorization that Navajo Tribal Oil and Gas Lease No. 14-20-603-373 will not be terminated provided that you comply with the conditions outlined in your letter.

We have been in contact with the Bureau of Land Management Office who is also agreeable to the said conditions if completed prior to December 31, 1991.

Sincerely,

ACTING Area Director

RECEIVED
BIA
OCT 12 1991 07
GALLUP, N.M.

Form 5-138

1990

RECEIVED
BLM
NOV 12 AM 11:07
019 FARMINGTON, N.M.

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS**

PERFORMANCE BOND

		Date Bond Executed 11-7-91	
Principal Chuska Energy Company		Surety First Bank	
Penal Sum of Bond (express in words and figures) \$15,000.00 Fifteen Thousand Dollars	Lease/Permit/Agreement No. BIA 14-20-603-373	Date of Lease/Permit/Agreement October 26, 1953	
Penal Sum Total \$ <u>15,000.00</u>			

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL and SURETY above named, are held and firmly bound unto the United States of America, Hereinafter called the Government, and Chuska Energy Company
3315 Bloomfield Hwy, Farmington, New Mexico, 87401
(lessor or permitter), in the penal sum of the amount stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents, provided, however that the liability of the surety to either one or both of the obligees shall not exceed in the aggregate the penal sum of the bond.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain agreement(s), numbered and dated as shown above and hereto attached, and whereas the principal and surety agree that the neglect or forbearance of the lessor/permitter in enforcing against the lessee/permittee/assignee/operator/contractor the payment of rentals, royalties or the performance of any other covenants or condition of the agreement, shall not in any way release the principal or surety, or either of them, from any default under such lease, the lessor or permitter may prosecute any claim, suit, action, or other proceeding against either the principal or surety without the necessity of joining the other.

NOW THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of said agreement during the original term of said agreement and any duly authorized extensions thereof, with or without notice to the surety, and during the life of any guaranty required under the agreement, and shall also well and truly perform and fulfill all the undertakings, covenants, terms and conditions of any and all duly authorized modifications of said agreement that may hereafter be made, notice of which modifications to the surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IT IS FURTHER UNDERSTOOD AND AGREED between all parties hereto, that the Surety shall so elect, may request that this bond be cancelled, by giving sixty (60) days advance notice in writing to both the Principal and the Superintendent or other officer in charge of the Agency or Field office concerned. It is the express condition of this bond that it shall be in effect until the Bureau of Indian Affairs, in writing, cancels said bond. If the bond is cancelled then it is understood that said Surety remains liable for all acts covered by this bond which may have been committed by the Principal up to said cancellation date under the terms, conditions, and provisions of this bond.

This bond is guarantee that the lessee/permittee/assignee/operator/contractor shall well and truly perform and fulfill all the undertakings, covenants, terms, and conditions of said agreement and the applicable federal regulations (25 CFR, 30 CFR and 43 CFR). The penal sum will be made available upon written certification from the Bureau of Indian Affairs stating that such amounts are due and payable.

PROVIDED, that in the event supervision over all the tracts to which this bond applies is relinquished by the Secretary of the Interior and the lessee/permittee/assignee/operator/contractor shall have made all payments then due under the agreement and shall have fully performed all obligations on their part to be performed up to the time of relinquishment of supervision, the liability of this bond shall be of no further force and effect.

IN PRESENCE OF:

WITNESS

INDIVIDUAL PRINCIPAL

- 1. _____ as to _____ (SEAL)
- 2. _____ as to _____ (SEAL)
- 3. _____ as to _____ (SEAL)
- 4. _____ as to _____ (SEAL)

WITNESS

INDIVIDUAL SURETY

- 1. _____ as to _____ (SEAL)
- 2. _____ as to _____ (SEAL)

Attest:

Corporate Principal Chuska Energy Company
3315 Bloomfield Hwy.
Farmington, NM 87401

Business Address -

Daniel P. Neelon
By Daniel P. Neelon
Attorney-in-Fact

Title

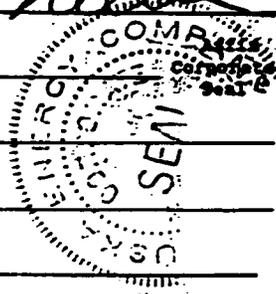
Corporate Surety

Business Address

By

Title

Affix
Corporate
Seal





CHUSKA ENERGY COMPANY

3315 BLOOMFIELD HIGHWAY • FARMINGTON, NEW MEXICO 87401 • PHONE: (505) 326-5525

September 7, 1993

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Attn: Mr. R.J. Firth
Associate Director

RE: Utah Division of Oil, Gas and Mining's
Reporting Requirements

RECEIVED

SEP 10 1993

DIVISION OF
OIL, GAS & MINING

Dear Mr. Firth:

Enclosed please find the following reports and well logs run on wells drilled by Chuska Energy Company during the period January 1, 1992 forward. The Production Reports were filed in June under a separate cover letter by our home office, Harken Energy Company, out of Dallas. We have received conflicting statements as to whether or not the data was received. Therefore, a second set of Production reports from January 1992 forward are also forwarded to your office under this cover letter.

