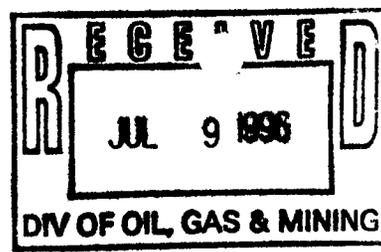




EQUITABLE RESOURCES
ENERGY COMPANY

WESTERN REGION

1601 Lewis Avenue
Billings, MT 59102



Office: (406) 259-7860
FAX: (406) 245-1365
FAX: (406) 245-1361

July 8, 1996

Bureau of Land Management
150 East 900 North
Richfield, UT 84701

---VIA FEDERAL EXPRESS---

Gentlemen:

RE: Mamba Federal #31-22
NW NE Section 22, T16S, R19W
Millard County, Utah

Enclosed is an Application for Permit to Drill for the above referenced well.

As operator, we request that the information on this well be held confidential for as long as regulations allow.

Please feel free to contact me if you require additional information.

Sincerely,

Molly Conrad
Operations Secretary

/mc

Enclosures

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONFIDENTIAL

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
 Equitable Resources Energy Company

3. ADDRESS OF OPERATOR
 1601 Lewis Avenue; Billings, MT 59102 (406) 259-7860

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)*
 At surface NW NE Section 22, T16S, R19W
 At proposed prod. zone 800' FNL, 1800' FEL
 243 648

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
 Approximately 1.5 miles from Warm Creek Ranch

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

16. NO. OF ACRES IN LEASE

17. NO. OF ACRES ASSIGNED TO THIS WELL

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

19. PROPOSED DEPTH
 5,000'

20. ROTARY OR CABLE TOOLS
 Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)
 4837' GL

22. APPROX. DATE WORK WILL START*
 June 30, 1996

5. LEASE DESIGNATION AND SERIAL NO.
 UTU-69960

6. IF INDIAN, ALLOTTED OR TRIBE NAME
 n/a

7. UNIT AGREEMENT NAME
 n/a

8. FARM OR LEASE NAME
 Mamba Federal

9. WELL NO.
 #31-22

10. FIELD AND POOL, OR WILDCAT
 Wildcat/Paleozoic

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
 Sec. 22, T16S, R19W

12. COUNTY OR PARISH
 Millard

13. STATE
 UTAH

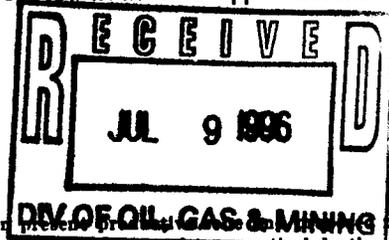
23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
See attached Drilling Program/Casing Design				

Operator intends to drill this well in accordance with the attached EXHIBITS. A listing of EXHIBITS is also attached.

SELF CERTIFICATION: I hereby certify that I am authorized, by proper lease interest owner, to conduct these operations associated with the application. Bond coverage pursuant to 43 CFR 3104 for lease activities is being provided by Equitable Resources Energy Company as principal and Safeco Insurance Company of America as surety under BLM Bond No. MT 0576 (Nationwide Oil & Gas Bond #5547188) who will be responsible for compliance with all of the terms and conditions of that portion of the lease associated with this application.

ORIGINAL: Bureau of Land Management (Richfield, UT)
 COPY: Bureau of Land Management (Fillmore, UT)
 COPY: Utah Division of Oil, Gas and Mining



IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present production 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 Molly Conrad TITLE Operations Sec. DATE 7-8-96

(This space for approval of State use)

PERMIT NO. 43-027-30038 APPROVAL DATE _____

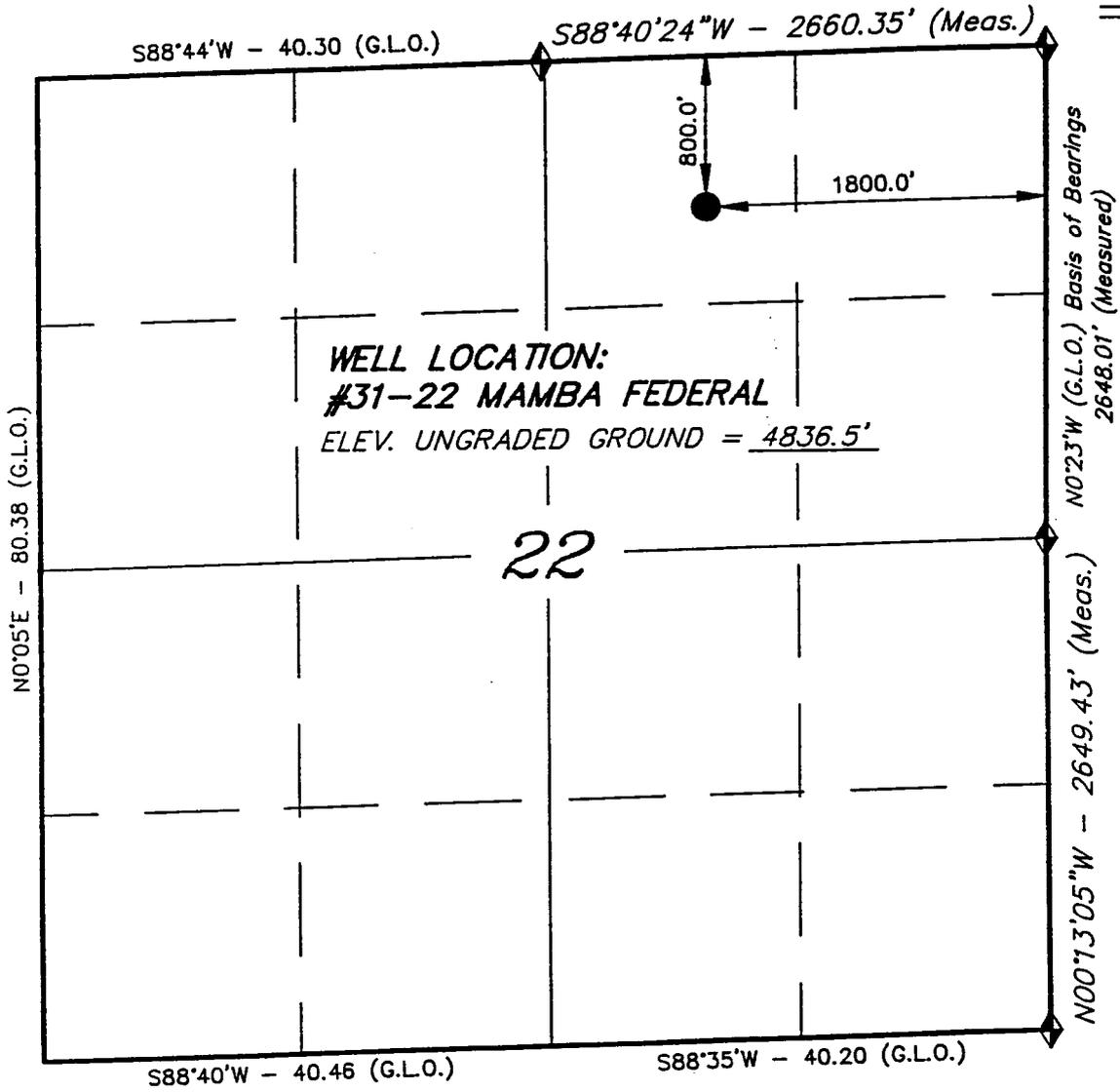
APPROVED BY J.P. Matthews TITLE Petroleum Engineer DATE 9/25/96

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

T16S, R19W, S.L.B.&M.

EQUITABLE RESOURCES ENERGY CO.



WELL LOCATION, #31-22 MAMBA FEDERAL,
 LOCATED AS SHOWN IN THE NW 1/4 NE 1/4
 OF SECTION 22, T16S, R19W, S.L.B.&M.
 MILLARD COUNTY, UTAH.



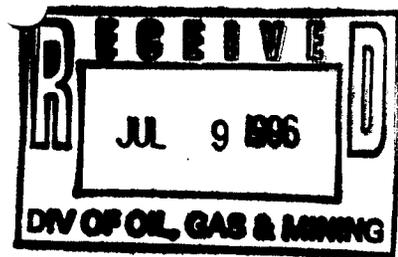
THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS
 PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS
 MADE BY ME OR UNDER MY SUPERVISION AND THAT
 THE SAME ARE TRUE AND CORRECT TO THE BEST OF
 MY KNOWLEDGE AND BELIEF.

Gene Stewart
 GENE STEWART
 REGISTERED LAND SURVEYOR
 REGISTRATION NO. 144102
 STATE OF UTAH

◆ = SECTION CORNERS LOCATED
 BASIS OF ELEV; U.S.G.S. 7-1/2 min QUAD (GANDY)

TRI STATE LAND SURVEYING & CONSULTING	
38 WEST 100 NORTH - VERNAL, UTAH 84078 (801) 781-2501	
SCALE: 1" = 1000'	SURVEYED BY: S.S. D.S.
DATE: 5-1-96	WEATHER: WARM
NOTES:	FILE #

Exhibit "K"



CONFIDENTIAL

AS OPERATOR, WE HEREBY REQUEST THAT THE STATUS OF THIS WELL BE HELD TIGHT FOR THE MAXIMUM PERIOD ALLOWED BY FEDERAL AND STATE REGULATIONS.

**Equitable Resources Energy Company
Western Region
1601 Lewis Avenue
Billings, MT 59102
(406) 259-7860
FAX: (406) 245-1361**

EXHIBITS FOR MAMBA FEDERAL WELLS:

- A PROPOSED DRILLING PROGRAM
- B PROPOSED SURFACE USE PROGRAM
- C GEOLOGIC PROGNOSIS
- D DRILLING PROGRAM/CASING DESIGN
- E EVIDENCE OF BOND COVERAGE
- F HAZMAT DECLARATION
- G EXISTING & PLANNED ACCESS ROADS
- H WELLSITE LAYOUT/CUT & FILL DIAGRAM
- I BOPE SCHEMATIC
- J RIG LAYOUT
- K SURVEY PLAT
- L ARCHAEOLOGICAL SURVEY REPORT

6/21/96

EQUITABLE RESOURCES ENERGY COMPANY
Balcron Oil Division
Mamba Federal #31-22
NW NE Section 22-T16S-R19W
Millard County, Utah

In accordance with requirements outlined in 43 CFR 3162-3.1 (d):

1. ESTIMATED IMPORTANT GEOLOGICAL MARKERS:

See Geologic Prognosis (EXHIBIT "C")

2. ESTIMATED DEPTHS OF ANTICIPATED OIL, GAS OR WATER:

Water can be expected throughout the Neogene (young Valley Fill) from 10' below surface to target formation (Paleozoic). The water should be relatively fresh and similar in salinity to surface waters coming from springs in the valley.

Oil or gas, if present, will be found only in rock formations beneath the base of the Valley Fill.

The boundary between the water in Valley Fill and the underlying hydrocarbons is a clay seal at the base of the Valley Fill that caps the hydrocarbon reservoirs. No mixing of the water above the seal and the hydrocarbons below the seal has been seen anywhere.

Also see Geologic Prognosis (EXHIBIT "C")

3. OPERATOR'S MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL:

- a. EXHIBIT "I" is a schematic of the BOP equipment and choke manifold. A 3M system will be used. The BOPE will be installed after setting 9-5/8" casing at 600'. The blind rams and pipe rams will be tested to 1500 psi. Pipe rams will be operationally checked each 24-hour period and blind rams each time pipe is pulled out of the hole.
- b. The BOPE will be tested to 1500 psi when initially installed, whenever any seal subject to test pressure is broken, and following related repairs. The pipe and blind rams will be activated at least weekly and on every trip the pipe and blind rams will be activated.

- c. An accumulator of sufficient capacity to open the hydraulically-controlled choke valve lines (if so equipped), close all rams, and retain a minimum of 200 psi above precharge on the closing manifold without the use of the closing unit pumps will be installed during the drilling of this well.
- d. An upper kelly cock will be used during the drilling of this well.
- e. Visual mud monitoring equipment will be used to detect volume changes indicating loss or gain in circulating fluid volume.
- f. Sufficient quantities of mud materials will be maintained or readily accessible for the purpose of assuring well control.

4. PROPOSED CASING AND CEMENTING PROGRAM:

- a. Surface casing will be set in the Valley Fill formation to approximately 600' and cemented to surface.
- b. All potentially productive hydrocarbon zones will be isolated.
- c. Casing designs are based on factors of burst: 1.00, collapse: 1.125, and joint strength: 1.8.
- d. All casing strings will be pressure tested to 0.22 psi/ft. of casing string length or 1500 psi whichever is greater (not to exceed 70% of yield).
- E. For details of casing, cement program, drilling fluid program, and proposed mud program, see the following attachment:

Drilling Program/Casing Design (EXHIBIT "D")

5. HAZARDOUS PRESSURES, TEMPERATURES, FLUIDS/GASSES EXPECTED:

- a. Expected bottom hole temperature is 150 degrees F. Expected bottom hole pressure is 2200 psi.
- b. No abnormal pressures or temperatures have been noted or reported in wells drilled in this area.

6. ANTICIPATED STARTING DATE AND DURATION OF OPERATIONS:

- a. The drilling operations for this well will begin as soon after APD approval as possible.
- b. These drilling operations should be completed within 21 days after spudding the well depending on weather and hole conditions.
- c. If the well is productive, a sundry notice and plat showing exact installed facilities will be submitted.
- d. If this well is non-productive, a sundry notice will be filed with the BLM District Office within 30 days following completion of the well for abandonment.

SURFACE USE PROGRAM

EQUITABLE RESOURCES ENERGY COMPANY
Mamba Federal #31-22
NW NE Section 22 Twn.16S Rge.19W
Millard County, Utah

In accordance with requirements outlined in 43 CFR 3162.3-1 (d):

- 1.) **EXISTING ROADS**
 - a.) From highway 6 and 50 at the Utah / Nevada border, go east one mile and take the Gandy road north 23.3 miles. Turn right at flags. Follow flagging approximately 1.5 miles east. Turn north and follow flags 0.4 miles to location.
 - b.) Existing roads will not need to be upgraded for this location.
 - c.) All existing roads used by these drilling operations will be maintained in the same or better condition as were existing prior to entry.
 - d.) Equitable Resources Energy Company will submit to the Authorized Officer a copy of the Conditional Use Permit from Millard County for access over county roads, prior to any construction activity.
 - e.) See EXHIBIT "G" for access road.
- 2.) **PLANNED ACCESS ROADS**; See EXHIBIT "G"
 - a.) Length: Approximately 1.9 miles of new access road will be required.
 - b.) Width: Maximum 30 feet overall right-of-way with an 18 foot running surface
 - c.) Maximum grade: Less than 6%
 - d.) Culverts will be installed if necessary.

- e.) Surface materials: Any surface materials which are required will either be native materials from the location and/or access site or material purchased from a private source.
- f.) A cattleguard will be placed on the access road where the new portion of road will cross through an existing fence.
- g.) All travel will be confined to location and access routes.
- h.) All access roads and surface disturbing activities will conform to the standards outlined in the Bureau of Land Management and Forest Service publication: Surface Operating Standards for Oil and Gas Exploration and Development, (1989).

The road shall be constructed/upgraded to meet the standards of the anticipated traffic flow and all-weather road requirements. This shall include ditching, draining, graveling, crowning, and capping the roadbed as necessary to provide a well-constructed safe road. If necessary prior to upgrading, the road shall be cleared of any snow cover and allowed to dry completely. Road drainage crossings will be of the dry creek draining crossing type. Crossings, if necessary, will 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 run off water shall be prevented by diverting water off at frequent intervals by means of cutouts. Upgrading will not be done during muddy conditions. Should mud holes develop, they will be filled in and detours around them will be avoided.

- h.) Right-of-Ways will be obtained for crossing the telephone line and power line along side the county road.

3.) LOCATION OF EXISTING WELLS:

There are no existing wells in this area.

4.) LOCATION OF EXISTING AND/OR PROPOSED PRODUCTION FACILITIES:

- a.) Upon completion, a sundry notice and plat showing exact production facilities will be submitted.

- b.) All above ground facilities will be painted earthtone color Desert Brown #10Y/R in accordance with the Munsell Soil Color chart within six months of the well completion unless prior written approval to proceed with an alternative has been granted via sundry notice.

5.) LOCATION AND TYPE OF WATER SUPPLY:

- a.) Water to be used to drill this well will be hauled by truck over the roads described in this Surface Use Program. The water will be purchased from a private source owned by Gerald C. Bates of HCR Box 340, Garrison, Utah.
- b.) No water well will be drilled on this site.

6.) CONSTRUCTION ROAD/LOCATION MATERIALS:

- a.) Any construction materials required will either be native materials from the location and/or access site or material purchased from a private source.
- b.) Reasonable precautions will be taken to protect all lands.
- c.) The top 6-8 inches of soil material, including all vegetation, shall be removed from the disturbed areas and stockpiled adjacent to the well pad and adjacent to the roadside, within the Right-of Way if applicable. Topsoil piles are indicated on the well pad layout (EXHIBIT "H"). Topsoil shall be reserved for reclamation and not utilized for any other purposes.
- d.) If snow is present on the ground when construction begins, the snow will be removed before the topsoil is stripped.
- e.) Well pads and roads will be designed with necessary gravel surfaces, crowning and ditching will be done to allow for proper drainage and to prevent ponding of water adjacent to or on the pad. The road will be constructed to be above seasonally elevated water tables.
- f.) The reserve pit will not be constructed in fill.

7.) METHODS FOR HANDLING WASTE MATERIALS AND DISPOSAL:

- a.) Burning of waste shall not be allowed. All trash will be contained in a trash bin and hauled away to an approved disposal site. The drill site and access road will be kept clean from trash, litter, discarded material and debris. The work area will be maintained in a sanitary condition at all times.
- b.) All drilling fluids and drill cuttings will be contained in the reserve pit and/or holding tanks. All appropriate measures will be taken to prevent leakage into the substratum or onto the surface. All appropriate measures will be taken to prevent overflow of the pit. A minimum of two feet of freeboard will be maintained in the reserve pit.
- c.) The reserve pit will be lined. In order to conserve water and protect the environment, a polyurethane nylon reinforced liner will be used. It will be a minimum of 12 mils thickness with sufficient bedding to cover any rock. The liner will overlap the pit walls and be covered with dirt and/or rocks to hold it in place.
- d.) Earthen dikes will be placed around fuel tanks to contain accidental spills. They will exceed the capacity of the largest tank by 50% and be lined with compacted clay or an artificial liner.
- e.) Gas, diesel fuel, oil lubricants and other petroleum products will be located, handled and stored in a manner that prevents them from entering into and contaminating the soils. If lubricants are drained from equipment, then a thick plastic liner shall be required under the equipment to collect any spilled material. Any spilled material will be drained from the liner and disposed with other petroleum based fluids. No material shall be allowed to drain on the ground. If soils or the ground are accidentally contaminated by fuels, lubricants or hazardous materials, such materials will be removed from the public lands and disposed of at an approved disposal site. If necessary, soil samples will be collected below the spill to assure that all contaminated soils are removed.

- f.) If surface water appears to be contaminated, as indicated by the presence of a film or sheen, then it shall be cleaned up and hauled to an approved disposal site, No surface discharge or other release of contained water will be allowed without prior approval from the Authorized Officer.
- g.) Any produced water will be contained on site for a period not to exceed 90 days.
- h.) Sewage will be disposed of according to county and state requirements. Sealed chemical portable toilets will be on location during these operations. Waste and chemicals will not be disposed of on location.
- i.) Appropriate sanitation permits from the Six County Sanitation and Health Department will be obtained prior to any construction.
- j.) Dust shall be controlled by applying water or other means approved by the Authorized Officer and in accordance with federal, state, and local emission standards for air quality.

8.) ANCILLARY FACILITIES:

None anticipated.

9.) LOCATION SITE LAYOUT:

- a.) The proposed location site and elevation plat is shown on EXHIBIT "K".
- b.) The drill pad layout, showing elevations, orientation, and access to the pad is shown on EXHIBIT "H".
- c.) The drilling rig facilities layout is shown on EXHIBIT "J". No permanent living facilities are planned. There will be two or three trailers on location during drilling operations.
- d.) If a flare pit is used, it will be located downwind of the wellhead a minimum of 100 feet.

- e.) All pits will be fenced according to the following minimum standards:
- a.) 39-inch net wire will be used with at least one strand of barbed wire on top of the net wire unless pipe or some type of reinforcement rod is attached to the top of the entire fence.
 - b.) The net wire shall be no more than two inches above the ground. If barbed wired it shall be three inches above the net wire. Total height of the fence will be at least 42 inches.
 - c.) Corner posts shall be cemented or braced in such a manner to keep the fence tight at all times. Standard steel, wood, or pipe posts will be used between the cornerbraces. Maximum distance between any two posts will be no greater than 16 feet.
 - d.) All wire will be stretched before it is attached to the corner posts.

The reserve pit will be fenced on three sides during drilling operations and on the forth side when the drilling rig is moved off location. Pits will be fenced and maintained until cleanup.

10.) PLANS FOR RECLAMATION OF LOCATION SITE:

The BLM will be contacted prior to commencement of any reclamation operations.

