FILE NO [illegible]S

[illegible]d in N I D File	✓	Checked by Chief	RLS
[illegible]- S R Sheet		Copy N I D to Field Office	✓
Lo[illegible]ion Map Pinned	✓	Approval Letter	✓
Card Indexed	✓	Disapproval Letter	
I W R for State or Fee Land			

COMPLETION DATA:

Date Well Completed 11-18-60

Location Inspected 11-9-62 RLC

OW WW TA

GW OS PA X

Bond released State of Fee Land

LOGS FILED

Driller's Log 12-21-60

Electric Logs (No.) 2

E I E-I ✓ GR GR-N Micro

Lat Mi-L Sonic Others Radioactivity Contact Caliper Log

Form 9-331a
(Feb. 1951)

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office Salt Lake City, Utah
Lease No. SL 042499
Unit Last Chance

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	X	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

August 11, 1960

Well No. Last Chance Unit 1 is located 660 ft. from {N/S} line and 591 ft. from {E/W} line of sec. 19

19 NW NW (¼ Sec. and Sec. No.) 26S (Twp.) 7E (Range) SLBM (Meridian)

Wildcat - South Last Chance Area (Field) Emery (County or Subdivision) Utah (State or Territory)

The elevation ~~of the derrick floor above sea level~~ is 5950 ft. (approx. ground)

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Proposed Work:

1. Drill 13-3/4" hole to 1400'±.
2. Cement 10-3/4", 40.5#, J-55 casing at 1400'± with 800 sacks cement, last 200 treated with calcium chloride.
3. Drill 9" hole to 6600'±. (Objectives Permian and Mississippian formations)
4. If commercial production is obtained a supplementary completion notice will be issued.

Surface formation is Jurassic-Carmel.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Shell Oil Company

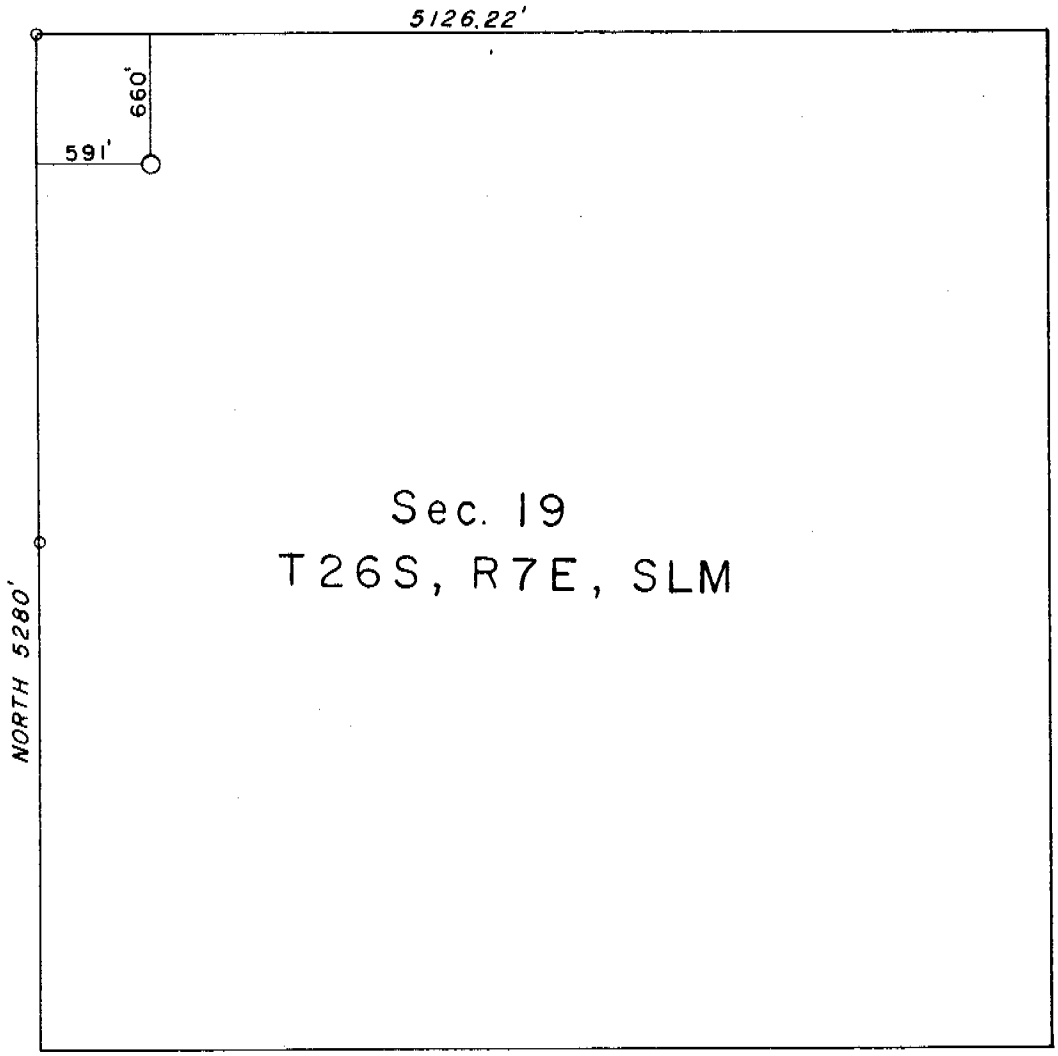
Address Post Office Box 1200

Farmington, New Mexico

for By W. M. Marshall

Title Division Exploitation Engineer

GPO 862040



This is to certify that the above plat was plotted from field notes of a survey made under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Registered Land Surveyor
Certificate No. 2158

DRAWN BY	SHELL OIL COMPANY	SCALE 1" = 1000'
CHECKED BY		Z-
DATE		

Surveyed Location for Last Chance Unit No. 1
660' South and 591' East from the NW Corner
Section 19, T. 26 S., R. 7 E., S.L.M., Emery County, Utah

August 16, 1960

Shell Oil Company
P. O. Box 1200
Farmington, New Mexico

Attention: W. M. Marshall, Div. Exploitation Eng.

Gentlemen:

This is to acknowledge receipt of your notice of intention to drill Well No. Last Chance Unit #1, which is to be located 660 feet from the north line and 591 feet from the west line of Section 19, Township 26 South, Range 7 East, SLBM, Emery County, Utah.

Please be advised that insofar as this office is concerned approval to drill said well is hereby granted.

This approval terminates within 90 days if the above mentioned well has not been spudded in within said period.

Very truly yours,

OIL & GAS CONSERVATION COMMISSION

CLEON B. FEIGHT,
EXECUTIVE SECRETARY

CBF:awr
cc: Don F. Russell, Dist. Eng.
U. S. Geological Survey
Salt Lake City, Utah

Copy to

Budget Bureau No. 42-R356.5.
Approval expires 12-31-60.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Utah
LEASE NUMBER SL 042492
UNIT Last Chance Unit 1

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah *County* Emery *Field* Wildcat-Last Chance Unit 1

The following is a correct report of operations and production (including drilling and producing wells) for the month of September, 19 60,

Agent's address Post Office Box 1200 *Company* Shell Oil Company
Farmington, New Mexico *Signed* Original signed by B. W. SHEPARD
Phone DA 5-8811 *Agent's title* Exploitation Engineer

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DATE PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
19 NW	26S	7E	1	-	-	-	-	-	-	Spudded 9-11-60 Drilling at 3310'

NOTE.—There were No runs or sales of oil; No M cu. ft. of gas sold; No runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Form 9-329
(January 1950)

16—25766-8 U. S. GOVERNMENT PRINTING OFFICE

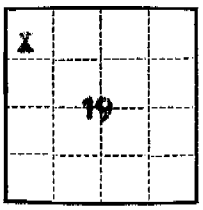
Form 9-331a
(Feb. 1961)

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office Salt Lake City, Utah

Lease No. SL 042499

Unit Last Chance



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	X
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	X
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

September 21, 1960

Well No. Last Chance Unit 1 is located 660 ft. from {N/S} line and 591 ft. from {E/W} line of sec. 19

NW NW 19 (¼ Sec. and Sec. No.) 26S (Twp.) 7E (Range) SLBM (Meridian)

Wildcat (Field) Emery (County or Subdivision) Utah (State or Territory)

The elevation of the ~~derrick floor~~ Kelly Bushing above sea level is 5970 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Spudded 9-11-60

9-11-60 Ran and cemented 16" conductor pipe at 35' with 50 sacks cement.

9-18-60 to 9-19-60 Ran and cemented (1463') 10-3/4", 40.5#, K-40 surface casing at 1474' with 702 cu. ft. 1-1 Diamix followed by 200 sacks cement treated with 2% calcium chloride. Good returns to surface. Flanged up and waited on cement. Pressure tested casing and BOP with 2500 psi, O.K.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Shell Oil Company

Address Post Office Box 1200

Farmington, New Mexico

By Original signed by B. W. SHEPARD
B. W. Shepard

Title Exploitation Engineer

GPO 862040

Form 9-331a
(Feb. 1951)

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Salt Lake City, Utah
Lease No. SL 042490
Unit Last Chance

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

October 11, 1960

Well No. Last Chance Unit 1 is located 660 ft. from {N/S} line and 591 ft. from {E/W} line of sec. 19

NW NW 19 (¼ Sec. and Sec. No.) | 26 S (Twp.) | 7 E (Range) | SLM (Meridian)

Wildcat (Field) | Emery (County or Subdivision) | Utah (State or Territory)

The elevation of the Kelly Bushing above sea level is 5970 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

10-9-60 DST #1 3706-3921 (Permian) Initial Shut in 1 hr., open 2 hrs., final shut in 2 hrs., strong blow, decreasing to weak after 40 min., dead after 70 min. Recovered 2218' (30 B) sulphurous muddy water. ISIP 1113, FP 893/1113, FSIP1113, HP 1903. Recovered water salinity 2090 PPM NaCl. Mud salinity 1105 PPM. NaCl

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Shell Oil Company

Address P. O. Box 1200

Farmington, N.M.

By Original signed by B. W. SHEPARD
B. W. Shepard

Title Exploitation Engineer

GPO 862040

Budget Bureau No. 42-R356.5.
Approval expires 12-31-60.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Utah
LEASE NUMBER SL 042199
UNIT Last Chance Unit 1

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah *County* Emery *Field* Wildcat-Last Chance Unit 1

The following is a correct report of operations and production (including drilling and producing wells) for the month of October, 19 60

Agent's address Post Office Box 1200 *Company* Shell Oil Company
Farmington, New Mexico *Signed* Original signed by B. W. SHEPARD
Phone DA 5-8811 *Agent's title* Exploitation Engineer

Sec. and ¼ of ¼	Twp.	Range	Well No.	Date Produced	Barrels of Oil	Gravity	Cu. Ft. of Gas (In thousands)	Gallons of Gasoline Recovered	Barrels of Water (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
NW	26S	7E	1	-	-	-	-	-	-	Drilling at 6102'

NOTE.—There were No runs or sales of oil; No M cu. ft. of gas sold; No runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

Copy to HC

Form 9-331a
(Feb. 1951)

X			
	19		

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office Salt Lake City, Utah
Lease No. SL 042499
Unit Last Chance

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL	X		

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

November 14, 1960

Well No. Last Chance Unit 1 is located 660 ft. from {N} line and 591 ft. from {W} line of sec. 19

NW NW 19 (¼ Sec. and Sec. No.) | 26S (Twp.) | 7E (Range) | SLBM (Meridian)

Wildcat (Field) | Emery (County or Subdivision) | Utah (State or Territory)

The elevation of the Kelly Bushing above sea level is 5970 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Status: Total Depth -6704'
Casing -10-3/4 @ 1474'
Hole Size -9" from 1474 to 6704'.

Proposed Work:

1. With open end drill pipe plug as follows:
   a. 75 sacks cement 5860-5960 (across top of Devonian)
   b. 75 sacks cement 4950-5050 (across top of Mississippian)
   c. 75 sacks cement 3600-3700 (across top of Permian Porosity)
   d. 75 sacks cement 3150-3250 (across top of Permian)
   e. 125 sacks cement 1400-1550 (across top of Wingate and shoe of surface casing)
2. Feel for top plug, recement if not above 1400'.
3. Cement at surface with a 10 sack cement plug, install marker.

(over)

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Shell Oil Company

Address P. O. Box 1200

Farmington, New Mexico

Original Signed By
W. M. MARSHALL

By W. M. Marshall

Title Division Exploitation Engineer

GPO 862040

Note: Verbal approval to abandon was given by D. F. Russell, USGS and by R. L. Schmidt, State of Utah Oil and Gas Conservation Commission to K. A. Hauptfleisch on 11-14-60.

Copy to AC

Form 9-331a
(Feb. 1951)

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

X			
		19	

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Salt Lake City, Utah
Lease No. SL 042499
Unit Last Chance

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	X
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

November 18, 1960

Well No. Last Chance Unit 1 is located 660 ft. from {N/S} line and 591 ft. from {E/W} line of sec. 19

NW NW 19 (¼ Sec. and Sec. No.) | 26S (Twp.) | 7E (Range) | SLBM (Meridian)

Wildcat (Field) | Emery (County or Subdivision) | Utah (State or Territory)

The elevation of the ~~derrick floor~~ Kelly Bushing above sea level is 5970 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

11-14-60 DST #2, 6300-6704 (Devonian-Elbert) ISI 60 min., open 2 hrs., FSI 2 hrs. Strong blow, weak after 15 min., dead after 45 min. Recovered 640' (63.0 B) mud cut water. Salinity 1320 ppm NaCl(t). ISIP 2150, FP 995/2150, FSIP 2150, HP 2930.

11-15-60 DST #3, 5420-5530 (Straddle-Mississippian) ISI 1 hr., open 2 hrs., FSI 2 hrs. Strong blow, weak after 25 min., dead after 50 min. Recovered 3890' (54 B) watery mud and muddy sulphur water. Salinity 1160 ppm NaCl(t). ISIP 1760, FP 1389/1780, FSIP 1780, HP 2580. (Bottom packer held OK)

(over)

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Shell Oil Company

Address Post Office Box 1200

Farmington, New Mexico

By Original Signed By W. M. MARSHALL
W. M. Marshall

Title Division Exploitation Engineer

GPO 862040

11-16-60 DST #4, 3620-3705 (Straddle-Permian-Toroweap) ISI 1 hr., open 2 hrs., FSI 2 hrs. Dead 5 min., weak blow for 1 hr. 15 min. decreasing to dead 1 hr. 40 min. Recovered 305' (1.7 B) slightly water cut mud. Salinity 580 ppm NaCl(t). ISIP 995, FP 45/145, FSIP 960 (Nrly Stb) HP 1695.

Form 9-331a
(Feb. 1951)

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office Salt Lake City, Utah

Lease No. SL 042499

Unit Last Chance

X				
	19		

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	X
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

November 30, 19 60

Last Chance
Well No. Unit 1 is located 660 ft. from X {N/S} line and 591 ft. from X {E/W} line of sec. 19

NW NW 19 (¼ Sec. and Sec. No.) 26S (Twp.) 7E (Range) SLBM (Meridian)

Wildcat (Field) Emery (County or Subdivision) Utah (State or Territory)

The elevation of ~~the derrick~~ Kelly Bushing floor above sea level is 5970 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Abandonment Work:

1. With open end drill pipe plugged as follows:
   a. 75 sacks cement 5860-5960 (across top of Devonian)
   b. 75 sacks cement 4950-5050 (across top of Mississippian)
   c. 75 sacks cement 3600-3700 (across top of Permian Porosity)
   d. 75 sacks cement 3150-3250 (across top of Permian)
   e. 135 sacks cement 1350-1550 (across top of Wingate and shoe of surface casing)
2. Located top plug in casing - 1350'.
3. Cemented at surface with a 10-sack cement plug, installed marker, abandoned 11-18-60.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Shell Oil Company

Address Post Office Box 1200

Farmington, New Mexico

Original Signed By
W. M. MARSHALL

By W. M. Marshall

Title Division Exploitation Engineer

Note: Estimated location clean up date (if weather permits) 1-1-61.