APD(S), SUNDRY NOTICES AND ENTITY ACTION FORMS

Barnes 18M
Barnes 18M(N)
Brown Hogan 1A-2
Burro 33I
Clay Hill 33-0
Crane 35H
Copperhead 15E
D.C. Anticline 35K
Heron 35H
Heron 35H(A)
Jack 31G
Kokopelli 29I
Lark 19B
Lark 19B(G)
Lighting Rock 2E
Lizard 4M
Lone Mountain Creek 12F-1

RECEIVED

SEP 10 1993

DIVISION OF
OIL, GAS & MINING

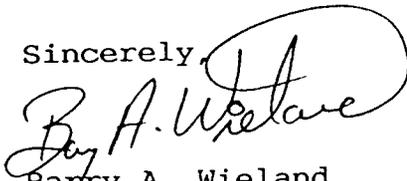
Monument 17E-2
Mule 31K
Mule 31K(N)
Mule 31M
NW Cajon 1I-1
North Heron 35C
Northwest Cajon 6E
North Cajon Mesa 5E-1
North Ruins 16K
Red Lake 25B
Tower 1F
Box Canyon 5F
Shalene 11K
South Triangle 7I
West Clay Hill 5B(A)

LOGS

Barnes 18M(N)
Brown Hogan 1A-2
Burro 33I
Clay Hill 33-0
Copperhead 15E
D.C. Anticline 35K
Heron 35H
Jack 31G
Kokopelli 29I
Lark 19B(G)
Lighting Rock 2E
Lone Mountain Creek 12F-1
Mule 31K(N)
Mule 31M
North Cajon Mesa 5E-1
North Heron 35C
N.W. Cajon 1I-1
N.W. Cajon 6E
Red Lake 25B
West Clay Hill 5B(A)

If you should have any further questions, please don't
hesitate to contact me, or Nell Lindenmeyer, at 505-326-
5525.

Sincerely,



Barry A. Wieland
Operations Manager

Enclosures
cc: Well File

OPERATOR Chuska Energy Company

OPERATOR ACCT. NO. N 9290

ENTITY ACTION FORM - FORM 6

ADDRESS 3315 Bloomfield Highway

Farmington, N.M. 87401

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
A	11357	→	43-037-31625	West Clay Hill 5B(A)	NENE	33	41S	25E	San Juan	12-2-91	

WELL 1 COMMENTS: *Entity previously added 4-16-90. Lee*
 Spudded 0400 hrs, 12-2-91. Drilled to 514'. Ran and cemented surface casing at 507'.

--	--	--	--	--	--	--	--	--	--	--	--

WELL 2 COMMENTS:

--	--	--	--	--	--	--	--	--	--	--	--

WELL 3 COMMENTS:

--	--	--	--	--	--	--	--	--	--	--	--

WELL 4 COMMENTS:

--	--	--	--	--	--	--	--	--	--	--	--

WELL 5 COMMENTS:

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

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

SEP 10 1993

Signature _____

Title _____ Date _____

Phone No. (____) _____

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

3. LEASE DESIGNATION AND SERIAL NO.

BIA 14-20-603-373

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

Navajo Tribal

7. UNIT AGREEMENT NAME

N/A

8. FARM OR LEASE NAME

9. WELL NO.

West Clay Hill 5B(A)

10. FIELD AND POOL OR WILDCAT

Wildcat

11. SEC., T., R. W. OR BLOCK AND CORNER OR AREA

Sec. 5, T42S, R25E

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. TYPE OF WELL: OIL WELL GAS WELL DRY Other Dry Hole

1b. TYPE OF COMPLETION: NEW WELL WORK OVER DEEP-EN PLUG BACK DIFF. REVE. Other Re-entry

2. NAME OF OPERATOR

Chuska Energy Company

2a. ADDRESS OF OPERATOR

3315 Bloomfield Highway, Farmington, N.M. 87401 505-326-5525

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)

At surface 750' FNL, 1400' FEL

At top prod. interval reported below

At total depth N/A

730' FNL, 960' FEL

14. API NO.

43-037-31625*

DATE ISSUED

11-15-91

12. COUNTY

San Juan

12. STATE

Utah

13. DATE SPUDDED

12-2-91

16. DATE T.D. REACHED

12-19-91

17. DATE COMPL. (Ready to prod.)

N/A 12-19-91 (Prod. & 4ML)

18. ELEVATIONS (OP. RES. AT, CR. ETC.)

4612 GR 4625 KB

19. ELEV. CASINGHEAD

4615 GR

20. TOTAL DEPTH, MD & TVD

5573' MD 5515 TVD

21. PLUG BACK T.D., MD & TVD

N/A

22. IF MULTIPLE COMPLET. HOW MANY

N/A

23. INTERVALS DRILLED BY

Yes

TOTAL TOOLS

Yes

CABLE TOOLS

No

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)

N/A

25. WAS DIRECTIONAL SURVEY MADE

Yes

26. TYPE ELECTRIC AND OTHER LOGS LOG MUD, CASING LOG 9-10-93

27. WAS WELL CORED YES NO (Specify interval)

Yes

BHC, GR, CSL, FDC/CNL, Lith Den/GR, DLL, GR, Cal

28. DRILL STEM TEST YES NO (See remarks page)

29. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8 5/8 K 55	24	500'	12 1/4	380 sx 'G' 2% CaCl ₂ + 1/4#sx flocele Cement slurry	
				Circulated to surface.	

30. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)

31. PERFORATION RECORD (Interval, size and number)

32. ACID, SHOT, FRACTURE CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED

SEP 10 1991

33. PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
P & A		

DATE OF TEST	HOURS TESTED	CHOKES SIZE	PROD. FOR TEST PERIOD	OIL—BSL	GAS—MCF.	WATER—BSL	GAS-OIL RATIO

FLOW TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BSL	GAS—MCF.	WATER—BSL	OIL GRAVITY-API (CORR.)

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

35. LIST OF ATTACHMENTS

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

SIGNED Barry A. Wieland

TITLE OPERATIONS MANAGER

DATE 5-27-93

See Spaces for Additional Data on Reverse Side

(November 1983)
(Formerly 2330)

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Budget Bureau No. 1004-0137
Expires August 31, 1985

FEB 13 1992

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Submit in Duplicate
(See instructions on reverse side)

5. LEASE DESIGNATION AND SERIAL NO.

RIA 14-20-603-373

6. INDIAN, ALIQUOT OR TRIBE NAME

Navajo Tribal

7. UNIT AGREEMENT NAME

N/A

8. FARM OR LEASE NAME

~~Wild Cat~~

9. PHONE NO.

43-037-31625

10. FIELD AND POOL OR WILDCAT

Wild Cat

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA

5-42S-25E

12. COUNTY OR PARISH
San Juan

13. STATE
Utah

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. TYPE OF WELL: OIL WELL GAS WELL DRY Other dry hole

1b. TYPE OF COMPLETION: NEW WELL WORK OVER DEEP-EN PIPE BACK DIFF. ENVR. Other Re-entry.

