Form 9-331 C
(May 1963)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK: DRILL [XX] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [XX] GAS WELL [ ] OTHER SINGLE ZONE [ ] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: Natural Gas Corporation of California

3. ADDRESS OF OPERATOR: 85 South 200 East, Vernal, UT 84078 Telephone 801-789-4573

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 803' FNL, 688' FEL, Section 21, T.9S., R.18E. (NE¼ NE¼)
At proposed prod. zone

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

5. LEASE DESIGNATION AND SERIAL NO.: 21534

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Federal

9. WELL NO.: 41-21I

10. FIELD AND POOL, OR WILDCAT: ~~Pleasant Valley~~ Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Section 21, T.9S., R.18E

12. COUNTY OR PARISH: Uintah

13. STATE: Utah

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

16. NO. OF ACRES IN LEASE: 640

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: 5850 Wasatch

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 5047' Ungr. Gr.

22. APPROX. DATE WORK WILL START*: June 1, 1982

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12-1/4	9-5/8	36# K-55	300	To surface
7-7/8	5-1/2	17# N-80	T.D.	As required to protect the oil shale and producing formation.

See attached sheets for additional information.

RECEIVED
APR 07 1982
DIVISION OF
OIL, GAS & MINING

APPROVED BY THE STATE
OF UTAH DIVISION OF
OIL, GAS, AND MINING
DATE: 4/8/82
BY: B. Feight

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 William A. Ryan — TITLE Petroleum Engineer — DATE 4/5/82

(This space for Federal or State office use)

PERMIT NO. 43-047-31198 APPROVAL DATE

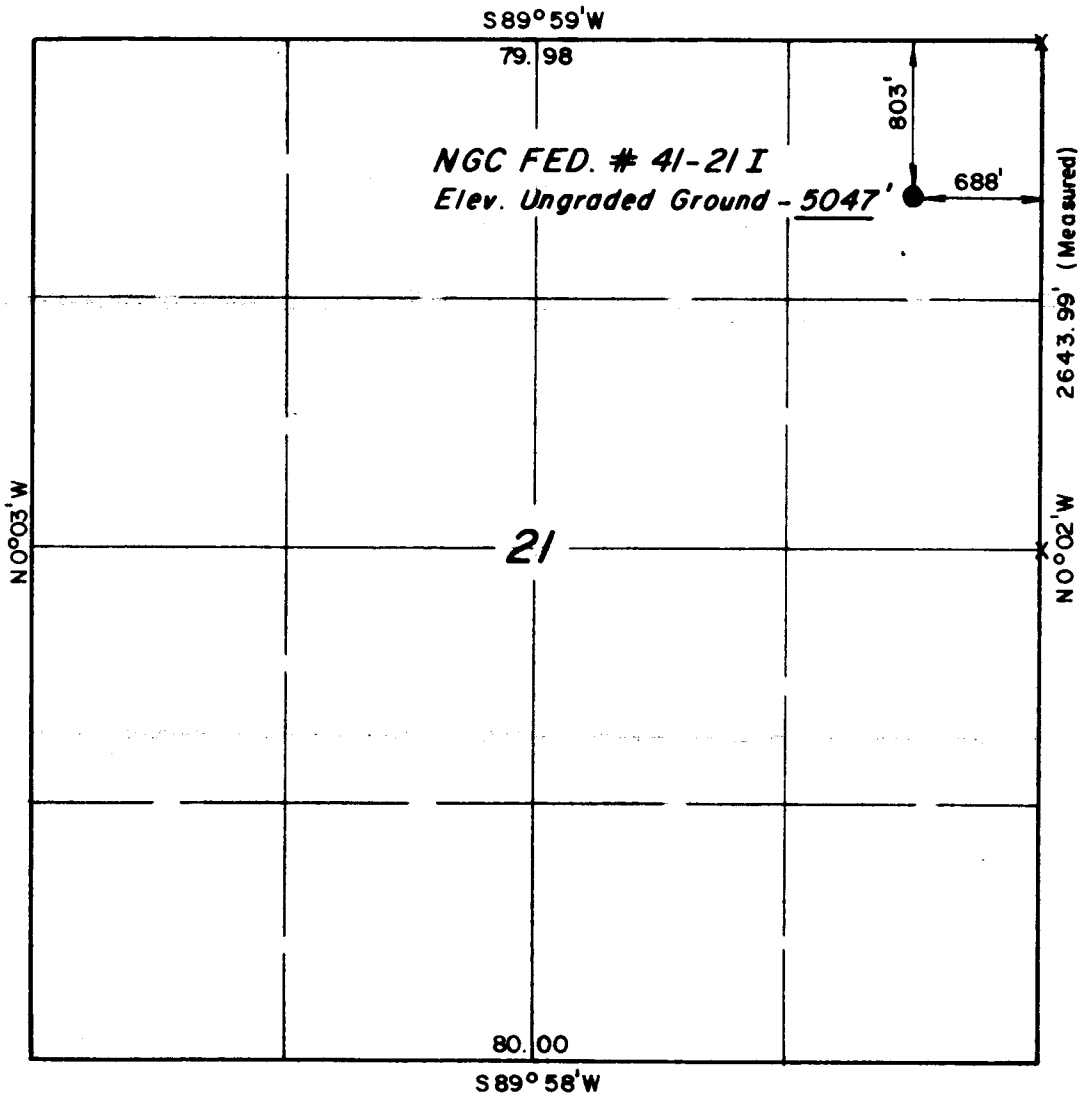
APPROVED BY TITLE DATE

CONDITIONS OF APPROVAL, IF ANY:

cc: Minerals Management Service; Div. OG&M; Operations; ERHenry; CTClark

*See Instructions On Reverse Side

T 9 S , R 18 E , S.L.B.&M.



X = Section Corners Located

PROJECT

NATURAL GAS CORP. OF CALIF.

Well location, *NGC FED. # 41-21 I*, located as shown in the NE 1/4 NE 1/4 Section 21, T9S, R18E, S.L.B.&M. Uintah County, Utah.

N

CERTIFICATE

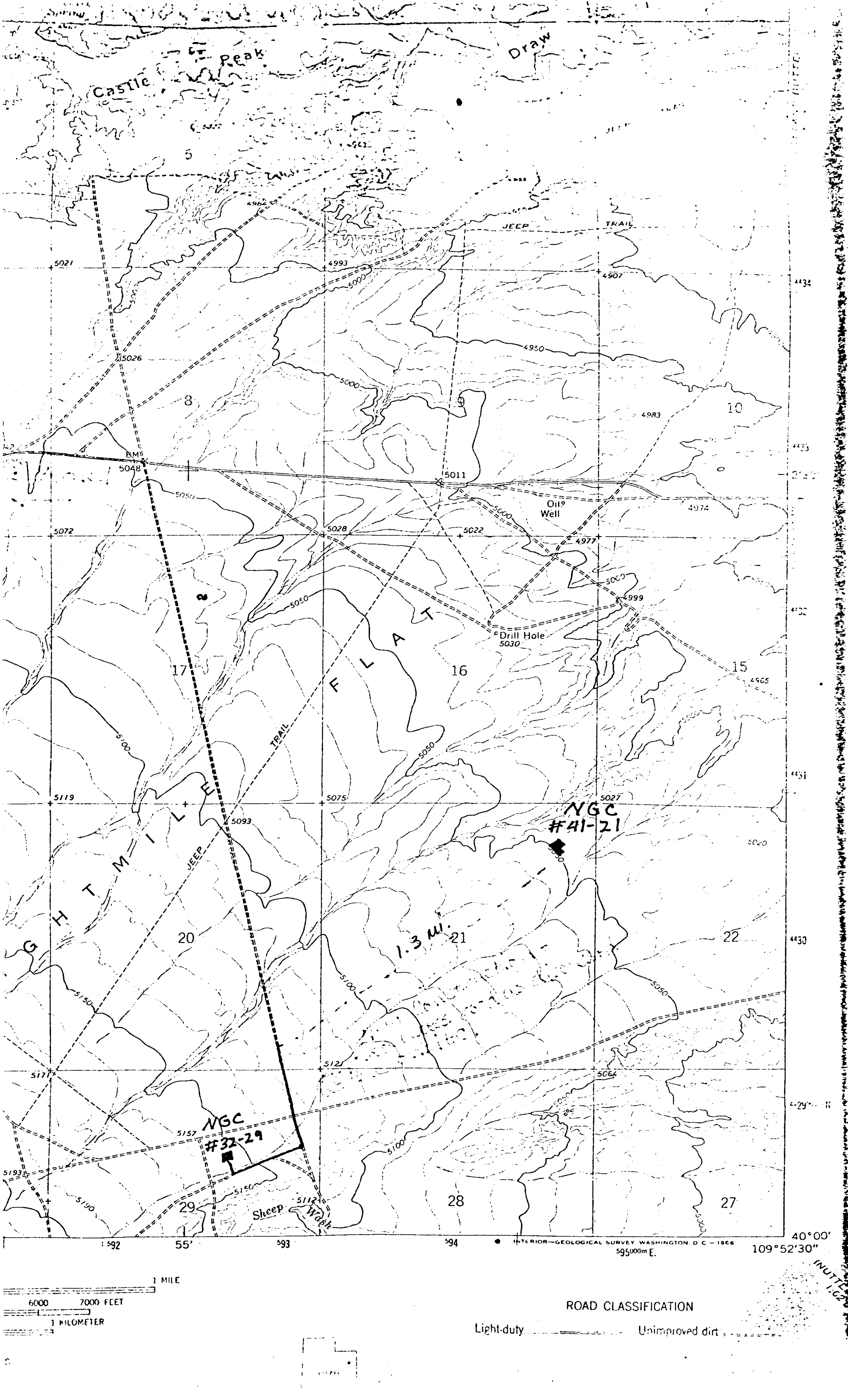
THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Lawrence C. Kay

REGISTERED LAND SURVEYOR
REGISTRATION № 3137
STATE OF UTAH

UINTAH ENGINEERING & LAND SURVEYING
P. O. BOX Q – 85 SOUTH - 200 EAST
VERNAL, UTAH - 84078

SCALE	1" = 1000'	DATE	3/31/82
PARTY	RK BK RP	REFERENCES	GLO Plat
WEATHER	Fair	FILE	NATURAL GAS



Castle Peak Draw
JEEP TRAIL
EIGHTMILE FLAT
Oil Well
Drill Hole
NGC #41-21
NGC #32-29
1.3 MI.
Sheep Wash
5
8
9
10
15
16
17
20
21
22
27
28
29
592
593
594
595000m E.
55'
40°00'
109°52'30"
INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1966
1 MILE
6000
7000 FEET
1 KILOMETER
ROAD CLASSIFICATION
Light-duty
Unimproved dirt

MINERALS MANAGEMENT SERVICE
OIL & GAS OPERATIONS
RECEIVED

APR 22 1982

SALT LAKE CITY, UTAH

Identification CER/EA No. 247-82

United States Department of the Interior
Geological Survey
2000 Administration Bldg.
1745 West 1700 South
Salt Lake City, Utah 84104

NEPA CATEGORICAL EXCLUSION REVIEW

PROJECT IDENTIFICATION

Operator: Natural Gas Corporation of California

Project Type: Oil Well

Project Location: 803' FNL 688' FEL Section 21, T. 9S., R. 18E.

Well No. 41-21 I Lease No. U-21534

Date Project Submitted: April 7, 1982

FIELD INSPECTION Date: April 16, 1982

Field Inspection Participants:
Greg Darlington - MMS, Vernal
Gary Slagel - BLM, Vernal
Rick Canterbury - NGCC
Leonard Heeney - Ross Construction
Mr. Gorr - Dirt Contractor

Related Environmental Documents: Unit Resource Analysis, Duchesne Planning Unit, BLM, Vernal.

I have reviewed the proposal in accordance with the categorical exclusion review guidelines. This proposal would not involve any significant effects and, therefore, does not represent an exception to the categorical exclusions.

April 21, 1982
Date Prepared

Gregory Darlington
Environmental Scientist

I concur

APR 22 1982
Date

W. P. Martin
District Supervisor

FOR E. W. GUYNN
DISTRICT OIL & GAS SUPERVISOR

Proposed Actions:

NGCC plans to drill the 41-21 I Pleasant Valley well, a 5850' oil test of various formations. At the onsite a new access road of 1.3 mile length agreed upon to reach the location and be more convenient to other locations of NGCC wells. A pad 200' by 300' and a reserve pit 100' by 150' are planned for the location.

Recommended Approval Conditions:

The operator agrees to accept and adhere to the following conditions in addition to the plans outlined in the APD:

1. BLM stipulations
2. Lease stipulations
3. Provide adequate logs for the identification of other minerals as requested in the Mineral Evaluation Report and Mining Report.

FIELD NOTES SHEET

Date of Field Inspection: April 16, 1982

Well No.: 41-21 I.

Lease No.: U-21534

Approve Location: ✓

Approve Access Road: Changed at onsite

Modify Location or Access Road: Change the access road per the attached map

Rearrange topsoil between 2 and 8

to be more convenient for company and keep it out of dry washes.

Evaluation of Criteria for Categorical Exclusion

1. Public Health and Safety
2. Unique Characteristics
3. Environmentally Controversial Items
4. Uncertain and Unknown Risks
5. Establishes Precedents
6. Cumulatively Significant
7. National Register Historic Places
8. Endangered/Threatened Species
9. Violate Federal, State, Local, or Tribal Laws

If this project is not eligible for Categorical Exclusion circle the numbers of the above criteria requiring the preparation of an EA.

Comments and special conditions of approval discussed at onsite: (include local topography) Good location; The road was improved. Although the change will require a slightly longer road it will be more convenient for use by company field personnel and less subject to erosion by sizeable cross drainages.

CATEGORICAL EXCLUSION REVIEW INFORMATION SOURCE

Criteria 16 DM 2.3.A	Federal/State Agency: Corre-spondence (date)	Federal/State Agency: Phone check (date)	Federal/State Agency: Meeting (date)	Local and private corre-spondence (date)	Previous NEPA	Other studies and reports	Staff expertise	Onsite inspection (date)	Other
ublic health nd safety							1,2,4,6	April 16 1982	
Unique charac-eristics							1,2,4,6		
Environmentally controversial							1,2,4,6		
Uncertain and unknown risks							1,2,4,6		
Establishes precedents							1,2,4,6		
Cumulatively significant							1,2,4,6		
National Register historic places							1,6		
Endangered/ threatened species							1,6		
Violate Federal, State, local, tribal law							1,2,4,6	✓	

CATEGORICAL EXCLUSION REVIEW COMMON REFERENCE LEGEND

1. Surface Management Agency Input
2. Reviews Reports, or information received from Geological Survey (Conservation Division, Geological Division, Water Resource Division, Topographic Division)
3. Lease Stipulations/Terms
4. Application Permit to Drill
5. Operator Correspondence
6. Field Observation
7. Private Rehabilitation Agreement
8. Onsite Requirements Other than the Items 1.-7.

IN REPLY REFER TO

T & R
U-802

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
VERNAL DISTRICT OFFICE
170 South 500 East
Vernal, Utah 84078

April 19, 1982

APR 1982
RECEIVED
Bureau of Land Management
Service
Vernal, Utah

Ed Guynn, District Engineer
USGS, Conservation Division
2000 Administration Building
1745 West 1700 South
Salt Lake City, Utah 84104

Re: Joint Onsite Inspection
Natural Gas Corporation
T9S, R17E, Sec. 9 Well #13-9 H
T9S, R18E, Sec. 21 Well #41-21
T9S, R19E, Sec. 18 Well #33-18 J

Dear Mr. Guynn:

On April 16, 1982, a joint onsite inspection was made of the above reference well site locations and proposed access roads by people representing Natural Gas Corporation, Ross Construction, USGS, and BLM. We feel that the surface use and operating plans are adequate with the following stipulations:

1. Construction and maintenance of roads, rehabilitation of disturbed areas, and construction of pipeline routes shall be in accordance with the surface use standards as set forth in the booklet, "Surface Operating Standards for Oil and Gas Exploration and Development."

2. The maximum width of access roads will be 30 feet total disturbed area. Turnouts will not be required and travelling off the right-of-way will not be allowed.

3. Topsoil will be stockpiled as addressed in the applicants 13 Point Plan. Our office recommends the top 6-10 inches of topsoil material be stockpiled.

4. The BLM will be notified at least 24 hours prior to any contruction.

5. The BLM will be notified at least 24 hours prior to any rehabilitation.

6. A burn pit will not be construct. There will be no burying of garbage or trash at the location. No trash will be thrown in the reserve pit. All trash must be contained and hauled to the nearest sanitary landfill.

7. All permanent (on site for six (6) months durantion or longer) structures constructed or installed, including the pumpjack, shall be painted a flat, non-reflective, earth tone color to match Tnemec 23-08351 Mesa Brown Enduratone or an approved equal. All facilities

shall be painted within 6 months of when the production facilities are put in place. Facilities that are required to comply with OSHA (Occupational Safety and Health Act) standards are excluded.

8. Reserve pits will be fenced with a wire mesh fence topped with at least one strand of barbed wire.

9. A muffler system will be installed on all pumping units.

10. At location #13-9 H, the topsoil will be stockpiled between points 1 and 8.

11. At location #41-21, the topsoil will be stock piled between points 1 and 2. The access road will be as shown on the attached map.

12. At location #33-18 J, the topsoil will be stock piled between points 1 and 8. The fence crossing to this location will require a cattle-guard. There will be an 18" culvert required in this access road.

An archaeological clearance has been conducted by Utah Archaeological Resources of the proposed drill sites and access roads. No cultural materials were located on the surface of the survey areas.

The proposed activities do not jeopardize listed, threatened or endangered flora/fauna and their habitats.

Sincerely,

Ralph J. Heft Area Manager
Diamond Mountain Resource Area

Enclosure

cc: USGS, Vernal

Ten Point Plan
Pleasant Valley Prospect
N.G.C. #41-21I Federal
Section 21, T.9S., R.18E
Uintah County, Utah

1. Surface Formation: Uintah.

2. Estimated Formation Tops and Datum:

Formation	Depth	Datum
Green River	1160	3990
Oil Shale Facies	1860	3200
Delta Facies	2910	2150
Green Shale Facies	3900	1160
Black Shale Facies	4920	140
Green River Lime	5470	- 410
Wasatch	5650	- 590
T.D.	5850	- 790

3. Producing Formation Depth: 5500 - T.D.

4. Proposed Casing Program:

Hole Size	Casing Size	Weight/Ft.	Setting Depth	Casing New/Used
12-1/4	9-5/8	36#, K-55	500	To surface - new
7-7/8	5-1/2	17#, N-80	T.D.	As required to protect the oil shale & producing formations - new

5. BOP and Pressure Containment Data: A 3000 psi WP BOP system as described in the BOP and Pressure Containment Data (attached) will be installed and maintained from under the surface casing. BOP system including the casing will be pressure tested to a minimum of 3000 psi for 30 minutes prior to drilling and will be mechanically checked daily during drilling operations.

6. Mud Program:

Interval	Mud Weight lbs./gal.	Viscosity Sec./Qt.	Fluid Loss ML/30 mins.	Mud Type
0-500	Clear water	---	No Control	Water/Gel
500-T.D.	9.5	35	10cc or less	Brine

7. Auxiliary Equipment: Upper Kelly cock, full opening stabbing valve, 2½" choke manifold, and pit level indicator.

8. Testing, Coring, Sampling and Logging:

a) Testing: Drill stem tests may be conducted at the discretion of the well site geologist.
b) Coring: One core in the Lower Green River Formation.
c) Sampling: cutting samples will be collected by the drilling contractor at 10' intervals from surface to T.D.
d) Logging:

Type	Interval
DI/GR and SP	
FDC-CNL/GR and F-Log Overlay	
BHC Sonic/GR and Caliper	
Possibility: Proximity log-Microlog w/GR and Cal	

9. Abnormalities (including sour gas):

No abnormal temperatures, pressures or other potential hazards are anticipated.

10. Drilling Schedule:

Anticipated starting date - June 1, 1982. Duration of operations - 30 days.

NATURAL GAS CORPORATION OF CALIFORNIA

85 South 200 East
Vernal, Utah 84078
(801) 789-4573

April 5, 1982

Mr. E. W. Guynn
Minerals Management Service
2000 Administration Building
1745 West 1700 South
Salt Lake City, UT 84104

Division of Oil, Gas & Mining
4241 State Office Building
Salt Lake City, UT 84114

Re: NGC #41-21I Federal
NE NE Section 21, T.9S., R.18E.
Uintah County, Utah
Pleasant Valley area

Gentlemen:

Enclosed are the following documents relating to drilling the above captioned well:

1) Application for Permit to Drill
2) Surveyor's Plat
3) Ten Point Plan
4) 13 Point Surface Use Plan

Your early consideration and approval of this application would be appreciated. Should you require additional information, please contact this office.

Yours truly,

William A Ryan

William A. Ryan
Petroleum Engineer

/kh

Encls.

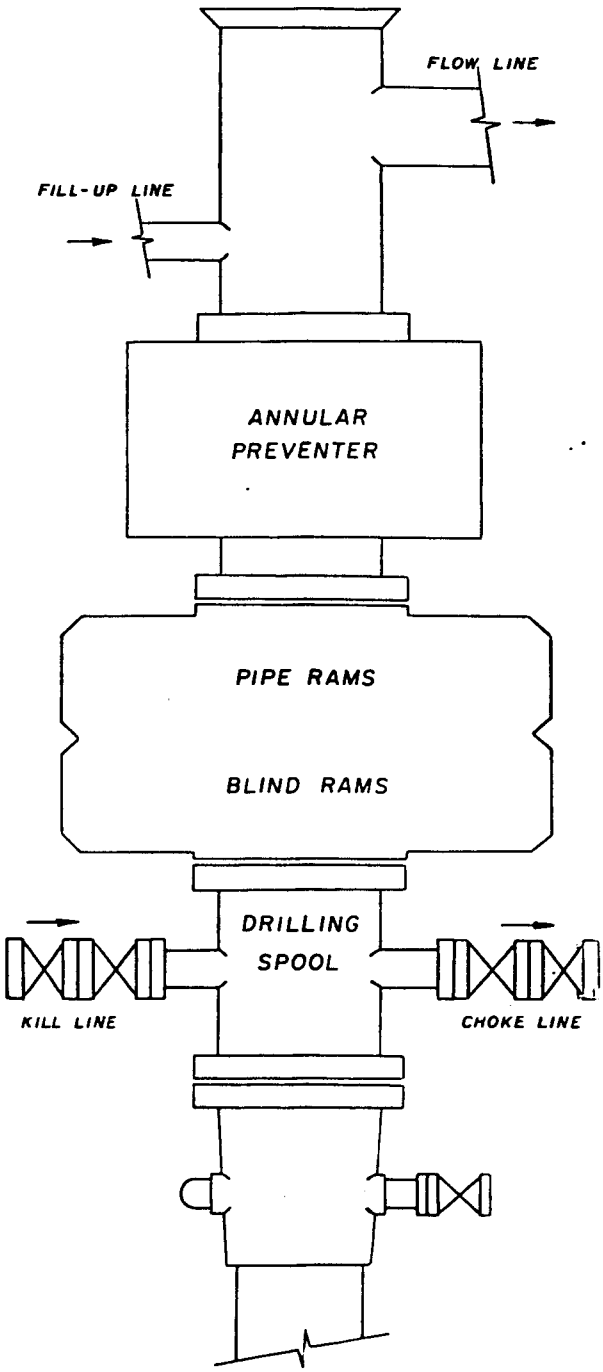
cc: Operations
C. T. Clark
E. R. Henry

RECEIVED
APR 07 1982
DIVISION OF
OIL, GAS & MINING

NATURAL GAS CORPORATION
OF
CALIFORNIA

BOP AND PRESSURE CONTAINMENT DATA

NGC Well #41-21I Federal
Section 21, T.9S., R.18E.
Uintah County, Utah



1. BOP equip shall consist of a double gate, hydraulically operated preventer with pipe & blind rams or two single ram type preventers, one equipped w/pipe rams, the other w/blind rams.

2. BOP's are to be well braced w/ hand controls extended clear of substructure.

3. Accumulator to provide closing pressure in excess of that required w/sufficient volume to operate all components.

4. Auxiliary equipment: Lower kelly cock, full opening stabbing valve, 2½" choke manifold, pit level indicator &/or flow sensors w/alarms.

5. All BOP equipment, auxiliary equipment stand pipe & valves & rotary hose to be tested to the rate pressure of the BOP's at time of installation & every 30 days thereafter. BOP's to be mechanically checked daily.

6. Modification of hook-up or testing procedure must be approved in writing on tour reports by wellsite representative.

Natural Gas Corporation of California

13 Point Surface Use Plan

for

Well Location

N.G.C. #41-21I

Located in

Section 21, T.9S., R.18E., S.L.B. & M.

Uintah County, Utah

1. EXISTING ROADS

See attached topographic map A.

To reach N.G.C. Well #41-21I, proceed west from Myton, Utah along U.S. Highway 40 for 1.5 miles to its junction with U.S. Highway 53; proceed south two miles to its junction with County Road #216. Follow this road south and east approximately 16 miles. At this point proceed south and west on an intersecting road for approximately one mile. At this point, the planned access road will start.

At the present time, no construction is anticipated along any portion of the described road.

2. PLANNED ACCESS ROAD

See attached topographic map B.

Please see attached application for right-of-way for additional off-lease right-of-way information.

The access road will be constructed to the following standards:

1) Width - The running surface will be 18 feet and the total disturbance width including the ditches will not exceed 40 feet.
2) Maximum grade - 3%.
3) Turnouts - None.
4) Drainage designs - Ditches will be constructed on each side of the road, V-shaped, 1 foot deep at 3:1 slopes.
5) Location and size of culverts, major cuts and fills - There will be one low water crossing constructed on the road approximately 1/4 mile before reaching the location.
6) Surfacing materials - None.
7) Gates, cattleguards, or fence cuts - None.
8) The proposed road has been flagged.

3. LOCATION OF EXISTING WELLS

The following wells are located within a 1 mile radius of the location site.

1) Water Wells - None.
2) Abandoned Wells - None.
3) Temporarily Abandoned Wells - None.

4) Disposal Wells - None.

5) Drilling Wells - None.

6) Producing Wells - None.

7) Shut-in Wells - None.

8) Injection Wells - None.

9) Monitoring or observation wells for other resources - None.

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

A. (1) Tank batteries - none.
(2) Production facilities - none.
(3) Oil gathering lines - none.
(4) Gas gathering lines - none.

B. (1) In the event production is established, all petroleum production facilities are to be contained within the proposed location site. In the event that production of oil from this well is established, a berm will be constructed around the tank battery large enough to contain the contents of tanks.

(2) Construction methods and materials - Production facilities will be placed on the proposed pad. Construction materials will come from the unused portion of the pad.

(3) Livestock and wildlife protection - The evaporation pond will be fenced on all four sides and overhead wire with flagging installed, if there is oil in the pit.

C. The rehabilitation of distrubed areas no longer required for the production of this well will be completed by backfilling, recontouring, topsoiling and seeding.

5. LOCATION AND TYPE OF WATER SUPPLY

See attached topographic map A .

Water will be taken from below the Pariette Draw wild life management area. The water will be hauled by truck over existing roads to the location.

Please see the attached agreement between Natural Gas Corporation and the State of Utah.

6. SOURCE OF CONSTRUCTION MATERIALS

All construction materials for this location site and access road will be borrow materials, accumulated during construction of the location site. No additional road gravels or pit lining material from other sources are anticipated at this time, but if they are required, the appropriate actions will be taken to acquire them from private sources.

7. METHODS FOR HANDLING WASTE DISPOSAL

1) Cuttings, drilling fluids and produced fluids - A reserve pit will be constructed. The reserve pit will be approximately 10' deep and at least one-half of this depth shall be below the surface of the existing ground.

   One-half of the reserve pit will be used as a fresh water storage area during the drilling of this well and the other one-half will be used to store nonflammable materials such as cuttings, salts, drilling fluids, chemicals, produced fluids, etc.

   Prior to the onset of drilling, a "stock tight" fence shall be installed on three sides of the reserve pit. This fence will be either (1) woven wire at least 28 inches high and within 4 inches of ground surface with two strands of barbed wire above the woven wire with 10-inch spacing, or, (2) at least five strands of barbed wire spaced, starting from the ground, at approximately 6-, 8-, 10-, 12-, and 12-inch intervals. At the completion of drilling operations, the fourth side of the reserve pit will be fenced and allowed to dry completely before the pit is backfilled. If there is oil on the pits, overhead wire and flagging will be installed on the pits.

   If deemed necessary by the agencies concerned to prevent contamination to surrounding areas, the reserve pit will be lined with a gel.

2) Sewage - A portable chemical toilet will be supplied for human waste.

3) Garbage - Trash cages will be on all locations and all trash will be removed to an authorized landfill.

4) Site Clean-up - Immediately after the rig is moved out, the area around the well site will be cleaned and all refuse placed in the trash cages.

8. ANCILLARY FACILITIES

There are no ancillary facilities planned for at the present time and none foreseen in the near future.

9. WELL SITE LAYOUT

See typical rig layout.

10. PLANS FOR RESTORATION OF THE SURFACE

Prior to construction of the location, the top 6 inches of soil material will be stripped and stockpiled. This will amount to approximately 1400 cubic yards of material that will be stockpiled.

If the well is producing, the platform and pit areas no longer required for the production of the well will be backfilled, recontoured, topsoiled and seeded.

If the well is abandoned, the entire disturbed area (including roads) will be restored by: (1) backfilling; (2) recontouring; (3) topsoiling; (4) seeding. Specifically: the platform highwall(s) and road fill(s) will be eliminated by moving all excavated material back in place. Restoration of the location and access road will begin within 90 days after completion of the well. The BLM representative will be notified prior to starting the rehabilitation operations.

The following seed mixture and methods for seeding will be used:

The seed mixture will be: Determined by the Bureau of Land Management at the time of abandonment.

Seed will be planted after September 1 and prior to ground frost; or seed will be planted after the frost has left and before May 15. All seed will be drilled on the contour at a depth of ¼ to ½ inch. Slopes too steep or rocky for machinery will be broadcast and the seed hand raked into the soil. When broadcasting the seed, the rate per acre will be doubled.

The Lessee further covenants and agrees that all of said clean-up and restoration activities shall be done and performed in a diligent and most workmanlike manner and in strict conformity with the above mentioned Items #7 and #10.

11. OTHER INFORMATION

1) The soil is a light sandy clay. The vegetation cover is 5-10% with the majority made up of sage brush.
2) The surface is owned by the Federal Government and administered by the Bureau of Land Management.
3) There are no occupied dwellings or other facilities including archaeological, historical, or cultural sites near the proposed location. The nearest live water is the White River, four miles to the southeast.

