

QUINTANA PETROLEUM CORPORATION

1050 SEVENTEENTH STREET  
SUITE 400  
DENVER, COLORADO 80265  
(303) 628-9211

September 1, 1988

Conoco, Incorporated  
851 Warner Ct.  
Casper, WY 82601

Attention: Ron Swanson

Re: Exception Location Request  
Designation of Operator Request  
Little Bonanza #1-4 Well  
Uintah County, Utah  
Red Wash Prospect

Dear Ron:

Thank you for your Farmout Agreement; we are processing it for signature. We have conducted an onsite for location in Section 4 & Section 3 of T9S-R24E and have determined that dirt work would be cheaper if we were to drill the well at exception locations for both of these wells. The footages for the Little Bonanza #1-4 Well is 2190' FSL and 740 FEL in Section 4. The footages for the Little Bonanza #1-3 are 1710' FSL and 1580' FWL in Section 3.

By signature of this letter below, you are indicating that Conoco, Inc. grants Quintana Petroleum Corp. their approval to so locate these wells. Please return this letter to the undersigned at your earliest convenience.

In addition, we need a designation of operator from Conoco, Inc. in favor of Quintana Petroleum Corp. at their Denver office address for Federal Lease U-54017 and U-54016. <sup>not needed anymore</sup>

Please transmit these documents to me at your earliest convenience.

Very truly yours,

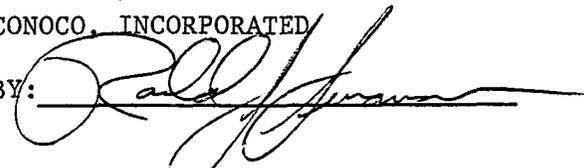


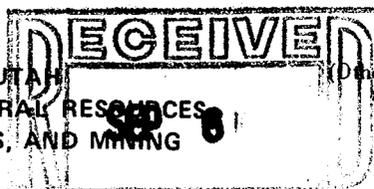
Douglas P. Cullen  
Landman

DPC:dln

AGREED AND ACCEPTED TO THIS 12<sup>TH</sup> day of September, 1988

CONOCO, INCORPORATED

BY: 



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

(Other instructions on reverse side)

5. Lease Designation and Serial No. U-54017  
 6. If Indian, Allottee or Tribe Name N/A  
 7. Unit Agreement Name N/A  
 8. Farm or Lease Name Little Bonanza Federal  
 9. Well No. #1-4  
 10. Field and Pool, or Wildcat Wildcat Undesignated  
 11. Sec., T., R., M., or Bk. and Survey or Area Sec. 4, T9S - R24E  
 12. County or Parrish Uintah  
 13. State Utah  
 22. Approx. date work will start\* Sept. 15, 1988

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work DRILL  DEEPEN  PLUG BACK   
 b. Type of Well Oil Well  Gas Well  Other  Single Zone  Multiple Zone   
 2. Name of Operator 303/628-9211 Quintana Petroleum Corp. 1050-17th St., Suite 400 Denver, CO 80265  
 3. Address of Operator 303/322-7878 Permitco Inc. - Agent P.O. Box 44065 Denver, CO 80201-4065  
 4. Location of Well (Report location clearly and in accordance with any State requirements.\*) At surface 2190' FSL and 740' FEL  
 At proposed prod. zone NE SE  
 14. Distance in miles and direction from nearest town or post office\* 32 miles southeast of Vernal, Utah  
 15. Distance from proposed\* location to nearest property or lease line, ft. (Also to nearest drlg. line, if any) 459'  
 16. No. of acres in lease 352.49  
 17. No. of acres assigned to this well 160  
 18. Distance from proposed location\* to nearest well, drilling, completed, or applied for, on this lease, ft. none  
 19. Proposed depth 6700' Mesa Verde  
 20. Rotary or cable tools Rotary  
 21. Elevations (Show whether DF, RT, GR, etc.) 5202' GR  
 23. PROPOSED CASING AND CEMENTING PROGRAM

Size of Hole	Size of Casing	Weight per Foot	Setting Depth	Quantity of Cement
12-1/4"	8-5/8	24#	250'	175 sx or suffic to circ to surf.
7-7/8"	5-1/2"	15.5#	6700'	To be designed upon inspection of open hole logs.

Quintana Petroleum Corp. proposes to drill a well to 6700' to test the Wasatch and Mesa Verde formations. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM and State of Utah requirements.

See Onshore Order No. 1 attached.

I certify that Quintana Petroleum Corp. has been authorized by proper lease interest owners to conduct operations on the above mentioned lease. Bond coverage for these operations will be provided by the Operator, Quintana Petroleum Corp.

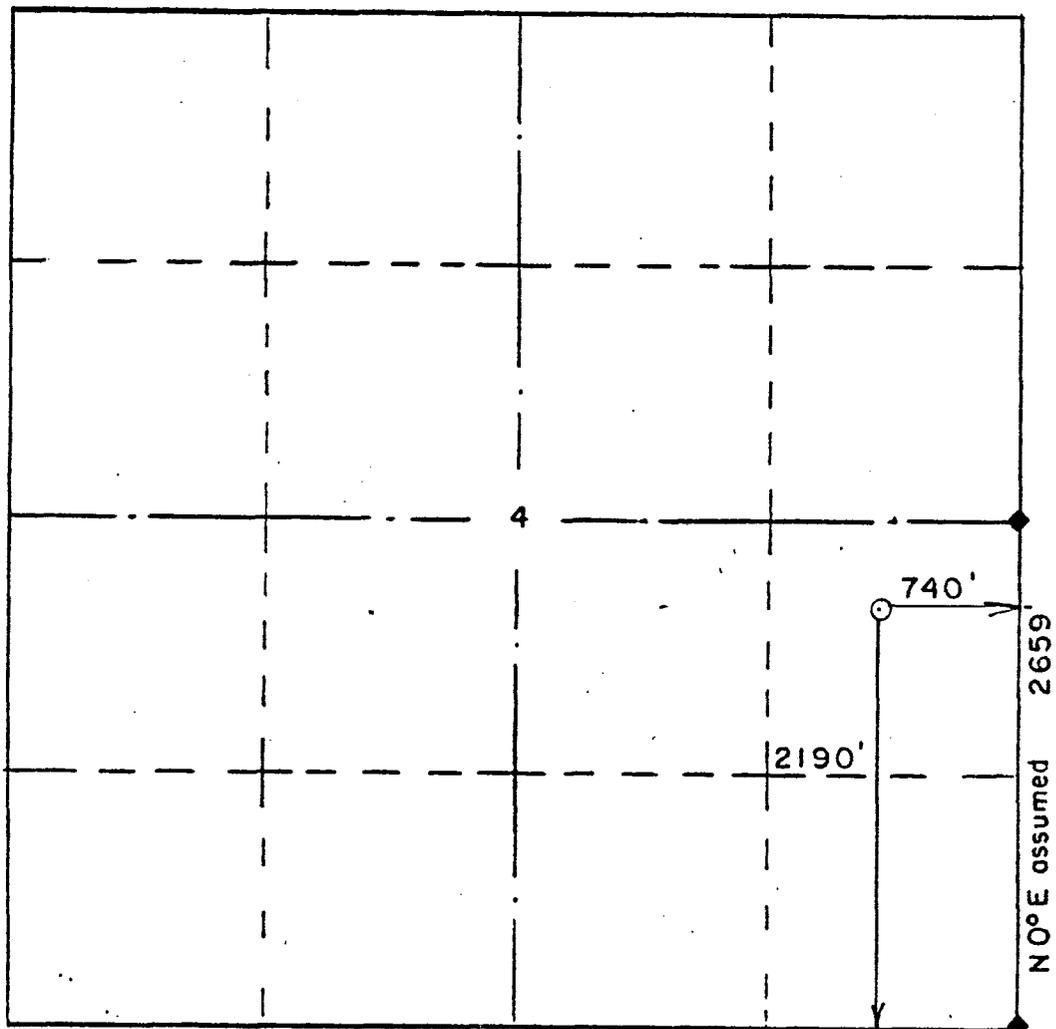
We realize this is a non-standard location in accordance with the spacing rules for the State of Utah. We have received permission from Conoco who is the lease holder to the north. They will be sending a letter to you giving their consent for the drilling of this well at the spacing indicated above.

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

24. Signed: [Signature] Title: Consultant for Quintana Petroleum Corp. Date: 9/1/88

(This space for Federal or State office use)  
 Permit No. 43-047-31854 Approval Date APPROVED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING  
 Approved by: \_\_\_\_\_ Title: \_\_\_\_\_ DATE: 9-3-88 BY: John R. Daza  
 Conditions of approval, if any: \_\_\_\_\_ WELL SPACING: R/15-3-2  
 \*See Instructions On Reverse Side

WELL LOCATION AND ACREAGE DEDICATION PLAT



WELL LOCATION DESCRIPTION:  
 QUINTANA PETROLEUM, Little Bonanza Federal 1-4  
 2190'FSL & 740'FEL  
 Section 4, T.9 S., R.24 E., SLM  
 Uintah County, Utah, UT  
 5202' ground elevation (flagged yellow)  
 Alternate: (flagged pink) 2145'FSL & 700'FEL

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

25 August 1988

*Gerald G. Huddleston*  
 Gerald G. Huddleston  
 REGISTERED LAND SURVEYOR  
 No. 5705  
 GERALD G. HUDDLESTON  
 STATE OF UTAH



# QUINTANA PETROLEUM CORPORATION

1050 SEVENTEENTH STREET  
SUITE 400  
DENVER, COLORADO 80265  
(303) 628-9211

August 16, 1988

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

Re: Little Bonanza Fed. #1-3  
C NE SW Sec. 3, T9S-R24E  
Uintah County, Utah

Little Bonanza Fed. #1-4  
C NE SE Sec. 4, T9S-R24E  
Uintah County, Utah

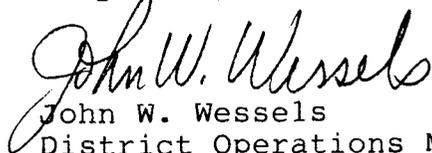
Gentlemen:

This letter is to inform you that Permitco is authorized to act as Agent and to sign documents on behalf of Quintana Petroleum Corporation when necessary for filing county, state and federal permits including Onshore Order No. 1 Right-of-Way applications, etc. for the referenced wells.

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

Quintana Petroleum Corporation agrees to accept full responsibility for operations conducted in order to drill, complete and produce the above-mentioned wells.

Very truly yours,



John W. Wessels  
District Operations Manager

cc: Permitco - Lisa Green

jp

ONSHORE OIL & GAS ORDER NO. 1;

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

LITTLE BONANZA FEDERAL #1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

Prepared For:

QUINTANA PETROLEUM CORPORATION

By:

PERMITCO INC.  
P.O. Box 44065  
Denver, Colorado 80201-4065  
303/322-7878

Copies Sent To:

- 4 - BLM - Vernal, Utah
- 1 - Utah Division of Oil Gas & Mining - SLC, UT
- 4 - Quintana Petroleum Corp - Denver, CO



Permitco Incorporated  
A Petroleum Permitting Company

ONSHORE OIL & GAS ORDER NO. 1  
Quintana Petroleum Corporation  
Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

DRILLING PROGRAM

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

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

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

<u>Formation</u>	<u>Depth</u>	<u>Subsea</u>
Green River	Surface	
"X" Marker	2750'	+2466'
"Z" Marker	3700'	+1516'
Wasatch	4020'	+1196'
Mesa Verde	5700'	- 484'
T.D.	6700'	-1484'

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

<u>Substance</u>	<u>Formation</u>	<u>Anticipated Depth</u>
Oil and Gas	Green River "X"	2750'
Oil and Gas	Green River "Z"	3700'
Gas	Wasatch	4020'
Gas	Mesa Verde	5700'

All shows of fresh water and minerals will be reported and adequately protected. If requested a sample will be taken of any water flows and furnished to the BLM in Vernal, Utah for analysis. All oil and gas shows will be tested to determine commercial potential.

- b. Quintana Petroleum Corp. plans to protect all surface fresh water zones by running a sufficient amount of surface casing.



ONSHORE OIL & GAS ORDER NO. 1  
Quintana Petroleum Corporation  
Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

DRILLING PROGRAM

Production                      Type and Amount  
To be designed upon inspection of open  
hole logs.

c. Auxiliary Equipment will be as follows:

1. Kelly cock.
2. A full opening safety valve will be on the floor at all times, with cross overs to all drill collars.
3. Necessary solids control equipment.
4. Pit Level Indicator and Flow Show

5. Drilling fluid will be as follows:

<u>Interval</u>	<u>Mud Type</u>	<u>Mud Wt.</u>	<u>Visc.</u>	<u>F/L</u>	<u>PH</u>
0-250'	Gel/Lime Sweeps	8.8-9.2	27-35	N/C	--
250-2500'	Gel/Lime Sweeps	8.8-9.2	27-35	N/C	--
2500-6700'	Dispersed	9.0-9.5	35-40	8-10	9.5

There will be sufficient weighted material on location to control a kick should one occur.

Monitoring of the system will be done visually and as indicated above (4C4).

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

- a. No conventional cores are anticipated.
- b. The logging program will consist of a DIL-SFL-GR and BHC Sonic from T.D. to base of surface casing. An FDC/CNL/GR/CAL will be run from T.D. to 1500'.
- c. No DST's are anticipated.

ONSHORE OIL & GAS ORDER NO. 1  
Quintana Petroleum Corporation  
Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

DRILLING PROGRAM

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

7. Abnormal conditions, bottom hole pressures and potential hazards.
  - a. The maximum bottom hole pressure to be expected is 3500 psi.
  - b. Quintana Petroleum Corporation plans to spud the Little Bonanza Federal #1-4 immediately upon approval of this application. Quintana Petroleum Corp. intends to complete the well within approximately one month after the well has reached T.D.
  
8. Other Information
  - a. Location construction is planned to commence upon approval of this application.
  - b. It is anticipated the duration of drilling will be 12 days.
  - c. The proposed completion program is as follows: Perforate zones of interest, frac and acidize as necessary and place well on production.
  - d. The operator will contact the Bureau of Land Management in Vernal, Utah at least 48 hours prior to beginning any dirt work on this location.
  - e. No location will be constructed or moved, no well will be plugged, and no drilling or workover equipment will be removed from a well to be placed in a suspended status without prior approval of the AO. If operations are to be suspended, prior approval of the AO will be obtained and notification given before resumption of operations.



Permitco Incorporated  
A Petroleum Permitting Company

ONSHORE OIL & GAS ORDER NO. 1  
Quintana Petroleum Corporation  
Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

DRILLING PROGRAM

- f. The spud date will be reported orally to the AO Vernal BLM Office within 24 hours after spudding. If the spudding occurs on a weekend or holiday, the report will be submitted on the following regular work day. The oral report will be followed up with a Sundry Notice.
- g. In accordance with NTL-1, this well must be reported on Form 3160.6, "Monthly Report of Operations," starting with the month in which operations commence and continuing each month until the well is physically plugged and abandoned. This report should be filed in duplicate directly with the BLM, Craig District Office.
- h. Immediate Report: Accidental spills, blowouts, fires, leaks, or any other unusual occurrences shall be promptly reported in accordance with the requirements of NTL-3A or its revision.
- i. If the well is successfully completed for production, then the AO will be notified when the well is placed in a producing status. Such notification will be sent by telegram or other written communication, no later than 5 days following the date on which the well is placed on production. Such notification may be provided orally if confirmed in writing, and must be received in this office not later than the fifth business day following the date on which the well is placed on production. The notification shall provide, as a minimum, the following information items:
  - 1. Operator Name
  - 2. Well name, number and location
  - 3. Date well was placed on production
  - 4. The lease, or communitized tract, or unit participating area to which the well's production is attributable.
- j. Pursuant to NTL-2B requirements regarding disposal facilities for new wells, this is authorization for unlined pit disposal of the water produced from this well for a period of 90 days from the date of initial production for sales purposes. During this period, an application for approval for permanent disposal method, along with the required water analysis and other information, must be submitted for the AO's approval.



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Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

DRILLING PROGRAM

- j. (cont.) Failure to timely file an application with the time allowed will be considered an incident of non-compliance, and will be grounds for issuing a shut-in order until the application is submitted.
- k. Pursuant to NTL-4A, lessees or operators are authorized to vent/flare gas during initial well evaluation tests, not exceeding a period of 30 days or the production of 50 MMCF of gas, whichever occurs first. An application must be filed with the AO and approval received, for any venting/flaring of gas beyond the initial 30 day or authorized test period.
- l. A schematic facilities diagram as required by 43 CFR 3162.7-2, 3162.7-3 and 3162.7-4 shall be submitted to the Vernal BLM Office within 30 days of installation or first production, whichever occurs first. All site security regulations as specified in 43 CFR 3162.7 shall be adhered to. All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed in accordance with 43 CFR 3162.7-4.
- m. No well abandonment operations will begin without the prior approval of the AO. In the case of newly drilled dry holes or failures, and in emergency situations, oral approval will be obtained from the AO.

SUBMITTAL OF THE THREE ABANDONMENT SUNDRY NOTICES  
(FORM 3160-5) AS PER ONSHORE ORDER NO. 1 WILL BE:

- 1. Request for Approval to Abandon
  - a. Proposed plugging procedures, or
  - b. Confirmation of verbal plugging procedures (prompt confirmation required)
- 2. Subsequent Report of Abandonment
  - a. "Other" category marked - executed plugging procedures (within 30 days following completion of abandonment)



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Sec. 4, T9S - R24E  
Uintah County, Utah

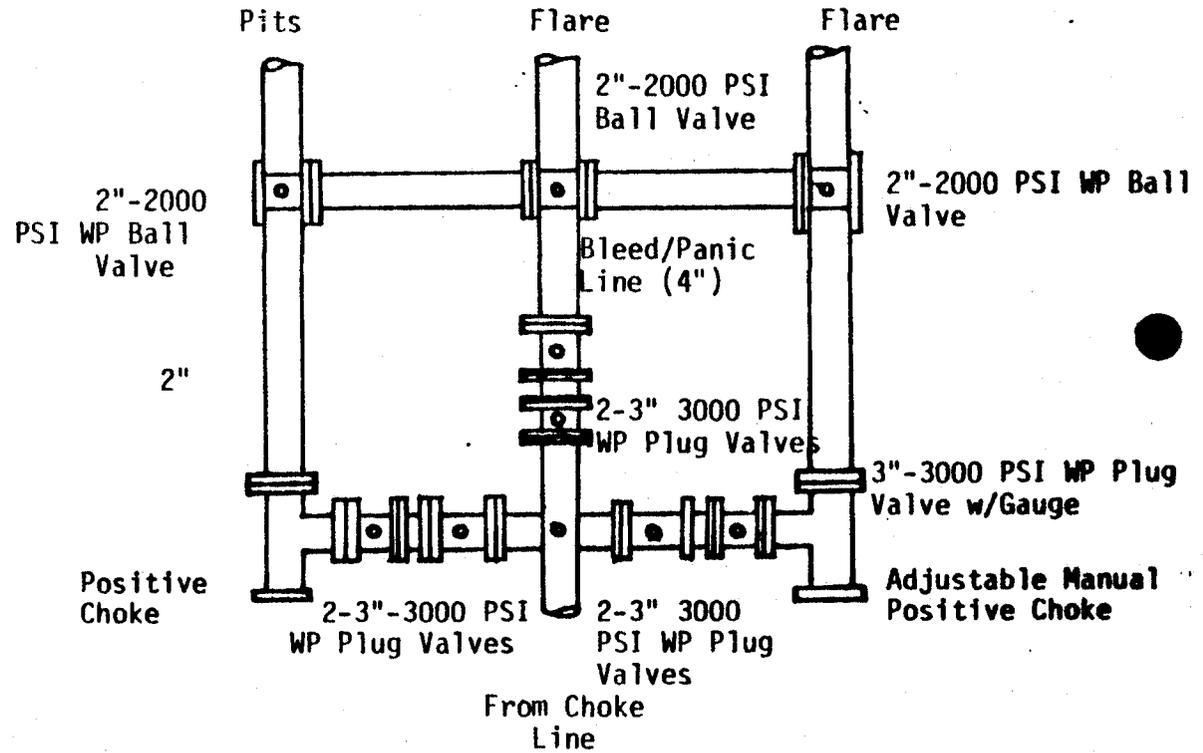
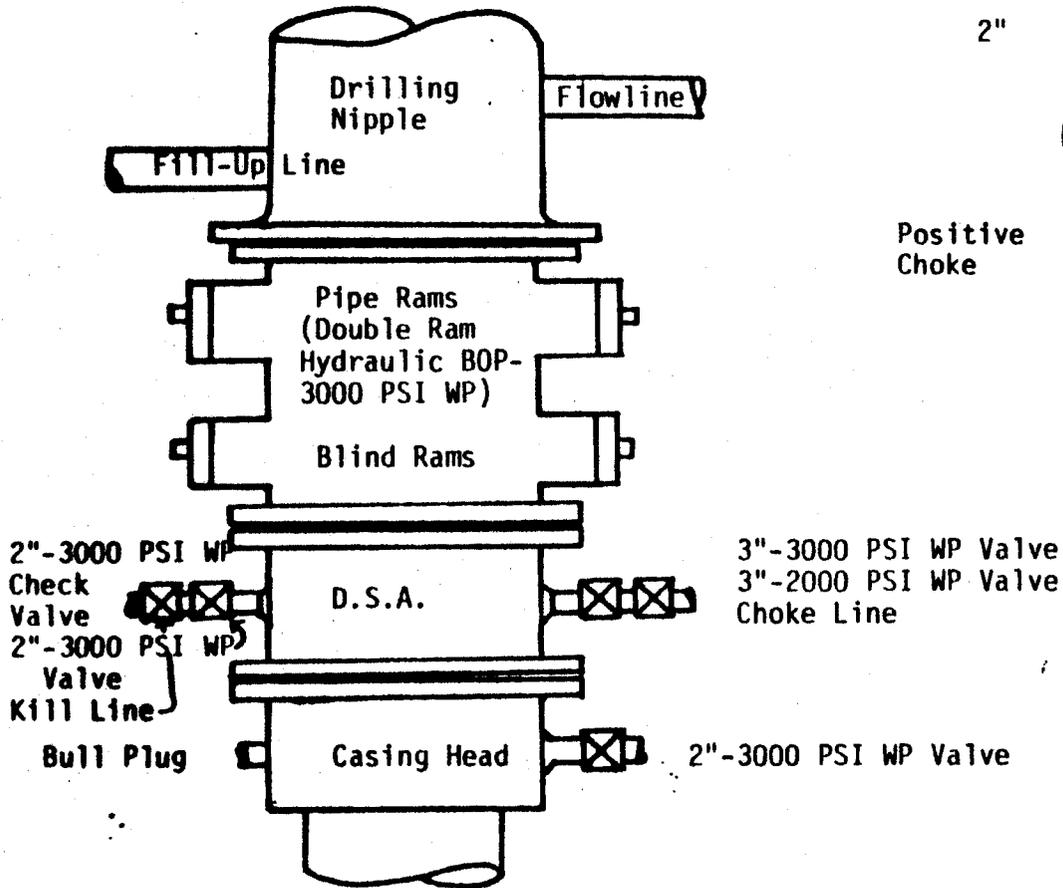
DRILLING PROGRAM

3. Subsequent Report of Abandonment
  - a. "Other" category marked - final abandonment after surface rehabilitation completion.
  - n. Subsequent report will indicate where plugs were placed and the current status of surface restoration. Final abandonment will not be approved until the surface reclamation work required by the approved abandonment notice has been completed to the satisfaction of the AO or his representative, or the appropriate surface managing agency.
  - o. Pursuant to Onshore Oil and Gas Order No. 1, lessees and operators have the responsibility to see that their exploration, development production, and construction operations are conducted in a manner which conforms with applicable Federal laws and regulations and with State and local laws and regulations to the extent that such State and local laws are applicable to operations on Federal or Indian lands.
  - p. If air drilling, the operator shall control blooie line discharge dust by use of water injection or any other acceptable method. The blooie line discharge shall be a minimum of 100 feet from the well head and be directed into the blooie pit in such a manner as to allow containment of drill bit cuttings and waste in the blooie pit.



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PLAIN VIEW-CHOKER MANIFOLD



The hydraulic closing unit will be located in the parts house, 85' from the wellhead. Choke & bleed/panic lines will go to the pit and flare.

ONSHORE ORDER NO. 1  
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Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

SURFACE USE PLAN

ONSHORE OIL & GAS ORDER NO. 1

Thirteen Point Surface Use Plan

1. Existing Roads

a. The proposed well site is located 32 miles south of Vernal, Utah.

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

From Vernal at the intersection of Highway 40 and the Bonanza turnoff go southeasterly on the highway for 31.8 miles. Turn right on a two-track and go approximately 2200 feet to a fork in the road. Turn left and proceed 1/2 mile. Turn left onto new access and go approximately 400 feet to the location.

c. For location of access roads within a 2-Mile radius, see Map #1.

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

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

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

2. Planned Access Roads

a. The new access road will be flatbladed initially during drilling and completion operation and will have a maximum disturbed width of 30 feet with a running surface of 18 feet. The length of the access road will be approximately 400 feet. This access road will be crowned and ditched if production is established. Appropriate water control will be installed to control erosion.