2. NAME OF OPERATOR
Chuska Energy Company

3. ADDRESS OF OPERATOR
3315 Bloomfield Hwy, Farmington, NM 87401

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface 750' FNL, 1400' FEL
At top prod. interval reported below N/A
At total depth 730' FNL, 960' FEL

14. PERMIT NO. DATE ISSUED
11-15-91

15. DATE SPUDDED 12-2-91 16. DATE T.D. REACHED 12-19-91 17. DATE COMPL. (Ready to prod.) N/A 12/19/91 18. ELEVATIONS (DP, RKB, RT, GR, ETC.)* 4612 GR 4625 KB 19. SLEV. CASINGHEAD 4615 GR

20. TOTAL DEPTH, MD & TVD 5573' MD 5515 TVD 21. PLUG. BACK T.D., MD & TVD N/A 22. IF MULTIPLE COMPL., HOW MANY* N/A 23. INTERVALS DRILLED BY ROTARY TOOLS yes CABLE TOOLS no

24. PRODUCING INTERVAL(S) OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
N/A 25. WAS DIRECTIONAL SURVEY MADE yes

26. TYPE ELECTRIC AND OTHER LOGS RUN
BHC, GR, CSL, FDC/CNL, LITH DEN/GR, DLL, GR, CAL 27. WAS WELL CORED yes

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT FULLED
<u>8 5/8 K 55</u>	<u>24</u>	<u>500'</u>	<u>12 1/4</u>	<u>380 ex 1G+2%CaCl2+1/4H/sx</u>	
	<u>See Duncn CR</u>			<u>fiocela. Cement slurry</u>	
				<u>circulated to surface.</u>	

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)

31. PERFORATION RECORD (Interval, size and number)

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED

33. PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	WGS-OIL RATIO

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	MD. GRABBY-API (COR.)

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) TEST WITNESSED BY

35. LIST OF ATTACHMENTS

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.
SIGNED Yusuf. Chandra TITLE Operations Engineer DATE JAN 20 1992

*(See Instructions and Spaces for Additional Data 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 matter within its jurisdiction.

OPERATOR

ACCEPTED FOR RECORD

FARMINGTON RESERVE AREA

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):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
Core #1	5380' kb	5440' kb	Desert Creek, 100% Recovery.	Hermosa	4309'	4265'
Core #2	5440' kb	5500' kb	Desert Creek, 100% Recovery.	U. Ismay Hovenweep L. Ismay Gothic Shale Desert Creek Chimney Rock Akah	5163' 5274' 5278' 5317' 5337' 5510' 5523'	5118' 5226' 5230' 5268' 5288' 5455' 5468'

SEP 10 1960

38. GEOLOGIC MARKERS



CHUSKA ENERGY COMPANY

3315 BLOOMFIELD HIGHWAY • FARMINGTON, NEW MEXICO 87401 • PHONE: (505) 326-5525

September 7, 1993

State of Utah
Department of Natural Resources
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

RECEIVED

SEP 10 1993

DIVISION OF
OIL, GAS & MINING

Attn: Mr. R.J. Firth
Associate Director

RE: Utah Division of Oil, Gas and Mining's
Reporting Requirements

Dear Mr. Firth:

Enclosed please find the following reports and well logs run on wells drilled by Chuska Energy Company during the period January 1, 1992 forward. The Production Reports were filed in June under a separate cover letter by our home office, Harken Energy Company, out of Dallas. We have received conflicting statements as to whether or not the data was received. Therefore, a second set of Production reports from January 1992 forward are also forwarded to your office under this cover letter.

APD(S), SUNDRY NOTICES AND ENTITY ACTION FORMS

Barnes 18M
Barnes 18M(N)
Brown Hogan 1A-2
Burro 33I
Clay Hill 33-0
Crane 35H
Copperhead 15E
D.C. Anticline 35K
Heron 35H
Heron 35H(A)
Jack 31G
Kokopelli 29I
Lark 19B
Lark 19B(G)
Lighting Rock 2E
Lizard 4M
Lone Mountain Creek 12F-1

RECEIVED

SEP 10 1993

DIVISION OF
OIL, GAS & MINING

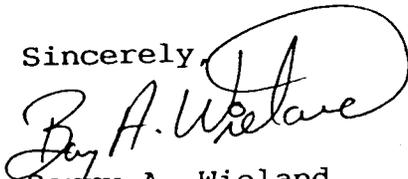
Monument 17E-2
Mule 31K
Mule 31K(N)
Mule 31M
NW Cajon 1I-1
North Heron 35C
Northwest Cajon 6E
North Cajon Mesa 5E-1
North Ruins 16K
Red Lake 25B
Tower 1F
Box Canyon 5F
Shalene 11K
South Triangle 7I
West Clay Hill 5B(A)

LOGS

Barnes 18M(N)
Brown Hogan 1A-2
Burro 33I
Clay Hill 33-0
Copperhead 15E
D.C. Anticline 35K
Heron 35H
Jack 31G
Kokopelli 29I
Lark 19B(G)
Lighting Rock 2E
Lone Mountain Creek 12F-1
Mule 31K(N)
Mule 31M
North Cajon Mesa 5E-1
North Heron 35C
N.W. Cajon 1I-1
N.W. Cajon 6E
Red Lake 25B
West Clay Hill 5B(A)

If you should have any further questions, please don't
hesitate to contact me, or Nell Lindenmeyer, at 505-326-
5525.