- a.) Immediately upon completion of the drilling operations, the reserve pit will be de-watered by removing and disposing drilling related fluids at an approved facility, or by allowing the fluids to evaporate in the pit. The location and the surrounding area, including the reserve pit, shall be cleaned of all remaining debris, trash, junk, and materials not required for production.
- b.) Immediately upon well completion, any hydrocarbons in the reserve pit will be removed for sale unless it is determined by the Authorized Officer to be waste oil. All waste oil will be disposed of properly at an approved site. The borehole will not be used for disposal of any waste materials. Fluids produced during the completion operation will be collected in tanks. The disposal of these fluids will be in accordance with onshore oil and gas order No. 7.

- c.) The polyurethane liner will be cut off above the fill of the cuttings and disposed at an approved facility before backfilling of the reserve pit.
- d.) Drill cuttings shall be buried in the reserve pit. The pit shall be backfilled to slightly above grade to promote settling of the unconsolidated fill material.
- e.) The reserve pit and that portion of the location and access road not needed for production facilities or operations will be recontoured to the approximate natural contours. The stockpiled topsoil will be applied in proportion to the area being reclaimed. The reserve pit will be reclaimed within 120 days from the date of well completion. Before any dirt work takes place, the reserve pit will be allowed to dry completely.
- f.) Site reclamation will include contouring the location to reestablishing natural contours and natural drainages. After contouring the stockpiled topsoil will be evenly redistributed and then seeded. Spreading of the topsoil will not occur during wet periods. Disturbed areas, including the access roads, will be scarified to a depth of at least one inch immediately prior to seeding. Reclaimed areas shall not be recontoured to a smooth condition, but will be left slightly roughened to collect precipitation and to promote seed germination. Seed mixture specifications and seeding instructions will be addressed in the Mitigation Measures (EXHIBIT "M") provided by the BLM.
- g.) Matting and silt fences, made from geotextiles or straw bales, will be used based on site-specific conditions, as necessary for erosion control.
- h.) Reclamation will include the removal of all culverts, signs, fences, cattleguards, and all other improvements.
- j.) Any gravel needed for the access road and/ or the well pad will be left where it was placed, unless specified otherwise by the Authorized Officer. The gravel will be ripped to a depth of six inches and the constructed surface will be recontoured.
- k.) Weed control will be the responsibility of Equitable Resources. The use of pesticides or herbicides will be approved by the Authorized Officer.

Dry hole/abandoned location:

At such time as the well is plugged and abandoned, operator will submit a subsequent report of abandonment and BLM will attach the appropriate surface rehabilitation conditions of approval.
See Mitigation Measures (EXHIBIT "M") for seeding mixture to be used in reclamation of this location.

11.) SURFACE OWNERSHIP:

Bureau of Land Management
150 East 900 N
Richfield, Utah 84701

12.) OTHER INFORMATION:

- a.) An archeology survey is attached. (EXHIBIT "L")
- b.) If unexpected cultural resources are observed during construction or reclamation operations, all operations will be suspended in the immediate vicinity and the find will be reported immediately to the BLM.
- c.) Operator will have on site a copy of the Surface Use Program and a copy of the supplemental conditions.
- d.) Drilling operations will be conducted in accordance with the Bureau of Land Management conditions of approval.
- e.) EXHIBIT "M" is a copy of the mitigation measures provided by the BLM.

13.) OPERATOR'S REPRESENTATIVES:

Equitable Resources Energy Company
1601 Lewis Avenue
Billings, Montana 59102
(406) 259-7860
Fax: (406) 245-1361

David McCoskery, Director of Engineering & Operations
Home: (406) 248-3864

Mike McNamara Production Manager
Home: (406) 652-8735

14.) 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 any 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 Equitable Resources Energy Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

July 8, 1996
Date

David M. McCoskery
David M. McCoskery
Director of Engineering & Operations
Equitable Resources Energy Company

EQUITABLE RESOURCES ENERGY COMPANY

Operator: EREC	Well Name: Mamba Fed. 31-22
Project ID:	Location: Millard / Utah

<u>Design Parameters:</u> Mud weight (8.80 ppg) : 0.457 psi/ft Shut in surface pressure : 1786 psi Internal gradient (burst) : 0.100 psi/ft Annular gradient (burst) : 0.000 psi/ft Tensile load is determined using air weight Service rating is "Sweet"	<u>Design Factors:</u> Collapse : 1.125 Burst : 1.00 8 Round : 1.80 (J) Buttruss : 1.60 (J) Body Yield : 1.50 (B)
--	--

	Length (feet)	Size (in.)	Weight (lb/ft)	Grade	Joint	Depth (feet)	Drift (in.)	Cost
1	4,300	7"	20.00	K-55	ST&C	4,300	6.331	
2	700	7"	23.00	K-55	ST&C	5,000	6.250	

	Collapse Load (psi)	Strgth (psi)	S.F.	Burst Load (psi)	Min Int Strgth (psi)	Yield S.F.	Tension Load (kips)	Strgth (kips)	S.F.
1	1966	2237	1.138	2216	3740	1.69	102.10	254	2.49 J
2	2286	3270	1.430	2286	4360	1.91	16.10	309	19.19 J

Prepared by : *McCoskery, Billings, Montana*
 Date : 06-17-1996
 Remarks :

Design is for a Production string.
 Minimum segment length for the 5,000 foot well is 1,500 feet.
 The mud gradient and bottom hole pressures (for burst) are 0.457 psi/ft and
 2,286 psi, respectively.

NOTE : The design factors used in this casing string design are as shown above. As a general guideline, Lone Star Steel recommends using minimum design factors of 1.125 - collapse (with evacuated casing), 1.0 - (uniaxial) burst, 1.8 - API 8rd tension, 1.6 - buttress tension, 1.5 - body yield tension, and 1.6 - EUE 8rd tension. Collapse strength under axial tension was calculated based on the Westcott, Dunlop and Kemler curve. Engineering responsibility for use of this design will be that of the purchaser.
 Costs for this design are based on a 1987 pricing model. (Version 1.07)



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
MONTANA STATE OFFICE
222 NORTH 32ND STREET
P.O. BOX 36800
BILLINGS, MONTANA 59107-6800

EXHIBIT E
Page 1 of 4



IN REPLY TO:

MTM 12619-A et al
BLM BOND NO. MT0576
(922.31)

April 25, 1989

NOTICE

Equitable Resources Energy Company
P. O. Box 21017
Billings, Montana 59104

OIL AND GAS

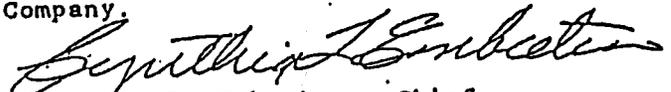
CORPORATE MERGER RECOGNIZED
RIDER TO NATIONWIDE BOND ACCEPTED

Acceptable evidence has been filed in this office concerning the merger of Balcron Oil Company into Equitable Resources Energy Company, the surviving corporation. Information provided shows that Balcron Oil Company merged into Equitable Resources Energy Company, changing the former entity's name to Balcron Oil, a Division of Equitable Resources Energy Company. Please note that Divisions cannot hold leases, therefore, after consultation with Balcron Oil, this office is recognizing only the merger action.

A rider was filed on April 20, 1989, to be made a part of \$150,000 Nationwide Oil and Gas Bond No. 5547188 (BLM Bond No. MT0576) with Balcron Oil Company as principal and Safeco Insurance Company of America as surety. By means of this rider, the surety consents to changing the name on the bond from Balcron Oil Company to Equitable Resources Energy Company. The rider is accepted effective April 20, 1989.

For our purposes, the merger is recognized effective April 20, 1989.

The oil and gas lease files and communitization agreement files identified on the enclosed Exhibit A have been noted as to the merger. Other lease interests will be transferred by assignments from Ballard & Cronoble to Equitable Resources Energy Company.


Cynthia L. Embretson, Chief
Fluids Adjudication Section

1 Enclosure
1-Exhibit A

cc: (w/encl.)
AFS, Denver (1)
All DMs (1 ea.)
RMO Section (1)
Regional Forester, Lakewood (2)
Regional Forester, Missoula (2)
Bureau of Reclamation (1)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

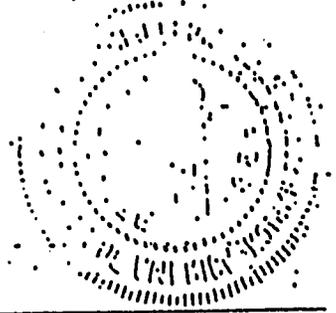
STATE, NATIONWIDE, OR NATIONAL PETROLEUM RESERVE
IN ALASKA OIL AND GAS BOND

Act of February 25, 1920 (30 U.S.C. Sec. 181)

Act of August 7, 1947 (30 U.S.C. Sec. 351)

Department of the Interior Appropriations Act, Fiscal Year 1981 (P.L. 96-514)

Other Oil and Gas Leasing Authorities as Applicable



KNOW ALL MEN BY THESE PRESENTS, That we
BALCRON OIL COMPANY
of 1601 Lewis Avenue, Billings, MT 59104

as principal, and
SAFECO INSURANCE COMPANY OF AMERICA
of 111 Presidential Blvd., Suite 231, Bala Cynwyd, PA 19004

as surety, are held and firmly bound unto the United States of America in the sum of ONE HUNDRED FIFTY THOUSAND AND 00/100-----dollars (\$ 150,000.00), in lawful money of the United States, which sum may be increased or decreased by a rider hereto executed in the same manner as this bond, for the use and benefit of (1) the United States; (2) the owner of any of the land subject to the coverage of this bond, who has a statutory right to compensation in connection with a reservation of the oil and gas deposits to the United States; and (3) any lessee or permittee under a lease or permit issued by the United States prior to the issuance of an oil and gas lease for the same land subject to this bond, covering the use of the surface or the prospecting for, or development of, other mineral deposits in any portion of such land, to be paid to the United States. For such payment, well and truly to be made, we bind ourselves, and each of our heirs, executors, administrators, and successors, jointly and severally.

- The coverage of this bond shall extend to all of the principal's holdings of federal oil and gas leases in the United States, including Alaska, issued or acquired under the Acts cited in Schedule A.
- The coverage of this bond extends only to the principal's holdings of federal oil and gas leases issued or acquired under the Acts cited and in the States named in Schedule A and to any other State or States that may be named in a rider attached hereto by the lessor with the consent of the surety.
- The coverage of this bond extends only to the principal's holdings of federal oil and gas leases within the National Petroleum Reserve in Alaska.

SCHEDULE A

Mineral Leasing Act of February 25, 1920 (30 U.S.C. Sec. 181), Acquired Lands Leasing Act of August 7, 1947 (30 U.S.C. Sec. 351), and other oil and gas leasing authorities as applicable.

NAMES OF STATES

ALL STATES

The conditions of the foregoing obligations are such that, whereas the said principal has an interest in oil and gas leases issued under the Acts cited in this bond: (1) as lessee; (2) as the approved holder of operating rights in all or part of the lands covered by such leases under operating agreements with the lessees; or (3) as designated operator or agent under such leases pending approval of an assignment or operating agreement; and

tract, removed, and dispose of oil and gas deposits in or under the lands covered by the leases, operating agreements or designations and is obligated to comply with certain covenants and agreements set forth in such instruments; and

WHEREAS the principal and surety agree that without notice to the surety the coverage of this bond, in addition to the present holdings of the principal, shall extend to and include:

WHEREAS the principal is authorized to drill for, mine, ex-



POWER OF ATTORNEY

GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

EXHIBIT "E" Page 4 of 4
3798

No. _____

KNOW ALL BY THESE PRESENTS:

That SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA, each a Washington corporation, does each hereby appoint

-----THOMAS L. VEHR; R. GEORGE VOINCHET, Pittsburgh, Pennsylvania-----

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA have each executed and attested these presents

this 4th day of September, 19 87.

CERTIFICATE

Extract from the By-Laws of SAFECO INSURANCE COMPANY OF AMERICA
and of GENERAL INSURANCE COMPANY OF AMERICA:

"Article V, Section 13. — FIDELITY AND SURETY BONDS . . . the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business . . . On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of SAFECO INSURANCE COMPANY OF AMERICA
and of GENERAL INSURANCE COMPANY OF AMERICA adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

- (i) The provisions of Article V, Section 13 of the By-Laws, and
- (ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
- (iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Boh A. Dickey, Secretary of SAFECO INSURANCE COMPANY OF AMERICA and of GENERAL INSURANCE COMPANY OF AMERICA, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 10th day of April, 19 89.

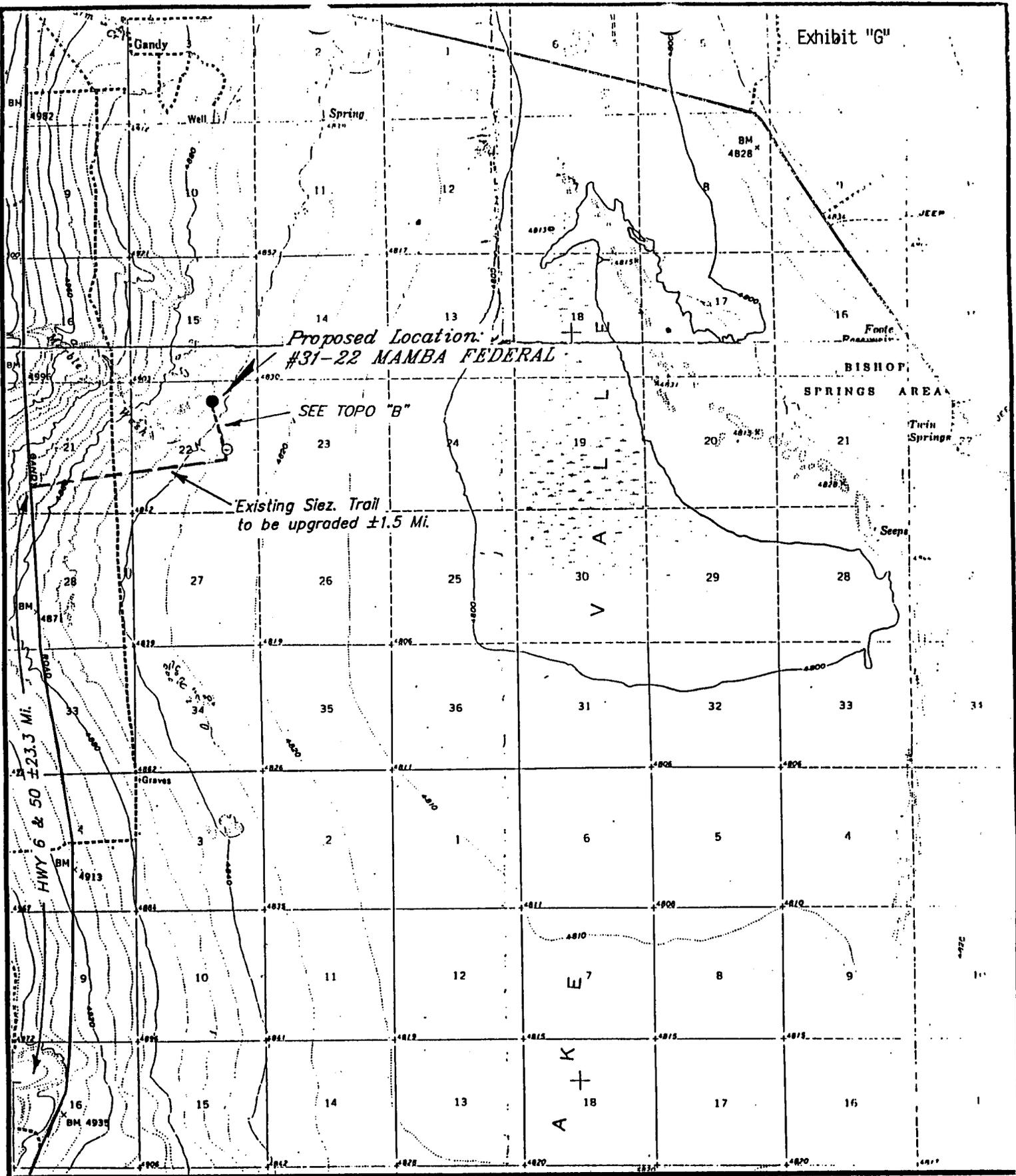
- A. Hazardous chemicals 10,000 pounds of which will most likely be used, produced, stored, transported, or disposed of in association with the proposed action of drilling, completing and producing this well:

We anticipate that none of the hazardous chemicals in quantities of 10,000 pounds or more will be associated with these operations.

- B. Extremely hazardous substances threshold quantities (per Howard Cleavinger 11/30/93) of which will be used, produced, stored, transported, or disposed of in association with the proposed action of drilling, completing and producing this well:

We anticipate that none of the extremely hazardous substances in threshold quantities per 40 CFR 355 will be associated with these operations.

12/1/93
Revised 12/7/93
/rs



EQUITABLE RESOURCES CO.

*#31-22 MAMBA FEDERAL
SEC. 22, T16S, R19W, S.L.B.&M.
TOPO "A"*

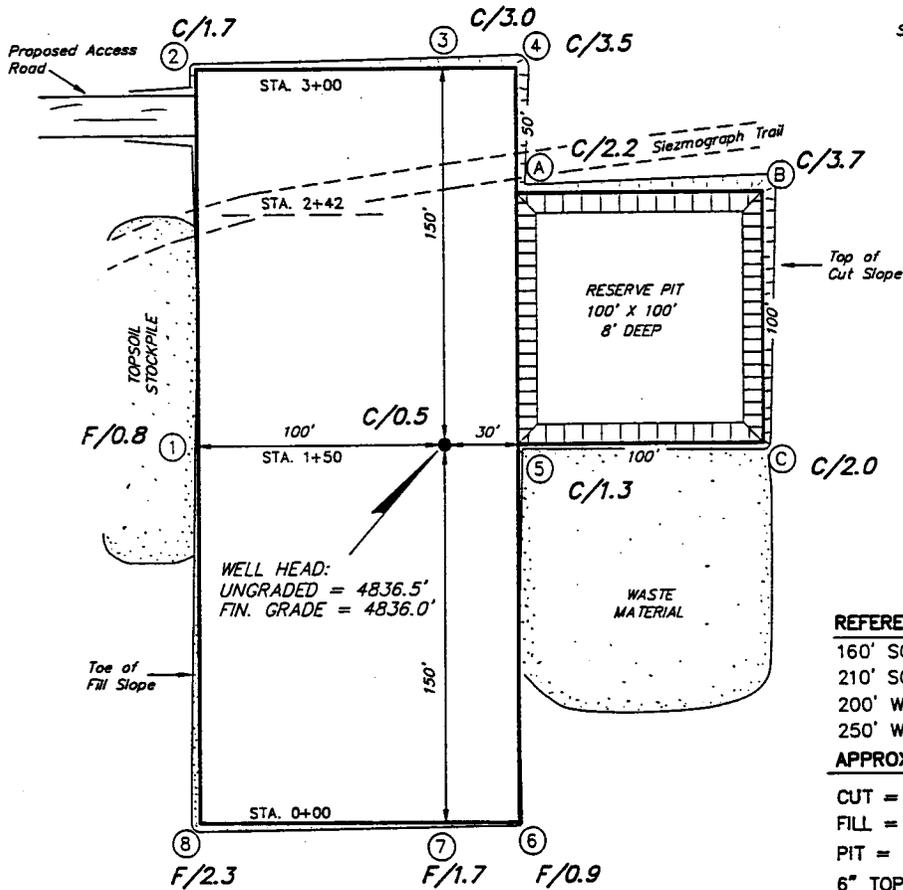
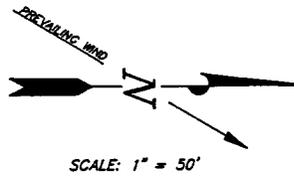


Tri State
Land Surveying, Inc.
(801) 781-2501
38 WEST 100 NORTH VERNAL, UTAH 84078

EQUITABLE RESOURCES ENERGY CO.

#31-22 MAMBA FEDERAL
SEC. 22, T16S, R19W, S.L.B.&M.