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ONSHORE ORDER NO  
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Little Bonanza Federal 1-4  
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Uintah County, Utah

SURFACE USE PLAN

2. Planned Access Roads (cont.)
- b. The maximum grade will be approximately 8%.
  - c. No turnouts are planned.
  - d. The access road was centerline flagged at the time of staking.
  - e. Drainage will be installed as deemed necessary by the dirt contractor. No drainages shall be blocked by loose dirt or debris.
  - f. No culverts will be installed unless commercial production is established. All drainages will be crossed with low water crossings. Three low water crossings are anticipated as shown on Map #1. Crushed gravel will be placed in the low water crossings.
  - g. No cattleguards will be necessary.
  - h. Surface disturbance and vehicular travel will be limited to the approved location and approved access route. Any additional area needed will be approved in advance.
  - i. Surfacing material may be necessary depending on weather conditions.
  - j. The maximum cut on location is 4.0 feet. The maximum fill is 5.0 feet.
  - k. Appropriate permits will be filed with the Utah State Highway Department for construction of an access approach off of the highway. An approved copy of this permit will be sent to the BLM in Vernal, Utah for their files.
  - l. Access roads and surface disturbing activities will conform to standards outlined in the USGS Publication (1978) Surface Operating Standards for Oil and Gas Development.

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SURFACE USE PLAN

2. Planned Access Roads (cont.)

- m. If the well is productive, the road shall be upgraded to meet the standards of the anticipated traffic flow and all-weather road requirements. Upgrading shall include ditching, draining, graveling, crowning, and capping the roadbed as necessary to provide a well constructed safe road. Prior to upgrading, the road shall be cleared of any snow cover and allowed to dry completely. Traveling off the 30 foot right-of-way will not be allowed. Road drainage crossings shall be of the typical dry creek drainage crossing type. Crossings shall be designed so they will not cause siltation or accumulation of debris in the drainage crossing nor shall the drainages be blocked by the roadbed. Erosion of drainage ditches by runoff water shall be prevented by diverting water off at frequent intervals by means of cutouts. Upgrading shall not be allowed during muddy conditions. Should mud holes develop, they shall be filled in and detours around them avoided.
- n. A right-of-way application will be submitted for roads crossing BLM lands outside lease no. U-54017. A copy of the ROW grant shall be with the dirt contractor during the construction and thereafter kept on location with a complete copy of the approved A.P.D.

3. Location of Existing Wells Within a 1-Mile Radius of the Proposed Location. (See Map #1).

- a. Water Wells -none
- b. Injection or disposal wells -none
- c. Producing Wells - one
- d. Drilling Wells - none
- e. Shut-in Wells - none
- f. Abandoned Wells - none



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SURFACE USE PLAN

4. Location of Tank Batteries and Production Facilities.
- a. All permanent structures (onsite for six months or longer) constructed or installed (including oil well pump jacks) will be painted a non-reflective earthtone color to match one of the standard environmental colors, as determined by the Rocky Mountain Five State Interagency Committee. All facilities will be painted within six months of installation. Facilities required to comply with the Occupational Safety and Health Act (OSHA) will be excluded. The required paint color is Desert Tan.
  - b. If a tank battery is constructed on this lease, it will be surrounded by a dike of sufficient capacity to contain at least 1-1/2 times the storage capacity of the battery. The integrity of the dike must be maintained.
  - c. If commercial production is established, a Sundry Notice with a production facility layout will be submitted.
  - d. All loading lines will be placed inside the berm surrounding the tank battery.
  - e. Any necessary pits will be properly fenced to prevent any wildlife entry. The production pit will be flagged overhead.
  - f. All site security guidelines identified in 43 CFR 3162.7 regulations will be adhered to.
  - g. All off-lease storage, off-lease measurement, or commingling on-lease or off-lease will have prior written approval from the District Manager.
  - h. All product lines entering and leaving hydrocarbon storage tanks will be effectively sealed.
  - i. Gas meter runs for each well will be located within 500 feet of the wellhead. The gas flowline will be buried from the wellhead to the meter and 500 feet downstream of the meter run or any production facilities. Meter runs will be housed and/or fenced.



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SURFACE USE PLAN

4. Production Facilities (cont.)

- j. All access roads will be upgraded to Class III standards and maintained as necessary to prevent erosion and accommodate year-round traffic.
- k. The road will be maintained in a safe useable condition.

5. Location and Type of Water Supply

- a. All water needed for drilling purposes will be obtained from the American Gilsonite Plant located in the town of Bonanza.
- b. Water will be trucked or pumped to location over the roads marked on Map #1.
- c. No water well is to be drilled on this lease.

6. Source of Construction Material

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

7. Methods of Handling Waste Disposal

- a. The reserve pit will be lined with native clay or commercial bentonite to prevent seepage of drilling fluids and/or water.
- b. Burning will not be allowed. All trash will be contained in a trash cage and its contents removed at the end of drilling operations and hauled to an approved disposal sight. The road and pad will be kept litter free.



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SURFACE USE PLAN

7. Methods for Handling Waste Disposal (cont.)

- c. Produced waste water will be confined to a unlined pit for a period not to exceed 90 days after initial production. During the 90-day period, an application for approval of a permanent disposal method and location, along with the required water analysis, will be submitted for the District Manager's approval.
- d. Drill cuttings are to be contained and buried in the reserve pit.
- e. Any salts and/or chemicals which are an integral part of the drilling system will be disposed of in the same manner as the drilling fluid.
- f. A chemical porta-toilet will be furnished with the drilling rig.
- g. The produced fluids will be produced into a test tank until such time as construction of production facilities is completed. Any spills of oil, gas salt water or other produced fluids will be cleaned up and removed.
- h. More than one pit for produced water on production facilities must be justified.

8. Ancillary Facilities

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

9. Well Site Layout

- a. The reserve pit will be located on the southwest side of the location. The stockpiled topsoil will be stored on the north side of the wellpad. Access to the wellpad will be from the south side of the pad.



Permitco Incorporated  
A Petroleum Permitting Company

ONSHORE ORDER NO. 1  
Quintana Petroleum Corp.  
Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

SURFACE USE PLAN

9. Wellsite Layout (cont.)

- b. See Diagram #1 for rig layout. See Diagram #2 for cross section of drill pad. See Diagram #3 for cuts and fills.
- c. The location of mud tanks; reserve pit, tri:

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SURFACE USE PLAN

9. Wellsite Layout (cont.)

- b. See Diagram #1 for rig layout. See Diagram #2 for cross section of drill pad. See Diagram #3 for cuts and fills.
- c. The location of mud tanks; reserve pit, trash cage; pipe racks; living facilities and soil stockpiles will be shown on Diagrams #1 and #3.
- d. During construction, all brush will be removed from the wellpad and access road and stockpiled separately from the topsoil.
- e. During construction 4-6 inches of topsoil will be removed from the cut areas only and stockpiled separately on the north side of the location to be used later during the reclamation process.
- f. Pit areas constructed of fill material will be lined with bentonite unless sufficient clay is found in the soil.
- g. All pits will be fenced with a wire mesh fence and topped with at least one strand of barbed wire. The reserve pit will be fenced on three sides before drilling starts. The fourth side will be fenced as soon as the drilling is completed. Any hydrocarbons on the pit will be removed from the pit as soon as possible after drilling operations are completed. Pits will be fenced and maintained until clean-up.
- h. The fence will be constructed as prescribed in the USGS Publication (1978) Surface Operating Standards for Oil and Gas Development. Alternatives to the prescribed standards shall be submitted to the Authorized Officer for approval.

10. Reclamation

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



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Uintah County, Utah

SURFACE USE PLAN

10. Reclamation of Surface (cont.)

- b. Before any dirt work to restore the location takes place, the reserve pit must be completely dry and all cans, barrels, pipe, etc. will be removed. The reserve pit and that portion of the location and access road not needed for production facilities/operations will be reclaimed. The reserve pit will be reclaimed within 180 days from the date of well completion.
- c. All disturbed areas will be recontoured to approximate the natural contours.
- d. The stockpiled topsoil will be evenly distributed over the disturbed areas.
- e. The reserve pit and that portion of the location and access road not needed for production and production facilities will be reclaimed as described in the reclamation section. Enough topsoil will be kept to reclaim the remainder of the location at a future date. This remaining stockpile of topsoil will be seeded in place using the prescribed seed mixture.
- f. Waste materials will be disposed of as stated in #7 of this Surface Use Plan.
- g. Prior to reseeding, all disturbed areas, including the access roads, will be scarified and left with a rough surface (new access only).
- h. Seed will be broadcast or drilled at the time specified by the BLM. If broadcast, a harrow or some other implement will be dragged over the seeded area to assure seed coverage and the seed mixture will be proportionately larger (double the lbs. per acres).
- i. An appropriate seed mixture will be determined by the BLM at the time the restoration activities are scheduled to begin. All seeding will be done from September 30th until the ground freezes.



**Permitco Incorporated**  
A Petroleum Permitting Company

ONSHORE ORDER NO. [REDACTED]  
Quintana Petroleum Corp.  
Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

SURFACE USE PLAN

10. Reclamation of Surface (cont.)

- j. At such time as the well is plugged and abandoned the operator will submit a surface reclamation plan to the Surface Management Agency for prescribed seed mixtures and reseeding requirements.
- k. If the seeding is unsuccessful, the lessee/operator may be required to make subsequent seedings.
- l. Compacted areas of the wellpad should be plowed or ripped to a depth of 12" before reseeding. Seeding should be done with a disc-type drill to ten inches apart. The seed should be planted between one-half inch deep and three quarter inch deep. A drag, packer or roller may be used to insure uniform coverage of the seed, and adequate compaction. Drilling of the seed should be done on the contour where possible. Where slopes are too steep for contour drilling a "cyclone" hand-seeder or similar broadcast seeder should be used, using twice the recommended seed per acre. Seed should then be covered to a depth described above by what-ever means is practical.

11. a. Surface Ownership

Wellpad and partial access road - Bureau of Land Management  
Remainder of the access road is maintained by the Utah State  
Highway Department.

b. Mineral Ownership

Federal

12. Other Information

- a. There will be no change from the proposed drilling and/or workover program without prior approval from the District Manager. Safe drilling and operating practices must be used. All wells, whether drilling, producing, suspended, or abandoned will be identified in accordance with 43 CFR 3162.2.



**Permitco Incorporated**  
A Petroleum Permitting Company

ONSHORE ORDER NO. 1  
Quintana Petroleum Corp.  
Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

SURFACE USE PLAN

12. Other Information (cont.)

- b. "Sundry Notice and Report on Wells" (Form 3160-5) will be filed for approval for all changes of plans and other operations in accordance with 43 CFR 3164.
- c. The dirt contractor will be provided with an approved copy of the surface use plan and will keep a copy on-site during the construction and reclamation operations.
- d. This permit will be valid for a period of one year from the date of approval. After permit termination, a new application will be filed for approval for any future operations.
- e. A Class III survey was conducted by LaPlata Archeological Consultants. No significant cultural resources were found and clearance is recommended. A copy of this report will be submitted directly by LaPlata Archeological Consultants.
- f. If during operations, any archaeological or historical sites, or any object of antiquity (subject to the Antiquities Act of June 8, 1906) are discovered, all operations which would affect such sites are to be suspended and the discovery reported promptly to the Surface Management Agency.
- g. The operator will control noxious weeds along rights-of-way for roads, pipelines, well sites or other applicable facilities. A list of noxious weeds may be obtained from the BLM or the appropriate County Extension Office. On BLM administered land, it is required that a Pesticide Use Proposal shall be submitted, and given approval, prior to the application of herbicides or other pesticides or possible hazardous chemicals.
- h. The operator or his contractor shall contact the BLM Offices at 801/789-1362 between 24 and 48 hours prior to construction activities. Contact Byron Tolman.
- i. The BLM Office shall be notified upon site completion prior to moving on the drilling rig.



Permitco Incorporated  
A Petroleum Permitting Company

ONSHORE ORDER NO. 1  
Quintana Petroleum Corp.  
Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

SURFACE USE PLAN

12. Other Information (cont.)

- j. No construction or drilling activities shall be conducted between May 15 - June 20 because of pronghorn antelope habitat areas.
- k. Drilling rigs and/or equipment used during drilling operations on this wellsite will not be stacked or stored on Federal Lands after the conclusion of drilling operations or at any other time without BLM authorization. However, if BLM authorization is obtained, it is only a temporary measure to allow time to make arrangements for permanent storage on commercial facilities. (The BLM does not seek to compete with private industry. There are commercial facilities available for stacking and storing drilling rigs.)

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

Permit Matters

PERMITCO INC.  
Lisa L. Green  
P.O. Box 44065  
Denver, CO 80201-4065  
303/322-7878

Drilling & Completion Matters

QUINTANA PETROLEUM CORP.  
1050-17th Street  
Suite 400  
Denver, CO 80265  
John Wessels - 303/628-9211 (W)  
Scott Kimbrough - 303/969-9468 (H)

Certification

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



Permitco Incorporated  
A Petroleum Permitting Company

ONSHORE ORDER NO. 1  
Quintana Petroleum Corp.  
Little Bonanza Federal 1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

SURFACE USE PLAN

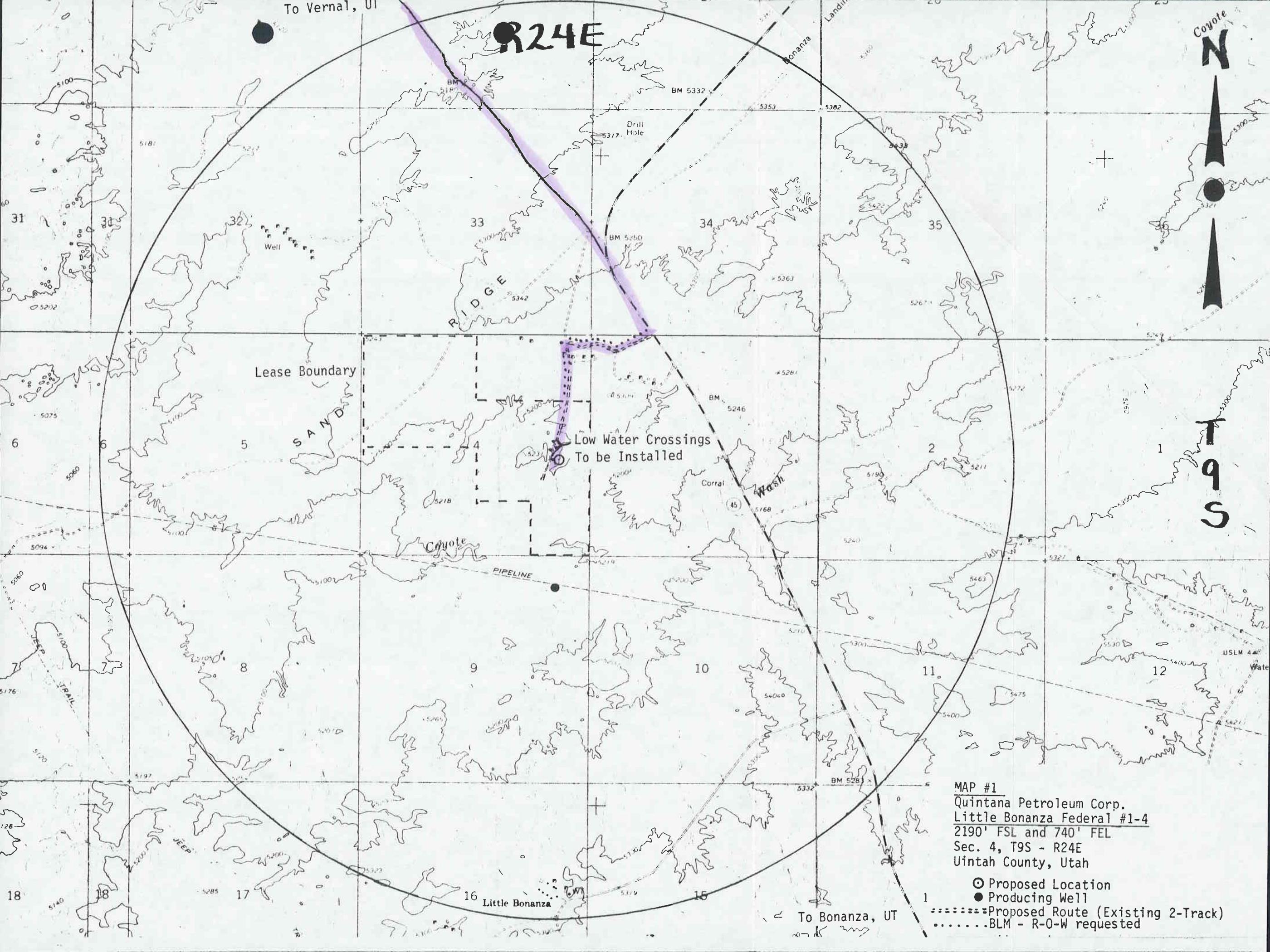
This statement is subject to the provisions of 18.U.S.C. 1001 for  
the filing of a false statement.

Date: 9/1/88

  
\_\_\_\_\_  
Lisa L. Green - PERMITCO INC.  
Authorized Agent for:  
QUINTANA PETROLEUM CORP.



**Permitco**  
Permitco Incorporated  
A Petroleum Permitting Company



R24E

Coyote

T9S

Lease Boundary

Low Water Crossings  
To be Installed

MAP #1  
 Quintana Petroleum Corp.  
 Little Bonanza Federal #1-4  
 2190' FSL and 740' FEL  
 Sec. 4, T9S - R24E  
 Uintah County, Utah

- Proposed Location
- Producing Well
- Proposed Route (Existing 2-Track)
- ..... BLM - R-O-W requested

To Bonanza, UT

Little Bonanza

PIPELINE

Corral Wash

SAND

RIDGE

Well

Drill Hole

Landline

Bonanza

USLM 44

Water

31

31

32

33

34

35

36

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6

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4

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GRAM #1  
Rig Layout

Quintana Petroleum Corp.  
Little Bonanza Federal #1-4  
2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

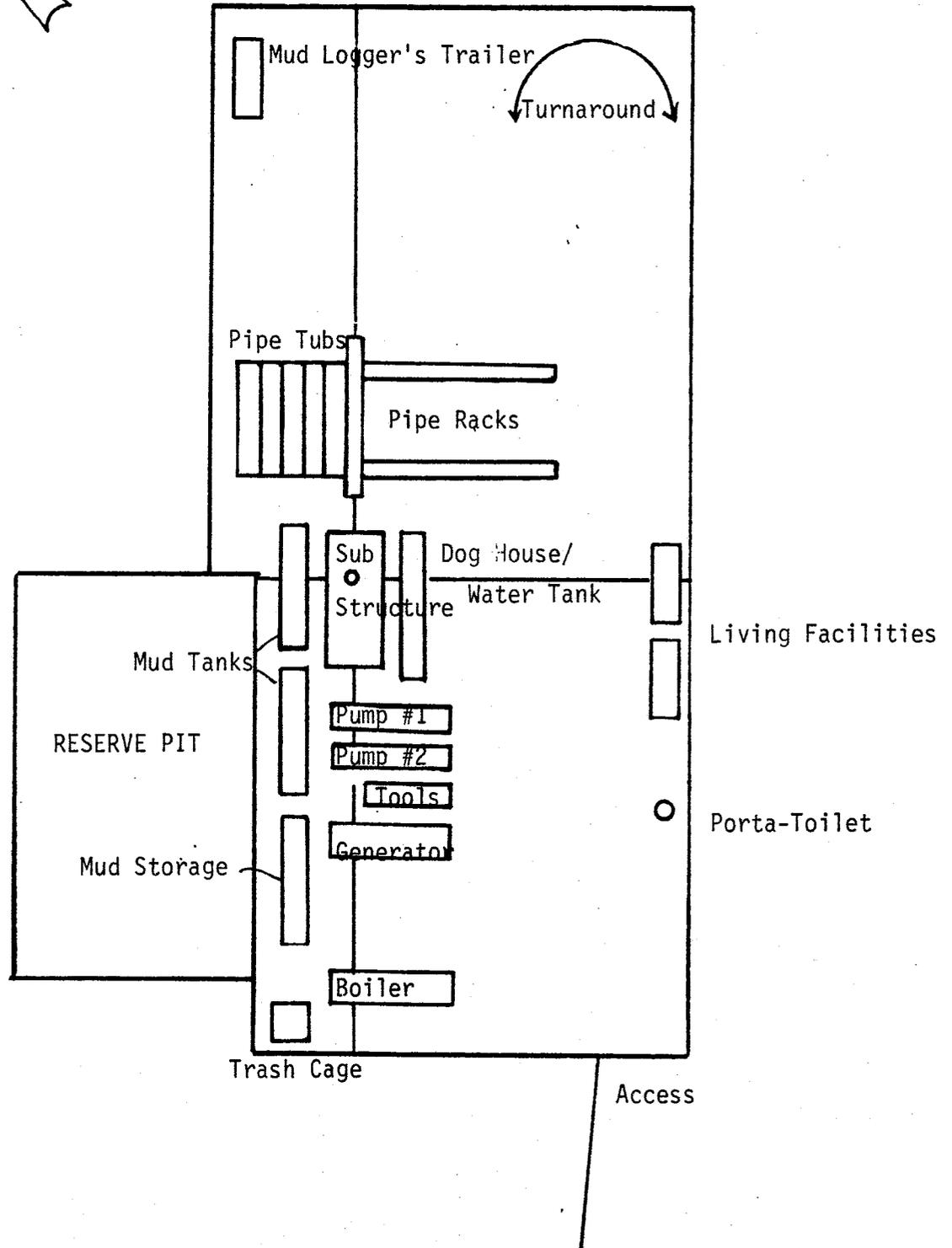
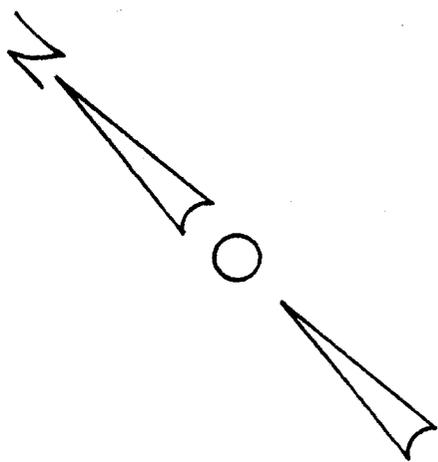


DIAGRAM #2

Cross Section

Little Bonanza Federal 1-4

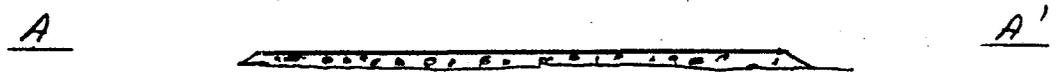
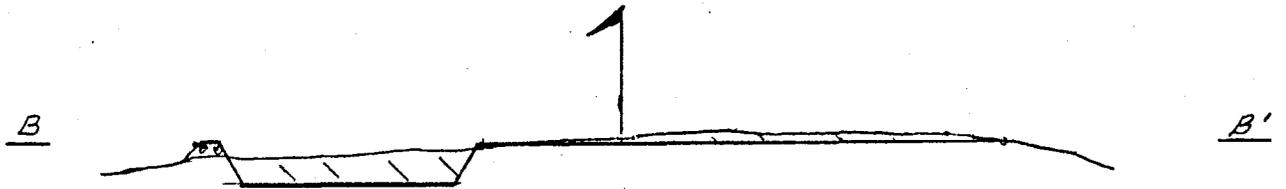
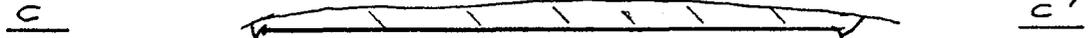
2190' FSL and 740' FEL

Sec. 4, T9S - R24E

Uintah County, Utah

Cut ////  
Fill

1"=50' Horz. & Vert.