Sincerely,



Barry A. Wieland
Operations Manager

Enclosures
cc: Well File

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

6. Lease Designation and Serial Number BIA 14-20-603-373
7. Indian Allottee or Tribe Name Navajo Tribal
8. Unit or Communitization Agreement N/A
9. Well Name and Number West Clay Hill 5B(A)
10. API Well Number 43-037-31625
11. Field and Pool, or Wildcat Wildcat

SUNDRY NOTICES AND REPORTS ON WELLS

1. Type of Well to which this report applies
 Oil Well Gas Well Other (specify) P & A

2. Name of Operator
Chuska Energy Company

3. Address of Operator
3315 Bloomfield Highway, Farmington, N.M. 87401

4. Telephone Number
505-326-5525

5. Location of Well
 Footage : 750' FNL, 1400' FEL (Surface)
 : 730' FNL, 960' FEL (Subsurface)
 County : San Juan
 State : UTAH
 CO. Sec. T., R., M. : Sec. 5, T42S, R25E

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

NOTICE OF INTENT (Submit in Duplicate)	SUBSEQUENT REPORT (Submit Original Form Only)
<input type="checkbox"/> Abandonment	<input checked="" type="checkbox"/> Abandonment
<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Casing Repair
<input type="checkbox"/> Change of Plans	<input type="checkbox"/> Change of Plans
<input type="checkbox"/> Conversion to Injection	<input type="checkbox"/> Conversion to Injection
<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Fracture Treat
<input type="checkbox"/> Multiple Completion	<input type="checkbox"/> Other
<input type="checkbox"/> Other	
<input type="checkbox"/> New Construction	<input type="checkbox"/> New Construction
<input type="checkbox"/> Pull or Alter Casing	<input type="checkbox"/> Pull or Alter Casing
<input type="checkbox"/> Recompletion	<input type="checkbox"/> Shoot or Acidize
<input type="checkbox"/> Shoot or Acidize	<input type="checkbox"/> Vent or Flare
<input type="checkbox"/> Vent or Flare	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Water Shut-Off	

Date of Work Completion _____

Approximate Date Work Will Start _____

Report results of Multiple Completions and Recompletions to different reservoirs on WELL COMPLETION OR RECOMPLETION AND LOG form.
 * Must be accompanied by a cement verification report.

13. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

PLUG	EXCESS %	FROM MD	TO MD	FT	SX	TOPS	ZONES COVERED
1	100	5573	5053	520	286	5164	Ismay, DC, Akah
2	100	4215	4115	100	60	4265	Hermosa
3	100	3200	3100	100	60	3150	Cedar Mesa
4	100	2410	2310	100	60	2360	De Chelly
5	50	1504	1170	337	147	1220	Chinle
6	50	520	420	100	44	470	Navajo
7	**	262	Surf	262	77		8 5/8" to Surface

All plugs were Class 'G' neat cement. Plug #1 contained 2% CaCl₂ and was tagged at 5053'. All plugs were displaced with mud. Verbal approval by Wayne Townsend, BLM, to Larry A. Chambers, Chuska, 4:00 P.M., 12-19-91. Rig released 1430 hrs. 12-19-91.

Casing:
 13 3/8", 48# surface 0-212'
 8 5/8", 24# intermediate 0-1454'

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

Name & Signature BARRY A. WIELAND Title OPERATIONS MANAGER Date 5-27-93

(State Use Only)

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

RECEIVED
BLM

FORM APPROVED
BIA-14-20-603-373
Navajo Tribal

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Chuska Energy Company

3. Address and Telephone No.
3315 Bloomfield Hwy. Farmington, NM 87401 (505) 326-5525

4. Location of Well (Percent, Sec., T., R., M., or Survey Description)
**750' FNL, 1400' FEL Surface
 730' FNL, 960' FEL Subsurface Section 5, T42S, R25E**

SEP 10 1993

7. If Unit or CA, Agreement Designation
N/A

8. Well Name and No.
W. Clay Hill (A)

9. API Well No.
43-037-31625

10. Field and Pool, or Exploratory Area
Wildcat

11. County or Parish, State
San Juan, County

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/Leaking
	<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

CONFIDENTIAL

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.)

PLUG	%	FROM, MD	TO, MD	FT	SX	TOPS	ZONES COVERED
1	100	5573	5053	520	286	5164	ISMAY, DC, AKAH
2	100	4215	4115	100	60	4265	HERMOSA
3	100	3200	3100	100	60	3150	CEDAR MESA
4	100	2410	2310	100	60	2360	DE CHELLY
5	50	1504	1170	337	147	1220	CHINLE
6	50	520	420	100	44	470	NAVAJO
7	**	262	SURF	262	77		8 5/8" TO SURFACE
					734		

ALL PLUGS WERE CLASS 'G' NEAT CEMENT. PLUG 1 CONTAINED 2% CaCl2 AND WAS TAGGED AT 5053'. ALL PLUGS WERE DISPLACED WITH MUD. VERBAL APPROVAL BY WAYNE TOWNSEND, BLM, TO LARRY A. CHAMBERS, CHUSKA, 4:00 PM, 12-17-91. RIG RELEASED 1430 HRS, 12-19-91.

CASING 13 3/8", 48# SURFACE 0-2112'
 8 5/8", 24# INTERMEDIATE 0-1454'

Approved as to plugging of the well
 Liability under bond to be retained until
 surface restoration is completed.

I hereby certify that the foregoing is true and correct.
 Signed Young A. Chambers Title Production Eng. **APPROVED**

IAN 09 1992

Approved by _____ Title _____
 Conditions of approval, if any: _____

This U.S.C. Section 1004, 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 statement or representation or to any matter within its jurisdiction.