Exhibit "H"

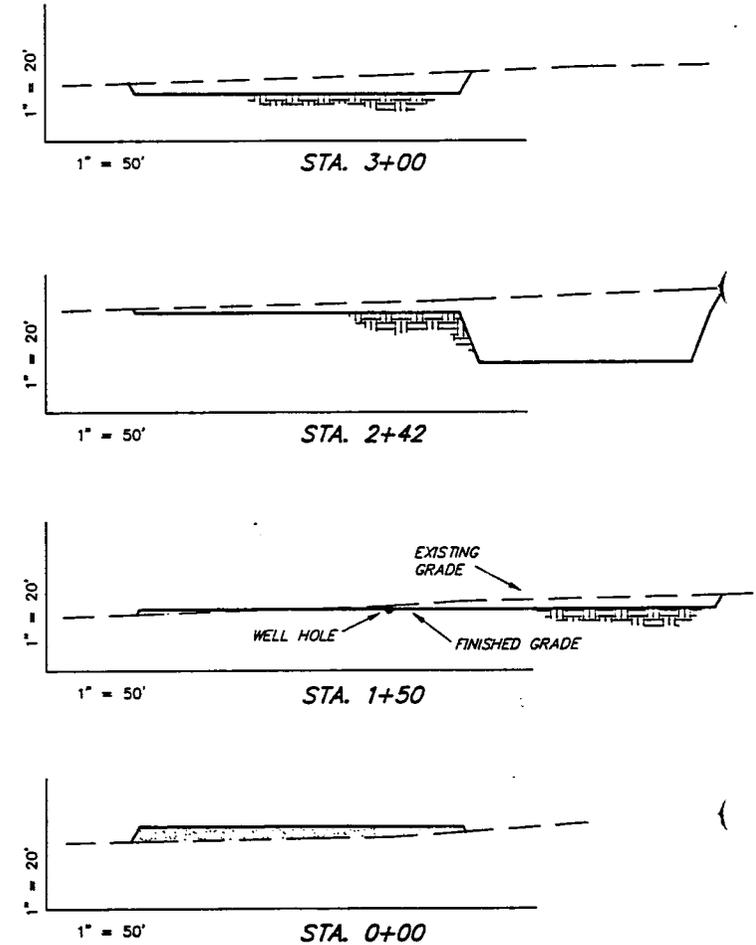


REFERENCE POINTS

- 160' SOUTH = 4834.4'
- 210' SOUTH = 4833.7'
- 200' WEST = 4839.4'
- 250' WEST = 4840.2'

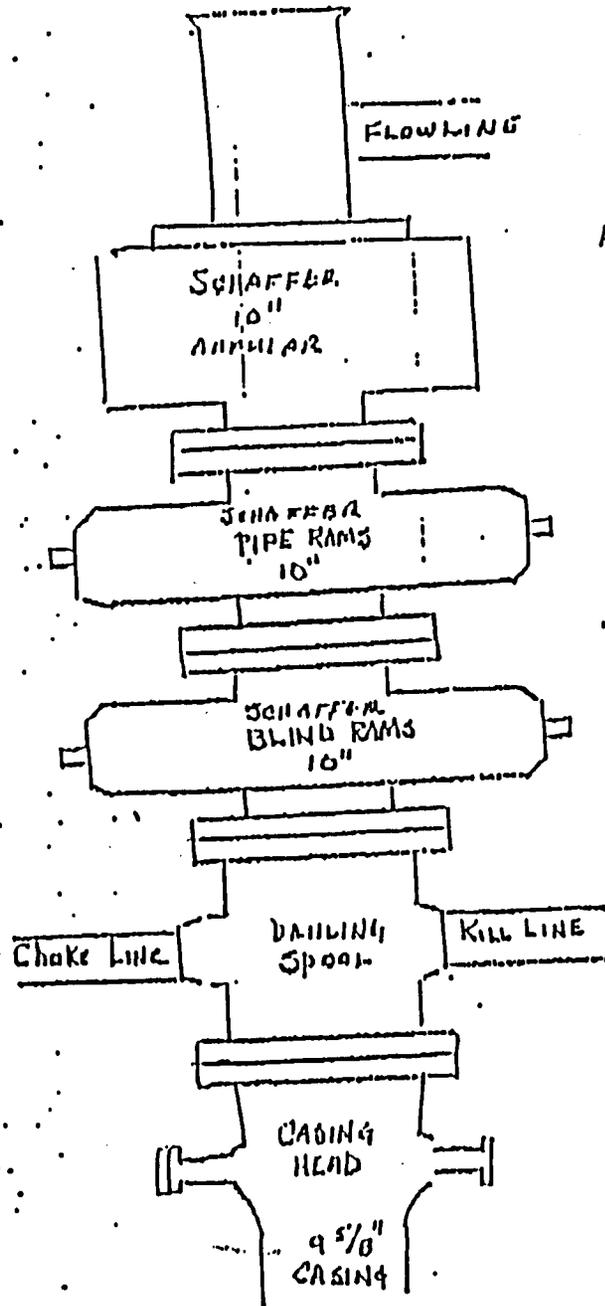
APPROXIMATE YARDAGES

- CUT = 1,280 Cu. Yds.
- FILL = 1,120 Cu. Yds.
- PIT = 2,510 Cu. Yds.
- 6" TOPSOIL = 910 Cu. Yds.



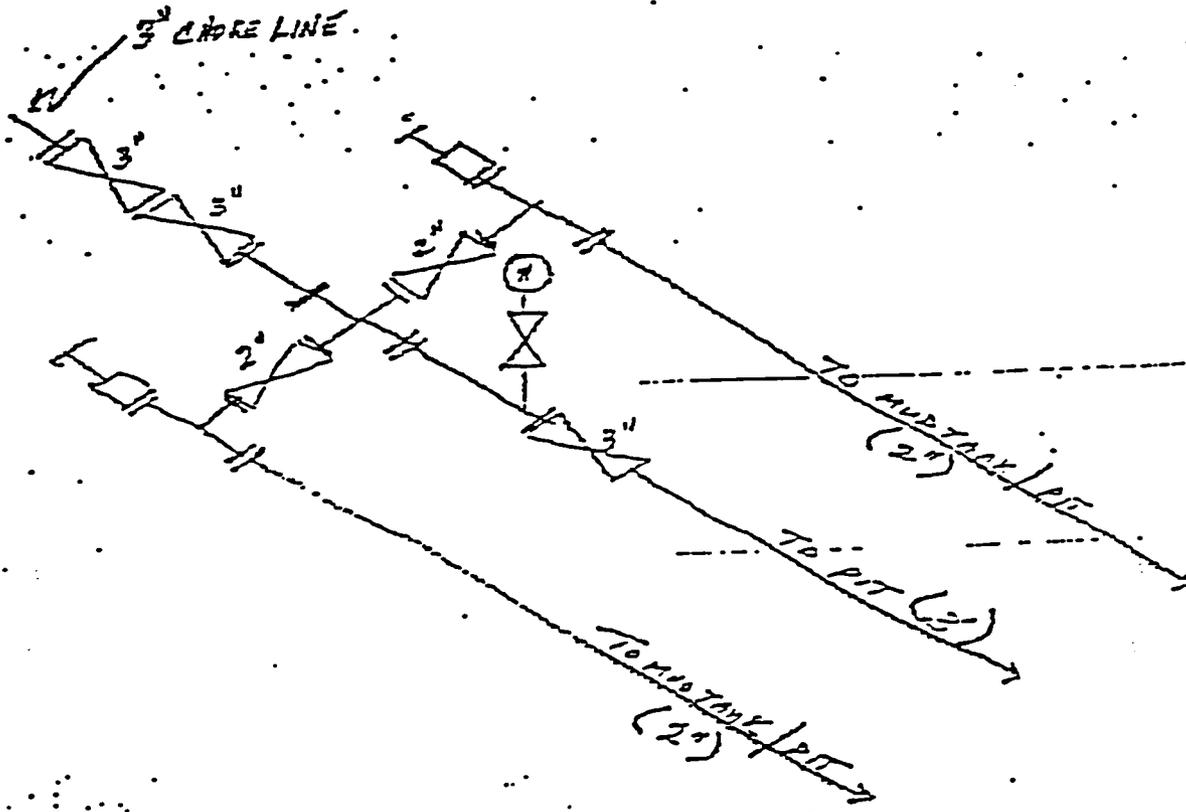
SURVEYED BY: S.S. D.S.
DRAWN BY: J.R.S.
DATE: 5-1-96
SCALE: 1" = 50'
FILE:

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Land Surveying, Inc.
(801) 781-2501
38 WEST 100 NORTH VERNAL, UTAH 84078



Annular preventer optional.

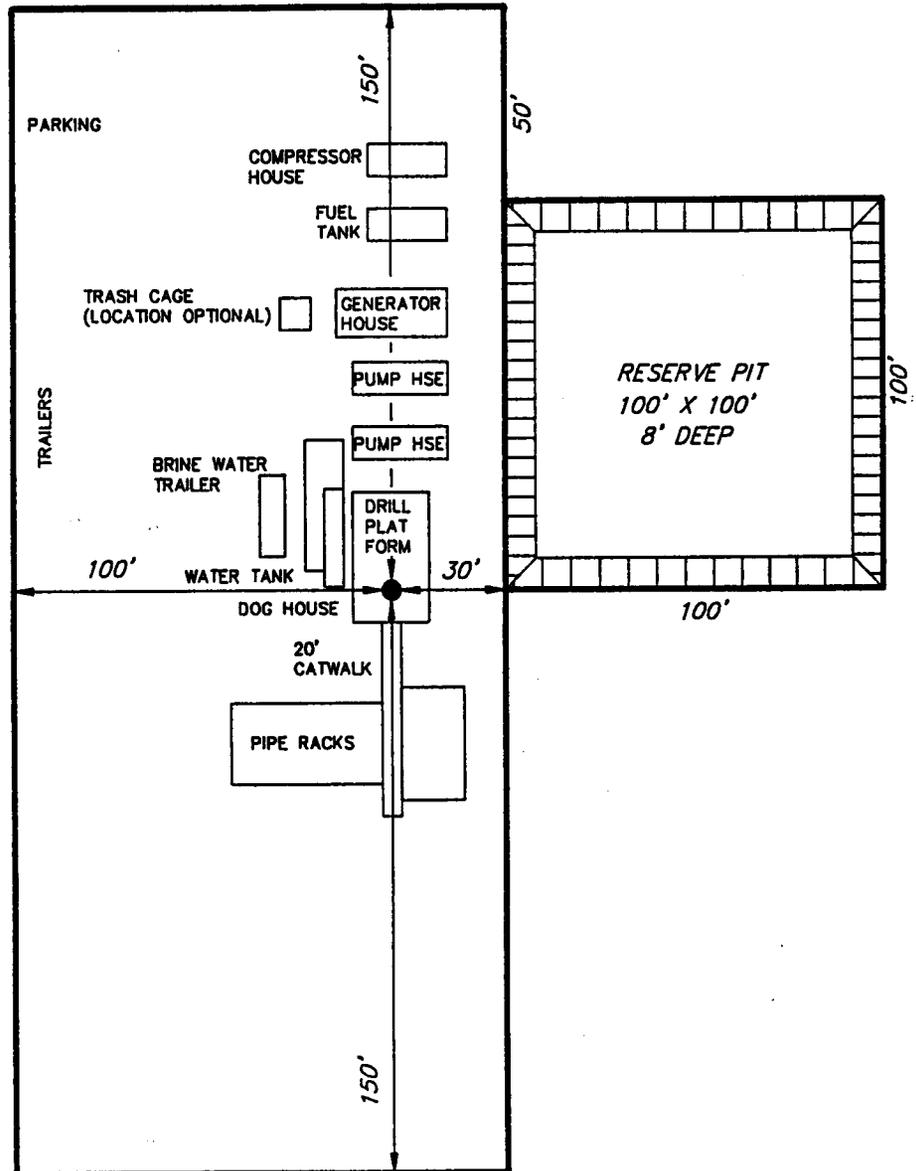
**BLOWOUT PREVENTER
EQUIPMENT.**



CHOKER MANIFOLD EQUIPMENT
SKID MOUNTED
ENCLOSED IN STEEL BUILDING

TYPICAL RIG LAYOUT

#31-22 MAMBA FEDERAL



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Land Surveying, Inc.
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38 WEST 100 NORTH, VERNAL, UTAH 84078

**CULTURAL RESOURCE EVALUATION
OF PROPOSED MAMBA FEDERAL UNITS
NO. 43-22 & 31-22 AND ASSOCIATED
ACCESS ROUTES IN THE SNAKE VALLEY
LOCALITY OF MILLARD COUNTY, UTAH**

Report Prepared for **Equitable Resources Energy Company**

Dept. of Interior Permit No.: UT-96-54937
AERC Project 1534 (BLCR-96-4)

Utah State Project No.: UT-96-AF-0302b

Principal Investigator
F. Richard Hauck, Ph.D.

Author of the Report
F. Richard Hauck



**ARCHEOLOGICAL-ENVIRONMENTAL RESEARCH
CORPORATION (AERC)**

181 North 200 West, Suite 5
Bountiful, Utah 84011-0853

June 7, 1996

ABSTRACT

An intensive cultural resource evaluation has been conducted for Equitable Resources Energy Company of proposed Mamba Federal Units No. 43-22 and 31-22 and associated access routes in the Snake Valley locality of Millard County, Utah. This evaluation involved a total of 32 acres, of which 20 acres are associated with the two proposed well pads, and an additional 12 acres associated with a 2 mile-long access corridors. These evaluations were conducted by F. R. Hauck and Glade Hadden of AERC on June 6, 1996.

No previously recorded significant or National Register eligible cultural resources will be adversely affected by the proposed development.

No newly identified cultural resource activity loci or isolated diagnostic artifacts were discovered or recorded during the examination.

AERC recommends project clearance based on adherence to the stipulations noted in the final section of this report.

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GENERAL INFORMATION

On June 6, 1996, AERC archaeologists F. R. Hauck and Glade Hadden conducted an intensive cultural resource evaluation for Equitable Resources Energy Company of Billings, Montana. This examination involved the proposed Mamba Federal Units No. 43-22 and 31-22 and an associated access routes located in the Gandy locality of Snake Valley in Millard County, western Utah. Two 10 acre well pads with some 2 miles of access right of way were examined for a total of 32 acres. The entire project is situated on public lands administered by the Fillmore Office of the Bureau of Land Management (Richfield District, Warm Springs Resource Area).

The purpose of the field study and this report is to identify and document cultural site presence and assess National Register potential significance relative to established criteria (cf., Title 36 CFR 60.6). The proposed development of these wells and access routes requires archaeological evaluations in compliance with U.C.A. 9-8-404, the Federal Antiquities Act of 1906, the Reservoir Salvage Act of 1960-as amended by P.L. 93-291, Section 106 of the National Historic Preservation Act of 1966-as amended, the National Environmental Policy Act of 1969, the Federal Land Policy and Management Act of 1979, the Archaeological Resources Protection Act of 1979, the Native American Religious Freedom Act of 1978, the Historic Preservation Act of 1980, Executive Order 11593, and various Utah State regulations.

In addition to documenting cultural identity and significance, mitigation recommendations relative to the preservation of cultural data and materials can be directed to the Bureau of Land Management Richfield District Office and to the Utah State Antiquities Section. This work was done under U.S. Department of Interior Permit for Utah UT-96-54937 which expires on January 31, 1997.

Project Location

The project location is in the Snake Valley locality of Millard County, Utah. It is situated on the Gandy 7.5 minute topographic quad (see Maps).

The proposed 100 foot-wide access corridor begins at the existing roadway ca. 3.5 miles south of Gandy. That location is in the SW quarter of Section 21, Township 16 South, Range 19 West, Salt Lake Meridian. It extends to the east-northeast for two miles, passing through Section 22 and the Mamba 43-22 Unit and ending at the Mamba Federal Unit 31-22 located in the NE quarter of Section 22 (see Map 2).

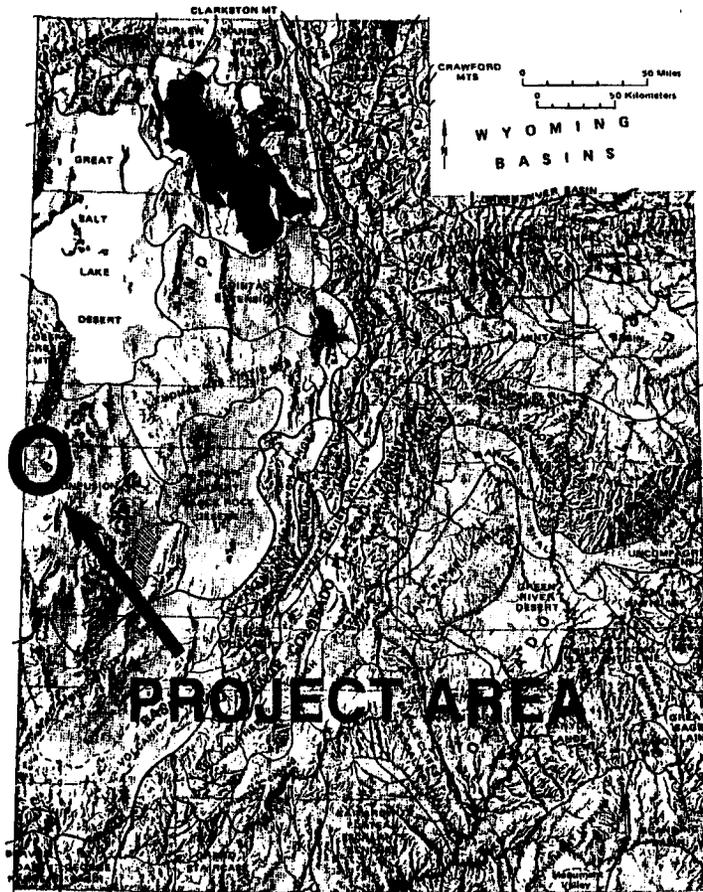
Environmental Description

The project area is within the 4830 to 4870 foot elevation zone above sea level. Open rangeland terrain is associated with the project area.

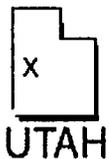
**MAP 1: GENERAL PROJECT AREA
IN
MILLARD COUNTY
UTAH**



**PROJECT: BLCR - 96 - 4
SCALE: see below
QUAD: see below
DATE: June 7, 1996**



UTAH GEOLOGICAL AND MINERAL SURVEY
MAP 43 1977
PHYSIOGRAPHIC SUBDIVISIONS OF UTAH
BY W.L. STOKES

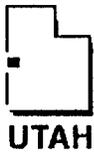
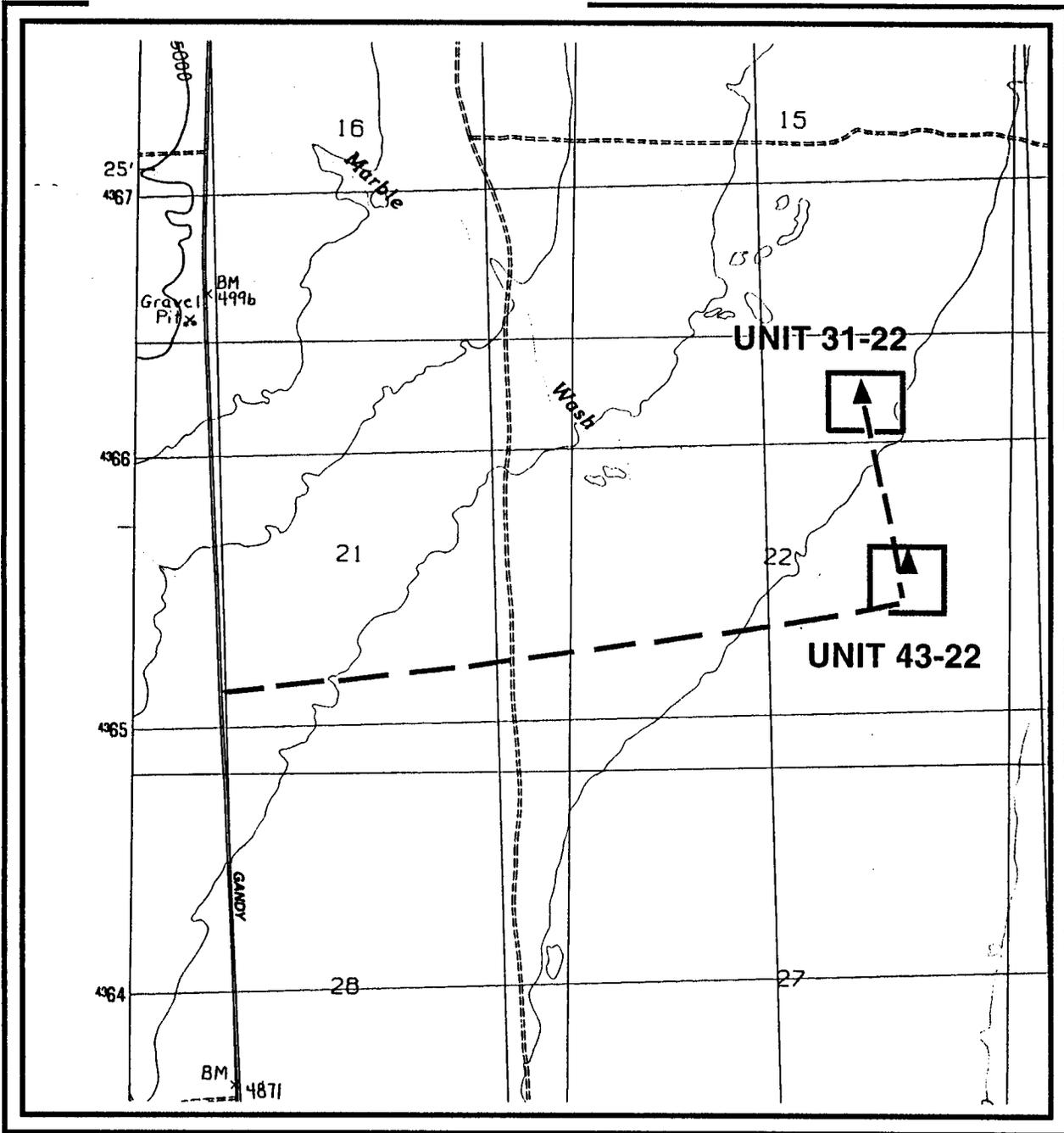


**TOWNSHIP: MULTIPLE
RANGE: MULTIPLE
MERIDIAN: SALT LAKE & UINTAH B. & M.**

**MAP 2: CULTURAL RESOURCE SURVEY
 OF MAMBA FEDERAL UNITS NO. 43-22
 & 31-22 IN THE GANDY LOCALITY
 OF MILLARD COUNTY, UTAH**



PROJECT: BLCU 100-4
 SCALE: 1:24,000
 QUAD: Gandy, Utah
 DATE: June 7, 1996



TOWNSHIP: 16 South
 RANGE: 19 West
 MERIDIAN: Salt Lake B. & M.