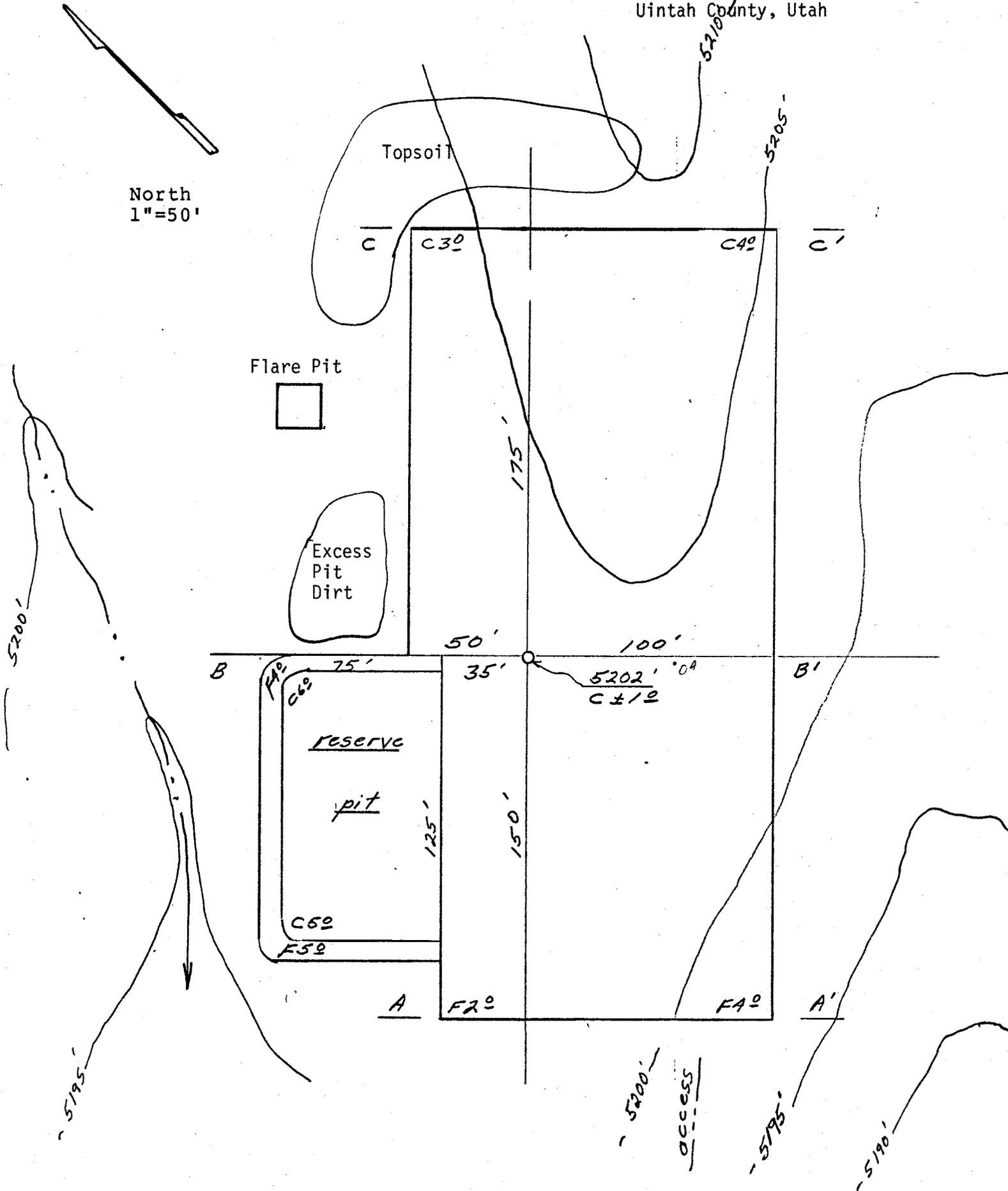


Plan View Sketch

DIAGRAM #3 - Cuts and Fill Diagram  
Little Bonanza Federal 1-4

2190' FSL and 740' FEL  
Sec. 4, T9S - R24E  
Uintah County, Utah

North  
1"=50'



# CONFIDENTIAL

OPERATOR Quintana Petroleum DATE 9-6-88

WELL NAME Little Bomenza Fed. 1-4

SEC NESE 4 T 9S R 24E COUNTY Wintch

43-047-31854  
API NUMBER

Fed.  
TYPE OF LEASE

CHECK OFF:

PLAT

BOND

NEAREST WELL

LEASE

FIELD

POTASH OR OIL SHALE

PROCESSING COMMENTS:

No other well in sec. 4 & sec. 3.  
Need water permit  
Exception location requested on APD.  
Conoco consent letter being sent.  
Not exception loc. as per J. Baza (slightly irregular sec. see plat)

**CONFIDENTIAL**  
**PERIOD**  
**EXPIRED**  
ON 5-11-90

APPROVAL LETTER:

SPACING:  R615-2-3 \_\_\_\_\_ UNIT

R615-3-2

\_\_\_\_\_  
CAUSE NO. & DATE

R615-3-3

STIPULATIONS:

1-Water Permit



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

Norman H. Bangarter

Governor

Dee C. Hansen

Executive Director

Dianne R. Nielson, Ph.D.

Division Director

355 West North Temple

3 Triad Center, Suite 350

Salt Lake City, Utah 84180-1203

801-538-5340

September 8, 1988

Quintana Petroleum Corporation  
c/o Permitco Incorporated  
P. O. Box 44065  
Denver, Colorado 80201-4065

Gentlemen:

Re: Little Bonanza Federal 1-4 - NE SE Sec. 4, T. 9S, R. 24E - Uintah County, Utah  
2190' FSL, 740' FEL

Approval to drill the referenced well is hereby granted in accordance with Rule R615-3-2, Oil and Gas Conservation General Rules, subject to the following stipulations:

1. Prior to commencement of drilling, receipt by the Division of evidence providing assurance of an adequate and approved supply of water as required by Chapter 3, Title 73, Utah Code Annotated.

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

1. Spudding notification within 24 hours after drilling operations commence.
2. Submittal of an Entity Action Form within five working days following spudding and whenever a change in operations or interests necessitates an entity status change.
3. Submittal of the Report of Water Encountered During Drilling, Form OGC-8-X.
4. Prompt notification if it is necessary to plug and abandon the well. Notify John R. Baza, Petroleum Engineer, (Office) (801) 538-5340, (Home) 298-7695, or Jim Thompson, Lead Inspector, (Home) 298-9318.
5. Compliance with the requirements of Rule R615-3-22, Gas Flaring or Venting, Oil and Gas Conservation General Rules.

Corporation

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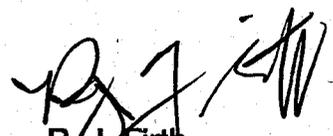
14

commencement of the proposed drilling operations, plans for facilities for sanitary wastes at the drill site shall be submitted to the local health department. These drilling operations and any subsequent well operations must be conducted in accordance with applicable state and local health department regulations. A list of local health departments and copies of applicable regulations are available from the Division of Environmental Health, Bureau of Sanitation, telephone (801) 538-6121.

Approval shall expire one (1) year after date of issuance unless substantial operations are underway or an application for an extension is made prior to the approval expiration date.

Phone number assigned to this well is 43-047-31854.

Sincerely,



R.J. Firth  
Associate Director, Oil & Gas

as  
Minerals  
14

QUINTANA PETROLEUM CORPORATION

1050 SEVENTEENTH STREET  
SUITE 400  
DENVER, COLORADO 80265  
(303) 628-9211

RECEIVED  
SEP 19 1988

September 15, 1988

DIVISION OF  
OIL, GAS & MINING

State of Utah  
Division of Oil, Gas & Mining  
3 Triad Center, Suite 350  
355 West North Temple  
Salt Lake City, Utah 84180-1204

RE: Little Bonanza #1-4  
Section 4, T9S-R24E  
Uintah County, Utah  
43-047-31854

Gentlemen:

Attached for your files please find a copy of the exception location approval from Conoco, Inc.

Very truly yours,



Jeannie Williams  
Production Technician

/jw  
attachment  
cc: Lisa Green, Consultant

150,000 N/W personal bond.

LCR

Form 3160-3  
(November 1983)  
(formerly 9-331C)

SUBMIT IN DUPLICATE  
(Other instructions on  
reverse side)

Form approved.  
Budget Bureau No. 1004-0136  
Expires August 31, 1985

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK  
DRILL  DEEPEN  PLUG BACK

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

2. NAME OF OPERATOR 1303/628-9211 1050-17th St., Suite 400  
Quintana Petroleum Corp. Denver, CO 80265

3. ADDRESS OF OPERATOR 303-322-7878  
Permitco Inc. - Agent Denver, CO

4. LOCATION OF WELL (Report location clearly and in accordance with BLM Form 3160-1)  
At surface 2190' FSL and 740' FEL  
At proposed prod. zone NE SE

RECEIVED  
OCT 06 1988

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

DIVISION OF  
OIL, GAS & MINING

15. DISTANCE FROM PROPOSED\*  
LOCATION TO NEAREST  
PROPERTY OR LEASE LINE, FT.  
(Also to nearest drilg. unit line, if any) 469'

16. NO. OF ACRES IN LEASE  
352.49

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. none

19. PROPOSED DEPTH  
6700'

20. ROTARY OR CABLE TOOLS  
Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)  
5202' GR

22. APPROX. DATE WORK WILL START\*  
Sept. 15, 1988

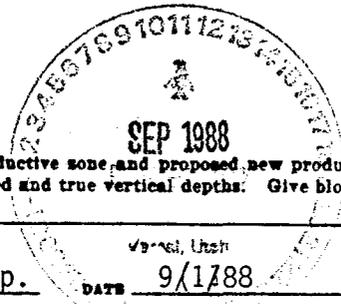
23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
12-1/4"	8-5/8"	24#	250'	175 sx or suffic to circ to surf.
7-7/8"	5-1/2"	15.5#	6700'	To be designed upon inspection of open hole logs.

Quintana Petroleum Corp. proposes to drill a well to 6700' to test the Wasatch and Mesa Verde formations. If productive, casing will be run and the well completed. If dry, the well will be plugged and abandoned as per BLM and State of Utah requirements.

See Onshore Order No. 1 attached.

I certify that Quintana Petroleum Corp. has been authorized by proper lease interest owners to conduct operations on the above mentioned lease. Bond coverage for these operations will be provided by the Operator, Quintana Petroleum Corp.



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

24. SIGNED [Signature] TITLE Consultant for Quintana Petroleum Corp. DATE 9/17/88

(This space for Federal or State office use)

PERMIT NO. 43-047-31854 APPROVAL DATE \_\_\_\_\_

APPROVED BY [Signature] TITLE Assistant District Manager Minerals DATE Oct. 5, 1988

NOTICE OF APPROVAL CONDITIONS OF APPROVAL ATTACHED TO OPERATOR'S COPY

BLM  
Ut 080-8-177-57

\*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 FOR NOTICE TO DRILL

WITHIN THE UINTAH OURAY RESERVATION

Company Quintana Petroleum Corp. Well No. 1-4  
Location Sec. 4 T.9 S. R.24 E. Lease No. U-54017

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

A. DRILLING PROGRAM

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

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

Report ALL water shows and water bearing sands to Wayne Svejnoha of this office. Copies of State of Utah form, OGC-8-X are acceptable. If noticeable water flows are detected, submit samples to this office along with any water analyses conducted.

Fresh water may be encountered from + 800 - 1000 ft., from + 1500 - 2000 ft., and from 3000 - 4000 ft. in the Green River Formation.

2. Pressure Control Equipment

All BOPE and testing procedures will be consistent with API RP 53, with individual components operable as designed. Pressure tests will be conducted before drilling out from under all casing strings which are set and cemented in place. Blowout preventer controls will be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned. Preventers will be inspected and operated at least daily to ensure good mechanical working order, and this inspection recorded on the daily drilling report. Preventers will be pressure tested before drilling casing cement plugs.

Also, an annular preventer must be used and tested to a minimum of 50% of the internal yield of the casing unless sufficient justification is provided to the authorized officer for not using the annular preventer.

BOPE pressure tests shall be conducted for at least 10 minutes. The Vernal District Office shall be notified, with sufficient lead time, in order to have a BLM representative present while pressure testing.

3. Casing Program and Auxiliary Equipment

The District Office shall be notified, with sufficient lead time, in order to have a BLM representative on location while running all casing strings and cementing.

4. Mud Program and Circulating Medium

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

5. Coring, Logging and Testing Program

The Mahogany Oil Shale zone has been identified from 2100 - 2252 ft. Therefore, the resources will be isolated and/or protected by a cement top for the production casing at least 200' above the oil shale.

A cement bond log (CBL), or some other means acceptable to the authorized officer, shall be utilized to determine the top of cement (TOC) for the intermediate and production casing.

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

6. Notifications of Operations

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

The spud date will be reported orally to the AO within 48 hours after spudding. If the spudding occurs on a weekend or holiday, the report will be submitted on the following regular work day. The oral report will be followed up with a Sundry Notice.

In accordance with Onshore Oil and Gas Order No. 1, this well will be reported on Form 3160-6, "Monthly Report of Operations", or any subsequent form as required by the regulations, starting with the

month in which operations commence and continue each month until the well is physically plugged and abandoned. This report will be filed with Minerals Management Service as per the requirements of 43 CFR 3162.4-3.

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

If a replacement rig is contemplated for completion operations, a "Sundry Notice" (Form 3160-5) to that effect will be filed, for prior approval of the AO, and all conditions of this approved plan are applicable during all operations conducted with the replacement rig.

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

Pursuant to NTL-2B, with the approval of a District Engineer, produced water may be temporarily disposed of into unlined pits for a period of up to 90 days. During the period so authorized, an application for approval of the permanent disposal method, along with the required water analysis and other information, must be submitted to the District Engineer.

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

A first production conference will be scheduled within 15 days after receipt of the first production notice.

#### 7. Other Information

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

All site security guidelines identified in 43 CFR 3162.7 regulations will be adhered to.

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

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

The oil and gas measurement facilities will be installed on the well location. The oil and gas meters will be calibrated in place prior to any deliveries. Tests for meter accuracy will be conducted monthly for the first three months on new meter installations and at least quarterly thereafter. The AO will be provided with a date and time for the initial meter calibration and all future meter proving schedules. A copy of the meter calibration reports will be submitted to the Vernal District Office. All meter measurement facilities will conform with the API standards for liquid hydrocarbons and the AGA standard for natural gas measurement.

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

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

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

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

The date on which production is commenced or resumed will be construed for oil wells as the date on which liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank, and for which a run ticket is required to be generated

or, the date on which liquid hydrocarbons are first produced into a permanent storage facility, whichever first occurs; and, for gas wells as the date on which associated liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank, and for which a run ticket is required to be generated or, the date on which gas is first measured through permanent metering facilities, whichever first occurs.

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

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

In the event after-hour approvals are necessary, please contact one of the following individuals:

Gerald E. Kenczka  
Petroleum Engineer

(801) 781-1190

Ed Forsman  
Petroleum Engineer

(801) 789-7077

Revised October 1, 1985

1

Date NOS Received 08/12/88

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

Company/Operator Quintana Petroleum Corporation  
Well Name & Number Little Bonanza Federal No. 1-4  
Lease Number U-54017  
Location NE ¼ SE ¼ Sec. 4 T.9 S. R.24 E  
Surface Ownership Federal - BLM

\_\_\_\_\_ The operator or his contractor shall contact the BLM office at (801) 789-1362 between 24 and 48 hours prior to construction activities. Contact - Byron Tolman .

\_\_\_\_\_ Fence Stipulation:

Each existing fence to be crossed by the right-of-way shall be braced and tied off before cutting so as to prevent slacking of the wire. The opening shall be closed temporarily as necessary during construction to prevent the escape of livestock, and upon completion of construction the fence shall be repaired to BLM or SMA specifications. A cattleguard with an adjacent 16 foot gate shall be installed in any fence where a road is to be regularly travelled.

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

The dirt contractor will be provided with an approved copy of the Surface Use Plan from the APD.

This drilling permit will be valid for a period of one year from the date of approval. After permit termination, a new application will be filed for approval for any future operations.



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ENTITY ACTION FORM - DOGM FORM 5

OPERATOR QUINTANA PETROLEUM CORPORATION  
ADDRESS 1050 - 17th Street, Suite 400  
Denver, Colorado 80265

OPERATOR CODE 19485  
PHONE NO. 303, 628-9211

**DIVISION OF  
OIL, GAS & MINING**

OPERATORS MUST COMPLETE FORM UPON SPUDDING NEW WELL OR WHEN CHANGE IN OPERATIONS OR INTERESTS NECESSITATES CHANGE IN EXISTING ENTITY NUMBER ASSIGNMENT.

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
A	99999	10937	43-047-31854	LITTLE BONANZA FEDERAL #1-4	NE SE	4	9S	24E	Uintah	10/9/88	
COMMENTS: Federal - lease Proposed Zone - mesa Verde Field - Undesignated (No other well in sec. 4, assign new entity 10937 on 10-13-88) JCR Not in a Unit											
COMMENTS:											
COMMENTS:											
COMMENTS:											
COMMENTS:											
COMMENTS:											

**CONFIDENTIAL**

ACTION CODES: A - ESTABLISH NEW ENTITY FOR NEW WELL (SINGLE WELL ONLY)  
 B - ADD NEW WELL TO EXISTING ENTITY (GROUP OR UNIT WELL)  
 C - RE-ASSIGN WELL FROM ONE EXISTING ENTITY TO ANOTHER EXISTING ENTITY  
 D - RE-ASSIGN WELL FROM ONE EXISTING ENTITY TO A NEW ENTITY  
 E - OTHER (EXPLAIN IN COMMENTS SECTION)  
 (SEE INSTRUCTIONS ON BACK OF FORM)

*J. Williams*  
SIGNATURE  
Production Technician 10/11/88  
TITLE DATE

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE  
(Other instructions on reverse side)

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

2. LEASE DESIGNATION AND SERIAL NO.

U-54017

6 IF INDIAN, ALLOTTEE OR TRIBE NAME

N/A

7. UNIT AGREEMENT NAME

N/A

8. FARM OR LEASE NAME

LITTLE BONANZA FEDERAL

9. WELL NO.

#1-4

10. FIELD AND POOL, OR WILDCAT

Wildcat

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

Section 4, T9S-R24E

12. COUNTY OR PARISH 13. STATE

Uintah

Utah

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.)

1. OIL WELL  GAS WELL  OTHER

2. NAME OF OPERATOR  
QUINTANA PETROLEUM CORPORATION (303)628-9211

3. ADDRESS OF OPERATOR  
1050 - 17th Street, Suite 400, Denver, CO

4. LOCATION OF WELL (Report location clearly and in accordance with instructions on reverse side. See also space 17 below.)  
At surface  
2190' FSL & 740' FEL (NE SE)

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14. PERMIT NO. 43-047-31854  
15. ELEVATIONS (Show whether OF, NT, OR, or GR)  
5202' GR  
DIVISION OF OIL, GAS & MINING

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

NOTICE OF INTENTION TO:

SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF   
FRACTURE TREAT   
SHOOT OR ACIDIZE   
REPAIR WELL   
(Other)

PULL OR ALTER CASING   
MULTIPLE COMPLETE   
ABANDON\*   
CHANGE PLANS

WATER SHUT-OFF   
FRACTURE TREATMENT   
SHOOTING OR ACIDIZING   
(Other)

REPAIRING WELL   
ALTERING CASING   
ABANDONMENT\*

(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.)\*

We request that all information received on this well be held CONFIDENTIAL for the maximum amount of time allowed.

CONFIDENTIAL

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

SIGNED J. Williams TITLE Production Technician DATE 10/11/88

(This space for Federal or State office use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL IF ANY:

cc: State of Utah DOGM

\*See Instructions on Reverse Side

QUINTANA PETROLEUM CORPORATION

1050 SEVENTEENTH STREET  
SUITE 400  
DENVER, COLORADO 80265  
(303) 628-9211

March 13, 1989

Bureau of Land Management  
District Office  
170 So. 500 E.  
Vernal, Utah 84078

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MAR 15 1989

DIVISION OF  
OIL, GAS & MINING

RE: Little Bonanza Federal #1-4  
NE SE Section 4, T9S-R24E  
Uintah County, Utah

Gentlemen:

Enclosed for your records please find copies of the following information on the subject well:

1. Well Completion Report (Form 3160-4)
2. Geologist's Report
3. Electric Logs
4. Mud Logs

Very truly yours,



Jeannie Williams  
Production Technician

/jw  
enclosures  
cc: State DOGM

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

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

2. NAME OF OPERATOR  
QUINTANA PETROLEUM CORPORATION (303) 628-~~9200~~ DIVISION OF OIL, GAS & MINING

3. ADDRESS OF OPERATOR  
1050 - 17th Street, Suite 400, Denver, Colorado 80265

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)\*  
At surface 2190' FSL & 740' FEL (NE SE)  
At top prod. interval reported below Same  
At total depth Same

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14. PERMIT NO. 43-047-31854 DATE ISSUED 9/8/88

5. LEASE DESIGNATION AND SERIAL NO.  
UTU-54017

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

7. UNIT AGREEMENT NAME  
N/A

8. FARM OR LEASE NAME  
LITTLE BONANZA FEDERAL

9. WELL NO.  
#1-4

10. FIELD AND POOL, OR WILDCAT  
Wildcat

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA  
Section 4, T9S-R24E

12. COUNTY OR PARISH  
Uintah

13. STATE  
Utah

15. DATE SPUDDED 10/9/88 16. DATE T.D. REACHED 10/26/88 17. DATE COMPL. (Ready to prod.) 2/11/89 (S.I.) 18. ELEVATIONS (DF, RKB, RT, GR, ETC.)\* 5202' GR 19. ELEV. CASINGHEAD 5202'

20. TOTAL DEPTH, MD & TVD 6700' 21. PLUG, BACK T.D., MD & TVD 5541' 22. IF MULTIPLE COMPL., HOW MANY\* 23. INTERVALS DRILLED BY → 24. ROTARY TOOLS 0-6700' 25. CABLE TOOLS N/A

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)\*  
4338'-4355' - Wasatch formation

25. WAS DIRECTIONAL SURVEY MADE  
No

26. TYPE ELECTRIC AND OTHER LOGS RUN  
DIL; Neutron; Microlog; CBL; tracer/CCL

27. WAS WELL CORRED  
No

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

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	48#	273.58'	17 1/2"	325 sxs "A"	None
5 1/2"	17# & 15.5#	6705.92'	7 7/8"	Stage 1: 1290 sxs 50/50 Poz Stage 2: 460 sxs 50/50 Poz	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
N/A				

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2 3/8"	5611.55'	4174'

31. PERFORATION RECORD (Interval, size and number)

5936'-5963' (O/A), 4 jspf  
5830'-5891', 4 jspf - CIBP @5815' & 5905'  
5579'-5593', 2 jspf - CIBP @5550'  
4228'-4234' & 4238'-4255', 2 jspf

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5830'-5864'	46620 gal Apollo 50 gel w/30%
4228'-4255'	28000 gal " " " CO2

33.\* PRODUCTION

DATE FIRST PRODUCTION 2/7/89 - test PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) Flowing (Now SI, waiting on gas market) WELL STATUS (Producing or shut-in) SI

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
2/10/89	24	1/2"	→	-0-	2790 mcf	391 bbls	N/A

FLOW, TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
570	---	→	-0-	2790 mcfpd	391 bwpd	---

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) Will be sold TEST WITNESSED BY R. Millett

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 Williams TITLE Production Technician DATE 3/13/89

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

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries);

38. GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
No Cores. No DST's.				Wasatch fm. Mesa Verde fm.	4000' 5705'	

OIL AND GAS	
DRN	RJF
JRB	GLH
DTS	SLS
1-TAS	
MICROFILM	
FILE	

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QUINTANA PETROLEUM CORPORATION  
LITTLE BONANZA FEDERAL #1-4  
NE/SE SECTION 4, T9S, R24E  
UINTAH COUNTY, UTAH

DIVISION OF  
OIL, GAS & MINING

GEOLOGIC REPORT

BY

CURTIS B. MATTHEWS

ROCKY MOUNTAIN GEO-ENGINEERING COMPANY

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WELL SUMMARY

OPERATOR: QUINTANA PETROLEUM CORPORATION  
WELL NAME: LITTLE BONANZA FED 1-4  
LOCATION: NE/SE SECTION 4, T9S, R24E  
FOOTAGE: 2190' FSL & 740' FEL  
AREA: RED WASH - COYOTE WASH PROSPECT  
COUNTY & STATE: UINTAH COUNTY, UTAH  
ELEVATION: GL 5202' , KB 5215.5'  
DRILLING ENGINEER: PAT MARX  
MUD LOGGING ENGINEERS: CURTIS B. MATTHEWS, STEVE SMITH  
SPUD DATE: 10-15-88 @ 8:00 PM  
COMPLETION DATE: 10-26-88 (GEOLOGIST RELEASED 10-27-88)  
CONTRACTOR: CACHUMA DRILLING, RIG #7-C  
TOOL PUSHER: JIM MURRAY  
HOLE SIZE: 7 7/8"  
CASING RECORD: 13 3/8" @ 273.6'  
PIPE: 4 1/2"  
DRILL COLLARS: 6 1/4"  
PUMPS: #1 NATIONAL 7P50, #2 NATIONAL 7P50  
DRILLING MUD: DAVIS MUD GEL LIME: 0-3500', DISPERSED: 3500'-T.D.  
ENGINEER: NATHAN PARKER  
GEOLOGIST: CURTIS B. MATTHEWS  
ELECTRIC LOGGING: HALLIBURTON LOGGING SERVICES  
TYPE OF "E" LOGS: RUN #1: DIL/FDC-CNL/MICROLOG  
RUN #2: BHC SONIC  
OBJECTIVES: PRIMARY - WASATCH & MESA VERDE  
SECONDARY - GREEN RIVER  
TOTAL DEPTH: DRILLER 6700', LOGGER 6700'

## WELL CHRONOLOGY

QUINTANA PETROLEUM CORPORATION  
LITTLE BONANZA FED 1-4

DATE & DAYS	12AM DEPTH	FTG/ DAY	DESCRIPTIONS
10-15-88 ( 1)	273'	325'	RIG UP, DRILL FLOAT, 45' CMT CSG SHOE @ 1800 HRS W/7 7/8" SECURITY S3J BIT, SURVEY @ 750' - 3/4 <sup>0</sup> , DRLG
10-16-88 ( 2)	598'	1444'	DRILL TO 1339', SURVEY @ 1339' - 3/4 <sup>0</sup> , TRIP, TRIP FOR BIT #2, 7 7/8" REED HP53A, DRLG, LOST ABOUT 75 BBLS @ 1675', LOST 1400 BBLS IN LAST 24 HRS
10-17-88 ( 3)	2042'	1158'	DRLG, RIG SERVICE & CHECK BOP, SURVEY @ 2943' - 1 1/2 <sup>0</sup> , LOST 900 BBLS FLUID IN LAST 24 HRS.
10-18-88 ( 4)	3200'	859'	DRLG, SERVICE RIG & CK BOP, INSTALL ROTATING HEAD, DRLG, SURVEY @ 3862' - 3/4 <sup>0</sup> , DRLG, REPAIR ROTARY CHAIN
10-19-88 ( 5)	4059'	571'	DRLG, SERVICE RIG & CK BOP, DRLG
10-20-88 ( 6)	4630'	350'	DRLG, TIGHT CONNECTIONS @ 4677' & 4738'. SERVICE RIG & CHECK BOP, SURVEY @ 4788' - 1 <sup>0</sup>
10-21-88 ( 7)	4980'	217'	DRLG, SERVICE RIG & CHECK BOP, STUCK DRILL PIPE @ 5111' CONNECTION, WORK STUCK PIPE FOR 5 HRS, FREE PIPE, CIRC & COND HOLE, DRLG
10-22-88 ( 8)	5197'	234'	DRLG, TRIP FOR BIT #3, TRIP FOR JUNK IN HOLE FROM BIT #2
10-23-88 ( 9)	5431'	319'	TRIP FOR JUNK IN HOLE FROM BIT #2, WASH & REAM 56' TO BOTTOM, DRLG, SERVICE RIG & CHECK BOP, DRLG
10-24-88 (10)	5750'	438'	DRLG, SERVICE RIG & CHECK BOP, DRLG
10-25-88 (11)	6188'	372'	DRLG, SURVEY @ 6267' - 1 <sup>0</sup> , DRLG, SERVICE RIG & CHECK BOP, DRLG, LOST 125 BBLS MUD
10-26-88 (12)	6560'	140'	DRLG, TRIP FOR HOLE IN DRILL PIPE @ 6629' - 1 1/2 HRS, 10 STDS, DRLG, RIG SERVICE & CHECK BOP DRL-TRIP FOR HOLE IN DRILL PIPE @ 6660', PULL 16 STDS - 3 HRS, DRLG - TD - 6700' 2 4:00 PM, SURVEY @ 6700' - 1 1/2 <sup>0</sup> , TOH, RIG UP WELEX @ 8:00 PM, RUN DIL/FDC-CNL/MICROLOG
10-27-88 (13)			RUN DIL/FDC-CNL/MICROLOG, RUN IN W/SONIC @ 6:00 AM, SONIC OUT @ 11:00, RELEASED @ 1:00 P.M.