12. LESSEE'S OR OPERATOR'S REPRESENTATIVE

Natural Gas Corporation of California
85 South 200 East
Vernal, UT 84078
Attn: William A. Ryan

Telephone: (801) 789-4573

13. 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 and belief, true and correct; and that the work associated with the operations proposed herein will be performed by Natural Gas Corporation of California and its contractors in conformity with this plan and terms and conditions with this plan and the terms and conditions under which it is approved.

April 5, 1982
Date

William A Ryan
William A. Ryan, Petroleum Engineer

IN REPLY REFER TO

T & R
U-801

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
VERNAL DISTRICT OFFICE
170 South 500 East
Vernal, Utah 84078

NATURAL GAS CORPORATION
CIRCULATE HANDLE FILE NOTE

March 18, 1982 MAR 24 1982

RJF _____ RDD _____
WAR ✓ CLR _____
KMH _____

Natural Gas Corporation
of California
85 South 200 East
Vernal, UT 84078

Re: Preliminary Staking
T8S, R18E, Sec. 35 Well #14-35
T9S, R17E, Sec. 9 Well #13-9
T9S, R18E, Sec. 21 Well #41-21
T9S, R19E, Sec. 18 Well #33-18

Dear Sirs:

The BLM has no objection to the staking of the above referenced well site location and access road. However, before any work is started, the area must be cleared for cultural resources and threatened or endangered flora/fauna. If water for these wells is obtained from water sources on BLM administered lands, this office must be given a written agreement with the persons who have the water rights and/or copy of a temporary water filing approved by the State of Utah, including the correct legal description. Natural Gas Corporation is also responsible for obtaining a temporary road right-of-way permit for any access road not within the lease area.

Sincerely,

Ralph J. Heft
Area Manager
Diamond Mountain Resource Area

cc: USGS, Vernal

Form 97 2M 10-70

TEMPORARY

Application No. 57251

47-1672

APPLICATION TO APPROPRIATE WATER
STATE OF UTAH

RECEIVED JAN 8 19

NOTE:—The information given in the following blanks should be free from explanatory matter, but when necessary, a complete supplementary statement should be made on the following page under the heading "Explanatory."

For the purpose of acquiring the right to use a portion of the unappropriated water of the State of Utah, for uses indicated by (X) in the proper box or boxes, 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.

1. Irrigation ☐ Domestic ☐ Stockwatering ☐ Municipal ☐ Power ☐ Mining ☐ Other Uses ☒
2. The name of the applicant is Natural Gas Co. of California
3. The Post Office address of the applicant is 85 South 200 East, Vernal, Utah 84078
4. The quantity of water to be appropriated .030 second-feet and/or _____ acre-feet
5. The water is to be used for Oil Well Drilling (Major Purpose) from Jan. 13, 1982 (Month) (Day) to June 12, 1982 (Month) (Day)

   other use period _____ (Minor Purpose) from _____ (Month) (Day) to _____ (Month) (Day)

   and stored each year (if stored) from _____ (Month) (Day) to _____ (Month) (Day)
6. The drainage area to which the direct source of supply belongs is _____ (Leave Blank)
7. The direct source of supply is* Pariette Draw (Name of stream or other source)

   which is tributary to _____, tributary to _____

*Note.—Where water is to be diverted from a well, a tunnel, or drain, the source should be designated as "Underground Water" in the first space and the remaining spaces should be left blank. If the source is a stream, a spring, a spring area, or a drain, so indicate in the first space, giving its name, if named, and in the remaining spaces, designate the stream channels to which it is tributary, even though the water may sink, evaporate, or be diverted before reaching said channels. If water from a spring flows in a natural surface channel before being diverted, the direct source should be designated as a stream and not a spring.

8. The point of diversion from the source is in Uintah County, situated at a point* North 300 ft. East 1280 ft. from the W¼ Cor. Sec. 14, T9S,R19E, SLB&M (14 Miles SW of Leota)

*Note.—The point of diversion must be located definitely by course and distance or by giving the distances north or south, and east or west with reference to a United States land survey corner or United States mineral monument, if within a distance of six miles of either, or if at a greater distance, to some prominent and permanent natural object. No application will be received for filing in which the point of diversion is not defined definitely.

9. The diverting and carrying works will consist of pumping water directly out of the stream into a truck
10. If water is to be stored, give capacity of reservoir in acre-feet _____ height of dam _____ area inundated in acres _____ legal subdivision of area inundated _____
11. If application is for irrigation purposes, the legal subdivisions of the area irrigated are as follows:

    _____ Total _____ Acres
12. Is the land owned by the applicant? Yes _____ No X If "No," explain on page 2.
13. Is this water to be used supplementally with other water rights? Yes _____ No X

    If "yes," identify other water rights on page 2.
14. If application is for power purposes, describe type of plant, size and rated capacity. _____
15. If application is for mining, the water will be used in _____ Mining District at the _____ mine, where the following ores are mined _____
16. If application is for stockwatering purposes, number and kind of stock watered _____
17. If application is for domestic purposes, number of persons _____, or families _____
18. If application is for municipal purposes, name of municipality _____
19. If application is for other uses, include general description of proposed uses Oil Well Drilling
20. Give place of use by legal subdivision of the United States Land Survey for all uses described in paragraphs 14 to 19, incl. Sec. 16, T9S,R19E, SLB&M
21. The use of water as set forth in this application will consume .030 second-feet and/or acre-feet of water and None second feet and/ or acre feet will be returned to the natural stream or source at a point described as follows: _____

EXPLANATORY

The following additional facts are set forth in order to define more clearly the full purpose of the proposed application:

(Use page 4 if additional explanatory is needed.)

The quantity of water sought to be appropriated is limited to that which can be beneficially used for the purpose herein described

Rick Canterbury
Signature of Applicant*

*If applicant is a corporation or other organization, signature must be the name of such corporation or organization by its proper officer, or in the name of the partnership by one of the partners, and the names of the other partners shall be listed. If a corporation or partnership, the affidavit below need not be filled in. If there is more than one applicant, a power of attorney, authorizing one to act for all, should accompany the Application.

DECLARATION OF CITIZENSHIP

STATE OF UTAH,
County of Uintah } ss

On the 7th day of January, 1982, personally appeared before me, a notary public for the State of Utah, the above applicant who, on oath, declared that he is a citizen of the United States, or has declared his intention to become such a citizen.

My commission expires: March 19

(SEAL) NOTARY PUBLIC JOHN SOLUM STATE OF UTAH

John E. Solum
Notary Public

FEES FOR APPLICATIONS TO APPROPRIATE WATER IN UTAH

Flow rate — c.f.s.	Cost	
0.0 to 0.1	$ 15.00	
over 0.1 to 0.5	30.00	
over 0.5 to 1.0	45.00	
over 1.0 to 15.0	45.00	plus $7.50 for each cfs above the first cubic foot per second.
over 15.0	150.00	

Storage — acre-feet		
0 to 20	22.50	
over 20 to 500	45.00	
over 500 to 7500	45.00	plus $7.50 for each 500 a.f. above the first 500 acre feet.
over 7500	150.00	

(This section is not to be filled in by applicant)

3:20 PM

STATE ENGINEER'S ENDORSEMENTS

1. Jan 7, 1982 Application received (by mail / over counter) in State Engineer's office by
2. Priority of Application brought down to, on account of
3. 1-12-82 Application fee, $15.00, received by C.G. Rec. No. 131080
4. Application microfilmed by Roll No.
5. 1/13/82 Indexed by C.A. Platted by
6. 1-8-82 Application examined by
7. Application returned, or corrected by office
8. Corrected Application resubmitted (by mail / over counter) to State Engineer's office.
9. Application approved for advertisement by
10. Notice to water users prepared by
11. Publication began; was completed
    Notice published in
12. Proof slips checked by
13. Application protested by
14. Publisher paid by M.E.V. No.
15. Hearing held by
16. Field examination by
17. 1-8-82 Application designated for (approval / rejection) up Sta.
18. 1/29/82 Application copied or photostated by slf proofread by
19. 1/29/82 Application (approved / ~~rejected~~)
20. **Conditions:**

    This Application is approved, subject to prior rights, as follows:

    a. Actual construction work shall be diligently prosecuted to completion.

    b. Proof of Appropriation shall be submitted to the State Engineer's office by NPR

    c. TEMPORARY APPROVAL -- EXPIRES June 12, 1982.

Dee C. Hansen, P.E., State Engineer

21. Time for making Proof of Appropriation extended to
22. Proof of Appropriation submitted.
23. Certificate of Appropriation, No. , ~~issued~~

TEMPORARY

Application No. 57251

EXPLANATORY CONTINUED

NOTICE TO APPLICANT

All waters in this state, whether above or under the ground, are the property of the public, subject to all existing rights to the use thereof. No appropriation of the unappropriated public water may be made and no rights to the use thereof shall be recognized except Application for such appropriation first be made to the State Engineer.

The approval of this Application is not a Certificate of Appropriation. It is merely your authority to begin construction work, which must be prosecuted diligently to completion. To secure a Certificate of Appropriation under this Application, Proof of Appropriation must be submitted within the time limit allowed by the State Engineer. The amount of water for which Certificate will be issued will depend upon the amount of water actually put to a beneficial use, not to exceed, however, the amount of water specified in this Application. Proof of Appropriation must be made in accordance with the requirements of the law. For further information write the State Engineer.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Application for Right-of-Way
Act of February 25, 1920 (30 U.S.C. 185) as Amended by the
Act of November 16, 1973 (87 Stat. 576)

INSTRUCTIONS: This is an optional form, which satisfies the minimum requirements for a right-of-way application. Additional information may be required by the authorized officer (43 CFR 2802.3-5). Submit the application to the Bureau of Land Management, Vernal District Office, 170 South 500 East, Vernal, Utah 84078.

1. Name (first, middle, last)

Natural Gas Corporation of California

2. Address (include zip code)

85 South 200 East, Vernal, UT 84078

3. LEGAL DESCRIPTION

Township	Range	Section	Subdivisions
9S	18E	9	

If additional space is needed, attach a separate sheet.

4. TYPE OF APPLICATION Road (access to well #41-21)
(communication site, road, powerline, etc.)

5. Check the appropriate box. This application is for:

(X) A new right-of-way.

( ) Amendment of existing right-of-way serial number _____.

( ) Renewal of existing right-of-way serial number _____.

( ) Assignment of existing right-of-way serial number _____.

( ) Other _____

6. A nonreturnable payment in accordance with the following schedule must be submitted with this application (see 43 CFR 2803.1-1(a)(2) for exceptions):

a. If length is less than 5 miles, payment is $50 per mile or fraction thereof.
b. If length is 5 to 20 miles, payment is $500.
c. If length is over 20 miles, payment is $500 for each 20 miles or fraction thereof.
d. If the application is for a non-linear right-of-way (e.g., reservoir, communication site, plant site, etc.), payment is $250 for each 40 acres or fraction thereof.
e. Assignment of a right-of-way, payment is $50.

7. TECHNICAL AND FINANCIAL CAPABILITY -- Attach evidence that you have, or prior to the commencement of construction will have, the technical and financial capability to construct, operate, maintain, and terminate the requested right-of-way.

8. PROJECT DESCRIPTION -- Use the space provided or attach a separate sheet.

a. Explain how the right-of-way will interrelate with existing and future projects and other developments on public lands.

b. Describe the right-of-way in sufficient detail to enable the authorized officer to determine:

i. Impacts on the environment;
ii. Benefits provided to the public; and
iii. Safety of the proposal.

Planned Access Road

See attached topographic Map "A".

An off-lease right-of-way will be required through Section 9, T.9S., R.17E. The right-of-way will be along an existing upgraded road. Little or no improvements will be required.

Right-of-way length - 2,000 feet.

9. If you are excepted from rental payments under 43 CFR 2803.1-2(c), execute and attach DI Form 1350, Assurance of Compliance. Forms are available upon request.

10. APPLICANT QUALIFICATIONS AND DISCLOSURE

Check the appropriate box and attach the required disclosure information.**

( ) CORPORATION, attach:

a. Private

A copy of the corporation's charter or articles of incorporation duly certified by the proper State official of the State where the corporation was organized.

Other than private

A copy of the law under which the corporation was formed and proof of oganization under that law.

b. A copy of the corporation's bylaws duly certified by the secretary of the corporation.

c. A copy of the resolution by the board of directors of the corporation or other documents authorizing the filing of this application.

d. If the corporation was not organized under Utah State laws, attach a certificate from the Secretary of State indicating that the corporation is in good standing and entitled to operate in Utah.

e. If 3 percent or more of any class of stock of the corporation is held or controlled by an alien citizen, complete the following:

Name of alien citizen _____

Citizenship _____

( ) STATE OR LOCAL GOVERNMENT OR AGENCY OR INSTRUMENTALITY THEREOF

a. Attach a copy of the law, resolution, order, or other authorization under which this application is made.

( ) PARTNERSHIP, ASSOCIATION, OR OTHER UNINCORPORATED ENTITY

a. Attach a copy of the articles of association, partnership agreement, or other similar document creating the entity, if any.

Each partner or member must sign this application and state if he or she is a citizen of the United States, unless a resolution or similar document is attached authorizing one member to sign on behalf of the others and stating that each member is a citizen of the United States.

( ) INDIVIDUAL

a. I am a citizen of the United States. ( ) yes ( ) no

** If the required disclosure information has previously been filed with the Department, and there have been no amendments or revisions to the charter, articles of incorporation or association, partnership agreement, or bylaws, you may, in lieu of filing that information again, complete the following:

Specific reference to the previous filing by

a. Date _____

b. Place _____

c. Case serial number U-46500

11. MAPS -- As a minimum, a United States Geological Survey Quadrangle map or aerial photograph showing the approximate location of the right-of-way shall be submitted with this application. The authorized officer will request a survey map at the appropriate time.

I hereby certify that the statements made by me on this form are true, complete, and correct to the best of my knowledge and belief and are made in good faith.

William A. Ryan — Signature

Petroleum Engineer — Title

April 5, 1982 — Date

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

The Privacy Act of 1974 and Regulation 43 CFR 2.48(d) require that you be furnished the following information in connection with information required by this application form:

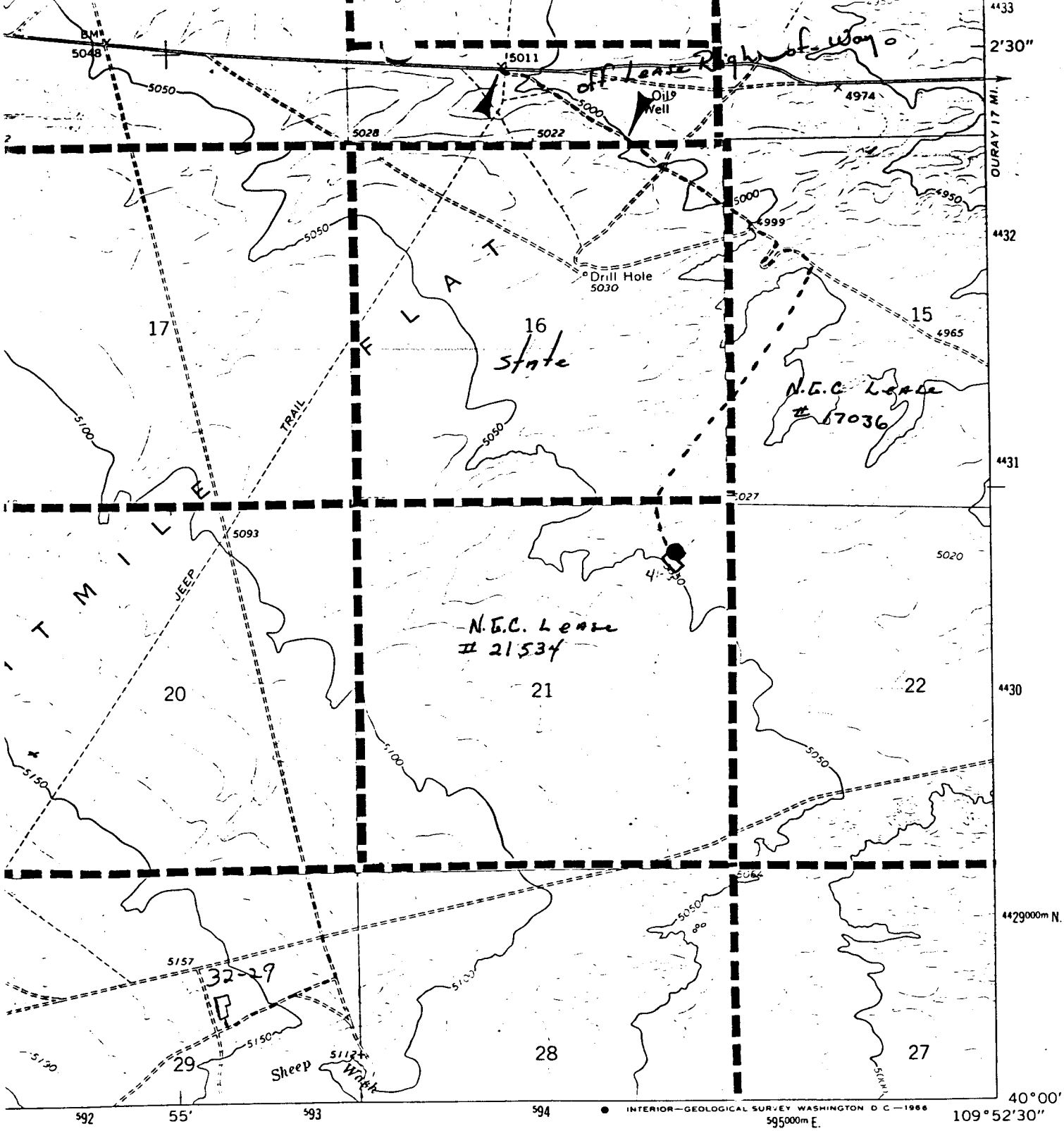
AUTHORITY: 43 U.S.C. 1701 et.seq., and 43 CFR Group 2800.

PRINCIPAL PURPOSE: The required information will be used primarily for the administration of public lands but will at all times be available to the public.

ROUTINE USES:

1. Adjudication of your rights to use the land and resources.
2. Documentation for public information in support of notations made on land status records for the management, disposal, and use of public lands and resources.
3. Transfer to appropriate Federal agencies when concurrence is required prior to granting a right in public lands or resources.
4. Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING THE INFORMATION: Disclosure of the information is voluntary. If all the information is not provided, your application may be rejected.



MAP "A"

ROAD CLASSIFICATION

Light-duty ═══ Unimproved dirt - - - - - -

4063 IV (NUTTERS HOLE) 1:62 500

PARIETTE DRAW SW, UTAH

N4000—W10952.5/7.5

1964

AMS 4064 III SW—SERIES V897

BHINGTON, D. C. 20242
ON REQUEST

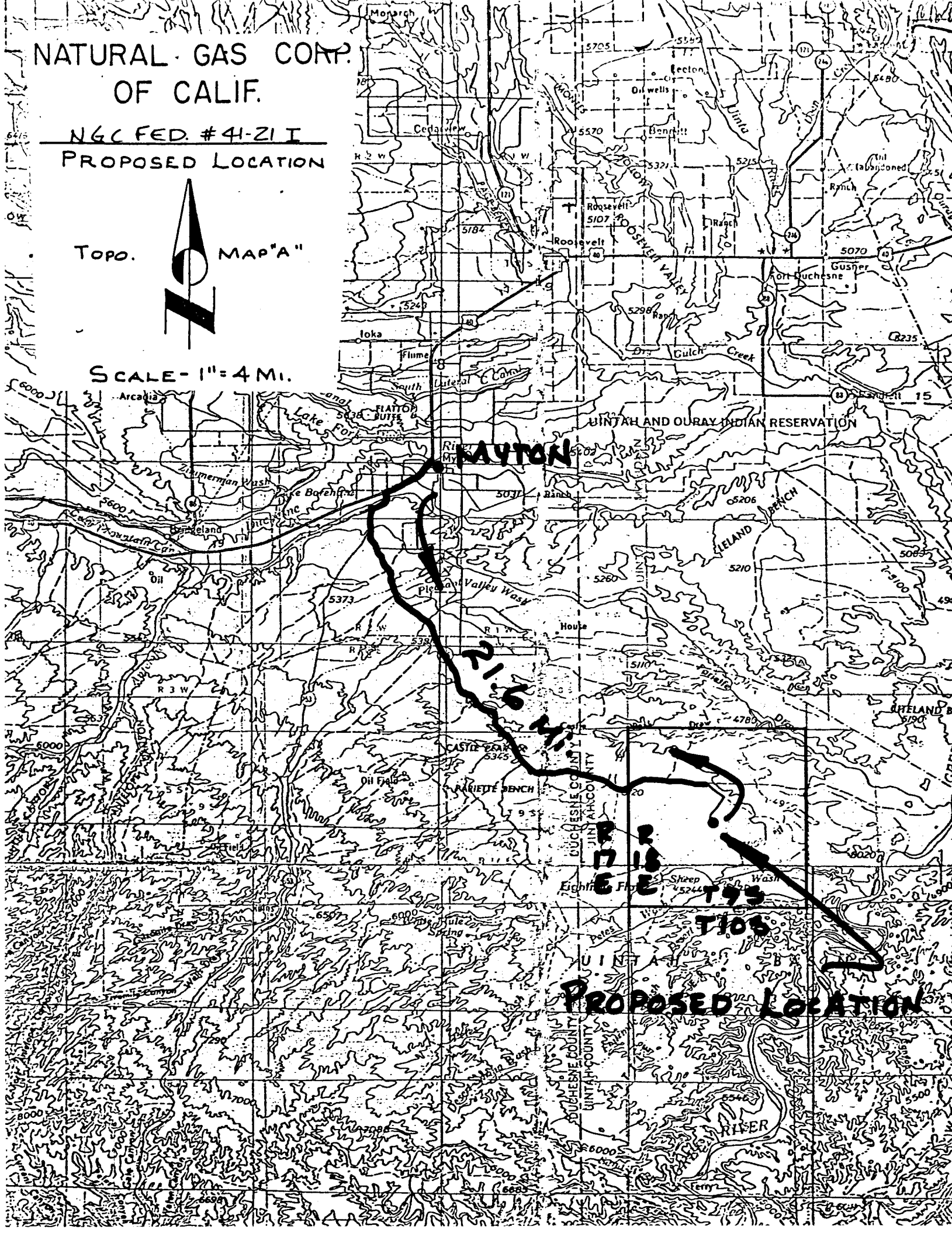
NATURAL GAS CORP.
OF CALIF.

NGC FED. #41-21 I

PROPOSED LOCATION

TOPO. MAP "A"

SCALE - 1" = 4 MI.

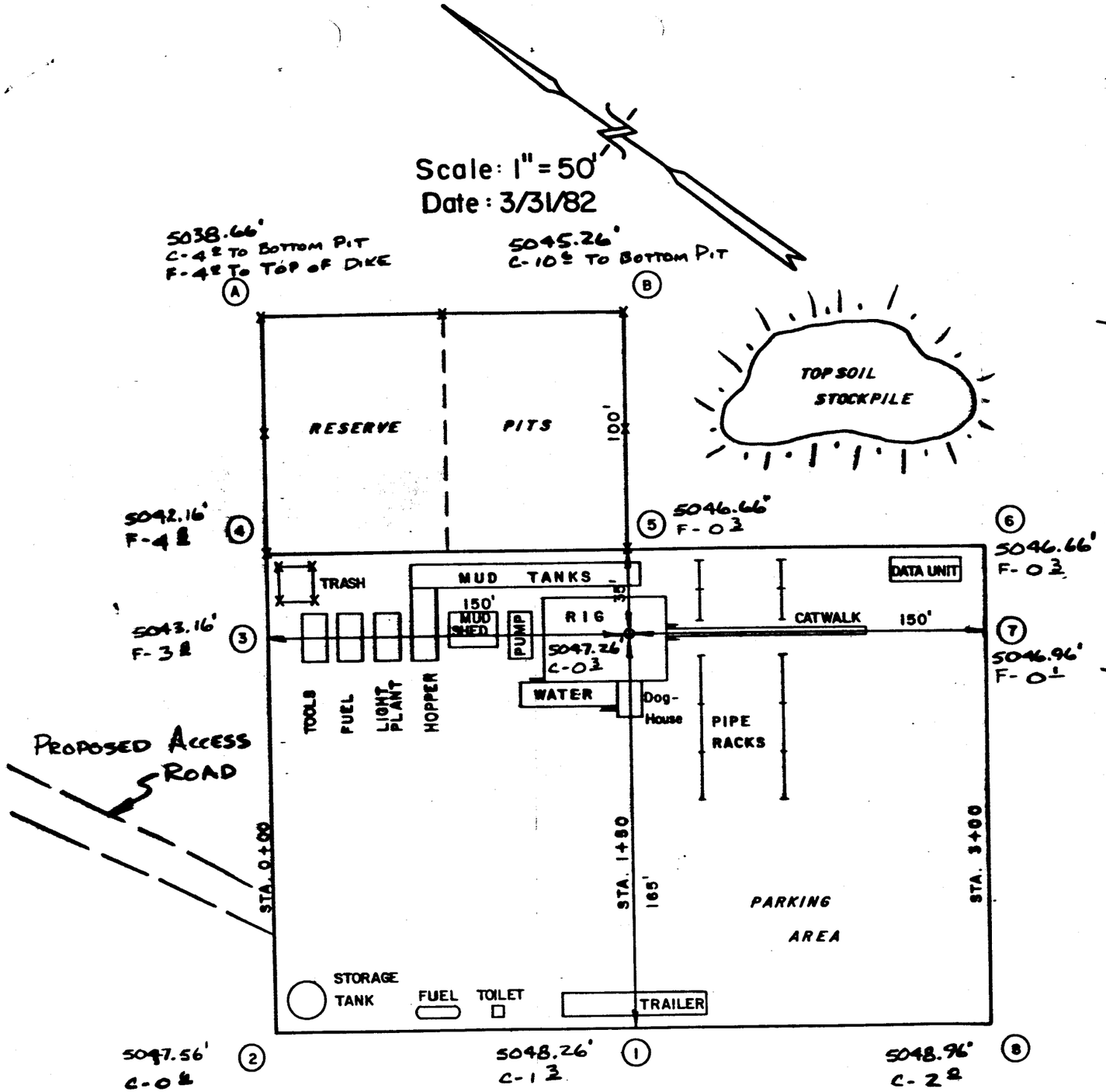


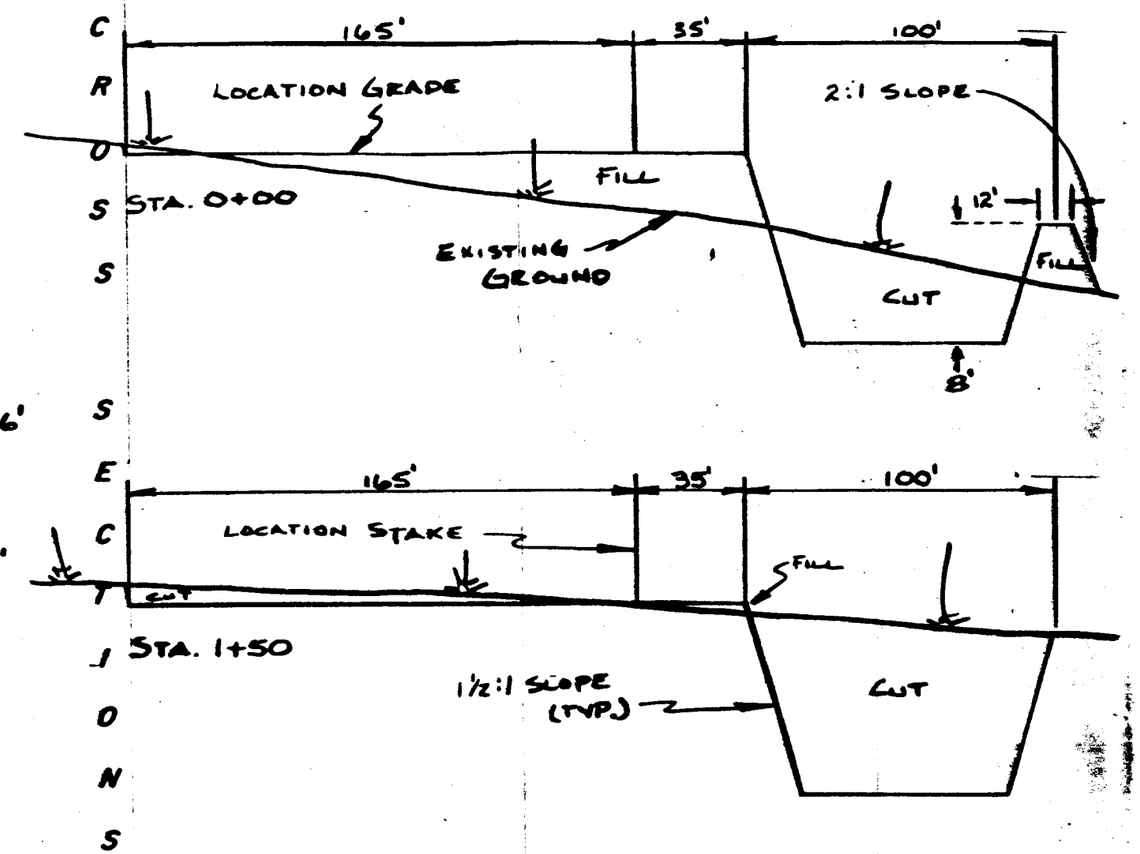
NATURAL GAS CORP. OF CALIF.