LEGEND

Well Location ▲

Access Route

Survey Area

Pipeline Corridor

Vegetation in the general project area reflects a typical "Artemisian" or Saltbush biotic province (Dice 1943) which is the dominant pattern found in many lowland areas throughout the eastern Great Basin. Limited rainfall and harsh climate promote the growth of xeric, salt tolerant species over most of the area, interspersed with scattered oases where shallow sub-surface water allows marshland vegetation to occur. The sparse vegetation in the general project area includes Rabbitbrush, (*Chrysothamnus spp.*), Sagebrush (*Artemisia spp.*), Greasewood (*Sarcobatus vermiculatus*), Mormon Tea (*Ephedra viridis*), Four-Wing Saltbush (*Atriplex canescens*), and a variety of alkali resistant grasses and sedges (cf. *Distichlis spicatus*, *Sporobolus airoides*, *Scirpus maritimus*, *Bromus tectorum* and *Carex rostrata*).

The geological associations within the project area consist of Quaternary fluvial and lake deposits which correlate with the post-Pleistocene recession of Lake Bonneville.

PREVIOUS RESEARCH IN THE LOCALITY

File Search

A records search of the site files and maps at the Antiquities Section of the State Historic Preservation Office in Salt Lake City was conducted on June 6, 1996. A similar search was conducted in the Fillmore BLM Office on that date. The National Register of Historic Places has been consulted and no registered historic or prehistoric properties will be affected by the proposed development.

Two archaeological inventories have been conducted in the immediate vicinity of this present project area. These projects include a seismic line examined in 1994 (94-409bs) and a parcel survey conducted in 1987. The seismic line was situated in the NW quadrant of Section 22; the parcel survey was in the NW quarter of Section 21. Both projects reported negative results.

Known cultural sites are situated in the Snake Valley locality. During the years, various prehistoric resources in the Gandy locality (cf., 42MD 66 and 42MD 68) have been identified and recorded by archaeologists conducting surface evaluations in this valley. Ms. Nancy Shearin, the Area Archaeologist has conducted surface evaluations within the vicinity of this present project (Shearin 1992a 1992b, 1993, 1994a, 1994b). Site 42MD 1129, a significant resource, was recently recorded by that archaeologist (Shearin 1994a). In addition, Kristopher Corambelas with Desert West Research, Inc. has recently evaluated seismic line corridors which pass through the Gandy locality (Corambelas 1994a and 1994b). Corambelas documented two ineligible sites (42MD 1167 and 1168) during his inventories in this general locality. AERC's evaluations in this locality since 1994 have resulted in the identification and recording of a series of significant prehistoric sites including 42MD 1180 through 42MD 1184 (Hauck 1995c).

Prehistory and History of the Cultural Region

Currently available information indicates that the Great Basin Cultural Area has been occupied by a variety of cultures beginning perhaps as early as 10,000 B.C. These cultures, as identified by their material remains, demonstrate a cultural developmental process that begins with the earliest identified Paleoindian peoples (10,000 -- 7,000 B.C.) and extends through the Archaic (ca. 7,000 B.C. -- A.D. 300), and Formative (ca. A.D. 400 -- 1100) Stages, and the Late Prehistoric-Protohistoric periods (ca. A.D. 1200 -- 1850) to conclude in the Historic-Modern period which was initiated with the incursion of the Euro-American trappers, explorers, and settlers. Basically, each cultural stage -- with the possible exception of the Late Prehistoric hunting and gathering Shoshonean bands -- features a more complex life-way and social order than occurred during the earlier stage of development (cf., Jennings 1978, 1980). For a more definitive outline of the area's pre-history see Prehistory of Southeastern Nevada (Fowler et. al. 1973)

Site Potential in the Project Development Zone

Previous archaeological evaluations in the general project area have resulted in the identification and recording of cultural resource sites having eligibility for potential nomination to the National Register of Historic Places (NRHP). These sites include occupations sometimes containing ceramic scatters, and lithic scatters containing reduction materials.

FIELD EVALUATIONS

Methodology

The intensive evaluation of the access routes and two ten acre parcels consisted of the archaeologists walking a series of 15 - 20 meter transects on each side of the right-of-way center line and within the ten acre parcels. Thus, a 30 to 35 meter-wide or 100 foot-wide corridor (ca. 12 acres) was examined for the total ca. two mile length of the proposed access routes.

Observation of cultural materials results in intensive examinations to determine the nature of the resource (isolate or activity locus). The analysis of each specific cultural site results in its subsequently being sketched, photographed, and appropriately recorded on standard IMACS forms. Cultural sites are then evaluated for significance utilizing the standards described below and mitigation recommendations are considered as a means of preserving significant resources which may be situated within the development zone.

Site Significance Criteria

Prehistoric and historic cultural sites which can be considered as eligible for nomination to the National Register of Historic Places have been outlined as follows in the National Register's Criteria for Evaluation as established in Title 36 CFR 60.6:

The quality of significance in American ... archaeology ... and culture is present in ... sites ... that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- a. That are associated with events that have made a significant contribution to the broad patterns of our history; or*
- b. that are associated with the lives of persons significant in our past; or*
- c. that embody the distinctive characteristics of a type, period, or method of construction ... ; or*
- d. that have yielded, or may be likely to yield, information important in prehistory or history.*

In addition to satisfying one or more of these general conditions, a significant cultural resource site in Utah will generally be considered as being eligible for inclusion in the National Register if it should advance our current state of knowledge relating to chronology, cultural relationships, origins, and cultural life ways of prehistoric or historic groups in the area.

In a final review of any site's cultural significance, the site must possess integrity and at least one of the above criteria to be considered eligible for nomination to the National Record of Historic Places.

Results of the Inventory

No prehistoric cultural resource activity loci were observed or recorded during the archaeological evaluations.

No previously recorded sites are located within the proposed development zone.

No isolated diagnostic artifacts were recorded or collected during the evaluation. One obsidian secondary flake was observed on the access route in Section 21. A careful search of the immediate vicinity failed to produce any other indicators of an activity locus. AERC considers three or more fragments of debitage as indicators of a cultural activity site.

No paleontological loci were observed or recorded during the evaluation.

CONCLUSION AND RECOMMENDATIONS

No known significant cultural or paleontological resources will be adversely impacted during the development and operation of the Equitable Resources Energy Company's Mamba Federal Units No. 43-22 and 31-22 as evaluated during this project.

AERC recommends that a cultural resource clearance be granted to Equitable Resources Energy Company relative to the proposed development of these well pads and access corridors based upon adherence to the following stipulations:

1. All vehicular traffic, personnel movement, construction and restoration operations should be confined to the flagged areas and corridors examined as referenced in this report, and to the existing roadways.
2. All personnel should refrain from collecting artifacts and from disturbing any significant cultural resources in the area.
3. The authorized official should be consulted should cultural remains from subsurface deposits be exposed during construction work or if the need arises to relocate or otherwise alter the location of the development area.



F. Richard Hauck, Ph.D.
President and Principal
Investigator

REFERENCES

Corambelas, Kristopher

1994a "Class III Cultural and Paleontological Inventory for the Balcron 2-D Seismic Line in Millard County, Utah." Report prepared for Balcron Oil Division by Desert West Research, Inc. Salt Lake City.

1994b "Class III Cultural and Paleontological Inventory for the Snake Valley 2-D Seismic Line in Millard County, Utah." Report prepared for Balcron Oil Division by Desert West Research, Inc. Salt Lake City.

Dice, L.R.

1943 The Biotic Provinces of North America. University of Michigan Press, Ann Arbor.

Fowler, D. D., D. B. Madsen and E. M. Hattori

1973 "Prehistory of Southeastern Nevada." Desert Research Institute Publications in the Social Sciences No. 6, Reno.

Grayson, D.K.

1993 The Desert's Past: A Natural Prehistory of the Great Basin. Smithsonian Institution Press, Washington.

Hauck, F.R.

1994a Cultural Resource Evaluation of Proposed Cobra State Unit No. 1 in the Snake Valley Locality of Millard County, Utah. Report prepared for Balcron Oil Division. (BLCR-94-8A) Archaeological-Environmental Research Corporation, Bountiful. (Ut-94-AF-599bs)

1994b *Addendum to* Cultural Resource Evaluation of Proposed Cobra State Unit No. 1 in the Snake Valley Locality of Millard County, Utah. Report prepared for Balcron Oil Division. (BLCR-94-8B) Archaeological-Environmental Research Corporation, Bountiful. (Ut-94-AF-599bs)

1994c Cultural Resource Evaluation of Proposed Asp Federal Unit No. 1 and Associated Access Route in the Snake Valley Locality of Millard County, Utah. Report prepared for Balcron Oil Division. (BLCR-94-8B) Archaeological-Environmental Research Corporation, Bountiful. (Ut-94-AF-599bs)

- 1995a Cultural Resource Evaluation of Proposed Cobra State Unit No. 12-36 and Associated Access Route in the Snake Valley Locality of Millard County, Utah. Report prepared for Balcron Oil Division. (BLCR-95-4) Archaeological-Environmental Research Corporation, Bountiful. (Ut-95-AF-107bs)
- 1995b Cultural Resource Evaluation of Proposed Cobra Federal Unit No. 42-35 and Associated Access Route in the Snake Valley Locality of Millard County, Utah. Report prepared for Balcron Oil Division. (BLCR-95-6) Archaeological-Environmental Research Corporation, Bountiful. (Ut-95-AF-559b)
- 1995c Site Reports and associated documentation for 42MD 1180 through 42MD 1184. (BLCR-94-8) Archaeological-Environmental Research Corporation, Bountiful. (Ut-94-AF-599bs)

Jennings, Jesse D.

- 1957 "Danger Cave." University of Utah Anthropological Papers, No. 27, University of Utah Press, Salt Lake City.
- 1978 "Prehistory of Utah and the Eastern Great Basin." University of Utah Anthropological Papers, No. 98, University of Utah Press, Salt Lake City.

Shearin, Nancy

- 1992a "Bureau of Land Management Report on the Moriah Pipeline in Millard County, Utah (U92-BL-278b)." Warm Springs Resource Area Office, Fillmore.
- 1992b "Bureau of Land Management Report on the Gandy Fence in Millard County, Utah (U92-BL-388b)." Warm Springs Resource Area Office, Fillmore.
- 1993 "Bureau of Land Management Report on the Gandy Middle Road in Millard County, Utah (U93-BL-096b)." Warm Springs Resource Area Office, Fillmore.
- 1994a "Bureau of Land Management Report on the Wild Horse Corrals in Millard County, Utah (U94-BL-246b)." Warm Springs Resource Area Office, Fillmore.
- 1994b "Bureau of Land Management Report on the Gandy Marsh Fences in Millard County, Utah (U94-BL-630b)." Warm Springs Resource Area Office, Fillmore.

Smith, Shelley J.

- 1994 "Fremont Subsistence Practices in Skull Valley, Northern Utah." Paper presented at the 24th Great Basin Anthropological Conference, Elko. (Manuscript on file.)

U.S.
 Department of the Interior
 Bureau of Land Management
 Utah State Office
 (AERC FORMAT)

Project
 Authorization U.9.6.A.F.3.0.2.b..
 Report Acceptable Yes ___ No ___
 Mitigation Acceptable Yes ___ No ___
 Comments: _____

Summary Report of
 Inspection for Cultural Resources

FEDERAL UNITS 43 - 22 & 31 - 22
 SNAKE VALLEY

1. Report Title

Equitable Resources Energy Co. (BLCR-96-4)

2. Development Company

3. Report Date 6 6 1996
 4. Antiquities Permit No. UT-96-54937

5. Responsible Institution AERC BLCR 96 - 1 Millard
 County

6. Fieldwork Location: 16 S 19 W 21 22
 TWN RNG Section. . . | . . . | . . . | . . . |

7. Resource Area .WS.
 TWN RNG Section. . . | . . . | . . . | . . . |

8. Description of Examination Procedures: The archeologists, F.R. Hauck & Glade Hadden intensively examined the proposed access routes for the proposed well locations by walking a series of 10 to 15 meter-wide transects within the flagged corridors and within the two ten acre pad sites.

9. Linear Miles Surveyed 2
 and/or
 Definable Acres Surveyed
 and/or
 Legally Undefinable 32
 Acres Surveyed
 10. Inventory Type I
 R = Reconnaissance
 I = Intensive
 S = Statistical Sample

11. Description of Findings: No archaeological sites were identified and recorded during the inventory associated with these roadway corridors & well sites.
 12. Number Sites Found .0. (No sites = 0)
 13. Collection: .N.
 (Y = Yes, N = No)

14. Actual/Potential National Register Properties Affected:
 The National Register of Historic Places (NRHP) has been consulted and no registered properties will be affected by the proposed development.

15. Literature Search, Location/ Date: Utah SHPO 6-6-96 Fillmore BLM 06-6-96

16. Conclusion/ Recommendations:

AERC recommends that a cultural resource clearance be granted to Equitable Resources Energy Company for this proposed development based on the following stipulations:

1. all vehicular traffic, personnel movement, construction and restoration operations should be confined to the flagged areas and corridors examined as referenced in this report, and to the existing roadways;
2. all personnel should refrain from collecting artifacts and from disturbing any significant cultural resources in the area; and
3. the authorized official should be consulted should cultural remains from subsurface deposits be exposed during construction work or if the need arises to relocate or otherwise alter the location of the exploration area.

17. Signature of Administrator & Field Supervisor
Administrator:

UT 8100-3 (2/85)

Field
Supervisor:



WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 07/09/96

API NO. ASSIGNED: 43-027-30038

WELL NAME: MAMBA FEDERAL 31-22
 OPERATOR: EQUITABLE RESOURCES (N9890)

PROPOSED LOCATION:
 NWN 22 - T16S - R19W
 SURFACE: 0800-FNL-1800-FEL
 BOTTOM: 0800-FNL-1800-FEL
 MILLARD COUNTY
 WILDCAT FIELD (001)

INSPECT LOCATION BY: / /		
TECH REVIEW	Initials	Date
Engineering		
Geology		
Surface		

LEASE TYPE: FED
 LEASE NUMBER: UTU - 69960

PROPOSED PRODUCING FORMATION: PALEO

RECEIVED AND/OR REVIEWED:

Plat

Bond: Federal [State [] Fee []
 (Number 5547188)

Potash (Y/N)

Oil shale (Y/N)

Water permit
 (Number GERALD C. BATES)

RDCC Review (Y/N)
 (Date: _____)

LOCATION AND SITING:

___ R649-2-3. Unit: _____

R649-3-2. General.

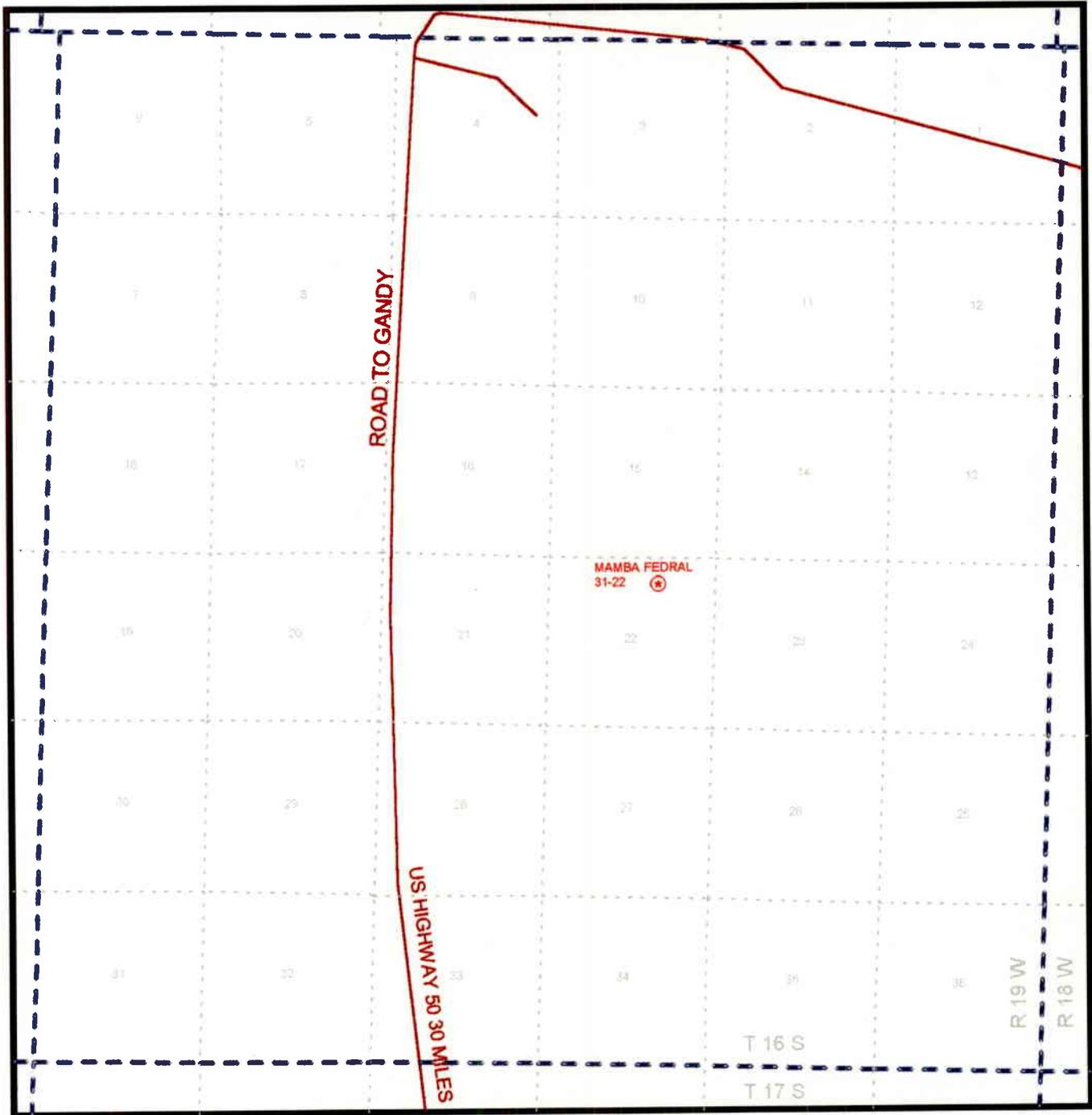
___ R649-3-3. Exception.

___ Drilling Unit.
 Board Cause no: _____
 Date: _____

COMMENTS: _____

STIPULATIONS: _____

EQUITABLE RESOURCES
WILDCAT EXPLORATION
SEC. 22, T16S, R19W
MILLARD COUNTY, UAC R649-3-3



PREPARED:
DATE: 10-JULY-96

UNITED STATES
 DEPARTMENT OF THE INTERIOR
 BUREAU OF LAND MANAGEMENT

CONFIDENTIAL
 (Other instructions on reverse side)

EXPIRES AUGUST 31, 1996
 Expires August 31, 1996

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

4. LEASE DESIGNATION AND SERIAL NO.
 UTU-69960

5. IF INDIAN, ALLOTTEE OR TRIBE NAME
 n/a

6. UNIT AGREEMENT NAME
 n/a

7. FARM OR LEASE NAME
 Mamba Federal

8. WELL NO.
 #31-22

9. FIELD AND POOL, OR WILDCAT
 Wildcat/Paleozoic

10. SEC. T. R. M. OR BLM. AND SURVEY OR AREA
 Sec. 22, T16S, R19W

11. COUNTY OR PARISH 12. STATE
 Millard UTAH

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
 Equitable Resources Energy Company

3. ADDRESS OF OPERATOR
 1601 Lewis Avenue; Billings, MT 59102 (406) 259-7860

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)
 At surface NW NE Section 22, T16S, R19W
 800' FNL, 1800' FEL
 At proposed prod. zone

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE
 Approximately 1.5 miles from Warm Creek Ranch

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

16. NO. OF ACRES IN LEASE

17. NO. OF ACRES ASSIGNED TO THIS WELL

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

19. PROPOSED DEPTH
 5,000'

20. ROTARY OR CABLE TOOLS
 Rotary

21. ELEVATIONS (Show whether DF, ET, CR, etc.)
 4837' GL

22. APPROX. DATE WORK WILL START
 June 30, 1996

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
See attached Drilling Program/Casing Design				

Operator intends to drill this well in accordance with the attached EXHIBITS. A listing of EXHIBITS is also attached.

SELF CERTIFICATION: I hereby certify that I am authorized, by proper lease interest owner, to conduct these operations associated with the application. Bond coverage pursuant to 43 CFR 3104 for lease activities is being provided by Equitable Resources Energy Company as principal and Safeco Insurance Company of America as surety under BLM Bond No. MT 0576 (Nationwide Oil & Gas Bond #5547188) who will be responsible for compliance with all of the terms and conditions of that portion of the lease associated with this application.