QUINTANA PETROLEUM CORP.  
LITTLE BONANZA FED. #1-4  
SECTION 4, T9S, R24E  
UINTAH COUNTY - UTAH

FORMATION TOPS		
FORMATION	E-LOG DATUM	SEA LEVEL DATUM
GREEN RIVER FM.	----	
WASATCH FM.	4000'	+1215'
MESA VERDE FM.	5705'	- 490'

QUINTANA PETROLEUM CORP.  
 LITTLE BONANZA FED. #1-4  
 SECTION 4, T9S, R24E  
 Uintah County, UTAH

SAMPLE DESCRIPTION

1500-1530	100%	SH	lt-mbrn, dkbrn ip, bf, mfrm-frm, sbblky-sbplty, calc, dol, occ kerogen lam, occ glsnite
1530-1560	100%	SH	lt-mbrn, incr dkbrn, bf, mfrm-frm, sbblky-sbplty, calc, dol, kerogen lam, occ yel-gold FLOR, fast strm, lt yel CUT, occ glsnite
1560-1590	100%	SH	lt-mbrn, dkbrn, bf, mfrm-frm, sbblky-sbplty, calc, dol, occ yel-gold <u>FLOR</u> , fast strm lt yel <u>CUT</u> , occ glsnite
1590-1620	100%	SH	lt-dkbrn, bf, mfrm-frm, sbblky-sbplty, calc, dol, occ yel-gold <u>FLOR</u> , mod strm lt yel <u>CUT</u>
1620-1650	100%	SH	lt-dkbrn, bf, mfrm-frm, sbblky-sbplty, calc, dol, occ glsnite, pyr ip
1650-1680	100%	SH	AA
1680-1710	90%	SH	lt-mbrn, bf, mfrm-frm, sbblky-sbplty, plty ip, calc, dol, occ kerogen lam, pyr ip
	10%	LS	bf-crm, msft, sbplty-plty, crp-micxln, grdg to dol SH
1710-1740	80%	SH	AA
	20%	LS	AA
1740-1770	70%	SH	lt-mbrn, bf, mfrm-frm, sbblky-sbplty, calc, dol, occ kerogen lam, pyr ip
	30%	LS	bf-crm, mfst, sbplty-plty, crp-micxln, grdg to dol SH
1770-1800	80%	SH	AA
	20%	LS	AA
1800-1830	80%	SH	lt-mbrn, mfrm-frm, sbblky-sbplty, calc, dol, pyr ip
	20%	LS	bf-crm, msft, sbplty-plty, crp-micxln, DULL YEL <u>FLOR</u> , mod strm cut w/over yel <u>CUT</u>
1830-1860	80%	SH	AA, w/kerogen lam, glsnite
	20%	LS	AA
1860-1890	30%	LS	ltbrn-bf, frm, arg, crp-micxln, dull yel <u>FLOR</u> , mod strm yel <u>CUT</u>
	20%	DOL	brn, micxl, frm, slty ip, slcarb
	50%	SH	brn-dkbrn, slty, frm, sbblky, carb, dull yel - yel <u>FLOR</u> , mod strm yel <u>CUT</u> w/over yel <u>CUT</u>

QUINTANA PETROLEUM CORP.  
 LITTLE BONANZA FED. #1-4  
 Uintah County, Utah

1890-1920	30%	LS AA
	20%	DOL AA
	50%	SH AA
1920-1950	30%	LS AA
	30%	DOL AA
	40%	SH AA
1950-2040	30%	LS AA, incr ltbrn, plty, arg, crpxl
	10%	DOL brn, frm, arg, abplty, micxl-crpxl
	50%	SH AA
	10%	SS ltgy, vfgr, sbang, wsrt, wcmt, slcalc
		NOTE: SAMPLE has dull yel orng <u>FLOR</u> , mod strm yel <u>CUT</u> w/overall yel <u>CUT</u>
2040-2070	70%	SH dkbrn-brn-occ gn, slty, frm, carb-vcarb ip, sl calc-dol, grdg to SLTST ip
	10%	DOL brn, arg, micxl, frm
	20%	LS ltbrn-occ dkbrn, frm, plty-sbplty, arg, micxl-crpxl
2070-2100	80%	SH AA
	10%	SS ltbrn-ofwh, vf-fgr, sbang, prst, mcmt, cgl, slcalc w/brn STN, yel FLOR, slow strm yel CUT, bri yel resd
	10%	LS AA
2100-2130	20%	LS ltbrn, plty, mfrm, sbang, crpxl
	80%	SH AA
	TR	SS AA, w/pyr incl
2130-2160	30%	LS AA, incr sft, arg, crpxl
	70%	SH dkbrn-brn-occ ltbrn, vcarb ip, vsly ip, slcalc-dol
		NOTE: SAMPLE has spotty dull yel-yel <u>FLOR</u> , mod strm yel <u>CUT</u>
2160-2190	30%	LS AA
	70%	SH AA
2190-2220	80%	LS ltbrn-bf, plty, sft-mfrm, slarg-arg, vf-micxl, incr dull yel <u>FLOR</u> , mod strm yel <u>CUT</u>
	20%	SH AA
2220-2250	40%	LS AA, decr <u>FLOR</u> & <u>CUT</u>
	10%	SS wh-occ ltgy, vfgr, sbrd-sbang, wsrt, fri, slcalc-calc, NFSOC
	50%	SH brn-dkbrn, sbblky-sbplty, frm, sl-ncalc, slty-v slty, carb-vcarb, lam w/carb mat, yel <u>FLOR</u> , slow overall yel CUT w/TR rapid strm yel <u>CUT</u>
2250-2280	20%	LS AA
	10%	SS AA
	70%	SH AA, w/gy-gygn, sbblky, sft, ncalc

QUINTANA PETROLEUM CORP.  
LITTLE BONANZA FED. #1-4  
UINTAH COUNTY, UTAH

2280-2310	50%	DOL	bf-ltbrn, frm, sbplty, cln, micxl
	20%	LS	AA
	30%	SH	AA
2310-2340	10%	LS	ltbrn-crm, plty, mfrm, brit, slarg, micxl
	60%	DOL	AA
	30%	SH	dkbrn-ltbrn, sbblky, frm, slty, carb ip, slcalc-dol
		NOTE:	SAMPLE has ABNT yel <u>FLOR</u> , TR pale yel <u>CUT</u> w/ slow strm yel CUT
2340-2370	40%	DOL	bf-ltgy, micxl, frm, slarg, w/pyr incl
	10%	LS	AA
	10%	SS	ltgy-ofwh, vf-fgr, sbang, m-psrt, mcmt, fri, cgl ip, slcalc-dol
	40%	SH	brn-ltbrn-ltgy-bf, sbblky-sbplty, slty, frm, grdg to dol ip
		NOTE:	<u>FLOR &amp; CUT</u> AA
2370-2400	50%	DOL	AA
	10%	LS	AA
	30%	SH	AA
	TR-10%	SS	AA
2400-2430	20%	SS	ltgy-frst-ofwh, vfgr, sbrd-sbang, m-psrt, mcmt, fri-slfri, slcalc, w/brn <u>OIL STN</u> , ABNT PYR
	20%	LS	ltbrn-bf, plty, slarg, micxl
	20%	DOL	brn-ltbrn, sbblky-sbplty, carb, arg, micxl
	40%	SH	AA
2430-2460	10%	SS	AA, incr pyr incl
	40%	LS	AA
	50%	SH	ltbrn-bf, sbblky-plty, carb ip, dol
		NOTE:	SAMPLE has ABNT yel-dull orng <u>FLOR</u> , TR strm yel <u>CUT</u>
2460-2490	50%	SH	lt-mbrn, ltgy, buf, sbblky-sbplty, calc, dol, pyr ip
	25%	LS	bf-ltbrn, plty-sbplty, slarg, micxl
	20%	DOL	brn-ltbrn, sbblky-sbplty, carb, arg, micxl
	5%	SS	ltgy-ofwh, vfgr-fgr, sbrd-sbang, m-psrt, mcmt, fri-slfri, slcalc, pyr
2490-2520	55%	SH	lt-mbrn, ltgy, bf, sbblky-sbplty, calc, dol, pyr ip, frm
	20%	LS	AA
	20%	DOL	AA
	5%	SS	AA
		NOTE:	SAMPLE has ABNT dull yel-dull orng <u>FLOR</u> , vwk strm ltyel <u>CUT</u>
2520-2550	60%	SH	lt-dkbrn, bf, sbblky-sbplty, calc, dol ip, frm
	35%	LS	bf-ltbrn, ltgy, plty-sbplty, micxl-crpxl, msft-mfrm
	5%	SS	lt-mgy, ofwh, vf-fgr, sbrd-sbang, m-psrt, mcmt, fri-slfri, kerogen ip, sl vis <u>OIL STN</u> ip
		NOTE:	<u>FLOR</u> : AA

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2550-2580	60%	SH lt-dkbrn,buf,sbblky-sbplty,calc,dolo ip,frm,pyr ip
	30%	LS buf-ltbrn,ltgy,plty-sbplty,mic-crpxl,mrly ip,sft-mfrm
	10%	SS wh-ofwh,ltgy,vf-fgr, mgr ip,sbrd-sbang,m-psrt,m-pcmt, fri-slfri,occ <u>OIL STAIN</u> ,NFOC
		NOTE: <u>FLOR AA</u>
2580-2610	70%	SH m-dkbrn,ltbrn-buf,sbblky-sbplty,slcalc,frm
	25%	LS AA
	5%	SS ltgy,vf-fgr,sbrd-sbang,m-psrt,mcmt,fri,kerogen mat, NFOC,sl <u>OIL STAIN</u>
		NOTE: Spl has abnt dul yel-dul orng <u>FLOR</u> ,vwk strmg ltyel <u>CUT</u>
2610-2640	60%	SH lt-mbrn,dkbrn ip,sbblky-sbplty,calc-slcalc,frm
	35%	LS buf-ltbrn,plty-sbplty,mic-crpxl,sft-mfrm
	5%	SS AA
		NOTE: <u>FLOR AA</u>
2640-2670	75%	SH m-ltbrn,dkbrn ip,sbblky-sbplty,slcalc,msft-frm
	25%	LS ltbrn,buf,plty-sbplty,mic-crpxl,msft-mfrm
		NOTE: <u>FLOR AA</u>
2670-2700	50%	SH lt-dkbrn,sbblky-sbplty,calc-slcalc,msft-frm
	30%	DOL ltbrn,buf-crm,sbplty-plty,sft-mfrm,mic-crpxl
	15%	LS buf-tn,sbplty,sft-mfrm,mrly,mic-crpxl
	5%	SS ltgy,vf-fgr,sbrd-sbang,msrt,mcmt,slfri-fri,pyr ip
		NOTE: ABNT dul yel-dul orng <u>FLOR</u> ,sl ltyel strmg <u>CUT</u>
2700-2730	50%	SH lt-mgy,lt-mbrn,dkbrn ip,sbblky-sbplty,calc,sft-mfrm,pyr
	25%	LS AA
	15%	SS wh-ofwh,lt-mgy,vf-fgr,occ mgr,sbrd-sbang,msrt,mcmt,fri, calc,occ <u>O STN</u> , NFOC
	10%	DOL AA
		NOTE: <u>FLOR AA</u> , NO CUT
2730-2760	50%	SH AA
	25%	SS wh-ofwh,lt-mgy,ltgn,vf-fgr,m-wsrt,sbang-sbrd,mcmt,fri, calc,occ <u>O STN</u> ,NFOC
	15%	DOL ltbrn,buf-crm,sbplty-plty,sft-mfrm,mic-crpxl
	10%	LS buf-tn,sbplty,sft-mfrm,mic-crpxl
		NOTE: <u>FLOR AA</u>
2760-2790	50%	SH lt-mbrn,lt-mgy,sbblky-sbplty,calc,sft-mfrm,pyr
	30%	SS AA w/incr ltgn,kerogen
	20%	LS AA
		<u>FLOR AA</u>
2790-2820	40%	SH AA
	40%	SS lt-mgy,ltgn,wh-ofwh,vf-fg,occ cgr,m-wsrt,mcmt,fri,calc, occ <u>O STN</u> , kerogen, NFOC
	20%	LS buf-tn,ltbrn,sbplty,sft-mfrm,mic-crpxl
		ABNT dul yel-dul orng <u>FLOR</u> ,wk ltyel strmg <u>CUT</u>
2820-2850	60%	SH lt-mbrn,buf,ltgy,sbblky-sbplty,calc,sft-mfrm,dol ip
	25%	SS AA
	15%	LS buf-tn,ltbrn,sft-mfrm,mic-crpxl,mrly
		NOTE: Abnt dul yel-dul orng min <u>FLOR</u> ,w/CUT AA

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2850-2880	65%	SH AA
	20%	SS wh-ofwh,ltbrn,ltgy,vf-fgr,m-wsrt,mcmt,calc,fri-slfri, occ <u>0 STN</u> ,NFOC
	15%	LS AA <u>FLOR AA</u>
2880-2910	60%	SH lt-mbrn,buf,ltgy,sbblky-sbplty,calc,sft-mfrm,dol ip
	25%	SS ltgy,wh-ofwh,ltbrn,vf-fgr,m-wsrt,mcmt,calc,fri-slfri, <u>0 STN</u>
	15%	LS buf-tn,ltbrn,sft-mfrm,mic-crpxl,mrly <u>FLOR AA</u>
2910-2940	55%	SH lt-mgy,lt-mbrn,sbblky-sbplty,calc,sft-mfrm,dol ip
	30%	SS AA w/,incr ltgy
	15%	LS buf-tan,ltbrn,sft-mfrm,mic-crpxl,mrly <u>FLOR AA</u>
2940-2970	55%	SH AA w/abnt pyr, <u>0 STN</u>
	35%	SS lt-mgy,wh-ofwh,ltbrn,vf-fgr,m-wsrt,mcmt,calc,fri, <u>0 STN</u> , NFOC,abnt pyr
	10%	LS AA
2970-3000	50%	SH lt-mgy,lt-mbrn,sbblky-sbplty,calc,sft-mfrm,dol ip,pyr
	50%	SS lt-mgy,wh-ofwh,ltbrn,vf-fgr,mgr ip,m-wsrt,mcmt,calc,fri- slfri, <u>0 STN</u> ip,NFOC
3000-3030	100%	SH m-dkbrn,lt-mgy,sbblky-sbplty,slcalc-calc,mfrm-frm,dol ip
3030-3060	90%	SH AA
	10%	SS frst-s&p,ltgy-brn,vfgr,sbrd-sbang,m-psrt,mcmt,fri,slcalc NFSOC
3060-3090	80%	SH AA
	10%	SS AA
	10%	LS ofwh-ltbrn,sbplty-plty,micrxl,slarg
3090-3120	60%	DOL ltbrn-crm,sbblky-sbplty,frm,micxl,slarg,yel min <u>FLOR/</u> <u>TR pale CUT</u>
	40%	SH gy-dkbrn,sbblky-sbplty,carb ip,slty ip,slcalc-ncalc
3120-3150	60%	SH AA
	30%	SS clr-ltbrn-ltgy,vf-fgr,sbrd,m-psrt,mcmt,fri,slcalc,tr brn <u>0 STN/TR FLOR/slo strmg yel CUT</u>
	10%	DOL AA
3150-3180	65%	SH AA
	25%	DOL ltornng-crm,sbblky,frm,crpxl,w/ost fos
	10%	SS ltgy-clr,vfg,sbrd,psrt,mcmt,fri,slcalc,NFSOC
3180-3210	70%	SH gy-brn-gn-gngy,sbblky,frm,slty,carb ip slcalc-calc ip
	20%	DOL AA
	10%	SS AA w/brn,vfgr,sbrd-sbang,psrt,mcmt,w/dkbrn <u>STN/mod</u> strmg <u>CUT/NO FLOR</u>
3210-3240	50%	SH AA
	50%	SS ltgy-s&p-frst,vfgr,sbrd-sbang,msrt,m-wcmt,slfri-tt,sl calc-calc,NFSOC

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	TR	DOL
3240-3270	70%	SS AA incr s&p,vfgr,sbrd,m-psrt,m-wcmt,slfri-tt,slcalc,NFSOC
	30%	SH gy-gn-gngy-occ brn,vsity ip,sbblky,mfrm,sl-ncalc
	TR	DOL
3270-3300	50%	SS ltgy-wh-s&p,vfgr,sbang,msrt,mcmt,fri-ssfri,slcalc-calc,occ pyr incl,NFSOC
	45%	SH brn-ltbrn-gy-gn,sbblky-sbply,slty,sft-frm,slcalc-dol ncalc ip
	5%	CHT orng-mlky,trns1,ang,hd
3300-3330	60%	SH AA
	30%	SS AA
	10%	DOL ltbrn-crm,sbblky,frm,micx1
3330-3360	60%	SH gy-ltgy-gngy,sbply-sbblky,vsity-slty,frm,slcalc-calc
	30%	SS ltgy-clr-frst,vf-fgr,sbrd-sbang,m-psrt,mcmt,pred fri,occ slfri,calc,NFSOC
	10%	LS gy-ofwh,frm ip,suc ip,slarg,micx1
	TR	PYR mass
3360-3390	70%	SH AA incr gy,slty,frm,slcalc-calc
	20%	SS AA
	10%	LS AA w/abnt pyr
3390-3420	80%	SH AA
	10%	SS ofwh-clr,fgr,sbrd-sbang,psrt,wcmt,tt-ssfri,calc,NFSOC
	10%	LS ofwh-ltgy,sbblky,frm,trns1 ip,cryp-micx1
3420-3450	100%	SH dkbrn-brn,sbply-pty,frm,slty,carb-vcarb,sl-ncalc
3450-3480	100%	SH AA,TR du1 orng <u>FLOR/slo</u> overall pale yel <u>CUT</u>
3480-3510	80%	SH dkbrn-brn-gy,sbblky-sbply,frm,slty,carb-vcarb ip,slcalc-dol
	10%	SS ltgy-frst,vfg,sbrd-sbang,msrt,mcmt,fri,calc-slcalc,occ ltbrn w/carb strng,slo strng yel <u>CUT</u>
	10%	DOL ltbrn-buf,sbply,carb ip,micx1
3510-3540	90%	SH AA
	10%	SS AA
3540-3570	100%	SH brn-gy-dkbrn,sbblky,occ sbply,frm,slty-vsity,carb ip,slcalc-dol
3570-3600	100%	SH brn-gy-gybrn,sbblky-blky,frm,carb,slty ip,slcalc-dol
3600-3690		NS (WORKING ON SHAKER)
3690-3720	75%	SH lt-mgy,lt-mbrn,dkbrn ip,sbblky-sbply,msft-frm,ncalc-calc,abnt glsnite,pyr
	20%	LS buf-tan,ltbrn,sbply-pty,sft-mfrm,mic-crpx1,x1 ip,occ ostracods

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	5%	SS	ltgy-ofwh,vf-fgr,msrt,sbang-sbrd,mcmt,fri,calc,NFSOC
3720-3750	85%	SH	lt-mgy,m-dkbrn ip,sbblky-sbplty,msft-frm,ncalc-calc, abnt pyr
	15%	LS	wh,crm,mlky ip,blky-plty,sft-mfrm,micxl-xl
3750-3780	80%	SH	AA w/lt-mbrn
	20%	LS	buf-tan,wh,sbblky-sbplty,sft-mfrm,mic-crpxl
3780-3800	75%	SH	lt-mgy,lt-mbrn,sbblky-sbplty,msft-frm,ncalc-calc,arg, abnt glsnite,abnt pyr
	25%	LS	AA
3800-3820	85%	SH	lt-dkgy,m-dkbrn,sbblky-sbplty,mfrm-frm,s1calc-calc,arg, abnt glsnite,pyr
	15%	LS	buf-tan,wh,mlky,sbblky-plty,sft-mfrm,micxl-xl,mrly
3820-3840	75%	SH	AA w/occ glsnite
	25%	LS	tn-buf,ltbrn,wh,mlky,sbblky-plty,sft-mfrm,micxl-xl,mrly, foss,ost
3840-3860	70%	LS	tn-buf,ltbrn,wh,mlky,sbblky-plty,sft-mfrm,micxl-xl,mrly, fos,ost
	30%	SH	lt-dkgy,occ brn,sbblky-sbplty,mfrm-frm,s1calc-calc,arg, occ glsnite
3860-3880	65%	LS	tn-buf,ltbrn,wh,mlky,sbblky-plty,sft-mfrm,micxl-xl,mrly, fos,ost
	35%	SH	lt-dkgy,ltbrn,sbblky-sbplty,mfrm-frm,s1calc-calc,arg
3880-3900	60%	SH	lt-dkgy,mbrn,sbblky-sbplty,msft-frm,s1calc-calc,arg,pyr
	40%	LS	AA
3900-3920	80%	SH	m-dkgy,ltgy ip,lt-mbrn,tn,sbblky-plty,msft-frm,s1calc- calc,arg ip,pyr
	20%	LS	tn-buf,ltbrn,wh,sbblky-plty,sft-mfrm,micxl,mrly,fos
3902-3940	60%	SH	lt-mgy,lt-mbrn,gybrn,buf,sbblky-plty,m-frm,s1calc-calc, carb,arg,pyr
	35%	LS	AA
	5%	SS	wh,vf-fgr,sbrd,msrt,mcmt,fri,calc,NFSOC
3940-3960	80%	Sh	lt-mgy,lt-mbrn,gybrn,buf,sbblky-plty,msft-frm,s1calc- calc,carb,arg ip,pyr
	20%	LS	tn-buf,ltbrn-gybrn,wh-sbblky-plty,sft-mfrm,micxl,mrly, fos ip
3960-3980	90%	SH	AA
	10%	LS	AA
3980-4000 T/WASATCH	90%	SH	gy-ltgy-red,slty-vslty,frm,sbblky,s1calc-occ calc
	10%	SS	clr-ltgy-vfgr,sbang-sbrd,psrt,mcmt,fri-slfri,s1calc, NFSOC
4000-4020	100%	SH	gy-red,sbblky-sbplty,slty ip,mfrm-frm,s1calc