GPO 9 18 507

Copy to HC

Budget Bureau No. 42-R356.5.
Approval expires 12-31-60.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LAND OFFICE Salt Lake City, Utah
LEASE NUMBER SL 042499
UNIT Last Chance Unit 1

LESSEE'S MONTHLY REPORT OF OPERATIONS

State Utah County Emery Field Wildcat - Last Chance Unit 1

The following is a correct report of operations and production (including drilling and producing wells) for the month of November, 19 60,

Agent's address Post Office Box 1200 *Company* Shell Oil Company

Farmington, New Mexico *Signed* Original Signed By

Phone DAvis 5-6811 *Agent's title* DIV. W. M. MARSHALL Exploitation Engineer

SEC. AND ¼ OF ¼	TWP.	RANGE	WELL NO.	DATE PRODUCED	BARRELS OF OIL	GRAVITY	CU. FT. OF GAS (In thousands)	GALLONS OF GASOLINE RECOVERED	BARRELS OF WATER (If none, so state)	REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas)
19 NW NW	26S	7E	1	-	-	-	-	-	-	Abandoned 11-18-60. T.D. 6704'.

NOTE.—There were no runs or sales of oil; no M cu. ft. of gas sold; no runs or sales of gasoline during the month. (Write "no" where applicable.)

NOTE.—Report on this form is required for each calendar month, regardless of the status of operations, and must be filed in duplicate with the supervisor by the 6th of the succeeding month, unless otherwise directed by the supervisor.

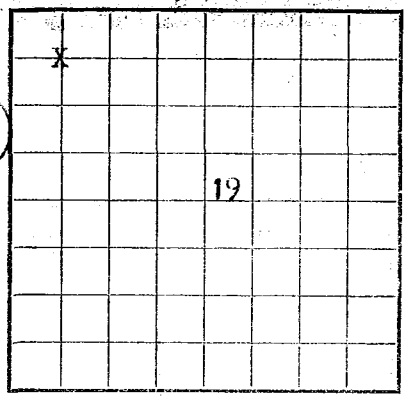
FORM 9-329
(January 1950)

16—25766-8 U. S. GOVERNMENT PRINTING OFFICE

Form 9-330

Bu[illegible] Bure[illegible] No. 42-R355.4.
Approval expires 12-31-60.

U. S. LAND OFFICE Salt Lake City, Utah
SERIAL NUMBER SL 042499
LEASE OR PERMIT TO PROSPECT .....



LOCATE WELL CORRECTLY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

Company Shell Oil Company Address P. O. Box 1200, Farmington, New Mexico
Lessor or Tract Federal - Last Chance Unit Field Wildcat State Utah
Well No. 1 Sec. 19 T. 26S R. 7E Meridian SLBM County Emery
Location 660 ft. {N./S.} of N Line and 591 ft. {E./W.} of W Line of Sec. 19 Elevation 5970 KB
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed Original Signed By W. M. MARSHALL

Date December 15, 1960 Title DIV. Exploitation Engineer

The summary on this page is for the condition of the well at above date.

Commenced drilling September 11, 1960 Finished drilling November 11, 1960

OIL OR GAS SANDS OR ZONES

(*Denote gas by G*)

None

No. 1, from ..... to ..... No. 4, from ..... to .....
No. 2, from ..... to ..... No. 5, from ..... to .....
No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

No. 1, from ..... to ..... No. 3, from ..... to .....
No. 2, from ..... to ..... No. 4, from ..... to .....

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
16"	—	—		50	—	—	—	—	Conductor
10-3/4"	40.5	—	—	1464	Baker	—	—	—	Surface

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
16"	40	42	Displacement	—	—
10-3/4"	1474	702 cu.ft.Diamix + 200	"	—	—

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

FOLD | MARK

Adapters—Material ---------- Size ----------

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 6704 feet, and from ---- feet to ---- feet

Cable tools were used from ---- feet to ---- feet, and from ---- feet to ---- feet

DATES

Abandoned as a "dry hole"
November 18, 1960

Put to producing ----------, 19----

The production for the first 24 hours was ---------- barrels of fluid of which ----% was oil; ----% emulsion; ----% water; and ----% sediment.

Gravity, °Bé. ----------

If gas well, cu. ft. per 24 hours ----------

Gallons gasoline per 1,000 cu. ft. of gas ----------

Rock pressure, lbs. per sq. in. ----------

EMPLOYEES

----------, Driller

Mountain States Drilling Co., Driller

----------, Driller

----------, Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
0	390	390	Carmel
390	1384	994	Navajo
1384	1527	143	Kayenta
1527	1909	382	Wingate
1909	2280	371	Chinle
2280	2292	12	Shinarump
2292	2940	648	Moenkopi
2940	3086	146	Sinbad
3086	3222	136	Lower Moenkopi
3222	3342	120	Kaibab
3342	3502	160	Coconino
3502	3724	222	Toroweep
3724	4304	580	Supai
4304	5002	698	Permian Carbonates
5002	5906	904	Redwall
5906	6220	314	Ouray
6220	6672	452	Elbert
6672	—	—	Lynch

(OVER)

DEC 1960

PD 4A 2-50 PRINTED IN U. S. A. 3-58
Preprint M 1718-P, 5-59

SHELL OIL COMPANY

Last Chance WELL NO. 1

Wildcat (FIELD)

Emery County, Utah (COUNTY)

DRILLING REPORT
FOR PERIOD ENDING

September 26, 1960

Section 19 (SECTION OR LEASE)

T. 26 S., R. 7 E. (TOWNSHIP OR RANCHO)

DAY 1960	DEPTHS FROM	DEPTHS TO	REMARKS
			Location: 660' South and 591' East from Northwest corner Section 19, T. 26 S., R. 7 E., S.L.M., Emery County, Utah **Elevation:** K.B. 5970.2 G.L. 5958.9 D.F. 5968.4
9/10	0	40	Drilled 9" hole to 40'. Reamed to 26". Set 16" conductor with 42 sacks cement plus 1-1/2 sacks $CaCl_2$. Spud: 5:00 A.M. 9-11-60
9/11 to 9/14	40	1476	Drilled 9" hole to 1476'. Lost circulation 410-420'. Recovered with 100 bbls. mud and lost circulation material. Deviation: 1/4° @ 234' 3/4° @ 390' 1° @ 680' 1-1/4° @ 847' 1-1/4° @ 1000' 1-1/4° @ 1105' 1° @ 1408'
9/14 to 9/19	40	1476	Reamed to 13-3/4". Ran and set 10-3/4" H-40, 40.5# casing at 1474' with 702 cu. ft. 1-1 Diamix followed with 200 sacks class A cement, 2% $CaCl_2$. Good returns to surface. Tested 2500 psi, O.K.
9/20 to 9/26	1474	3064	Drilled 9" hole. Deviation: 1-1/4° @ 1590 3/4° @ 1830 3/4° @ 2040 1-1/4° @ 2315 1-1/2° @ 2623 2° @ 2918 2-1/4° @ 3002
			END

CONDITION AT BEGINNING OF PERIOD

HOLE SIZE	HOLE FROM	HOLE TO	CASING SIZE	DEPTH SET
26"	0	40	16"	40'
13-3/4"	0	1476	10-3/4"	1474'
9"	1476	3064		

DRILL PIPE SIZES 4-1/2"

Average Mud Properties

Wt. 8-6-9-4, Vis. 32-40, W.L. 8.4-11.7, F.C. 1/32 - 2/32 pH 10-12

J. D. McLehaney

FD 4A 2-60 PRINTED IN U. S. A. 5-58
Preprint M 1718-P 5-59

SHELL OIL COMPANY

WELL NO. 1

DRILLING REPORT
FOR PERIOD ENDING

10-19-60

Wildcat (FIELD)

Emery County, Utah (COUNTY)

Last Chance (SECTION OR LEASE)

Sec. 19, T.26 S., R.7 E. (TOWNSHIP OR RANCHO)

DAY	DEPTHS FROM	DEPTHS TO	REMARKS
9-26	3064		Twisted off drill collar pin, 8 collars from bottom.
9-27	3064		Recovered fish after 3 runs. Left 3 cones in hole. Ran clusterite shoe with basket. No recovery. Ran Bit #16, HTC W7R. Pulled. Ran magnet. Recovered 1 cone and bearings.
9-28 to 9-29	3064	3195	Ran magnet (2nd run), recovered 1 cone and bearings. Ran magnet, 3rd run, recovered cone and bearings. Drilling 9" hole. Dev. 2-1/2° @ 3190.
9-30	3195		Stuck while running in.
10-1 to 10-8	3195	3920	Ran Dialog. Stuck 7 drill collars off bottom at 2985'±. Ran string shot - backed off. Ran in jars and bumper sub. Came loose after about 30 minutes. Pulled. Ran in bit. Drilling 9" hole. Dev. 2-1/4° @ 3507.
10-8	3920		DST #1, 3706-3921. Ran Halliburton tester with 2 7-3/4" expanding shoe packers set at 3702' and 3706'; 215' of tail pipe, 3 Amerada pressure recorders, 1 inside, 2 outside (BT #1084, BT #1086, PRD #3176). No air or water cushion. Initial open period 2 min., initial shut-in 1 hr., flow period 2 hrs., final shut-in 2 hrs. Immediate strong blow decreasing to weak after 40 min. and dying at 70 min. Total recovery, 2218' (30 bbls.) of mud cut sulphurous water, salinity 2050 ppm NaCl. Mud salinity before testing was 1105 ppm NaCl. ISIP 1113 (60 min.), FSIP 1113 (120 min.) (stabilized), IFP/FFP 893/1113, HP 1903.
10-9 to 10-18	3920	4982	Drilling 9" hole. Dev. 2° @ 4076 2-1/2° @ 4352 1-1/4° @ 4720
10-19	4982	5001	Core #1 - recovered 18-3/4' sandstone, siltstone, and dolomite. Christensen diamond bit 8-7/8" x 4", Type 14917, Bit serial No. K 1504. Core barrel 6-3/4" x 4" x 60. Length 64.94, No. 833.
			END

CONDITION AT BEGINNING OF PERIOD

HOLE SIZE	HOLE FROM	HOLE TO	CASING SIZE	DEPTH SET
26"	0	40	16"	40'
13-3/4"	0	1476	10-3/4"	1474'
9"	1476	3064		

DRILL PIPE SIZES 4-1/2"

J. L. Thurber
SIGNED

PD 4A 2-60 PRINTED IN U. S. A. 3-58
Preprint #M 1718-P 5-59

SHELL OIL COMPANY

WELL NO. 1

DRILLING REPORT
FOR PERIOD ENDING

11-14-60

Wildcat
(FIELD)

Emery County, Utah
(COUNTY)

Last Chance
(SECTION OR LEASE)

Sec. 19, T26S, R7E,
(TOWNSHIP OR RANCHO)

DAY	DEPTHS FROM	DEPTHS TO	REMARKS
10-19 to 10-22	5001	5378	Drilling 9" hole.
10-23 to 10-24	5378	5500	Drilling 9" hole. Lost circulation, 425 bbls. @ 5469'. Mixed mud w/lost circulation material. Drilled to 5486', losing mud. Mixed mud while drilling (approx. 100 bbls.)
10-24 to 10-29	5500	6086	Drilling with full returns. Dev. 2-3/4° @ 5956'.
10-30 to 11-3	6086	6378	Drilling 9" hole. Losing circulation while drilling (approx. 200 bbls.) 6161' - 6214'. Mixed mud w/lost circulation material. Drilling w/full returns @ 6214'.
11-4 to 11-11	6378	6704	Drilling 9" hole. Lost 1 cone @ 6399'. Ran magnet; picked up cone on first run. Drilling 9" hole.
11-12 to 11-13	6704		Ran Welex Induction-Electric, Gamma Ray-Neutron & Contact-Caliper Logs. Ran Century Geophysical-Schlumberger Seismic Reference Survey (Induction Sonic log).
11-14	6704		Ran DST No. 2. Interval 6300-6704. Conventional test using 2 - 7-1/2" sidewall anchors and 2 - 7-3/4" expanding shoe packers. Initial shut in time 1 hr., flow 2 hrs. and final shut in 2 hrs. During flow, received an immediate strong blow which decreased to a weak blow after 15 minutes and finally died at 45 minutes. Recovered 4540 feet (60± bbls) mud cut water with a salinity of 1320 ppm. NaCl. Initial shut in pressure 2150 (60 minutes); final shut in pressure of 2150, stabilized (120 minutes). Initial flow pressure 995; final flow pressure 2150; and hydrostatic pressure 2930.

CONDITION AT BEGINNING OF PERIOD

HOLE SIZE	HOLE FROM	HOLE TO	CASING SIZE	DEPTH SET
26"	0	40	16"	40'
13-3/4"	40	1476	10-3/4"	1474'
9"	1476	5704		

DRILL PIPE SIZES

J. D. McLehaney
SIGNED

PD 4A 2-50 PRINTED IN U. S. A. 3-58
Preprint M 1718-P 5-59

SHELL OIL COMPANY

WELL NO. 1

DRILLING REPORT
FOR PERIOD ENDING
November 18, 1960

Wildcat (FIELD)
Emery County, Utah (COUNTY)

Last Chance (SECTION OR LEASE)
Sec. 19, T. 26 S., R. 7 E. (TOWNSHIP OR RANCHO)

DAY	DEPTHS FROM	DEPTHS TO	REMARKS
11-14 to 11-15	6704		Ran DST No. 3, straddle testing interval 5420-5530' (Leadville), using 2 - 7" sidewall anchors, 2 - (lower) 7-3/4" expanding shoe packers and 2 - (upper) 7-3/4" expanding shoe packers. Tool was initially shut in 1 hour, flow 2 hours and final shut in for 2 hours. During the flow there was an immediate strong blow diminishing after 25 minutes to weak and dying at 50 minutes. The test recovered 3890 ft. (54 bbls.) water cut mud, mud cut sulphurous water and sulphurous water with a salinity of 1160 ppm NaCl. The initial shut in pressure was 1780 (60 min.), final shut in pressure of 1780, stabilized (120 min.). The flowing pressures were 1389 initially, and 1780 final. Hydrostatic pressure was 2580 psi.
11-16	6704		Ran DST No. 4, straddle testing interval 3620-3705' (Supai), using 2 7-3/4" expanding shoe packers (upper) and 2 lower set with 2 - 7" sidewall anchors. Initial open 3 min., shut in 1 hour, flow 2 hrs., and final shut in 2 hrs. During flow the blow began dead, became faint at 5 min., gradually increased to weak until 1 hr., 15 min., then decreased to dead at 1 hr., 40 min. Recovery was 305 feet (1.7 bbls.) slightly water cut mud with salinity of 580 ppm NaCl. Initial shut in pressure was 995 (60 min.), final shut in pressure 960 after 120 min. (nearly stabilized), initial flow 45, final flow 145, and hydrostatic pressure 1695 psi.
11-17 to 11-18	6704		Plugged as follows: 75 sacks @ 5960 75 sacks @ 5050 75 sacks @ 3700 75 sacks @ 3250 135 sacks @ 1550 Found top of plug @ 1350. Cemented at surface with 10 sack cement plug, installed marker. Released rig 10:00 A.M. Abandoned 11-18-60. Contractor: Mountain States Drilling Co. Contract Drilling Foreman: Red Porter Contract Drillers: Don Holty, Ralph LeMasters, John Cestnick Shell Drilling Foremen: R. I. Alberts, C. L. Christiansen

CONDITION AT BEGINNING OF PERIOD

HOLE SIZE	HOLE FROM	HOLE TO	CASING SIZE	DEPTH SET
26"	0	40	16"	40'
13-3/4"	40	1476	10-3/4"	1474'
9"	1476	6704		

DRILL PIPE SIZES 4-1/2"

J. D. McLehaney
SIGNED

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 0 to 350
_____ ____ to ____

Well Last Chance Unit No. 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged (Not)
0	120		No Sample	
120	130	100	Limestone, light gray, IVFA, argillaceous, very silty.	
130	140	100	Sandstone, light gray, tan, very fine, very silty, round, well cemented, well sorted, very calcareous.	
140	150	100	Siltstone, light tan, very calcareous with trace vugular porosity.	
150	160	100	Siltstone, as above with siltstone, light gray, micaceous.	
160	170	100	Limestone, light gray-tan, IVFA, very silty.	
170	180	100	Siltstone, tan, very calcareous, micaceous.	
180	190	100	Limestone, tan, IVFA, very silty.	
190	210	100	Siltstone, light gray, very calcareous, trace mica.	
210	220	100	Siltstone, as above, with occasional anhydrite.	
220	230	100	Siltstone, light gray-light green, very calcareous, argillaceous, trace mica.	
230	240	70 30	Siltstone, as above, light gray, oolitic. Chert, with occasional medium quartz grains.	
240	250	100	Anhydrite, white-pink.	
250	270	100	Anhydrite, white with light gray siltstone partings, very calcareous, argillaceous.	
270	280	100	Sandstone, tan-orange, very fine, sub-round, dolomitic.	
280	300	100	Sandstone, as above, with occasional anhydrite and gypsum (satin spar) partings.	
300	320	100	Siltstone, light gray-maroon, dolomitic, trace mica.	
320	330	100	Siltstone, light green, maroon, argillaceous, dolomitic, with trace gypsum (satin spar).	
330	340	100	Shale, light gray, silty, dolomitic.	
340	350	100	Shale, as above, with occasional anhydrite.	