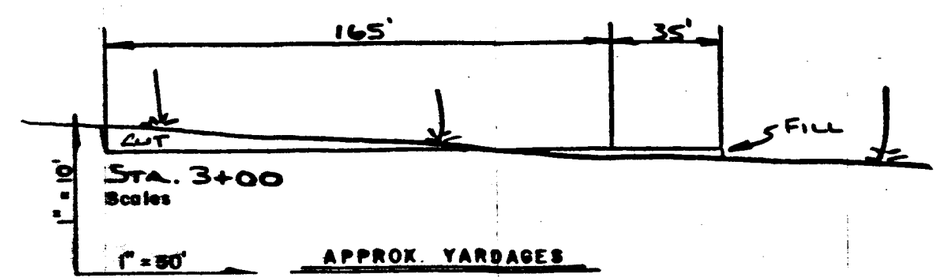
NGC Fed. # 41-21 I

LOCATION LAYOUT & CUT SHEET

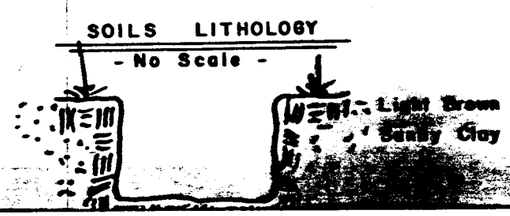
Scale: 1" = 50'
Date: 3/31/82







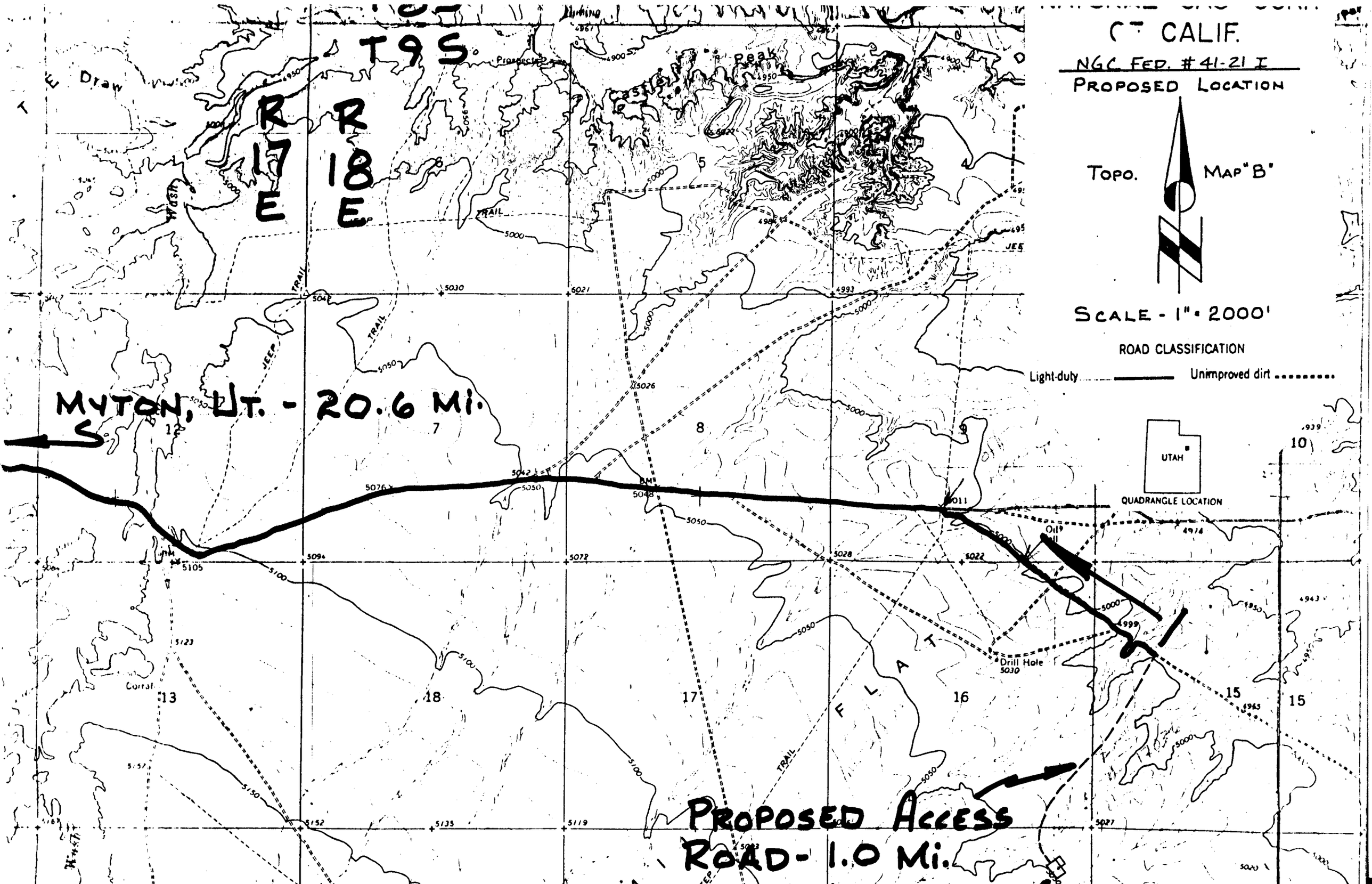
SOILS LITHOLOGY
- No Scale -



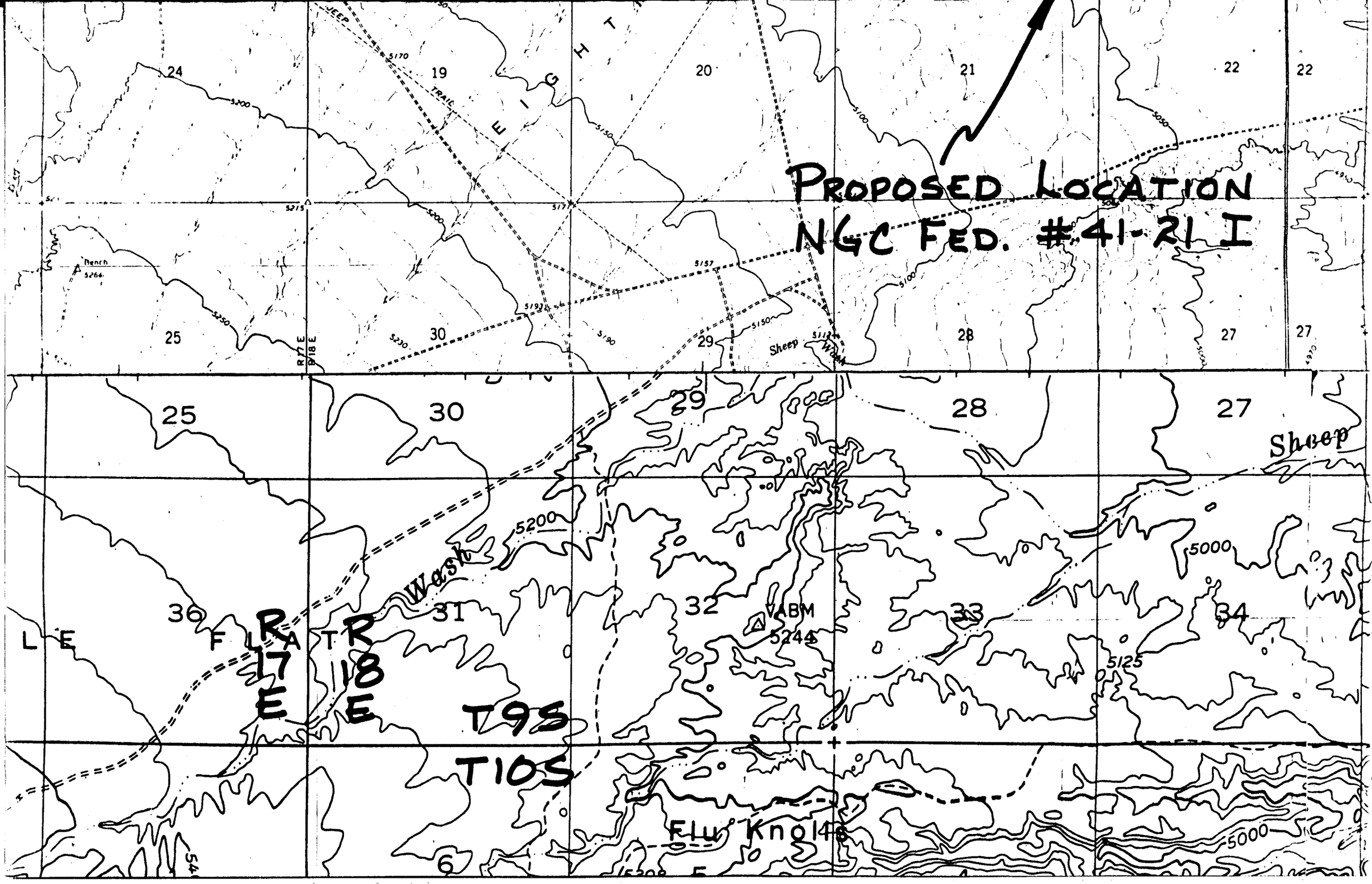
APPROX. YARDAGES

Cubic Yards Cut - 7428

Cubic Yards Fill - 1495



CT CALIF.
NGC FED. #41-21 I
PROPOSED LOCATION
TOPO. MAP "B"
SCALE - 1" = 2000'
ROAD CLASSIFICATION
Light-duty
Unimproved dirt
UTAH
QUADRANGLE LOCATION
T9S
R 17 E
R 18 E
MYTON, UT. - 20.6 MI.
PROPOSED ACCESS ROAD - 1.0 MI.
Castle Peak
Draw
Wash
Corral
Drill Hole
FLAT
TRAIL
JEEP


PROPOSED LOCATION
NGC FED. #41-21 I
JEEP TRAIL
EIGHT
Bench
Sheep Wash
Sheep
Wash
VABM
5244
Flu Knolls
R 17 E
R 18 E
T9S
T10S
LE FLAT
24
19
20
21
22
25
30
29
28
27
36
31
32
33
34
6
5200
5000
5125
5150
5100
5050
5230
5250
5215
5170
5193
5157
5112
5264

** FILE NOTATIONS **

DATE: 4-7-82

OPERATOR: Natural Gas Corp. of Calif

WELL NO: Fed 41-21

Location: Sec. 21 T. 9S R. 18E County: Uintah

File Prepared: ✓ Entered on N.I.D: ✓

Card Indexed: ✓ Completion Sheet: ✓

API Number 43-047-30198

CHECKED BY:

Petroleum Engineer:

Director: OK per rule C-3

Administrative Aide: OK bd per Rule C-3

APPROVAL LETTER:

Bond Required: Survey Plat Required:

Order No. O.K. Rule C-3

Rule C-3(c), Topographic Exception - company owns or controls acreage within a 660' radius of proposed site

Lease Designation Fed. Plotted on Map ✓

Approval Letter Written

Hot Line ✓ P.I. ✓

April 8, 1982

Natural Gas Corportion of California
85 South 200 East
Vernal, Utah 84078

RE: Well No. 41-211
Sec. 21, T. 9S, R. 18E
Uintah County, Utah

Insofar as this office is concerned, approval to drill the above referred to oil well is hereby granted in accordance with Rule C-3, General Rules and Regulations and Rules of Practice and Procedure.

Should you determine that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

CLEON B. FEIGHT - Director
Office: 533-5771
Home: 466-4455

Enclosed please find Form OGC-8-X, which is to be completed whether or not water sands (acquifers) are encountered during drilling. Your cooperation in completing this form will be appreciated.

Further, it is requested that this Division be notified within 24 hours after drilling operations commence, and that the drilling contractor and rig number be identified.

The API number assigned to this well is 43-047-31198.

Sincerely,

DIVISION OF OIL, GAS AND MINING

Cleon B. Feight

Cleon B. Feight
Director

CBF/as
Encl.
cc: Minerals Management Service

NATURAL GAS CORP. OF CALIFORNIA

NGC FEDERAL 41-21 I

Section 21, T9S-R18E

Uintah County, Utah

43-047-31198

RECEIVED

JUL 30 1982

DIVISION OF
OIL, GAS & MINING

Decollement
Consulting
Inc.

GEOLOGIC REPORT

for

NATURAL GAS CORPORATION OF CALIFORNIA

on

NGC FEDERAL 41-21 I

TABLE OF CONTENTS

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Formation Evaluation 22

Lithologic Descriptions 24

July 1982

Barry J. Fisher
Barry Fisher
Geologist

Decollement Consulting Inc.

WELL DATA SUMMARY

Well name:	NGC Federal 41-21 I
Operator:	Natural Gas Corporation of California
Location:	NENE Section 21, T9S - R18E
County:	Uintah County
State:	Utah
Drilling contractor:	Olsen Rig #5
Elevation:	5047 Ground level 5061 Kelly bushing
Depth logged:	300' - 5870'
Well status:	Waiting on completion tools
Casing program:	9-5/8" surface at 290' 5-½" production
Mechanical logs run:	DIL FDC-CNL BHC MPT Sidewall Cores
Cores:	None
D.S.T.:	None
Mudlogging company:	Décollement Consulting, Inc

Decollement Consulting Inc.

FORMATION TOPS

FORMATION	PROGNOSIS	SAMPLE	E-LOG	SUBSEA LOG
Green River Formation	1160	1290	1210	+ 4851
Oil Shale Facies	1860	1980	2110	+ 2951
Delta Facies	2910	2980	2986	+ 2075
Green Shale Facies	3900	3980	4010	+ 1051
Black Shale Facies	4920	5008	5050	- 11
Green River Lime	5470	5520	5514	- 453
Wasatch Formation	5650	5686	5690	- 629

DAILY DRILLING SUMMARY

Date	Depth	Progress	Hrs. Drlg.	Mud Mass	Visc.	W.L.	PH	Activity
6/4	0			8.3			8.5	Rig up
6/5	874	874	11	8.4	27		8.5	Spud 1400 hours
6/6	2124	1250	24	8.4	27		9.0	Drilling
6/7	3125	1001	24	8.4	27		9.0	Drilling
6/8	3907	732	24	8.4	27		9.5	Drilling
6/9	4420	513	16	8.4	27		9.5	Drilling
6/10	5187	767	24	8.4	27		9.0	Trip at 4255'
6/11	5805	618	24	8.8	46	8.4	10.0	Drilling
6/12	5870	65	4.5	8.8	46	8.4	10.0	T.D. at 0430 hours circulate, condition hole for logs

Decollement Consulting Inc.

DEVIATION SURVEYS

DEPTH	SURVEY	CHANGE
2878	1-½°	
4255	1-3/4°	1/4°
5870	3/4°	1°

B I T R E C O R D

OIL COMPANY: Natural Gas Corporation
WELL NAME: NGC Federal
LOCATION NUMBER: 41-21 I

CONTRACTOR: Olsen Drilling
RIG NUMBER: 5
RIG MAKE & MODEL: Cardwell L 350

COUNTY: Uintah
STATE: Utah
SPUD DATE: 6/4/82
T.D. DATE: 6/11/82

NO. 1 PUMP, MAKE & MODEL: Emsco D-500
NO. 2 PUMP, MAKE & MODEL: Emsco D-175

SURFACE CASING: 8-5/8" at 290'
INTERMEDIATE CASING:
PRODUCTION CASING: 5 ½"

GROUND LEVEL: 5047'
KELLY BUSHING: 5061'

BIT NO.	SIZE INCHES	TYPE MAKE	JETS	BIT SER. NO.	DEPTH OUT	FEET	HOURS	ACCUM HOURS	WEIGHT LBS.	RPM	VERT. DEV.	PUMP PRESS.	MUD WT.	MUD VIS	BIT T	COND. B	COND. G	REMARKS
1	7-7/8"	Reed HPSM	3x10	910644	4255	3965	88-3/4	88-3/4	40	70	1-3/4°	1200	8.4	27	8	8	I	Shot
2	7-7/8"	STC F-45	3x10	CJ4365	5870	1615	56-3/4	135-1/2	42	65	3/4°	1300	8.4 to 8.8	27 to 46	6	5	I	Shot

Decollement Consulting Inc.

LOGGING REPORT

DATE: 6-11-82

Logging Co.: Schlumberger Logging Engineer: R. Dickes Truck No. 8139

Depth (Driller): 5870 ft. Depth (Strap): 5867 ft. Depth (Logger): 5857 ft.

Hole Size: 7-7/8 in. Casing (Driller): 300 ft. Int. Casing (Driller): ft.

MUD DETAILS

Mud Type: LSND Wt.: 8.8 Vis.: 46 pH: 10 W.L.: 10

Salinity at time of logging: 5500 (ppm-chlorides)

Hole conditions prior to logging: good

Operations summary: Circ. time after T.D. (hrs.) 3, No. of "Dummy Trips" 1

Description of "Dummy Trips": 10 stands

Hours logging: 13

LOGGING SEQUENCE

Type of Log	Time spent in hrs.	Remarks
DIL-FDC-CNL	4	
BHC	3	
MPT	2	
CST	3	

No. of runs in hole: Total 4 Succeeded 4 Failed

Further remarks:

Decollement Consulting Inc.

DATE	TIME	DEPTH	WT (ppg)	FUNNEL VIS	PLASTIC VIS	YIELD POINT	GELS	pH	FILTRATE	SALINITY	CHLORIDES	SAND%	SOLIDS%	OIL%	WATER%	CHROMATES	NITRATES	NO_3
6/4	12:45	216	8.3	27				8.5			3,000				100%	300		
6/5	06:30	1264	8.4	27				8.5			2,000				100%	400		
6/6	06:35	2426	8.4	27				9.0			2,000	Trace	Trace		100%	300		
6/7	06:35	3390	8.4	27				9.0			2,000	Trace	Trace		100%	350		
6/8	06:45	4130	8.4	27				9.5			3,500	Trace	Trace		100%	300		
6/9	05:45	4603	8.4	27				9.5			3,500	Trace	Trace		100%	300		
6/10	07:15	5384	8.5	27				9.0			6,500	Trace	Trace	Trace	100%	400		
6/11	06:30	5870	8.8	46	15	14	9/21	10.0	8.4		5,500	Trace	3%	Trace	97%	400		

Decollement Consulting Inc.

SHOW REPORT SHOW # 1 8

Company Natural Gas Corporation Date 6-6-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 2728 to 2743 Cir. out at break? At Show?

Drill rate before show 1.75 During Show .75 After show 1.5

Mud weight before show After show

Chlorides before show After show

LITHOLOGY Formation: Oil Shale Facies

Description: 100% Sandstone - clear, frosted, angular to subangular, medium grained, unconsolidated, spotty, medium brown stain on 40% of sample

Quality & quantity of cuttings:

FLUORESCENCE

% of sample 50% Brightness Bright Color Yellow Uniformity Spotty

Cut Good fast cut HCl effect

Remarks: Free oil in sample

MUD GAS: Before: During: After:

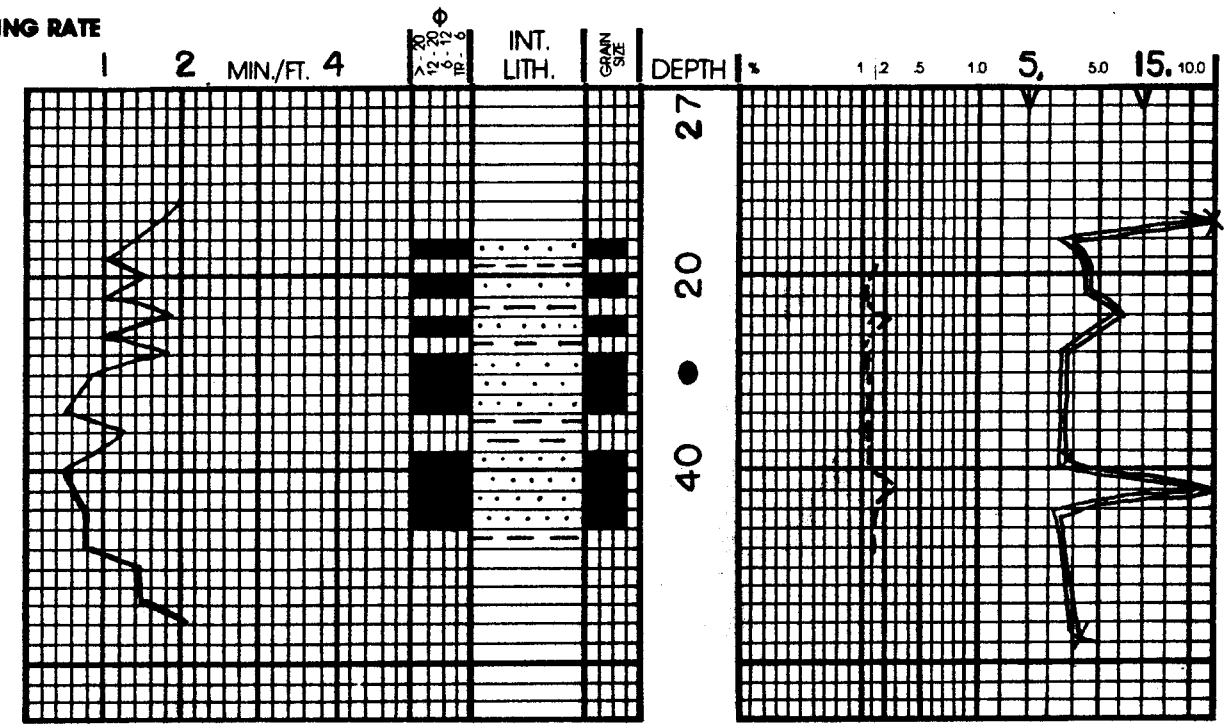
Calculated Hydrostatic Head (X Depth X Mud Wt.): psi

Calculated Normally Pressured Formation (X Depth): psi

Calculated Differential Pressure psi

Total x x x C3
C1 iC4
C2 nC4

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT

SHOW # 2

Company Natural Gas Corporation Date 6-6-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 2942 to 2980 Cir. out at break? _____ At Show? _____

Drill rate before show 2.0 During Show .5 After show 2

Mud weight before show _____ After show _____

Chlorides before show _____ After show _____

LITHOLOGY Formation: Oil Shale Facies

Description: 100% Sandstone - white, clear, very fine to fine grained, unconsolidated, subangular to angular, patchy light and dark oil stain in 10% of cuttings

Quality & quantity of cuttings: _____

FLUORESCENCE

% of sample 40% Brightness _____ Color Yellow Uniformity _____

Cut Blooming blue white HCl effect _____

Remarks: Trace free oil

MUD GAS: Before: _____ During: _____ After: _____

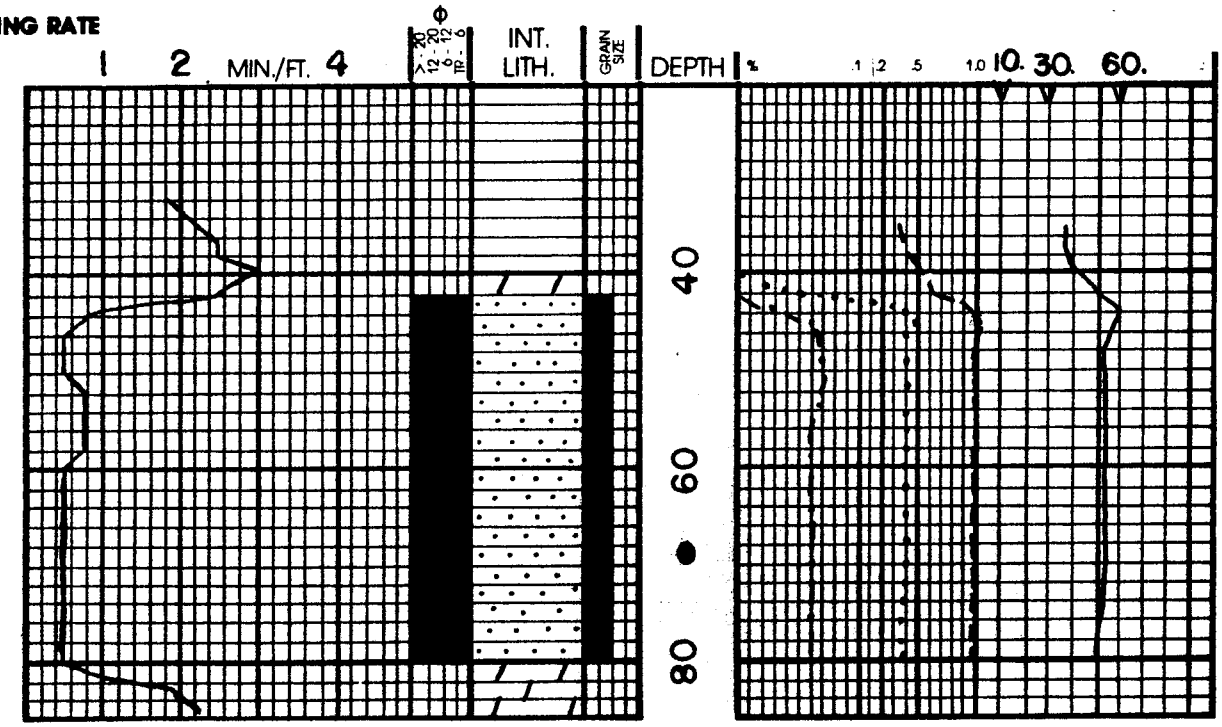
Calculated Hydrostatic Head (X Depth X Mud Wt.): _____ psi

Calculated Normally Pressured Formation (X Depth): _____ psi

Calculated Differential Pressure _____ psi

Total x x x C3 ..... C1 ..... C2 ..... IC4 ..... nC4 .....

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 3

Company Natural Gas Corporation Date 6-7-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 3290 to 3308 Cir. out at break? _____ At Show? _____

Drill rate before show 2.0 During Show 1.5 After show 2.0

Mud weight before show _____ After show _____

Chlorides before show _____ After show _____

LITHOLOGY Formation: Delta Facies

Description: 100% Sandstone - white, clear, very fine to medium grained, unconsolidated to friable, subangular to angular

Quality & quantity of cuttings: _____

FLUORESCENCE

% of sample 30% Brightness _____ Color Yellow Uniformity spotty

Cut Fast blue white HCl effect _____

Remarks: some free oil and spotty stain

MUD GAS: Before: _____ During: _____ After: _____

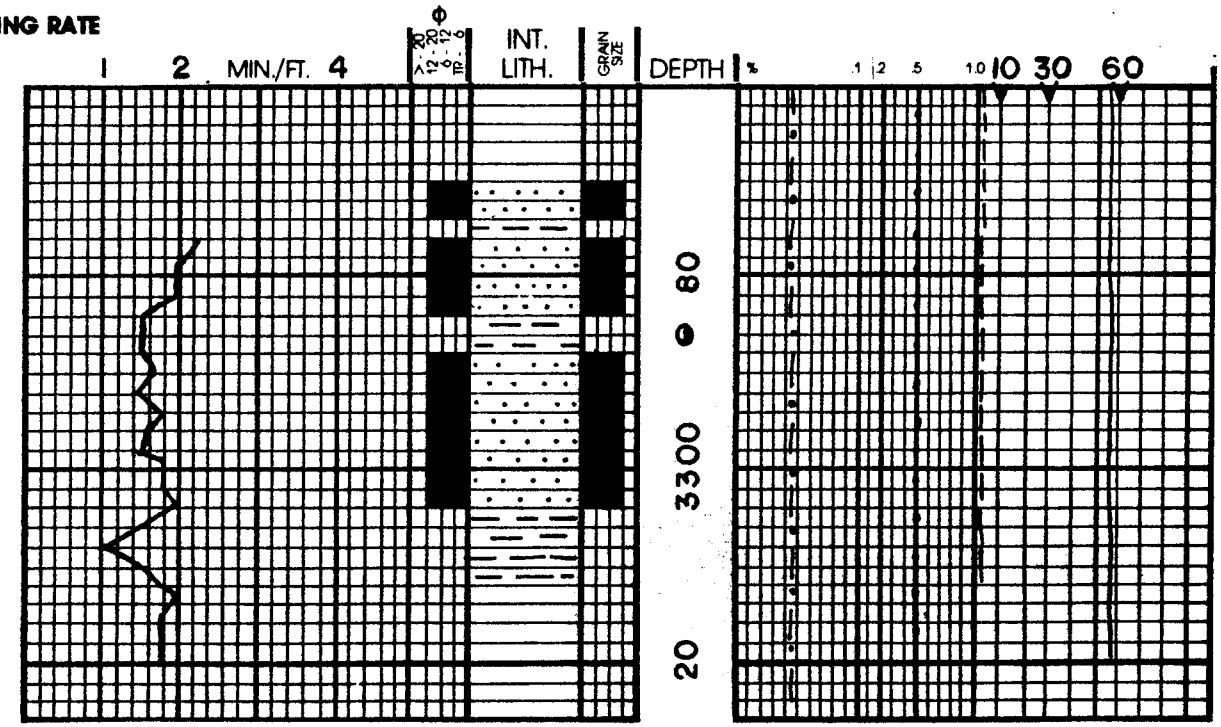
Calculated Hydrostatic Head (X Depth X Mud Wt.): _____ psi

Calculated Normally Pressured Formation (X Depth): _____ psi

Calculated Differential Pressure _____ psi

Total x x x C3
C1 C4
C2 nC4

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 4

Company Natural Gas Corporation Date 6-7-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 3570 to 3578 Clr. out at break? _____ At Show? _____

Drill rate before show 2.0 During Show 1.25 After show 2.5

Mud weight before show _____ After show _____

Chlorides before show _____ After show _____

LITHOLOGY Formation: Delta Facies

Description: 90% Sandstone - clear, white, light gray, very fine grained, sub-angular, moderately sorted, poor calcite cement, friable to unconsolidated

Quality & quantity of cuttings: _____

FLUORESCENCE

% of sample 50% Brightness Bright Color Yellow Uniformity _____

Cut Good fast streaming cut HCl effect _____

Remarks: Abundant light crude, spotty light brown stain, approximately 26%

MUD GAS: Before: _____ During: _____ After: _____

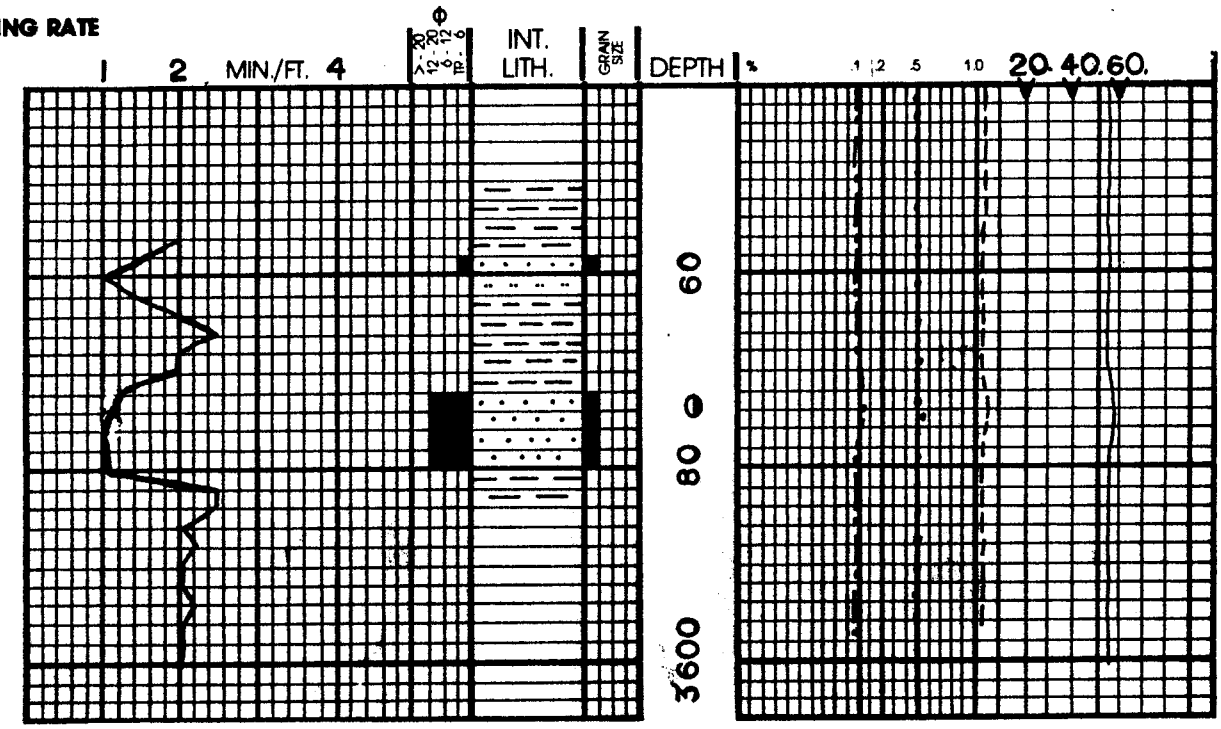
Calculated Hydrostatic Head (X Depth X Mud Wt.): _____ psi