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

6. Lease Designation and Serial Number RTA 14-20-603-373
7. Indian Allottee or Tribe Name Navajo Tribal
8. Unit or Communitization Agreement N/A
9. Well Name and Number West Clay Hill 5B (A)
10. API Well Number 43-037-31625
11. Field and Pool, or Wildcat Wildcat

SUNDAY NOTICES AND REPORTS ON WELLS

1. Type of Well to which this notice or report applies: Oil Well Gas Well Other (specify) P & A

2. Name of Operator
Chuska Energy Company

3. Address of Operator
3315 Bloomfield Highway, Farmington, N.M. 87401

4. Telephone Number
505-326-5525

5. Location of Well 750' FNL, 1400' FEL (Surface)
Footage : 730' FNL, 960' FEL (Subsurface)
OO, Sec. T., R., M. : Sec. 5, T42S, R25E

County : San Juan
State : UTAH

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

NOTICE OF INTENT (Submit in Duplicate)	SUBSEQUENT REPORT (Submit Original Form Only)
<input checked="" type="checkbox"/> Abandonment	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Casing Repair
<input type="checkbox"/> Change of Plans	<input type="checkbox"/> Change of Plans
<input type="checkbox"/> Conversion to Injection	<input type="checkbox"/> Conversion to Injection
<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Fracture Treat
<input type="checkbox"/> Multiple Completion	<input type="checkbox"/> Other _____
<input type="checkbox"/> Other _____	
<input type="checkbox"/> New Construction	<input type="checkbox"/> New Construction
<input type="checkbox"/> Pull or Alter Casing	<input type="checkbox"/> Pull or Alter Casing
<input type="checkbox"/> Recompletion	<input type="checkbox"/> Shoot or Acidize
<input type="checkbox"/> Shoot or Acidize	<input type="checkbox"/> Vent or Flare
<input type="checkbox"/> Vent or Flare	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Water Shut-Off	
Approximate Date Work Will Start _____	Date of Work Completion _____

Report results of Multiple Completions and Recompletions to different reservoirs on WELL COMPLETION OR RECOMPLETION AND LOG form.
** Must be accompanied by a cement verification report.

13. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

PLUG	EXCESS %	FROM MD	TO MD	FT	SX	TOPS	ZONES COVERED
1	100	5600	5114	486	286	5164	Ismay, DC, Akah
2	100	4215	4115	100	60	4265	Hermosa
3	100	2410	2310	100	60	2360	De Chelly
4	50	1504	1170	337	147	1220	Chinle
5	50	520	420	100	44	470	Navajo
6	**	262	Surf.	262	77		8 5/8" to Surface

All plugs will be Class 'G' neat cement. Plug #1 to contain 2% CaCl₂. All plugs will be displaced with mud. Plug #1 will be tagged to verify depth prior to pumping second plug. Verbal approval by Wayne Townsend, BLM, to Larry A. Chambers, Chuska, 4:00 P.M. 11-17-91

Casing:
13 3/8", 48# Surface 0-212'
8 5/8", 24# Intermediate 0-1454'

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

Name & Signature BARRY A. WIELAND Title OPERATIONS MANAGER Date 5-27-93
(State Use Only)

SEP 10 1993

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

Get
Leads
RECEIVED

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 to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.

BIA 14-20-603-373

6. If Indian, Allottee or Tribe Name

Navajo Tribal

7. If Unit or CA, Agreement Designation

N/A

8. Well Name and No.

W. Clay Hill 5B(A)

9. API Well No.

43-037-31625

10. Field and Pool, or Exploratory Area

Wildcat

11. County or Parish, State

San Juan, County

SUBMIT IN TRIPLICATE

SEP 9

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Chuska Energy Company

3. Address and Telephone No.

3315 Bloomfield Hwy. Farmington, NM 87401 (505) 326-5525

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

750' FNL, 1400' FEL Surface
730' FNL, 960' FEL Subsurface Section 5, T42S, R25E

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 or Completion or Recompletion Report and Log)

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 cased, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

PLUG	%	FROM, MD	TO, MD	FT	SX	TOPS	ZONES COVERED
1	100	5600	5114	486	286	5164	ISMAY, DC, AKAH
2	100	4215	4115	100	60	4265	HERMOSA
3	100	2410	2310	100	60	2360	DE CHELLEY
4	50	1504	1170	337	147	1220	CHINLE
5	50	520	420	100	44	470	NAVAJO
6	**	262	SURF	262	77		8 5/8" TO SURFACE
						674	

ALL PLUGS WILL BE CLASS 'G' NEAT CEMENT. PLUG 1 TO CONTAIN 2% CaCl2. ALL PLUGS WILL BE DISPLACED WITH MUD. PLUG #1 WILL TAGGED TO VERIFY DEPTH PRIOR TO PUMPING SECOND PLUG. VERBAL APPROVAL BY WAYNE TOWNSEND, BLM, TO LARRY A. CHAMBERS, CHUSKA, 4:00 PM, 12-17-91.

CASING 13 3/8", 48# SURFACE 0-212'
 8 5/8", 24# INTERMEDIATE 0-1454'

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

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

Signed Yang H. Chen Title Production Eng. **APPROVED** 12/17/91

(This space for Federal or State office use)

Approved by _____ Title _____

Conditions of approval, if any: _____

JAN 09 1992
AREA MANAGER

IN REPLY REFER TO
(019)

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT
FARMINGTON RESOURCE AREA
1235 LA PLATA HIGHWAY
FARMINGTON, NEW MEXICO 87401

Attachment to Notice of

Re: Permanent Abandonment

Intention to Abandon

Well: 58(A) W.C. 14y H. 11

CONDITIONS OF APPROVAL

1. Plugging operations authorized are subject to the attached "General Requirements for Permanent Abandonment of Wells on Federal Leases."
2. Mark Kelly with the Farmington Office is to be notified at least 24 hours before the plugging operations commence (505) 326-6201.
3. Blowout prevention equipment is required.
4. The following modifications to your plugging program are to be made (when applicable):

Office Hours: 7:45 a.m. to 4:30 p.m.