4020-4040	90%	SH AA
	10%	SS wh,vf-fgr,sbrd-sbang,m-psrt,mcmt,fri,slcalc,NFSOC
4040-4060	90%	SH gy-red-yel-occ purp,sbblky-plty,frm,slty-occ vslty,sl-ncalc
	10%	SS AA w/Tr Glau
4060-4100	90%	SH AA incr red,slty,mfrm,sl-ncalc
	10%	SS clr-frst,fgr,sbrd,psrt,mcmt,slfri,sl-ncalc
	TR	PYR
4100-4120	100%	SH gy-gybrn-red-yel-occ purp,sbblky-plty,sft-frm,slty ip,sl-ncalc
	TR	LS buf,sbblky,frm,crpxl
4120-4140	90%	SH AA incr red,slty,sbplty,slcalc-calc,occ w/calc frac
	10%	SS frst-clr,vf-fgr,sbrd,msrt,mcmt,fri,slcalc,NFSOC
4140-4180	100%	SH AA
	TR	PYR
4180-4200	100%	SH gy-red-gybrn-yel-gn,sbblky-plty,sft-frm,slty,occ carb,slcalc-occ calc
	TR	SS s&p-ltgy,vfgr,sbang,wsrt,mcmt,slfri,slcalc
4200-4220	90%	SH AA
	10%	SS ltgy-clr-wh,vfgr,sbrd,m-psrt,mcmt,fri,slcalc,NFSOC
4220-4260	60%	SS clr-wh,f-mgr,sbrd,psrt,m-pcmt,fri,uncons ip,slcalc ip
		NFSOC, Tr Glau cong ip
	40%	SH AA
4260-4380	95%	SH lt-mgy,lt-dkbrn,red,redbrn,occ yel,occ mar,sbblky-plty,sft-mfrm,arg,slcalc-calc,occ carb,slty-sdy ip,pyr
	5%	SS ltgy-wh,clr ip,f-mgr,sbrd-sbang, p-msrt,m-pcmt,fri, sl calc ip,NFSOC,congl ip
4280-4300	95%	SH AA w/incr sdy
	5%	SS AA
4300-4320	90%	SH lt-mgy,red,redbrn,occ yel,occ mar,sbblky-plty,sft-mfrm, arg,slty-sdy,slcalc-calc,occ carb,pyr,mot
	10%	SS ltgy-wh,clr ip,s&p ip,vf-mgr,congl ip,sbrd-sbang,p-msrt, m-pcmt,fri,slcalc,NFSOC
4320-4360	100%	SH lt-mgy,red,redbrn,incr mar,occ yel,sbblky-plty,sft-mfrm, arg,sdy,slty ip,slcalc-calc,occ carb,pyr,mot dul orng min FLOR ip,gilsnite
4360-4380	100%	SH lt-mgy,red,redbrn,orngred,mar ip,occ yel,sbblky-plty, sft-mfrm,arg,sdy,slty ip,slcalc-calc,pyr,dul orng min FLOR ip,gil
4380-4400	95%	SH AA
	5%	SS wh-ltgy,vfgr,m-psrt,sbrd-sbang,mcmt,fri- <u>slfri</u> ,calc,NFSOC
4400-4420	100%	SH lt-mgy,gybrn,redbrn,lt-mbrn ip,yel,mar,sbblky-sbplty,arg

4420-4440	95%	SH AA
	5%	SS wh-ltgy,redbrn ip,vf-fgr,m-psrt,sbrd-sbang,mcmt,fri-sl fri,calc,NFSOC
4440-4460	90%	SH lt-mgy,gybrn,redbrn,lt-mbrn,yel,mar,ltgn ip,sbblky-sbplty, arg,sdy-vsdy,slcalc-calc,pyr,dul orng min <u>FLOR</u>
	10%	SS AA w/occ mgr
4460-4480	90%	SH lt-mgy,gybrn,redbrn,lt-mbrn,yel,mar,sbblky-sbplty,arg,sdy, vsdy,slcalc-calc,pyr,dul orng min <u>FLOR</u>
	10%	SS wh-ltgy,redbrn-ltbrn,vf-fgr,m-psrt,sbrd-sbang,mcmt,fri-sl fri,calc,NFSOC
4480-4500	95%	SH AA
	5%	SS AA
4500-4540	95%	SH lt-mgy,gybrn,redbrn,lt-mbrn,yel,mar,sbblky-sbplty,arg, sdy,slcalc-calc,pyr,dul orng min <u>FLOR</u>
	5%	SS AA
4540-4560	100%	SH AA
4560-4580	90%	SH red-gy-gngy-yel,sbblky-sbplty,slty-vslty,sl-ncalc
	5%	LS ltbrn,abnt fos,ost,mic-vfxl
	5%	SS wh,vfgr,sbrd-sbang,wsrt,mcmt,fri,w/PYR INCL,slcalc-calc
4580-4600	90%	SH AA
	10%	SS clr-s&p,vfgr,sbrd,m-psrt,mcmt,fri,slcalc-calc,NFSOC
	TR	PYR & LS
4600-4620	80%	SH gy-red-yel-gngy,sbplty,vslty-slty,frm,sl-ncalc
	10%	LS gy-ltbrn,frm,micxl,sdy,fos
	10%	SS wh-frst,vfgr,sbang,msrt,mcmt,w/FOS INCL
4620-4640	80%	SH gy-red-yel-gngy,sbblky-plty,slty-vslty,frm,slcalc-occ calc
	10%	SS AA
	10%	LS ltbrn-buf,sbblky,intbd in SS ip,fos micxl
4640-4660	80%	SH AA incr red,slty,frm,sbblky,sl-ncalc
	10%	SS AA
	10%	LS AA
	TR	PYR
4680-4700	90%	SH red-gy-gngy-yel,sbblky-plty,slty ip,frm,calc-slcalc
	10%	LS gy,sbblky,dns,frm,slarg-arg,micxl
	TR	SS s&p,vfgr,sbang,msrt,mcmt,fri,calc
4700-4720	90%	SH AA
	10%	LS AA
4720-4740	100%	SH gy-red-yel,mot,plty-sbplty,frm,slty ip,sl-ncalc
4740-4760	100%	SH lt-mgy,dkgy ip,mbrn,redbrn,yel ip,mar ip,sbblky-sbplty, sft-mfrm,slty-sdy ip,sl-ncalc,mot,pry
4760-4780	95%	SH lt-mgy,dkgy ip,mbrn,redbrn,orngbrn,incr yel,mar ip,sbblky

	30%	SS wh-clr-s&p,vf-fgr,sbang,m-psrt,mcmt,slfri-fri,calc-cmt,NFSOC
	20%	LS ltbrn-buf,sbblky-plty,frm,TR FOS micxl
5050-5060	90%	SH red-gy-gngy,sbblky,slty-vslty,frm,ncalc
	10%	SS AA
5060-5070	95%	SH lt-mgy,redbrn,yel ip,sbblky-sbplty,plty ip,sft-mfrm,arg ip,ncalc-calc,pyr ip
	5%	SS wh-ltgy,vfgr,msrt,sbrd-sbang,p-mcmt,fri,calc,NFSOC
5070-5080	80%	SH AA
	20%	SS wh,s&p ip,f-mgr,p-msrt,sbang-sbrd,fri-slfri,m-pcmt,slcalc,NFSOC
5080-5090	90%	SH lt-mgy,redbrn,yel ip,sbblky-sbplty,plty ip,sft-mfrm,arg ip,lmy ip,ncalc-calc,pyr ip
	10%	SS wh-ltgy,vf-fgr,mgr ip,p-msrt,sbang-sbrd,fri-slfri,m-pcmt,slcalc,NFSOC
5090-5100	100%	SH AA
	TR	SS AA
5100-5110	90%	SH red-gy-yel-gngy,sbblky,slty,frm,occ wxy,NFSOC
	10%	SS wh,vfg,sbrd,m-psrt,mcmt,fri,calc,NFSOC
5110-5120	100%	SH AA incr dkred,frm,brit,ncalc
5120-5130	90%	SH varcol red-dkred-gy-gn-yel-pk,sbblky-sbplty,frm,vslty ip,sl-ncalc
	10%	LS ltbrn-brn,mfrm,arg,crpxl
5130-5140	100%	SH AA incr gy
5140-5150	90%	SH gy-red-yel-purp,sbblky-sbplty,slty ip,brit ip,sl-ncalc
5150-5160	80%	SH gy-ltbrn-red-yel,sbblky-plty,frm,slty ip,brit ip,sl-ncalc
	20%	SS s&p,vfgr,sbang,msrt,mcmt,slfri-fri,slcalc,NFSOC
5160-5170	60%	SH AA
	30%	SS AA
	10%	LS ltbrn,plty,mfrm,crpxl
5170-5180	80%	SH gy-gybrn-red-ltbrn,sbblky,frm-mfrm,vslty ip,sl-ncalc
	20%	LS buf-ltbrn-gy,sbblky-plty,arg,sft,trns1 ip,crpxl
5180-5200	80%	SH AA
	20%	SS s&p-ltgybrn,vfgr,sbrd-sbang,m-psrt,mcmt,fri,slcalc-calc,NFSOC
5200-5210	80%	SH gy-red-occ yel-occ purp,sbblky-plty,vslty,frm,slcalc ip
	20%	LS ofwh-buf,plty,mfrm,micxl,slarg ip
	TR	SS wh,vfgr,wcmt,tt,ncalc
5210-5220	80%	SH AA incr slty,incr calc
	10%	LS AA
	10%	SS ltgy-wh,vfgr,sbrd-sbang,wsrt,m-wcmt,slfri-tt,slcalc,NFSOC

5220-5230	70%	SH AA	
	20%	SS	ltgy-s&p,vfgr,sbrd-sbang,msrt,mcmt,fri,slcalc-calc
	10%	LS	AA
5230-5240	70%	SH	AA (Abnt PYR)
	30%	SS	clr-wh,f-mgr,occ cgr,sbrd-rdd,psrt,m-pcmt,fri,occ uncons,slcalc,NFSOC
5240-5250	70%	SS	wh-s&p-clr-ltgy,vf-mgr,sbrd-sbang,m-psrt,mcmt,fri ip,occ tt,slcalc-calc,NFSOC
	30%	SH	gy,sbblky-sbplty,slty-vslty,frm,slcalc-occ calc
5250-5260	50%	SH	gy-red-dkgy,frm,vslty,slcalc-occ lmy
	40%	SS	ofwh-s&pclr-ltgy,vfg,sbrd,msrt,mcmt,fri,slcalc-calc
	10%	LS	ofwh,plty,mfrm,crpxl
5260-5270	60%	SH	AA
	20%	SS	AA
	20%	LS	ltbrn-gy,plty-sbplty,frm,arg ip,mic-vfxl
5270-5280	70%	SS	s&p-ofwh,fgr,sbrd-sbang,m-psrt,m-wcmt,slfri,vcalc,NFSOC
	30%	SH	gy-gn-red,sbblky,slty,frm,calc-slcalc
5280-5290	50%	SS	AA
	40%	SH	AA
	10%	LS	ltbrn,plty,frm,micxl
5290-5300	50%	SH	gy-blk-occ red,sbblky,vslty,vcarb ip,slcalc-ncalc,grdg to lig ip
	40%	SS	s&p-ltgy,vfgr,sbang-sbrd,m-psrt,mcmt,slfri-fri,slcalc,NFSOC
	TR	LS	AA
5300-5310	60%	SS	s&p-ofwh,vf-fgr,sbrd,psrt,psrt,mcmt,calc-slcalc,NFSOC
	40%	SH	AA
5310-5320	50%	SS	s&p,ofwh,fgr,mgr ip,sbrd,msrt,mcmt,slfri,calc,NFSOC
	50%	SH	m-dkgy,gybrn,rdbrn ip,yel ip,sbblky-sbplty,sft-msft,sl-ncalc
5320-5330	50%	SS	AA
	50%	SH	AA w/gygn
5330-5340	75%	SH	lt-mgy,gybrn,redbrn,tan ip,yel ip,sbblky-sbplty,sft-msft,sl-ncalc
	25%	SS	AA
5340-5360	60%	SH	m-dkgy,gybrn,redbrn-brn,ltgn ip,sbblky-sbplty,sft-mfrm,sl-ncalc
	40%	SS	s&p,wh-ofwh,fgr,mgr ip,sbrd,msrt,mcmt,slfri-fri,calc,NFSOC
5360-5370	55%	SH	m-dkgy,gybrn,redbrn,brn,ltgn ip,sbblky-sbplty,sft-mfrm,sl-ncalc
	45%	SS	AA
5370-5380	65%	SH	m-dkgy,gybrn ip,redbrn ip,sbblky-sbplty,msft-mfrm,sl-ncalc

	35%	SS s&p,wh-ofwh,fgr,mgr ip,sbrd,msrt,mcmt,slfri-fri,calc,NFSOC
5380-5390	55%	SH m-dkgy,gybrn,redbrn,ltgn ip,sbblky-sbplty,msft-mfrm,sl-n calc,abnt glsnite
	45%	SS wh-ofwh,s&p,fgr,mgr ip,sbrd,msrt,mcmt,slfri-fri,calc,NFSOC
5390-5400	60%	SH m-dkgy,gybrn,redbrn,sbblky-sbplty,msft-mfrm,sl-ncalc
	40%	SS AA
5400-5410	50%	SH AA w/lt-mgy,dkgy ip
	50%	SS s&p,wh-ofwh,fgr-mgr,sbrd-sbang,msrt,mcmt,slfri-fri,calc, NFSOC
5410-5420	50%	SH lt-mgy,dkgy ip,redbrn,tn ip,sbblky-sbplty,mfrm-msft,sl-n calc,occ glsnite
	50%	SS AA
5420-5430		NS (NO BOT UP CIRC)
5430-5440	70%	SH gy-occ brn,sbplty-blky,frm,vslty ip,sl-ncalc
	30%	SS s&p,fgr,sbrd-sbang,psrt,m-wcmt,slfri-tt,sl-ncalc,NFSOC
	TR	LS ltgy,plty,frm,dns,crpxl
5440-5450	60%	SH AA
	30%	SS AA
	10%	LS AA
5450-5460	80%	SH ltgy-dkgy-gngy,sbplty,frm,slty ip,slcalc ip,pred ncalc
	20%	SS s&p,fgr,sbrd-sbang,m-psrt,mcmt,fri-slfri,slcalc,TR dd O STN/NFOC
5460-5470	80%	SH AA
	20%	SS AA
	TR	LS ofwh,plty,crpxl
5470-5480	65%	SH dk-mgy,brn ip,gybrn,sbblky-sbplty,msft-mfrm,ncalc
	35%	SS s&p,wh-ofwh,ltgy ip,f-vfgr,m-wsrt,slfri-hd,calc,NFSOC
5480-5490	60%	SH AA w/yel,lav ip,slty
	40%	SS s&p,wh-ofwh,ltgy ip,f-vfg,m-wsrt,sl fri-hd,calc,NFSOC
5490-5500	85%	SH m-dkgy,gybrn,gygn,brn,gybrn,sbblky-sbplty,mfrm-frm,arg ip,sl-ncalc,slty,glsnite
	15%	SS AA
5500-5510	85%	SH AA
	15%	SS s&p,ltgy,wh-ofwh,f-vfgr,m-wsrt,slfri-fri,mcmt,calc,NFSOC
5510-5520	90%	SH lt-mgy,dkgy ip,gybrn,gygn,redbrn,brn,sbblky-sbplty,sft- mfrm,n-slcalc,arg ip,slty ip,lmy ip
	10%	SS AA
5520-5530	90%	SH AA
	10%	SS s&p,ltgy,gybrn ip,vf-fgr,msrt,mcmt,slfri-fri,calc,NFSOC
5530-5550	100%	SH lt-mgy,gybrn,redbrn,sbblky-sbplty,sft-mfrm,n-slcalc,lmy ip,arg ip,slty ip

5550-5560	95%	SH lt-mgy,lt-mbrn,redbrn,gygn,red,sbblky-sbplty,sft-mfrm,calc-slcalc,vlmy ip,arg,slty ip
	5%	SS s&p,wh-ofwh,mg,y,vf-fgr,msrt,mcmt,slfri-fri,slcalc,NFSOC
5560-5570	95%	SH AA w/tan
	5%	SS AA
5570-5580	95%	SH lt-mgy,tan-ltbrn,redbrn,gybrn,red,sbblky-plty,sft-mfrm,sl-ncalc,lmy ip,slty ip,arg ip
	5%	SS s&p,wh-ofwh,mg,y ip,vf-fgr,msrt,mcmt,slfri,slcalc,NFSOC
5580-5590	80%	SH lt-dkgy,gybrn,tan-mbrn,red,redbrn,sbblky-plty,sft-mfrm,sl-ncalc,arg ip,slty ip
	20%	SS S&p,wh-ofwh,mg,y ip,f-vfg,sbrd-sbang,msrt,mcmt,slfri-fri,slcalc,v fnt lt yel <u>FLOR/v fnt slo ltyel strmg CUT</u>
5590-5600	90%	SH lt-mgy,gybrn,tan-mbrn,red,redbrn,sbblky-sbplty,sft-mfrm,sl-ncalc,arg ip
	10%	SS AA
5600-5610	85%	SH lt-mgy,gybrn,tan-brn,lav,sbblky-sbplty,sft-mfrm,sl-ncalc arg ip,scy ip
	15%	SS s&p,gy,vf-fgr,sbrd-sbang,msrt,mcmt,fri-slfri,slcalc,NFSOC
5610-5620	80%	SH AA w/yel
	10%	SS AA
	10%	LS buf-crm,sbplty-plty,sft,crpxl
5620-5630	85%	SH lt-mgy,gybrn,ltbrn,gygn,yel,sbplty-plty,sft-mfrm,sl-ncalc,scy ip,arg,lmy ip
	15%	SS s&p,gy,gybrn,vf-fgr,sbrd-sbang,m-psrt,mcmt,fri,slcalc,NFSOC
5630-5640	80%	SH AA w/sdy,tr COAL
	20%	SS s&p,gy,gybrn,vf-fgr,m-psrt,m-pcmt,fri,slcalc,NFSOC
5640-5650	75%	SH lt-mgy,gybrn,yel,lav ip,sbplty-plty,sft-mfrm,sl-ncalc,scy,arg ip,lmy ip
	25%	SS AA
5650-5660	75%	SH lt-mgy,gybrn,lt-mbrn,gn,yel ip,sbblky-sbplty,sft-mfrm,sl-ncalc,scy,arg ip
	25%	SS s&p,gy,gybrn,vf-fgr,m-psrt,m-pcmt,fri,slcalc,NFSOC
5660-5670	65%	SH AA
	35%	SS s&p,wh,gy,vf-fgr,m-psrt,m-pcmt,fri,slcalc,NFSOC
5670-5680	70%	SS s&p-clr,vf-fgr,sbrd,psrt,mcmt,fri,slcalc-calc,NFSOC
	30%	SH AA
5680-5690	70%	SH gy-gybrn,sbblky,frm,slty ip,slcalc ip
	30%	SS s&p-gybrn,vfgr,sbang,msrt,m-wcmt,fri ip,tt ip,slcalc,NFSOC
5690-5700	60%	SH AA
	40%	SS AA w/brn,sbrd,m-psrt,mcmt,slfri,slcalc,NFSOC
5700-5710	70%	SH AA
	20%	SS AA
	10%	LS ltbrn,frm,sbblky,fos ip,micxl

5710-5720	90%	SH gy-gngy-brngy,sbplty-sbblky,frm,slty ip,wxy ip,slcalc ip
	10%	SS s&p-gy,vfgr,sbrd-sbang,m-psrt,mcmt,slfri-fri,slcalc-n calc,NFSOC
	TR	LS AA
5720-5730	90%	SH AA
	10%	SS AA
5730-5740	80%	SH dkgy-gy-gybrn,sbblky-sbplty,slty ip,carb ip,slcalc,w/ carb-coal lam
	20%	SS AA
	TR	COAL blk,brit,vit
5740-5750	70%	SS s&p-clr,f-mgr,sbrd,psrt,mcmt,fri,calc,w/TR blk <u>STN</u> ;pos dd 0 <u>STN</u> /spoty wh <u>FLOR</u> /TR strmg <u>CUT</u>
	30%	SH AA
5750-5760	90%	SH gy-gngy-gybrn,plty-sbplty,frm,slty ip,sl-ncalc
	10%	SH AA
5760-5770	60%	SH gy-dkgy,plty-sbplty,frm,vslty,occ carb,sl-ncalc
	40%	SS s&p-ltgy,vfgr,sbang,msrt,m-wcmt,slfri-tt ip,slcalc-calc, NFSOC
5770-5780	70%	SH AA
	30%	SS AA
5780-5790	60%	SH AA
	40%	SS AA
5790-5800	50%	SH gy-brn-gybrn,sbblky-plty,slty,sl-ncalc,spoty dul yel min <u>FLOR</u>
	40%	SS s&p,vfgr,sbrd-sbang,msrt,mcmt,fri,sl-vcalc,NFSOC
	10%	COAL blk,brit,vit
5800-5810	60%	SH AA incr brn plty w/dul orng min <u>FLOR</u>
	30%	SS AA
	10%	COAL AA
5810-5820	80%	SH AA
	20%	SS s&p-ltgy-wh,vf-occ fgr,sbrd-sbang,m-psrt,m-wcmt,fri ip, tt ip,slcalc-calc, NFSOC
5820-5830	70%	SH gy-dkgybrn-dkgy-brn,sbblky-plty,slty ip,carb ip,sl-ncalc (10% dul orng min <u>FLOR</u> )
	30%	SS AA
5830-5840	60%	SS s&p,clr,vf-fgr,sbrd-sbang,m-psrt,mcmt,fri,slcalc,NFSOC
	40%	SH AA
5840-5850	50%	SS AA
	50%	SH AA incr brn,plty,mfrm,carb,dul yel min <u>FLOR</u>
5850-5860	80%	SS s&p-clr,f-mgr,sbrd,psrt,m-pcmt,fri,uncons ip,slcalc,w/ TR wh <u>FLOR</u> /pale <u>CUT</u>
	20%	SH AA

5860-5880	60%	SS AA
	40%	SH gy-gybrn,sbblky-sbplty,frm,slty ip,slcalc ip
5880-5890	50%	SS s&p-clr,vf-mgr,sbrd,psrt,mcmt,fri-slfri,slcalc-calc,w/ TR spoty wh <u>FLOR/pale CUT</u>
	50%	SH AA
5890-5900	60%	SH AA
	40%	SS AA
	TR	COAL blk,brit,shly
5900-5910	75%	SH lt-mgy,gybrn,ltbrn,sbblky-plty,sft-frm,arg ip,pred n calc,lmy ip
	25%	SS s&p,ofwh,f-mgr,sbrd-sbang,m-psrt,mcmt,fri-slfri,calc
5910-5920	80%	SH lt-mgy,gybrn,lt-dkbrn,sbblky-sbplty,sft-mfrm,arg ip,n calc-slcalc
	20%	SS s&p,wh,ltgy,vf-fgr,sbrd-sbang,m-psrt,mcmt,fri-slfri,calc
5920-5930	85%	SH AA w/dkgy,gn
	15%	SS s&p,ltgy,ltbrn,wh,vf-fgr,sbrd-sbang,m-psrt,mcmt,fri-slfri,calc
5930-5940	65%	SH lt-dkgy,gybrn,lt-dkbrn,sbblky-sbplty,sft-mfrm,n-slcalc, arg ip,slty ip
	35%	SS s&p,wh,ltgy,f-vfg,sbrd-sbang,msrt,mcmt,fri-slfri,calc,NFSOC
5940-5950	60%	SS wh-clr,s&p,fgr,sbrd,m-wsrt,m-wcmt,slfri-hd,calc,ltbl <u>FLOR/</u> ltyel slo strmg <u>CUT</u>
	40%	SH lt-dkgy,gybrn,lt-dkbrn,sbblky-sbplty,sft-mfrm,n-slcalc
5950-5960	60%	SS s&p,wh-clr,fgr,sbrd,m-wsrt,m-wcmt,slfri-hd,calc,ltbl <u>FLOR/</u> fnt ltyel slow strmg <u>CUT</u>
	40%	SH AA
5960-5970	70%	SH m-dkgy,gybrn,lt-mbrn,red,redbrn,sbblky-sbplty,sft-frm,arg ip,sl-ncalc,sdy ip
	30%	SS s&p,gy,ltbrn ip,vf-fgr,sbrd,m-wsrt,m-wcmt,slfri-hd,calc NFSOC
5970-5980	75%	SH AA w/yel ip
	25%	SS AA
5980-5990	80%	SH m-dkgy,gybrn,lt-mbrn,red,redbrn,sbblky-sbplty,sft-mfrm, arg ip,sl-ncalc,slty ip
	20%	SS s&p,wh-gy,vf-fgr,sbrd-sbang,msrt,mcmt,fri-slfri,calc,NFSOC
5990-6000	65%	SH AA w/yel ip
	35%	SS s&p,wh-gy,vf-fgr,sbrd-sbang,msrt,mcmt,fri-slfri,calc,NFSOC
6000-6010	75%	SH lt-mgy,lt-mbrn,gybrn,dkbrn ip,sbblky-plty,msft-frm,n-sl calc,sdy ip
	25%	SS s&p,wh-ltgy,fgr,vfgr ip,sbrd-sbang,msrt,m-wcmt,slfri-hd, calc,NFSOC
	TR	COAL
6010-6020	70%	SH AA