Calculated Normally Pressured Formation (X Depth): _____ psi

Calculated Differential Pressure _____ psi

Total x x x C3
C1 iC4
C2 nC4

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 5

Company Natural Gas Corporation Date 6-7-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 3665 to 3690 Cir. out at break? _____ At Show? _____

Drill rate before show 1.75 During Show 1 After show 1.25

Mud weight before show _____ After show _____

Chlorides before show _____ After show _____

LITHOLOGY Formation: Delta Facies

Description: 80% Sandstone - clear, fine to medium grained, subrounded to subangular, moderately sorted, friable

Quality & quantity of cuttings: _____

FLUORESCENCE

% of sample 60% Brightness Bright Color Yellow Uniformity _____

Cut Good slow streaming cut HCl effect _____

Remarks: 60% of sample with spotty dark brown stain, abundant free oil in samples and on pits

MUD GAS: Before: _____ During: _____ After: _____

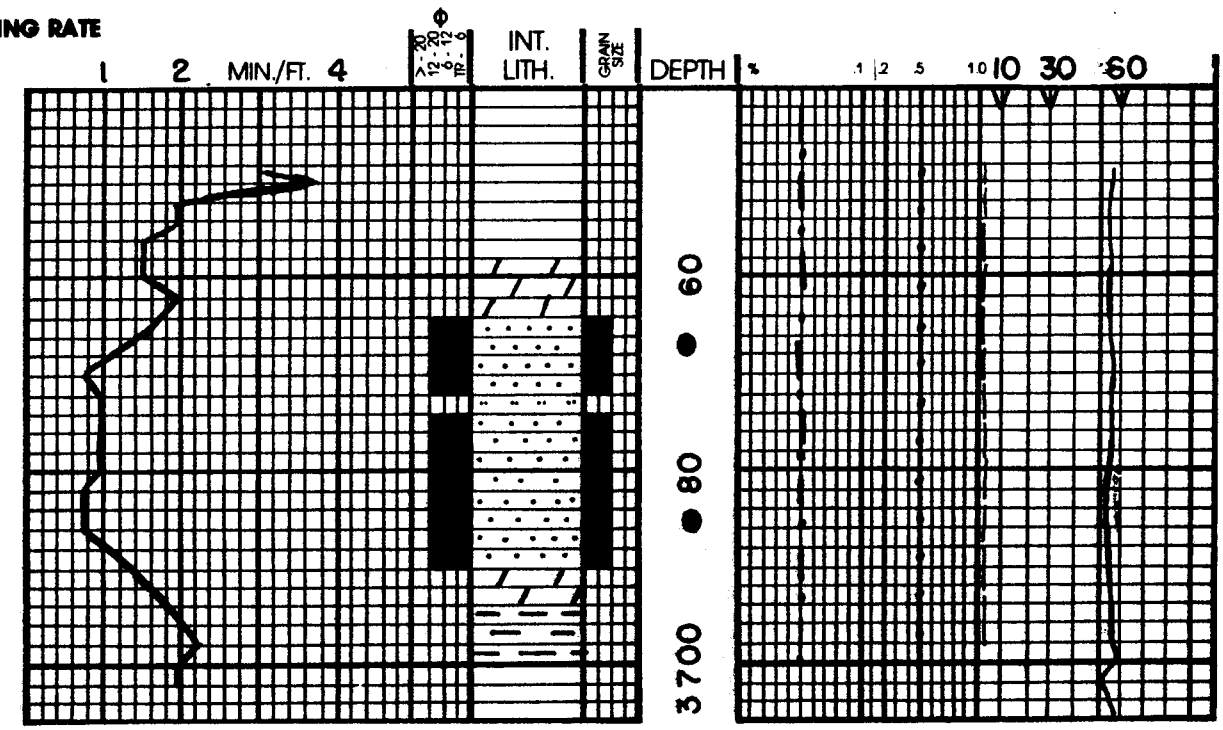
Calculated Hydrostatic Head (X Depth X Mud Wt.): _____ psi

Calculated Normally Pressured Formation (X Depth): _____ psi

Calculated Differential Pressure _____ psi

Total ___x___x___x___ C3 _____
C1 _____ iC4 _____
C2 _____ nC4 _____

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 6 13

Company Natural Gas Corporation Date 6-8-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 3894 to 3910 Cir. out at break? _____ At Show? _____

Drill rate before show 2.5 During Show 1 After show 2

Mud weight before show _____ After show _____

Chlorides before show _____ After show _____

LITHOLOGY Formation: Delta Facies

Description: 100% Sandstone - clear, white, fine to very fine grained, subangular to to subrounded, poorly sorted, calcareous cemented, friable

Quality & quantity of cuttings: _____

FLUORESCENCE

% of sample 20% Brightness Bright Color Yellow Uniformity _____

Cut Slow milky cut HCl effect _____

Remarks: 20% spotty brown oil stain

MUD GAS: Before: _____ During: _____ After: _____

Calculated Hydrostatic Head (X Depth X Mud Wt.): _____ psi

Calculated Normally Pressured Formation (X Depth): _____ psi

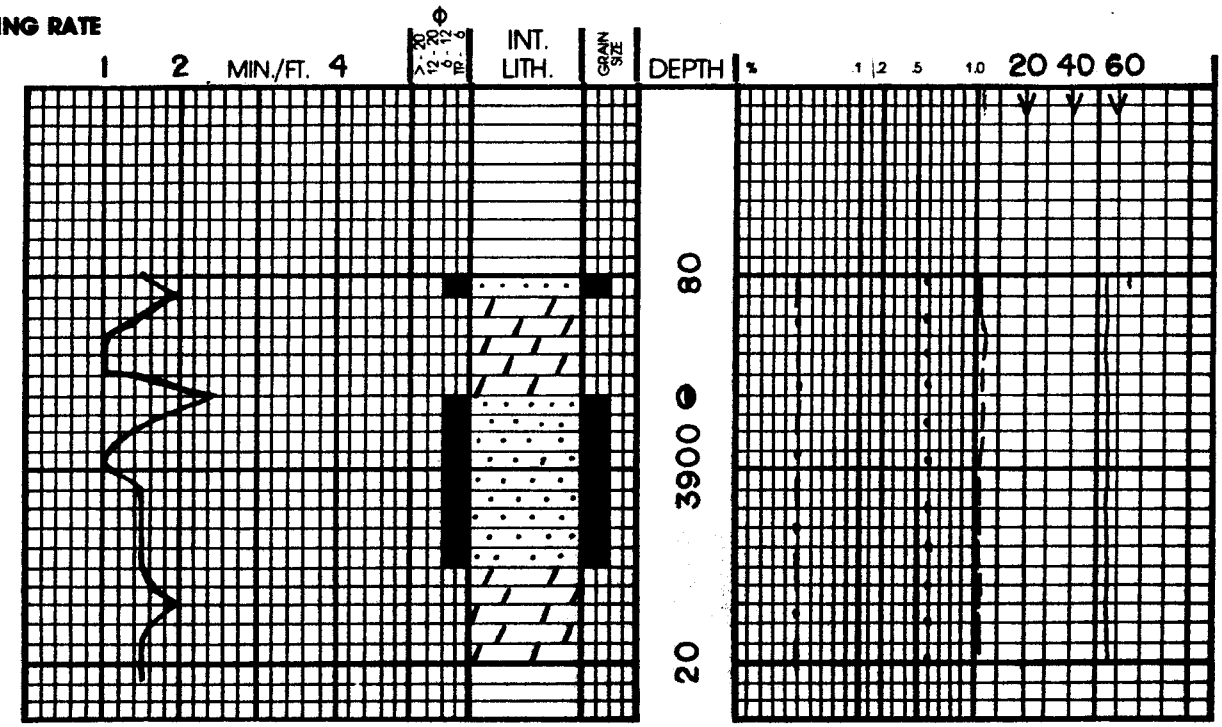
Calculated Differential Pressure _____ psi

Total ___x___x___x___ C3 _____

C1 _____ IC4 _____

C2 _____ nC4 _____

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 7

Company Natural Gas Corporation Date 6-8-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 3930 to 3940 Cir. out at break? _____ At Show? _____

Drill rate before show 1.5 During Show .5 After show 1.5

Mud weight before show _____ After show _____

Chlorides before show _____ After show _____

LITHOLOGY Formation: Delta Facies

Description: 90% Sandstone - clear, white, fine to very fine grained, subangular, poorly sorted, calcareous cement, friable

Quality & quantity of cuttings: _____

FLUORESCENCE

% of sample 20% Brightness Bright Color Yellow Uniformity _____

Cut Slow milky cut HCl effect _____

Remarks: 20% with spotty dark brown oil stain

MUD GAS: Before: _____ During: _____ After: _____

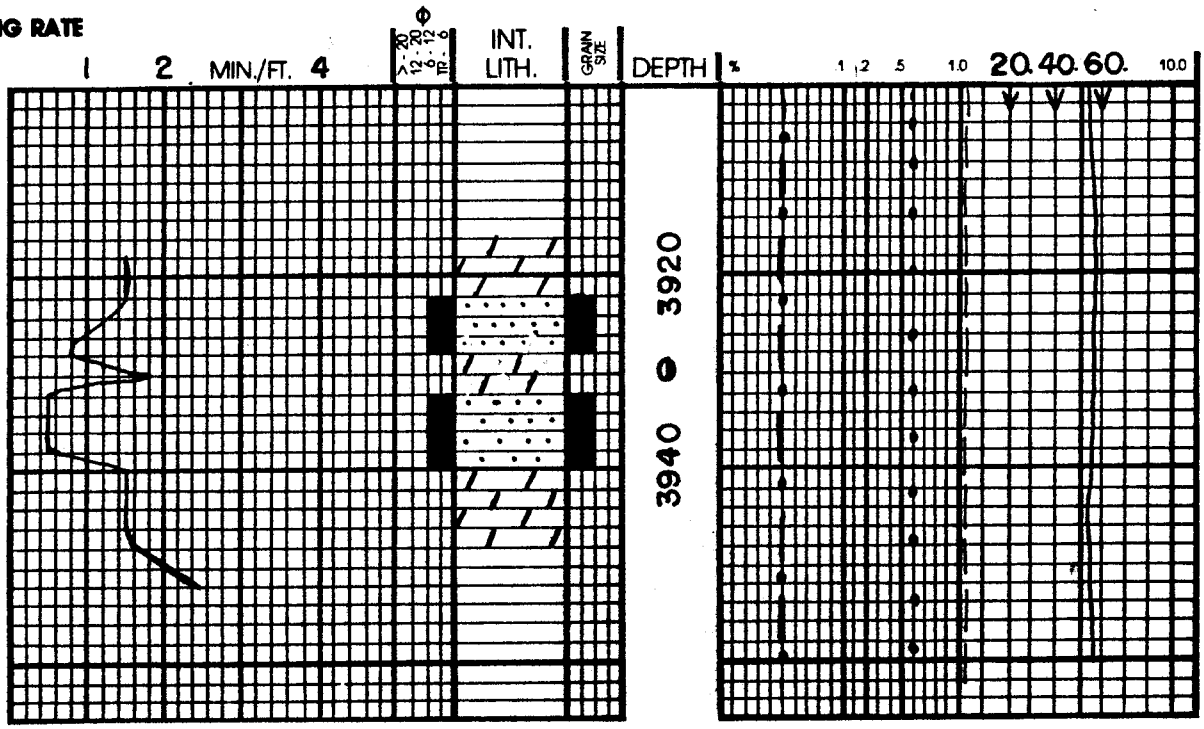
Calculated Hydrostatic Head (X Depth X Mud Wt.): _____ psi

Calculated Normally Pressured Formation (X Depth): _____ psi

Calculated Differential Pressure _____ psi

Total x x x C3
C1 iC4
C2 nC4

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 8

Company Natural Gas Corporation Date 6-8-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 3995 to 4010 Cir. out at break? _____ At Show? _____

Drill rate before show 1.5 During Show .75 After show 1.5

Mud weight before show _____ After show _____

Chlorides before show _____ After show _____

LITHOLOGY Formation: Green Shale Facies

Description: 100% Sandstone - clear, white, frosted, very fine grained to fine grained, subangular, unconsolidated to friable

Quality & quantity of cuttings: _____

FLUORESCENCE

% of sample 20% Brightness Bright Color Yellow Uniformity _____

Cut Slight milky cut HCl effect _____

Remarks: 20% with light brown spotty stain

MUD GAS: Before: _____ During: _____ After: _____

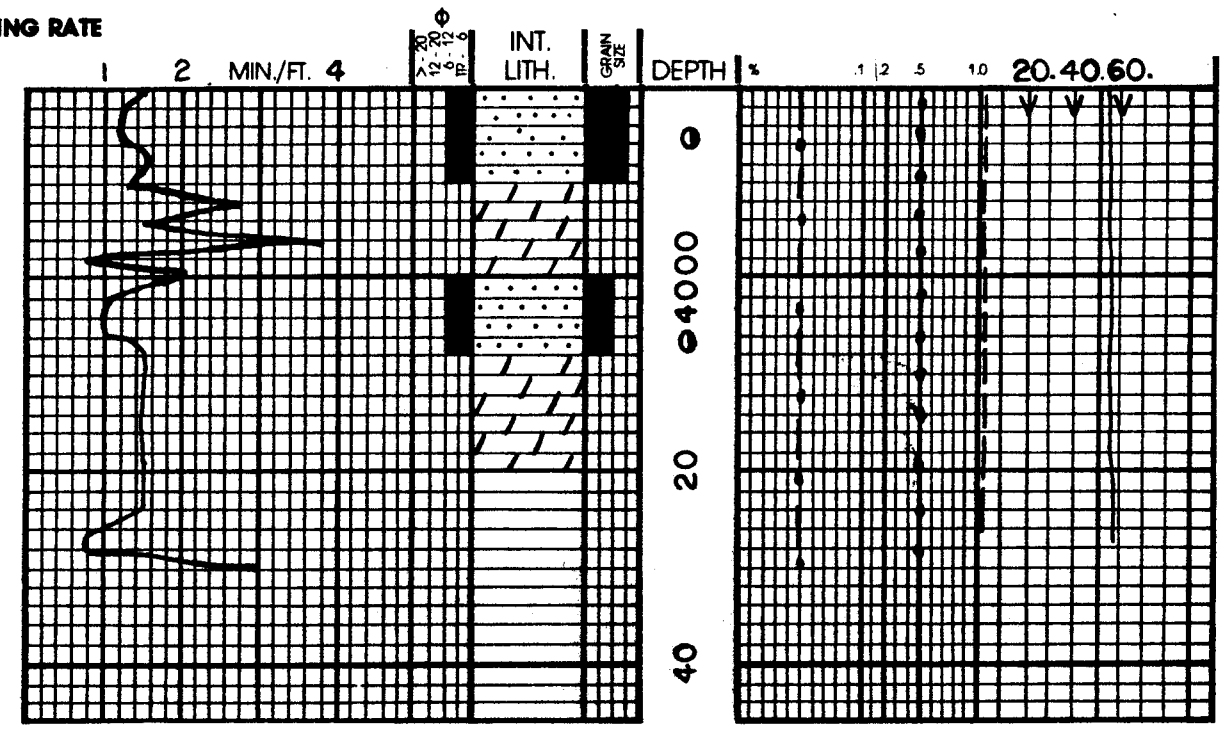
Calculated Hydrostatic Head (X Depth X Mud Wt.): _____ psi

Calculated Normally Pressured Formation (X Depth): _____ psi

Calculated Differential Pressure _____ psi

Total ___ x ___ x ___ C3 ___
C1 ___ iC4 ___
C2 ___ nC4 ___

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 9 16

Company Natural Gas Corporation Date 6-8-82

Well NGC 41-21 I

Location 8 mile flat Uintah County, Utah

Depth of Show 4074 to 4079 Cir. out at break? -- At Show?

Drill rate before show 2.5 During Show .75 After show 2.0

Mud weight before show -- After show --

Chlorides before show -- After show --

LITHOLOGY Formation: Green Shale Facies

Description: 100% Sandstone- white to clear, very fine to fine grained, subangular, friable to unconsolidated, well sorted, calcareous cement.

Quality & quantity of cuttings:

FLUORESCENCE

% of sample 30% Brightness Color yellow Uniformity

Cut slightly milky cut HCl effect --

Remarks: trace brown oil stain.

MUD GAS: Before: During: After:

Calculated Hydrostatic Head (X Depth X Mud Wt.): psi

Calculated Normally Pressured Formation (X Depth): psi

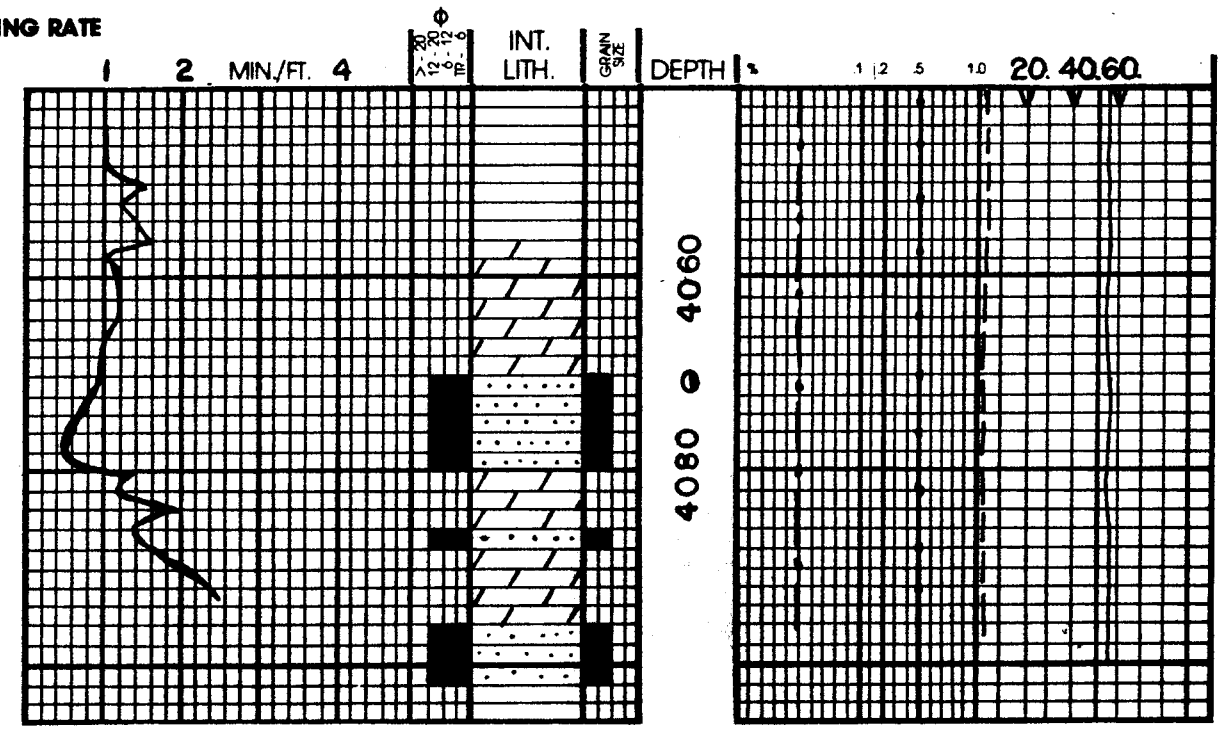
Calculated Differential Pressure psi

Total x x x C3

C1 iC4

C2 nC4

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT

SHOW # 10

Company Natural Gas Corporation Date 6/8/82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 4154 to 4170 Cir. out at break? At Show?

Drill rate before show 1.5 During Show .5 After show 1.5

Mud weight before show After show

Chlorides before show After show

LITHOLOGY Formation: Green Shale Facies

Description: 100% Sandstone - clear, white, very fine to fine grained, subangular, unconsolidated

Quality & quantity of cuttings:

FLUORESCENCE

% of sample 30% Brightness Bright Color Yellow Uniformity

Cut Fast streaming blue cut HCl effect

Remarks: 30% spotty dark brown stain

MUD GAS: Before: During: After:

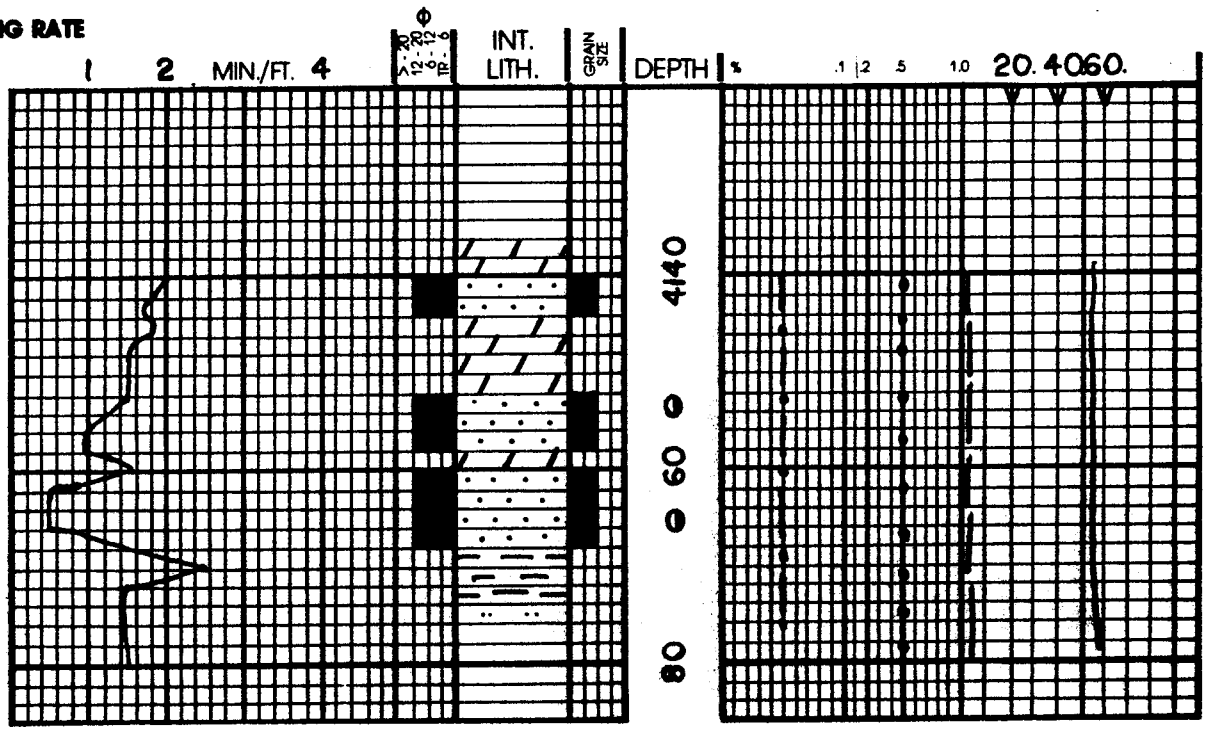
Calculated Hydrostatic Head (X Depth X Mud Wt.): psi

Calculated Normally Pressured Formation (X Depth): psi

Calculated Differential Pressure psi

Total x x x C3
C1 nC4
C2 nC4

DRILLING RATE



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SHOW REPORT SHOW # 11

Company Natural Gas Corporation Date 6-9-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 4444 to 4456 Cir. out at break? _____ At Show? _____

Drill rate before show 2.0 During Show 1.0 After show 2.0

Mud weight before show _____ After show _____

Chlorides before show _____ After show _____

LITHOLOGY Formation: Green Shale Facies

Description: 100% Sandstone - white, fine grained, predominantly consolidated, subangular, poor to moderately sorted, friable

Quality & quantity of cuttings: _____

FLUORESCENCE

% of sample 20% Brightness Bright Color Yellow Uniformity _____

Cut Very fast cut HCl effect _____

Remarks: Trace light brown live oil stain, 15% visual porosity

MUD GAS: Before: _____ During: _____ After: _____

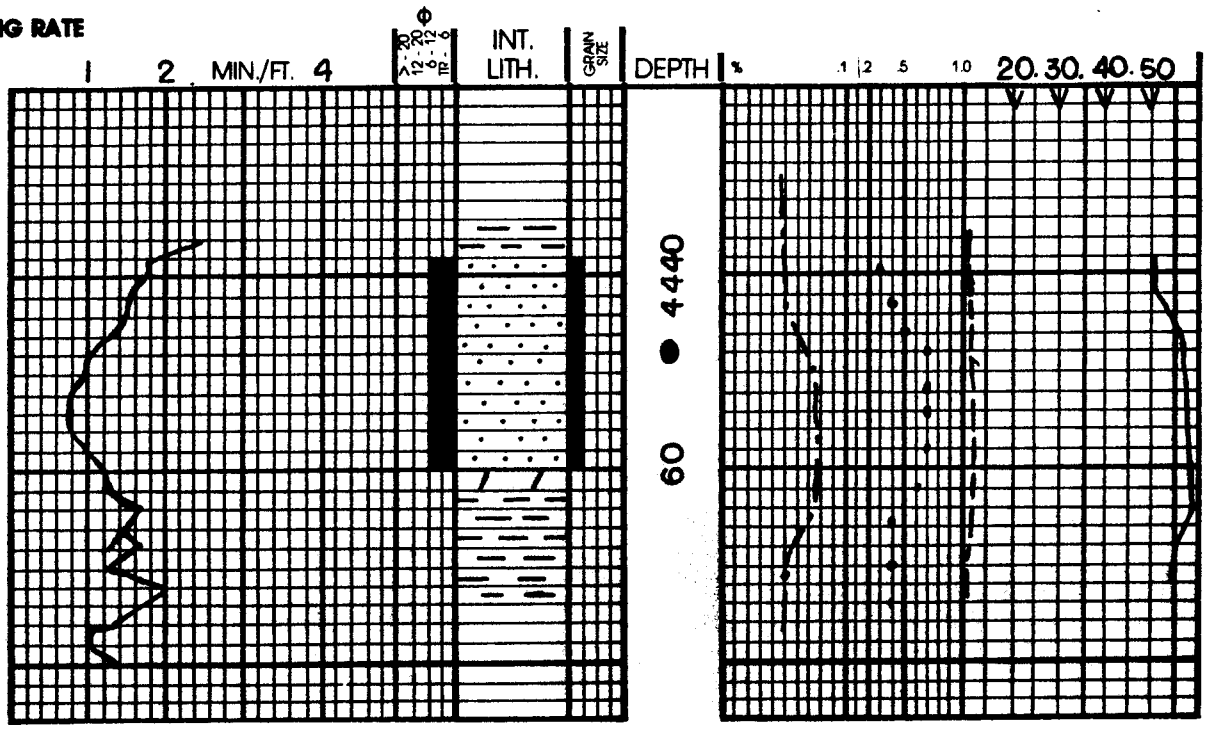
Calculated Hydrostatic Head (X Depth X Mud Wt.): _____ psi

Calculated Normally Pressured Formation (X Depth): _____ psi

Calculated Differential Pressure _____ psi

Total x x x C3
C1 nC4
C2 nC4

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 12

Company Natural Gas Corporation Date 6-9-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 4817 to 4828 Cir. out at break? _____ At Show? _____

Drill rate before show 2.0 During Show 1.0 After show 2.0

Mud weight before show _____ After show _____

Chlorides before show _____ After show _____

LITHOLOGY Formation: Green Shale Facies

Description: 100% Sandstone - light to dark brown, clear, fine to medium grained, subrounded, unconsolidated

Quality & quantity of cuttings: _____

FLUORESCENCE

% of sample _____ Brightness Dull Color Gold Uniformity _____

Cut Good fast streaming cut HCl effect _____

Remarks: Same bright yellow fluorescence, 90% dark even stain

MUD GAS: Before: _____ During: _____ After: _____

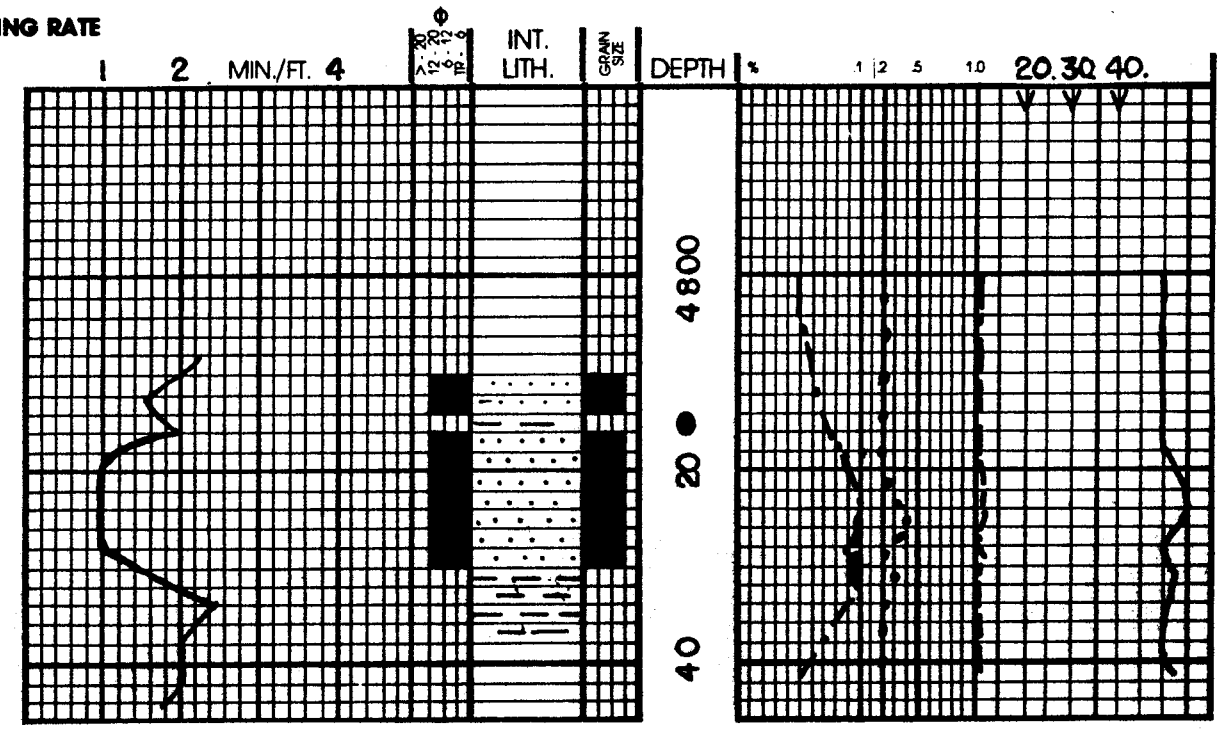
Calculated Hydrostatic Head (X Depth X Mud Wt.): _____ psi

Calculated Normally Pressured Formation (X Depth): _____ psi

Calculated Differential Pressure _____ psi

Total x x x C3
C1 iC4
C2 nC4

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 13

Company Natural Gas Corporation Date 6-9-82

Well NGC 41-21 I

Location 8 Mile Flat - Uintah County, Utah

Depth of Show 5140 to 5170 Cir. out at break? At Show?