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DITCH SAMPLES

Examined by McLehaney 350 to 1910
_____ to ____

Well Last Chance Unit No. 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged (Not)
350	360	100	Siltstone, light gray, very dolomitic, argillaceous, trace mica.	
360	370	100	Sandstone, white, very fine, round, well sorted, fair cementing , calcareous.	
370	380	100	Limestone, tan, IVFA, silty.	
380	390	100	Limestone, light brown, IIIF-MA, oolitic, with abundant maroon siltstone partings, calcareous.	
390	550	100	Sandstone, tan, very fine-fine, round, unconsolidated.	
550	600	100	Sandstone, as above, fine-medium.	
600	790	100	Sandstone, as above, fine-coarse.	
790	840		No Sample	
840	900	100	Sandstone, as above.	
900	1150	100	Sandstone, tan, occasional pink, very fine-fine, round, unconsolidated.	
1150	1300	100	Sandstone, as above, occasional maroon.	
1300	1320		No Sample	
1320	1380	100	Sandstone, orange, very fine-fine, round, well sorted, fair cementing , calcareous.	
1380	1390	90 10	Sandstone, as above, with occasional light gray shale partings. Shale, light green.	
1390	1460	100	Sandstone, clear-pink, very fine-fine, occasionally medium round with occasional green shale partings, occasional anhydrite	
1460	1475	100	Shale, maroon (Poor Sample Quality)	
1476	1490		Cement	
1490	1550		No usable sample	
1550	1610	100	Sandstone, white-light red, very fine-fine, silty, dolomitic.	
1610	1650	100	Sandstone, as above, unconsolidated, trace porosity.	
1650	1700	100	Sandstone, as above, light red, very silty, unconsolidated.	
1700	1900	100	Sandstone, as above, tan-light red, uniform, silty, unconsolidated.	
1900	1910	90 10	Sandstone, as above. Shale, light gray-light green.	

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DITCH SAMPLES

Examined by McLehaney 1910 to 2230
_____ ____ to ____

Well Last Chance Unit No. 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged (Not)
1910	1920	50	Sandstone, as above.	
		50	Shale, as above, light gray, light green, light brown, occasionally dolomitic	
1920	1940	100	Siltstone, light green, light brown, light gray, occasionally shaly, occasionally dolomitic.	
1940	1970	100	Siltstone, as above, white-tan, light green.	
1970	2000	100	Siltstone, as above, cream-gray, pink, occasionally light green.	
2000	2030	100	Siltstone, as above, cream, light green, light red, yellow, light gray, occasionally shaly with occasional uniform pink sandstone partings	
2030	2040	90	Siltstone, as above.	
		10	Sandstone, white-gray, fine, fine-good sorting, calcareous, micaceous, with abundant varicolored shale inclusions.	
2040	2050	80	Siltstone, as above, with yellow shale partings.	
		20	Sandstone, pink-light red, very fine-, round-sub-round, fair-poor cementing, good sorting.	
2050	2060	80	Shale, green, dolomitic with occasionally silty partings.	
		20	Sandstone, gray, fine-medium, fair sorting, calcareous, trace mica, with shale and silt inclusions.	
2060	2070	100	Shale, as above.	
2070	2080	20	Shale, as above.	
		80	Shale, yellow, occasional light green, occasionally silty, calcareous.	
2080	2120	100	Shale, yellow, occasional light green, occasionally silty, calcareous.	
2120	2130	30	Shale, yellow, as above.	
		70	Shale, pink-light red, calcareous.	
2130	2150	100	Shale, pink-light red, as above, with trace yellow shale.	
2150	2190	100	Shale, yellow, light green, light red, calcareous, occasionally silty, occasionally micaceous.	
2190	2200	50	Shale, as above.	
		50	Sandstone, white-light gray, very fine, good sorting, fair cementing, calcareous.	
2200	2220	100	Shale, as above, red with occasional light green, pink, yellow, calcareous, with occasional trace sandstone, as above.	
2220	2230	60	Shale, as above, red, maroon, pink, yellow, calcareous, occasionally micaceous.	
		40	Sandstone, white-light gray, very fine-silty, good sorting, fair cementing, slightly calcareous.	

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DITCH SAMPLES

Examined by McLehaney 2230 to 2660
_____ to ____

Well Last Chance #1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (not)
2230	2240	40 60	Shale, as above, red, yellow. Siltstone, light gray-light green, dolomitic, micaceous.
2240	2250	100	Siltstone, as above, grading to shale, light gray-light green, pink, light red, yellow, soft.
2250	2280	100	Shale, light gray-light green, pink, light red, yellow, soft, calcareous with occasional light gray silty partings.
2280	2290	100	Conglomerate, white-light gray, very finely conglomeratic, with silt and shale partings, pyritic, micaceous.
2290	2300	100	Shale, brown, yellow, light-gray-light green, soft, calcareous.
2300	2350	100	Shale, as above, firm, with occasional gray silty partings.
2350	2430	100	Shale, as above, occasionally soft.
2430	2460	100	Shale, as above, firm, brown, occasionally light green, yellow.
2460	2470	100	Shale, as above, brown, light green, white, firm, occasionally dolomitic.
2470	2490	100	Shale, as above, brown with occasional cream,pink, light green, yellow.
2490	2510	100	Shale, as above, cream-light green, brown, light gray.
2510	2520	100	Shale, as above, brown with occasional light-gray-light green.
2520	2540		No Sample
2540	2550	100	Shale, as above.
2550	2560	100	Shale, as above, with soft light green shale.
2560	2580	100	Shale, as above, brown, with light green, light pink, yellow, firm, occasionally dolomitic.
2580	2590	100	Shale, as above, brown, light green, soft-firm.
2590	2640	100	Shale, as above, brown, firm with light green, maroon, firm-soft.
2640	2650	100	Shale, as above, brown, maroon, light green, pink, firm.
2650	2660	100	Shale, as above, brown, with light green, yellow, pink.

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 2660 to 3010
_____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (NOT)
2660	2670	90	Shale, brown with light green, yellow, pink, firm, slightly dolomitic
		10	Siltstone, brown, light tan, dolomitic, with very fine mica, with occasional white anhydrite inclusions
2670	2680	20	Shale, as above
		80	Siltstone, as above
2680	2700	100	Siltstone, as above
2700	2720	100	Shale, brown, light green, maroon, soft, dolomitic, with trace Siltstone partings
2720	2770	100	Shale, as above brown, light green, pink, yellow, firm, slightly Dolomitic
2770	2790	60	Shale, as above
		40	Sandstone, light brown, very fine-silt, good sorting, fair cementing grading to siltstone, micaceous
2790	2800	80	Shale, as above
		20	Siltstone, brown, micaceous, occasionally sandy
2800	2820	70	Shale as above
		30	Siltstone, as above
2820	2830	60	Shale, as above
		40	Siltstone, as above
2830	2840	20	Shale, as above
		80	Siltstone, as above
2840	2860	70	Shale, as above
		30	Siltstone, as above
2860	2870	50	Shale, as above
		50	Siltstone, as above
2870	2880	90	Shale, light green with brown, yellow pink, maroon, firm
		10	Siltstone, as above
2880	2890	80	Shale, as above
		20	Siltstone, as above
2890	2900	50	Shale, brown with light green, pink, maroon
		50	Siltstone, as above
2900	2910	90	Shale, brown, light green, yellow, pink, firm, slightly dolomitic
		10	Siltstone, as above
2910	2920	100	Shale, as above with trace siltstone, as above
2920	2930	100	Shale, as above, brown, firm, with abundant brown siltstone
2930	2940	10	Shale, brown, firm
		90	Dolomite, cream, IVFA
2940	2950	100	Shale, as above with trace dolomite as above
2950	2970	100	Shale, as above
2970	2980	100	Dolomite, white - light gray IVFA, slightly calcareous with trace shale, as above
2980	2990	10	Shale, brown, firm
		90	Limestone, cream, IVFA, slightly dolomitic
2990	3000	10	Shale, as above, slightly silty
		20	Sandstone, white, very fine, good sorting, good cementing, very calcareous
		70	Dolomite, light green to light gray, IVFA
3000	3010	100	Limestone, cream-light gray IVFA with trace dolomite, as above and shale as above

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 3010 to 3250
_____ ____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (NOT)
3010	3020	100	Limestone, white-cream, IVFA, occasionally fossiliferous, trace vugular porosity, 10% black oil stain, no fluorescence, light yellow cut fluorescence.
3020	3030	100	Limestone, cream-tan, IVFA, pin point porosity, fossiliferous, 90% black oil stain, no fluorescence, yellow cut fluorescence
3030	3040	100	Limestone, as above with 50-60% stain as above
3040	3050	100	Dolomite, cream IVFA, trace fracture porosity, trace fluorescence, light blue milky cut fluorescence, 20-30% black stain, no fluorescence, yellow-orange cut fluorescence
3050	3060	100	Dolomite, cream as above with trace stain, nc fluorescence, yellow-orange cut fluorescence
3060	3070	100	Siltstone, brown, firm with very fine mica, with occasional trace dolomite, as above
3070	3080	50	Siltstone, as above
		50	Dolomite, light gray IVFA, occasional III, occasional pelletoidal
3080	3090	70	Siltstone, as above
		30	Dolomite, as above, light green - light gray, very pelletoidal
3090	3140	100	Siltstone, as above with white anhydrite partings.
3140	3150	60	Siltstone, as above
		40	Siltstone, light green-light gray, dolomitic, with very fine mica
3150	3160	10	Siltstone, brown, as above
		90	Siltstone, light green-light gray, as above
3160	3170	100	Siltstone, light green-light gray as above with trace brown siltstone, as above
3170	3190	100	Siltstone, as above with occasional pyrite
3190	3200	10	Siltstone, light green to light gray, firm, dolomitic with very fine mica
		10	Siltstone, brown, firm with very fine mica
		40	Chert, clear to white, with occasional black stain, no fluorescence, bright yellow cut fluorescence
		40	Sandstone, white, medium to very coarse, rounded to subrounded, 5-10% porosity, black stain throughout, no fluorescence, bright yellow cut fluorescence
3200	3210	60	Chert, as above, with about 10% stain as above
		40	Sandstone, as above, with about 80% stain as above
3210	3220	100	Chert, as above, clear to white, with 5% stain as above with sandstone partings
3220	3230	50	Chert, as above, 50% black stain as above, occasional light yellow cut fluorescence with occasional white sandstone partings
		50	Dolomite, white to light gray, I-III VFA, very silty with 25% black stain, no fluorescence, light yellow cut fluorescence
3230	3240	10	Chert, as above
		90	Dolomite, as above, white, I-III VFA-B, occasional light yellow fluorescence, bright yellow cut fluorescence
3240	3250	70	Chert, as above
		30	Dolomite, as above, with stain and fluorescence as above

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 3250 to 3530
_____ to _____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (NOT)
3250	3260	100	Dolomite, as above, white, IVFA with occasional trace of stain as above, with occasional chert
3260	3280	70	Dolomite, as above
		30	Chert, as above
3280	3290	70	Dolomite, as above, I-III VFA, occasional B, 5% black stain, light yellow fluorescence, bright yellow cut fluorescence
		30	Chert, as above
3290	3300	50	Dolomite, as above, with about 5% stain and fluorescence as above
		50	Chert, as above
3300	3310	50	Dolomite, as above, with trace stain and fluorescence as above
		50	Chert, as above
3310	3330	90	Dolomite, as above
		10	Chert, as above
3330	3340	100	Sandstone, clear to white, very fine, subrounded to subangular, good sorting, good cementing, calcareous, with occasional trace chert (abundant cavings)
3340	3380	100	Sandstone, as above, 70-80 cuttings gas: 22 units, hot wire; .044 mole per cent N C_4 H_{10}, no mud gas, no stain
3380	3390	100	Sandstone, as above, about 5% porosity, trace yellow fluorescence, light yellow cut fluorescence, 40% brown to black stain, no fluorescence, yellow cut fluorescence Cuttings Gas: 30 units, hot wire; C H_4 Tr; C_2H_6, 0.14 mole per cent; C_3H_8, .012 mole per cent; IC_4H_{10}, Tr; N C_4H_{10}, .066 mole per cent.
3390	3400	20	Sandstone, clear to white, very fine, subrounded to subangular, good sorting, good cementing, calcareous, 50% brown to black stain, no fluorescence, yellow cut fluorescence
		80	Dolomite, white, IVFA, very sandy
3400	3410	100	Sandstone, white, very fine to fine, with occasional coarse, rounded to subrounded, fair to good sorting, good cementing, very dolomitic, trace to 5% porosity
3410	3420	100	Sandstone, as above, fair to poor cementing, occasionally unconsolidated, with increasing amounts large loose grains
3420	3430	40	Sandstone, as above, clear to white, fair to good cementing, with occasional large loose grains
		60	Dolomite, white, IVFA, occasionally very sandy, with occasional anhydrite partings
3430	3480	100	Sandstone, as above, with trace dolomite as above
3480	3510	100	Sandstone, as above, fine to coarse
3510	3520	90	Sandstone, as above
		10	Anhydrite, white, with trace light gray dolomite, IVFA
3520	3530	70	Sandstone, as above
		20	Dolomite, white to cream, I-III VFA, occasionally fossiliferous
		10	Anhydrite, as above

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 3530 to 3700
_____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (NOT)
3530	3540	60	Sandstone, as above
		10	Dolomite, as above
		30	Anhydrite, as above
3540	3550	50	Sandstone, as above
		30	Dolomite, cream to light tan, I occasional III VFA
		20	Anhydrite, as above
3550	3560	20	Sandstone, as above
		80	Dolomite, as above, white
3560	3570	60	Sandstone, as above
		40	Dolomite, as above, with trace anhydrite partings
3570	3580	70	Sandstone, as above
		10	Dolomite, as above
		20	Anhydrite, white
3580	3590	70	Sandstone, as above
		20	Dolomite, as above
		10	Anhydrite, as above
3590	3600	80	Sandstone, as above, with trace black stain, no fluorescence, yellow cut fluorescence
		10	Dolomite, as above
		10	Anhydrite, as above
3600	3610	30	Sandstone, as above
		70	Dolomite, as above, with abundant anhydrite partings, trace stain, no fluorescence, yellow cut fluorescence
3610	3620	100	Dolomite, tan, I-III VFA, fossiliferous, sandstone partings, trace stain, black, light yellow fluorescence, light yellow cut fluorescence
3620	3630	90	Sandstone, clear to white, medium to coarse, round, fair cementing, fair sorting, 50% black stain, no fluorescence, yellow cut fluorescence
		10	Dolomite, as above
3630	3640	100	Sandstone, as above, 80% black stain, no fluorescence, bright yellow cut fluorescence
3640	3650	20	Sandstone, as above, trace stain, no fluorescence, bright yellow cut fluorescence
		80	Dolomite, light tan, I-III VFA with white anhydrite partings
3650	3660	50	Sandstone, as above
		50	Dolomite, as above
3660	3670	100	Dolomite, as above, with sandstone and occasional anhydrite partings
3670	3680	80	Sandstone, white, medium to coarse, round to subrounded, trace black stain, no fluorescence, yellow cut fluorescence
		20	Dolomite, as above
3680	3690	100	Sandstone, as above, with occasional dolomite, 60% black stain, light yellow fluorescence, bright yellow cut fluorescence
3690	3700	90	Sandstone, as above, with dolomite, trace black stain, no fluorescence, yellow cut fluorescence
		10	Dolomite, light tan, I-III VFA with occasional anhydrite partings