ORIGINAL: Bureau of Land Management (Richfield, UT)
 COPY: Bureau of Land Management (Fillmore, UT)
 COPY: Utah Division of Oil, Gas and Mining

RICHFIELD FIELD OFFICE

OFFICE MGR	INT ACT INFO	WIRE AVIATION	INT ACT INFO
RESOURCES		REG ADVISOR	
REPORT SER		PLAN ADVISOR	

JUL 15 1996

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.

SIGNED Mouy Conrad
 (This space for use of State when used)

TITLE Operations DATE 7/13/96

APPROVAL DATE _____
 APPROVED BY Dave Henderson TITLE District Manager DATE August 23, 1996
 CONDITIONS OF APPROVAL, IF ANY: See Attached. Acting

*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

CONDITIONS OF APPROVAL

Company: Equitable Resources Energy Company
Well: Mamba Federal 31-22
Location: T. 16 S., R. 19 W., Section 22 NW $\frac{1}{4}$ NE $\frac{1}{4}$, SLM&B, Millard
County, Utah
Lease: UTU-69960

NOTICES:

1. Approval of this application does not warrant nor 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.
2. All lease and/or unit operations shall be conducted in such a manner that full compliance is made with applicable laws, regulations (43 CFR 3100, 3160, and 3180), lease/agreement terms, Onshore Oil and Gas Orders, and Notice to Lessee's, and this approved plan of operations.
3. The operator is fully responsible for the actions of any subcontractor.
4. A copy of the approved application and these conditions shall be maintained on location during all construction and drilling operations. Deviation from the approved plan without prior approval is not allowed.
5. Operators have the responsibility to assure that activities authorized by this permit are conducted in a manner that complies with other applicable Federal, State and local laws and regulations.
6. Be advised that Equitable Resources Energy Company is considered the operator of this well, Mamba Federal 31-22, in T. 16 S., R. 19 W., Section 22 NW $\frac{1}{4}$ NE $\frac{1}{4}$, SLB&M, Millard County, Utah, on Lease UTU-69960. Equitable Resources Energy Company is responsible for the operations conducted on the leased lands.
7. Bond coverage for this well is provided by BLM Bond No. MT0576 via surety consent as provided in 43 CFR 3104.2.
8. This office shall hold the aforementioned operator and bond liable until the provisions of 43 CFR 3106.7-2 are met.
9. This Application for Permit to Drill (APD) shall be valid for one year from the date of approval, provided the lease does not expire. If activities have not commenced by the end of the one-year period, the APD shall be returned to the operator without prejudice. Should the operator still desire to drill the well, a new APD must be submitted to this office. Upon written request by the operator, a one-time 90-day extension to this time period may be granted by the Authorized Officer.

Mamba 31-22, UTU-69960
Equitable Resources

10. If at any time, the facilities located on public lands, authorized by the terms of this lease, are no longer included in the lease (due to a contraction on the unit or other lease or unit boundary change) the BLM shall process a change in the authorization to the appropriate statute. The authorization shall be subject to appropriate rental or other financial obligation determined by the Authorized Officer.
11. Review and appeal rights are contained in 43 CFR 3165.5 and 3165.4. Contact the Richfield District Office, BLM, for further information.
12. Failure to comply with the provisions of this permit, including applicable regulations, stipulations, and/or conditions of approval shall be considered a violation subject to the enforcement provisions of 43 CFR 3163.

REQUIRED NOTIFICATIONS BY THE LESSEE/OPERATOR:

1. The operator shall notify the Richfield District Office, Bureau of Land Management, at least one week prior to commencement of construction.

Contact: Michael Jackson, Geologist
(801) 896-8221 Richfield District Office

The operator shall notify the Richfield District Office, Bureau of Land Management, at least forty-eight (48) hours prior to spudding including dry hole digger or rat hole rigs.

Contact: Michael Jackson as above

The operator must contact the Petroleum Engineering Technician (PET), Cedar City District Office, at least forty-eight (48) hours prior to the following operations:

- a. Pressure testing of BOPE or any casing string
- b. Running and cementing all casing strings
- c. Plugging operations

Contact: Theron Mitchell, PET
(801) 586-2401 Cedar City District Office
(801) 559-3038 Cellular phone
(801) 586-2719 Home

If cannot reach at above, call:
(801) 826-4291 Escalante Resource Area
(801) 826-4347 Residence

Mamba 31-22, UTU-69960
Equitable Resources

2. In the case of newly drilled dry holes and in any emergency situation, after hour authorization may be obtained by contacting the following individuals, in the order listed:

Michael Jackson
(801) 896-8221 Richfield District Office
(801) 896-9079 Home

Al McKee, Petroleum Engineer
(801) 539-4045 BLM Utah State Office
(801) 572-6911 Home

Robert Henricks, Branch Chief of Fluid Minerals
(801) 539-4041 BLM Utah State Office
(801) 484-2294 Home

DRILLING PLAN:

1. Submission and approval of a Hydrogen Sulfide Drilling Plan and Public Protection Plan would be required if the 100 ppm H₂S threshold of Onshore Order No. 6 is exceeded.
2. Usable quality water encountered at any depth shall be isolated and/or protected in accordance with Onshore Order No. 2. If the proposed well is not producible and usable water is encountered, then at the discretion of the Authorized Officer, the well shall be plugged by the operator from total depth (or bottom hole) to the depth of usable ground water and the well shall be administratively converted for use in the BLM's range or wildlife programs. The BLM will assume all costs and responsibilities for conversion of the water well beyond the costs normally incurred when plugging and abandoning a well.
3. Any prospectively valuable minerals shall be isolated and/or protected in accordance with Onshore Order No. 2.
4. An annular preventer shall be utilized and tested to 1500 psi. The ram preventers shall be tested to 70% of the internal yield of the surface casing ($3520 * 0.7 = 2464$, rounded to 2400 psi).
5. If the 7" production casing is run and cemented in place, an acoustical cement evaluation log (i. e., CET, CBL, or similar) shall be run to determine cement top and bond quality.
6. All DST operations shall be conducted in accordance with the provisions of Onshore Order No. 2, Section III, D.
7. The flare line shall be installed in accordance with Onshore Order No. 2, Drilling Operations, and shall extend to a flare pit.

Mamba 31-22, UTU-69960
Equitable Resources

8. No hexavalent chromate additives shall be used in the mud system in order to protect usable quality water aquifers.
9. Daily drilling and completion progress reports shall be submitted to the Richfield District Office (Attention: Michael Jackson), BLM, on a weekly basis.
10. Two copies of all logs and a single copy of core descriptions, core analyses, drill stem tests, well-test data, geologic summaries, sample descriptions, and all other surveys or data obtained and compiled during the drilling and/or completion operations shall be submitted to the Richfield District Office (Attention: Michael Jackson).
11. Gas produced from this well may not be vented or flared beyond an initial authorized test period of 30 days or 50 MMCF prior written approval of the Authorized Officer. Should gas be vented or flared without approval beyond the authorized test period the operator may be direct 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.
12. Operations authorized by the permit shall not be suspended for more than 30 days without prior approval of the Authorized Officer. All conditions of this approval shall be applicable during any operations conducted with a replacement rig.
13. 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 AO 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."
14. The date on which production is commenced or resumed shall be constructed 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 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, 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

Mamba 31-22, UTU-69960
Equitable Resources

\$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).

15. A Notice of Intent to Abandon and a Subsequent Report of Abandonment shall be submitted for abandonment approval if the well is a dry hole.

SURFACE USE PLAN:

1. When the fence at the Gandy Road is removed for installation of the cattleguard, the fence posts adjacent to the cattleguard shall be properly braced with three post braces on either side of the cattleguard to prevent sagging of the existing fence. Metal braces may be substituted for the post braces. No more fence shall be disturbed or removed than necessary to install the cattleguard.
2. Fences shall be constructed in accordance with the lessee's proposed standards. Fences shall be maintained in good repair during drilling operations and while the reserve pit is drying. Fences must remain in place until the reserve pit is completely dry and site restoration begins.
3. Any accumulations of hydrocarbons in the reserve pit shall be removed and recovered for sale, unless it is determined by the Authorized Officer to be waste oil. All waste oil shall be disposed of properly at approved facilities. The borehole shall not be used for disposal of any waste materials.
4. Produced hydrocarbons shall be put in test tanks on location during completion work. Disposal of these fluids shall be in accordance with Onshore Oil and Gas Order No. 7.
5. The lessee shall submit to the Authorized Officer a copy of the lessee's Conditional Use Permit with Millard County for access over county roads, prior to any construction activity.

The lessee shall submit to the Authorized Officer copies of the lessee's agreements with the rights of way holders for the telephone line and power line at the Gandy Road, prior to any construction activity.

6. If any existing access requires additional construction, upgrading or widening, then approval shall be obtained from the Authorized Officer prior to such work. Access roads and surface disturbing activities shall conform to the standards outlined in the Bureau of Land Management and Forest Service publication: Surface Operating Standards for Oil and Gas Exploration and Development, (1989). Riprap shall be required at the downstream end of any culverts.

Mamba 31-22, UTU-69960
Equitable Resources

7. The lessee shall submit to the Authorized Officer appropriate written agreements and/or permits as necessary for the acquisition and use of water.
8. The reserve pit and any portion of the location and access road not needed for production or production facilities shall be reclaimed as approved by the Authorized Officer. The stockpiled topsoil shall be applied in proportion to the area being reclaimed.
9. If gravel is used in the construction of the access road or well pad, then such gravel shall be removed from the site and disposed at an approved location, unless otherwise approved by the Authorized Officer. If the quantity of gravel used can be ripped and blended with native materials and not adversely affect recontouring to natural contours and revegetation of the site, then authorization to leave the gravel may be granted.
10. Areas that have been compacted due to operations will be ripped to a depth of approximately 6 inches.
11. Site reclamation shall include contouring the location to reestablishing natural contours and natural drainages. After contouring the stockpiled topsoil will be evenly redistributed and then seeded. Spreading of the topsoil would not occur during wet periods to avoid compaction. Disturbed areas, including access roads, will be scarified to a depth of at least 1 inch immediately prior to seeding. Reclaimed areas shall not be recontoured to a smooth condition, but left in a slightly roughened condition to collect precipitation and to promote seed germination. The following seed mixture will be drilled at the application rate below:

Common Name	Scientific Name	Rate (lbs/acre)
Hycrest crested wheatgrass	<u>Agropyron desertorum</u>	4
Pubescent wheatgrass	<u>Agropyron trichophorum</u>	1
Russian wildrye	<u>Elymus iunceus</u>	3
Fourwing saltbrush	<u>Atriplex canescens</u>	1
Yellow sweetclover	<u>Melilotus officinales</u>	2
Winterfat	<u>Ceratoides lanata</u>	2
Tall wheatgrass	<u>Thinopyrum ponticum</u>	1
	TOTAL	14

The seed shall be certified, pure live seed, and seed tags must be available if requested by the Authorized Officer. No noxious weeds shall be in the seed mixture. Fertilizers shall not be applied to reclaimed lands unless recommended by a professional agronomist and will not be applied within 100 feet of any drainage.

Mamba 91-22, UTU-69960
Equitable Resources

Seeding shall be accomplished by drilling. Drill row spacing shall be 7 to 12 inches and the depth calibrated for between $\frac{1}{2}$ and 1 inches. Drilling shall be parallel to contour as much as possible.

Seeding shall be done in the fall unless conditions are not conducive to such action. Seeding shall be repeated until native vegetation attains 50% of the surrounding undisturbed cover, as determined by a method acceptable to the Authorized Officer.

12. When the cattleguard at the Gandy Road is removed, the fence posts on either side of the cattleguard shall remain braced, and the same type of wire and the same wire spacing as in the original fence shall be used in the reconstruction of the fence.
13. If cement is used to brace the corner posts on the fence around the reserve pit, these cement deadmen shall be removed from the ground when the fence is dismantled. The cement deadmen shall be disposed at an authorized facility or buried in the reserve pit. Fence wire and posts shall be removed from the reclaimed site and disposed at an approved facility.
14. If the well is producible, then an additional drilling plan and surface use plan shall be submitted to the Authorized Officer for approval prior to any additional work.
15. If any Special Status plant species that may be affected or disturbed are discovered during construction or the duration of the project, then all activities that could affect this resource will cease and notification will be made to the plant T&E specialist in the resource area.
16. The operator is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic archaeological sites or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials and contact the Authorized Officer. Within five (5) working days, the Authorized Officer will inform the operator as to:
 - whether the materials appear to be eligible for the National Register of Historic Places,
 - the mitigation measures the operator will likely have to undertake before the site can be used, assuming in situ preservation is not necessary, and
 - a time frame for the Authorized Officer to complete an expedited review under 36 CFR § 800.11 to confirm, through the State Historic Preservation Officer, and the advisory council on historic preservation, that the findings of the Authorized Officer are correct and that mitigation is appropriate.

Mamba 31-22, UTU-69960
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If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the Authorized Officer will assume responsibility for whatever recordation and stabilization of the exposed materials that may be required. Otherwise, the operator will be responsible for mitigation costs. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, the operator will then be allowed to resume construction.



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)

September 25, 1996

Equitable Resources Energy
1601 Lewis Avenue
Billings, Montana 59102

Re: Mamba Federal 31-22 Well, 800' FNL, 1800' FEL, NW NE,
Sec. 22, T. 16 S., R. 19 W., Millard County, Utah

Gentlemen:

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

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-027-30038.

Sincerely,


for R. J. Firth
Associate Director

lwp

Enclosures

cc: Millard County Assessor
Bureau of Land Management, Richfield District Office



Operator: Equitable Resources Energy Company
Well Name & Number: Mamba Federal 31-22
API Number: 43-027-30038
Lease: UTU-69960
Location: NW NE Sec. 22 T. 16 S. R. 19 W.

Conditions of Approval

1. General

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

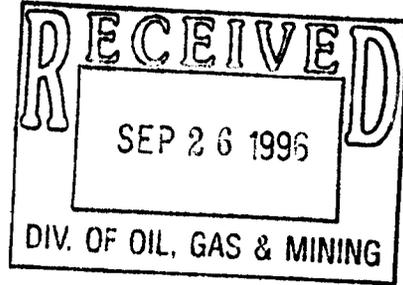
2. Notification Requirements

Notify the Division within 24 hours following spudding the well or commencing drilling operations. Contact Jimmie Thompson at (801)538-5336.

Notify the Division prior to commencing operations to plug and abandon the well. Contact Frank Matthews at (801)538-5334 or Mike Hebertson at (801)538-5333.

3. Reporting Requirements

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



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

SUBMIT IN TRIPLICATE

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other	5. Lease Designation and Serial No. UTU-69960
2. Name of Operator Equitable Resources Energy Company	6. If Indian, Allottee or Tribe Name n/a
3. Address and Telephone No. 1601 Lewis Avenue; Billings, MT 59102 (406) 259-7860	7. If Unit or CA, Agreement Designation n/a
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) NW NE Section 22, T16S, R19W 800' FNL, 1800' FEL	8. Well Name and No. Mamba Federal #31-22
	9. API Well No. 43-027-30038
	10. Field and Pool, or Exploratory Area Wildcat/Paleozoic
	11. County or Parish, State Millard County, UTAH

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

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input 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>drilling water source</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.)*

Operator intends to use water from Warm Creek in drilling this well. A copy of the Certificate of Appropriation of Water is attached.

ORIGINAL: Bureau of Land Management (Richfield, UT)
COPY: Utah Division of Oil, Gas and Mining

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

Signed: Bobbie Schuman Title: Regulatory and Environmental Specialist Date: September 23, 1996

(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

(DUPLICATE)

CERTIFICATE OF APPROPRIATION OF WATER

STATE OF UTAH TITLE CHANGE

APPLICATION NO. 3490

2-4-70

CERTIFICATE NO. 1480

SEVIER RIVER

WATER DIVISION

Cecil R. Bates, Geny, etc

Whereas, It has been made to appear to the satisfaction of the undersigned, State Engineer of the State of Utah, that the appropriation of water from Warm Creek in Millard County, made by Charles A. Phillips has been perfected in accordance with the application therefor, received in the office of the State Engineer on the 6 day of September 1910, and recorded on page 418 in book I-10 of the record of applications to appropriate water; Wherefore, Be it known that I, Geo. K. Bacon, State Engineer of the State of Utah, under and by authority and direction of the provisions of the Compiled Laws of Utah, 1907, as amended by Chapter 62 of the Session Laws of Utah, 1909, on "Water Rights and Irrigation," do hereby certify that the said Charles A. Phillips of Chicago in Cook County, State of Illinois, is entitled to the use of 1.5 cubic feet of water per second, subject to the following restrictions, to-wit:

The water to be diverted from Warm Creek at a point 1320 ft. E. and 415 ft. S. of the NW Cor. Sec. 4, T. 16 S., R. 19 W., S.L.B.& M. The diverting works consist of a wooden and earthen dam and an earthen ditch, known as the Phillips Ditch being 4760 ft. long, 4 ft. wide on top, 2 ft. wide in the bottom and having an effective depth of 1 1/4 ft. The water is to be used from March 1st to October 15th of each year to irrigate 120 acres of land embraced in SE 1/4 SE 1/4 Sec. 4, NE 1/4 NE 1/4 Sec. 9, NW 1/4 NW 1/4 Sec. 10, T. 16 S., R. 19 W., S.L.B.& M. and more particularly described as follows: Beg. NE cor. SE 1/4 SE 1/4 Sec. 4, T. 16 S., R. 19 W., thence S. 620 ft., S. 960 ft., E. 290 ft., S. 360 ft., E. 330 ft., N. 1320 ft. to place of beginning containing 16 acres, also begin 620 ft. W. NE cor. SE 1/4 SE 1/4 said Sec. 4, T. 16 S., R. 19 W.; thence W. 469 ft., S. 1320 ft., E. 759 ft., N. 360 ft., W. 290 ft., N. 960 ft. to place of beginning containing 17 acres, also begin NW cor. SE 1/4 SE 1/4 said Sec. 4, T. 16 S., R. 19 W., thence S. 1320 ft. E. 231 ft., N. 1320 ft., W. 231 ft. to place of beg. containing 7 acres, also beg. NW cor. NE 1/4 NE 1/4 said Sec. 9, T. 16 S., R. 19 W., thence S. 330 ft., E. 594 ft., N. 330 ft., W. 594 ft. to place of beginning containing 4.5 acres, also beg. NE cor. NE 1/4 said Sec. 9, T. 16 S., R. 19 W., thence W. 726 ft., S. 330 ft., W. 594 ft., S. 361 ft., E. 1320 ft., N. 691 ft., to place of beginning containing 18 acres., also begin SE cor. NE 1/4 NE 1/4 said Sec. 9, T. 16 S., R. 19 W., thence N. 629 ft., W. 1320 ft., S. 629 ft., E. 1320 ft., to place of beginning containing 17.5 acres, also beg. NW cor. NW 1/4 NW 1/4 said Sec. 10, T. 16 S., R. 19 W., thence S. 300 ft., E. 590 ft., N. 300 ft., W. 590 ft., to place of beginning containing 4 acres, also beg. NE cor. NW 1/4 NW 1/4 said Sec. 10, T. 16 S., R. 19 W., thence W. 730 ft., S. 300 ft., W. 590 ft., S. 1020 ft., E. 1320 ft., N. 1320 ft., to place of beginning containing 36 acres.

This certificate does not entitle the holder to use to exceed 3 acre feet of water per acre of land irrigated per annum.

The diverting works must be maintained in such condition as will prevent an unreasonable loss of water.

The date of the appropriation is September 6 1910.

In witness whereof, I have hereunto set my hand and affixed the seal of my office this TENTH day

of AUGUST A. D. 1926.

MICROFILMED

Geo. K. Bacon
STATE ENGINEER

RECEIVED
6 PM
BOD OPERATIONS

T16 S R19 W

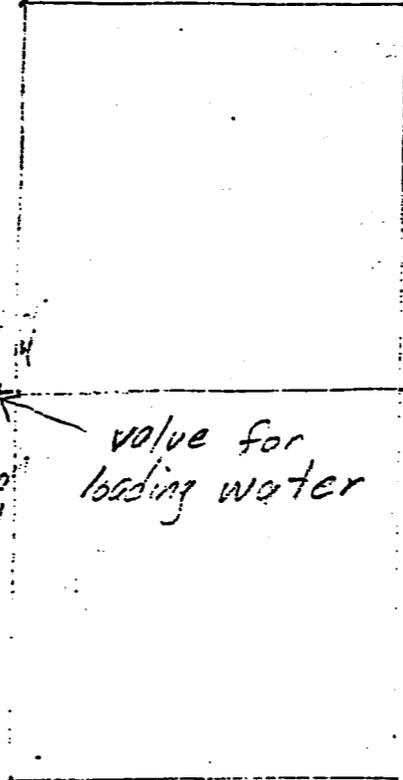
Pipe line

sec 5 | sec 4

section 8 | section 9

road

Gandy



valve for loading water

DIVISION OF OIL, GAS AND MINING

CONFIDENTIAL

SPUDDING INFORMATION

Name of Company: EQUITABLE RESOURCES ENERGY CO.