Drill rate before show 2.0 During Show 3.0 After show 2.5

Mud weight before show After show

Chlorides before show After show

LITHOLOGY Formation: Black Shale Facies

Description: 80% Sandstone - white, clear, very fine grained, unconsolidated to friable, subangular, calcareous, trace clay fill

Quality & quantity of cuttings:

FLUORESCENCE

% of sample 20% Brightness Color Yellow Uniformity Spotty

Cut Good bleeding cut HCl effect

Remarks: 60% bright oil stain

MUD GAS: Before: During: After:

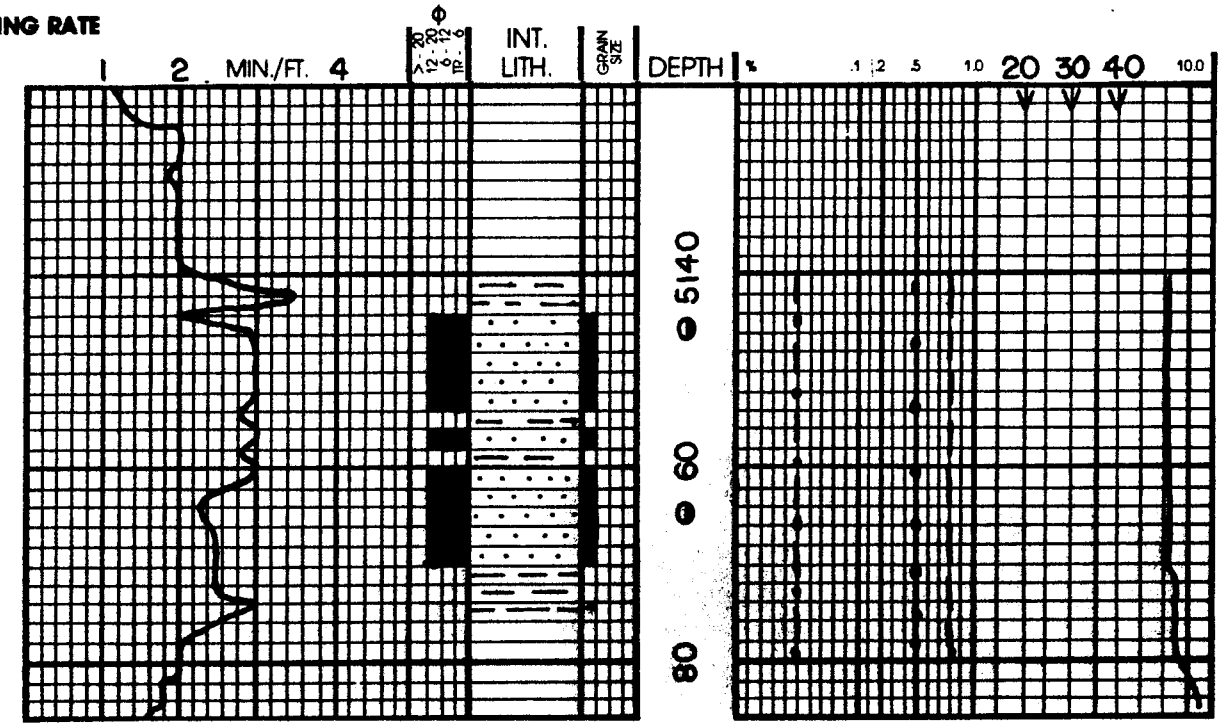
Calculated Hydrostatic Head (X Depth X Mud Wt.): psi

Calculated Normally Pressured Formation (X Depth): psi

Calculated Differential Pressure psi

Total x x x C3
C1 C4
C2 nC4

DRILLING RATE



Decollement Consulting Inc.

SHOW REPORT SHOW # 14

Company National Gas Corporation Date 6-10-82

Well NGC 41-21 I

Location 8 mile flat Uintah County, Utah

Depth of Show 5219 to 5227 Cir. out at break? -- At Show?

Drill rate before show 2.0 During Show .75 After show 2.0

Mud weight before show -- After show --

Chlorides before show -- After show --

LITHOLOGY Formation: Black Shale Facies

Description: 70% Sandstone- white to clear, frosted, very fine to fine grained, friable to unconsolidated, subangular, moderately sorted.

Quality & quantity of cuttings: --

FLUORESCENCE

% of sample 60% Brightness -- Color -- Uniformity even

Cut slow streaming cut HCl effect

Remarks: 60% with brown oil stain

MUD GAS: Before: During: After:

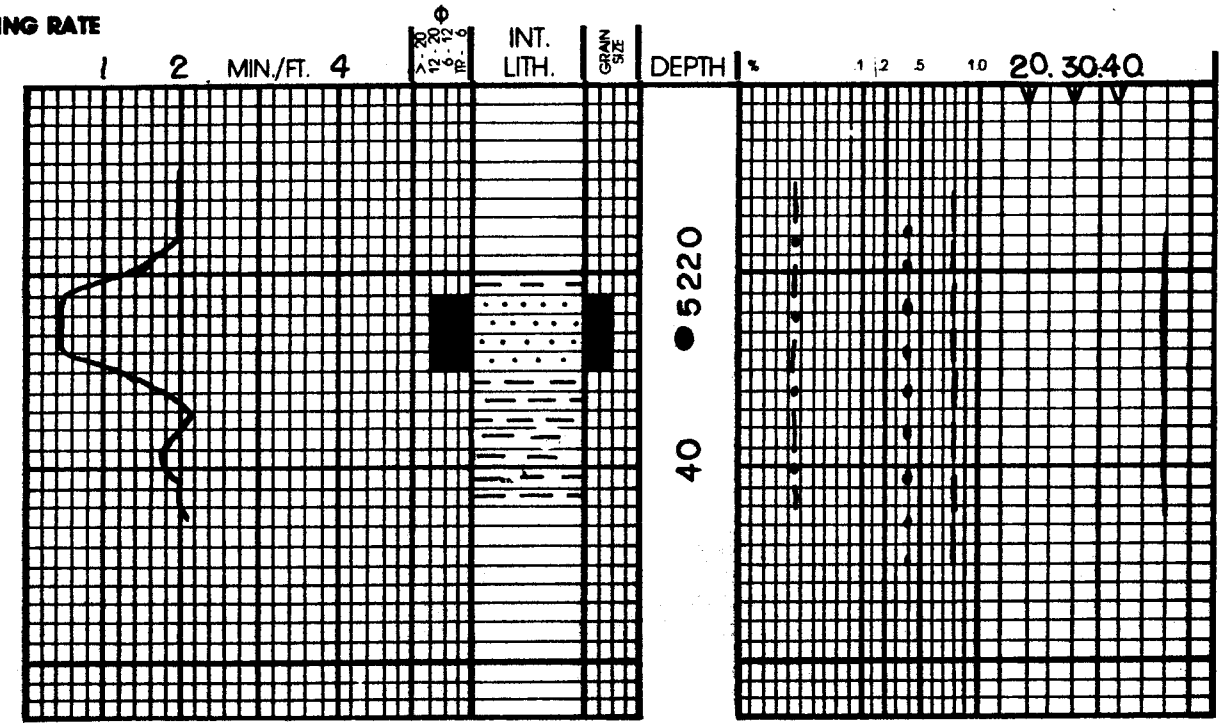
Calculated Hydrostatic Head (X Depth X Mud Wt.): psi

Calculated Normally Pressured Formation (X Depth): psi

Calculated Differential Pressure psi

Total x x x C3
C1 iC4
C2 nC4

DRILLING RATE



Decollement Consulting Inc.

FORMATION EVALUATION

Uinta Formation — Eocene

The Natural Gas Corporation 41-21I, was spudded in the Uinta Formation on June 4, 1982. It contains both lacustrine and fluviatile beds of middle to late Eocene age. No shows of gas or oil were observed in this unit.

Green River Formation — Eocene

The top of this formation was encountered at a log depth of 1210'. This corresponds to the first lacustrine dolomite observed in samples. This unit consists chiefly of brown dolomites, often well stained and showing gold fluorescence with light blue milky cuts. Some siltstones and sandstones are interbedded with the dolomites but are poorly developed and void of hydrocarbons.

Oil Shale Facies — Eocene

The Oil Shale Facies was encountered at a log depth of 2110'. Abundant kerogen was observed over the shaker at 2140'. This unit is a continuation of the lacustrine environment but contains two well developed sands near its contact with the underlying Delta Facies. A good drill break at 2728' yielded a well developed sand with free oil in the samples and a 200 unit gas increase. A second good break at 2942' yielded a similarly developed sand with a good show and a gas increase which saturated the hot wire and necessitated using the chromatograph for all subsequent gas readings. Both zones appear wet on electric logs.

Delta Facies — Eocene

The top of the Delta Facies was encountered at a log depth of 2986'. In samples the top is the base of the latter well developed sand of the oil shale facies at a drilling depth of 2980'. This unit is predominantly lacustrine consisting of brown dolomites with several interbedded shales and sand lenses of fluviatile origin. Numerous oil shows were noticed in this zone and are described under the Show Evaluation Report section of this report. All of these shows calculate out as wet on electric logs.

Green Shale Facies — Eocene

This unit was encountered at a log depth of 4010'. It separates the predominantly chemically deposited lacustrine sediments above from the less chemically deposited delta sediments below. Lithologically, this unit is chiefly composed of gray and gray green shales and predominantly fine to med-

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ium grained sands. This zone contained the best oil show of the well in a drilling break at 4817' (log depth of 4804'). It displayed dark even staining on 90% of the chips, dull gold fluorescence and a good fast blue streaming cut. A 4% increase in methane was observed here also. Logs indicate oil production from this zone.

Black Shale Facies — Eocene

This unit was encountered at a log depth of 5050'. The top of the Black Shale Facies in samples is very gradational with the first occurrence of black shales as high as 5000'. The unit represents a return to lacustrine conditions with the depositional dark brown, dark gray or black, dolomitic or calcareous, carbonaceous shales. These shales are interbedded with thin beds of very fine grained sandstones. A notable show was encountered at a drilling depth of 5219' (log depth of 5204'). The sand was well stained and displayed good porosity and fluorescence. No significant gas increase was observed but logs indicate porosities indicative of reservoir potential.

Green River Lime Facies — Eocene

The Green River Lime Facies was encountered at 5514' (loggers depth). The sample top was 5520', marked by the very dark brown, very argillaceous limestone. This lacustrine unit contained several shows of kerogen and several very thin sandstones.

Wasatch Formation — Eocene

The Wasatch Formation was encountered at a log depth of 5690'. The sample top at 5686' was marked by the occurrence of gray green shale beneath the Green River Lime, and a dramatic decrease in drill rate. The unit consists of variegated shale and several thin sand lenses. The unit grades from predominantly green gray and gray, subwaxy shales at the top to red brown, very silty, earthy shales at total depth. Two thin sands are poorly developed and lack any significant hydrocarbon shows. The well reached total depth at a drillers depth of 5870'. The hole was conditioned and logs were run. A string of 5 1/2" casing was to be run in the hole, for planned oil production of the lower Green River Formation.

LITHOLOGIC DESCRIPTIONS

Spudded well in Uinta Formation

300-320	90%	Shale - gray, brown, noncalcareous, silty, sandy, blocky, to platy, soft to firm.
	10%	Sandstone - clear, light gray, very fine to fine grained, subangular to subrounded, moderately sorted Trace glauconite
320-340	70%	Sandstone - light gray, fine to very fine grained, subangular, subrounded, moderately sorted, slightly calcareous silty
	30%	Shale - brown to gray-brown, slightly calcareous, silty, sandy, blocky, soft to firm, earthy Trace glauconite
340-360	80%	Sandstone - as above
	20%	Shale - brown to gray-brown, slightly calcareous, silty, sandy, blocky, soft to firm, waxy Trace chert
360-380	30%	Sandstone - light gray to light brown-gray, white, very fine to fine grained, moderately sorted, subangular, noncalcareous
	70%	Shale - medium brown, green-gray, silty, sandy, firm to soft, subwaxy to earthy, blocky
380-400	80%	Sandstone - white, red-brown, very fine to fine grained, poorly sorted, subangular, slightly calcareous, firm to soft, poor porosity
	20%	Shale - brown to red-brown, green, silty, sandy, blocky, glauconitic, subwaxy to earthy, slightly calcareous, firm to soft
400-420	100%	Sandstone - gray-brown, very fine grained, subrounded to subangular, slightly calcareous, firm to soft
420-440	80%	Sandstone - as above
	20%	Shale - light brown, green, calcareous, blocky, silty, subwaxy to earthy, firm to soft
440-460	65%	Sandstone - light gray to very light gray, medium gray, poorly sorted, subrounded to subangular, slightly calcareous, argillaceous, hard, salt and pepper
	35%	Shale - green, brown, noncalcareous, very silty and sandy, waxy to subwaxy, earthy
460-480	100%	Sandstone - dark brown gray, medium gray, very fine grained, subrounded, well sorted, argillaceous, calcite cement, soft to firm Trace shale - green

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480-500	50%	Sandstone - white, clear, very fine grained, good sorting subrounded, slightly calcareous, friable, slightly argillaceous
	50%	Shale - dark gray-brown, dark brown, green, silty to sandy, noncalcareous, waxy-subwaxy, soft, blocky Trace limestone
500-520	40%	Sandstone - clear, green, brown, very fine grained, good sorting, subrounded, slightly calcareous,
	60%	Shale - green, brown, gray, noncalcareous, platy to blocky, subwaxy, soft
520-540	90%	Shale - green, light brown, calcareous, silty, sandy, earthy to subwaxy, soft, blocky
	10%	Sandstone - light brown, clear, green, very fine grained, subangular, calcite cement, argillaceous, soft to firm
540-560	100%	Sandstone - light green, clear, medium gray, subrounded, unconsolidated Trace mica
560-580	100%	Shale - light gray-brown, light green, very silty, calcareous, blocky, earthy, firm
580-600	40%	Siltstone - gray-brown, brown, gray, calcareous, firm, some very sandy, grading to sandstone, trace glauconite
	20%	Sandstone - white, clear, light gray, very fine to fine grained, some medium grained, subrounded to subangular, moderately sorted, slightly calcite cement, salt and pepper, tight, approximately 1% porosity
600-620	60%	Shale - varicolored, brown, gray-brown, green, gray-green, rare brown, soft to firm, platy to blocky, some very silty, some sandy, slightly calcareous, trace fine mica
	20%	Siltstone - gray-brown, brown, gray, firm, sandy, trace glauconite
	20%	Sandstone - white, clear, gray, friable to firm, very fine to fine grained, subrounded to subangular, some silty, slightly calcareous, some salt and pepper, trace glauconite, trace red chert, trace feldspar
620-640	70%	Shale - brown, varicolored, gray-green, green, red brown, soft to firm, platy, blocky, silty, some grading to siltstone, trace fine mica, slightly calcareous, trace red chert
	30%	Siltstone - brown to gray-brown, blocky, firm to soft, sandy, some grading to sandstone
640-660	100%	Shale - brown, soft to firm, platy to blocky, silty, some grading to siltstone, slightly calcareous, trace fine mica

660-680	100%	Sandstone - white, light green, light brown, very fine to fine grained, angular to subangular, tight, subrounded, very hard, trace mica, trace glauconite
680-700	30%	Sandstone - white to light green, light brown, very fine to fine grained, angular, subangular, subrounded, tight, very hard, trace mica, trace glauconite
	40%	Siltstone - brown-gray, brown, firm, platy to blocky, sandy, some grading to sandstone, slightly calcareous
	30%	Shale - brown, green, soft to firm, platy to blocky, slightly calcareous, some silty, subwaxy, trace fine mica
700-720	60%	Shale - brown, calcareous, platy to blocky, earthy to subwaxy, soft to firm
	40%	Siltstone - brown, calcareous, sandy, soft
720-740	20%	Shale - as above
	40%	Siltstone - as above
	40%	Sandstone - green, light gray, brown, fine to very fine grained, subangular to angular, poorly sorted, calcite cement, grading to siltstone, tight, friable, mica, no fluorescence, show, odor, or cut
740-760	30%	Shale - brown, calcareous, blocky to platy, earthy to occasionally subwaxy, predominantly very silty, soft to firm, green, waxy, soft
	40%	Siltstone - brown, calcareous, very sandy, soft
	30%	Sandstone - light gray, light green, light brown, very fine to fine grained, angular, poorly sorted, calcite cement, micaceous, tight, friable to firm
760-780	30%	Shale - green, platy, subwaxy, soft, brown, as above
	40%	Siltstone - brown, calcareous, very sandy, soft
	30%	Sandstone - light brown, light gray, green, very fine to fine grained, angular, poorly sorted, calcite cement, tight, micaceous, friable
780-800	20%	Shale - brown, calcareous, blocky to platy, earthy, silty, soft to firm
	30%	Siltstone - light brown, calcareous, very sandy, soft
	50%	Sandstone - light gray, green, fine to very fine grained, angular to subangular, poorly sorted, calcite cement, micaceous, trace glauconite, silty, tight, friable to firm
800-820	30%	Shale - as above, trace green, platy, subwaxy, soft-firm
	40%	Shale - light brown, calcareous, very sandy, soft
	30%	Sandstone - light gray, green, light gray, as above, no fluorescence, show, odor, or cut

820-840	60%	Siltstone - light green, light gray, light brown, calcareous, very sandy, firm to soft
	40%	Sandstone - light gray, light brown, fine to very fine grained, angular, poorly sorted, calcite cement, silty, micaceous, trace glauconite, tight, friable to firm, no fluorescence, show, odor, or cut
840-860	50%	Shale - green, brown, platy to blocky, calcareous, subwaxy to earthy, silty in part, soft to firm
	30%	Siltstone - light to medium brown, sandy, soft to firm
	20%	Sandstone - as above, trace medium grained, subangular, unconsolidated
860-880	100%	Sandstone - clear, frosted, green, medium to coarse grained, subangular to subrounded, unconsolidated
880-900	100%	Sandstone - clear, frosted, occasionally green, medium to coarse grained, subrounded to subangular, unconsolidated
900-920	40%	Siltstone - light green, light brown, calcareous, very sandy, soft to occasionally firm
	60%	Sandstone - light gray, light brown, clear, fine grained, subangular, poor to fair sorted, calcite cement, micaceous, silty in part, firm, tight, unconsolidated, as above
920-940	30%	Siltstone - light green, light brown, calcareous, very sandy, soft to firm
	70%	Sandstone - as above, trace unconsolidated
940-960	20%	Shale - green, brown, gray, platy to blocky, calcareous, earthy, silty, soft
	40%	Siltstone - white, light green, calcareous, sandy, soft
	40%	Sandstone - clear, light gray, white, very fine grained, subangular, moderately sorted, calcite cement, micaceous, trace glauconite, tight, friable
960-980	20%	Shale - as above
	70%	Siltstone - light green, white, light gray, calcareous, sandy, grading to sandstone, soft to firm
	10%	Sandstone - light gray, white, very fine grained, subangular, moderately sorted, calcite cement, micaceous, trace glauconite, tight, friable
980-1000	60%	Shale - green, light gray, trace brown, blocky to platy, earthy-subwaxy, silty, soft to occasionally firm
	20%	Siltstone - white, green, light gray, calcareous, sandy, soft
	20%	Sandstone - light gray, white, very fine grained, subangular, moderately to poorly sorted, calcite cement, micaceous, tight, friable

1000-1020	60%	Shale - green, light green, slightly calcareous, blocky, subangular, silty, sandy, soft to occasionally firm
	30%	Sandstone - white, light green, very fine grained, slightly calcareous, subangular, friable
	10%	Siltstone - white, light green, sandy, calcareous
1020-1040	50%	Shale - green, blocky to platy, silty, sandy, noncalcareous, soft
	40%	Sandstone - light gray-green, light green, very fine grained, subangular to subrounded, calcite cement, friable
	10%	Siltstone - light gray, white, noncalcareous, soft
1040-1060	100%	Sandstone - white, very light gray-green, very fine grained, subangular to subrounded, calcite cement, friable, unconsolidated in part, moderately sorted Trace shale - light gray, as above
1060-1080	100%	Sandstone - clear, frosted, white, fine to medium grained, subrounded, moderately sorted, poor calcite cement, predominantly unconsolidated, friable
1080-1100	100%	Sandstone - clear, frosted, white, fine to medium grained, subrounded to subangular, poor to moderately sorted, calcite cement, predominantly unconsolidated
1100-1120	60%	Siltstone - white to buff, calcareous, slightly sandy, soft
	40%	Sandstone - clear, frosted, white, fine to medium grained, subrounded, poorly sorted, unconsolidated, friable, no fluorescence, show, odor, or cut
1120-1140	70%	Sandstone - clear, frosted, white, fine to medium grained, subrounded, moderately sorted, calcite cement, predominantly unconsolidated, friable, poor visible porosity (10%), friable
	30%	Siltstone - as above Trace shale - green
1140-1160	60%	Siltstone - white, light gray, calcareous, sandy, soft
	20%	Shale - gray-brown, red-brown, green, blocky-platy, earthy, subwaxy, silty, soft
	20%	Sandstone - white, light gray, fine grained, subangular, moderately sorted, calcite cement, micaceous, tight, friable - firm, no fluorescence, cut, show, or odor
1160-1180	80%	Tuffs - white, clay, micaceous, moderately calcareous, very fine grained with trace white mineral fluorescence
	20%	Shale - varicolored, gray, green, red-brown, calcareous blocky to platy, earthy, silty, soft

1180-1200	70%	Shale - gray, brown, light green, platy to blocky, calcareous, earthy, silty, soft
	30%	Sandstone - white, light gray, fine to very fine grained, subangular, moderately sorted, calcite cement, micaceous, tight, friable to firm, no fluorescence, show, odor, cut
1200-1220	70%	Dolomite - medium to light brown, cream, microcrystalline, limy, argillaceous in part, dense, firm to soft, yellow mineral fluorescence
	30%	Shale - gray, purple, blocky to platy, subwaxy to earthy, silty, slightly calcareous, soft
1220-1240	20%	Dolomite - as above
	10%	Shale - gray, brown, green, blocky to platy, slightly calcareous, earthy to subwaxy, silty, soft
	70%	Sandstone - clear, frosted, medium to occasionally coarse grained, subangular to subround, poorly sorted, some calcareous cement, unconsolidated.
1240-1260	30%	Dolomite - light to medium brown, cream, medium crystalline, argillaceous in part, limy, no visible porosity, soft to firm.
	20%	Shale - varicolored, generally as above.
	50%	Sandstone - light gray, white, clear, fine to very fine grained, subangular, moderately sorted, calcareous cement, poor visible porosity (approximately 10%), micaceous, friable, no fluorescence, stain, odor or cut.
1260-1280	30%	Dolomite - light to medium brown, medium crystalline, limy, no visible porosity, firm.
	10%	Shale - varicolored, generally as above.
	60%	Sandstone - light gray, clear, fine grained, subangular, moderately to poorly sorted, calcareous cement.

Pipe Tally-Depth Correction

Green River Formation

1280-1300	100%	Dolomite - light to medium brown, tan, medium crystalline, limy, occasionally argillaceous, no visible porosity, firm to soft.
1300-1320	70%	Dolomite - as above.
	30%	Sandstone - light gray, clear, very fine to fine grained, subangular, moderately sorted, calcareous cement, micaceous, tight, friable, no fluorescence, stain odor or cut.
1320-1340	90%	Dolomite - light to medium brown, tan, medium crystalline, occasionally argillaceous, limy, no visible porosity, firm to soft.
	10%	Shale - medium to light gray, platy, calcareous, earthy, silty, soft.

1340-1360	80%	Dolomite - light brown, microcrystalline, sucrosic, firm, even light brown stain, gold to yellow fluorescence, moderate cut, some streaming cut, light blue fluorescence.
	10%	Sandstone - as above.
	10%	Shale - as above.
1360-1380	70%	Sandstone - light gray, light brown, white to clear, very fine to medium grained, subangular to subround, poor to moderately sorted, slightly calcareous, some salt and pepper, with interbedded tuffs, no stain odor fluorescence or cut.
	10%	Shale - brown, gray brown, gray, soft to firm, platy to blocky, silty, slightly calcareous.
	20%	Dolomite - as above.
1380-1400	90%	Dolomite - light brown to brown, microcrystalline, some sucrosic, firm with even light brown stain, even gold fluorescence with slight cut, some slightly streaming, light blue fluorescence becoming a yellow ring.
	10%	Sandstone - as above.
1400-1420	60%	Sandstone - light gray, gray green, white, clear, light brown, very fine to medium grained, friable, subangular, moderately to poorly sorted, trace pyrite, some silty, trace gilsonite, possibly yellow fluorescence.
	40%	Dolomite - as above.
1420-1440	100%	Dolomite - light brown to light gray, microcrystalline, some sucrosic, limy, some brown stain, trace fractures, trace pyrite, gold fluorescence, light cut (blue fluorescence), yellow ring residue.
1440-1460	100%	Dolomite - light brown, light gray, microcrystalline, some sucrosic, limy, some brown stain, trace fractures, trace pyrite, gold fluorescence, light cut (blue fluorescence), yellow ring residue.
1460-1480	90%	Dolomite - as above.
	10%	Sandstone - white to clear, light gray, unconsolidated, friable, very fine to medium grained, angular to subangular, trace salt and pepper.
1480-1500	100%	Dolomite - light brown, light gray, microcrystalline, some sucrosic, some argillaceous, some sandy, limy, gold fluorescence, light blue cut.
1500-1520	100%	Dolomite - light brown, light gray, microcrystalline, some sucrosic, some argillaceous, some sandy, limy, gold fluorescence, light blue cut.

1520-1540	100%	Dolomite - light brown to light gray, microcrystalline, some sucrosic, some slightly argillaceous, limy, gold fluorescence, light blue cut.
1540-1560	90%	Dolomite - light brown, light gray, microcrystalline, some sucrosic, some slightly argillaceous, limy, gold fluorescence, light blue cut.
	10%	Sandstone - clear to white to light gray, very fine to medium grained, angular to subangular, moderately to poorly sorted, friable to unconsolidated, some salt and pepper, slightly calcareous.
1560-1580	80%	Dolomite - light brown to light gray, microcrystalline, some sucrosic, firm, some slightly argillaceous, trace sand grains, gold fluorescence, light blue cut.
	20%	Sandstone - white to clear to light gray, very fine to medium grained, friable to unconsolidated, subangular to angular, trace salt and pepper.
1580-1600	80%	Dolomite - as above.
	20%	Sandstone - as above.
1600-1620	100%	Dolomite - light brown to light gray, microcrystalline to sucrosic, firm to soft, gold fluorescence, light blue cut.
1620-1680	100%	Dolomite - light brown to light gray, microcrystalline, some sucrosic, trace pyrite, some slightly argillaceous. Sandstone - trace, unconsolidated, clear to white, medium grained, angular.
1680-1700	100%	Dolomite - light brown, light gray, microcrystalline, some sucrosic, trace pyrite, some slightly argillaceous.
1700-1780	100%	Dolomite - light brown to light gray, microcrystalline, some sucrosic, trace pyrolucite, some slightly argillaceous, gold fluorescence, light blue cut.
1780-1800	100%	Dolomite - gray brown, gray, microcrystalline, firm, argillaceous, gold fluorescence, trace pyrolucite.
1800-1820	90%	Dolomite - medium brown, gray brown, microcrystalline, argillaceous, firm to soft, trace pyrolucite, even gold fluorescence.
	10%	Siltstone - tan to light brown, dolomitic, limy, soft to very soft.
1820-1840	80%	Dolomite - medium brown, tan to light brown, gray brown, microcrystalline, argillaceous in part, firm to soft, even gold fluorescence.

	20%	Siltstone - as above.
1840-1860	70%	Dolomite - medium brown, red brown, microcrystalline, argillaceous to argillaceous in part, even gold fluorescence, firm.
	30%	Siltstone - tan to light brown, dolomitic, soft to very soft.
1860-1880	70%	Dolomite - red brown, gray brown, microcrystalline, slightly argillaceous, even gold fluorescence, firm.
	20%	Siltstone - tan, light brown, dolomitic, soft to very soft, slightly argillaceous.
	10%	Sandstone - clear, fine to very fine grained, subangular, unconsolidated in part, poorly sorted.
1880-1900	80%	Dolomite - red brown, microcrystalline, slightly argillaceous, silty in part, spotty gold fluorescence, firm to soft.
	20%	Siltstone - tan to light brown, dolomitic, soft to very soft, shaly.
1900-1920	70%	Dolomite - red brown, medium brown, gray brown, microcrystalline, slightly argillaceous, trace kerogen, spotty gold fluorescence, soft to firm.
	30%	Siltstone - as above, platy in part.
		Sandstone - trace, clear, fine to medium grained, subangular, trace pyrolucite.
1920-1940	65%	Dolomite - red brown to gray brown, medium brown, microcrystalline, argillaceous in part, trace kerogen, some sucrosic, firm to soft, spotty gold fluorescence.
	35%	Siltstone - light brown to tan, dolomitic, soft, very soft, shaly.
		Sandstone - trace, white, fine to medium grained, unconsolidated.
1940-1980	100%	Dolomite - brown, red brown, trace gray, microcrystalline, some sucrosic, argillaceous to argillaceous in part, firm, gold fluorescence, light blue cut, trace kerogen.

Oil Shale Facies

1980-2040	100%	Dolomite - brown to red brown, tan, microcrystalline, some sucrosic, firm, argillaceous to argillaceous in part, laminated kerogen, gold fluorescence, light blue cut.
2040-2120	100%	Dolomite - brown, gray brown, red brown, tan, gray, microcrystalline, some sucrosic, argillaceous to argillaceous in part, limy in part, trace laminated kerogen, gold fluorescence, light blue cut.