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DITCH SAMPLES

Examined by McLehaney 3700 to 3890
_____ ____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged (NOT)
3700	3710	100	Dolomite,	as above, occasionally fossiliferous, with occasional sandstone and anhydrite partings
3710	3720	70	Dolomite,	as above, with anhydrite partings
		30	Sandstone,	white, medium to coarse, rounded to subrounded, very dolomitic
3720	3730	20	Dolomite,	as above
		80	Sandstone,	as above, 5-10% porosity, 50% stain, brown to black, 10% light yellow fluorescence, yellow cut fluorescence
3730	3740	100	Sandstone,	as above, 80% brown to black stain, trace fluorescence, yellow cut fluorescence
3740	3750	100	Sandstone,	as above, unconsolidated, with large loose quartz grains, 30% brown to black stain, trace fluorescence, yellow cut fluorescence
3750	3760	100	Sandstone,	as above, 30% stain as above, 70% fluorescence, pale yellow cut fluorescence
3760	3770	100	Sandstone,	as above, fair cementing, 60% stain, trace light yellow fluorescence, light yellow cut fluorescence
3770	3780	100	Sandstone,	as above, 80% stain, 10% light yellow fluorescence, yellow cut fluorescence
3780	3790	100	Sandstone,	as above, 70% stain, 50% yellow fluorescence, light blue to light yellow cut fluorescence
3790	3800	100	Sandstone,	as above, medium, unconsolidated, 30% stain, 30% yellow fluorescence, light yellow to light blue cut fluorescence
3800	3810	100	Sandstone,	as above, 20% black stain, 20% light yellow fluorescence, milky cut fluorescence
3810	3820	100	Sandstone,	as above, with abundant large loose grains, 60% brown to black stain, 60% light yellow fluorescence, bright yellow cut fluorescence
3820	3830	100	Sandstone,	as above, coarse, 40% brown stain, 40% light yellow fluorescence, bright yellow cut fluorescence
3830	3840	100	Sandstone,	as above, 40% brown to black stain, 40% light yellow and light blue fluorescence, light blue to light yellow cut fluorescence
3840	3850	100	Sandstone,	clear to white, fine to medium, with occasional large loose grains, unconsolidated, dolomitic, 40% brown to black stain, 100% pale yellow fluorescence, light blue cut fluorescence
3850	3860	100	Sandstone,	as above, 30% brown stain, 50% yellow fluorescence, milky cut fluorescence
3860	3870	100	Sandstone,	as above, medium to coarse, abundant large loose grains, unconsolidated, 60% brown to black stain, 60% yellow fluorescence, milky cut fluorescence
3870	3880	100	Sandstone,	as above, 70% brown stain, 80% yellow fluorescence, milky cut fluorescence
3880	3890	100	Sandstone,	as above, medium, occasionally coarse, fair sorting, fair cementing, 60% brown stain, 60% yellow fluorescence, milky cut fluorescence

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DITCH SAMPLES

Examined by McLehaney 3890 to 4280
_____ ____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (NOT)
3890	3900	100	Sandstone, as above, medium, unconsolidated, 30% brown stain, 30% yellow fluorescence, milky cut fluorescence
3900	3910	100	Sandstone, as above, medium, unconsolidated, 10% brown to black stain, 20% yellow fluorescence, milky cut fluorescence
3910	3920	100	Sandstone, as above, fine, fair cementing, good sorting, 20% stain, 10% yellow fluorescence, milky cut fluorescence
3920	3930	100	Sandstone, as above, unconsolidated, pyritic, trace brown stain, trace light yellow fluorescence, milky cut fluorescence
3930	3940	100	Sandstone, as above, coarse, unconsolidated, pyritic, trace brown stain, trace light yellow fluorescence, milky cut fluorescence
3940	3950	100	Sandstone, as above, medium, occasionally coarse, subrounded to subangular, fair to poor cementing, pyritic
3950	3970	100	Sandstone, as above, fine to medium, occasionally coarse
3970	3990	100	Sandstone, as above, very pyritic
3990	4000	100	Sandstone, as above, fine to medium, fair to good cementing, good sorting, dolomitic, pyritic
4000	4020	100	Sandstone, as above, fine to medium, unconsolidated
4020	4060	100	Sandstone, as above, clear to tan, unconsolidated
4060	4070	100	Sandstone, as above, medium, fair cementing
4070	4080	100	Sandstone, as above, fine to coarse, with abundant large loose grains, rounded to subrounded, poor cementing
4080	4100	100	Sandstone, as above, unconsolidated
4100	4120	100	Sandstone, as above, with occasional large loose grains, unconsolidated
4120	4130	100	Sandstone, as above, fine to medium, fair cementing
4130	4150	---	No Sample
4150	4160	100	Sandstone, as above, tan, fine to medium, subangular to subrounded, slightly dolomitic
4160	4170	80	Sandstone, as above
		20	Sandstone, reddish brown, fine, fair to poor cementing, fair sorting, slightly calcareous
4170	4190	90	Sandstone, as above, tan, fine to coarse, rounded to subrounded, poor cementing, unconsolidated
		10	Sandstone, as above, reddish brown
4190	4200	100	Sandstone, as above, tan, coarse, occasionally fine to medium, unconsolidated
4200	4210	100	Sandstone, as above, medium to coarse, fair to poor cementing
4210	4250	100	Sandstone, tan, medium, occasionally coarse, fair cementing
4250	4260	20	Sandstone, as above
		80	Sandstone, light red, very fine to fine, fair to good sorting, fair cementing, slightly dolomitic
4260	4270	70	Sandstone, as above, tan
		30	Sandstone, as above, light red
4270	4280	80	Sandstone, as above, tan
		20	Sandstone, as above, light red

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DITCH SAMPLES

Examined by McLehaney 4280 to 4350
Thurber 4350 to 4450

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged
4280	4290	100	Sandstone, white, fine to medium, subangular to subrounded, fair sorting, fair cementing, dolomitic	
4290	4300	100	Sandstone, tan, fine, subangular to subrounded, good sorting, fair to good cementing, dolomitic	
4300	4310	100	Siltstone, light green, grades to very fine sandstone, pyritic	
4310	4320	10	Siltstone, as above	
		90	Dolomite, white to pink, IVFA, pyritic	
4320	4330	40	Sandstone, white, fine grained, good sorting, fair cementing, dolomitic	
		60	Dolomite, as above, with quartz grains	
4330	4340	30	Sandstone, as above	
		70	Dolomite, as above, white	
4340	4350	100	Dolomite, as above	
4350	4360	100	Dolomite, white to cream, IVFA, with occasional floating quartz grains, occasionally siliceous (abundant white sandstone cavings)	
4360	4370	70	Dolomite, white to cream, as above	
		30	Dolomite, gray to green, III VFA, silty	
4370	4380	90	Dolomite, white to cream, as above	
		10	Dolomite, gray to green, as above	
4380	4390	90	Dolomite, white to cream, as above	
		10	Chert, red to brown, banded	
		Tr.	Siltstone, red to brown	
		Tr.	Dolomite, gray to green, as above	
4390	4400	100	Dolomite, cream to pink, IVFA with fine to medium floating quartz grains	
		Tr	Chert, as above	
		Tr	Siltstone, as above	
4400	4410	60	Sandstone, white, fine to medium grained, dolomitic, fair sorting	
		30	Dolomite, as above	
		10	Shale, vari-colored, slightly calcareous	
		Tr	Chert, as above	
4410	4420	50	Shale, as above	
		30	Dolomite, light gray to green, III VFA, silty	
		20	Sandstone, white, as above	
4420	4430	70	Dolomite, white to cream, IVFA, occasionally siliceous	
		10	Shale, vari-colored, slightly calcareous	
		10	Chert, white to reddish brown, with occasional clear anhydrite inclusions	
		10	Sandstone, white, fine to medium grained, dolomitic, fair sorting	
4430	4440	70	Dolomite, as above	
		20	Chert, as above	
		10	Siltstone, maroon, dolomitic, hard	
		Tr	Shale, as above	
		Tr	Sandstone, as above	
4440	4450	50	Shale, as above	
		20	Siltstone, as above	
		20	Dolomite, as above	
		10	Sandstone, as above	
		Tr	Chert, as above	

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DITCH SAMPLES

Examined by Thurber 4450 to 4580
_____ ____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged (NOT)
4450	4460	50	Sandstone, as above	
		30	Shale, as above	
		20	Siltstone, as above, grading to sandstone	
		Tr	Chert, as above	
		Tr	Dolomite, as above	
4460	4470	80	Sandstone, white, fine to medium grained, occasionally coarse, sub-rounded, fair sorting, dolomitic cement, occasional reddish brown sandstone	
		10	Shale, as above	
		10	Siltstone, as above, occasionally calcareous	
		Tr	Chert, as above	
4470	4490	100	Sandstone, as above	
		Tr	Limestone, white, IVFA, siliceous, glauconitic	
		Tr	Shale, as above	
		Tr	Siltstone, as above	
4490	4510	100	Sandstone, as above	
		Tr	Shale, as above	
		Tr	Chert, as above	
4510	4520	100	Sandstone, white-buff, as above	
		Tr	Shale, as above	
		Tr	Dolomite, white, IVFA	
4520	4530	50	Sandstone, as above	
		30	Dolomite, white-pink, IVFA, occasionally siliceous, glauconitic	
		20	Dolomite, gray, I/III VFA	
		Tr	Shale, as above	
		Tr	Chert, as above	
4530	4540	50	Sandstone, as above	
		20	Dolomite, white-pink, as above	
		20	Dolomite, gray-green, III VFA, very sandy	
		10	Shale, as above	
		Tr	Chert, as above	
4540	4550	100	Sandstone, light gray green-pink, fine to medium grained, occasionally coarse, subrounded, fair sorting, dolomitic cement	
		Tr	Shale, vari-colored	
		Tr	Chert, white-red brown	
4550	4560	50	Sandstone, as above	
		50	Sandstone, red brown, very fine to fine grained, occasionally coarse, fair sorting, subrounded, dolomitic cement	
		Tr	Shale, as above	
		Tr	Dolomite, white, IVFA	
4560	4580	90	Sandstone, light gray green-pink, as above	
		10	Dolomite, white-pink, IVFA	

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DITCH SAMPLES

Examined by Thurber 4580 to 4720
_____ ____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (NOT)
4580	4590	70	Dolomite, white, IVFA, siliceous, cherty - 30% dark brown-black asphaltic oil stain in dolomite, no fluorescence, good light yellow milky cut fluorescence
		30	Chert, white-tan
		Tr	Sandstone, white, as above
		Tr	Shale, as above
4590	4600	80	Dolomite, white-buff, IVFA, occasionally siliceous - 10% oil stain as above
		10	Chert, as above
		10	Shale, as above
		Tr	Sandstone, as above
4600	4610	60	Dolomite, as above
		40	Sandstone, light gray-green, very fine to fine, grading to dolomite
		Tr	Shale, as above
		Tr	Chert, as above
4610	4620	40	Dolomite, as above
		20	Sandstone, light gray-green, as above
		40	Sandstone, red-brown, very fine to fine, well sorted, subrounded, dolomitic
		Tr	Shale, as above
4620	4650	70	Sandstone, red-brown, as above
		30	Dolomite, as above
		Tr	Sandstone, light gray-green, as above
		Tr	Shale, as above
4650	4670	70	Sandstone, red-brown, as above, occasionally micaceous
		20	Dolomite, white-buff, IVFA
		10	Shale, as above
		Tr	Sandstone, light gray-green, as above
4670	4680	90	Sandstone, red-brown, as above
		10	Dolomite, as above
		Tr	Shale, as above
		Tr	Sandstone, light gray-green, as above
4680	4690	80	Dolomite, white-light tan, IVFA, occasionally I/III VFA
		20	Sandstone, red-brown, as above
		Tr	Shale, as above
		Tr	Sandstone, light gray-green, as above
4690	4710	100	Dolomite, white-light tan, I/III VFA
		Tr	Sandstone, red-brown, as above
		Tr	Shale, as above
		Tr	Sandstone, light gray-green, as above
4710	4720	100	Dolomite, white-light tan, I/III VFA
		Tr	Sandstone, red brown, very fine to fine, well sorted, subrounded, dolomitic, occasionally micaceous
		Tr	Shale, vari-colored, occasionally slightly calcareous
		Tr	Sandstone, light gray-green, very fine to fine, grading to dolomite

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DITCH SAMPLES

Examined by Thurber 4720 to 4830
_____ ____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (NOT)
4720	4730	60	Dolomite, as above
		30	Sandstone, white-tan, very fine to fine, well sorted, rounded to sub-rounded, dolomitic
		10	Sandstone, gray-green, silty to very fine, dolomitic, grading to dolomite
		Tr	Shale, as above
4730	4740	100	Dolomite, tan, I/III VFA
		Tr	Sandstone, white-tan, as above
		Tr	Shale, as above
		Tr	Chert, orange
4740	4750	30	Dolomite, tan, as above
		70	Dolomite, gray-tan, I/III VFA, micaceous, glauconitic, with very fine to fine floating quartz grains
		Tr	Sandstone, white-tan, as above
		Tr	Chert, as above
4750	4770	80	Sandstone, white-tan, rounded to subrounded, well sorted, well cemented, dolomitic, very fine to fine grained
		20	Dolomite, tan, I/III VFA
		Tr	Shale, as above
4770	4780	70	Sandstone, white-tan, as above
		20	Sandstone, clear, very fine to medium, subrounded, clean, fair sorting, with black asphaltic oil stain (X porosity), no fluorescence, faint light yellow cut fluorescence
		10	Dolomite, as above
		Tr	Shale, as above
4780	4790	80	Sandstone, white-tan, as above
		10	Sandstone, clear, as above, with oil stain as above (X porosity)
		10	Dolomite, as above
		Tr	Shale, as above
4790	4800	60	Dolomite, white-light tan, I/III VFA
		40	Sandstone, white-tan, as above
		Tr	Shale, as above
4800	4810	100	Dolomite, as above
		Tr	Sandstone, as above
		Tr	Shale, as above
4810	4820	90	Dolomite, as above
		10	Shale, vari-colored, occasionally calcareous
		Tr	Sandstone, white-tan, as above
		Tr	Chert, tan
4820	4830	70	Sandstone, white, very fine to fine, rounded to subrounded, well sorted, well cemented, dolomitic
		30	Dolomite, as above
		Tr	Shale, as above
		Tr	Chert, as above

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DITCH SAMPLES

Examined by Thurber 4830 to 4940
_____ to _____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged
4830	40	70	Sandstone, white - gray green, silty - very fine, subrounded, well cemented, grading to dolomite.	
		30	Dolomite, white - light tan, I/III VFA.	
		tr	Chert, tan, as above.	
		tr	Shale, vari-colored, occasionally calcareous.	
4840	50	100	Dolomite, light tan, I/III VFA, occasionally micaceous.	
		tr	Sandstone, as above.	
4850	60	100	Dolomite, tan - gray green, I/III VFA, micaceous, pyritic, with occasional black asphaltic residue. No fluorescence, no cut fluorescence.	
		tr	Chert, dolomitic, tan.	
4860	70	100	Dolomite, light tan, I/III VFA-B5-Ctr, with occasional fine floating quartz grains, as above with asphaltic residue.	
		tr	Sandstone, gray - green, as above, grading to dolomite.	
		tr	Chert, orange.	
4870	80	100	Dolomite, light tan, as above with occasional mica and pyrite.	
4880	90	100	Dolomite, white - light tan, I/III VFA tr B, with occasional gray - green sandy dolomite, occasional mica and pyrite.	
		tr	Shale, as above.	
		tr	Chert, tan.	
4890	4900	100	Dolomite, as above.	
		tr	Chert, tan - orange.	
		tr	Shale, as above.	
		tr	Sandstone, gray - red brown, silty - very fine, dolomitic.	
4900	10	100	Dolomite, light tan, I/III VFA, with occasional gray - green sandy dolomite.	
		tr	Chert, as above.	
		tr	Shale, as above.	
4910	20	90	Dolomite, light tan, I/III VF-F, A, sandy.	
		10	Chert, tan - orange.	
		tr	Sandstone, white, very fine - fine, dolomitic.	
4920	30	70	Dolomite, as above, with occasional light maroon	
		10	Chert, as above.	
		10	Sandstone, as above.	
		10	Shale, as above.	
4930	40	40	Dolomite, light tan - gray green, I/III VFA with occasional very fine - fine floating quartz grains.	
		40	Dolomite, purple - maroon, IVFA, sandy with abundant fine - medium quartz grains.	