	TR	25% SS AA COAL
6020-6030	75% 25% 5%	SH lt-dkgy, gybrn, lt-mbrn, sbblky-sbplty, msft-frm, n-slcalc SS s&p, wh-ltgy, f-vfgr, sbrd-sbang, msrt, m-wcmt, slfri-hd, calc COAL blk, vit, mhd, shly ip
6030-6040	80% 20%	SH AA SS AA NFSOC
6040-6050	75% 25%	SH lt-dkgy, tan-brn, gybrn, sbblky-plty, msft-frm, n-slcalc SS s&p, wh-ltgy, vf-fgr, m-wsrt, mcmt, slfri-mhd, calc, NFSOC
6050-6060	65% 35%	SH AA SS s&p, wh-ltgy, vf-fgr, m-wsrt, mcmt, slfri-mhd, calc, NFSOC
6060-6070	70% 30%	SH lt-dkgy, lt-dkbrn, gybrn, sbblky-plty, msft-frm, n-slcalc, arg ip, slty ip SS AA
6070-6080	85% 15%	SH lt-dkgy, lt-dkbrn, gybrn, sbblky-plty, msft-frm, n-slcalc, arg ip, sdy ip SS s&p, wh-gy, vf-fgr, msrt, mcmt, slfri, calc, NFSOC
6080-6090	95% 5%	SH AA SS AA
6090-6100	60% 40%	SH lt-dkgy, lt-dkbrn, gybrn, sbblky-plty, sft-mfrm, n-slcalc, arg ip, sdy ip SS s&p, wh-gy, brn, vf-fgr, sbrd-sbang, m-wsrt, mcmt, slfri-mhd, calc, sl ltbl <u>FLOR</u> , v fnt ltyel slo strmg <u>CUT</u>
6100-6110	75% 25%	SS s&p, wh-ltgy, vf-fgr, m-wsrt, sbrd, mcmt, slfri-mhd, calc, NFSOC SH AA
6110-6120	80% 20%	SH lt-mgy, gybrn, lt-mbrn, sbblky-plty, msft-frm, sl-ncalc, sdy SS s&p, wh-gy, vf-fgr, m-wsrt, sbrd, mcmt, slfri-mhd, calc, NFSOC
6120-6130	80% 20%	SS clr, s&p, ofwh, vf-fgr, sbrd, psrt, mcmt, fri, slcalc-calc, NFSOC SH AA
6130-6140	70% 30%	SH gy, dkgybrn, gngy, brn, sbblky-sbplty, vsly ip, slcarb ip, sl- ncalc, occ dul yel min <u>FLOR</u> SS AA
6140-6150	80% 20%	SH AA SS AA w/gybrn, vfgr, sbrd, arg mtx, slcalc
6150-6160	90% 10%	SH gy, dkbybrn, brn, sbblky-plty, slty ip, frm, brit ip, sl-ncalc SS wh, fgr, sbang, psrt, m-pcmt, sl-ncalc
6160-6170	100% TR	SH AA COAL blk, vit, brit
6170-6180	90% 10%	SH AA w/dkbrn, mfrm, carb, ncalc, dul yel <u>FLOR/NO CUT</u> SS AA

6180-6190	90%	SH AA
	10%	SS wh,brn,vfgr,sbrd,m-psrt,mcmt,sl-ncalc,arg mtz ip,NFSOC
6190-6200	90%	SH dkgybrn,gy,brn,sbblky-sbplty,frm-mfrm,carb ip,vslty ip, slcalc ip,
	10%	SS AA
6200-6210	60%	SH AA
	40%	SS ofwh,s&p,vfgr,sbrd,m-psrt,mcmt,slfri-fri,sl-ncalc,w/TR dd 0 STN,NFOC
6210-6220	80%	SH gy,dkby,brn,sbplty-plty,frm,carb ip,slty ip,sl-ncalc
	20%	SS AA
6220-6230	50%	SH AA
	40%	SS ofwh,s&p,wh,vf-fgr,sbrd-sbang,m-psrt,mcmt,fri,sl-ncalc, TR dd 0 STN/NFOC
	10%	COAL blk,plty,brit,lam in SS ip
6230-6240	50%	SH AA
	50%	SS incr s&p,fgr,sbrd,msrt,mcmt,slfri,slcalc,NFSOC
6240-6250	70%	SS clr,s&p,fgr,sbrd,psrt,mcmt,slfri-fri,w/TR GLAU,TR dd 0 STN,NFOC
	30%	SH AA
6250-6260	60%	SH gy,gngy,brn,occ gn,sbplty-plty,frm,brit ip,slty ip,sl-n calc
	40%	SS AA
	TR	COAL & LS
6260-6270	70%	SH AA
	30%	SS AA
6270-6280	90%	SH gy,gybrn,brn,sbplty-plty,slty ip,frm,sl-ncalc
	10%	SS wh,s&p,sbang,m-psrt,mcmt,slfri,slcalc,NFSOC
	TR	COAL blk,vit
6280-6290	90%	SH AA w/incr vslty,mfrm,slcalc
	10%	SS AA
	TR	PYR
6290-6300	90%	SH AA
	10%	COAL blk,vit
6300-6310	50%	SS wh,s&p,vf-fgr,sbrd-sbang,m-psrt,mcmt,fri,slcalc,NFSOC
	50%	SH gy,brn,gybrn,sbplty,slty,ncalc
6310-6320	70%	SH lt-mgy,gybrn,brn ip,sbblky-sbplty,sft-mfrm,slty,n-slcalc
	30%	SS s&p,gy,brn,vf-fgr,sbrd-sbang,m-wsrt,mcmt,fri-slfri,calc, slty,NFSOC
6320-6330	90%	SH lt-mgy,gybrn,tan,sbblky-sbplty,sft-mfrm,slty,arg,n-slcalc
	10%	SS brn,gybrn,gy,s&p,vf-fgr,sbang-sbrd,m-psrt,m-pcmt,fri-sl fri,calc,slty,NFSOC

6330-6340	80%	SH AA
	20%	SS AA
	TR	COAL
6340-6350	90%	SH lt-dkgy,gybrn,sbblky-sbplty,sft-mfrm,slty ip,n-slcalc,coaly
	10%	SS brn,gybrn,gy,s&p,vf-fgr,sbang-sbrd,m-psrt,m-pcmt,fri-slfri,calc,NFSOC
6350-6360	65%	SH lt-dkgy,dkbrn-blk,gybrn,sbplty-plty,sft-mfrm,slty,coaly,n-slcalc
	35%	SS lt-dkbrn,s&p,gy,vf-fgr,sbang-sbrd,m-psrt,m-pcmt,fri-sl fri,calc,slty,orgnic mat,poss dd <u>0 STN</u> ,occ lt yel <u>FLOR</u> , occ vfnt ltyel vslo strmg <u>CUT</u>
6360-6370	75%	SH lt-mgy,gybrn,dkbrn-blk,sbplty,msft-frm,slty,coal,n-sl calc,pyr
	15%	SS s&p,ltbrn,gy,vf-fgr,sbang-sbrd,m-psrt,m-pcmt,fri-slfri, cald,slty,NFSOC
	10%	COAL blk-dkbrn,du1-vit,msft-mfrm,shly
6370-6380	85%	SH AA
	15%	SS AA w/org mat ip
6380-6390	75%	SH lt-mgy,gybrn,ltbrn,sbblky-sbplty,msft-frm,arg ip,slty ip, n-slcalc,pyr
	15%	SS brn,s&p,gy,vf-fgr,sbang-sbrd,m-psrt,m-pcmt,fri-slfri, calc,poss <u>0 STN</u> ,NFOC
	10%	COAL blk,vit,du1 ip,mfrm-frm
6390-6400	70%	SH AA
	30%	SS wh,s&p,brn,vf-fgr,sbrd-sbang,msrt,mcmt,fri-slfri,calc, poss <u>0 STN</u> ,NFOC
6400-6410	90%	SH lt-dkgy,tan-brn,gybrn,ltgn,sbblky-sbplty,msft-mfrm,arg ip,calc-ncalc
	10%	SS wh,s&p,brn ip,vf-fgr,sbrd-sbang,msrt,mcmt,fri-slfri,calc, occ poss <u>0 STN</u> ,NFOC
6410-6420	65%	SH AA
	25%	SS AA
	10%	COAL blk,vit,mfrm-frm
6420-6430	60%	SH lt-dkgy,gybrn,sbblky-sbplty,msft-mfrm,n-slcalc,slty ip
	40%	SS wh,s&p,ltgy,f-vfgr,sbrd-sbang,m-wsrt,m-wcmt,slfri,sl calc,NFSOC
	TR	COAL
6430-6440	60%	SH AA
	40%	SS AA w/TR ltbl <u>FLOR</u> /v fnt ltyel sl strmg <u>CUT</u>
	TR	COAL
6440-6450	70%	SS s&p,wh-gy,f-vfgr ip,sbrd-sbang,m-wsrt,m-wcmt,slfri,calc, NFSOC
	30%	SH lt-mgy,gybrn,sbblky,mfrm,n-slcalc

6450-6460	75%	SS s&p,wh-ltgy,f-vfgr,sbrd-sbang,m-wsrt,m-wcmt,slfri-fri,calc,NFSOC
	25%	SH dkbrn-blk,gy,sbblky,mfrm,sl-ncalc
6460-6470	75%	SH AA
	20%	SS wh,s&p,brn,f-vfgr,sbrd-sbang,m-wsrt,mcmt,slfri-fri,calc,sl 1tbl FLOR/NO CUT/poss 0 STN
	5%	COAL blk-dkbrn,vit-dul,mfrm
6470-6480	65%	SH lt-dkbrn,gybrn,ltgy,gygn,sbblky-sbplty,msft-mfrm,sl-ncalc,slty
	30%	SS wh-ltgy,s&p,brn,f-vfg,sbrd-sbang,m-wsrt,mcmt,slfri-fri,calc,sl 1tbl FLOR/poss 0 STN/slo stmg wh CUT
	5%	COAL blk,vit-dul,mfrm
6480-6490	80%	SH AA
	10%	SS AA
	10%	COAL blk,plty,vit
6490-6500	65%	SH gy,gybrn,ltbrn,sbplty,frm,carb ip,sl-ncalc
	30%	SS s&p,wh,ltgy,vf-fgr,sbrd-sbang,m-psrt,mcmt,fri ip,occ tt,sl-ncalc,NFSOC
	5%	COAL
6500-6510	80%	SH AA
	20%	SS ltgybrn,s&p,vf-fgr,sbrd,m-psrt,m-wcmt,grdg to SLTST ip,slcalc,arg mtx ip,NFSOC
6510-6520	80%	SH AA
	20%	SS AA w/COAL strgs
6520-6530	80%	SH brn,gybrn,gy,sbblky-sbplty,sft-frm,vslty,carb ip,NFSOC
	10%	SS brn,s&p,gybrn,vfgr,sbrd-sbang,psrt,mcmt,arg mtx ip,grdg to SLTST ip,sl-ncalc,NFSOC
	10%	COAL blk,slty-lig,sft
6530-6540	70%	SH AA
	20%	COAL blk,sbblky,vlig-slty,sft
	10%	SS AA
6540-6550	60%	SH dkbrn,gy,gngy,occ brn,sbblky-sbplty,sft-frm,vcarb ip,vslty ip,sl-ncalc
	30%	SS s&p,clr,wh,ltbrn,vf-fgr,sbrd-sbang,m-psrt,mcmt,slfri-fri,slcalc,NFSOC
	10%	COAL AA w/vit,sbblky,brit
6550-6560	50%	SS AA incr clr,fgr,sbang,m-wsrt,mcmt,slfri,ncalc
	35%	SH AA
	15%	COAL AA w/PYR INCL
6560-6570	40%	SS SS clr-ltbrn,vfgr,sbang,m-wsrt,m-wcmt,slfri-tt,sl-ncalc,NFSOC
	30%	COAL blk,shly ip,vit ip,sft-mfrm,brit ip
6570-6580	60%	SH AA w/COAL strgs
	20%	SS AA
	20%	COAL AA

6580-6590	50%	SH AA
	30%	SS ofwh,ltbrn,clr,vfgr,sbrd-sbang,msrt,mcmt,fri,slcalc,NFSOC
	20%	COAL blk,shly,occ vit,sft
6590-6600	90%	COAL blk,vit,brit,shly ip,sft ip
	10%	SH AA
6600-6010	40%	SH dkbrn,dkgybrn,sbplty,carb-lig,slty,sft-frm,sl-ncalc
	50%	COAL AA incr shly
	10%	SS AA
6610-6620		NS
6620-6630		NS
6630-6640	60%	SS wh-gy,ltbrn,s&p,vf-fgr,sbrd-sbang,m-wsrt,m-wcmt,slfri-hd, slcalc,NFSOC
	20%	SH dkbrn,m-dkgy,sbblky,carb-lig,slty,sft-frm,sl-ncalc
	20%	COAL blk,vit,brit,shly ip,sft ip
6640-6650		NS
6650-6660	75%	SS wh-gy,ltbrn-brn,vf-fgr,sbrd-sbang,m-wsrt,m-wcmt,slfri-hd, slcalc,NFSOC
	15%	SH dkbrn,gybrn,gy,sbblky,sft-frm,slty,sl-ncalc
	10%	COAL blk,vit,brit,shly ip,sft ip
6660-6670	80%	SH AA
	10%	SS AA
	10%	COAL AA
6670-6680	70%	SH dkbrn-dkgy,sbblky-,carb,lig ip,ncalc
	20%	COAL blk,shly,frm-mfrm,occ vit -micxl,grdg to dol SH
	10%	SS AA
6680-6690	50%	SH AA
	30%	SS s&p,offwh,ltbrn,vfgr,sbrd-sbang,msrt,mcmt,slfri,slcalc,w/ COAL strgs
	20%	COAL AA
6690-6700	70%	SH AA
	20%	SS AA
	10%	COAL AA

FORMULAS:

$$S(w) = \sqrt{\frac{.81 R(w)}{\phi^2 R(t)}}$$

$$\phi(ND) = \sqrt{\frac{\phi(D)^2 + \phi(N)^2}{2}}$$

Quintana Petroleum Corp.  
 Little Bonanza Federal #1-4  
 NE/SE Sec 4 T9S R24E  
 Uintah County, Utah

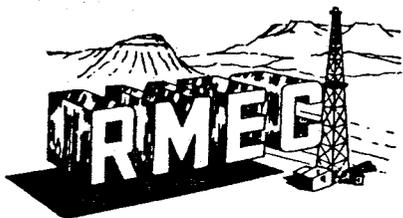
E-LOG CALCULATIONS

INTERVAL	R(w)	R(t)	φ(N)	φ(D)	φ(S)	φ(ND)	φ	S(w)
<u>Green River Fm.</u>								
<u>3126-34</u>								
3132	.10	18	.24	.10	.08*	.18	.18	37%
<u>Wasatch Fm.</u>								
<u>4228-52</u>								
4231	.240	16	.18	.13	.15	.16	.16	69%
4242	.240	17	.19	.15	.18	.17	.17	63%
<u>5300-07</u>								
5306	.240	10	.19	.17	.18	.18	.18	77%
<u>5579-92</u>								
5582	.36	13	.18	.18	.18	.18	.18	83%
<u>Mesa Verde Fm.</u>								
<u>5740-51</u>								
5744	.32	17	.14	.12	.24*	.13	.13	95%
<u>5830-46</u>								
5839	.32	15	.19	.15	.17	.17	.17	77%
<u>5853-68</u>								
5856	.32	16	.19	.17	.17	.18	.18	71%
<u>5942-61</u>								
5936	.32	14	.14	.10	.10	.12	.11	100%
5945	.32	12	.16	.15	.14	.16	.15	92%
<u>6116-36</u>								
6125	.32	16	.15	.14	.13	.15	.14	85%
<u>6243-52</u>								
6248	.32	18	.16	.12	.15	.14	.14	86%
<u>6419-26</u>								
6420	.32	18	.15	.08	.12	.12	.12	100%
<u>Additional Zones</u>								
3266	.10	15	.27	.10	.16	.20	.18	41%
4277	.240	11	.16	.14	.15	.16	.15	89%
4512	.240	13	.17	.11	.12	.14	.13	94%
4570	.240	15	.19	.19	.21	.19	.20	57%
5245	.240	13	.15	.12	.13	.14	.14	87%
5674	.32	12	.17	.12	.14	.15	.15	98%

\*: Anomalous Reading on log

Note: Welox did not make any R(w) calculations. S(w)'s are based on the following R(w)'s

- .100 @ 3219'
- .250 @ 5000'
- .240 @ 5324'
- .360 @ 5445'
- .32 @ 5710'



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORP.

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 1

INTERVAL: From 3126' To 3134'

DRILL RATE: Abv 1 min/ft Thru .8 min/ft Below 1 1/2 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	75	8000	TR				
During	1100	140,000	3000	1500			
After	150	12,000	TR				

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

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

FLUO: Mineral  Even  Spotty   
None  % in total sample 20  
Poor   
Fair  % in show lithology 10  
Good  COLOR: DULL YEL

CUT: None  Streaming  
Poor  Slow   
Fair  Mod   
Good  Fast   
COLOR: YEL

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

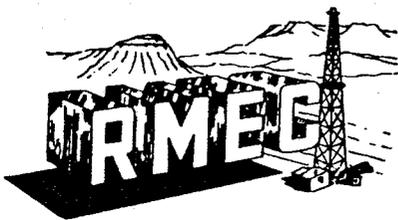
POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

LITHOLOGY 30% SS; clr-ltbrn,ltgy,vf-fgr,sbrd,m-psrt,mcmt,fri,sl calc,tr brn oil stn,  
tr flor,slow strm yel cut SAMPLE QUALITY FAIR

NOTIFIED AL LARSON @ 0800 HRS. DATE: 10/18/88

REMARKS \_\_\_\_\_

ZONE DESCRIBED BY STEVE SMITH



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORP.

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, Uintah county, Utah

ZONE OF INTEREST NO. 2

INTERVAL: From 4228' To 4252'

DRILL RATE: Abv 2 min/ft Thru 1/2-1 min/ft Below 2 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	20	2120	133	56			
During	1080	106,000	18,500	5000	TR		
After	85	8480	760	140			

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

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

FLUO: Mineral  Even  Spotty   
 None  % in total sample 10  
 Poor   
 Fair  % in show lithology 0  
 Good  COLOR: \_\_\_\_\_

CUT: None  Streaming  
 Poor  Slow   
 Fair  Mod   
 Good  Fast   
 COLOR: \_\_\_\_\_

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

POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

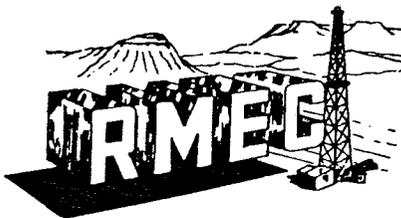
LITHOLOGY 60% SS: clr-frst, f-mgr, sbrd, psrt, m-pcmt, calc, uncons ip, glau ip, congl ip

SAMPLE QUALITY GOOD

NOTIFIED AL LARSON @ 0800 HRS. DATE: 10/20/88

REMARKS \_\_\_\_\_

ZONE DESCRIBED BY STEVE SMITH



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORPORATION

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 3

INTERVAL: From 5300' To 5307'

DRILL RATE: Abv 5 min/ft Thru 1 min/ft Below 5 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	18	1700	228	TR			
During	300	39,220	3040	1120			
After	20	1908	152	56			

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

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

FLUO: Mineral  Even  Spotty  CUT: None  Streaming  
 None  % in total sample 10 Poor  Slow   
 Poor  Fair  Mod   
 Fair  % in show lithology \_\_\_\_\_ Good  Fast   
 Good  COLOR: \_\_\_\_\_ COLOR: \_\_\_\_\_

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

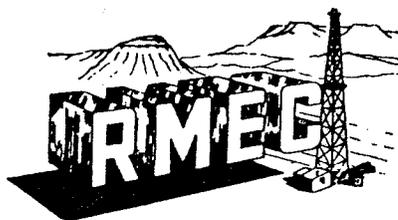
POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

LITHOLOGY 60% SS: s&p, Offwh, vf-fgr, sbrd, psrt, mcmt, calc-sl calc  
40% SH SAMPLE QUALITY GOOD

NOTIFIED JOE ROSS @ 0830 HRS. DATE: 10/22/88

REMARKS \_\_\_\_\_

ZONE DESCRIBED BY STEVE SMITH



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORPORATION

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 4

INTERVAL: From 5579' To 5592'

DRILL RATE: Abv 3 min/ft Thru 1½ min/ft Below 3½ min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	10	3312	475	280			
During	350	80,560	7600	4480	1000		
After	10	3445	570	224			

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

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

FLUO: Mineral  Even  Spotty   
 None  % in total sample 10  
 Poor   
 Fair  % in show lithology 5  
 Good  COLOR: \_\_\_\_\_

CUT: None  Streaming  
 Poor  Slow   
 Fair  Mod   
 Good  Fast   
 COLOR: lt yel

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

POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

LITHOLOGY 20% SS: s&p, wh-offwh, mgy ip, f-vfgr, sbrd-sbanq, msrt, mcmt, sl fri-fri, sl calc  
80% SH SAMPLE QUALITY GOOD

NOTIFIED JOE ROSS @ 0830 HRS. DATE: 10/24/88

REMARKS Very faint to no flor in SS, very faint lt yel slow strm cut

ZONE DESCRIBED BY CURTIS MATTHEWS



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORPORATION

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 5

INTERVAL: From 5740' To 5751'

DRILL RATE: Abv 3 1/2 min/ft Thru 1 1/2 min/ft Below 3 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	30	3710	427	70			
During	220	27,000	2660	840	TR		
After	25	3180	380	56			

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

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

FLUO: Mineral  Even  Spotty   
 None  % in total sample 20  
 Poor   
 Fair  % in show lithology 5  
 Good  COLOR: WHITE

CUT: None  Streaming  
 Poor  Slow   
 Fair  Mod   
 Good  Fast   
 COLOR: WH

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

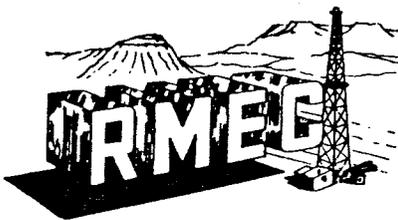
POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

LITHOLOGY 70% SS: s&p,clr,f-mgr,sbrd-rd,psrt,mcmt,fri,calc  
30% SH SAMPLE QUALITY GOOD

NOTIFIED JOE ROSS @ 0900 HRS. DATE: 10/24/88

REMARKS \_\_\_\_\_

ZONE DESCRIBED BY STEVE SMITH



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORPORATION

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 6

INTERVAL: From 5830' To 5846'

DRILL RATE: Abv 2 1/2 min/ft Thru 3/4 min/ft Below 4 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	20	3000	380	56			
During	290	63,600	4940	1120	TR		
After	30	4240	760	56			

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

CARBIDE HOLE RATIO: GRAMS READING X Min. in Peak = \_\_\_\_\_ Sensitivity: Poor  Fair  Good

FLUO: Mineral  Even  Spotty  CUT: None  Streaming  
 None  % in total sample \_\_\_\_\_ Poor  Slow   
 Poor  Fair  Mod   
 Fair  % in show lithology \_\_\_\_\_ Good  Fast   
 Good  COLOR: \_\_\_\_\_ COLOR: \_\_\_\_\_

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

POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

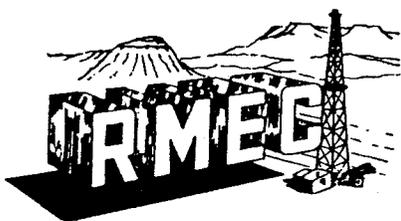
LITHOLOGY 60% SS: s&p,clr,vf-fgr,sbrd-sbanq,m-psrt,mcmt,fri,sl calc

40% SH SAMPLE QUALITY GOOD

NOTIFIED JOE ROSS @ 0900 HRS. DATE: 10/24/88

REMARKS MESA VERDE FORMATION

ZONE DESCRIBED BY STEVE SMITH



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORPORATION

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 7

INTERVAL: From 5853' To 5868'

DRILL RATE: Abv 2 1/2 min/ft Thru 3/4 min/ft Below 1 1/2 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	30	4240	760	56			
During	1000	127,900	12,160	6160	3000		
After	140	18,240	2660	1120	TR		

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

CARBIDE HOLE RATIO:  $\frac{\text{GRAMS}}{\text{READING}}$  X Min. in Peak = \_\_\_\_\_

Sensitivity: Poor  Fair  Good

FLUO: Mineral  Even  Spotty   
 None  % in total sample 15  
 Poor   
 Fair  % in show lithology 5  
 Good  COLOR: WHITE

CUT: None  Streaming  
 Poor  Slow   
 Fair  Mod   
 Good  Fast   
 COLOR: PALE CUT

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

POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

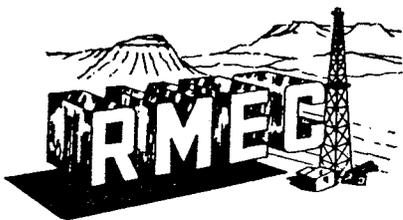
LITHOLOGY 80% SS: s&p,clr,f-mgr,sbrd,psrt,m-pcmt,fri,uncons ip,sl calc

20% SH SAMPLE QUALITY GOOD

NOTIFIED JOE ROSS @ 0900 HRS. DATE: 10/24/88

REMARKS \_\_\_\_\_

ZONE DESCRIBED BY STEVE SMITH



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORPORATION

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 8

INTERVAL: From 5942' To 5961'

DRILL RATE: Abv 2 1/2 min/ft Thru 1 1/2 min/ft Below 4 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	45	5830	760	500			
During	225	32,860	3800	2240	900		
After	45	5035	475	224			

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

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

FLUO: Mineral  Even  Spotty   
 None  % in total sample 40  
 Poor   
 Fair  % in show lithology 80  
 Good  COLOR: LTBLUE

CUT: None  Streaming  
 Poor  Slow   
 Fair  Mod   
 Good  Fast   
 COLOR: LTVEL

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

POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

LITHOLOGY 60% SS: s&p,wh-clr,fgr,m-wsrt,m-wcmt,sl fri-hd;calc  
40% SH SAMPLE QUALITY GOOD

NOTIFIED AL LARSON @ 0800 HRS. DATE: 10/25/88

REMARKS \_\_\_\_\_

ZONE DESCRIBED BY CURTIS MATTHEWS



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORPORATION

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 9

INTERVAL: From 6116' To 6136'