2120-2140	100%	Dolomite - brown, gray brown, gray, red brown, tan, microcrystalline, some sucrosic, argillaceous to argillaceous in part, limy in part, abundant kerogen laminations, gold fluorescence, light blue cut, abundant kerogen over shaker.
2140-2200	100%	Dolomite - brown, gray brown, gray, red brown, tan, microcrystalline, some sucrosic, argillaceous to argillaceous in part, limy in part, abundant kerogen laminations, gold fluorescence, light blue cut.
2200-2220	80%	Dolomite - gray, gray brown, some brown, tan, microcrystalline, some sucrosic, argillaceous to argillaceous in part, some limy, spotty fluorescence, slightly cut.
	20%	Shale - gray, soft to firm, platy to blocky, dolomitic, trace pyrite.
2220-2240	70%	Dolomite - brown, gray, red brown, tan, microcrystalline, some sucrosic, argillaceous to argillaceous in part, some limy, gold fluorescence, light blue cut.
	20%	Sandstone - white to clear to gray, very fine to medium grained, friable to unconsolidated, subangular to subround.
	10%	Shale - as above.
2240-2260	100%	Dolomite - brown gray, red brown, tan, microcrystalline, some sucrosic, argillaceous, some limy, gold fluorescence, light blue cut, abundant kerogen.
2260-2300	100%	Dolomite - brown, gray brown, tan, microcrystalline, some sucrosic, argillaceous, with abundant kerogen, gold fluorescence, blue cut.
2300-2320	100%	Dolomite - brown, gray brown, tan, microcrystalline, some sucrosic, trace pyrite, argillaceous, with abundant kerogen, gold fluorescence, blue cut.
2320-2340	100%	Dolomite - dark brown, light brown to tan, gray brown, microcrystalline, some sucrosic, some argillaceous, friable, with abundant kerogen, even gold fluorescence, blue cut.
2340-2380	100%	Dolomite - gray brown, light brown to tan, dark red brown, some sucrosic, slightly argillaceous, firm, abundant kerogen, even gold fluorescence, blue cut.
2380-2400	100%	Dolomite - dark to light brown, tan, predominantly medium crystalline, occasionally sucrosic, argillaceous in part, abundant kerogen and oil stain, abundant dull gold fluorescence, good cut.

2400-2420	100%	Dolomite - medium to light brown, dark brown, predominantly medium crystalline, increasingly argillaceous, occasional kerogen laminations, abundant stain, abundant dull gold fluorescence, good blue cut, soft to firm.
2420-2440	100%	Dolomite - generally as above, predominantly argillaceous, also sucrosic, continued good fluorescence and cut.
2440-2460	100%	Dolomite - medium to dark brown, tan, predominantly argillaceous, abundant kerogen laminations, occasionally medium crystalline, good stain, abundant dull gold fluorescence, good blue cut, gold residue.
2460-2480	100%	Dolomite - light to dark brown, tan, predominantly medium crystalline, argillaceous in part, occasional kerogen laminations, firm to soft, abundant stain, fluorescence, cut.
2480-2500	100%	Dolomite - medium to light brown to tan, predominantly medium crystalline, argillaceous in part, occasional kerogen laminations, decreasing stain, dull fluorescence, slow streaming cut.
2500-2540	100%	Dolomite - medium to dark brown, tan, medium crystalline in part, very argillaceous in part, abundant kerogen laminations, soft to firm, abundant dull fluorescence, good streaming cut.
2540-2560	100%	Dolomite - dark to medium brown, tan, predominantly medium crystalline, argillaceous in part, trace kerogen laminations, abundant dull fluorescence, good streaming cut.
2560-2580	100%	Dolomite - dark brown, medium brown, light brown to tan, medium crystalline, argillaceous in part, abundant kerogen, firm to soft, abundant dull fluorescence, slow milky cut, trace pyrolucite, trace kerogen laminations.
2580-2590	100%	Dolomite - dark red brown, medium brown, light brown, medium crystalline, argillaceous in part, some sucrosic, soft to firm, some silty, dull fluorescence, occasionally streaming cut.
2590-2600	100%	Dolomite - tan to light brown, gray brown, predominantly medium crystalline, argillaceous (slight), abundant pyrolucite, trace kerogen laminations, firm to soft, dull fluorescence.
2600-2610	100%	Dolomite - generally as above, abundant kerogen laminations, trace pyrolucite.

2610-2620	100%	Shale - dark red brown, medium brown, earthy, dolomitic, very abundant kerogen laminations, occasionally microcrystalline to sucrosic, sandy, silty, spongy, earthy, good streaming cut, abundant yellow green fluorescence. POSSIBLE MAHOGONY OIL SHALE.
2620-2630	100%	Shale - dark red brown, medium brown, earthy, very abundant kerogen laminations, occasionally microcrystalline, sucrosic, dolomitic, sandy, silty, spongy, platy, good fast streaming cut, abundant blue fluorescence.
2630-2650	100%	Dolomite - medium brown, tan, dark brown, medium clean, argillaceous, silty, abundant kerogen, some kerogen laminations, dull even fluorescence, firm to soft.
2650-2660	100%	Dolomite - tan to medium brown, occasionally dark brown, microcrystalline, argillaceous in part, occasional kerogen laminations, dull fluorescence, good bleeding cut, soft.
2660-2670	100%	Dolomite - generally as above, occasionally sucrosic.
2670-2680	60%	Shale - medium gray, gray green, blocky, slightly calcareous, earthy, sandy to silty, firm to soft.
	40%	Dolomite - light brown, tan, microcrystalline, argillaceous in part, abundant mineral fluorescence, soft to firm.
2680-2690	40%	Shale - generally as above, occasionally subwaxy.
	40%	Dolomite - generally as above.
	20%	Siltstone - light gray, grading to very fine grained sandstone, calcareous, micaceous, soft.
2690-2700	70%	Shale - green to gray, gray, blocky, earthy, slightly calcareous, silty to sandy, soft to firm.
	20%	Dolomite - light to medium brown, tan, microcrystalline, argillaceous in part, abundant mineral fluorescence, soft to firm.
	10%	Siltstone - as above.
2700-2710	70%	Shale - medium gray, blocky to platy, slightly calcareous, silty, earthy to subwaxy, soft to firm.
	10%	Dolomite - generally as above.
	20%	Sandstone - light gray, white, very fine grained, subangular, moderately sorted, calcareous cement, occasionally micaceous, tight, friable to firm, no fluorescence stain odor or cut.
2710-2720	30%	Shale - as above.
	30%	Dolomite - generally as above, light to medium brown, tan, microcrystalline, occasionally argillaceous, mineral fluorescence.

	40%	Sandstone - light gray, white, subangular, moderately sorted, calcareous cement, friable, no stain, trace light yellow fluorescence, slight gold cut.
2720-2730	10%	Dolomite - as above.
	10%	Shale - generally as above.
	80%	Sandstone - clear, frosted, angular to subangular, medium grained, unconsolidated, spotty medium brown stain on 40% of chips, 50% bright yellow fluorescence, good fast flash cut, abundant free oil in sample.
2730-2740	100%	Sandstone - frosted, clear, medium to coarse grained, subangular to angular, unconsolidated, spotty medium brown stain on 40% of chips, 60% bright yellow fluorescence, good fast flash cut, abundant free oil in sample.
2740-2750	80%	Sandstone - generally as above, medium brown spotty stain on 20% of chips, 30% bright yellow fluorescence, good streaming cut.
	20%	Dolomite - light to medium brown, tan, microcrystalline, argillaceous in part, mineral fluorescence, soft.
2750-2760	80%	Sandstone - clear, frosted, fine grained to occasionally medium grained, predominantly unconsolidated, subangular, occasional light brown stain, 20% yellow fluorescence, occasional fair streaming cut.
	20%	Dolomite - generally as above.
2760-2770	30%	Shale - medium gray, slightly calcareous, earthy, silty to soft to firm.
	30%	Dolomite - tan, medium brown, microcrystalline, occasionally argillaceous, mineral fluorescence, soft to firm.
	40%	Sandstone - light gray, white, fine grained, subangular, moderately sorted, poorly cemented to calcareous, friable, occasional light brown stain, 10% yellow fluorescence, slight cut.
2770-2790	100%	Dolomite - buff, tan, cryptocrystalline, microcrystalline, in part, yellow mineral fluorescence, firm, no fluorescence stain odor or cut.
2790-2800	40%	Dolomite - light gray, buff, tan, light brown, crypto to occasionally microcrystalline
	60%	Shale - light gray, blocky, calcareous, subwaxy to occasionally earthy, slightly silty, firm.
2800-2810	100%	Dolomite - dark to medium brown, tan, very argillaceous, no visible crystalline structure, poor visible porosity, abundant kerogen laminations, abundant dark kerogen stain, dull fluorescence, slow bleeding cut.

2810-2820	100%	Dolomite - buff, tan, medium brown, microcrystalline, bright yellow fluorescence, slow bleeding cut, soft to firm.
2820-2830	100%	Dolomite - generally as above, also tan, cryptocrystalline.
2830-2840	100%	Dolomite - medium to dark brown, tan, trace light gray, predominantly microcrystalline, commonly argillaceous, abundant kerogen laminations, abundant dull gold fluorescence, slow milky cut, firm to soft. Shale - trace, gray.
2840-2850	100%	Dolomite - buff to gray, tan, medium crystalline to occasionally cryptocrystalline, dense, firm, no visible porosity. Shale - trace, green.
2850-2860	40% 60%	Very abundant Kerogen. Dolomite - light brown, tan, dark brown, microcrystalline in part, sucrosic in part.
2860-2870	100%	Dolomite - light gray to gray, light brown, microcrystalline, some sucrosic, slightly argillaceous, kerogen probably associated with light brown dolomite.
2870-2880	100%	Dolomite - light gray to gray, light brown, microcrystalline, some sucrosic, slightly argillaceous, some kerogen.
2880-2900	100%	Dolomite - light gray to gray, light brown, microcrystalline, some sucrosic, argillaceous, kerogen probably associated with light brown dolomite.
2900-2910	60% 40%	Dolomite - light gray to gray, microcrystalline, some sucrosic, sandy, some grading to very fine grained sandstone. Sandstone - white to light gray, very fine to fine grained, friable to unconsolidated, subangular to subround, moderately saturated, dolomitic cement, no stain odor fluorescence or cut.
2910-2920	100%	Dolomite - light gray to very light gray, light brown, microcrystalline, some sucrosic, sandy, silty, firm, kerogen probably associated with light brown dolomite.
2920-2940	80% 20%	Dolomite - light gray to gray, light brown, microcrystalline, some sucrosic, sandy, some argillaceous, kerogen probably associated with brown dolomite. Sandstone - white to light gray, very fine to fine grained, friable to unconsolidated, subround to subangular, dolomitic.

2940-2950	100%	Sandstone - white to clear, very fine to fine grained, unconsolidated, subangular to angular, free oil, yellow fluorescence, blooming cut.
2950-2960	100%	Sandstone - as above, well sorted, good porosity.
2960-2980	100%	Sandstone - clear to white, very fine to fine grained, unconsolidated, subangular to angular, well sorted, free oil, yellow fluorescence, blooming cut.

Delta Facies

2980-2990	100%	Dolomite - light gray, microcrystalline, some sucrosic, argillaceous, silty, limy, yellow gold fluorescence, no cut.
2990-3000	80%	Dolomite - brown to light brown, microcrystalline, some sucrosic, argillaceous, silty, limy, yellow gold fluorescence, no cut.
	20%	Sandstone - white to clear, very fine to fine grained, friable, dolomitic, some pinpoint stain, very light cut.
3000-3020	100%	Dolomite - brown, light brown, microcrystalline, some sucrosic, argillaceous, silty, limy, yellow gold fluorescence, no cut.
3020-3030	90%	Dolomite - light brown, as above.
	10%	Sandstone - white to clear, very fine to fine grained, friable, subangular to angular, with some oil stain, yellow fluorescence, blue white streaming cut.
3030-3050	100%	Dolomite - gray, light brown, brown, microcrystalline, some sucrosic, argillaceous, gold fluorescence, light cut, kerogen and kerogen laminations.
3050-3060	100%	Dolomite - tan to light brown, light gray, microcrystalline, some sucrosic, argillaceous, limy, bright gold fluorescence.
3060-3070	90%	Dolomite - light gray, gray, tan, microcrystalline, some sucrosic, argillaceous, sandy, spotty gold fluorescence.
	10%	Sandstone - white to light gray, very fine to fine grained, friable, subangular, dolomitic.
3070-3090	100%	Dolomite - tan to light gray, microcrystalline, some sucrosic, argillaceous, sandy, spotty gold fluorescence.
3090-3100	100%	Dolomite - light gray to tan, microcrystalline, some sucrosic, argillaceous, limy in part, spotty gold fluorescence.
3100-3120	80%	Dolomite - tan, some light gray, microcrystalline, some

		sucrosic, argillaceous, green yellow fluorescence.
	20%	Sandstone - gray, very fine to fine grained, friable, subangular, dolomitic, trace pyrite, no stain, fluorescence odor or cut.
3120-3130	90%	Dolomite - as above.
	10%	Sandstone - as above.
3130-3180	100%	Dolomite - brown, tan, light gray, microcrystalline, some sucrosic, argillaceous, limy in part, with kerogen and kerogen laminations, gold fluorescence, slight blue cut.
3180-3200	100%	Dolomite - tan to light brown, microcrystalline, some sucrosic, argillaceous to argillaceous in part, some silty, with some stain and kerogen laminations, dull gold fluorescence.
3200-3210	100%	Dolomite - as above.
		Shale - trace, gray, firm to soft, platy to silty, dolomitic.
3210-3220	90%	Dolomite - tan to light brown, predominantly microcrystalline, some sucrosic, argillaceous, silty, soft to firm, with some stain and kerogen laminations.
	10%	Shale - gray, firm to soft, platy, silty, dolomitic.
3220-3230	90%	Shale - gray, firm to soft, platy, silty, dolomitic.
	10%	Dolomite - as above.
3230-3240	70%	Shale - gray, soft to firm, silty, dolomitic.
	30%	Dolomite - light brown to tan, predominantly microcrystalline, some sucrosic, argillaceous, some silty, trace kerogen laminations, dull gold fluorescence.
3240-3250	80%	Shale - as above.
	20%	Dolomite - as above.
3250-3270	100%	Shale - gray, soft to firm, silty and subwaxy, dolomitic.
		Dolomite - trace, as above.
3270-3280	60%	Shale - gray, soft to firm, platy to blocky, silty and subwaxy, dolomitic.
	40%	Sandstone - white to clear, very fine to medium grained, unconsolidated to friable, subangular to angular, with 30% yellow spotty fluorescence, spotty stain, fair blue cut, and free oil.
3280-3290	80%	Sandstone - white to clear, very fine to medium grained, unconsolidated to friable, subangular to angular, with 30% yellow spotty fluorescence, 20% spotty light stain, fair blue cut and free oil.

	20%	Dolomite - light brown, microcrystalline, argillaceous.
3290-3300	100%	Sandstone - white to clear, very fine to medium grained, unconsolidated, friable, subangular to angular, with 30% yellow spotty fluorescence, spotty stain, fair blue cut and some free oil.
3300-3310	70%	Shale - gray, soft to firm, blocky to platy, silty, dolomitic.
	30%	Sandstone - as above.
3310-3320	60%	Sandstone - white to clear, very fine to medium grained, friable, subangular to angular, with fluorescence stain cut.
	40%	Shale - as above.
3320-3330	50%	Sandstone - as above.
	50%	Shale - gray, soft to firm, platy to blocky, silty, dolomitic.
3330-3340	80%	Dolomite - dark brown to light brown, microcrystalline, argillaceous, silty, with kerogen laminations.
	20%	Shale - as above.
3340-3350	60%	Shale - as above.
	40%	Dolomite - light brown to dark brown, microcrystalline, some sucrosic, argillaceous, with dull gold fluorescence.
3350-3360	80%	Shale - gray, soft to firm, platy to blocky, silty, dolomitic.
	20%	Dolomite - as above.
3360-3370	90%	Shale - as above.
	10%	Dolomite - as above.
3370-3380	90%	Shale - gray, soft to firm, platy, blocky, silty, some subwaxy.
	10%	Dolomite - light brown to brown, microcrystalline, as above.
3380-3400	100%	Shale - gray, soft to firm, platy to blocky, silty, some subwaxy, dolomitic, trace pyrite.
3400-3410	60%	Shale - as above.
	20%	Dolomite - tan, light brown, argillaceous, microcrystalline in part, soft.
	20%	Sandstone - light gray, clear, very fine grained, subangular, moderately sorted, unconsolidated, trace light spotty stain, 20% yellow fluorescence, slight milky cut.

3410-3420	70%	Shale - gray, platy to blocky, silty, earthy to occasionally subwaxy, calcareous, soft to firm.
	20%	Dolomite - as above.
	10%	Sandstone - unconsolidated, as above, trace stain, 10% yellow fluorescence, slight milky cut.
3420-3440	80%	Dolomite - medium to light brown, tan, microcrystalline, argillaceous in part, soft to firm, dull gold fluorescence, slow bleeding cut.
	20%	Shale - as above.
3440-3460	100%	Dolomite - light to medium brown, microcrystalline, occasionally argillaceous, soft to firm, some kerogen, occasional ostracods, abundant bright yellow fluorescence, slight milky cut.
3460-3470	100%	Dolomite - medium to dark brown, tan, buff, predominantly microcrystalline, occasionally sucrosic, argillaceous in part, occasional kerogen, abundant bright yellow fluorescence, slight milky cut.
3470-3480	70%	Dolomite - generally as above.
	30%	Shale - medium gray, blocky to platy, silty to sandy, calcareous, soft to firm.
3480-3490	80%	Shale - as above.
	20%	Dolomite - light to medium brown, tan, microcrystalline, argillaceous in part, occasionally sucrosic, trace kerogen, bright yellow fluorescence, no cut.
3490-3500	60%	Dolomite - as above.
	40%	Shale - medium gray, green gray, calcareous, blocky to platy, silty, firm to soft.
3500-3510	90%	Dolomite - cream, buff, predominantly gray, argillaceous in part, abundant bright mineral fluorescence, soft to firm.
	10%	Shale - as above.
3510-3520	70%	Dolomite - as above.
	30%	Shale - gray, green gray, calcareous, blocky to platy, silty, soft to occasionally firm.
		Sandstone - trace, unconsolidated, medium grained, subround, very abundant kerogen.
3520-3530	30%	Dolomite - as above.
	30%	Shale - as above, silty to sandy, earthy.
	40%	Sandstone - white, light gray, clear, very fine grained, grading to siltstone, subangular, moderately sorted, predominantly clean matrix, some calcareous cement, poor visible porosity, no visible stain, 20% bright yellow fluorescence,

slow milky cut, friable to firm.

3530-3540	10%	Dolomite - cream, light brown, predominantly argillaceous, some microcrystalline, soft to firm
	70%	Shale - green gray, gray, calcareous, earthy to subwaxy, blocky to platy, silty, soft to firm.
	20%	Sandstone - generally as above, no visible stain, trace yellow fluorescence, slight milky cut.
3540-3550	10%	Dolomite - as above.
	70%	Shale - as above.
	20%	Siltstone - light gray, white, grading to very fine grained sandstone, calcareous, soft, no fluorescence, stain, odor or cut.
3550-3560	20%	Dolomite - light brown, tan, microcrystalline, argillaceous in part, fair visible porosity, light brown stain, gold fluorescence, slow bleeding cut.
	60%	Shale - gray, gray green, platy to blocky, silty, calcareous, soft to firm.
	20%	Siltstone - light gray, white, grading to very fine grained sandstone, calcareous, soft.
3560-3570	10%	Dolomite - as above.
	60%	Shale - as above.
	10%	Siltstone - as above.
	20%	Sandstone - light gray, white, very fine grained, subangular, moderately sorted, poor cement to calcareous, visible porosity, 8-10%, with visible stain.
3570-3580	10%	Shale - as above.
	90%	Sandstone - clear, white, light gray, very fine grained, subangular, very loosely consolidated, moderately sorted, poor cement to calcareous, 10-14% visible porosity, spotty light brown stain on 20% of chips, bright yellow fluorescence on 50%, good fast streaming cut, friable.
	VERY ABUNDANT LIGHT CRUDE	
3580-3590	30%	Shale - as above.
	30%	Dolomite - tan, light brown, crypto to microcrystalline, bright fluorescence, soft to firm.
	40%	Sandstone - light gray, clear, white, fine to occasionally medium grained, predominantly very loose consolidated to unconsolidated, 10-14% visible porosity, spotty dark brown stain on 20% of chips, slow gold bleeding cut, friable.
3590-3610	80%	Limestone - white, buff, crypto to microcrystalline, firm to soft, dull fluorescence.
	10%	Dolomite - brown, gray brown, microcrystalline, argillaceous, bright yellow fluorescence, soft to firm.

	10%	Shale - gray, gray green, calcareous, soft, blocky to platy, slightly silty, subwaxy to earthy. Sandstone - trace, white, clear, light gray, consolidated, soft to firm, fast streaming blue white cut.
3610-3620	50%	Limestone - white, buff to tan, crypto to microcrystalline, firm to soft, dull fluorescence.
	40%	Dolomite - brown, gray brown, microcrystalline, argillaceous, slightly silty, slightly sandy, firm, bright yellow fluorescence.
	10%	Shale - green to gray green, slightly argillaceous, calcareous, blocky to platy, subwaxy to earthy.
3620-3630	40%	Limestone - buff, white, crypto to microcrystalline, firm to soft, dull fluorescence.
	30%	Dolomite - brown, tan, microcrystalline, limy, argillaceous, firm, bright yellow fluorescence.
	20%	Shale - light gray, calcareous, sandy in part, blocky to platy.
	10%	Sandstone - clear, fine grained, angular, moderately sorted, calcareous cement, friable to firm, no fluorescence stain odor or cut.
3630-3640	70%	Shale - light gray, green gray to black gray, platy to blocky, calcareous, slightly silty, subwaxy.
	30%	Dolomite - generally as above. Sandstone - trace, as above.
3640-3650	30%	Dolomite - medium to light brown, buff, predominantly microcrystalline, argillaceous in part, limy, bright to dull yellow fluorescence, slow cut, occasional ostracods.
	50%	Shale - as above.
	20%	Siltstone - light gray, white, calcareous, very sandy to grading to sandstone, soft, no fluorescence stain odor or cut.
3650-3660	80%	Shale - gray, green gray, platy to blocky, predominantly subwaxy, silty in part, soft.
	20%	Dolomite - as above.
3660-3670	30%	Dolomite - as above.
	70%	Sandstone - clear, fine to occasionally medium grained, subround to subangular, moderately sorted, loosely consolidated, friable, spotty dark brown stain on 50% of chips, 80% bright yellow fluorescence, good fast flash cut, 10-14% visible porosity, some with slow streaming cut.
3670-3680	20%	Dolomite - as above.
	20%	Siltstone - light gray, white, calcareous, very sandy, soft.
	60%	Sandstone - generally as above, dark brown spotty stain on 40% on chips, 60% bright yellow fluorescence, good slow

streaming cut, 10-14% visible porosity, friable.

3680-3690	20%	Dolomite - as above.
	80%	Sandstone - clear, fine to medium grained, subround to subangular, poorly sorted, no visible cut, 14-18% visible porosity, unconsolidated in part, dark brown spotty stain on 60% of chips, 60% bright yellow fluorescence, good slow streaming cut, abundant free oil in samples and pits.
3690-3700	30%	Dolomite - medium to light brown, microcrystalline, occasionally argillaceous, bright gold fluorescence.
	70%	Shale - light to medium gray, calcareous, blocky to platy, earthy to subwaxy, occasionally very silty.
		Sandstone - trace, as above.
3700-3710	70%	Limestone - white, buff, dolomitic, micro to cryptocrystalline, firm to soft, dull fluorescence.
	30%	Dolomite - gray, green gray, some brown, microcrystalline, bright gold fluorescence.
3710-3720	50%	Shale - green, green gray, noncalcareous, blocky to platy, subwaxy, silty, soft to firm.
	30%	Dolomite - dark brown, microcrystalline, argillaceous, firm to soft, bright gold fluorescence.
	20%	Sandstone - clear, white, fine to medium grained, subround to subangular, poorly sorted, friable.
3720-3730	70%	Dolomite - light gray, microcrystalline, argillaceous in part, soft to firm.
	30%	Sandstone - clear, white, fine to very fine grained, calcareous cement, occasionally medium grained, poorly sorted, subround to subangular, no fluorescence.
3730-3740	50%	Dolomite - light gray, brown gray, microcrystalline, some sucrosic, argillaceous, soft to firm.
	50%	Limestone - white, buff, micro to cryptocrystalline, dolomitic, soft, brown yellow fluorescence.
		Sandstone - trace, generally as above.
3740-3750	100%	Dolomite - light gray, green gray, microcrystalline, argillaceous, sandy, silty, some sucrosic, soft to firm, no fluorescence.
		Limestone - as above, trace.
3750-3760	90%	Dolomite - light gray to green gray, microcrystalline, argillaceous in part, soft to firm, no fluorescence.
	10%	Sandstone - clear, fine to very fine grained, calcareous cement, consolidated, no stain, subangular to subround, poorly sorted, firm.

3760-3770	90%	Dolomite - light gray to green gray, light brown, microcrystalline, slightly argillaceous, firm to soft.
	10%	Limestone - white, chalky, very soft, silty, sandy.
		Sandstone - trace, as above.
3770-3780	100%	Dolomite - as above.
3780-3790	80%	Dolomite - as above.
	10%	Sandstone - clear, very fine to fine grained, calcareous cement, consolidated, no stain, subround to subangular, poorly sorted, firm.
	10%	Limestone - white, chalky, silty, sandy, very soft.
3790-3800	100%	Dolomite - light gray to green gray, medium brown, light brown, microcrystalline, argillaceous in part, slightly silty, firm, no fluorescence.
3800-3810	100%	Dolomite - generally as above, some sucrosic.
3810-3820	80%	Dolomite - light gray to gray, brown to light brown, microcrystalline, argillaceous, firm, no fluorescence.
	20%	Sandstone - clear, very fine to fine grained, calcareous cement, poorly sorted, unconsolidated, subangular, no stain.
3820-3830	100%	Dolomite - medium gray, medium brown, microcrystalline, argillaceous, silty, some stain, firm, no fluorescence.
3830-3840	100%	Dolomite - light gray to green gray, light brown to brown, microcrystalline, slightly argillaceous, soft to firm, no fluorescence.
3840-3850	100%	Dolomite - light gray to medium gray, light brown, microcrystalline, argillaceous, soft to firm, silty, sandy, no fluorescence.
3850-3860	90%	Dolomite - as above, some stain.
	10%	Sandstone - clear, very fine to fine grained, calcareous cement, subround, poorly sorted, friable, no stain.
3860-3870	100%	Dolomite - generally as above, some sucrosic.
3870-3880	100%	Dolomite - dark red brown, light gray, medium brown, microcrystalline, some sucrosic, argillaceous, silty, some sandy, firm.
3880-3890	90%	Dolomite - generally as above, very sandy, silty, argillaceous.
	10%	Sandstone - clear, white, fine to very fine grained, calcareous cement, subangular, some stain, friable.

3890-3900	60%	Sandstone - clear, white, fine to very fine grained, calcareous cement, subangular to subround, moderately to poorly sorted, friable, 20% spotty light brown stain, slightly milky cut, 10% visible porosity, 20% bright yellow fluorescence.
	40%	Dolomite - generally as above.
3900-3910	100%	Sandstone - clear, white, fine to very fine grained, calcareous cement, subangular to subround, poorly sorted, consolidated, friable, 20% stain, 20% fluorescence, slight milky cut.
3910-3920	100%	Dolomite - medium gray, brown, microcrystalline, some sucrosic, predominantly argillaceous, silty, sandy, firm.
3920-3930	90%	Sandstone - clear, white, fine to very fine grained, calcareous cement, subangular to subround, poorly sorted, friable, 20% spotty dark brown stain, slightly milky cut, 20% bright yellow fluorescence.
	10%	Dolomite - as above.
3930-3940	90%	Sandstone - white, clear, very fine to fine grained, subround, calcareous cement, consolidated, friable, 20% spotty dark brown stain, 25% bright yellow fluorescence, slight milky cut, 10% visible porosity.
	10%	Dolomite - dark gray, dark brown, microcrystalline, limy, predominantly argillaceous, sandy, silty, firm.
3940-3950	90%	Dolomite - dark gray to medium gray, light brown, predominantly microcrystalline, argillaceous, silty, sandy, firm.
	10%	Sandstone - clear, white, very fine to fine grained, calcareous cement, consolidated, friable.
3950-3960	100%	Dolomite - gray brown, light brown, microcrystalline, occasionally argillaceous, firm, predominantly stained, 20% bright yellow fluorescence, streaming cut. Sandstone - trace, generally as above.
3960-3970	100%	Dolomite - gray brown to dark gray brown, microcrystalline, argillaceous, firm, 20% bright yellow fluorescence, streaming cut.
3970-3980	80%	Sandstone - white to light gray, clear, very fine to medium grained, friable to unconsolidated, calcareous, angular to subangular, trace salt and pepper, with fluorescence, spotty stain, light milky cut.
	20%	Dolomite - as above.

Green Shale Facies

3980-3990	100%	Sandstone - white to light gray, clear, frosted, very fine to medium grained, friable to unconsolidated, calcareous, angular to subangular, trace salt and pepper, with fluorescence stain, light milky cut. Dolomite - trace, as above.
3990-4000	80%	Dolomite - gray, gray to light tan, microcrystalline, argillaceous, some silty, some mineral fluorescence.
	20%	Sandstone - as above, with stain, fluorescence, light milky cut.
4000-4010	40%	Dolomite - gray, microcrystalline, argillaceous, some silty, firm, some mineral fluorescence.
	60%	Sandstone - clear to white to frosted, very fine to fine grained, friable to unconsolidated, subangular to angular, calcareous, with stain fluorescence and light cut, 10% visible porosity, 20% spotty dark brown stain, 20% bright yellow fluorescence, slight milky cut.
4010-4020	80%	Sandstone - clear to white to frosted, very fine to fine grained, friable to unconsolidated, subangular to angular, calcareous, with 20% spotty stain, bright yellow fluorescence, and milky light cut.
	20%	Dolomite - as above.
4020-4030	20%	Dolomite - brown to dark brown, tan, microcrystalline, dense, argillaceous to very argillaceous, with kerogen laminations, with fluorescence.
	80%	Sandstone - as above.
4030-4040	100%	Dolomite - gray, gray green, dark brown, tan, microcrystalline, some sucrosic, argillaceous to very argillaceous in part, silty, some mineral fluorescence.
4040-4050	100%	Dolomite - gray to gray green, some brown, microcrystalline, very argillaceous, grading to shale, some mineral fluorescence.
4050-4070	100%	Dolomite - gray to gray green, brown to light brown, crystalline, some sucrosic, some very argillaceous, grading to shale, some mineral fluorescence.
4070-4080	100%	Sandstone - white to clear, very fine to fine grained, friable to unconsolidated, subangular to angular, well sorted, calcareous, with 5% spotty dark brown oil stain, 30% yellow green fluorescence, with some floating sand, very light milky cut.
4080-4090	60%	Sandstone - as above.