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DITCH SAMPLES

Examined by Thurber 4940 to 5010
_____ ____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (Not)
		10	Chert, as above.
		10	Sandstone, as above.
4940	50	60	Dolomite, red brown - maroon, IVFA, sandy, as above.
		10	Dolomite, white - light tan, I/III VFA with occasional very fine - fine quartz grains.
		20	Siltstone, maroon, grading to dolomite.
		10	Sandstone, white - gray green, very fine - fine, fair sorting, dolomitic.
		tr	Shale, as above.
4950	60	40	Dolomite, red brown - maroon, very sandy, with very fine - fine quartz grains.
		30	Dolomite, white - light tan, I/III VFA with occasional very fine - fine quartz grains.
		20	Siltstone, brown - maroon, dolomitic, grading to dolomite.
		10	Chert, clear - orange.
		tr	Shale, vari-colored, occasionally calcareous.
		tr	Calcite, milky white.
4960	70	70	Siltstone, as above.
		20	Dolomite, white - gray green, I/III VFA with occasional very fine - fine quartz grains.
		10	Chert, as above.
		tr	Shale, as above.
		tr	Calcite, as above.
4970	80	60	Dolomite, white - light tan with red - brown iron stain, I VF-FA with occasional quartz grains.
		40	Siltstone, as above.
		tr	Shale, as above.
		tr	Chert, as above.
		tr	Calcite, as above.
4980	82	30	Dolomite, white - light tan, as above.
		20	Siltstone, as above.
		30	Sandstone, white, silty - very fine, well sorted, dolomitic.
		10	Chert, tan - orange.
		10	Shale, as above.
		tr	Calcite, as above.
4982	5001		Core #1, recovered 18-3/4 ft. sandstone, siltstone and dolomite.
5001	10	90	Dolomite, white - tan, I/III VFA with occasional red - brown iron stain, occasional large quartz grains, anhydrite veins.
		10	Chert, tan - orange.
		tr	Siltstone, maroon, as above.
		tr	Shale, as above.

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DITCH SAMPLES

Examined by Thurber 5010 to 5240
_____ to ____

Well Last Chance Unit 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (Not)
5010	20	80	Dolomite, as above.
		20	Chert, as above.
		tr	Siltstone, as above.
		tr	Shale, as above.
5020	30	10	Dolomite, as above.
		90	Dolomite, white, IVF-FA.
		tr	Siltstone, as above.
		tr	Chert, as above.
5030	40	100	Dolomite, white, as above.
		tr	Dolomite, white - tan, as above.
5040	50	60	Dolomite, white, as above.
		40	Dolomite, red brown, I/III VFA, iron stain, occasional fine - medium quartz grains.
5050	60	80	Dolomite, white - tan, I/III VFA.
		20	Chert, tan.
5060	70	80	Dolomite, white-tan, I/III VFA.
		20	Chert, tan.
5070	90	100	Dolomite, as above, white with occasional white-light tan chert.
5090	5100	100	Dolomite, as above, with occasional chert as above, with trace white anhydrite.
5100	20	100	Dolomite, as above, IVFA, occasional III with trace chert.
5120	30	100	Dolomite, as above, white, occasional light pink.
5130	70	90	Dolomite, as above.
		10	Chert, white.
5170	80	90	Dolomite, as above, white-light pink with trace white anhydrite.
		10	Chert, as above, white-light pink.
5180	5200	90	Dolomite, as above white-light gray, occasional light pink, IVFA, trace anhydrite.
		10	Chert, as above, white.
5200	10	70	Dolomite, as above.
		30	Chert, as above.
5210	40	100	Dolomite, as above, trace chert.

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DITCH SAMPLES

Examined by Thurber 5240 to 5590
McLehaney 5590 to 5700

Well Last Chance No. 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged (Not)
5240	5330	100	Dolomite, as above.	
5330	5340	90	Dolomite, as above, light tan.	
		10	Chert, clear-smoaky.	
5340	5350	80	Dolomite, as above, with trace anhydrite.	
		20	Chert, as above.	
5350	5370	90	Dolomite, as above.	
		10	Chert, as above.	
5370	5380	90	Dolomite, as above, IVFA, trace B.	
		10	Chert, as above.	
5380	5390	100	Dolomite, as above, with trace chert.	
5390	5420	100	Dolomite, as above.	
5420	5470	100	Dolomite, as above, IVFA, trace III, trace B, trace C.	
5470	5480	100	Dolomite, as above, (mostly cavings).	
5480	5490	100	Dolomite, as above, I-III VFA, Trace B.	
5490	5520	100	Dolomite, as above, IVFA, trace B.	
5520	5540	100	Dolomite, as above, I-III VFA, trace B, trace C.	
5540	5550	100	Dolomite, as above, IVFA, trace B, trace white chert.	
5550	5570	100	Dolomite, as above, I-III VFA, trace B with trace white chert.	
5570	5580	90	Dolomite, as above.	
		10	Chert, white.	
5580	5590	90	Dolomite, as above, white-light tan.	
		10	Chert, as above.	
5590	5600	90	Dolomite, white I-III VFA, trace B.	
		10	Chert, white.	
5600	5630	100	Dolomite, as above, white-light tan, I-III VF-FA, B, Trace C, with trace Chert, as above.	
5630	5680	100	Dolomite, as above, white.	
5680	5690	100	Dolomite, as above, white-brown.	
5690	5700	100	Dolomite, as above, IVFA with trace black chert.	

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 5700 to 6020
_____ ____ to ____

Well Last Chance No. 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (Not)
5700	5720	80	Dolomite, as above, IVFA, trace B.
		20	Chert, black.
5720	5730	40	Dolomite, as above.
		60	Chert, as above white-black, dolomitic.
5730	5740	20	Dolomite, as above.
		30	Chert, as above.
		50	Siltstone, dark gray-black, dolomitic, no fluorescence, 10% light yellow cut fluorescence.
5740	5750	100	Siltstone, as above, dolomitic, cherty, no fluorescence, 5% light blue cut fluorescence.
5750	5760	90	Siltstone, as above, black, dolomitic, very cherty, no fluorescence, trace light blue cut fluorescence.
		10	Chert, black.
5760	5790	70	Siltstone, as above, no fluorescence, trace light blue-light yellow cut fluorescence.
		30	Chert, as above.
5790	5800	100	Siltstone and Chert (Mostly Cavings) no fluorescence, trace yellow cut fluorescence.
5800	5810	?	Siltstone, as above, no fluorescence, trace yellow cut fluorescence.
		?	Dolomite, white, I-III VFA, B, trace brown-black stain, no fluorescence, yellow cut fluorescence.
5810	5820	10	Siltstone, as above, with abundant black chert.
		90	Dolomite, as above, white-light tan I-III F A, B, trace C, trace black stain, no fluorescence, yellow cut fluorescence.
5820	5830	100	Dolomite, as above, light brown, III F A, B, trace C, trace black stain, no fluorescence, yellow cut fluorescence.
5830	5890	100	Dolomite, as above.
5890	5910	100	Dolomite, as above, white, occasionally light brown.
5910	5920	90	Dolomite, as above.
		10	Limestone, white-light gray IVFA, pelletoidal.
5920	5930	10	Dolomite, as above.
		90	Limestone, as above.
5930	6010	100	Limestone, as above, light gray, with occasional white anhydrite
6010	6020	40	Limestone, as above.
		60	Dolomite, dark gray-brown III FA

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 6020 to 6250
_____ _____ to _____

Well Last Chance No. 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged (Not)
6020	6030	60	Limestone, as above.	
		40	Dolomite, as above.	
6030	6040	80	Limestone, as above.	
		20	Dolomite, as above.	
6040	6070	100	Limestone, light gray, occasionally white, IVFA, pelletoidal with trace dolomite, gray-brown, III FA	
6070	6080	70	Limestone, as above	
		30	Dolomite, light brown-gray, III VF-FA, silty	
6080	6090	40	Limestone, as above	
		60	Dolomite, light gray, IVFA	
6090	6110	100	Dolomite, as above, pyritic	
6110	6120	100	Dolomite, as above, light gray-light tan	
6120	6140	100	Dolomite, as above, light tan-white, I-III F-MA, trace B	
6140	6150	100	Dolomite, as above, gray, occasionally light tan, I-III VF-FA with occasional pyrite	
6150	6160	20	Dolomite, as above	
		80	Limestone, white-light gray, IVFA	
6160	6170	60	Dolomite, white-gray, IIIVFA	
		40	Limestone, as above	
6170	6190	100	Dolomite, as above, gray, IIIVFA, occasionally I, with occasional pyrite	
6190	6200	80	Dolomite, as above	
		20	Limestone, gray, IVFA	
6200	6220	100	Limestone, as above, white-light gray	
6220	6230	30	Limestone, as above	
		70	Dolomite, white, III-IVFA, occasional pyrite	
6230	6240	100	Dolomite, as above, white-light tan, with trace limestone, as above	
6240	6250	100	Dolomite, as above, IVFA, trace III	

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 6250 to 6490
_____ ____ to ____

Well Last Chance No. 1
Field or Area Wildcat

From	To	%	Shows Underlined — Samples Lagged (Not)
6250	6270	100	Dolomite, as above, IVFA
6270	6280	100	Dolomite, as above, with trace quartz grains
6280	6290	100	Dolomite, as above, light tan, light green with trace quartz grains
6290	6300	100	Dolomite, as above, light tan, light green, light pink with occasional quartz grains
6300	6310	100	Dolomite, as above, pyritic with abundant white sandstone partings, fine-coarse, round
6310	6320	90	Dolomite, as above
		10	Sandstone, clear-white, fine-coarse, round, fair-good cementing, poor sorting, calcareous
6320	6330	60	Dolomite, as above
		40	Sandstone, as above
6330	6340	30	Dolomite, as above
		70	Sandstone, as above
6340	6355	90	Dolomite, as above, IVFA, trace B
		10	Sandstone, as above
6355	6366	Core #2	Sandstone, white, very fine-medium, subround-round, very dolomitic (Rec. 9')
6366	6400	100	Sandstone, as above, white, very fine-medium
6400	6410	100	Dolomite, light tan, light green, IVFA, with quartz grains and trace sandstone
6410	6420	100	Dolomite, as above, light tan, IVFA, trace III, with abundant sandstone and quartz
6420	6440	100	Dolomite, as above, I-III VF-FA, with trace sandstone and quartz
6440	6460	100	Dolomite, as above, III VFA, occasionally I, with trace anhydrite, trace sandstone and quartz
6460	6470	100	Dolomite, as above, light tan, light pink
6470	6490	100	Dolomite, as above, light tan, III VFA, trace I, with sandstone and quartz as above, light pink IVFA

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 6490 to 6660
_____ to _____

Well Last Chance No. 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged (Not)
6490	6500	100	Dolomite, as above, tan, III VFA, with sandstone and quartz as above	
6500	6510	95	Dolomite, as above	
		5	Sandstone, clear - white, fine - medium, rounded - subrounded, fair sorting, fair - poor cementing, very dolomitic	
6510	6530	10	Dolomite, as above	
		90	Sandstone, as above	
6530	6540	20	Dolomite, tan - light brown, III VFA	
		80	Sandstone, as above	
6540	6560	100	Dolomite, as above, light brown	
6560	6570	90	Dolomite, as above, brown, III VFA with white anhydrite partings	
		10	Dolomite, light tan, light green, IVFA	
6570	6580	40	Dolomite, as above, brown	
		60	Dolomite, as above, light tan - light green	
6580	6590	100	Dolomite, light green, gray - light pink, I-III VFA, with trace anhydrite	
6590	6600	100	Dolomite, as above, green gray - light brown	
6600	6610	100	Dolomite, gray - brown, III VFA, with trace anhydrite	
6610	6620	60	Dolomite, as above	
		20	Dolomite, gray, IVFA, pyritic	
		20	Dolomite, light tan, IVFA	
6620	6630	90	Dolomite, tan - brown, I-III VFA, pyritic	
		10	Dolomite, gray, as above	
6630	6640	60	Dolomite, tan - brown, as above	
		20	Dolomite, gray, as above	
		20	Dolomite, white, III MA	
6640	6650	10	Dolomite, white, as above	
		40	Dolomite, white, I-III VF-F A-B	
		50	Dolomite, light green, IVFA, very silty	
6650	6660	100	Dolomite, white - light tan, I-III VF-F A-B, with trace silty dolomite as above	

M-1720-P 4-59

DITCH SAMPLES

Examined by McLehaney 6660 to 6704
_____ ____ to ____

Well Last Chance No. 1
Field or Area Wildcat

From	To	%	Shows Underlined	Samples Lagged (Not)
6660	6670	100	Dolomite, as above, light tan, III VF-FA, trace B, pyritic	
6670	6680	80	Dolomite, as above	
		20	Dolomite, light gray - light tan, III F-MA, fossiliferous, pyritic with abundant white anhydrite partings	
6680	6690	100	Dolomite, tan - brown, III-I VFA, trace B, with anhydrite partings	
6690	6700	100	Dolomite, as above, brown, III VF-FA, B, trace C, with anhydrite partings	
6700	6704	100	Dolomite, as above, III VF-FA-B, with abundant anhydrite partings (T.D. 6704)	

PD 4 8-50 PRINTED IN U.S.A.
Preprint *M1719-P 8-59

SHELL OIL COMPANY

CORE RECORD

WEEK ENDING 10-19-60

CORE FROM 4982 TO 5001

CORES EXAMINED BY Thurber

AREA OR FIELD Wildcat

COMPANY Shell Oil Company

LEASE AND WELL NO. Last Chance #1

NO.	FROM	TO	RECOVERED	FORMATIONAL, STRUCTURAL AND PROBABLE PRODUCTIVITY DESCRIPTION OF CORE	SYMBOL	OBSERVED DIP	CORE INDICATIONS OIL—GAS / CORE OR DITCH
1	4982	5001	18-3/4'	Sandstone, siltstone and dolomite 4' sandstone, tan @ top to white @ base, very fine, sub-rounded, well sorted, dolomitic, clean, fair porosity. Becoming dolomitic @ base. 2' dolomite, red-brown to maroon with gray-green mottling @ base, I/III VF-F A-B_5 porosity, becoming sandy with calcite veining and occasional fractures @ base. 3' siltstone, maroon, dolomitic, hard, with abundant very fine quartz grains @ top, occasional chert inclusions and calcite veining. 1' dolomite, red-brown-maroon, I/III VF-F A-B_3, with abundant quartz grains. 3' siltstone, red brown to maroon, interbedded with chert, dark grey to orange, and dolomite, gray green to white, III/I VF-FA. 2' dolomite, light tan, III VFA, with orange chert inclusions. 3-3/4' dolomite, white and maroon @ top to tan @ base, III/I VF-M A-B_3 @ top to I/III VFA trace B @ base. Interbedded with tan to orange chert. Occasional anhydrite veining. Becoming pelletal @ base.		None	Light blue spotty fluorescence throughout all of core. No cut fluorescence. Occasional brown staining in siltstone and dolomite with no fluorescence or cut fluorescence. Spotty fluorescence probably due to contamination from an unknown source; not present on fresh breaks. No odor.