Well Name: MAMBA FEDERAL 31-22

Api No. 43-027-30038

Section 22 Township 16S Range 19W County MILLARD

Drilling Contractor UNION

Rig #: 17

SPUDDED:

Date: 10/2/96

Time: 1:00 AM

How: ROTARY

Drilling will commence: _____

Reported by: MOLLY CONRAD

Telephone #: _____

Date: 10/8/96 Signed: JLT

3270 ✓

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-69960

6. If Indian, Allottee or Tribe Name
n/a

7. If Unit or CA, Agreement Designation
n/a

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

Equitable Resources Energy Company

3. Address and Telephone No.

1601 Lewis Avenue; Billings, MT 59102 (406) 259-7860

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

**NW NE Section 22, T16S, R19W
800' FNL, 1800' FEL**

8. Well Name and No.

Mamba Federal #31-22

9. API Well No.

43-027-30038

10. Field and Pool, or Exploratory Area
Wildcat/Paleozoics

11. County or Parish, State

Millard County, 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

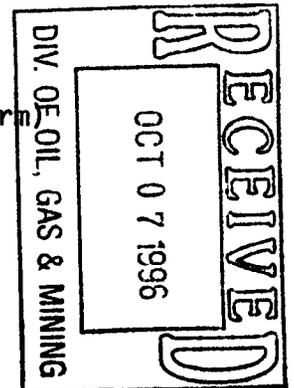
- Abandonment
 Recompletion
 Plugging Back
 Casing Repair
 Altering Casing
 Other spud notice
- Change of Plans
 New Construction
 Non-Routine Fracturing
 Water Shut-Off
 Conversion to Injection
 Dispose Water

(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.)*

This well was spud 10/2/96 at 1 a.m.

ORIGINAL: Bureau of Land Management (Fillmore, UT)
COPY: Utah Division of Oil, Gas, and Mining (with Entity Action form)



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

Signed

Bobbie Schuman
Bobbie Schuman
(This space for Federal or State office use)

Title

Regulatory and Environmental Specialist

Date

October 3, 1996

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.

*See instruction on Reverse Side

OPERATOR Equitable Resources Energy Company
 ADDRESS 1601 Lewis Avenue
Billings, MT 59102

OPERATOR ACCT. NO. N 9890

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	12011	43-027-30038	Mamba Federal #31-22	NWNE	22	16S	19W	Millard	10/2/96	10/2/96
WELL 1 COMMENTS: Spud of new well. <i>Entity added 10-9-96. Lee</i>											
WELL 2 COMMENTS:											
WELL 3 COMMENTS:											
WELL 4 COMMENTS:											
WELL 5 COMMENTS:											

RECEIVED
 OCT 07 1996
 DIV. OF OIL, GAS & MINING

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

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

(3/89)

DATE: October 3, 1996

Dobbie Schuman
 Signature
 Regulatory and
 Environmental Specialist

Phone No. (406) 259-7860

OPERATOR Equitable Resources Energy Company
 ADDRESS 1601 Lewis Avenue
Billings, MT 59102

OPERATOR ACCT. NO. N 9890

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
A			43-027-30038	Mamba Federal #31-22	NWNE	22	16S	19W	Millard	10/2/96	10/2/96
WELL 1 COMMENTS: Spud of new well.											
WELL 2 COMMENTS:											
WELL 3 COMMENTS:											
WELL 4 COMMENTS:											
WELL 5 COMMENTS:											

RECEIVED
 OCT 07 1996
 DIV. OF OIL, GAS & MINING

- ACTION CODES (See instructions on back of form)
- A - Establish new entity for new well (single well only)
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NOTE: Use COMMENT section to explain why each Action Code was selected.

(3/89)

DATE: October 3, 1996

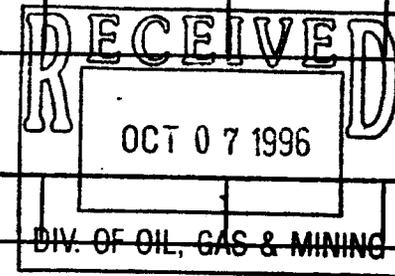
Robbie Schuman
 Signature
 Regulatory and
 Environmental Specialist

Phone No. (406) 259-7860

OPERATOR Equitable Resources Energy Company
 ADDRESS 1601 Lewis Avenue
Billings, MT 59102

OPERATOR ACCT. NO. N 9890

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
A			43-027-30038	Mamba Federal #31-22	NWNE	22	16S	19W	Millard	10/2/96	10/2/96
WELL 1 COMMENTS: Spud of new well.											
WELL 2 COMMENTS:											
WELL 3 COMMENTS:											
WELL 4 COMMENTS:											
WELL 5 COMMENTS:											



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

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

(3/89)

DATE: October 3, 1996

Robbie Schuman
 Signature
 Regulatory and
 Environmental Specialist
 Phone No. (406) 259-7860

REPORT OF WATER ENCOUNTERED DURING DRILLING

1. Well name and number: Mamba Federal #31-22

API number: 43-027-30038

2. Well Location: QQ MMNE Section 22 Township 16S Range 19W County Millard

3. Well operator: Equitable Resources Energy Company

Address: 1601 Lewis Avenue
Billings, MT 59102

Phone: (406) 259-7860

4. Drilling contractor: Union Drilling (Rig 17)

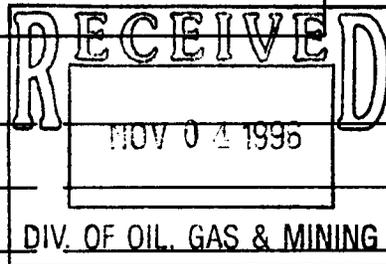
Address: Buckhannon, WV

Phone: _____

5. Water encountered (attach additional pages as needed):

DEPTH		VOLUME (FLOW RATE OR HEAD)	QUALITY (FRESH OR SALTY)
FROM	TO		
3197	3258	approx. 35 BPH	Fresh

6. Formation tops: Base of Valley Fill 2821'
Chainman Shale 2821'



If an analysis has been made of the water encountered, please attach a copy of the report to this form.

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

Date: October 31, 1996

Name & Signature: *Sobbie Schuman*

Title: Regulatory Specialist

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

5. Lease Designation and Serial No.
UTU-69960

6. If Indian, Allottee or Tribe Name
n/a

7. If Unit or CA, Agreement Designation
n/a

8. Well Name and No.
Mamba Fed. #31-22

9. API Well No.
43-027-30038

10. Field and Pool, or Exploratory Area
Wildcat/Paleozoic

11. County or Parish, State
Millard County, UT

SUNDRY NOTICES AND REPORTS ON WELLS

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

SUBMIT IN TRIPLICATE

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
Equitable REsources Energy Company

3. Address and Telephone No.
1601 Lewis Avenue, Billings, MT 59102 (406) 259-7860

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
NW NE Section 22, T16S, R19W
800' FNL & 1800' FEL

CONFIDENTIAL

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

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

(Note: Report results of multiple completion or Recompletion Report and Log for Completion or Recompletion Report and Log for)

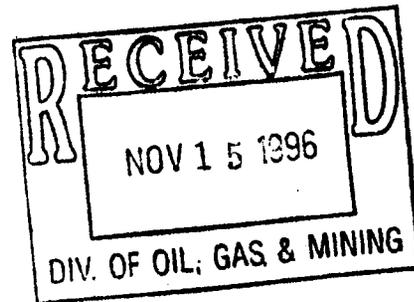
13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to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

This well was plugged and abandoned as follows:

Shot off casing at 1033'
 Plug #1 1082' - 982' (1/2 in csg stub, other 1/2 out) 30 sxs Class "G" cmt.
 Plug #2 655' - 555' (across base of surface csg) 50 sxs Class "G" cmt.
 Plug #3 Surface Plug 50 sxs Class "G" Cmt

This well was plugged and abandoned on 10/25/96.

Original: Bureau of Land Management (Richfield, UT)
 Copy: Bureau of Land Management (Fillmore, UT)
 Copy: State of UTah, Division of Oil, GAS, & Mining



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

Signed Molly Conrad Title Operations Secretary Date 11-12-96

(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.

Form 3160-4
(November 1983)
(formerly 9-580)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE

(Copy of this in-
formation on
reverse side)

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

3. LEASE DESIGNATION AND SERIAL NO.

UTU-69960

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

n/a

7. UNIT AGREEMENT NAME

n/a

8. FARM OR LEASE NAME

MAMBA FED. #31-22

9. WELL NO.

43-027-30038

10. FIELD AND POOL, OR WILDCAT

Wildcat/Paleozoic

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

NW NE Section 22, T16S, R19W

12. COUNTY OR
PARISH

Millard

13. STATE

Utah

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

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

b. TYPE OF COMPLETION: NEW WELL WORK OVER DRILL-
IN PLUG BACK DIFF. OTHER

2. NAME OF OPERATOR

EQUITABLE RESOURCES ENERGY COMPANY

3. ADDRESS OF OPERATOR

1601 LEWIS AVENUE BILLINGS, MT 59102 (406)259-7860

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

At surface 800' ENL & 1800' FEL

At top prod. interval reported below

At total depth

CONFIDENTIAL

14. PERMIT NO.

43-027-30038

DATE ISSUED

7-25-96

15. DATE SPUNDED

10-2-96

16. DATE T.D. REACHED

10-10-96

17. DATE COMPL. (Ready to prod.)

10-25-96 P & A

18. ELEVATIONS (DF, RMB, RT, GR, ETC.)*

4837 GL

19. ELEV. CASINGHEAD

n/a

20. TOTAL DEPTH, MD & TVD

3256'

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

3072'

22. IF MULTIPLE COMPL.,
HOW MANY*

n/a

23. INTERVALS
DRILLED BY

ROTARY TOOLS

SFC-TD

CABLE TOOLS

n/a

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

n/a

25. WAS DIRECTIONAL
SURVEY MADE

n/a

26. TYPE ELECTRIC AND OTHER LOGS RUN

BHS/GR

27. WAS WELL CORED

n/a

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

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8-5/8"	24#	162' KB	12-1/4"	160 x 8" G" w/ additives	NONE

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
n/a				

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKERS SET (MD)
n/a		

31. PREPARATION RECORD (Interval, size and number)

n/a

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
n/a	CONFIDENTIAL PERIOD EXPIRED ON 7-17-98

33. PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)					
P & A	n/a	P & A					
DATE OF TEST	HOURS TESTED	CHOKED SIZE	PROD'N. FOR TEST PERIOD	OIL—BSL.	GAS—MCF.	WATER—BSL.	GAS-OIL RATIO
n/a	n/a	n/a		n/a	n/a	n/a	n/a
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BSL.	GAS—MCF.	WATER—BSL.	OIL GRAVITY-API (CORR.)	
n/a	n/a		n/a	n/a	n/a	n/a	

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

n/a

TEST WITNESSED BY

35. LIST OF ATTACHMENTS

NONE

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

SIGNED

Bobbie Schuman

TITLE Regulatory Specialist

DATE 1-30-97

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

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

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

2. NAME OF OPERATOR
EQUITABLE RESOURCES ENERGY COMPANY

3. ADDRESS OF OPERATOR
1601 LEWIS AVENUE BILLINGS, MT 59102 (406)259-7860

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
 At surface 800' ENL & 1800' FEL
 At top prod. interval reported below
 At total depth

14. PERMIT NO. 43-027-30038 DATE ISSUED 7-25-96

5. LEASE DESIGNATION AND SERIAL NO.
UTU-69960

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
n/a

7. UNIT AGREEMENT NAME
n/a

8. FARM OR LEASE NAME
MAMBA FED. #31-22

9. WELL NO.
43-027-30038

10. FIELD AND POOL, OR WILDCAT
Wildcat/Paleozoic

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
NW NE Section 22, T16S, R19W

12. COUNTY OR PARISH
Millard 13. STATE
Utah

15. DATE SPUDDED 10-2-96 16. DATE T.D. REACHED 10-10-96 17. DATE COMPL. (Ready to prod.) 10-25-96 P & A 18. ELEVATIONS (DF, RKB, RT, OR, ETC.)* 4837 GL 4852' KB 19. ELEV. CASINGHEAD n/a

20. TOTAL DEPTH, MD & TVD 3256' 21. PLUG, BACK T.D., MD & TVD 3072' 22. IF MULTIPLE COMPL., HOW MANY* n/a 23. INTERVALS DRILLED BY → SFC-TD 25. WAS DIRECTIONAL SURVEY MADE n/a

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)* n/a 26. TYPE ELECTRIC AND OTHER LOGS RUN BHC/GR MUD LOG, CBL, NEUTRON GRZ COLLARS 10-28-96 27. WAS WELL CORED n/a

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

CASINO SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8-5/8"	24#	162' KB	12-1/4"	160 sxs "G" w/ additives	NONE

29. LINER RECORD					30. TUBING RECORD		
SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
n/a					n/a		

31. PERFORATION RECORD (Interval, size and number) n/a

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.	
DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
n/a	

33.* PRODUCTION

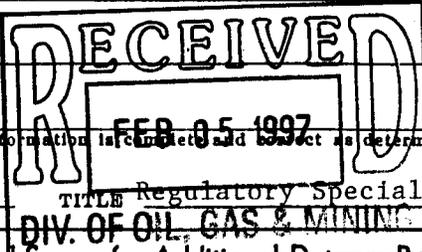
DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)					
P & A	n/a	P & A					
DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
n/a	n/a	n/a	→	n/a	n/a	n/a	n/a
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)	
n/a	n/a	→	n/a	n/a	n/e	n/a	

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

35. LIST OF ATTACHMENTS
NONE

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

SIGNED *Bobbie Schuman* TITLE Regulatory Specialist DATE 1-30-97



*(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):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
Valley Fill Mississ. Chainman	Surface 2820'	2820' TD	<p>CORES: Interval 3240'-3245', Then core barrel dropped to 3258' Recovered 4.5' @ 15 mpf drill rate</p> <p>SHOWS: No shows during coring Gas detected while drilling Miss. Chainman formation.</p>

38.

GEOLOGIC MARKERS

NAME	TOP	
	MEAS. DEPTH	TRUE VERT. DEPTH
	<p>3240' 3245' 3258'</p>	

EREC, Western Region
DAILY OPERATING REPORT

MAMBA FEDERAL #31-22

Location: NW NE Section 22 T16S, R19W

Millard County, Utah

---TIGHT HOLE---

800' FNL, 1800' FEL

PTD: 5000 ft Formation: Paleozoic

Wildcat

Elevations: 4837 ft GL

Contractor: Union Drilling

Operator: EREC Western Region

Spud: 10-1-96 @ 10:30 p.m.

**Casing: 9-5/8", 36#, J-55 STC csg
7", L-80 LTC @ 3075'**

Tubing: n/a

10/02/96 TD: 162' (162') Day 1
Formation: Valley Fill
Present Operation: Drilling
MIRU Union Drilling Rig #17. Weld flowline onto conductor pipe. Spud 12-1/4" surface hole @ 1:00 AM 10/02/96. Drill to 162' KB. No costs available, will update tomorrow.

10/02/96 TD: 220' (165') Day 1
(Revised) MW 8.6 VIS 39
Formation: Surface
Present Operation: Drilling
MIRU Union Rig #17. NU conductor pipe & rotating head. Spud well @ 10:30 P.M., 10/1/96. Drilled to 102'. Circulated & mudded up. Drill to 220'.
DC: \$79,610 CC: \$79,610

10/03/96 TD: 605' (385') Day 2
MW 8.6 VIS 40
Present Operation: Nippling up
Drill. Run survey @ 300' - 1/4". Drill. Rig repair. Drill. Short trip @ 581'. Drill to 605'. Circulate. Run survey @ 605' - 1/4". TOOH, rigged up and ran 17 jts @ 605.35' of 9-5/8", 36#, J-55, STC csg. Cemented w/ 100 sxs of lite w/2% CaCl₂ + 1/4# per sx Flocele & 150 sxs of Premium w/2% CaCl₂ + 1/4# per sx Flocele. Plug down @ 8:00 P.M. w/good returns. WOC. Cut off csg & welded on head. Tested well head to 1200 psi. NU BOP stack.
DC: \$22,449 CC: \$102,059

EREC, Western Region

DAILY OPERATING REPORT

MAMBA FEDERAL #31-22

Location: NW NE Section 22 T16S, R19W

Millard County, Utah

---TIGHT HOLE---

- 10/04/96 TD: 1100' (495') Day 3
MW 8.9 VIS 27
Formation: Valley Fill
Present Operation: Drilling
Finish nipping up BOPs. Test pipe & blind rams, choke manifold, kelly cock, and all lines & valves to 3000 psi, OK. Test hydril to 1500 psi, OK. Test csg to 2000 psi, OK. TIH, work on pump. Drill cement. Condition mud. Drill. Rig service. Drill.
DC: \$12,731 CC: \$114,790
- 10/05/96 TD: 2070' (970') Day 4
MW 9.1 VIS 33 pH 9
Present Operation: Circulate & Condition hole for survey
Drill. Run survey @ 1210' - 3/4°. Rig service. Clean mud tanks. Drill. Run survey @ 1445' - 1/4°. Drill. Attempted to run survey @ 2070', wire line broke. TOOH for survey tool. Clean mud tanks. Change shaker screens. TIH. Load hole. Circulate for survey. Have drilled some anhydrite which is causing the mud to disperse.
DC: \$12,458 CC: \$127,248
- 10/06/96 TD: 3088' (1018') Day 5
MW 9.1 VIS 34
Present Operation: Trip for bit
Ran survey @ 2070' - 1°. Drill. Run survey @ 2382' - 1°. Drill. Run survey @ 2660' - 1/2°. Drill. Run survey @ 2975'. Drill. Circulate for trip. Trip for bit.
DC: \$7,863 CC: \$135,111
- 10/07/96 TD: 3240' (152') Day 6
MW 9.0 VIS 33 pH 8.5
Present Operation: Trip in w/test tools
Finish trip out for bit. Change bit & rig service. TIH. Drill. Had 4' bit drip from 3226' to 3230'. Lost all returns. Mixed LCM & attempted to regain circulation. Estimated loss of 1100 bls. Wash 10' more until we tagged up @ 3040'. Tripped out. Rig service. PU test tool. TIH.
DC: \$12,806 CC: \$147,917

DAILY OPERATING REPORT

MAMBA FEDERAL #31-22

Location: NW NE Section 22 T16S, R19W

Millard County, Utah

---TIGHT HOLE---

- 10/08/96 TD: 3240' (0') Day 7
MW 9.3 VIS 36
Present Operation: Wash & Ream to Bottom
TIH w/DST #1. Tool stopped @ 2850'. TOOH. Rig service. Mix mud. TIH. Kelleyed up @ 2525'. Had plugged bit. TOOH. Unplug bit & bit sub. TIH. Check circulation. W&R from 2040' to 3240'.
DC: \$16,171 CC: \$164,088
- 10/09/96 TD: 3240' (0') Day 8
MW 9.3 VIS 38 pH 8.5
Present Operation: Ream Core Barrel to Bottom
W&R to bottom. TOOH. Rig service. Clean out test tools. TIH w/DST #2. Tool stopped @ 3100'. TOOH, LD test tool. Rig service. TIH w/bit. W&R to bottom from 3129' - 3240'. TOOH for core barrel. PU core barrel. Fill pre-mix tank & mix mud. TIH. W&R from 2980' - 3005'.
DC: \$15,757 CC: \$179,845
- 10/10/96 TD: 3258' (18') Day 9
MW 9.3 VIS 60
Present Operation: TOOH for Logs
Ream to btm w/core barrel. Cut 5' of core. Had 13' bit clear under core (3245' - 3258'). No btm @ kelley down of 3258'. TOOH w/core barrel. Recovered 4-1/2' of core. LD core barrel. Mix mud in pre-mix tank. TIH. W&R to btm w/no returns. TOOH to log. RU loggers & ran sonic lob from 2800' to base of surface csg. Logs stopped @ 2800'. RD loggers. TIH to 3120'. Lost circulation. Hole got tight. TOOH.
DC: \$12,063 CC: \$191,908
- 10/11/96 TD: 3258' (0') Day 10
MW 9.2 VIS 45
Present Operation: Circulate & Condition for Casing
TOOH to log. RU loggers & run BHC sonic log from 2851' to 2800'. Wait on orders. Wait on csg. TIH to 3100'. Circulate.
DC: \$19,130 CC: \$211,038

EREC, Western Region

DAILY OPERATING REPORT

MAMBA FEDERAL #31-22

Location: NW NE Section 22 T16S, R19W

Millard County, Utah

---TIGHT HOLE---

- 10/12/96 PBTB: 3072' (0) Day 11
Present Operation: Rigging Down
Wash from 3100' to 3258'. LD drill pipe & drill collars. RU csg crew. Unload, clean, drift & strap csg. Run and cement csg as follows:
- | <u>DEPTH</u> | <u>INTERVAL</u> | <u># JTS</u> | <u>WT & GRD</u> |
|---------------------|-----------------|--------------|---------------------|
| 3072' - 3070.40' | 1.60 | 1 | Float shoe |
| 3070.40' - 3060.63' | 9.77 | 1 | Packer stage collar |
| 3060.63' - 3.88 up | 3064.51 | 74 | 7", L-80, LT&C |
- Cemented by Halliburton w/100 sxs of Premium "H" w/1/4# per sx Flocele. Plug down @ 8:15 w/good returns. Csg stopped @ 3080'. Attempted to wash through bridge. Would not go. Cemented bottom of csg @ 3072'. Nipple down BOP stacks. Set slips. Cut off csg. NU tubing head. Clean mud tanks. Rig down floor. Rig released @ 3:00 PM MST 10/12/96.
DC: \$72,323 CC: \$283,361
- 10/16/96 Completion
Present Operation: PU Tubing
MIRU Teton Well Service Rig.
DC: \$2,950 CC: \$286,311
- 10/17/96 Completion
Picked up 98 jts of tbg. Tagged up @ 3060'. Stripped on BOP. Rigged up pump & tank & power swivel. Drill on pkr collar. Made 4'. SDFN.
DC: \$19,303 CC: \$305,614