DRILL RATE: Abv 4 min/ft Thru 1 min/ft Below 5 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	40	5300	760	200			
During	400	74,200	6080	2800	TR		
After	50	6360	1140	200			

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

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

FLUO: Mineral  Even  Spotty  CUT: None  Streaming  
 None  % in total sample \_\_\_\_\_ Poor  Slow   
 Poor  Fair  Mod   
 Fair  % in show lithology \_\_\_\_\_ Good  Fast   
 Good  COLOR: \_\_\_\_\_ COLOR: \_\_\_\_\_

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

POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

LITHOLOGY 80% SS: clr, s&p, offwh, vf-fgr, sbrd, m-psrt, mcmt, fri, calc, NSOFC

20% SH SAMPLE QUALITY GOOD

NOTIFIED AL LARSON @ 0800 HRS. DATE: 10/25/88

REMARKS \_\_\_\_\_

ZONE DESCRIBED BY STEVE SMITH



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81506

COMPANY QUINTANA PETROLEUM CORPORATION

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 10

INTERVAL: From 6243' To 6252'

DRILL RATE: Abv 2 1/2 min/ft Thru 1 min/ft Below 2 1/2 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	60	8480	760	280			
During	360	63,600	6840	3920	2000		
After	60	8480	760	280			

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

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

FLUO: Mineral  Even  Spotty  CUT: None  Streaming \_\_\_\_\_  
 None  % in total sample 10 Poor  Slow   
 Poor  Fair  Mod   
 Fair  % in show lithology \_\_\_\_\_ Good  Fast   
 Good  COLOR: dull yel COLOR: \_\_\_\_\_

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

POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

LITHOLOGY 70% SS: clr,s&p,fgr,sbrd,psrt,mcmt,sl fri-fri,tr qlau,tr dead o stn,sl calc

30% SH SAMPLE QUALITY GOOD

NOTIFIED AL LARSON @ 0800 HRS. DATE: 10/25/88

REMARKS \_\_\_\_\_

ZONE DESCRIBED BY STEVE SMITH



# ROCKY MOUNTAIN GEO-ENGINEERING CO.

WELL LOGGING — CORE and WATER ANALYSIS

2450 INDUSTRIAL BLVD.

PHONE 243-3044

GRAND JUNCTION, COLORADO 81505

COMPANY QUINTANA PETROLEUM CORPORATION

WELL NO. LITTLE BONANZA FED 1-4

LOCATION SEC 4, T9S, R24E, UINTAH COUNTY, UTAH

ZONE OF INTEREST NO. 11

INTERVAL: From 6419' To 6426'

DRILL RATE: Abv 3 1/2 min/ft Thru 1 1/2 min/ft Below 5 1/2 min/ft

### MUD GAS-CHROMATOGRAPH DATA

	TOTAL	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	OTHER
Before	50	9540	760	560			
During	365	78,440	12,160	9520	2000		
After	55	9540	760	560			

Type gas increase: Gradual  Sharp

Gas variation within zone: Steady  Erratic  Increasing  Decreasing

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

FLUO: Mineral  Even  Spotty   
 None  % in total sample \_\_\_\_\_  
 Poor   
 Fair  % in show lithology \_\_\_\_\_  
 Good  COLOR: \_\_\_\_\_

CUT: None  Streaming  
 Poor  Slow   
 Fair  Mod   
 Good  Fast   
 COLOR: \_\_\_\_\_

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

POROSITY: Poor  Fair  Good  Kind INTERGRANULAR

LITHOLOGY 40% SS: wh,s&p,ltgy,f-vfqr,sbrd-sbang,m-wsrt,m-wcmt,sl fri,sl calc,NSOFC

60% SH SAMPLE QUALITY GOOD

NOTIFIED AL LARSON @ 0800 HRS. DATE: 10/26/88

REMARKS \_\_\_\_\_

ZONE DESCRIBED BY CURTIS MATTHEWS

GEOLOGIC SUMMARY  
AND  
ZONES OF INTEREST

Quintana Petroleum Corporation's Little Bonanza Federal #104 well, located in NE/SE Section 4, T9S, R24E of Uintah County, Utah, was spudded October 15, 1988 in the Tertiary Uintah Formation. A total depth of 6700' was reached on October 26, 1988 in the Upper Cretaceous Mesa Verde Formation. The primary objectives of the well were the gas potential of the Wasatch and Mesa Verde Formations. Secondary objectives were the gas/oil potential of the Green River Formation.

GREEN RIVER FORMATION (? - 4000')

LITHOLOGY

The Eocene Green River Formation consists of Shale, Sandstone, Limestone, and Dolomite. The Green River Shales ranged from light to dark brown, light to dark gray, and a minor amount of green to gray green.

The light to dark brown oil shale dominated the section down to 2700'. The oil shale was calcareous to noncalcareous and carbonaceous. The shale was dolomitic and contained kerogen stringers and laminations. The shale had dull orange to dull yellow fluorescence with a slow to moderate light yellow streaming cut. The light to dark brown shale was present in lesser amounts from 2700' to the top of the Wasatch Formation.

The light to dark gray shale was present from approximately 2700' to the top of the Wasatch Formation. The shale was calcareous to slightly calcareous with some samples being slightly to very silty. Abundant pyrite was observed at approximately 3000' and near the base of the formation at approximately 3700'.

The green to gray green shale was calcareous, smooth in texture and contained minor amounts of glauconite and pyrite.

The Green River Sandstone contained clear to off white, light to medium gray, light brown, and salt and pepper colored sands. Grain size was very fine-to-fine grained and subround to subangular in shape. The sandstones were calcareous to slightly calcareous, moderate to poorly sorted, and poorly to well cemented. Pyrite and trace amounts of mica and glauconite were observed. Visible porosity was poor to good with occasional trace oil stain observed. No fluorescence, odor, or cut was observed except in the designated show zones.

Limestones were predominately light brown to tan with minor amounts of buff, cream, and light gray colors. Grain size was cryptocrystalline to microcrystalline with fine crystalline observed near the base of the formation. The limestones were occasionally silty and marly. The limestones in the basal 250' of the Green River Formation were fossiliferous with ostracods, occasionally oolitic. A dull yellow fluorescence with a yellow moderate steaming cut was observed in samples down to approximately 2300'.

QUINTANA PETROLEUM CORP.  
LITTLE BONANZA FED. #1-4

Dolomites were predominately light to dark brown with minor amounts of buff and light gray colors. Grain size was microcrystalline to cryptocrystalline and was shaly grading to dolomitic shale. No fluorescence, stain, odor, or cut was observed except in Show Zone #1.

SHOW ZONES

Background gas within the Green River Formation ranged from 15 units to a maximum of 600 units. The maximum of 600 units was observed in a poorly developed sandstone at 2458' - 2488'.

Show Zone #1 was encountered at 3126' - 3134' with 1100 units of gas observed over 75 units of background gas. Methane, ethane, and propane were present in the sandstone which exhibited a trace brown oil stain, trace dull yellow fluorescence, and a slow stream yellow cut. Log analysis of this zone shows a water saturation of 37%.

WASATCH FORMATION (4000' - 5705')

LITHOLOGY

The Lower Eocene Wasatch Formation consists of shale, sandstones, and limestone. The shales had a wide range of colors including light to dark gray, light to dark brown, red, red-brown, orange-red, yellow, purple-maroon, and gray-green. The shales were predominately non-calcareous to slightly calcareous with trace amounts of pyrite. The gray and brown shales were smooth in texture with occasional silt. The red, red-brown, yellow, and purple-maroon shales were generally silty to sandy in texture with a mottled appearance.

The sandstones were white to clear, frosted, salt and pepper, and occasionally light gray, and light brown. The salt and peppered appearance was dominant from approximately 4900' to the base of the Wasatch. Grain size ranged from very fine-to-medium grain, with subround to subangular particles. The sandstones were moderate to poorly sorted, moderate to poorly cemented, and slightly-to-very calcareous. Sandstones in the top of the Wasatch were noncalcareous with an increasing calcareous content occurring deeper in the formation.

Limestones were buff to brown, brown-gray, and gray. Grain size ranged from microcrystalline to very fine crystalline. The limestones were argillaceous and no fluorescence, stain, odor, or cut was observed.

SHOW ZONES

Background gas in the Wasatch Formation ranged from 10 units to 1500 units. Anomalous readings were observed at 4266' - 4279' and 4312' - 4364'. These high gas readings did not correspond to any drilling breaks or sand and occurred right after the #2 Show Zone. Either the shale is fractured and leaking gas or the #2 Show Zone is bleeding gas into the wellbore.

QUINTANA PETROLEUM CORP.  
LITTLE BONANZA FED. #1-4

Show Zone #2 was encountered from 4228' - 4252' with 1080 units of total gas over 20 units of background gas. Methane, ethane, propane, and a trace of butane was observed. The sandstone had no fluorescence, stain, odor, or cut, and had fair visible porosity. Log analysis of this zone shows a water saturation of 63-69%.

Show Zone #3 was encountered from 5300' - 5307' with 300 units of total gas over 18 units of background gas. Methane, ethane and propane were observed. The sandstone had no fluorescence, stain, odor, or cut. Log analysis of this zone shows a water saturation of 77%.

Show Zone #4 was encountered from 5579' - 5592' with 350 units of total gas over 10 units of background gas. Methane, ethane, propane, and butane were observed. The sandstone had very faint-to-no fluorescence and a very faint light yellow slow stream cut. Log analysis of this zone shows a water saturation of 83%.

MESA VERDE FORMATION (5705' - 6700')

LITHOLOGY

The Upper Cretaceous Mesa Verde Formation consists of shale, sandstone, and coal. The shales ranged from light to dark gray and from brown to gray-brown. The shales were noncalcareous to slightly calcareous and were silty in part. A spotty dull yellow mineral fluorescence was observed throughout the section.

The sandstones were salt and peppered, white to clear, gray, and brown in color. Grain size ranged from very fine-to-fine grained and was subround-to-subangular. The sandstone was poorly to moderately sorted, poorly to well cemented, and calcareous to slightly calcareous.

Coal was observed dispersed in small stringers throughout the section with the bottom of the well encountering thicker coal beds. The coal was black, vitreous-to-dull, and shaly. Coal stringers were interbedded with shale and sandstone beds.

SHOW ZONES

Background gas in the Mesa Verde Formation ranged from 10 units to 250 units. In the bottom section of the well, the coal contained gas.

Show Zone #5 was encountered from 5740' - 5751' with 220 units of total gas over 30 units of background gas. Methane, ethane, propane, and a trace of butane were observed. The sandstone had poor white fluorescence, a poor white fast stream cut, and fair visible porosity. Log analysis of this zone shows a water saturation of 95%.

Show Zone #6 was encountered from 5830' - 5846' with 290 units of total gas over 20 units of background gas. Methane, ethane, propane, and a trace of butane were observed. The sandstone had fair visible porosity and no fluorescence, stain, odor, or cut. Log analysis of this zone shows a water saturation of 77%.

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LITTLE BONANZA FED. #1-4

Show Zone #7 was encountered from 5853' - 5868' with 1000 units of total gas over 30 units of background gas. Methane, ethane, propane, and butane were observed. The sandstone had fair visible porosity and poor white fluorescence with a poor pale cut. Log analysis of this zone shows a water saturation of 71%.

Show Zone #8 was encountered from 5942' - 5961' with 225 units of gas over 45 units of background gas. Methane, ethane, propane, and butane were observed. The sandstone had poor visible porosity with fair light blue fluorescence and a poor slow light yellow stream cut. Log analysis of this zone shows a water saturation of 92-100%.

Show Zone #9 was encountered at 6116' - 6136' with 400 units of total gas over 40 units of background gas. Methane, ethane, propane, and a trace of butane were observed. The sandstone had fair visible porosity and no fluorescence, stain, odor, or cut. Log analysis of this zone shows a water saturation of 85%.

Show Zone #10 was encountered at 6243' - 6252' with 360 units of total gas over 60 units of background gas. Methane, ethane, propane, and butane were observed. The sandstone had poor to fair visible porosity and a trace dead oil stain, faint dull yellow fluorescence with no cut. Log analysis of this zone shows a water saturation of 86%.

Show Zone #11 was encountered at 6419' - 6426' with 365 units of total gas over 50 units of background gas. Methane, ethane, propane, and butane were observed. The sandstone had poor to fair visible porosity with no fluorescence, stain, odor, or cut. Log analysis of this zone shows a water saturation of 100%.

SUMMARY

The Little Bonanza Federal #1-4 had production casing run to total depth. Determinations of production zones to complete have not been made as yet, but zones with Sw's of less than 80% should be fully analyzed.

If I may be of further assistance, feel free to contact me. Thank you for giving me the opportunity to serve as your geological consultant. Rocky Mountain Geo-Engineering Co. and I would welcome the opportunity to serve you again in the future.

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

6. Lease Designation and Serial Number

UTU54017

7. Indian Allottee or Tribe Name

N/A

8. Unit or Communitization Agreement

N/A

9. Well Name and Number

LITTLE BONANZA FED. #1-4

10. API Well Number

43-047-31854

11. Field and Pool, or Wildcat

Wildcat

1. Type of Well  
 Oil Well     Gas Well     Other (specify)

2. Name of Operator  
QUINTANA PETROLEUM CORPORATION

3. Address of Operator  
1325 So. Colorado Blvd., Suite 411, Denver, CO 80222

4. Telephone Number  
(303)692-9559

5. Location of Well  
Footage : 2190' FSL & 740' FEL  
QQ, Sec. T., R., M. : NE SE Section 4, T9S-R24E

County : Uintah  
State : UTAH

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

NOTICE OF INTENT  
(Submit in Duplicate)

- |  |   |
|--|---|
| <input type="checkbox"/> Abandonment             | <input type="checkbox"/> New Construction     |
| <input type="checkbox"/> Casing Repair           | <input type="checkbox"/> Pull or Alter Casing |
| <input type="checkbox"/> Change of Plans         | <input type="checkbox"/> Recompletion         |
| <input type="checkbox"/> Conversion to Injection | <input type="checkbox"/> Shoot or Acidize     |
| <input type="checkbox"/> Fracture Treat          | <input type="checkbox"/> Vent or Flare        |
| <input type="checkbox"/> Multiple Completion     | <input type="checkbox"/> Water Shut-Off       |
| <input type="checkbox"/> Other _____             |   |

Approximate Date Work Will Start \_\_\_\_\_

SUBSEQUENT REPORT  
(Submit Original Form Only)

- |  |   |
|--|---|
| <input type="checkbox"/> Abandonment *           | <input type="checkbox"/> New Construction     |
| <input type="checkbox"/> Casing Repair           | <input type="checkbox"/> Pull or Alter Casing |
| <input type="checkbox"/> Change of Plans         | <input type="checkbox"/> Shoot or Acidize     |
| <input type="checkbox"/> Conversion to Injection | <input type="checkbox"/> Vent or Flare        |
| <input type="checkbox"/> Fracture Treat          | <input type="checkbox"/> Water Shut-Off       |
| <input type="checkbox"/> Other _____             |   |

Date of Work Completion \_\_\_\_\_

Report results of Multiple Completions and Recompletions to different reservoirs on WELL COMPLETION OR RECOMPLETION AND LOG form.

\* Must be accompanied by a cement verification report.

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

ANNUAL STATUS REPORT

In accordance with Utah Admin. R. 649-8-10, Quintana Petroleum Corporation submits that this well continues to be shut in, waiting on better gas market.

**RECEIVED**

JAN 21 1993

DIVISION OF  
OIL, GAS & MINING

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

Name & Signature J. M. Snider

*JMSnider*

Title Production Tech.

Date 1/19/93

(State Use Only)

Bureau of Land Management  
Branch of Fluid Minerals (UT-922)  
P.O. Box 45155  
Salt Lake City, Utah 84145-0155

April 22, 1993

Quintana Petroleum Corporation  
601 Jefferson Street  
Houston, Texas 77002

Gentlemen:

Enclosed is one approved copy of Communitization Agreement No. UTU71692. This agreement communitizes all rights as to natural gas and associated liquid hydrocarbons producible from the Wasatch Formation, covering Lots 1, 2, S $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$  (E $\frac{1}{2}$ ) of Section 4, Township 9 South, Range 24 East, SLB&M, Uintah County, Utah. This agreement conforms with the spacing set forth in Order No. 179-5 which was issued by the State of Utah, Board of Oil, Gas and Mining on March 24, 1993.

This agreement is effective as of March 24, 1993. The communitized area covers 312.67 acres and includes portions of Federal oil and gas leases U-54017 and U-62252.

Approval of this agreement does not warrant or certify that the operator thereof and other holders of operating rights hold legal or equitable title to those rights in the subject leases which are committed hereto.

Minerals Management Service Form MMS-3160, "Monthly Report of Operations", must be submitted for this agreement beginning with the month in which drilling operations commence. Form MMS-3160 is to be mailed to the Minerals Management Service, Production Accounting Division, P. O. Box 17110, Denver, Colorado 80217.

If this well is producing, this approval requires the submission of a Payor Information Form MMS-4025 to the Minerals Management Service (MMS) within 30 days (30 CFR 210.51). Please notify the designated payor or payors (purchasers, working interest owners, or others) as soon as possible regarding this requirement. Any production royalties that are due must be reported and paid within 90 days of the Bureau of Land Management's approval date or the payors will be assessed interest for late payment under the Federal Oil and Gas Royalty Management Act of 1982 (See 30 CFR 218.54). If you need assistance or clarification, please contact the Minerals Management Service at 1-800-525-9167 or 303-231-3504.

DOGm

Please furnish all interested principals with necessary evidence of this approval.

Sincerely,

/S/ Robert A. Henricks

Robert A. Henricks  
Chief, Branch of Fluid Minerals

Enclosure

bcc: Branch of Lands and Minerals Operations w/enclosure  
District Manager - Vernal w/enclosure  
DOGM  
File - UTU71692  
MMS - Data Management Division  
Agr. Sec. Chron.  
Fluid Chron.

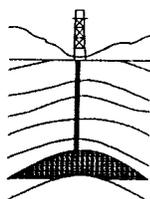
922:TATHOMPSON:tt:04-21-93



**BALLARD & ASSOCIATES, INC.**

P. O. Box 20174  
Billings, Montana 59104  
(406) 259-8790

**W. W. Ballard**  
**President**



518 17th St., Suite #1180  
Denver, Colorado 80202  
(303) 595-8515

**H. J. Kagie**  
**Vice President**

December 29, 1994

State of Utah  
Division of Oil, Gas & Mining  
3 Triad Center, Suite 350  
355 West North Temple  
Salt Lake City, UT 84180-1204

Re: Change of Operator

Dear Sir/Madam:

Enclosed please find Sundry Notices and Reports on Wells submitted to the Bureau of Land Management to change operator from Quintana Petroleum Corporation to Ballard & Associates, Inc.

If you require additional information please contact me at (303) 595-8515.

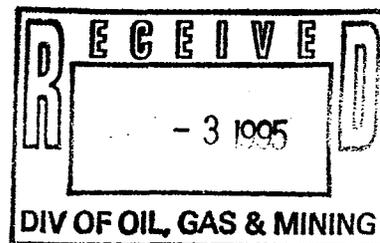
Sincerely,

A handwritten signature in cursive script that reads "Jodie Sundquist".

Jodie Sundquist  
Production/Operation Technician

/jls

Enclosure



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE

RECEIVED  
- 3 1005  
DIV OF OIL, GAS & MINING

1. Type of Well  
 Oil Well  Gas Well  Other

2. Name of Operator  
 Ballard & Associates

3. Address and Telephone No.  
 518 - 17th Street, Suite 1180, Denver, CO 80202 (303)595-8515

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
 2190' FSL & 740' FEL  
 NE SE Section 4, T9S-R24E

5. Lease Designation and Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation  
 UTU71692

8. Well Name and No.  
 LITTLE BONANZA FED. #1-4

9. API Well No.  
 43-047-31854

10. Field and Pool, or Exploratory Area  
 Wildcat

11. County or Parish, State  
 Uintah County, Utah

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

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

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

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

Effective 7:00 a.m. December 1, 1994, the Operator of this well will change from Quintana Petroleum Corporation to:

Ballard & Associates  
518 - 17th Street, Suite 1180  
Denver, Colorado 80202

Effective December 1, 1994, Ballard & Associates is responsible under the terms and conditions of the lease for operations conducted on the leased lands or a portion thereof under Bureau of Land Management Bond UT1005 issued by Norwest Bank Billings letter of credit.

Seller/Owner/Lessee Name: QUINTANA PETROLEUM CORPORATION  
Date: December 7, 1994  
Signed: *J.M. Snider*

cc: Utah DOGM

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

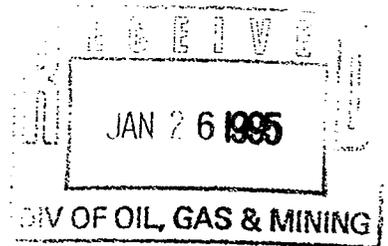
Signed *H. J. Kozel* Title Vice President Acquisitions Date 12/19/94

(This space for Federal or State office use)

Approved by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_  
 Conditions of approval, if any:

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

United States Department of the Interior  
BUREAU OF LAND MANAGEMENT  
Utah State Office  
P.O. Box 45155  
Salt Lake City, Utah 84145-0155



IN REPLY REFER TO:  
UT-922

January 25, 1995

Ballard & Associates, Inc.  
518 17th Street, Suite 1180  
Denver, Colorado 80202

Re: Badlands Unit  
Uintah County, Utah

Gentlemen:

On January 23, 1995, we received an indenture dated December 1, 1994, whereby Quintana Petroleum Corporation resigned as Unit Operator and Ballard & Associates, Inc. was designated as Successor Unit Operator for the Badlands Unit, Uintah County, Utah.

The instrument is hereby approved effective January 25, 1995. In approving this designation, the Authorized Officer neither warrants nor certifies that the designated party has obtained all required approval that would entitle it to conduct operations under the Badlands Unit Agreement.

Your statewide (Utah) oil and gas bond No. 1005 will be used to cover all operations within the Badlands Unit.

It is requested that you notify all interested parties of the change in unit operator. Copies of the approved instruments are being distributed to the appropriate federal offices, with one copy returned herewith.

Sincerely,

/s/ Robert A. Henricks

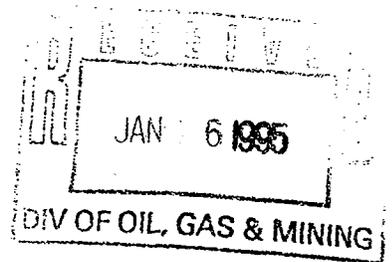
Robert A. Henricks  
Chief, Branch of Fluid Minerals

Enclosure

bcc: District Manager - Vernal (w/enclosure)  
Division of Oil, Gas & Mining  
Branch of Mineral Leasing Adjudication  
File - Badlands Unit (w/enclosure)  
MMS - Data Management Division  
Agr. Sec. Chron  
Fluid Chron

U-922:TAThompson:tt:01-25-95

United States Department of the Interior  
BUREAU OF LAND MANAGEMENT  
Utah State Office  
P.O. Box 45155  
Salt Lake City, Utah 84145-0155



IN REPLY REFER TO:  
UT-922

January 25, 1995

Ballard & Associates, Inc.  
518 17th Street, Suite 1180  
Denver, Colorado 80202

Re: Caballo Unit  
San Juan County, Utah

Gentlemen:

On January 23, 1995, we received an indenture dated December 1, 1994, whereby Quintana Petroleum Corporation resigned as Unit Operator and Ballard & Associates, Inc. was designated as Successor Unit Operator for the Caballo Unit, San Juan County, Utah.

The instrument is hereby approved effective January 25, 1995. In approving this designation, the Authorized Officer neither warrants nor certifies that the designated party has obtained all required approval that would entitle it to conduct operations under the Caballo Unit Agreement.

Your statewide (Utah) oil and gas bond No. 1005 will be used to cover all operations within the Caballo Unit.

It is requested that you notify all interested parties of the change in unit operator. Copies of the approved instruments are being distributed to the appropriate federal offices, with one copy returned herewith.

Sincerely,

/s/ Robert A. Henricks

Robert A. Henricks  
Chief, Branch of Fluid Minerals

Enclosure

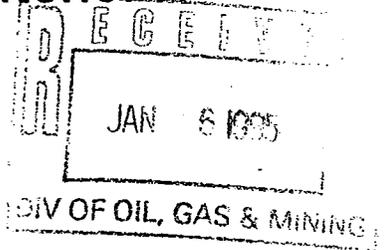
bcc: District Manager - Moab (w/enclosure)  
Division of Oil, Gas & Mining  
Branch of Mineral Leasing Adjudication  
File - Caballo Unit (w/enclosure)  
MMS - Data Management Division  
Agr. Sec. Chron  
Fluid Chron

U-922:TAThompson:tt:01-25-95

# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

Utah State Office  
P.O. Box 45155  
Salt Lake City, Utah 84145-0155



IN REPLY REFER TO:  
UT-922

January 25, 1995

Ballard & Associates, Inc.  
518 17th Street, Suite 1180  
Denver, Colorado 80202

Re: Deadman (Upper Ismay) Unit  
San Juan County, Utah

Gentlemen:

On January 23, 1995, we received an indenture dated December 1, 1994, whereby Quintana Petroleum Corporation resigned as Unit Operator and Ballard & Associates, Inc. was designated as Successor Unit Operator for the Deadman (Upper Ismay) Unit, San Juan County, Utah.