	40%	Dolomite - as above.
4090-4100		No Sample
4100-4110	80%	Sandstone - white to frosted, very fine to fine grained, friable, unconsolidated, subangular, calcareous, with free oil, yellow green fluorescence, no cut, with crude coming over shaker, dark spotty stain.
	20%	Dolomite - as above.
4110-4120	60%	Sandstone - white to light gray, frosted, clear, very fine to fine grained, friable, unconsolidated, subangular, calcareous, with free oil, 20% fluorescence, cut.
	40%	Dolomite - as above.
4120-4130	70%	Sandstone - white to light gray, frosted, clear, very fine to fine grained, friable, unconsolidated, subangular to calcareous, with free oil, fluorescence and cut.
	30%	Dolomite - gray, microcrystalline, grading to shale, argillaceous.
4130-4140	70%	Sandstone - white to light gray, frosted, clear, very fine to fine grained, friable to unconsolidated, subangular, calcareous, with free oil, yellow green fluorescence, milky yellow cut.
	30%	Dolomite - as above.
4140-4150	80%	Sandstone - white to light gray, friable to unconsolidated, fine to very fine grained, subangular, calcareous, with free oil, yellow green fluorescence, yellow milky cut.
	20%	Dolomite - as above.
4150-4160	80%	Sandstone - clear, white, very fine to fine grained, subangular, unconsolidated, 11-14% visible porosity, with free oil, spotty dark brown stain on 35% of chips, 30% bright yellow fluorescence, fair fast streaming blue cut.
	20%	Dolomite - as above.
4160-4170	100%	Sandstone - clear, frosted, fine grained, subangular to angular, unconsolidated, dark spotty to even stain on 60% of chips, sandy in part, 30% bright yellow fluorescence, good fast streaming blue cut.
4170-4180	30%	Dolomite - as above.
	20%	Shale - light gray, calcareous, very silty.
	20%	Siltstone - light gray, calcareous, sandy, soft.
	30%	Sandstone - generally as above, unconsolidated, trace spotty stain, trace yellow fluorescence, slight cut.

4180-4190	60%	Limestone - buff, microcrystalline, soft
	20%	Dolomite - light to medium brown, occasionally gray.
	20%	Shale - medium gray, calcareous, silty, earthy to subwaxy, soft to firm.
		Sandstone - trace, unconsolidated.
4190-4200	20%	Limestone - as above.
	30%	Dolomite - as above.
	50%	Siltstone - light gray, white, grading to very fine grained sandstone, calcareous, sandy, soft, no fluorescence stain odor or cut.
4200-4210	20%	Dolomite - tan to medium brown, predominantly argillaceous, microcrystalline in part, soft
	40%	Shale - medium gray, gray to green, silty, earthy to subwaxy, slightly calcareous, firm.
	40%	Siltstone - as above, grading to very fine grained sandstone, no fluorescence stain odor or cut.
4210-4220	20%	Dolomite - as above, occasional ostracods.
	40%	Shale - as above.
	40%	Siltstone - as above, grading to very fine grained sandstone, trace salt and pepper.
4220-4230	40%	Dolomite - light brown, microcrystalline, to sucrosic, trace argillaceous, ostracods, abundant bright gold fluorescence, slow milky cut.
	40%	Shale - medium gray, green gray, blocky to platy, earthy to subwaxy, calcareous, soft to firm.
	20%	Sandstone - clear, white, light gray, very fine to fine grained, angular to subangular, predominantly unconsolidated, moderately sorted, some calcareous cement, dark brown spotty stain on 20% of chips, 30% bright yellow fluorescence, fair streaming rapid cut.
4230-4250		Trip for Bit-Samples not circulated up
4250-4260	60%	Shale - medium gray, green gray, blocky to platy, earthy to subwaxy, silty, calcareous, soft.
	40%	Sandstone - clear, fine to very fine grained, angular to subangular, consolidated, calcareous cement.
		Dolomite - trace, as above.
4260-4270	70%	Shale - medium gray, green gray, blocky to platy, earthy to subwaxy, silty, calcareous, soft to firm.
	30%	Sandstone - clear, white, very fine to fine grained, subangular to angular, some silty, consolidated to unconsolidated, calcareous cement, poorly sorted, no stain.
4270-4280	50%	Shale - medium gray, green gray, blocky to platy, earthy

		to subwaxy, silty, calcareous, soft to firm.
	40%	Sandstone - clear to white, very fine to fine grained, angular to subangular, consolidated, calcareous cement, friable.
	10%	Dolomite - light brown, medium brown, microcrystalline, gold fluorescence, slow milky cut.
4280-4290	45%	Shale - gray, green gray, light brown to tan.
	35%	Dolomite - brown, light brown, dark brown, microcrystalline, slightly argillaceous, bright gold fluorescnece, slight milky cut.
	20%	Sandstone - clear, white, very fine to fine grained, silty, poorly sorted, subangular, consolidated, calcareous cement, no stain.
42904300	60%	Shale - as above.
	30%	Dolomite - as above.
	10%	Sandstone - as above.
4300-4310	50%	Shale - green gray, blocky to platy, silty, sandy, earthy to subwaxy, soft.
	30%	Sandstone - clear to white, very fine to fine grained, consolidated, poorly sorted, subangular, calcareous cement, friable.
	20%	Dolomite - light brown, medium brown, microcrystalline, slightly argillaceous, bright gold fluorescence, slight milky cut.
4310-4330	50%	Shale - green gray, gray, blocky to platy, silty, sandy, earthy, subwaxy, noncalcareous, firm to soft.
	30%	Sandstone - clear to white, fine to very fine grained, consolidated, calcareous cement, friable, no stain, no fluorescence.
	20%	Dolomite - light brown, medium brown, microcrystalline, argillaceous, bright gold fluorescence, soft.
4330-4340	100%	Shale - gray, blocky to platy, subwaxy, calcareous, firm, some sandy and silty.
4340-4350	80%	Shale - gray, blocky to platy, subwaxy, silty, calcareous, firm.
	20%	Dolomite - red brown, light brown, microcrystalline, some sucrosic, bright yellow fluorescence.
		Sandstone - trace, clear, white, fine to very fine grained, unconsolidated to consolidated, calcareous, friable.
4350-4360	100%	Dolomite - dark red brown, light brown to tan, microcrystalline, firm to soft, very limy in part, no fluorescence or cut.

4360-4370	80%	Shale - gray, platy to blocky, earthy to subwaxy, sandy, calcareous, soft to firm.
	20%	Sandstone - white to clear, very fine to fine grained, consolidated, subround, moderately sorted, slight stain, no cut.
4370-4380	20%	Shale - as above.
	80%	Sandstone - as above.
4380-4390	60%	Dolomite - brown gray, light brown, microcrystalline, firm to soft, limy in part, some fluorescence.
	40%	Sandstone - white, clear, very fine to fine grained, consolidated, calcareous cement, subround, poorly sorted, no stain, friable.
4390-4400	60%	Shale - gray, blocky, subwaxy to earthy, sandy in part, calcareous, soft to firm.
	40%	Dolomite - brown gray, light brown, microcrystalline, firm to soft, limy, some fluorescence.
		Siltstone - trace, white, calcareous, soft.
4400-4410	70%	Sandstone - white to clear, very fine to fine grained, occasionally medium grained, consolidated to unconsolidated, subround, poorly sorted, 5-10% bright yellow fluorescence, no cut, approximately 10% spotty dark brown stain.
	30%	Shale - gray, platy to blocky, earthy to subwaxy, silty, occasionally sandy, calcareous, soft to firm, no fluorescence.
4410-4420	50%	Sandstone - white to clear, very fine to fine grained, consolidated, slightly calcareous, subround to subangular, poorly to moderately sorted, occasional yellow fluorescence, weak streaming cut.
	30%	Shale - generally as above, very sandy.
	20%	Siltstone - white, soft, calcareous, sandy, grading to very fine grained sandstone.
4420-4430	60%	Sandstone - white to clear, very fine to fine grained, occasionally medium grained, predominantly consolidated, slightly calcareous, subangular, poorly sorted, some yellow fluorescence, weak streaming cut, no visible stain.
	40%	Dolomite - as above.
4430-4440	100%	Sandstone - clear, occasionally white, fine grained, predominantly consolidated, subangular, poorly to moderately sorted, friable, occasionally pyritic, some light brown spotty stains, bright yellow fluorescence, 20% very faint cut, 15% visible porosity, trace mica.

4440-4450	100%	Sandstone - clear, fine to occasionally medium grained, consolidated to unconsolidated, subround to subangular, poorly to moderately sorted, friable, bright yellow fluorescence in 25%, 30% light brown spotty stain.
4450-4460	100%	Sandstone - clear, frosted, very fine to medium grained, unconsolidated to friable, subangular, moderately sorted, with trace free oil, approximately 10% light brown spotty stain, yellow green fluorescence, trace good cut.
4460-4470	40%	Sandstone - as above.
	40%	Shale - gray, medium gray, soft to firm, blocky to platy, silty, calcareous.
	20%	Dolomite - gray, microcrystalline, some sucrosic, argillaceous.
4470-4480	80%	Sandstone - clear to frosted, very fine to medium grained, unconsolidated to friable, subangular, moderately sorted, trace free oil, 10% stain, spotty fluorescence, light cut.
	10%	Shale - as above.
4480-4490	20%	Sandstone - as above.
	80%	Shale - gray, dark gray, gray green, soft to firm, blocky to platy, silty, dolomitic, some grading to very argillaceous dolomite.
4490-4510	100%	Shale - gray, gray green, some dark gray, soft to firm, platy to blocky, silty, dolomitic, some grading to very argillaceous dolomite.
4510-4520	80%	Shale - as above.
	20%	Sandstone - frosted to clear, very fine to medium grained, friable, moderately sorted, subangular.
4520-4530	20%	Shale - as above.
	80%	Sandstone - frosted to white to clear to light gray, very fine to medium grained, subangular to subround, moderately sorted, calcareous, dolomitic, friable, approximately 5% stain, 75% fluorescence.
4530-4540	100%	Shale - light gray to gray, soft to firm, platy, blocky, silty, some subwaxy, earthy, dolomitic.
4540-4550	60%	Dolomite - light gray to gray, microcrystalline, some sucrosic, some very argillaceous, dull mineral fluorescence.
	40%	Shale - gray to medium gray, soft to firm, platy to blocky, silty to earthy, dolomitic.
4550-4560	100%	Shale - gray brown to brown, firm, blocky to platy, silty to earthy.

4560-4570	60%	Dolomite - gray brown, brown, microcrystalline, some argillaceous, firm.
	40%	Shale - gray to medium gray, gray brown, soft to firm, platy to blocky, earthy, silty, dolomitic, grading to argillaceous dolomite.
4570-4580	40%	Dolomite - as above.
	30%	Shale - as above.
	30%	Sandstone - white to light gray, frosted, very fine to medium grained, friable, subangular, dolomitic, with spotty stain approximately 7%, spotty fluorescence.
4580-4590	90%	Limestone - brown to light brown, dense, argillaceous, mineral fluorescence.
	10%	Shale - as above.
4590-4600	20%	Limestone - as above.
	20%	Dolomite - gray, microcrystalline, argillaceous in part, with mineral fluorescence.
	60%	Shale - gray, gray brown, soft to firm, platy to blocky, silty, sandy, some earthy, calcareous, dolomitic in part.
4600-4610	20%	Sandstone - light gray to white, very fine to medium grained, friable, subangular to subround, moderately to poorly sorted, calcareous, no stain odor fluorescence or cut.
	80%	Shale - gray, light gray, soft to firm, blocky, fissile, some silty, earthy, calcareous.
4610-4620	100%	Shale - gray to light gray, soft to firm, blocky, fissile, some silty, earthy, calcareous.
4620-4630	100%	Shale - gray, light gray, brown, soft to firm, blocky to platy, some silty, some earthy, some subwaxy, calcareous.
4630-4640	100%	Shale - as above, calcareous to dolomitic.
4640-4650	80%	Shale - as above, with abundant white clay.
	20%	Sandstone - white to light gray, very fine grained, friable, subangular to subround, clay filled dolomite, no stain, odor fluorescence or cut.
4650-4660	40%	Sandstone - white to light gray, very fine grained, friable, subangular to subround, moderately sorted, clay filled, dolomitic, no stain odor fluorescence or cut.
	60%	Shale - gray to light gray, brown, soft to firm, blocky to platy, some silty, some earthy, some subwaxy, calcareous to dolomitic, with abundant associated clay.
4660-4670	100%	Shale - as above.
		Sandstone - trace, as above.

4670-4700	100%	Shale - gray to light gray, gray brown, tan, soft to firm, blocky to platy, some silty, some earthy, some subwaxy, calcareous to dolomitic, with abundant associated clay.
4700-4720	100%	Shale - predominantly brown to dark brown, soft to firm, platy to blocky, silty, some earthy, calcareous to dolomitic, with associated kerogen laminations.
4720-4730	100%	Shale - light brown to gray brown, some gray, soft to firm, platy to blocky, some silty, some earthy, trace kerogen laminations, calcareous to dolomitic.
4730-4750	100%	Shale - gray to medium gray, some light gray, some light brown, soft to firm, platy to blocky, silty, some earthy, some subwaxy, dolomitic to calcareous.
4750-4760	100%	Shale - gray to gray brown, soft to firm, platy to blocky, silty, earthy, dolomitic to calcareous.
4760-4770	100%	Shale - gray brown, light brown, soft to firm, platy to blocky, silty, some earthy, dolomitic to calcareous.
4770-4780	30%	Dolomite - medium to light brown, microcrystalline, bright gold fluorescence, firm to hard, also argillaceous, soft.
	70%	Shale - as above.
4780-4790	70%	Shale - gray brown, gray, platy, earthy, very silty, firm to soft, occasionally subwaxy.
	30%	Dolomite - as above.
4790-4800	70%	Shale - predominantly medium gray, gray green, some gray brown, calcareous, slightly silty, subwaxy to earthy.
	20%	Dolomite - as above.
	10%	Sandstone - light brown, light gray, very fine grained, subangular, well sorted, poorly cemented to calcareous, trace mica, good even light brown stain on 80% of chips, 80% bright gold fluorescence, good fast blue streaming cut, friable.
4800-4810	60%	Shale - as above.
	40%	Sandstone - light brown, fine grained, subangular to subround, predominantly unconsolidated, 90% dark brown even stain on chips, 70% dull gold fluorescence, good fast blue streaming cut, some dead oil.
4810-4820	Drill Break Sample	
	90%	Sandstone - light to dark brown, clear, fine to medium

		grained, subround, unconsolidated, 90% dark even stain, 90% dull gold to some bright yellow fluorescence, very good fast streaming cut, 11-14% visible porosity.
	10%	Shale - as above.
4820-4840	30%	Shale - as above.
	50%	Sandstone - light gray, white, very fine grained, grading to siltstone, subangular, moderately sorted, calcareous cement, 10% spotty dark brown stain, 20% bright yellow fluorescence, fair milky cut, firm to friable, 10% visible porosity.
	20%	Dolomite - as above.
4840-4850	20%	Shale - as above.
	10%	Dolomite - medium to light brown, microcrystalline, bright mineral fluorescence, no cut.
	70%	Sandstone - light gray, white, fine to very fine grained, subangular to subround, well sorted, poorly cemented to calcareous, 10% visible porosity, very light brown even stain on 20% of chips, 20% bright yellow fluorescence, fair milky cut.
4850-4860	50%	Shale - medium gray, as above.
	30%	Sandstone - light gray, white, fine to very fine grained, subangular, moderately sorted, calcareous cement, trace light brown stain, 10% yellow fluorescence, slow milky cut.
	20%	Dolomite - light to medium brown, microcrystalline, argillaceous in part, gold fluorescence, no cut.
4860-4870	10%	Dolomite - as above.
	70%	Shale - medium gray, platy, calcareous, subwaxy, slightly silty, soft to firm.
	20%	Sandstone - light gray, very fine grained, grading to siltstone, well sorted, calcareous cement, trace mica, visible porosity approximately 10%, no fluorescence stain odor or cut, friable to firm.
4870-4880	10%	Dolomite - as above.
	60%	Shale - as above.
	30%	Sandstone - generally as above.
4880-4890	30%	Dolomite - medium to light brown, tan, predominantly microcrystalline, argillaceous in part, bright gold fluorescence, slow milky cut, firm.
	70%	Shale - gray, calcareous, blocky to platy, earthy, silty to sandy, firm to soft.
4890-4900	20%	Dolomite - as above.
	80%	Shale - as above, grading to siltstone.

4900-4910	90%	Shale - medium gray, dark brown, very argillaceous, platy to blocky, earthy, silty, calcareous, some gilsonite, soft to firm.
	10%	Dolomite - as above.
4910-4920	100%	Shale - dark brown, platy to blocky, earthy, very silty, very organic, soft to firm.
4920-4930	20%	Dolomite - medium to light brown, predominantly argillaceous, microcrystalline in part, limy, bright gold fluorescence, no cut.
	70%	Shale - predominantly medium gray, some dark brown, platy to blocky, earthy to subwaxy, silty, disseminated pyrite, slightly calcareous, firm to soft.
	10%	Siltstone - light gray, white, grading to sandstone, calcareous, tight, firm, no fluorescence stain odor or cut.
4930-4940	10%	Dolomite - as above, dull gold fluorescence.
	60%	Shale - generally as above, predominantly medium gray, some dark brown.
	30%	Sandstone - light gray, white, very fine grained, grading to siltstone, moderately sorted, unconsolidated in part, trace dark brown spotty stain, 30% bright yellow fluorescence, slightly milky cut, friable.
4940-4950	10%	Dolomite - as above, abundant ostracods.
	60%	Shale - medium gray, gray green, dark brown, platy to blocky, earthy to subwaxy, silty, soft.
	30%	Sandstone - generally as above, very fine grained, unconsolidated, trace dark brown stain, 30% bright yellow fluorescence.
4950-4960	80%	Shale - as above, increasing dark brown, becoming very silty.
	20%	Dolomite - light to medium brown, tan, argillaceous, microcrystalline in part, limy, dull gold fluorescence, slightly milky cut.
4960-4970	100%	Shale - dark brown, gray brown to dark gray brown, platy to blocky, earthy, very silty, soft, dolomitic.
4970-4980	80%	Shale - dark brown, gray brown, platy to blocky, earthy, subwaxy, very silty, soft.
	20%	Dolomite - light brown to tan, microcrystalline, argillaceous, limy, bright orange fluorescence, slightly streaming cut.
4980-4990	90%	Shale - gray, dark brown gray, platy to blocky, earthy to occasionally subwaxy, silty in part, soft.
	10%	Dolomite - light brown to tan, microcrystalline, argillaceous, limy, bright orange fluorescence, slightly streaming cut.

4990-5000	90%	Shale - gray, dark gray, green gray, platy to blocky, silty, sandy in part, earthy to subwaxy, soft to spongy.
	10%	Dolomite - as above.

Black Shale Facies

5000-5010	100%	Shale - dark brown, brown, platy to blocky, earthy, very silty, gilsonitic, no fluorescence, very slow blue to white streaming cut.
5010-5020	100%	Shale - dark brown, very dark brown, earthy to subwaxy, silty, platy to blocky, gilsonitic, no fluorescence, very slow blue to white streaming cut, gilsonitic laminations.
5020-5040	100%	Shale - dark brown, dark gray brown, very dark brown, earthy to subwaxy, platy to occasionally blocky, soft to spongy, no fluorescence, good blue to white streaming cut.
5040-5050	100%	Shale - as above, occasionally gilsonitic.
5050-5060	100%	Shale - dark brown, gray brown, soft to firm, platy to blocky, silty, some earthy, with gilsonitic laminations, trace pyrite.
5060-5070	100%	Shale - gray brown to dark brown, soft to firm, platy to blocky, silty, some earthy, with gilsonitic laminations, dolomitic to calcareous, trace pyrite.
5070-5100	100%	Shale - brown to gray brown, soft to firm, blocky to fissile, silty to some earthy, calcareous to dolomitic, trace fine disseminated pyrite, trace fine mica.
5100-5140	100%	Shale - brown to gray brown, soft to firm, blocky to fissile, silty to some earthy, calcareous to dolomitic, trace fine mica.
5140-5150	70%	Sandstone - white to clear, very fine grained, unconsolidated to friable, subangular, calcareous, trace clay filled porosity, with 20% spotty fluorescence, abundant 60% stain, good blue cut.
	30%	Shale - as above.
5150-5170	80%	Sandstone - white to clear, very fine grained, unconsolidated to friable, subangular, calcareous, trace clay filled porosity, with 20% spotty fluorescence, 60% light brown spotty stain, good blue cut.
	20%	Shale - as above.

5170-5190	100%	Shale - gray to gray green, soft to firm, platy to blocky, subwaxy to earthy, calcareous.
5190-5200	100%	Shale - gray green, light brown, medium gray, soft to firm, blocky to splintery, silty to subwaxy, some earthy, calcareous to dolomitic.
5200-5220	100%	Shale - gray green, gray, light brown, soft to firm, blocky to fissile, some splintery, silty to subwaxy, some earthy, calcareous to dolomitic, trace fine mica.
5220-5230	70%	Sandstone - white to clear, frosted, very fine to fine grained, friable to unconsolidated, subangular, moderately sorted, with good porosity, 60% light brown spotty stain, 30% even yellow fluorescence, slow streaming cut.
	30%	Shale - as above.
5230-5250	100%	Shale - light to medium gray, light brown, gray green, soft to firm, blocky to fissile, subwaxy, silty, some earthy, calcareous to dolomitic, trace fine mica.
5250-5290	100%	Shale - gray to gray brown, gray green, brown, light brown, soft to firm, blocky to splintery, some silty, some subwaxy, some earthy, calcareous to dolomitic, trace fine mica.
5290-5300	20%	Sandstone - white to clear, very fine to fine grained, unconsolidated to friable, subangular to subround, slightly calcareous, some salt and pepper, no stain fluorescence, odor or cut.
	80%	Shale - as above.
5300-5310	50%	Sandstone - as above, moderately well sorted.
	50%	Shale - as above.
5310-5330	100%	Shale - gray, gray brown, brown, brown gray, soft to firm, blocky to splintery, silty, some earthy, some sandy, trace fine disseminated pyrite, trace fine mica, calcareous to dolomitic.
5330-5360	100%	Shale - gray, brown to light brown, gray green, soft to firm, blocky, splintery, silty, some earthy, some silty, dolomitic to calcareous, trace fine pyrite.
5360-5370	100%	Shale - as above, trace fine mica.
5370-5380	30%	Shale - medium gray, dark brown, blocky to platy, subwaxy to earthy, silty in part, soft to firm, dolomitic.
	70%	Sandstone - clear, white, frosted, fine to medium grained, predominantly unconsolidated, poor visible porosity, approximately 10% light brown spotty stain, trace yellow

fluorescence, slight streaming cut.

5380-5390	30%	Dolomite - medium brown, microcrystalline, some argillaceous, firm, bright gold fluorescence, slight milky cut.
	70%	Shale - medium to light gray, blocky to platy, earthy, subwaxy, calcareous, very silty in part, soft to firm. Sandstone - trace, no fluorescence stain odor or cut.
5390-5400	20%	Dolomite - as above.
	70%	Shale - as above.
	10%	Sandstone - white, fine grained, subangular, moderately sorted, calcareous cement, tight, no visible stain, trace yellow fluorescence, very slight cut, friable.
5400-5410	20%	Dolomite - medium brown, microcrystalline, some argillaceous, bright gold fluorescence, none to very slight cut, firm.
	60%	Shale - medium to light gray, gray green, platy to blocky, subwaxy to earthy, silty in part, soft to firm.
	20%	Sandstone - as above, trace yellow fluorescence, very slight cut.
5410-5420	20%	Dolomite - medium brown, tan, microcrystalline, some sucrosic, argillaceous in part, bright gold fluorescence, slow milky cut, firm.
	30%	Shale - as above.
	30%	Siltstone - white, light gray, calcareous, sandy, tight, firm, no fluorescence stain odor or cut.
	20%	Sandstone - light gray, white, very fine grained, subangular, moderately sorted, calcareous cement, black shale partings, tight, no fluorescence odor stain or cut, firm to friable.
5420-5430	30%	Dolomite - as above.
	50%	Shale - medium gray, gray green, platy to blocky, some splintery, subwaxy, some earthy, silty in part.
	20%	Siltstone - as above.
5430-5440	30%	Dolomite - as above, occasionally cream, very argillaceous.
	50%	Shale - as above.
	20%	Siltstone - as above.
5440-5450	20%	Dolomite - as above.
	40%	Shale - gray, gray green, platy to blocky, subwaxy to earthy, silty, firm.
	10%	Siltstone - as above.
	30%	Sandstone - clear, white, very fine grained, subangular to subround, moderately sorted, calcareous cement, tight, firm.
5450-5460	30%	Limestone - very dark brown, black, very argillaceous, dolomitic, firm, no visible porosity.

	70%	Shale - medium gray, gray green, platy to blocky, subwaxy to earthy, silty, firm.
5460-5470	40%	Limestone - as above.
	60%	Shale - medium gray, gray green, platy to blocky, subwaxy to earthy, firm, silty.
5470-5480	20%	Limestone - as above.
	50%	Shale - as above.
	30%	Dolomite - light brown, tan, microcrystalline, some sucrosic, argillaceous.
5480-5490	30%	Sandstone - clear, light gray, very fine grained, subround to subangular, moderately sorted, calcareous cement, some mica, tight, firm, no stain odor fluorescence or cut.
	50%	Shale - medium gray, trace gray green, platy to splintery, some blocky, slightly calcareous, silty, firm.
	20%	Dolomite - as above.
5490-5500	20%	Dolomite - medium to light brown, predominantly crystalline, some argillaceous.
	70%	Shale - as above, gray green.
	10%	Sandstone - as above, no fluorescence stain odor or cut.
5500-5510	80%	Shale - medium to light gray, gray green, splintery to platy, predominantly subwaxy, some earthy, silty in part, firm to soft.
	20%	Dolomite - as above, predominantly argillaceous, silty.
5510-5520	60%	Shale - as above.
	20%	Dolomite - medium brown, argillaceous, microcrystalline in part, dense.
	20%	Sandstone - light gray, white, very fine to fine grained, subangular, moderately sorted, calcareous cement, some clay filled, tight, firm, no fluorescence stain odor or cut.
Green River Lime		
5520-5530	90%	Limestone - very dark brown, very argillaceous, no visible crystalline structure, brittle, firm to hard.
	10%	Shale - light gray, gray, green, platy to splintery, some blocky, slightly calcareous, predominantly subangular, slightly silty.
5530-5540	100%	Limestone - as above.
5540-5550	100%	Limestone - very dark brown, brown, no visible crystalline structure, very argillaceous, earthy, brittle, firm.
5550-5560	100%	Limestone - as above, medium brown, very earthy, with abundant kerogen.

5560-5570	100%	Limestone - very dark brown, brown, no visible crystalline structure, very argillaceous, soft to spongy, abundant kerogen.
5570-5580	100%	Limestone - very dark brown, dark brown, occasionally light brown, no visible crystalline structure, argillaceous, earthy, soft to spongy, abundant kerogen, occasional oil stain, no fluorescence.
5580-5600	100%	Limestone - dark brown, medium brown, occasionally very dark brown, no visible crystalline structure, earthy, soft to spongy, abundant kerogen, occasional oil stain, no fluorescnece.
5600-5610	80%	Limestone - dark brown, light brown to medium brown, occasionally very dark brown, microcrystalline, argillaceous, firm to brittle.
	20%	Sandstone - green, light green, gray green, very fine grained, subangular to subround, well sorted, slightly calcareous, soft, grading to siltstone, no fluorescence stain odor or cut.
5610-5620	80%	Limestone - medium brown, dark brown, occasionally very dark brown, argillaceous, firm, brittle.
	20%	Sandstone - green, light green, green to blue gray, very fine to fine grained, subround to subangular, moderately sorted, trace glauconite, soft, grading to siltstone, no fluorescence stain odor or cut.
5620-5630	90%	Limestone - very dark brown, dark brown, occasionally light brown to brown, microcrystalline, argillaceous in part, soft to spongy, abundant kerogen, no fluorescence.
	10%	Sandstone - as above.
5630-5640	100%	Limestone - very dark brown, dark brown, occasionally light brown, no visible crystalline structure, argillaceous, soft to spongy, very abundant kerogen, no fluorescence or cut.
5640-5650	100%	Limestone - very dark brown, dark brown, light brown to tan, no visible crystalline structure, argillaceous, firm, brittle, decreasing in kerogen.
5650-5660	100%	Limestone - dark brown, very dark brown, light brown, microcrystalline, argillaceous, firm, brittle.
5660-5680	100%	Limestone - as above, occasionally platy.
Wasatch Formation		
5680-5690	40%	Limestone - light brown to very light brown, tan, micro-

		crystalline, argillaceous, firm, brittle, dull gold fluorescence, streaming weak cut.
	60%	Shale - gray green, gray to light gray, platy to occasionally blocky, subwaxy, slightly calcareous, firm, brittle.
5690-5700	20%	Limestone - as above.
	70%	Shale - green gray, gray to light gray, platy to occasionally blocky, subwaxy, slightly calcareous, firm, brittle.
	10%	Sandstone - light gray, very fine to fine grained, subround, moderately sorted, calcareous, friable, no fluorescence stain odor or cut.
5700-5710	70%	Shale - light gray to gray, gray green, platy to occasionally splintery, subwaxy, slightly calcareous, firm.
	30%	Limestone - light brown to brown, very light brown to tan, microcrystalline, slightly argillaceous, yellow to gold orange fluorescence, good streaming weak cut.
5710-5720	80%	Shale - light gray to gray, green gray, platy to occasionally splintery, argillaceous, slightly calcareous, firm.
	20%	Limestone - as above, also medium brown, some sucrosic. Sandstone - trace, white, very fine grained, consolidated, calcareous cement, subround, moderately sorted, friable.
5720-5730	100%	Shale - light gray to gray, green gray, splintery to occasionally platy, slightly silty, slightly calcareous, firm. Limestone - trace, as above.
5730-5740	100%	Shale - as above. Limestone - trace, brown to slightly red brown, microcrystalline, slightly argillaceous, yellow to gold to light orange fluorescence, weak streaming cut.
5740-5750	100%	Shale - gray to medium gray brown, soft to firm, platy to blocky, silty to earthy, trace fine mica. Limestone - as above, trace.
5750-5760	100%	Shale - as above.
5760-5770	100%	Shale - green, medium gray, red brown, soft to firm, platy to blocky, silty to earthy, trace fine mica.
5770-5780	100%	Shale - gray to medium gray, red brown, soft to firm, platy to blocky, silty, earthy.
5780-5790	100%	Shale - gray to medium gray, red brown, soft to firm, platy to blocky, some splintery, silty to very silty, earthy, calcareous, trace fine mica. Sandstone - trace, white to light gray, very fine grained,

friable, subround to subangular, calcareous, trace stain, green fluorescence, green cut.