SYMBOLS: C-CLAY OR SHALE (SAND 0-5%). 1-CLAY OR SHALE WITH SAND STREAKS (SAND 5-25%). 2-CLAY OR SHALE AND SAND (SAND 25-60%). 3-SAND WITH SHALE STREAKS (SAND 60-90%). S-SAND (90-100%).
NOTE: SHOW FLUID CONTENT AS IN STANDARD LEGEND.

PD 4-B 8-50

WEEK ENDING November 5, 1960

CORE FROM 6355 TO 6366

CORES EXAMINED BY McLehaney, Schneider

SHELL OIL COMPANY

CORE RECORD

AREA OR FIELD Wildcat

COMPANY Shell Oil Co.

LEASE AND WELL NO. Last Chance #1

NO.	FROM	TO	RECOVERED	FORMATIONAL, STRUCTURAL AND PROBABLE PRODUCTIVITY DESCRIPTION OF CORE	SYMBOL	OBSERVED DIP	CORE INDICATIONS OIL—GAS / CORE OR DITCH
2	6355	6366	9.3'			None	None
	6355	6362	7'	Sandstone, white, very fine-medium, subround-round, very dolomitic, estimated 3-5% porosity			
	6362	6364.3	2.3'	Sandstone, as above, no estimated porosity. Almost vertical fracture from 6362 to 6363			

SYMBOLS: C-CLAY OR SHALE (SAND 0-5%). 1-CLAY OR SHALE WITH SAND STREAKS (SAND 5-25%). 2-CLAY OR SHALE AND SAND (SAND 25-60%). 3-SAND WITH SHALE STREAKS (SAND 60-90%). S-SAND (90-100%).
NOTE: SHOW FLUID CONTENT AS IN STANDARD LEGEND.

Branch of Oil and Gas Operations
8416 Federal Building
Salt Lake City, Utah, 84111

October 14, 1965

Mr. William J. Colman
1411 Deseret Building
Salt Lake City, Utah

Dear Mr. Colman:

On October 12, George Brown of this office visited your two wells in the Last Chance field, Emery County, Utah, on Federal lease Salt Lake 042322. Generally, he found everything to be in good shape although he did note that there were no well signs and that there was miscellaneous debris scattered around. Hence, you should erect a sign for each well (see enclosed instructions) and do some general lease cleanup work.

Please advise us when the above requested work has been completed.

Sincerely yours,

Rodney A. Smith,
District Engineer

Enclosure

cc: File

G.Brown:id

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

June 23, 1986

TO: Well File

FROM: Mary Alice Peterson

RE: API Number for Last Chance Unit #1 Well -- 26S 7E Sec. 19

Two wells were issued the same API number. Both wells were in the 10000 series. The well first drilled was the Gruvers Mesa #2 in 25S 16E sec. 10. We are leaving its API number as 43-015-11033. The second well drilled was the Last Chance Unit #1 well. 26S 7E sec. 19. We are changing this API number from 43-015-11033 to 43-015-20367. This is a Shell Oil Co. Well.

map
0176S 27

Form 3160-3
(July 1992)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

FORM APPROVED
OMB NO. 1004-0136
Expires: February 28, 1995

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

5. LEASE DESIGNATION AND SERIAL NO.: UTU-69699

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

7. UNIT AGREEMENT NAME: Last Chance

1a. TYPE OF WORK: DRILL ☑ DEEPEN ☐

b. TYPE OF WELL: OIL WELL ☐ GAS WELL ☑ OTHER ☐ SINGLE ZONE ☑ MULTIPLE ZONE ☐

8. FARM OR LEASE NAME, WELL NO.: Last Chance Unit 1

2. NAME OF OPERATOR: Maralo, LLC

CONFIDENTIAL

9. API WELL NO.: 43-015-20367

3. ADDRESS AND TELEPHONE NO.: 233 West Wall St., Suite 900, Midland, Tx. 79701 (915) 684-7441

10. FIELD AND POOL, OR WILDCAT: Last Chance

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 652' FNL & 590' FWL 4265530 N 481814 E

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 19-26s-7e SLBM

At proposed prod. zone: Same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 28 air miles south of Emery

12. COUNTY OR PARISH: Emery

13. STATE: UT

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
590'	684	160
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
N/A	9,200'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 5,963' ungraded

22. APPROX. DATE WORK WILL START*: September 25, 2001

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
26"	16"	Conductor	40'	≈43 sx & to surface
13-1/2"	10-3/4"	40.5	1,474'	>702 cu. ft. & to surface
9" to 7-7/8"	N-80 4-1/2"	11.6	9,200'	345 cu ft & to 1,000' above Tapeats

Well was originally drilled to 6,704' by Shell and P&A in 1960.
Slight difference in footages due to more accurate survey today.

Federal Approval of this Action is Necessary

RECEIVED
AUG 15 2001
DIVISION OF
OIL, GAS AND MINING

cc: BLM (M&M), Grill, Hall, UDOGM

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

24. SIGNED [signature] TITLE Consultant (505) 466-8120 DATE 8-14-01

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

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

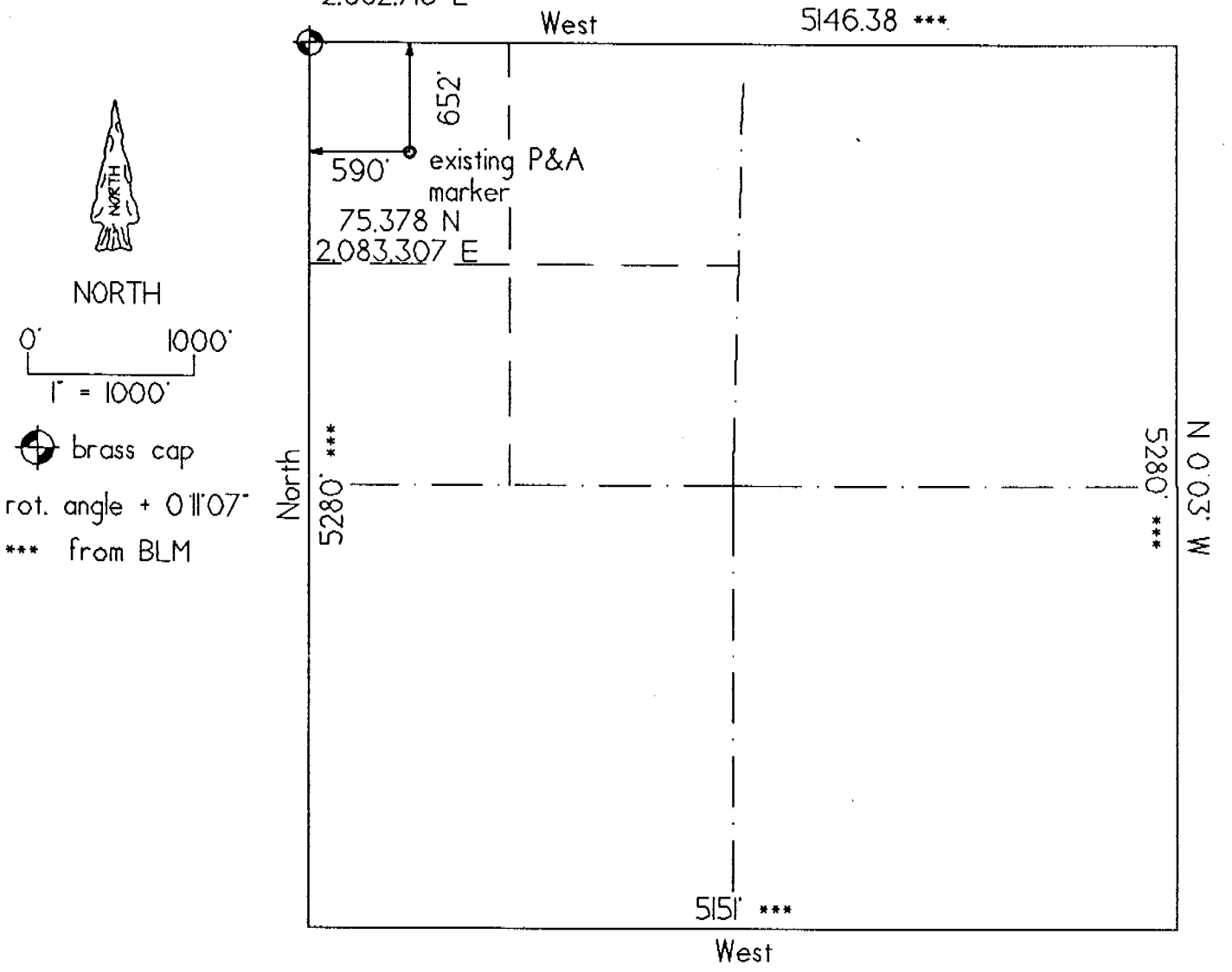
CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY [signature] TITLE BRADLEY G. HILL RECLAMATION SPECIALIST III DATE 09-20-01

*See Instructions On Reverse Side

NAD 27 Utah Central
76.028 N
2.082.716 E

Well Location Plat



Well Location Description

Maralo LLC
Last Chance Unit # 1
652' FNL & 590' FWL
Section 19. T.26 S.. R.7 E.. SLM
Emery County. UT
5963' grd. el. (by GPS)

REGISTERED LAND SURVEYOR
GERALD G. HUDDLESTON
No. 161297
STATE OF UTAH

6 July 2001

Gerald G. Huddleston. LS

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

HUDDLESTON LAND SURVEYING - BOX KK - CORTEZ. CO - (970) 565 -3330

Maralo, LLC
Last Chance Unit #1
652' FNL & 590' FWL
Sec. 19, T. 26 S., R. 7 E.
Emery County, Utah

TIGHT HOLE
CONFIDENTIAL

Drilling Program

1. FORMATION TOPS

The estimated tops of important geologic markers are:

Formation Name	GL Depth	KB Depth	Subsea El.
Carmel Ss	0'	12'	+5,963'
Navajo Ss	358'	390'	+5,585'
Kayenta Ss	1,372'	1,384'	+4,591'
Wingate Ss	1,515'	1,527'	+4,448'
Chinle Sh	1,897'	1,909'	+4,066'
Shinarump Cg	2,268'	2,280'	+3,695'
Moenkopi Fm	2,280'	2,292'	+3,683'
Sinbad Ls	2,928'	2,940'	+3,035'
Kaibab Ls	3,210'	3,222'	+2,753'
Coconino Ss	3,330'	3,342'	+2,633'
Toroweap Ls	3,490'	3,502'	+2,473'
Permian Carbonates	4,292'	4,304'	+1,671'
Redwall Ls	4,990'	5,002'	+973'
Ouray Ls	5,894'	5,906'	+69'
Elbert Fm	6,208'	6,220'	-245'
Lynch Dolo	6,660'	6,672'	-697
Bowman	7,568'	7,580'	-1,605'
Hartman	7,958'	7,970'	-1,995'
Ophir	8,618'	8,630'	-2,655'
Tapeats Ss	8,988'	9,000'	-3,025'
Total Depth	9,188'	9,200'	-3,225'

* all elevations reflect the proposed graded ground level of 5,963'

2. NOTABLE ZONES

Primary oil and gas goal is the Tapeats. Other oil and gas shows which appear to the well site geologist to be commercial may also be tested (four DSTs were run by Shell). Fresh water may be found in the Carmel-Wingate interval. Uranium may be found in the Chinle. All fresh water and prospectively valuable minerals will be recorded by depth and protected with casing and cement.

3. PRESSURE CONTROL (See PAGE 3)

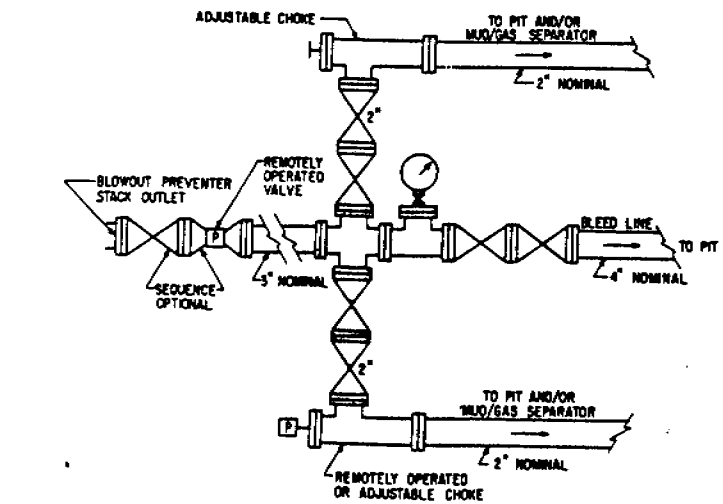
An 11" x 5000 psi WP double gate BOP with blind rams and 4-1/2" pipe rams, 11" x 5000 psi WP annular BOP, and an 11" x 5000 psi WP rotating head will be used from ≈6,704' to TD. Rig will be equipped with upper and lower kelly cocks and a stabbing valve. Wrench will be available at all times. BOP will be tested at nipple up and every 30 days thereafter. BLM and UDOGM will be notified at least 24 hours before testing. Will close pipe rams daily and blind rams on trips, the results of which will be recorded on tour sheets.

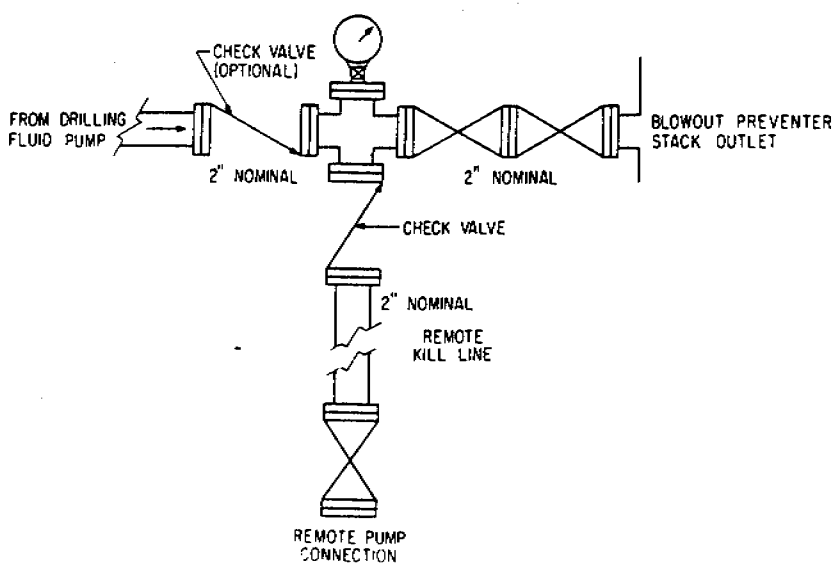
4. CASING, TUBING, & CEMENT

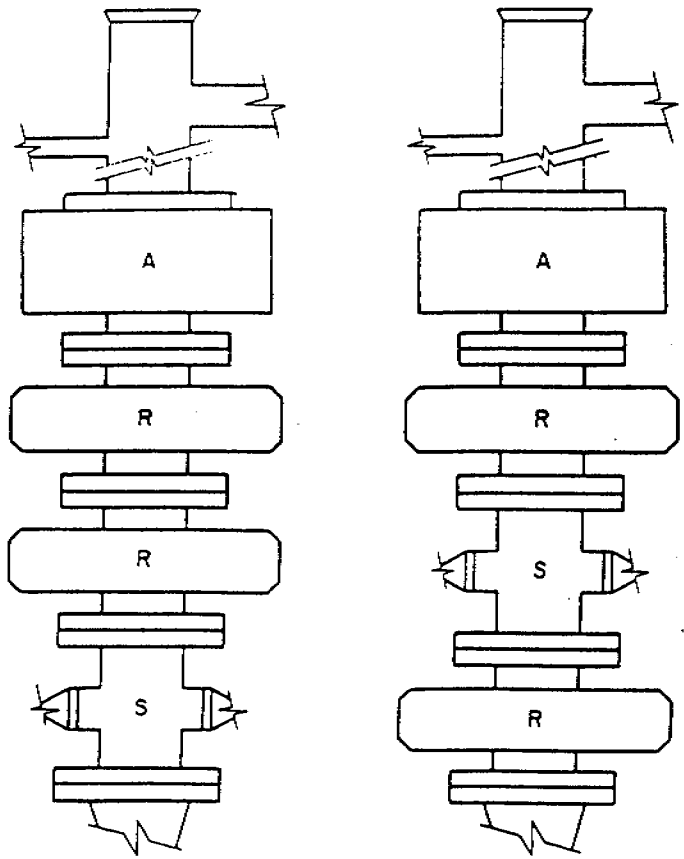
Hole Size	O.D.	Weight	Grade/Thread/Age	SFt	SFc	SFb	Set. Depth
26"	16"	Conductor	?/? & Existing	?	?	?	40'
13-1/2"	10-3/4"	40.5#/ft	?/? & Existing	?	?	?	1,474'
9" to 7-7/8"	4-1/2"	11.6 #/ft	N-80/LT&C/New	2.09	1.21	1.06	9,200'
9" to 7-7/8"	2-3/8"	4.7 #/ft	N-80/EUE/New	2.41	2.24	1.60	9,200'

Flanged casing head will be 10-3/4" x 11" x 5,000 psi WP with two 2" LP outlets. Outlets will have one 2" 3,000' psi WP ball valve and one 2" x 3,000 psi WP bull plug. Tubing head will be 11" 5,000 psi WP x 7-1/16" 10,000 psi WP tubing spool with two 2-1/16" 10,000 psi WP gate valves on the outlets.