EREC, Western Region
DAILY OPERATING REPORT

MAMBA FEDERAL #31-22

Location: NW NE Section 22 T16S, R19W

Millard County, Utah

---TIGHT HOLE---

- 10/23/96 Completion
Present Operation: RU Schlumberger to run free pipe log
TU loggers & ran gamma ray - neutron log from 3236' to 2600'. Released pkrs & TOOH.
RU loggers & set CIBP @ 3000'. Dump baled 6 sxs of cement on top. Ran free pipe log.
Could not get tool to work.
DC: \$4,720 CC: \$331,614
- 10/24/96 Completion
Present Operation: RU Casing Tongs to turn casing
RU Schlumberger. Ran CBL from 7900' to 2500'. Found cement top @ 2800'. Shot csg
of @ 2777'. RD BOP & well head equipment. PU spear and tried to pull csg. Csg would
not come. Pulled up to 195,000#, got csg to move 24". Could not get csg to move up
anymore. RU Schlumberger & ran bond log from 2700' to 500'. All pipe appeared to be
free. RU pumper, hooked up to back side & pumped @ 5bbls/minute. Had intermittent
circulation. Picked up spear and pulled on csg. Still would not come. Picked up
packer & set packer on top of csg. Circulated csg & annulus. RD pump. Picked up
spear & attempted to pull csg. Would not come. SDFN.
DC: \$3,186 CC: \$334,800
- 10/25/96 Completion
Present Operation: 186' of Open Hole
Start up rig. TU csg tongs, turn pipe, 12-1/2 rounds. Csg making up tighter. RD csg
tongs. RU loggers and shoot off csg @ 2449'. TD loggers. PU spear and pull on csg.
Could not get csg to come. RU loggers & shot csg off @ 1033'. RU spear & pull csg. RU
csg crew & LD 25 jts of 7" csg. TIH w/80 jts of tbg. LD same. Ran in hole w/35 jts of
tbg. Pumped 30 sxs plug, half in csg stub & half out (1082' - 982'). LD 14 jts of tbg.
Pumped 50 sxs plug across base of surface csg (655' - 555'). LD 3 jts of tbg. Pumped
50 sx surface plug. LD 3 jts of tbg. RDMO.
DC: \$28,858 CC: \$363,658

REPORT OF WATER ENCOUNTERED DURING DRILLING

1. Well name and number: Mamba Federal #31-22

API number: 43-027-30038

2. Well Location: QQ NWNE Section 22 Township 16S Range 19W County Millard

3. Well operator: Equitable Resources Energy Company

Address: 1601 Lewis Avenue
Billings, MT 59102 Phone: (406) 259-7860

4. Drilling contractor: Union Drilling (Rig 17)

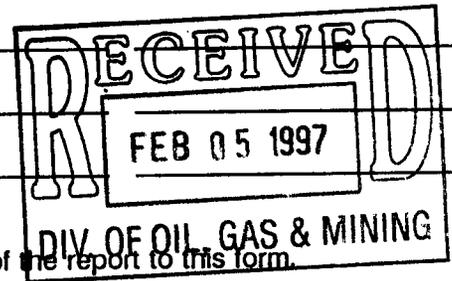
Address: Buckhannon, WV
Phone: _____

5. Water encountered (attach additional pages as needed):

DEPTH		VOLUME (FLOW RATE OR HEAD)	QUALITY (FRESH OR SALTY)
FROM	TO		
3197	3258	approx. 35 BPH	Fresh

6. Formation tops: Base of Valley Fill 2821'

Chainman Shale 2821'



If an analysis has been made of the water encountered, please attach a copy of the report to this form.

I hereby certify that this report is true and complete to the best of my knowledge. Date: October 31, 1996

Name & Signature: *Sobbie Schuman* Title: Regulatory Specialist

Donna M. Herring Petroleum Geologist

• 123 West Main St., P.O. Box 125, Alexandria OH 43001-0125 • (614) 924-0516 •

T R A N S M I T T A L

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

25 February 97

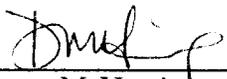
Cc: Dave McCoskery
Equitable Resources Energy Co.
P.O. Box 21017
Billings, Montana 59104

RE: Attached Wellsite Geological Report
EREC #31-22 Mamba Federal
Millard County, Utah

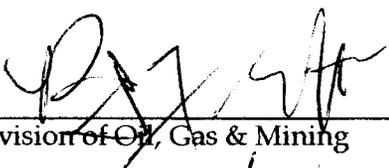
~~CONFIDENTIAL~~

Attached are two complete Wellsite Geological Reports for the above noted dry hole. These reports are shipped to you as previously requested by the operator. PLEASE KEEP THESE REPORTS CONFIDENTIAL FOR THE MAXIMUM ALLOWED TIME.

Please sign all three copies of this transmittal; retain one copy for your files, and enclose one each in the postage-paid envelopes attached to these transmittals and addressed to myself and to Mr. McCoskery at Equitable Resources Energy Company.



Donna M. Herring
Petroleum Geologist



for Division of Oil, Gas & Mining

27 Feb 97

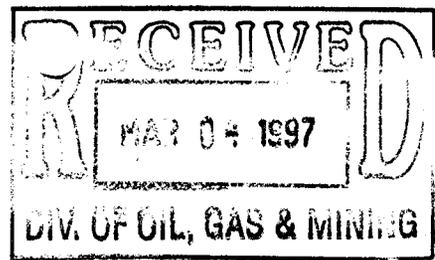
Shipping date

3/4/97

Receipt date

SE30g\31-22\ERECrns





Equitable Resources Energy Company
#31-22 Mamba Federal
800 FNL 1800 FEL, NW/NE Sec.22-T16S-R19W
Millard County, Utah
43 027 30038
PA 10-25-96

Wellsite Geology Report

CONFIDENTIAL

Contents

Well Summary and Interpretation
Basic Information
Geological Well History
Deviation Table
Mud Data
Bit Record
Lithologic Summary
Hydrocarbon Show Summary
Geologic Log (in pocket)

by
Donna M. Herring
Petroleum Geologist

WELL SUMMARY & INTERPRETATION

Equitable Resources Energy Company #31-22 Mamba Federal
800 FNL 1800 FEL, NW/NE Sec.22-T16S-R19W
Millard County, Utah

The EREC #31-22 Mamba Federal was drilled on the west side of Snake Valley in western Millard County, four miles southwest of the Balcron (EREC) #12-36 Cobra State dry hole drilled in 1995. None of the pre-valley fill units seen in the #12-36 Cobra State were penetrated in the #31-22 Mamba Federal. The #31-22 Mamba Federal hole was spudded 1 October 96 in young valley fill sediments, drilled lower valley fill conglomerate, upper Chainman Formation shale and siltshale, middle to lower Chainman argillaceous carbonates, and crossed a fault into lower Chainman argillaceous dolomites (two alternative interpretations are discussed below). Minor methane was detected in the lower valley fill; minor oil and gas shows were encountered in the Mississippian section and were related in part to lost circulation zones in and near the fault cut. Deviation while drilling was 1° or less; caving in valley fill and upper Chainman shales was the only hole problem encountered. A drillstem test was attempted twice in a lost circulation zone 3226-3240', but tools could not get to bottom. After DST attempts, one core was taken in the interval 3240-3245', in breccia of black dolomite in the footwall of the fault. After coring, borehole compensated sonic and gamma ray logs were run uphole from 2852' when wireline tools could not get to bottom after a wiper trip and second attempt. When the geologist was released 10 October 96, plans were to set casing to TD and test the lost circulation zones below 3226'. Age and lithologic interpretations discussed below are based on wellsite drill cuttings study and wireline logs only.

The upper valley fill sediments, of Quaternary to Recent age drilled surface-1409' (log top 1393)', consist of playa clays and volcanic ash or bentonitic clays, with common thin interbeds of sand and conglomerate. Detrital grains, pebbles and cobbles are overwhelmingly volcanic-derived, with a minor Paleozoic carbonate contribution in some beds. First background gas was detected near 800', in these sediments, with a very minor increase to <2 units total gas near 960'.

Lower valley fill, Tertiary "Older Valley Fill", was encountered 1409-2821' (log 1393-2821'). Clay-rich sand, gravel, sandstone and conglomerate, dominantly volcanic-lithic, comprise the upper 700', with a prominent biotitic volcanic ash near 2100'. The lowermost 700' alternates between two units (see lithologic summary), one essentially conglomeratic, and one heterolithic unit with common limestone and sand/sandstone. No oil shows, and no gases above background, were detected in this section.

Mississippian Chainman Shale is interpreted 2821-3258'(TD). The uppermost shale penetrated is probably upper middle Chainman, consisting of soft, dark, pyritic, rarely phosphatic, mostly non-silty clayshale. Progressively downsection, the Chainman becomes dominantly silty below about 2890', commonly calcareous (including discrete thin limestones) below about 2960', dolomitic in part below about 3050', and dominantly argillaceous black to dark gray, platy, laminated, dolomitic limestone and limestone shortly below 3100'. The single sample 3090-3100' consisted of 87% very light colored recrystallized fossiliferous limestone, a rock type not seen elsewhere in the well.

Background gas increased slightly in the Chainman, with limited cut fluorescence in shale 3010-3030', minor peaks of 4 units total gas @3060' and @3100' which included subequal distributions of gases C1-C4, and trip gas @3088' of 24 units. Gas recovered from the hole after initial lost circulation @3226' had very different distribution of constituent gases C1-C4, and minor associated gas bubbles

broke out of the mud in the possum belly with oil rainbows. This deeper/late gas is interpreted to derive from the fault zone cut near 3226' as discussed in the Hydrocarbon Show Summary.

Chainman samples in the last 20' recovered (3170-3190') before losing circulation at 3226' included common slickensides and increasing calcite fracture fill. Core recovered from 3240-3245' (core barrel dropped to 3258' after coring 5') was black to very dark gray, very silty, very argillaceous, unfossiliferous dolomite, brecciated but not slickensided. Included veins of refractured microbreccia and crystalline dolomite fracture fill indicate multiple episodes of movement on a brittle, probably extensional, fault. Lithologic correlation to Chainman stratigraphy in the immediately adjacent Confusion Range suggests the cored interval is lowermost Chainman beneath a normal fault which has cut out several hundred feet of stratigraphic section.

Alternative interpretations for the encountered lithologies might include: A) Chainman down to the fault cut, then crossing the fault into lower Pilot, described in the lower 160' in the Confusion Range as comprising "medium gray dolomitic siltstone"; or B) Chainman to the light-colored limestone at 3090', Joana Limestone formation 3090-3100' (described in the Confusion Range as 10-40' thick fossiliferous limestone), then upper Pilot Shale formation 3100-3226', crossing a fault into the (cored) lower Pilot. Either of these alternatives requires the penetrated Chainman to be anomalous relative to the Confusion Range sequence, or to have unrecognized fault cuts in the wellbore.

After logging, circulation could not be regained, and orders were received to set casing to TD for attempted completion. Geologist was released after logging.

Donna M. Herring
Petroleum Geologist
Certified Professional
Earth Scientist

BASIC INFORMATION

Equitable Resources Energy Company #31-22 Mamba Federal
800 FNL 1800 FEL, Sec.22-T16S-R519W
Millard County, Utah

US Dept. Interior Permit: UT-96-54937
Permitted depth: 5,000'
Elevations: GL 4837' KB 4852'
Spud: 1 October 96
Drilling complete: 9 October 96
Logging complete: 10 October 96
Total depth: 3258' driller; logger could not get past 2852'
Well complete: Plans were to set casing, when geologist released 10 October
Formation @TD: Mississippian Chainman Shale
Sample intervals: 30' spls 55-605' (driller's depths); 10' spls 605-3190';
core chips 3240-3245'
Hole sizes: 12-1/4" @55-605'; 8-3/4"@605-3258'
Casing: 16" conductor @55' KB
9-5/8" 36# J-55 STC casing @605' driller, 598' logger;
when geologist was released, plans were to set casing to TD
Wireline logging: Schlumberger Well Services, Vernal UT
Brian Wylie, field engineer
Run One: BHC Sonic/GR 2804-498'
Run Two: BHC Sonic/GR 2852-498'
Mudlogging: NorAm Wellsite Services, Billings MT
Mudloggers: Scott Olson, Rocky Bailey (605-3258')
Drilling consultant: Corey Welter, Billings MT
Rig: Union Drilling, Rig #17, Vernal UT
Toolpusher: David Gray
Mud pump: Gardner Denver FXN, 14" stroke, 6" liner
Mud: Gel/polymer system
Dynamic Drilling Products, Denver CO
Mud engineers: Jerry Krater, Scott Anderson
Wellsite geologist: Donna M. Herring, Alexandria OH
Cores and drillstem tests: Core #1 @3240-3245' (5'), recovered 4.5', no shows
Baker Hughes, Casper WY, coring consultant Chuck Ireland
TerraTek, Salt Lake City UT, core analysis Scott Christianson
DST attempted, could not get to bottom
Hydrocarbon shows: Minor methane in lower valley fill
Gas, minor cut fluorescence, minor possum belly rainbows in
Chainman Shale (Lost circulation @3228' prevented sampling
3190'-TD, except for core recovered 3240-3245')

**Equitable Resources Energy Company #31-22 Mamba Federal
800 FNL 1800 FEL, NW/NE Sec.22-T16S-R19W
Millard County, Utah**

GEOLOGICAL WELL HISTORY

Condensed from daily geological reports; see also Lithologic Summary for daily lithology descriptions, and tabulated Mud Data, Bit Record, and Deviation Table.

Thu, 3 Oct 96/6:30 a.m. 605' Valley fill, NU surface casing, made 385'.

DEVIATION: 1/4° @300', 1/4° @605'

BIT DATA: No. 1, Size 12 1/4", STC FDT. CASING 16" @55' KB; 9 5/8" @605'

(First Daily Geological Report; spud 10:30pm 1 October) Caught 30' doghouse samples, spud to 605'. Mudloggers arrived 2 October and began RU. WO part for mudloggers' water hookup; finish RU, begin washing doghouse samples.

Fri, 4 Oct 96/6:00 a.m. 1131' Valley fill, drilling, made 426'.

DEVIATION: 1/4° @905' MUD DATA @605': MW 8.6 Vis 40

BIT DATA: No. 2, Size 8 3/4", HTC GT-1. CASING 16" @55' KB; 9 5/8" @605'

BOTTOMHOLE LITHOLOGY: Sandy clay. DRILL RATE average 1/2 mpf, and 1-2 mpf in very soft sticky less sandy clay zones below 1000' depth. GAS INFO: BGG from 800', now averaging 1 unit. Maximum 1.5 units @960-968', to 24ppm C1. Carbide lag 6min @ 1007'.

Sat, 5 Oct 96/7:00 a.m. 2124' "Older Valley Fill", drilling, made 993'.

DEVIATION: 1/4° @905', 3/4° @1210', 1/4° @1445'

MUD DATA @1410': Wt 9.1+ Vis 33 WL 10.4 pH 9.0 Cl 200 BGG 1 unit; @2070: MW 8.8 Vis 32

BIT DATA: No. 2, Size 8 3/4", HTC GT-1. CASING 16" @55' KB; 9 5/8" @605'

BOTTOMHOLE LITHOLOGY: Sandstone and Conglomerate; TOP of "Older Valley Fill" @1414' by samples and drill rate. DRILL RATE average 1 mpf, ranging from 10' in 2min to 2.5mpf. GAS INFO: BGG 1 unit.

Sun, 6 Oct 96/7:00 a.m. 3088' Chainman Shale, tripping for bit, made 964'.

DEVIATION: 1/4° @1745', 1° @2070', 1° @2382', 1/2° @2660'

MUD DATA @3048': MW 9.1 Vis 32; MUD DATA @2382': MW 9.4 Vis 60 WL 14.0 pH 9.0 Cl 300

BIT DATA: No. 2 Size 8 3/4" Type HTC GT-1 CASING 16" @55' KB; 9 5/8" @605'

BOTTOMHOLE LITHOLOGY: Shale and silty shale; TOP of MISSISSIPPIAN CHAINMAN SHALE @2821' by samples and drill rate. DRILL RATE average 1.5 mpf in Chainman, consistent.

GAS INFO & SHOWS: BGG 2 units since shortly after topping Chainman (previously 1 unit BGG). Maximum gas 4 units @3060' including methane and heavier (C1 47ppm, C2 7ppm, C3 31ppm, C4 total 39ppm). Connection gas @2974' total 7 units (C1 23ppm, C2 7ppm, C3 46ppm, C4 50ppm). Very rare yellow slow streaming cut fluorescence 3010-3030', no oil show, no wet or dry fluorescence, no residual ring. Carbide lag @2693', 15 minutes. DISCUSSION: Chainman appears to be in the oil window, given its production of gases as heavy as C4 and at least some capacity to cut in the absence of free oil. A trip for bit was called when the previously consistent drill rate of 1-1.5mpf increased over 38' (3050-3088') to 4.5mpf with no obvious change in samples. Circulated sample before tripping was 97% shale as previous. Comparison of carbide lag (15-17min) with calculated lag (25-28min) indicates channeling. Carbide lag test @2382' had a similar result. Mud weight and viscosity have been high (to 9.4 and 48, respectively), even though mud has been consistently dumped and diluted, apparently because of clays in the valley fill formation dissolving into the mud. Dumping has continued and dilution was increased just before drilling out of the base of valley fill; within 100' of top of Chainman mud weight dropped to 9.1, viscosity to 32, with attendant color change to gray from brown.

Mon, 7 Oct 96/5:00 a.m. 3240' Chainman Shale, tripping in w/DST tools, made 152'.

MUD DATA @3096': MW 9.0 Vis 33 WL 7.6 pH 8.5 Cl 300

MUD DATA @3201': MW 9.2 Vis 36 BGG 1-2 units TG 24 units

DRL BREAKS: Depth 3202-3216', before 2-3mpf, during .5mpf, after 1.5mpf, lithology lost to formation @3228'. Depth 3226-3240', before 1-1.5mpf, during <.1mpf, pulled up @3240', lost complete returns @3228'

SHOWS: 3060-3150' Gas as noted below.

Two feet into an extremely fast drill break 3226-3230', lost complete returns (@3228'). Last sample up was 3180-3190, with no shows and no gas above background (BGG 2 units) before losing circulation. Previously, gas in the Chainman had peaked at 4 units near 3060', then gradually decreased to background by 3150' (78' above lost circulation). Mixed and pumped LCM pills, short tripped. When tagging bottom to evaluate DST anchor, found bit went to 3240' (instead of 3230' anticipated). GAS INFO: BGG 1-2 units. Maximum gas 4 units @3100' including methane and heavier (C1 11ppm, C2 7ppm, C3 23ppm, C4total 19ppm). Trip gas @3088' total 24 units (C1 35ppm, C2 14ppm, C3 93ppm, C4 161ppm). Decreased to 2 unit background by 3150. No oil shows, rare calcite mineral fluorescence only.

Tue, 8 Oct 96/6:00 a.m. 3240' Chainman Shale, washing to bottom, made 0'.

DEVIATION 1/2° @2660', 1° @2975' BGG 3 units

SHOWS: While washing to bottom through fill, downtime & connection gas to 152 units.

Could not get DST tools past 2850'; TOH w/DST tools, TIH w/bit for wash & clean trip before second DST attempt. Downtime gas was detected 22 minutes after regaining circulation after tripping in w/bit to the bridge/fill found near 2620'. TOTAL GAS 152 UNITS, consisting at maximum of C1 885ppm, C2 35ppm, C3 23ppm, C4 40ppm. Connection gas while continuing to wash and ream has been 2-10 units including gases C1-C3 in trace detectable amounts. Over the shaker while washing/reaming 2620-3000', valley fill gravels were common, below 3000' shale has been abundant, for an estimated 240' of Chainman fill and 380' of uphole gravel fill. DISCUSSION: (A) Gases recovered from the mud after regaining circulation are fundamentally different than those recovered prior to losing circulation; (B) Mississippian stratigraphy in the well could be interpreted more favorably than as Chainman.

(A) Gas detected while drilling Chainman included proportions of C3 and C4 that were two to six times those of C1 and C2. Regained circulation mud has twenty to forty times the methane (C1) compared to C3 and C4, with subequal detection of C2, C3, and C4. This is a strong indication that most of the gas we are now seeing is from the lost circulation zone, and is percolating up through the fill.

(B) Mississippian stratigraphy of the well below 2821' is probably Chainman Shale, but may include Joana Limestone and Pilot Shale (see following discussion). If the section is entirely Chainman, we are in the upper half of the Chainman and would have 1000-1800' of in-place stratigraphy above the Devonian here (if our lost circulation zone is not a fault past which we come into something completely different). If the lowermost part of the well is in Pilot Shale, we might have as little as 600' to drill to Devonian, assuming our lost circulation is in siltstones of the Pilot and not a fault.