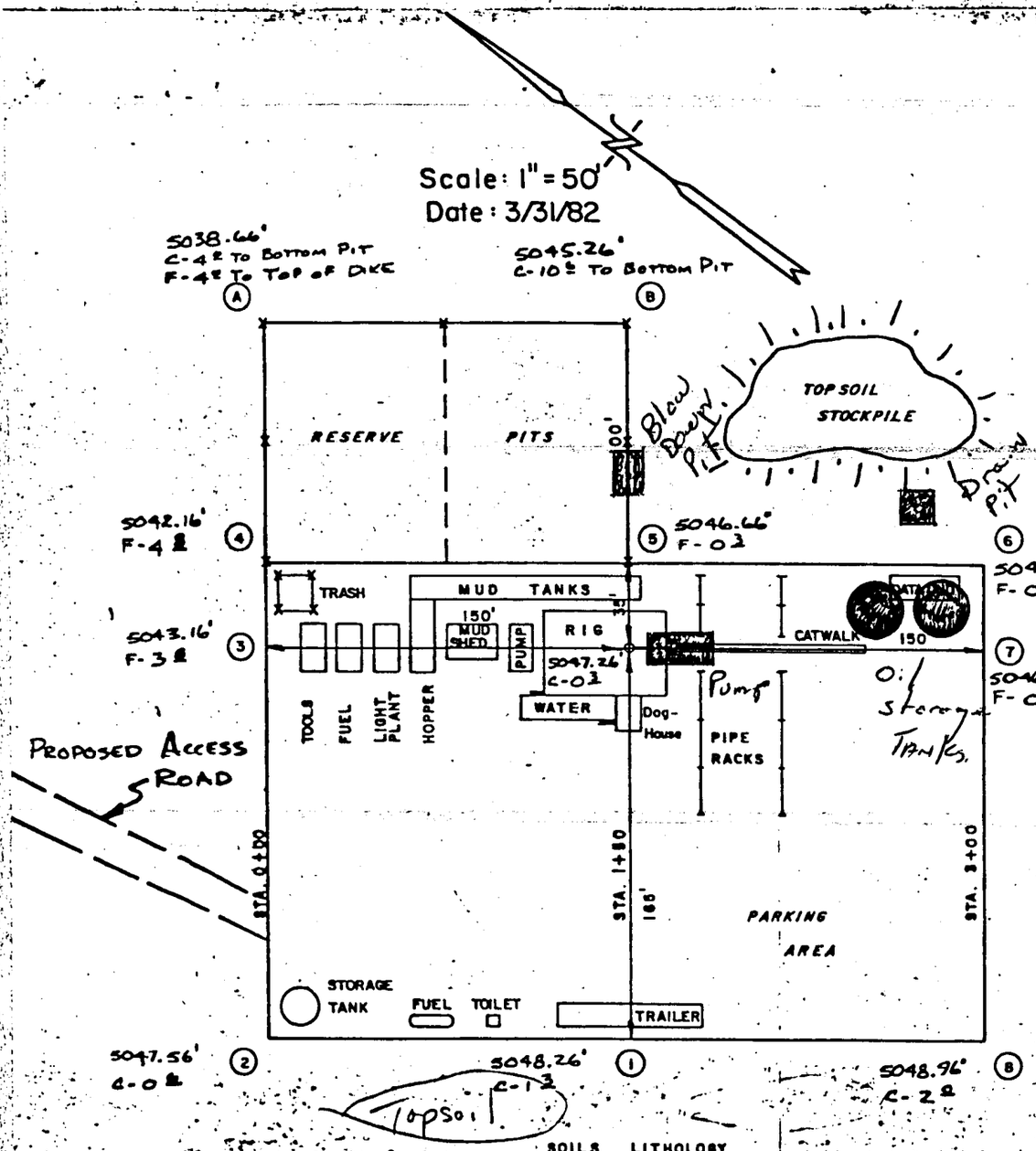
5790-5810	100%	Shale - as above. Sandstone - as above.
5810-5840	100%	Shale - red brown, gray to medium gray, soft to firm, platy to blocky, silty to very silty, slightly calcareous.
5840-5850	100%	Shale - red brown to brown, gray to medium gray, soft to firm, platy to blocky, earthy to subwaxy, silty to very silty, some grading to siltstone, calcareous. Sandstone - trace, light brown to white, very fine to coarse grained, friable, subangular to round, poorly sorted, calcareous with light green fluorescence, good fast cut.
5850-5870	100%	Shale - red brown to brown, gray to medium gray, soft to firm, platy to blocky, silty to very silty, some grading to siltstone.

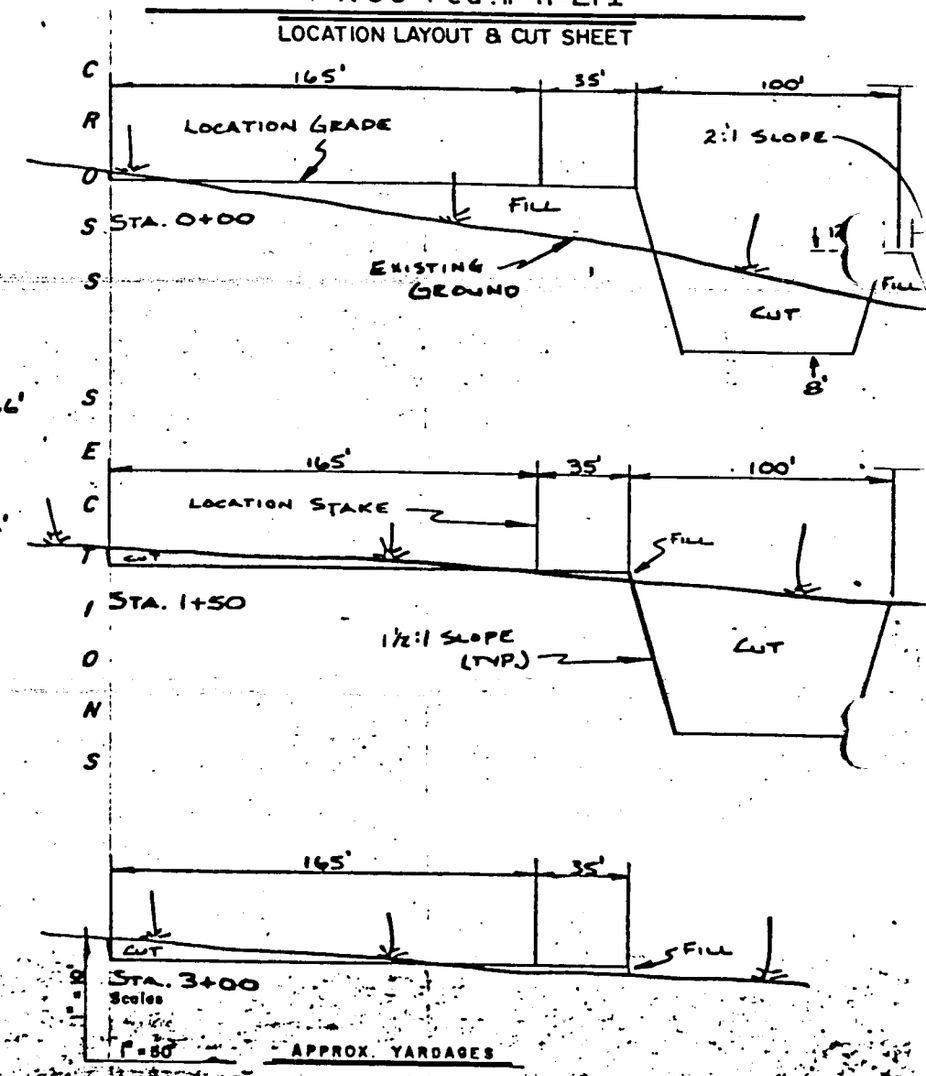
NATURAL GAS CORP. OF CALIF.

NGC Fed. # 41-21 I

LOCATION LAYOUT & CUT SHEET

Scale: 1" = 50'
Date: 3/31/82





SOILS LITHOLOGY
- No Scale -

Light Brown Sandy Clay

APPROX. YARDAGES

Cubic Yards Cut - 7428
Cubic Yards Fill - 1495

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well [XX] gas well [ ] other

2. NAME OF OPERATOR
Natural Gas Corporation of California

3. ADDRESS OF OPERATOR
85 South 200 East, Vernal, UT

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 803' FNL, 688' FEL, Sec. 21, T.9S.
AT TOP PROD. INTERVAL: (NE¼ NE¼) R.18E.
AT TOTAL DEPTH:

5. LEASE
21534

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Federal

9. WELL NO.
41-21-I

10. FIELD OR WILDCAT NAME
Pleasant Valley

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Section 21, T.9S., R.18E.

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

14. API NO.
43-047-31198

15. ELEVATIONS (SHOW DF, KDB, AND WD)
5047' Un Gr

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	[ ]	[ ]
FRACTURE TREAT	[X]	[ ]
SHOOT OR ACIDIZE	[X]	[ ]
REPAIR WELL	[ ]	[ ]
PULL OR ALTER CASING	[ ]	[ ]
MULTIPLE COMPLETE	[ ]	[ ]
CHANGE ZONES	[ ]	[ ]
ABANDON*	[ ]	[ ]
(other)		

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. 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.)*

Operator proposes to complete the above captioned well and install production equipment. Please see attached location layout for equipment placement. The following two zones will be perforated: 4807-12 and 4150-55. The zones will be fracture treated with 19,800 gal. of gelled water and 48,000# of sand and 17,000 gal. of gelled water and 40,000# of sand respectively.

APPROVED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING
DATE: 8/9/82
BY: [illegible]

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

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

SIGNED William A Ryan TITLE Petroleum Engr. DATE July 30, 1982
W. A. Ryan

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

NATURAL GAS CORPORATION OF CALIFORNIA

85 South 200 East
Vernal, Utah 84078

July 30, 1982

Mr. E. W. Guynn
Minerals Management Service
2000 Administration Bldg.
1745 West 1700 South
Salt Lake City, UT 84104

Division of Oil, Gas & Mining
4241 State Office Building
Salt Lake City, UT 84114

Mr. Sam Boltz, Jr.
Chorney Oil Company
1860 Lincoln, Suite 401
Denver, CO 80295

Mr. Bob Gilmore
DeGolyer & MacNaughton
No. 1 Energy Square
Dallas, TX 75206

Re: NGC #41-21-I Federal
NE NE Section 21, T.9S., R.18E.
Uintah County, UT
Pleasant Valley area

Gentlemen:

Attached are copies of Form 9-331, Sundry Notices and Reports on Wells, Request for Approval to Fracture Treat and Shoot or Acidize, the above referenced well.

Sincerely,

W. A. Ryan
Petroleum Engineer

/kh

Attachment

cc: Operations
C. T. Clark
E. R. Henry
S. Furtado

RECEIVED
AUG 03 1982
DIVISION OF
OIL, GAS & MINING

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

NATURAL GAS CORPORATION OF CALIFORNIA

85 South 200 East
Vernal, Utah 84078

October 7, 1982

Mr. E. W. Guynn
Minerals Management Service
2000 Administration Bldg.
1745 West 1700 South
Salt Lake City, UT 84104

Division of Oil, Gas & Mining
4241 State Office Building
Salt Lake City, UT 84114

Mr. Sam Boltz, Jr.
Chorney Oil Company
1860 Lincoln, Suite 401
Denver, CO 80295

Mr. Bob Gilmore
DeGolyer & MacNaughton
No. 1 Energy Square
Dallas, TX 75206

Re: NGC #41-21-I Federal
NE NE Sec. 21, T.9S., R.18E.
Uintah County, UT
Pleasant Valley area

Gentlemen:

Attached are copies of Form 9-330, Well Completion or Recompletion Report and Log, for the above captioned well.

Yours truly,

William A. Ryan
Petroleum Engineer

/kh

Attachment

cc: Operations
C. T. Clark
E. R. Henry
R. Boschee
D. McGinley
J. M. Kunz
M. L. Clarke
I. Chai
S. Furtado
J. Bockelman

Form 9-330
(Rev. 5-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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

Form approved.
Budget Bureau No. 42-R355.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

RECEIVED
OCT 12 1982
DIVISION OF
OIL, GAS & MINING

1a. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] DRY [ ] Other

b. TYPE OF COMPLETION: NEW WELL [X] WORK OVER [ ] DEEP-EN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] Other

2. NAME OF OPERATOR: Natural Gas Corporation of California

3. ADDRESS OF OPERATOR: 85 South 200 East, Vernal, UT 84078

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)
At surface 803' FNL, 688' FEL, Section 21, T.9S., R.18E. (NE¼NE¼)
At top prod. interval reported below
At total depth

5. LEASE DESIGNATION AND SERIAL NO.: 21534
6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
7. UNIT AGREEMENT NAME:
8. FARM OR LEASE NAME: Federal
9. WELL NO.: 41-21-I
10. FIELD AND POOL, OR WILDCAT: Pleasant Valley
11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 21, T.9S., R.18E.

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
43-047-31198	April 8, 1982	Uintah	Utah

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
6-5-82	6-11-82	8-31-82	5047' Ungr. Gr.	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
5870'			→	0 - TD	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
4803' - 12'
4150' - 55'

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: DI/GR and SP, FDC-CNL/GR and F-Log Overlay, BHC Sonic/GR and Cal.

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
9-5/8"	36#, K-55	290'	12-1/4"	To surface	
5-1/2"	17#, N-80	5864'	7-7/8"	748 sx	

29. LINER RECORD

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

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-7/8"	4870.93'	

31. PERFORATION RECORD (*Interval, size and number*)
4803' - 13' 4SPF 21 holes
4150' - 55' 3SPF 16 holes

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
4803' - 13'	20500 gal gel, 48000# 20/40
4150' - 55'	15000 gal gel, 40000# 20/40

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
8-31-82	American 228 unit	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
9-29-82	24		→	19	0	148	

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
0	15	→	19	0	148	

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*)
Small amount of gas being made; all being used to run pump

TEST WITNESSED BY: Boyd Snow

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 [signature] TITLE Petroleum Engineer DATE October 7, 1982

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

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.
If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.
Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.
Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.
Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.
Item 29: *"Sacks Cement":* Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.
Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

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.

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Green River	1210	
Oil Shale Facies	1943	
Delta Facies	2980	
Green Shale Marker	3970	
Black Shale Fac.	5070	
Green River Lime	5512	
Wasatch	5675	

U.S. GOVERNMENT PRINTING OFFICE: 1963—O-683636

STATE OF UTAH
NATURAL RESOURCES & ENERGY
Oil, Gas & Mining

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Cleon B. Feight, Division Director

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

December 11, 1982

Natural Gas Corporation of California
85 South 200 East
Vernal, :utah 84078

Re: Well No. Federal #41-21-I
Sec. 21, T. 9S, R. 18E.
Uintah County, Utah

Gentlemen:

According to our records, a "Well Completion Report" filed with this office October 7, 1982, from above referred to well, indicates the following electric logs were run: DI/GR and SP, FDC-CNL/GR and F-Log Overlay, BHC Sonic/GR and Cal. As of todays date, this office has not received these logs.

Rule C-5, General Rules and Regulations and Rules of Practice and Procedure, requires that a well log shall be filed with the Commission together with a copy of the electric and radioactivity logs.

Your prompt attention to the above will be greatly appreciated.

Sincerely,

DIVISION OF OIL, GAS AND MINING

Cari Furse

Cari Furse
Clerk Typist

CF/cf

Board/Charles R. Henderson, Chairman • John L. Bell • E. Steele McIntyre • Edward T. Beck
Robert R. Norman • Margaret R. Bird • Herm Olsen

an equal opportunity employer • please recycle paper

Form 9-330
(Rev. 5-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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

Form approved.
Budget Bureau No. 42-R355.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] DRY [ ] Other

b. TYPE OF COMPLETION: NEW WELL [ ] WORK OVER [X] DEEP-EN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] Other

2. NAME OF OPERATOR: Natural Gas Corporation of California

3. ADDRESS OF OPERATOR: 85 South 200 East, Vernal, UT 84078

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface 803' FNL, 688' FEL, NE¼ NE¼
At top prod. interval reported below
At total depth

5. LEASE DESIGNATION AND SERIAL NO.: U-21534
6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
7. UNIT AGREEMENT NAME:
8. FARM OR LEASE NAME: Federal
9. WELL NO.: 41-21-I
10. FIELD AND POOL, OR WILDCAT: Pleasant Valley
11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 21, T.9S., R.18E.
12. COUNTY OR PARISH: Uintah
13. STATE: Utah

14. PERMIT NO.: 43-047-31198 DATE ISSUED: 4/8/82

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
6/5/82	6/11/82	8/31/82	5047' Un. Gr.	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
5870'			→	0-TD	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: 4803-12'

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: DI-GR & SP, FDC-CNL/GR & F Log Overlay, BHC Sonic

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
9-5/8	36# K-55	290	12-1/4	To surface	
5-1/2	17# N-80	5864	7-7/8	748 sx	

29. LINER RECORD

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

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-7/8	4868'	

31. PERFORATION RECORD (*Interval, size and number*)
4803'-13' 4 SPF 21 holes
4150'-55' 3 SPF 16 holes

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
4803'-13'	20,500 gal. gel, 48,000# 20/40
4150'-55'	Squeezed w/50 sx cement

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
8-31-82	American 228 Unit	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
3-8-83	24		→	12	15	0	

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
0	25	→	12	15	0	

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

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 Wm Ryan W. A. Ryan TITLE DATE 3/11/83

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

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: *"Sacks Cement":* Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

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.

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Green River	1210	
Oil Shale Fac.	1943	
Delta Facies	2980	
Green Shale Mkr.	3970	
Black Shale Fac.	5070	
Green River Lime	5512	
Wasatch	5675	

U.S. GOVERNMENT PRINTING OFFICE: 1983—O-683636

cc: MMS; Div. OG&M; Chorney; DeGolyer; Operations; CTClark; ERHenry; SFurtado; RBoschee; DMcGinley; JMKunz; MClarke; IChai

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. LEASE DESIGNATION AND SERIAL NO.: U-21534

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

1. OIL WELL [X] GAS WELL [ ] OTHER

2. NAME OF OPERATOR: Natural Gas Corporation of California

8. FARM OR LEASE NAME: Federal

3. ADDRESS OF OPERATOR: 85 South 200 East, Vernal, UT 84078

9. WELL NO.: 41-21-I

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface: 803' FNL, 688' FEL, NE¼ NE¼

10. FIELD AND POOL, OR WILDCAT: Pleasant Valley

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 21, T.9S., R.18E.

RECEIVED FEB 13 1984
DIVISION OF OIL, GAS & MINING

14. PERMIT NO.: 43-047-31198

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 5047' Un. Gr.

12. COUNTY OR PARISH: Uintah

13. STATE: Utah

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[ ]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[ ]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other)			[ ]
(Other) Test zone w/possible P&A			[ ]	(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. 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.)*

Operator has determined that at current production levels (less than 5 bbls. of oil per day) subject well is not economical. We propose to test the producing perforations (4803-13) for fluid entry. If fluid entry is less than 15 bbls. per min., a radical fracture treatment will be performed and the well placed on production. If the fluid entry is greater than 15 bbls. per minute, the well will be plugged and abandoned in the following manner: a 200 foot cement plug will be placed from 3900-4100 feet and a second plug placed at 1800-2000 feet with a 10 sx cement plug at the surface. A dry hole marker will be set. All production equipment will be removed and the location recontoured. We will reseed the location to your specifications.

Attached is a down hole diagram for your information. If you require additional information, please call me at our Vernal office 789-4573.

ACCEPTED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING
DATE: 2/14/84
BY: [signature]

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

SIGNED William A. Ryan TITLE Petroleum Engineer DATE 2/9/84

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any 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.

K.B. - 5061'
G.L. - 5047'

LEASE & WELL NO.	Well #41-21-I
Loc.	NE¼ NE¼ Section 21, T.9S., R.18E.
Fld./Cty./St.	Uintah County, Utah

WELLHEAD

Csg. Head	10" 3M Equip. unknown
Tubing Head	10"x3M 6"x3M OCT SN 84591
Tree	6"x3M R 21819
	Pumping tee, Radigan BOP Stuffing Box

CONDUCTOR

Cement

SURFACE

	JTS.	WT.	GRADE	CPLG.	AMT. SET
Size 9-5/8	8	36#	K-55	STC	

Total Csg.	
K.B. Corr.	
Float Equip.	
Depth Set	290 GR
Cement	

PRODUCTION/ INTERMEDIATE

	JTS.	WT.	GRADE	CPLG.	AMT. SET
Size 5-1/2	143	17#	N-80		

Total Csg.	5860.61
Float Equip.	at 5779.49
Misc. Equip.	Shoe at 5864.93
K.B. Corr.	
Depth Set	5864 KB
Cement	Stg. 1-478 sx Ideal, Stg. 2-270 sx Idea

LINER

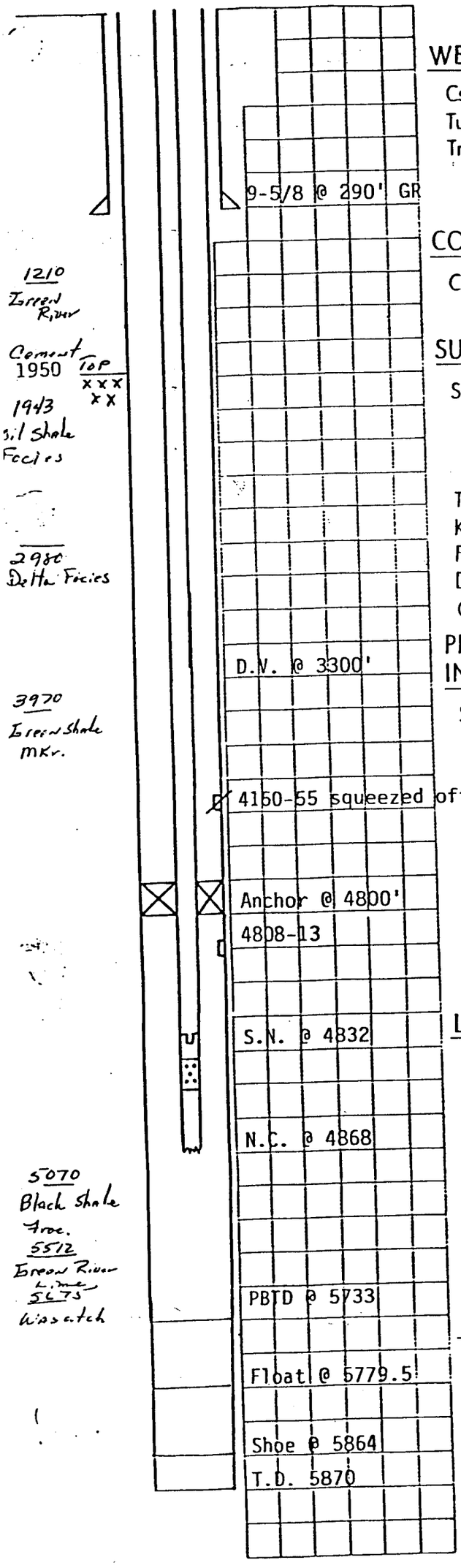
	JTS.	WT.	GRADE	CPLG.	AMT. SET
Size					

P.B.R. Hanger	
Misc. Equip.	
Float Equip.	
K.B. Corr.	
Depth Set	
Cement	

TUBING

	JTS.	WT.	GRADE	CPLG.	AMT. SET
Size 2-7/8	150	6.5	J-55	EUE	

Subs	3' 2-7/8" perf sub J-55 EUE
Misc. Equip.	
Packer	
Pkr. Ext.	
Tbg. Anchor	Baker 5½" @ 4800'
Perf. Sub.	
Mud Anchor	
K.B. Corr.	



P.B.T.D. - 5733

Natural Gas
Corporation of
California

February 9, 1984

Bureau of Land Management
Branch of Fluid Minerals
Vernal District
170 South 500 East
Vernal, UT 84078

Bureau of Land Management
Branch of Fluid Minerals
University Club Building
136 East South Temple
Salt Lake City, UT 84111

Mr. John Baker
DeGolyer & MacNaughton
No. 1 Energy Square
Dallas, TX 75206

Division of Oil, Gas & Mining
4241 State Office Building
Salt Lake City, UT 84114

Mr. Sam Boltz, Jr.
Chorney Oil Company
555 17th Street, Suite 1000
Denver, CO 80202-3910

Re: NGC #41-21-I Federal
Sec. 21, T.9S., R.18E.
Uintah County, UT
Pleasant Valley area

Gentlemen:

Attached are copies of Form 3160-5, Sundry Notices and Reports on Wells, Request to Test Zone with Possible P&A, for the subject well.

Yours truly,

William A. Ryan

William A. Ryan

/kh

cc: Operations
Land Dept.
E. R. Henry
S. Furtado

RECEIVED
FEB 14 1984
DIVISION OF
OIL, GAS & MINING

85 South 200 East
Vernal, Utah 84078
(801) 789-4573

Form 3160-4
(November 1983)
(formerly 9-330)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE (See other instructions on reverse side)

Form approved.
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 P & A

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

2. NAME OF OPERATOR: Natural Gas Corporation of California

3. ADDRESS OF OPERATOR: 85 South 200 East, Vernal, UT 84078

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)
At surface: 803' FNL, 688' FEL, NE¼ NE¼
At top prod. interval reported below
At total depth

RECEIVED
JUN 20 1984
DIVISION OF OIL GAS & MINING

5. LEASE DESIGNATION AND SERIAL NO.: U-21534
6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
7. UNIT AGREEMENT NAME:
8. FARM OR LEASE NAME: Federal
9. WELL NO.: 41-21-I
10. FIELD AND POOL, OR WILDCAT: Pleasant Valley
11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 21, T.9S., R.18E.

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
43-047-31198	4-8-82	Uintah	Utah

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
6-5-82	6-11-82	~~8-31-82~~ 6-14-84	Mkl 5047' GR	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
5870'	P&A		→	0-TD	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: Plugged and abandoned

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: DI/GR & SP, FDC-CNL/GR and F-log Overlay, BHC Sonic

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
9-5/8"	36#, K-55	290'	12-1/4	To surface	
5-1/2"	17#, N-80	5864'	7-7/8	748 sx	

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)

4803-13' 4 SPF 21 holes
4150-55' 3 SPF 16 holes

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
4803-13	20,500 gal gel, 48,000# 20/40
4150-55	15,000 gal gel, 40,000# 20/40

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
8/31/82	Plugged and abandoned	P & A

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

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

SIGNED William A Ryan William A. Ryan TITLE Petroleum Engineer DATE June 18, 1984

*(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.

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.

38. GEOLOGIC MARKERS

NAME	TOP	
	MEAS. DEPTH	TRUE VERT. DEPTH
Green River	1210	
Oil Shale Fac.	1943	
Delta Facies	2980	
Green Shale Mkr.	3970	
Black Shale Fac.	5070	
Green River Lime	5512	
Wasatch	5675	

cc: BLM; Div. OG&M; Chorney; DeGolyer; Operations; Land; LJorgensen; SFurtado; RBoschee; PSmith; IChai; MClarke

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. LEASE DESIGNATION AND SERIAL NO.: U-21534

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Federal

9. WELL NO.: 41-21-I

10. FIELD AND POOL, OR WILDCAT: Pleasant Valley

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 21, T.9S., R.18E.

12. COUNTY OR PARISH: Uintah

13. STATE: Utah

1. OIL WELL ☐ GAS WELL ☐ OTHER P & A

2. NAME OF OPERATOR: Natural Gas Corporation of California

3. ADDRESS OF OPERATOR: 85 South 200 East, Vernal, UT 84078

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 803' FNL, 688' FEL, NE¼ NE¼

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.):

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	X
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. 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.)*

Operator reports the subject well has been plugged and abandoned in the following manner:

Set CIBP at 4770' KB; filled hole with 9# per gallon fresh water mud, 10 sx cement on top of CIBP; 25 sx cement plug at 4000-4225; 50 sx cement plug from 401' to surface; 100 sx cement pumped into annulus of 9-5/8" and 5-1/2" casing. Dry hole marker set.

All surface equipment will be removed and the location recontoured. Seeding will be performed this fall.

RECEIVED
JUN 20 1984
DIVISION OF OIL GAS & MINING

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

SIGNED Wm Ryan William A. Ryan TITLE Petroleum Engineer DATE 6/18/84

PA Date

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

cc: BLM; Div. OG&M; DeGolyer; Chorney; Operations; Land; SFurtado; LJorgensen

*See Instructions on Reverse Side

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

Natural Gas
Corporation of
California

RECEIVED
MAY 15 1987
DIV. OIL, GAS, MINING

May 6, 1987

Bureau of Land Management
Vernal District
170 South 500 East
Vernal, Utah 84078

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

Re: NGC Well #41-21-I
NE/NE Sec. 21, T.9S., R.18E.
Uintah County, UT

Gentlemen,

Attached is form 3160-5, "Sundry Notices and Reports of Wells", Final Rehabilitation Notice for the above referenced well.

If you need more information, please contact our Vernal office.

Very truly yours,

Eric F. Hadsell
Lead Engineer

KH

Attachment

cc: S. Furtado (Rm 1449)
L. Jorgensen (Rm 1421)
W. G. Paulsell (Rm 1428)

85 South 200 East
Vernal, Utah 84078
(801) 789-4573

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. LEASE DESIGNATION AND SERIAL NO.: U-21534

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: 051910

1. OIL WELL ☐ GAS WELL ☐ OTHER: Abandoned

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Natural Gas Corporation of California

8. FARM OR LEASE NAME: Federal

3. ADDRESS OF OPERATOR: 85 South 200 East, Vernal, UT 84078

9. WELL NO.: 41-21-I

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: NE/NE 803' FNL, 688' FEL

10. FIELD AND POOL, OR WILDCAT: Eight Mile Flat No

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 21, T9S, R18E

14. PERMIT NO.: 43-047-31198

15. ELEVATIONS (Show whether DF, RT, GR, etc.):

12. COUNTY OR PARISH: Uintah

13. STATE: Utah

16. **Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data**

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other) FINAL REHABILITATION NOTICE			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. 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.)*

Operator advises that rehabilitation work is complete (see copy of Sundry dated 10/19/85) and the required vegetation is in place to the extent that a final clearance can be approved.

RECEIVED
MAY 15 1987
DIV. OIL, GAS, MINING

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

SIGNED Eric F. Hadsell TITLE Lead Engineer DATE May 6, 1987

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any 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.

CONDITIONS OF APPROVAL

We have reviewed the Sundry Notice for technical adequacy and concur with the request providing the following stipulations are included as a part of the approval.

Natural Gas Corporation of California will notify the Diamond Mountain Resource Area Minerals Staff (Vernal District BLM) when the location has a good vegetative cover established and is ready for final rehabilitation inspection. Notification should be given using Sundry Notice form 3160-5.