GENERAL REQUIREMENTS FOR
PERMANENT ABANDONMENT OF WELLS ON FEDERAL AND INDIAN LEASES
FARMINGTON RESOURCE AREA

1. Secure prior approval either on a Sundry Notice (Form 3160-5) or verbally from the Fluids Drilling & Production Section at this office before changing the approved plugging program.
2. Plugging equipment used shall have separate mixing and displacement pumps and a calibrated tank to assure proper displacement of plugs. The Operator is responsible for providing all measuring devices needed to assure proper measurement of materials being used.
3. A proper tank or pit will be used to contain all fluids pumped from the well during plugging operations. Unattended pits are to be fenced.
4. All cement plugs are to be placed through tubing (or drillpipe) and shall be a minimum of 100 feet in length with 50% excess inside casing or 100% excess when plug is set in open hole or squeezed into perforations. 15.6#/gal slurry weight is to be used when using class B neat cement or when CaCl₂ is used. Use the recommended slurry weight of other type cements when they are used (Class C, Pozzolan etc.).
5. Any cement plugs placed when well is not full of fluid, or when well may be taking fluid, (i.e. across perms-unless bridge plug or retainer is used, across bad csg., or fresh water formations) will be tagged (touched) after cement has set to verify proper location.
 - 5a. Testing The first plug below the surface plug shall generally be tested by either tagging the plug with the working pipe string, or pressuring to a minimum pump (surface) pressure of 1000 psig, with no more than a 10 percent drop during a 15-minute period (cased hole only). If the integrity of any other plug is questioned, it must be tested in the same manner. Also, any cement plug which is the only isolating medium for a fresh water interval or a zone containing a valuable mineral deposit should be tested by tagging with the drill string.
6. Mud must be placed between plugs. Plugging mud is to be made up with a minimum of 15 lbs/bbl of sodium bentonite, and a nonfermenting polymer. Minimum consistency of plugging mud must be 9 lbs/gal and with a minimum viscosity of 50 sec/qt. Fresh water is to be utilized for mixing mud.
7. Following the placement of a cement plug, the withdrawal rate for at least the length of the cement plug shall not exceed 30 ft/min, in order to minimize the contamination of the plug.

8. Within 30 days after plugging work is completed, file a Sundry Notice (Subsequent Report of Abandonment, Form 3160-5), in quintuplicate with Area Manager, Bureau of Land Management, 1235 La Plata Highway, Farmington, NM 87401. The report should give in detail the manner in which the plugging work was carried out, the extent (by depths) of cement plugs placed, and the size and location (by depths) of casing left in the well. Show date well was plugged.

9. All permanently abandoned wells are to be marked with a regulation marker (4" pipe extending 4' above the ground line) containing the information as specified in 43 CFR 3162.6(d). Unless otherwise approved.

10. After plugging work is completed the surface is to be rehabilitated in accord with instructions from the Fluids Surface Management Section of the Farmington Resource Area Office.

All above are minimum requirements. The period of liability under the bond of record will not be terminated until the lease is inspected and surface work approved.

Please advise this office when the well location is ready for final inspection.

Failure to comply with the above conditions of approval may result in an assessment for noncompliance and/or a Shut-in Order being issued pursuant to 43 CFR 3163.1.

You are further advised that any instructions, orders or decisions issued by the Bureau of Land Management are subject to administrative review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4 and 43 CFR 4.700.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004
Expires: March 31, 19
5. Lease Designation and Serial
BIA 14-20-603-3
6. If Indian, Altona or Tribe
Navajo Tribal

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Chuska Energy Company

3. Address and Telephone No.
3315 Bloomfield Hwy. Farmington, NM 87401 (505) 326-5525

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
750' FNL, 1400' FEL Surface
730' FNL, 960' FEL Subsurface Section 5, T42S, R25E

7. If Unit or CA, Agreement I
N/A

8. Well Name and No.
W-024-5

9. API Well No.
43-037-31625

10. Field and Pool, or Exploration
Wildcat

11. County or Parish, State
San Juan, Count

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
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Lining 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 or recompletion reports)

CONFIDENTIAL

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 direct give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

EXCESS

PLUG	Ø	FROM, MD	TO, MD	FT	ØX	TOPS	ZONES COVERED
1	100	5600	5114	486	286	5164	ISMAY, DC, AKAH
2	100	4215	4115	100	60	4265	HERMOSA
3	100	2410	2310	100	60	2360	DE CHELLY
4	50	1504	1170	337	147	1220	CHINLE
5	50	520	420	100	44	470	NAVAJO
6	**	262	SURF	262	77		8 5/8" TO SURFACE

674

ALL PLUGS WILL BE CLASS 'G' NEAT CEMENT. PLUG 1 TO CONTAIN 2% CaCl₂. ALL PLUGS WILL BE DISPLACED WITH MUD. PLUG #1 WILL TAGGED TO VERIFY DEPTH PRIOR TO PUMPING SECOND PLUG. VERBAL APROVAL BY WAYNE TOWNSEND, BLM, TO LARRY A. CHAMBERS, CHUSKA, 4:00 PM, 12-17-91.

CASING 13 3/8", 48# SURFACE 0-212'
 8 5/8", 24# INTERMEDIATE 0-1454'

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

Signed Yang K. Chen Title Production Perm. Date 12/27/91

(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 representations as to any matter within its jurisdiction.

*See instruction on Reverse Side

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

SUNDAY NOTICES AND REPORTS ON WELLS			6. Lease Designation and Serial Number NOG 8702-1116
			7. Indian Allottee or Tribe Name Navajo Tribal
			8. Unit or Communitization Agreement None
			9. Well Name and Number West Clay Hill 5B (A)
1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other (specify)	2. Name of Operator Chuska Energy Company	3. Address of Operator 3315 Bloomfield Highway, Farmington, N.M. 87401	4. Telephone Number 505-326-5525
5. Location of Well 750' FNL, 1400' FEL (SURFACE) Footage : 730' FNL, 960' FEL (SUBSURFACE) QQ, Sec. T., R., M. : Sec. 33, T41S, R25E		10. API Well Number 43-037-31625	
		11. Field and Pool, or Wildcat Wildcat	
12. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE REPORT OR OTHER DATA			