The instrument is hereby approved effective January 25, 1995. In approving this designation, the Authorized Officer neither warrants nor certifies that the designated party has obtained all required approval that would entitle it to conduct operations under the Deadman (Upper Ismay) Unit Agreement.

Your statewide (Utah) oil and gas bond No. 1005 will be used to cover all operations within the Deadman (Upper Ismay) Unit.

It is requested that you notify all interested parties of the change in unit operator. Copies of the approved instruments are being distributed to the appropriate federal offices, with one copy returned herewith.

Sincerely,

/s/ Robert A. Henricks

Robert A. Henricks  
Chief, Branch of Fluid Minerals

Enclosure

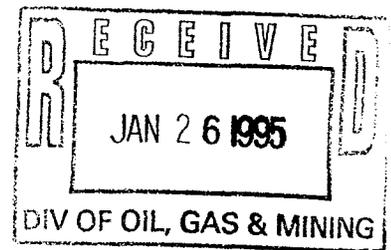
bcc: District Manager - Moab (w/enclosure)  
Division of Oil, Gas & Mining  
Branch of Mineral Leasing Adjudication  
File - Deadman (Upper Ismay) Unit (w/enclosure)  
MMS - Data Management Division  
Agr. Sec. Chron  
Fluid Chron

WELL STATUS REPORTS  
UTAH STATE OFFICE

INSPECTION ITEM	API NO.	WELL NUMBER	QTQT	SEC	TWN	RNG	WELL STATUS	LEASE NAME	OPERATOR
** INSPECTION ITEM UTU71692 UTU71692	430473185400S1	1-4	NESE	4	9S	24E	GSI	UTU54017	QUINTANA PETROLEUM CORPOR

United States Department of the Interior  
BUREAU OF LAND MANAGEMENT

Utah State Office  
P.O. Box 45155  
Salt Lake City, Utah 84145-0155



IN REPLY REFER TO:  
UT-922

January 25, 1995

Ballard & Associates, Inc.  
518 17th Street, Suite 1180  
Denver, Colorado 80202

Re: Successor of Operator  
Communitization Agreement (CA)  
UTU71692  
Uintah County, Utah

Gentlemen:

On January 23, 1995, we received an indenture dated December 1, 1994, whereby Quintana Petroleum Corporation resigned as Operator and Ballard & Associates, Inc. was designated as Successor Operator for CA UTU71692, Uintah County, Utah.

The instrument is hereby approved effective January 25, 1995. In approving this designation, the Authorized Officer neither warrants nor certifies that the designated party has obtained all required approval that would entitle it to conduct operations under CA UTU71692.

Your statewide (Utah) oil and gas bond No. 1005 will be used to cover all operations within CA UTU71692.

It is requested that you notify all interested parties of the change in operator. Copies of the approved instruments are being distributed to the appropriate federal offices, with one copy returned herewith.

Sincerely,

/s/ Robert A. Henricks

Robert A. Henricks  
Chief, Branch of Fluid Minerals

Enclosure

bcc: District Manager - Vernal (w/enclosure)  
~~Division of Oil, Gas & Mining~~  
File - CA UTU71692 (w/enclosure)  
MMS - Data Management Division  
Agr. Sec. Chron  
Fluid Chron

U-922:TAThompson:tt:01-25-95

STATE OF UTAH  
 DIVISION OF OIL, GAS AND MINING  
 355 West North Temple, 3 Triad, Suite 350, Salt Lake City, UT 84180-1203

MONTHLY OIL AND GAS PRODUCTION REPORT

OPERATOR NAME AND ADDRESS:

JEANNIE SNIDER  
 QUINTANA PETROLEUM CORP  
 1325 S COLORADO BLVD B411  
 DENVER CO 80222

UTAH ACCOUNT NUMBER: N9485

REPORT PERIOD (MONTH/YEAR): 11 / 94

AMENDED REPORT  (Highlight Changes)

Well Name			Producing Zone	Well Status	Days Oper	Production Volumes		
API Number	Entity	Location				OIL(BBL)	GAS(MCF)	WATER(BBL)
NORTH CHAPITA FED. 1-36			MVRD			U-56960	(Bedlands Unit)	BLM Appr. 1-25-95
4304731795	10745	08S 22E 36						
LITTLE BONANZA 1-4			NESE WSTC			U-54017	(C.A. UTU 71692)	BLM Appr. 1-25-95
4304731854	10937	09S 24E 4						
BADLANDS FEDERAL 1-31			MVRD			U-61401	(Bedlands Unit)	BLM Appr. 1-25-95
4304731857	10960	08S 23E 31						
CABALLO UNIT 1-15			ISMY			U-62953	(Caballo Unit)	"
4303731403	10994	36S 23E 15						
DEADMAN CANYON FEDERAL #2-20			ISMY			U-57469	(Deadman Unit)	"
4303731303	11010	37S 24E 20						
DEADMAN CANYON 3-20			ISMY			U-57469	(Deadman Unit)	"
4303731304	11010	37S 24E 20						
DEADMAN CANYON FED #1-28			ISMY			U-49678	(Deadman Unit)	"
4303731306	11010	37S 24E 28						
BADLANDS FED #1-32			MVRD			U-56965	(Badlands Unit)	BLM Appr. 1-25-95
4304731869	11627	08S 23E 32						
Deadman Cn. 1-20			ISMY / GIW			U-57469	(Deadman Unit)	"
*4303731293	10696	37S 24E 20						
<b>TOTALS</b>								

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

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

Date: \_\_\_\_\_

Name and Signature: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Division of Oil, Gas and Mining  
**OPERATOR CHANGE WORKSHEET**

Routing

1- <del>LFC</del> <del>GAN</del>
2- <del>LWP</del> 7-PL
3- <del>BTS</del> 8-SJ
4- <del>VLC</del> 9-FILE
5- R.J.F. ✓
6- LWP ✓

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

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

The operator of the well(s) listed below has changed (EFFECTIVE DATE: 12-1-94)

TO (new operator)	<u>BALLARD &amp; ASSOCIATES INC</u>	FROM (former operator)	<u>QUINTANA PETROLEUM CORP</u>
(address)	<u>518 - 17TH ST STE 1180</u>	(address)	<u>1325 S COLORADO BLVD B411</u>
	<u>DENVER CO 80202</u>		<u>DENVER CO 80222</u>
	<u>JODIE SUNDQUIST</u>		<u>JEANNIE SNIDER</u>
	phone (303) <u>595-8515</u>		phone (303) <u>629-9559</u>
	account no. <u>N 0895 (1-30-95)</u>		account no. <u>N 9485</u>

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

Name: <b>**SEE ATTACHED**</b>	API: <u>047-31854</u>	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____

**OPERATOR CHANGE DOCUMENTATION**

- See 1. (Rule R615-8-10) Sundry or other legal documentation has been received from former operator (Attach to this form). *(rec'd 1-3-95)*
- See 2. (Rule R615-8-10) Sundry or other legal documentation has been received from new operator (Attach to this form). *(rec'd 1-3-95)*
- See 3. The Department of Commerce has been contacted if the new operator above is not currently operating any wells in Utah. Is company registered with the state? (yes) If yes, show company file number: #172063
- See 4. (For Indian and Federal Wells ONLY) The BLM has been contacted regarding this change (attach Telephone Documentation Form to this report). Make note of BLM status in comments section of this form. Management review of Federal and Indian well operator changes should take place prior to completion of steps 5 through 9 below.
- See 5. Changes have been entered in the Oil and Gas Information System (Wang/IBM) for each well listed above. *(1-30-95)*
- See 6. Cardex file has been updated for each well listed above. *2-9-95*
- See 7. Well file labels have been updated for each well listed above. *2-9-95*
- See 8. Changes have been included on the monthly "Operator, Address, and Account Changes" memo for distribution to State Lands and the Tax Commission. *(1-30-95)*
- See 9. A folder has been set up for the Operator Change file, and a copy of this page has been placed there for reference during routing and processing of the original documents.

ENTITY REVIEW

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

BOND VERIFICATION (Fee wells only)

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

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

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

FILMING

1. All attachments to this form have been microfilmed. Date: February 21 1995.

FILING

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

COMMENTS

8/16/95 Apr. eff. 1-25-95

Form 3160-5  
(June 1990)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. Lease Designation and Serial No.

UTU - 54017

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

UTU - 71692

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well  Gas Well  Other

8. Well Name and No.

Little Bonanza Fed. 1-4

2. Name of Operator

BALLARD & ASSOCIATES, INC.

9. API Well No.

43-047-31854

3. Address and Telephone No. Box 1102, Vernal, Utah 84078 /  
518 17th St., #400, Denver, Colorado 80202

10. Field and Pool, or Exploratory Area  
Red Wash/Coyote Wash

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

2190 FSL and 740 FEL NE/SE SEC. 4, T9S-R24E  
Uintah County, Utah

11. County or Parish, State  
Uintah, Utah

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

TYPE OF SUBMISSION

- Notice of Intent
- Subsequent Report
- Final Abandonment Notice

TYPE OF ACTION

- Abandonment
- Recompletion
- Plugging Back
- Casing Repair
- Altering Casing
- Other Change of Operator
- Change of Plans
- New Construction
- Non-Routine Fracturing
- Water Shut-Off
- Conversion to Injection
- Dispose Water

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

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

Notice that Ballard has Turned Operation and Ownership of Well over to  
Triage Energy Corporation.

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

BALLARD & ASSOCIATES, INC.

Signed H. J. Kease

Title V.P.

Date 6-27-96

(This space for Federal or State office use)

Approved by \_\_\_\_\_  
Conditions of approval, if any:

Title \_\_\_\_\_

Date \_\_\_\_\_

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.

Form 3160-5  
(June 1990)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. Lease Designation and Serial No.  
UTU-54017

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation  
UTU-71692

8. Well Name and No.  
Little Bonanza Fed. 1-4

9. API Well No.  
43-047-31854

10. Field and Pool, or Exploratory Area  
Red Wash/Coyote Wash

11. County or Parish, State  
Uintah, Utah

SUBMIT IN TRIPLICATE

1. Type of Well  
 Oil Well     Gas Well     Other

2. Name of Operator  
TRIAGE ENERGY CORPORATION

3. Address and Telephone No.  
5401 West Kennedy Boulevard, Ste. 751, Tampa, Florida 33609

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
2190 FSL and 740 FES NE/SE Sec. 4, T9S-R24E  
Uintah County, Utah

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

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

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

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

Please be advised that Triage Energy Corp. is considered to be the operator of Well No. 1-4; NE1/4 SE1/4 Section 4, Township 9S, Range 24E; Lease UTU-54017; Uintah County, Utah; and is responsible under the terms and conditions of the lease for the operations conducted upon the leased lands. Bond coverage is provided by Bond No. UT#-1047.

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

*Van L. McNeel*    Van L. McNeel    Title President    Date 6/27/96  
 TRIAGE ENERGY CORP.

(This space for Federal or State office use)

Approved by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_  
Conditions of approval, if any:

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

\*See Instruction on Reverse Side

DESIGNATION OF SUCCESSOR OPERATOR

Communitization Agreement Number UTU 71692

Designation of successor Operator for communitized area, County of Uintah, State of Utah, being:

Township 9 South, Range 24 East  
Section 4  
Containing 312.67 acres, more or less.

THIS INDENTURE, dated as of the 1st day of January, 1996, by and between Triage Energy Corp, hereinafter designated as "First Party," and the owners of communitized working interests, hereinafter designated as "Second Parties,"

WHEREAS, under the provisions of the Act of February 25, 1920, 41 Stat. 437, 30 U.S.C. Secs. 181, et seq., as amended by the Act of August 8, 1946, 60 Stat. 950, a Communitization Agreement for the above Communitized Area, effective 3-24-93, wherein Ballard & Associates is designated as Operator of the communitized area; and

WHEREAS said, Ballard & Associates has resigned as Operator, and the designation of a successor Operator is now required pursuant to the terms thereon; and

WHEREAS the First Party has been and hereby is designated by Second Parties as Operator of the communitized area, and said First Party desires to assume all the rights, duties and obligations of Operator under the said Communitization Agreement.

NOW, THEREFORE, in consideration of the premises hereinbefore set forth and the promises hereinafter stated, the First party hereby covenants and agrees to fulfill the duties and assume the obligations of Operator of the communitized area under and pursuant to all the terms of said Communitization Agreement, and the Second Parties covenant and agree that, effective upon approval of this indenture by the Chief, Branch of Fluid Minerals, Bureau of Land Management, First Party shall be granted the exclusive right and privilege of exercising any and all rights and privileges as Operator, pursuant to the terms and conditions of said Communitization Agreement; said Agreement being hereby incorporated herein by reference and made a part hereof as fully and effectively as though said Agreement were expressly set forth in this instrument.

IN WITNESS WHEREOF, the parties hereto have executed this instrument as of the date hereinabove set forth.

ATTEST

BY [Signature]

FIRST PARTY

[Signature]  
BY Van L. McNeel  
President  
TRIAGE ENERGY CORP.



# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

Utah State Office  
P.O. Box 45155  
Salt Lake City, UT 84145-0155

August 5, 1996

Triage Energy Corporation  
c/o Hale Pratt Midgley Laitos  
Green & Hackstaff P.C.  
1675 Broadway, Suite 2000  
Denver, Colorado 80202

Re: Successor of Operator  
Communitization Agreement (CA)  
UTU71692  
Uintah County, Utah

Gentlemen:

We received an indenture dated January 1, 1996, whereby Ballard & Associates resigned as Operator and Triage Energy Corporation was designated as Operator for CA UTU71692, Uintah County, Utah.

This indenture was executed by all required parties. The instrument is hereby approved effective August 5, 1996. In approving this designation, the Authorized Officer neither warrants nor certifies that the designated party has obtained all required approval that would entitle it to conduct operations under CA UTU71692.

Your Lease (Utah) oil and gas bond No. 1047 will be used to cover CA operations.

Please advise all interested parties of the change in operator. Copies of the approved instruments are being distributed to the appropriate federal offices, with one copy returned herewith.

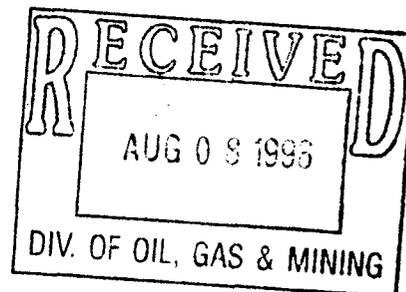
Sincerely,

Assad M. Raffoul

for Robert A. Henricks  
Chief, Branch of Fluid Minerals

### Enclosure

bcc: District Manager - Vernal (w/enclosure)  
Division Oil, Gas, & Mining  
File - UTU71692 (w/enclosure)  
MMS - Data Management Division  
Agr. Sec. Chron  
Fluid Chron



WELL STATUS REPORTS  
UTAH STATE OFFICE

INSPECTION ITEM	API NO.	WELL NUMBER	QTQT	SEC	TWN	RNG	WELL STATUS	LEASE NAME	OPERATOR
** INSPECTION ITEM UTU71692 UTU71692	430473185400S1 1-4		NESE	4	9S	24E	GS1	UTU54017	BALLARD + ASSOCIATES INC

**HALE PRATT MIDGLEY LAITOS  
GREEN & HACKSTAFF  
1675 Broadway Suite 2000  
Denver, CO 80202  
(303) 592-8700  
(303) 592-8710 (fax)**

1675 Broadway Suite 2000  
Denver, Colorado 80202  
Telephone (303) 592-8700  
Telecopier (303) 592-8710

BARBARA J.B. GREEN  
JAMES C. HACKSTAFF  
ALLAN C. HALE  
MARY V. LAITOS  
SCOTT A. MIDGLEY  
NANCY I. PERTCHECK  
CHARLES M. PRATT

**FACSIMILE TRANSMISSION**

THE ENTIRE ATTACHMENT TO THIS FACSIMILE COVER LETTER AND THE CONTENTS THEREOF ARE CONFIDENTIAL, ARE INTENDED ONLY FOR THE USE OF THE BELOW-NAMED INDIVIDUAL OR ENTITY, AND MAY BE SUBJECT TO THE ATTORNEY/CLIENT PRIVILEGE AND/OR THE ATTORNEY WORK PRODUCT PRIVILEGE. THE SENDING OF THIS COMMUNICATION BY FACSIMILE IS NOT INTENDED AS A WAIVER OF ANY PRIVILEGE LISTED ABOVE. IF YOU, AS THE READER OF THIS COVER LETTER, ARE NOT THE INTENDED RECIPIENT OF THIS COVER LETTER AND THE ATTACHED INFORMATION, YOU HEREBY ARE NOTIFIED THAT YOU ARE OBLIGATED TO DELIVER IT TO THE INTENDED RECIPIENT WITHOUT READING THE ATTACHMENTS YOURSELF OR DISSEMINATING ANY OF THIS COMMUNICATION, INCLUDING THE ATTACHMENTS, TO ANY OTHER PERSON OR ENTITY. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE IMMEDIATELY NOTIFY THE SENDER BY TELEPHONE AND RETURN UNREAD THIS COVER LETTER AND THE ATTACHMENTS TO THE ABOVE ADDRESS VIA THE U.S. POSTAL SERVICE. THANK YOU.

PLEASE DELIVER TO: DATE: 8-13-96

NAME: LISHA CORDOVA

FIRM: State of Utah, Division of Oil, Gas & Mining

FAX #: (801) 359-3940 TELE #: (801) 538-5296

FROM:

NAME: MARY LAITOS

FIRM: Hale Pratt Midgley Laitos Green & Hackstaff

FAX #: 303-592-8710 TELE #: 303-592-8700

RE: Thanks for your help. Please contact me if

NOTE: You need further information.

OPERATOR: \_\_\_\_\_

TOTAL NUMBER OF PAGES: 8 (including this cover sheet)



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

Michael O. Leavitt  
Governor  
Ted Stewart  
Executive Director  
James W. Carter  
Division Director

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

August 13, 1996

Triage Energy Corporation  
c/o Mary Laitos  
1675 Broadway, Suite 2000  
Denver, Colorado 80202

Re: Little Bonanza 1-4 Well Located in Section 4, Township 9  
South, Range 24 East, Uintah County, Utah.

Dear Ms. Laitos:

In reviewing the operator change for the referenced well, it was determined that your company is not currently registered with the Utah Department of Commerce. This letter is written to advise you of your responsibility to register your company with the state prior to conducting business within Utah. This can be accomplished by contacting:

Department of Commerce  
Division of Corporations  
160 East 300 South  
Salt Lake City, Utah 84111  
(801)530-4849

Sincerely,

A handwritten signature in cursive script that reads "Lisha Cordova".

Lisha Cordova  
Admin. Analyst

cc: Dept. of Commerce  
D. T. Staley  
R. J. Firth  
Operator File(s)  
Correspondence File/lwp

**OPERATOR CHANGE WORKSHEET**

Routing	
1- <del>JTC</del>	6- <del>VLD</del>
2- <del>GLH</del>	7-KDR
3-DPS <i>013</i>	8-SJ <i>013</i>
4-VLD ✓	9-FILE
5-RJF ✓	

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

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

The operator of the well(s) listed below has changed, effective: 8-5-96

TO: (new operator)	<u>TRIAGE ENERGY CORPORATION</u>	FROM: (old operator)	<u>BALLARD &amp; ASSOCIATES INC</u>
(address)	<u>3000 N GARFIELD STE 265</u>	(address)	<u>518 17TH ST STE 400</u>
	<u>MIDLAND TX 79705</u>		<u>DENVER CO 80202</u>
	<u>MITCH ORR</u>		
Phone:	<u>(915)687-4516</u>	Phone:	<u>(303)595-8515</u>
Account no.	<u>N4230 (8-13-96)</u>	Account no.	<u>N0895</u>

WELL(S) attach additional page if needed: C.A. UTU71692

Name:	<u>LITTLE BONANZA 1-4/WS</u>	API:	<u>43-047-31854</u>	Entity:	<u>10937</u>	S	<u>4</u>	T	<u>9S</u>	R	<u>24E</u>	Lease:	<u>U54017</u>
Name:	_____	API:	_____	Entity:	_____	S	_____	T	_____	R	_____	Lease:	_____
Name:	_____	API:	_____	Entity:	_____	S	_____	T	_____	R	_____	Lease:	_____
Name:	_____	API:	_____	Entity:	_____	S	_____	T	_____	R	_____	Lease:	_____
Name:	_____	API:	_____	Entity:	_____	S	_____	T	_____	R	_____	Lease:	_____
Name:	_____	API:	_____	Entity:	_____	S	_____	T	_____	R	_____	Lease:	_____

**OPERATOR CHANGE DOCUMENTATION**

- 1 (r649-8-10) Sundry or other legal documentation has been received from the **FORMER** operator (attach to this form). *(Reg. 8-8-96) (Rec'd 8-13-96)*
- 2 (r649-8-10) Sundry or other legal documentation has been received from the **NEW** operator (Attach to this form). *(Rec'd 8-13-96)*
- 3 The Department of Commerce has been contacted if the new operator above is not currently operating any wells in Utah. Is the company registered with the state? (yes/no) \_\_\_\_\_ If yes, show company file number: \_\_\_\_\_. *(8-13-96) L.L.H. M.A. L.H.D.*
- 4 **FOR INDIAN AND FEDERAL WELLS ONLY.** The BLM has been contacted regarding this change. Make note of BLM status in comments section of this form. BLM approval of Federal and Indian well operator changes should ordinarily take place prior to the division's approval, and before the completion of steps 5 through 9 below.
- 5 Changes have been entered in the Oil and Gas Information System (3270) for each well listed above. *(8-13-96)*
- 6 Cardex file has been updated for each well listed above. *(8-13-96)*
- 7 Well file labels have been updated for each well listed above. *(8-13-96)*
- 8 Changes have been included on the monthly "Operator, Address, and Account Changes" memo for distribution to Trust Lands, Sovereign Lands, UGS, Tax Commission, etc. *(8-13-96)*
- 9 A folder has been set up for the Operator Change file, and a copy of this page has been placed there for reference during routing and processing of the original documents.

**ENTITY REVIEW**

- Lee 1. (r649-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/no) no If entity assignments were changed, attach copies of Form 6, Entity Action Form.
- N/A 2. Trust Lands, Sovereign Lands, Tax Commission, etc., have been notified through normal procedures of entity changes.

**BOND VERIFICATION - (FEE WELLS ONLY)**

- N/A 1. (r649-3-1) The NEW operator of any fee lease well listed above has furnished a proper bond.
- Lee 2. A copy of this form has been placed in the new and former operator's bond files.
3. The FORMER operator has requested a release of liability from their bond (yes/no) \_\_\_\_\_, as of today's date \_\_\_\_\_. If yes, division response was made to this request by letter dated \_\_\_\_\_.

**LEASE INTEREST OWNER NOTIFICATION OF RESPONSIBILITY**

- N/A 1. Copies of documents have been sent on \_\_\_\_\_ to \_\_\_\_\_ at Trust Lands for changes involving State leases, in order to remind that agency of their responsibility to review for proper bonding.
- BGS  
5/14/96

**FILMING**

- ✓ 1. All attachments to this form have been microfilmed. Today's date: August 20, 1996

**FILING**

1. Copies of all attachments to this form have been filed in each well file.
2. The original of this form, and the original attachments are now being filed in the Operator Change file.

**COMMENTS**

Form 3160-5  
(November 1994)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

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

FORM APPROVED  
OMB No. 1004-0135  
Expires July 31, 1996

5. Lease Serial No.  
UTW 54017

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.  
Little Bonanza Fed 1-4

9. API Well No.  
43-047-31854

10. Field and Pool, or Exploratory Area  
Red Wash/Coyote Wash

11. County or Parish, State  
Uintah, Utah

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

1. Type of Well  
 Oil Well  Gas Well  Other

2. Name of Operator  
Triage Energy Corporation

3a. Address  
P. O. Box 23887 Tampa, FL 33623

3b. Phone No. (include area code)  
(915) 694-8228

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
2190 FSL and 740 FEL NE/SE  
Sec. 4, T9S-R24E

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

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

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

11/8/01  
Pumped 55 sx cement to 5765'  
Set Cast Iron Bridge Plug at 2950' plus 2 sx cement on top  
Set cement retainer @ 2700'. Pumped 25 sx cement through retainer (covered 2729-2740 perfs) plus 5 sx on retainer. Perforated 4 holes @ 1285'.  
Set cement retainer @ 1230' Pumped 195 sx cement to surface. Let cement set overnight.

11/9/01  
Filled top of hole w/9 sx cement circulated to surface.  
Cellar dug out, dry hole marker welded on top. Witnessed by BLM Rep. Allen Walker  
Tubing and separator hauled off.

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

Linda Johnston  
Signature  
*Linda Johnston*

Title  
Agent  
Date  
1/10/02

**THIS SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

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

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

(Instructions on reverse)

STATE OIL REPORTS  
P. O. Box 7663  
Midland, TX 79708  
(915) 694-8228 (915) 694-4743-fax

CO: <u>State of Utah</u>	DATE: <u>2/20/02</u>
TO: <u>Carolyn</u>	FROM: LINDA JOHNSTON
FAX: <u>801-359-3940</u>	TOTAL PAGES: _____
<input type="checkbox"/> URGENT <input type="checkbox"/> REPLY ASAP <input type="checkbox"/> FYI	

COMMENTS: Bridge Little Pomona Feb 1-4

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RECEIVED

FEB 20 2002

DIVISION OF  
OIL, GAS AND MINING