The section 2821-3190' (last sample) is consistent with Chainman Shale lithologies in the adjacent Confusion Range. The lowermost samples 3100-3190' are permissible for Pilot Shale but not a good match for the calcareous siltstones found in Pilot Shale of the Confusion Range. The single sample 3090-3100' included a light-colored coarse-grained fossiliferous limestone which is permissible for Joana Limestone. In the USGS geologic quadrangle for Gandy, the Joana is only 10-40' thick.

Wed, 9 Oct 96/6:00 a.m. 3240' Chainman Shale, TIH w/core barrel, made 0'.

BGG During reaming 8 units

SHOWS: While tripping in w/DST tools, minor small gas bubbles breaking out of mud and blooming into rainbows on surface in possum belly.

OPERATIONS: Finished trip to wash and clean, lost circulation when breaking through bridge at 3180' (bit torque before breakthrough). Tagged up, TOH with bit, TIH with DST tools (second attempt), could only get tools to about 3100'. Made another wash-and-clean trip with bit, presently tripping in hole washing down core barrel, abundant Chainman fill coming over shaker.

GAS INFO: TRIP GAS 136 UNITS (C1 236ppm, C2 71ppm, C3 357ppm, C4 179ppm) when going in hole w/DST tools. Maximum gas before losing circulation during wash-and-clean trip after DST, 24 units (C1 82ppm, C2 35ppm, C3 194ppm, C4 110ppm).

Summary of DST attempts and related info of last several days' operations: Lost circulation at 3226' in drill break, pulled up at 3230', mixed and pumped LCM in attempt to regain circulation, lost or pumped away total 1100bbls mud. Tagged up before TOH for test tools, bit went to 3240'. TOH for test, TIH with Halliburton DST tools, could not get below 2850'. TOH with DST tools, TIH with bit to clean and condition, hit bridge at 2570', washed and reamed to 2575'. Tripped to unplug bit, went back in hole and washed and cleaned 2040-3240', lost 100bbls mud after breaking through bridge at 3100'. Fill washed over shaker was uphole gravels 2620-3000', and Chainman shale 3000' to bottom.

TIH with DST tools (second attempt). Displaced mud flowing through possum belly included only the usual and previously observed shale scum and rare floating contaminant, until about 7th stand from bottom, when small gas bubbles started breaking out at possum belly. The gas bubbles broke at surface and released rainbows into mud for all of last five connections. DST tool broke through bridge at about 2850', could not get

below about 3100'. TOH with DST tools, make wash-and-clean round trip (lost circulation at 3180', tagged up before TO), presently TIH washing and reaming with core barrel.

DISCUSSION: Minor gas and a minor show of oil entrained with it have apparently percolated at least partway through fill and mud during downtime. Wash-and-clean trip gas after second DST attempt was methane-rich and therefore like that from the bottomhole per yesterday's report discussion. Gas during wash-and-clean trip before losing circulation had subequal ppm of all for gases measured, and is therefore a mixture of the Chainman and bottomhole gases.

Thu, 10 Oct 96/5:00 a.m. 3258' Chainman Shale, washing to bottom, made 18'.

BGG/CG maximum 16 units, during trip between log runs.

CORES: Core #1, 3240-3245' (5') drilled, then barrel dropped to 3258'; recovered rubble and breccia of silty limy dolomite, NO SHOWS, details below.

OPERATIONS: Ream to bottom w/core barrel, core 3240-3258' (details below), had 13' bit drop under core, no bottom at kelly down of 3258'. TOH w/core barrel, TIH w/bit, wash & ream to bottom w/no returns. TO to log, RU Schlumberger, could not get logs past 2804'; ran BHC Sonic/GR 2804-498', RD loggers, TIH to 3120, lost circulation, hole got tight, will TO to log second run. Logger's TD 2804'; Logger's casing @598'.

GAS INFO: No gas during coring operation. During cleanout trip after log run #1, intermittent gas maximum 16 units (C1 35ppm, C2 7ppm, C3 62ppm, C4 59ppm; distribution indicates continued mixing of uphole and downhole gases). Gas returns do not correlate to expected trip gas or connections; NO OIL SHOWS.

CORE #1: TIH w/Baker Hughes 8' core barrel, washed to bottom, lost circulation when broke through bridge at 3180'. Cored 3240-3245' at 15mpf, then barrel dropped 3245-3258' (13') in 3 minutes (as fast as automatic driller would allow). Recovered 4.5' black to dark gray very argillaceous very silty dolomite rubble and breccia, open fractures, angular fragments, no slickensides, NO SHOWS, interpreted Chainman or Pilot formation in footwall of extensional fault. TerraTek (Salt Lake City) caught core.

Thu, 10 Oct 96/2:00 p.m. 3258' Chainman Shale, WOO, made 0'.

TO from wash & clean trip, TIH w/Schlumberger for Run #2, rerun BHC/GR, could not get below 2852' (48' deeper than before cleanout). Logged 2852-2680' ("second pass" on Run Two log) to confirm on depth with GR curve, noted ratty sonic curve below 2760'. "Third pass" 2852-2630' to check sonic curve, GR was on depth and sonic tracked both above 2760' and below 2832', but interval 2760-2832' did not correlate to second pass. Made "fourth pass" to confirm sonic tool function with same results, added integrated transit time pips to display, logged 2852-498' with transit time. Schlumberger engineer indicated most common causes for sonic response seen (repeat correlations above and below an incoherent zone) are enlarged hole, gas in the mud, or other anomalous mud properties. Log top Tertiary "Older Valley Fill" @1393'; probable log top Mississippian Chainman @2821', but insufficient rathole for confirmation. Geologist released after logging; FINAL GEOLOGICAL REPORT.

Equitable Resources Energy Company #31-22 Mamba Federal
800 FNL 1800 FEL, NW/NE Sec.22-T16S-R19W
Millard County, Utah

DEVIATION TABLE

Spud to 3258' TD.

Depth Deviation

300.....	1/4°
605.....	1/4°
905.....	1/4°
1210.....	3/4°
1445.....	1/4°
1745.....	1/4°
2070.....	1°
2382.....	1°
2660.....	1/2°
2975.....	1°

MUD DATA

Equitable Resources Energy Company #31-22 Mamba Federal
 800 FNL 1800 FEL, NW/NE Sec.22-T16S-R19W
 Millard County, Utah

Date	Time	Gel	Vis	Wt.	sd	WL	pH	CI	PV	YP	sol	cake	alkalin	Ca	Depth	
10/01	22:30					SPUD MUD										55'
10/02	06:00		39	8.6											220'	
10/03	06:00		40	8.6											605'	
10/04	00:00		38	8.9											805'	
	02:00		37	8.9											945'	
	11:00	0/1	33	9.1+	.25	10.4	9.0	200	8	7	5.2	2/32	.15/.35	20	1410'	
	13:00		33	9.1											1415'	
	15:00		35	9.1+											1476'	
	18:00		38	9.2											1799'	
	21:00			9.2											1953'	
10/05	05:00		32	8.8											2070'	
	07:00		40	8.9											2129'	
	10:00		38	9.2											2278'	
	12:00	12/25	60	9.4	.25	14.0	9.0	300	15	20	6.7	2/32	.15/.45	30	2382'	
	13:00		48	9.3											2403'	
	15:00		54	9.3											2510'	
	19:00		60	9.5											2729'	
	21:00		70	9.5											2849'	
10/06	00:00		50	9.2											2975'	
	02:30		32	9.1											3048'	
	10:00		33	9.0											3088'	
	10:30	0/1	33	9.0	.25	7.6	8.5	300	6	6	4.7	2/32	.05/.15	30	3096'	
	12:00		34	9.1											3133'	
	13:00		36	9.2											3157'	
	15:00		36	9.2											3201'	
	19:00		36	9.2		Lost 1100bbls mud in LC zone @3226'									3240'	
10/07	11:00	0/0	32	8.4	--	8.0	7.0	300	2	4	.5	2/32	--	30	3240'	
	19:00		33												3240'	
	21:00		33			Lost 100bbls on bit trip after DST attempts									3240'	
10/08	11:30	2/5	38	9.3	--	8.8	8.5	300	13	11	6.5	2/32	.1/.2	120	3240'	
	22:00		30			Losing mud when breaking through bridges									3240'	
10/09	05:00		3			Cored blind, pumping water									3240'	
	11:00					Water, circulated after coring and before logging									3258'	

(Last Mud Engineer's Report 10/09 @11:00; last Rig Report of MW or Vis 10/09 @05:00)

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Millard County, Utah

BIT RECORD

Bit #	Size	Mfr.	Type	Serial#	On @	Off @	Made	Hours on btm	RPM	WOB	Condition when pulled
1	12.25"	STC	FDT	NB9014	55	605	550'	11.5	100	10-15	not reported
2	8.75"	HTC	GT-1	N08X6	605	3088	2483'	42	60-100	8-30	not reported
3	8.75"	Sec	S81F	688922	3088	3240	152'	5	60	35-36	not reported
4	8.469"	Baker	C-23	111771	3240	3258	18'	1.25	55	17	good

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800 FNL 1800 FEL, NW/NE Sec.22-T16S-R19W
Millard County, Utah

LITHOLOGIC SUMMARY

Lithologic descriptions from daily reports, made from initial examination of mudloggers' splits. See separate lithologic log in pocket of this report for detailed descriptions of geologist's splits, made with reference to GSA Rock Color chart and other publications.

Spud in Quaternary-Tertiary Valley Fill, undifferentiated.

60-310': 95-97% Clay, very pale orange, yellow gray, greenish gray, very silty & sandy, very calcareous, very to moderately water sensitive, silt & sand is micaceous & volcanic lithic; 3-5% Gravel, fine, subround to round, subspherical, rarely oblate, dominantly volcanic lithic multicolored, with minor gray limestone & dolomite.

310-800': >99% Clay, greenish gray, light greenish gray, rarely laminated, very silty & fine sandy (quartz & volcanic lithic), extremely to moderately water sensitive; <1% Gravel, fine to very fine, quartz & volcanic lithic.

800-840': 80-95% Clay as above, 5-20% Sand, coarse to very coarse quartz and lithic volcanics.

840-970': >99% Clay as above, <1% Sand as above.

970-1010': 70-95% Clay as above, 5-30% Sand, coarse to very coarse, tuffaceous, green, gray, orange, partly to nonwelded.

1010-1120': >99% Clay as above; <1% Sand, coarse to very coarse volcanic lithic.

1120-1310': 97-100% Claystone, light gray orange pink, grayish yellow, yellowish gray, lithic silty, fine sandy (volcanic lithic) in part, rarely finely laminated, firm to very firm, slightly to very calcareous, slightly to moderately water-sensitive, slightly anhydritic in part; Tr-3% Sand, loose coarse, volcanic lithic, subangular to subrounded.

1310-1420': 80-100% Claystone, light gray orange pink, grayish yellow, yellowish gray, lithic silty, fine sandy (volcanic lithic) in part, as above; 5-10% Sandstone, yellow gray to light yellow gray, white in part, fine to coarse poorly sorted, quartz and volcanic lithic, angular prolate to subrounded oblate and spherical, calcareous and argillaceous; Tr-15% Sand, loose coarse, volcanic lithic, subangular to subrounded.

Sample top Tertiary "Older Valley Fill" @1409' (log top 1393')

1420-1480': 70-90% Sandstone, yellow gray to light yellow gray, fine to coarse as above; 10-20% Claystone, light gray orange pink, grayish yellow, yellowish gray, lithic silty, fine sandy (volcanic lithic) in part, as above; 3-5% Sand, loose coarse, volcanic lithic as above; Tr-3% Gravel, fine pebbles, volcanic lithic; <1% Chert, brown, yellow brown, banded in part translucent.

1480-1600': (Estimated clay matrix 5-10% of sample before washing) 90-97% Sandstone, yellow gray, fine to coarse poorly sorted, angular, firm to hard, calcareous; 3-10% Sand, loose coarse, volcanic lithic, angular to subangular.

1600-1960': 10-80% Sandstone, yellow gray to light yellow gray, fine to coarse poorly sorted, volcanic lithic, subangular to subrounded, firm to hard calcareous; 10-80% Gravel, fine pebbles, volcanic lithic, angular to subrounded, some broken larger pebbles with rounded faces; Tr-10% Sandstone, coarse well-sorted, volcanic lithic, subangular to subrounded, calcareous; Rare-Very Rare Anhydrite/Gypsum, white to clear cleavage fragments.

1960-2000': 10-75% Sandstone, yellow gray to light yellow gray, fine to coarse poorly sorted, volcanic lithic, subangular to subrounded, firm to hard calcareous; 10-75% Gravel, fine pebbles, volcanic lithic, angular to subrounded, some broken larger pebbles with rounded faces; 5-20% Quartz, loose, water-clear to slightly milky, angular to subrounded; Tr-10% Sandstone, coarse well-sorted, volcanic lithic, subangular to subrounded, calcareous.

2000-2080': 65-100% Sand & Gravel, coarse sand to fine pebble size, volcanic lithic, subangular to subrounded, firm to hard calcareous; 1-10% Quartz, water-clear to slightly milky, angular to subrounded; 0-5% Sandstone, yellow gray to light yellow gray, fine to coarse poorly sorted, volcanic lithic, subangular to subrounded, firm to hard, calcareous; 0-30% Claystone, light gray orange pink,

grayish yellow, yellowish gray, volcanic lithic silty and fine sandy, firm to very firm, slightly to very calcareous, slightly to moderately water sensitive, rarely slightly anhydritic.

2080-2100': 90-92% Sand & Gravel, coarse sand to fine pebble size, volcanic lithic, subangular to subrounded, firm to hard calcareous; 5-10% Volcanic Ash, white, biotitic, soft to very soft and colloidal; Tr-3% Sandstone, yellow gray to light yellow gray, fine to coarse poorly sorted, volcanic lithic, subangular to subrounded, firm to hard, calcareous.

2100-2820': This interval includes alternating units 60' to 250' thick from 2100' to 2600', and 20' to 90' thick below 2600' depth. Alternate (A) is: 50-100% Sand & Gravel, coarse sand to fine pebble size, volcanic lithic as above (with significant Paleozoic lithics 2620-2650'), Tr-40% Limestone, light brown to very pale yellow brown, quartz sandy and silty in part, hard, fossiliferous in part (gastropods and unidentified), 0-25% Quartz, clear angular loose, 0-25% Quartz, white, milky, translucent to opaque, subangular to subrounded, Tr-3% Sandstone, yellow gray to light yellow gray as above, 0-1% Chert, yellow gray, yellow brown, rarely banded or inclusion-rich.

Alternate (B) is: 88-95% Sand & Gravel, coarse sand to fine pebble size as above, 0-5% Limestone, light brown to very pale yellow brown as above, 5-10% Claystone, light gray orange pink, grayish yellow, yellowish gray as above, 0-2% Conglomerate, clasts same as Sand & Gravel, well cemented with calcite and rarely silica or dolomite, poorly sorted, rarely argillaceous.

Sample top Mississippian Chainman Shale @2821' (log top 2821')

2820-2850': 5-10% Shale, medium dark gray, grayish black, rarely black, soft to firm, non- to very calcareous, non- to moderately silty, rare fine-grained disseminated pyrite, rare sand-size particles of brown phosphate(?), subfissile, pearly, rare to common thin veins white calcite; 2-20% Claystone, light gray orange pink, grayish yellow, yellowish gray as above; 70-88% Sand & Gravel, coarse sand to fine pebble size as above.

2850-3020': 40-90% Shale (increasing downsection) medium dark gray, grayish black, rarely black as above, more and less pyritic/subfissile-subplaty; 0-2% Limestone (below 2900 only) medium gray, microcrystalline, hard, very argillaceous; 8-10% Cavings, sand, gravel and claystone as above.

3020-3090': 90-97% Shale medium dark gray, grayish black, rarely black, more and less pyritic/subfissile-subplaty, as above; 0-10% Limestone, medium gray as above becoming brown gray/silty/pyritic; 0-10% Siltstone, medium light gray, very argillaceous, moderately calcareous in part, slightly dolomitic in part, firm, subearthy to subpearly, platy; 3-5% Cavings, sand, gravel and claystone as above.

3090-3100': 5% Shale medium dark gray, grayish black, rarely black as above; 5% Limestone, white to light pink gray, soft, earthy; 87% Limestone, very pale orange, coarse crystalline mottled to cryptocrystalline oolitic with other unidentified fossils, hard, vitreous to pearly; 3% Sandstone, medium light gray as above.

3100-3190' (Last sample): 0-20% Shale, medium dark gray, grayish black, rarely black as above; 80-100% Limestone, olive gray, medium dark gray, brownish black, light gray in part, silty to very silty, moderately to very argillaceous, pyritic in part, fossiliferous in part (brachiopod fragments, pelletal mottling), fine crystalline, platy splitting in part, coarsely laminated in part, calcite fracture filling increasing down section from trace to 2%, rare to common slickensides last 20'. (Sample 3100-3110' 50% cavings after trip).

3190-3240': Lost to formation.

CORE #1: Cored 3240-3245' at 15mpf, then barrel dropped 3245-3258' (13') in 3 minutes (as fast as automatic driller would allow).

Recovered 4.5' rubble and breccia of dolomite, open fractures, angular fragments 2-12cm, no slickensides, NO SHOWS. Dolomite is black to dark gray, very argillaceous, very silty, calcareous in part, hard, blocky, nonfossiliferous. Includes rare blebs green firm dolomitic clay (gouge?), rare "veins" microbreccia of same dolomite in orange dolomitic matrix, common veins white coarse- crystalline opaque to translucent dolomite, typically re-fractured.

Interpreted recovery of footwall rocks beneath fault cut, multiple episodes extensional movement on fault. Formation probably lower Chainman, possibly lower Pilot, correlating to Confusion Range stratigraphy.

3245-3258'(TD): Not recovered in core barrel.

HYDROCARBON SHOW SUMMARY

Equitable Energy Resources Company #31-22 Mamba Federal
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Millard County, Utah

Quaternary-Tertiary Valley Fill undifferentiated, and Tertiary "Older Valley Fill"

- BGG from 800', initially 1 unit. Maximum valley fill reading 1.5 units @960-968', to 24ppm C1.

Mississippian Chainman Shale, while drilling above 3226'

- BGG 2 units beginning shortly after topping Chainman. Gas 4 units @3060' including methane and heavier (C1 47ppm, C2 7ppm, C3 31ppm, C4total 39ppm). Connection gas @2974' total 7 units (C1 23ppm, C2 7ppm, C3 46ppm, C4 50ppm). Very rare yellow slow streaming cut fluorescence 3010-3030', no oil show, no wet or dry fluorescence, no residual ring. DISCUSSION: Chainman appears to be in the oil window, given its production of gases as heavy as C4 and at least some capacity to cut.
- Gas 4 units @3100' including methane and heavier (C1 11ppm, C2 7ppm, C3 23ppm, C4total 19ppm), with BGG 2units. Trip gas @3088' (trip for bit) total 24 units (C1 35ppm, C2 14ppm, C3 93ppm, C4 161ppm). Decrease to 2unit background by 3150. No oil shows, stain, fluorescence or cut in this interval.

Shows after first lost circulation (below 3226') in probable lower Chainman Shale

- Trip gas 136units(C1 236ppm, C2 71ppm, C3 357ppm, C4 179ppm) in displaced mud when going in hole w/DST tools. During wash-and-clean trip after first DST attempt, maximum gas before losing circulation was 24 units (C1 82ppm, C2 35ppm, C3 194ppm, C4 110ppm), TOH for plugged bit, TIH to continue wash & clean, downtime gas was detected 22 minutes after regaining circulation above the bridge/fill found near 2620', with total gas 152 units, consisting at maximum of C1 885ppm, C2 35ppm, C3 23ppm, C4 40ppm. Connection gas while continuing to wash and ream 2-10 units including gases C1-C3 in trace detectable amounts. DISCUSSION: Gases recovered from the mud after regaining circulation are fundamentally different than those recovered prior to initial lost circulation. Gas detected while drilling Chainman included proportions of C3 and C4 that were two to six times those of C1 and C2. Regained circulation mud has twenty to forty times the methane (C1) compared to C3 and C4, with subequal detection of C2, C3, and C4. This is a strong indication that most of the late gas is from the lost circulation zone, percolated up through the fill.
- While tripping in w/DST tools on second attempt, minor small gas bubbles broke out of mud and bloomed into rainbows on surface in possum belly. Could only get tools to about 3100', abort DST, TOH. Made another wash-and-clean trip with bit, BGG 8 units during reaming on cleanout trip. DISCUSSION: Minor gas and the minor show of oil entrained with it have apparently percolated at least partway through fill and mud during downtime. Wash-and-clean trip gas after second DST attempt was methane-rich and therefore like that from the bottomhole.
- No gas during coring operation; no oil, stain, odor, cut or fluorescence in recovered core.
- During cleanout trip after log run #1, intermittent gas maximum 16 units (C1 35ppm, C2 7ppm, C3 62ppm, C4 59ppm; distribution indicates mixing of uphole and downhole gases). Gas returns did not correlate to expected trip gas or connections. Schlumberger engineer indicated most common causes for sonic response seen 2760-2832' (repeat correlations above and below this incoherent zone) are enlarged hole, gas in the mud, or other anomalous mud properties.