<p>NOTICE OF INTENT (Submit in Duplicate)</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Abandonment</td> <td><input type="checkbox"/> New Construction</td> </tr> <tr> <td><input type="checkbox"/> Casing Repair</td> <td><input type="checkbox"/> Pull or Alter Casing</td> </tr> <tr> <td><input type="checkbox"/> Change of Plans</td> <td><input type="checkbox"/> Recompletion</td> </tr> <tr> <td><input type="checkbox"/> Conversion to Injection</td> <td><input type="checkbox"/> Shoot or Acidize</td> </tr> <tr> <td><input type="checkbox"/> Fracture Treat</td> <td><input type="checkbox"/> Vent or Flare</td> </tr> <tr> <td><input type="checkbox"/> Multiple Completion</td> <td><input type="checkbox"/> Water Shut-Off</td> </tr> <tr> <td><input type="checkbox"/> Other _____</td> <td></td> </tr> </table> <p>Approximate Date Work Will Start _____</p>	<input type="checkbox"/> Abandonment	<input type="checkbox"/> New Construction	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Pull or Alter Casing	<input type="checkbox"/> Change of Plans	<input type="checkbox"/> Recompletion	<input type="checkbox"/> Conversion to Injection	<input type="checkbox"/> Shoot or Acidize	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Vent or Flare	<input type="checkbox"/> Multiple Completion	<input type="checkbox"/> Water Shut-Off	<input type="checkbox"/> Other _____		<p>SUBSEQUENT REPORT (Submit Original Form Only)</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Abandonment</td> <td><input type="checkbox"/> New Construction</td> </tr> <tr> <td><input type="checkbox"/> Casing Repair</td> <td><input type="checkbox"/> Pull or Alter Casing</td> </tr> <tr> <td><input type="checkbox"/> Change of Plans</td> <td><input type="checkbox"/> Shoot or Acidize</td> </tr> <tr> <td><input type="checkbox"/> Conversion to Injection</td> <td><input type="checkbox"/> Vent or Flare</td> </tr> <tr> <td><input type="checkbox"/> Fracture Treat</td> <td><input type="checkbox"/> Water Shut-Off</td> </tr> <tr> <td><input checked="" type="checkbox"/> Other <u>Spud/Surface Casing</u></td> <td></td> </tr> </table> <p>Date of Work Completion _____</p> <p>Report results of Multiple Completions and Recompletions to different reservoirs on WELL COMPLETION OR RECOMPLETION AND LOG form. ** Must be accompanied by a cement verification report.</p>	<input type="checkbox"/> Abandonment	<input type="checkbox"/> New Construction	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Pull or Alter Casing	<input type="checkbox"/> Change of Plans	<input type="checkbox"/> Shoot or Acidize	<input type="checkbox"/> Conversion to Injection	<input type="checkbox"/> Vent or Flare	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Water Shut-Off	<input checked="" type="checkbox"/> Other <u>Spud/Surface Casing</u>	
<input type="checkbox"/> Abandonment	<input type="checkbox"/> New Construction																										
<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Pull or Alter Casing																										
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<input type="checkbox"/> Conversion to Injection	<input type="checkbox"/> Shoot or Acidize																										
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<input type="checkbox"/> Conversion to Injection	<input type="checkbox"/> Vent or Flare																										
<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Water Shut-Off																										
<input checked="" type="checkbox"/> Other <u>Spud/Surface Casing</u>																											

13. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details and give pertinent dates. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

MIRU Aztec Rig #184. Spudded 0400 hrs. 11-8-91. Drilled 12 1/4" hole to 514'. RU and ran 12 jts 8 5/8", 24#, J-55 STC casing and landed at 507'. Cemented with 375 sx Class "G" cement with 2% CaCl2 & 1/4#sk Celloflake. Good returns to surface. Notification of spud by Jim Myers to BLM, Mr. Beckman, at 4:00 P.M., 11-7-91

SFP 10 1993

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

Name & Signature *B.A. Wieland* BARRY A. WIELAND Title OPERATIONS MANAGER Date 5-27-93

(State Use Only)

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

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill new wells, deepen existing wells, or to reenter plugged and abandoned wells.
Use APPLICATION FOR PERMIT for such proposals.

6. Lease Designation and Serial Number BIA 14-20-603-373
7. Indian Allottee or Tribe Name Navajo Tribal
8. Unit or Communitization Agreement N/A
9. Well Name and Number West Clay Hill 5B(A)
10. API Well Number 43-037-31625
11. Field and Pool, or Wildcat Wildcat

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other (specify) _____	
2. Name of Operator Chuska Energy Company	
3. Address of Operator 3315 Bloomfield Highway, Farmington, N.M. 87401	
4. Telephone Number 505-326-5525	County : San Juan State : UTAH
5. Location of Well 750' FNL 1400' FEL (Surface) 730' FNL 960' FEL (Subsurface) QQ. Sec. T., R., M. : Sec. 5, T42S, R25E	

12. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA					
<p style="text-align: center;">NOTICE OF INTENT (Submit in Duplicate)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Abandonment <input type="checkbox"/> Casing Repair <input type="checkbox"/> Change of Plans <input type="checkbox"/> Conversion to Injection <input type="checkbox"/> Fracture Treat <input type="checkbox"/> Multiple Completion <input type="checkbox"/> Other _____ </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> New Construction <input type="checkbox"/> Pull or Alter Casing <input type="checkbox"/> Recompletion <input type="checkbox"/> Shoot or Acidize <input type="checkbox"/> Vent or Flare <input type="checkbox"/> Water Shut-Off </td> </tr> </table> <p>Approximate Date Work Will Start _____</p>	<input type="checkbox"/> Abandonment <input type="checkbox"/> Casing Repair <input type="checkbox"/> Change of Plans <input type="checkbox"/> Conversion to Injection <input type="checkbox"/> Fracture Treat <input type="checkbox"/> Multiple Completion <input type="checkbox"/> Other _____	<input type="checkbox"/> New Construction <input type="checkbox"/> Pull or Alter Casing <input type="checkbox"/> Recompletion <input type="checkbox"/> Shoot or Acidize <input type="checkbox"/> Vent or Flare <input type="checkbox"/> Water Shut-Off	<p style="text-align: center;">SUBSEQUENT REPORT (Submit Original Form Only)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Abandonment * <input type="checkbox"/> Casing Repair <input type="checkbox"/> Change of Plans <input type="checkbox"/> Conversion to Injection <input type="checkbox"/> Fracture Treat <input checked="" type="checkbox"/> Other <u>Spud/Casing Report</u> </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> New Construction <input type="checkbox"/> Pull or Alter Casing <input type="checkbox"/> Shoot or Acidize <input type="checkbox"/> Vent or Flare <input type="checkbox"/> Water Shut-Off </td> </tr> </table> <p>Date of Work Completion _____</p> <p><small>Report results of Multiple Completions and Recompletions to different reservoirs on WELL COMPLETION OR RECOMPLETION AND LOG form. * Must be accompanied by a cement verification report.</small></p>	<input type="checkbox"/> Abandonment * <input type="checkbox"/> Casing Repair <input type="checkbox"/> Change of Plans <input type="checkbox"/> Conversion to Injection <input type="checkbox"/> Fracture Treat <input checked="" type="checkbox"/> Other <u>Spud/Casing Report</u>	<input type="checkbox"/> New Construction <input type="checkbox"/> Pull or Alter Casing <input type="checkbox"/> Shoot or Acidize <input type="checkbox"/> Vent or Flare <input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Abandonment <input type="checkbox"/> Casing Repair <input type="checkbox"/> Change of Plans <input type="checkbox"/> Conversion to Injection <input type="checkbox"/> Fracture Treat <input type="checkbox"/> Multiple Completion <input type="checkbox"/> Other _____	<input type="checkbox"/> New Construction <input type="checkbox"/> Pull or Alter Casing <input type="checkbox"/> Recompletion <input type="checkbox"/> Shoot or Acidize <input type="checkbox"/> Vent or Flare <input type="checkbox"/> Water Shut-Off				
<input type="checkbox"/> Abandonment * <input type="checkbox"/> Casing Repair <input type="checkbox"/> Change of Plans <input type="checkbox"/> Conversion to Injection <input type="checkbox"/> Fracture Treat <input checked="" type="checkbox"/> Other <u>Spud/Casing Report</u>	<input type="checkbox"/> New Construction <input type="checkbox"/> Pull or Alter Casing <input type="checkbox"/> Shoot or Acidize <input type="checkbox"/> Vent or Flare <input type="checkbox"/> Water Shut-Off				

13. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Chuska spud in on December 2, 1991, as a re-entry to Duncan Jeep Federal #1. Chuska assumed approval granted by way of letter from BLM/BIA granting approval to conduct activities in area. This Sundry Notice serves as a correction to update BLM files properly.

SEP 10 1993

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

Name & Signature	BARRY A. WIELAND	Title OPERATIONS MANAGER
(State Use Only)		Date 5-27-93

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Feb Sundry

RECEIVED
FEB 03 1992

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

3. Lease Designation and Serial No.
BIA 14-20-603-373

6. If Indian, Altonce or Tribe Name
Navajo Tribal

7. If Unit or CA, Agreement Designation
N/A

8. Well Name and No.
W. Clay Hill 5B(A)

9. API Well No.
43-037-31625

10. Field and Pool, or Exploratory Area
Wildcat

11. County or Parish, State
San Juan County, UT

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
 Chuska Energy Company

3. Address and Telephone No.
 3315 Bloomfield Highway, Farmington, NM 87401 505-326-5525

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
 750' FNL 1400' FEL (Surface)
 730' FNL 960' FEL (Subsurface)
 5-T42S-R25E

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"/> Subsequent Report <input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> End of Well Completion <input checked="" type="checkbox"/> Plugging Back <input type="checkbox"/> Casing Repair <input type="checkbox"/> Altering Casing <input type="checkbox"/> Other <u>Spud/Casing Report</u>
	<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 <small>(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)</small>

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent data, 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.)*

Chuska spud in on December 2, 1991 as a re-entry to Duncan Jeep Federal #1. Chuska assumed approval granted by way of letter from BLM/BIA granting approval to conduct activities in area. This Sundry Notice serves as a correction to update BLM files properly.

CONFIDENTIAL

RECEIVED
BLM
92 JAN 27 PM 12:43
FARMINGTON, N.M.

SEP 0 1992

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

Signed *Alu Sundry* Title *Land* Date *1-27-92*

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____

Conditions of approval, if any:

ACCEPTED FOR RECORD
JAN 30 1992
FARMINGTON RESOURCE AREA
BY *SM*

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
Operator

10/22/93

api num: 43-037-31625

entity:

well name: West Clay Hill 5B-A (Re-entry)

operator: CHUSKA ENERGY COMPANY

field: Undesignated

confidential flag: - confidential expires:

MAIL WELL DAT
prod zone: sec 5

twonshp 425

menu: opt 00
range qr-qr
25E NWNE

meridian:

alt addr flag:

*** application to drill, deepen, or plug back ***

lease number: BIA 14-20-603-373

lease type: 2

well type: OW

surface loc: 750 FNL 1400 FEL

unit name:

prod zone loc: 730 FNL 960 FEL

depth: 5675

proposed zone: IS-DC

elevation: 4612 GR

apd date: 11-15-71

auth code: 649-3-3

*** completion information ***

date recd:

la/pa date:

spud date:

compl date:

total depth:

producing intervals:

bottom hole:

first prod:

well status:

24hr oil: 24hr gas:

24hr water:

gas/oil ratio:

*** well comments:

api gravity:

BLM APD Approval Date Used; Directional; BIT - NENE

opt: 21 api:

zone:

date(yymm):

enty

acct:

DME

RE-ENTRY. This well is in computer, but this is a new APD for the Re-entry. Update computer, index, etc. as needed.

PA

OIL AND GAS

RJF	
FRM	
SLS	
GLH	
DTS	
KNH/EA	
2- [handwritten]	
3- MICROFILM	
4- 3 FILE	