If mud weight exceeds 11.0 ppg at TD or if the anticipated fracture gradient exceeds 0.80 psi/ft, then the casing design may be altered. All casing strings will be cleaned and drifted before running. All thread sealant (Kindex) will be removed before running.







TYPICAL 5,000 psi WORKING PRESSURE BOP STACKS

A = Annular type blowout preventer
R = Ram
S = Drilling spool with side outlet connections for choke & kill lines

PERMITS WEST, INC.

Production casing will be run as follows:
1) Set differential float collar one joint above the differential fill float shoe.
2) Install top and bottom wiper plug.
3) Install centralizer with stop ring in the middle of the shoe joint.
4) Centralizers will be set over collars on the first five connections, excluding the float collar. Centralize through and 100' on either side of potentially productive intervals.
5) Thread lock all connections through the float collar. Use API casing dope on all remaining connections.
6) Stage cementing tool may be run depending on the presence of lost circulation and/or potentially productive zones.
7) Centralize above and below the stage cementing tool.

Conductor pipe was cemented to the surface with 42 sacks of cement + 1-1/2 sacks $CaCl_2$.

Surface casing was cemented to the surface with 702 cubic feet Diamix + 200 sacks of Class A + 2% $CaCl_2$.

Production casing will be cemented to at least 1,000' above the top of the Tapeats with 300 sx Class G with fluid loss additive, dispersant, retarder, and silica flour as needed. Weight = 15.8 ppg. Yield = 1.15 cubic feet per sack.

5. MUD PROGRAM

Interval	Weight	Viscosity	Fluid Loss	Type
6,704'-TD	9.0 - 11.0	32-50	8-10 cc	LSND, gel, caus. soda, PHPA

Will mud up with low solids non-dispersed mud with gel, caustic soda, and PHPA polymer (1/4 to 1/2 ppb) before drilling out intermediate casing. Treat cement contamination with soda ash and sodium bicarbonate. Mud weight will be determined by gas concentration and need to balance conditions. Will check for flow after all drilling breaks. Will keep trip speeds down to reduce surge swab

conditions. Hole will be kept full at all times. Pit will be continuously monitored since gas kicks and lost circulation can be expected at all times. Sweep hole as necessary. Drill pipe will move at all times. System will be monitored for bacteria and treated as necessary.

A two man mud logging unit with a hot wire and chromatograph will be on location from ≈6,704' to TD.

6. CORING, TESTING, & LOGGING

No cores are planned at this time.

One DST of the Tapeats is planned. Unless otherwise instructed, DST times will be: IF (15 min.), ISI (60 min.), FF (60-90 min. depending on blow at surface), and FSI (2 x FF). Length of anchors will be kept to a minimum while testing. Test string will include dual packers, top and bottom pressure recorders, jars, safety joint, sample chamber, and reverse circulating sub (pressure and bar activated.) Water cushion use will be determined at the time of the DST.

DIL-SFL-SP and LDT-CNL-GR-CAL logs will be run from the base of the intermediate casing to TD. Dip meter and/or BHC/Sonic-GR-CAL may be run too.

7. DOWNHOLE CONDITIONS

No abnormal temperatures or pressures or hydrogen sulfide are expected. Maximum pressure will be ≈3,680 psi.

Deviation tendencies in the area can be severe. Surveys will be run every ≈500'. Deviation limit will be ≤6°. Maximum dog leg severity will be ≤1° per 100 feet. It is anticipated that a 9-7/8" bit and packed hole assembly will initially be

used to keep from side tracking original hole. After reaching ≈6,704', then a 7-7/8" bit will be used and the feasibility of using downhole drilling motors will be evaluated.

8. OTHER INFORMATION

Must spud before September 30, 2001 to meet unit obligation. It is expected it will take ≈2 weeks to drill and ≈2 weeks to complete the well.

Surface Use Plan

1. DIRECTIONS & EXISTING ROADS (See Pages 13 & 14)

From the junction (aka, Exit 89) of I-70 and U-10 ...
Go E 2.1 miles on the S frontage road
Then turn right and go S 5.3 mil
Then turn right and go SW 9.4 mi. to a signed junction
Then turn left and go E 1.0 mi. to a signed junction
Then bear left and continue E 6.6 mi.
Then turn right and go S 0.1 to the well site

Roads (all county except for the last 1/10 mile) will be maintained to a standard at least equal to their present condition.

2. ROAD TO BE UPGRADED (See Page 14)

No new road will be built. Only the last 1/10 mile of access needs upgrading. It will be flat bladed with a 14' wide running surface to remove ruts. If the well is a producer, it will be upgraded to Class 3 Road Standards within 60 days of dismantling the rig. Maximum disturbed width will then be 35'. If the deadline cannot be met, BLM will be notified so temporary drainage control can be installed. Class 3 Road Standards control drainage by using topography, ditch turnouts, dips, out sloping, crowning, low water crossings, gravel, and culverts.

3. EXISTING WELLS (See Page 17)

There are six plugged and abandoned wells within a mile radius. There are no existing oil, gas, water, or disposal wells within a mile.

4. PROPOSED PRODUCTION FACILITIES

A wellhead, pump, separator, tank battery will be installed on the pad. All will be painted a flat olive black color. Tanks will be surrounded by an impermeable dike with sufficient capacity to hold 150% of the volume of the largest tank within the dike.

5. WATER SUPPLY

Water will be trucked ≈32 miles from the Johnson Livestock Oak Ranch LLC. The ranch is off of U-10 at a point ≈3 miles north of Exit 89 in 21-23-23s-5e. Water rights are 94-1146 and 94-1149.

6. CONSTRUCTION MATERIALS & METHODS (See PAGES 15 & 16)

Dirt contractor will call BLM (435-636-3630) 48 hours before starting construction. Surface disturbance and vehicle travel will be limited to the pad and road. Any additional area needed must be approved in advance by BLM. The dirt contractor will have an approved copy of the APD surface use plan before starting construction and keep it on site.

Maralo will move the existing water and feed troughs off the pad and lay new PVC water lines to the water troughs.

Any cultural and/or paleontology resource (historic or prehistoric site or object) discovered by Maralo, or any person working on their behalf, will be immediately reported to BLM (435-636-3630). Maralo will suspend all operations in the immediate area of such discovery until written approval to proceed is issued by BLM. An evaluation of the discovery will be made by BLM to determine appropriate action to prevent the loss of significant cultural or scientific values. Maralo will be responsible for the cost of evaluation. Any decision as to proper mitigation measures will be made by BLM after consulting

with Maralo.

Soil and brush will be piled west of the well site. A diversion ditch will be cut west and south of the pad.

The reserve will be lined with at least a minimum 12 mil plastic liner. All of the capacity will be in cut. No liquid hydrocarbons will be discharged to the pit, pad, or road. Should hydrocarbons escape, they will be cleaned up and removed within 48 hours.

The pit will be fenced 48" high on 3 sides with 32" high woven wire topped with 2 smooth wire stands 4" and 16" above the woven wire. Steel posts will be set ≈16.5' apart. Corner posts will be ≥6" O.D. wood and anchored with a dead man. The fourth side will be fenced the same when drilling stops. The fence will be kept in good repair while the pit dries.

The top of the reserve pit will be netted once the drill rig is down. Fence and net will be maintained to prevent animal entry.

7. WASTE DISPOSAL

Human waste will be disposed of in chemical toilets, which will be hauled to a state approved dump station. All trash will be placed in a portable trash cage and hauled to the county landfill. No trash will be buried or burned.

8. ANCILLARY FACILITIES

There will be no air strips or camps. Camper trailers will be on location for the company man, tool pusher, and mud loggers.

9. WELL SITE LAYOUT

See PAGES 15 and 16 for depictions of the well pad, cross section, cut and fill diagram, reserve pit, trash cage, access onto the location, parking, living facilities, and rig orientation.

10. RECLAMATION & REVEGETATION

Upon completion of drilling, the well site will be cleared of all debris, material, and junk not needed for production.

Reclamation will start when the reserve pit is dry. All areas not needed for production will be backfilled, recontoured to natural contours, and the reserved topsoil spread. If the well is a producer, then enough topsoil will be saved to reclaim the rest of the pad. Seed will be applied at a time and in a method to be specified by BLM.

11. SURFACE OWNER

All construction is on lease and on BLM surface.

12. OTHER INFORMATION

BLM's Moab Field Office's phone number is (435) 259-6111.
BLM's Price Field Office's phone number is (435) 636-3630.

Safe drilling and operating practices will be used. The nearest hospital is a 3 hour drive away in northwest Price off US 191. Hospital phone number is (435) 637-4800

13. REPRESENTATION

Anyone having questions concerning the APD should call:

Brian Wood, Consultant
Permits West, Inc.
37 Verano Loop
Santa Fe, NM 87508
(505) 466-8120 FAX: (505) 466-9682 Cellular: (505) 699-2276

The field representatives will be:

	Office	Cellular	Home
Dan Hall, Consultant	(303) 969-9610	(303) 618-1877	(303) 838-9675
Richard Grill, Engineer	(915) 684-7441	(915) 661-1186	(915) 687-0977
Shane Lough, Geologist	(915) 684-7441	(915) 661-7441	(915) 362-5434

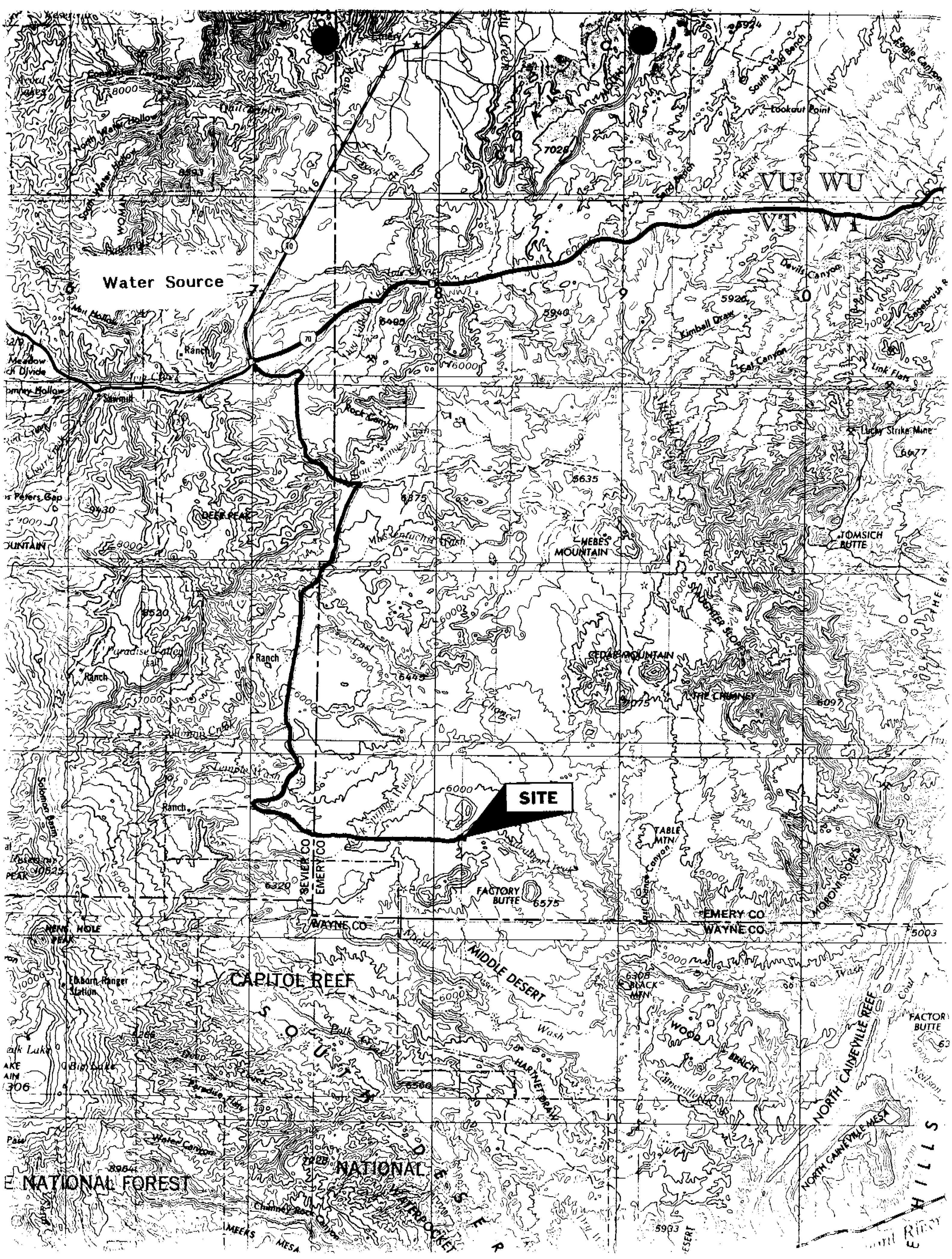
Maralo, LLC is considered to be the operator of the Last Chance Federal Unit #1 well in the NWNW 19-26s-7e, Lease UTU-69699, Emery County, Utah, and is responsible under the terms and conditions of the lease for the operations conducted on the leased lands. Bond (#RLB0003634) coverage for this well will be provided via surety consent as provided for in 43 CFR 3104.2. BLM will hold the aforementioned operator and bond liable until the provisions of 43 CFR 3106.7-2 continuing responsibility are met.

I hereby certify Maralo, LLC has the necessary consents from the proper lease and unit interest owners to conduct lease operations in conjunction with this APD. Bond coverage *per* 43 CFR 3104 for lease activities will be provided by Maralo, LLC. I hereby certify I have inspected the proposed drill site and access route; that I am familiar with the conditions which currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Maralo, LLC. 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

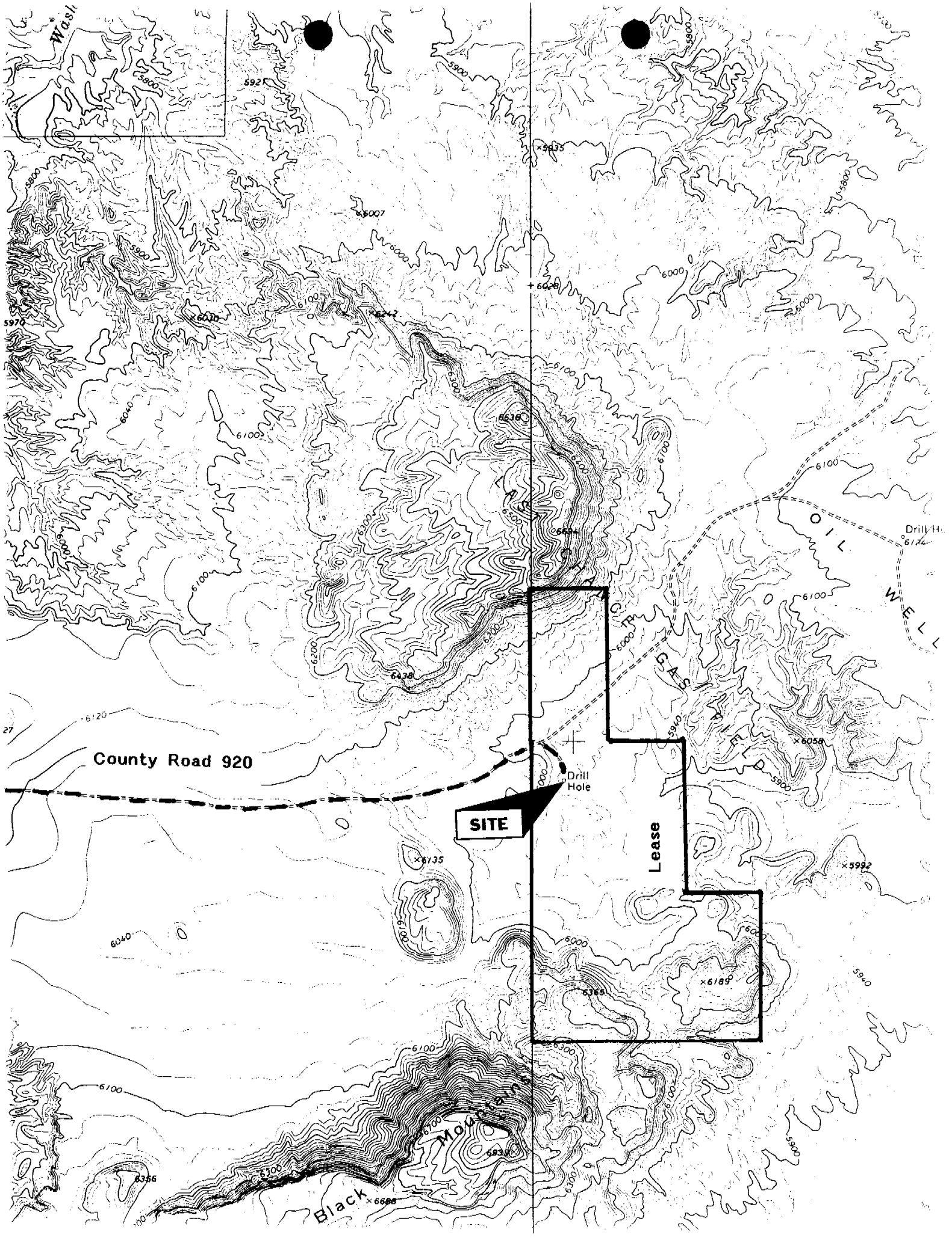
the filing of a false statement.

Brian Wood, Consultant

August 14, 2001
Date

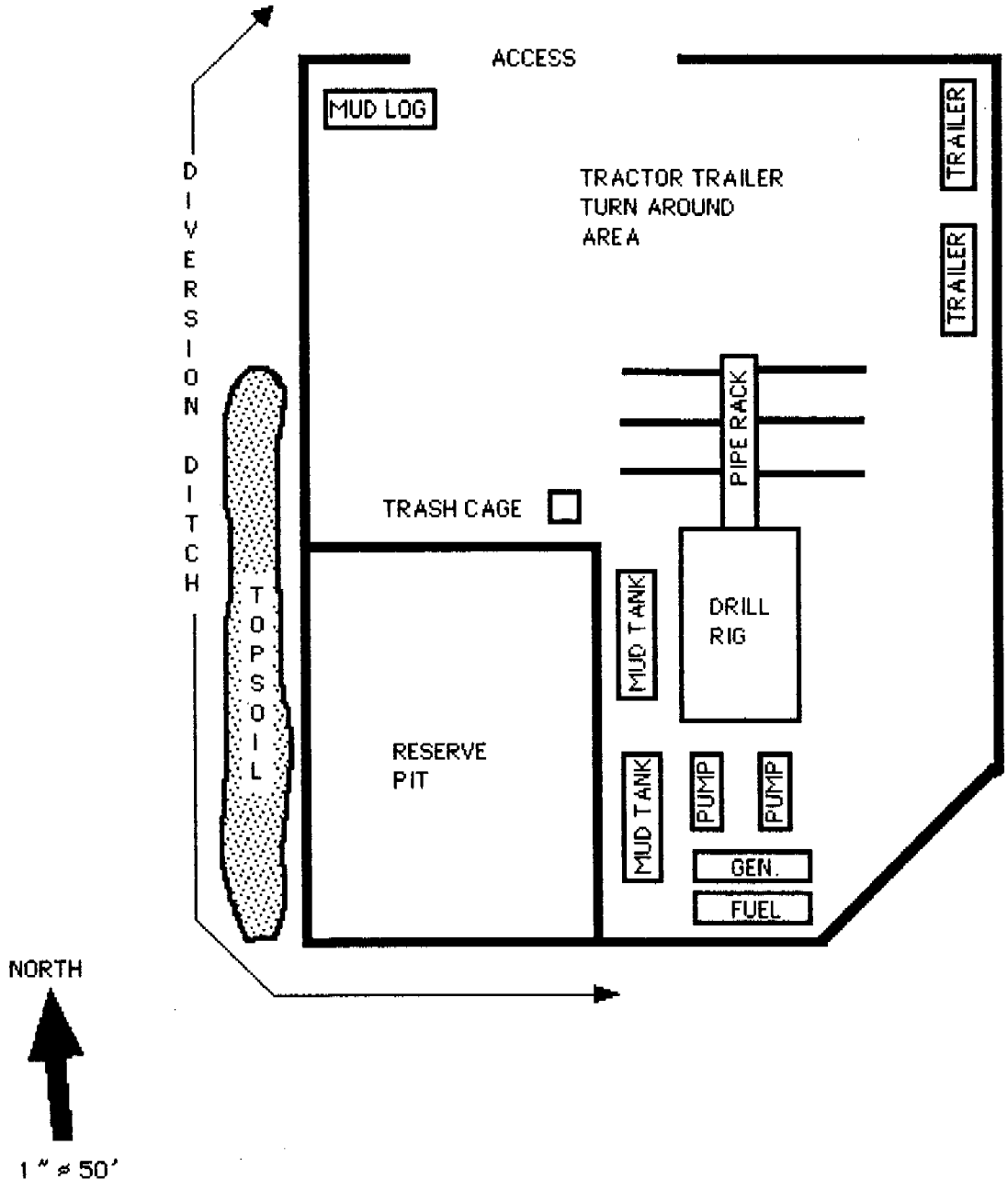


Water Source
SITE
VU WU
VT WT
Devils Canyon
Kimball Draw
Eagle Canyon
Lookout Point
South Sand Bench
Link Flats
Lucky Strike Mine
Rock Canyon
DEER PEAK
HEBES MOUNTAIN
TOMSICH BUTTE
CEDAR MOUNTAIN
THE CHIMNEY
Paradise Valley
Ranch
Sawmill
Temple Wash
TABLE MTN
FACTORY BUTTE
6575
SEVIER CO
EMERY CO
WAYNE CO
MIDDLE DESERT
CAPITOL REEF
BLACK MTN
WOOD BENCH
HARTNET DRAW
NORTH CAINEVILLE REEF
NORTH CAINEVILLE MESA
Elkhorn Ranger Station
NATIONAL
E NATIONAL FOREST
Chimney Rock Canyon
MEEKS MESA


County Road 920
SITE
Drill Hole
Lease
OIL
GAS
FIELD
Black
Mountain

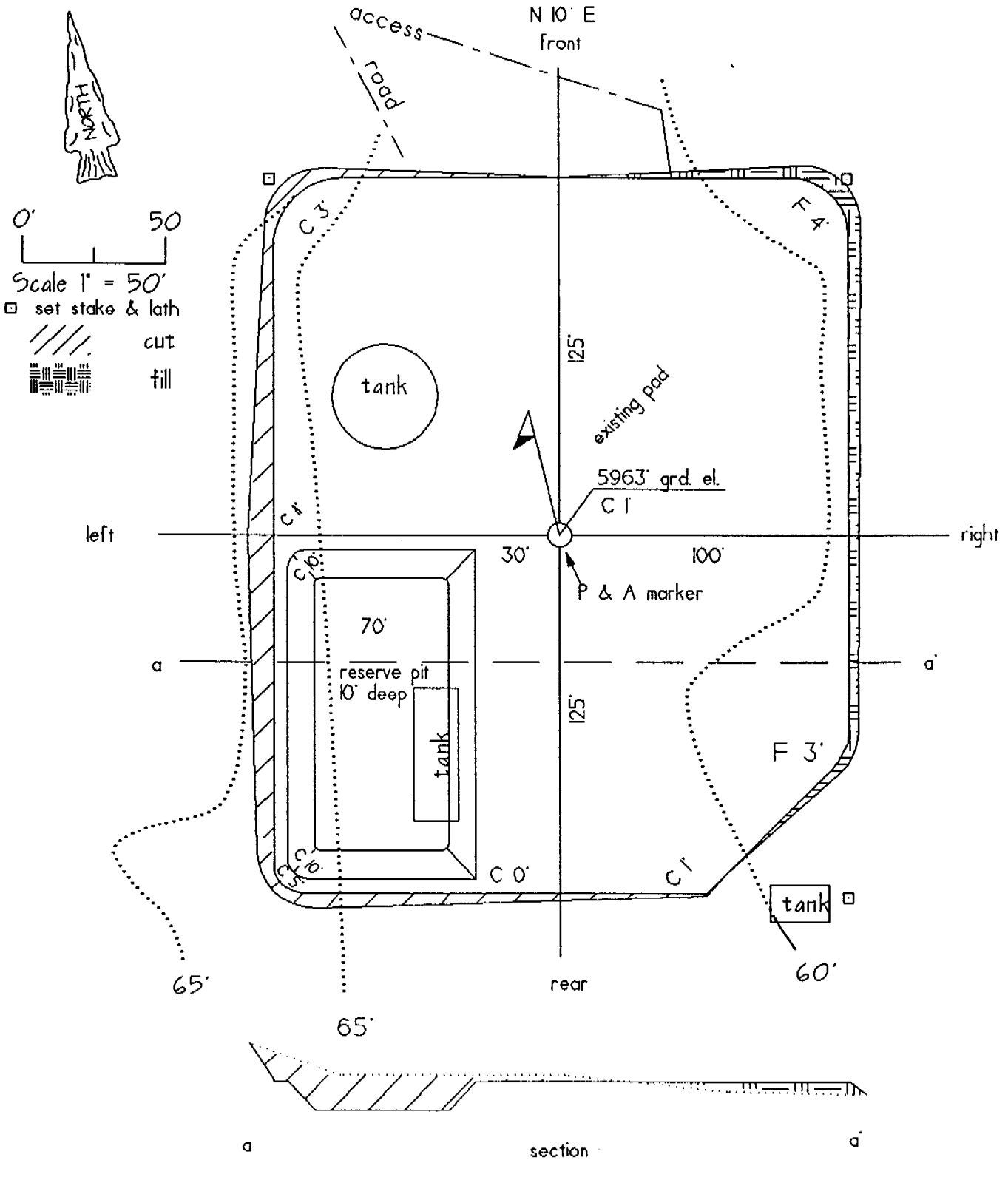
Maralo, LLC
Last Chance Unit #1
652' FNL & 590' FWL
Sec. 19, T. 26 S., R. 7 E.
Emery County, Utah

TIGHT HOLE
CONFIDENTIAL



Last Chance Unit # 1

well pad & section



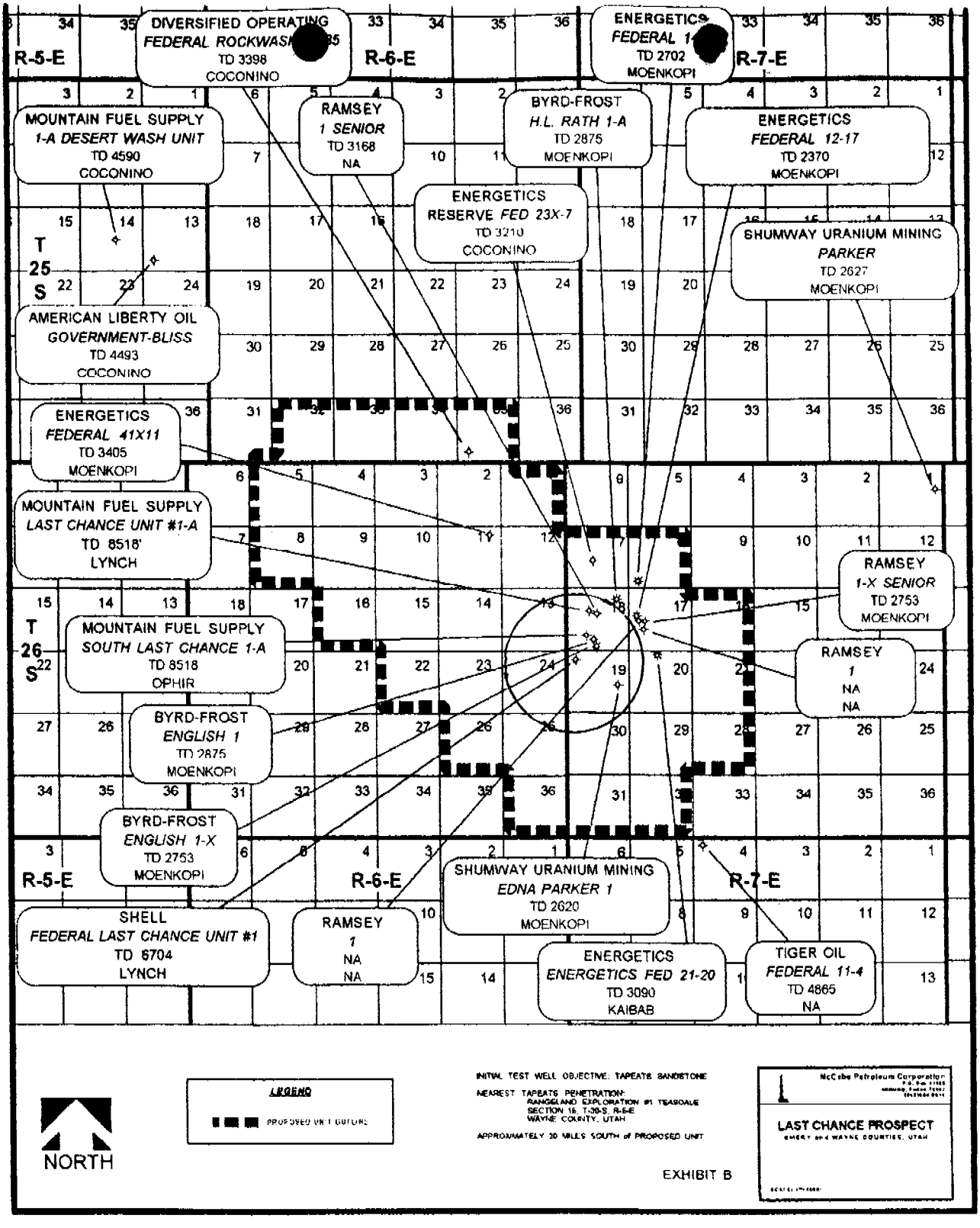

DIVERSIFIED OPERATING
FEDERAL ROCKWASH
TD 3398
COCONINO
ENERGETICS
FEDERAL 1
TD 2702
MOENKOPI
MOUNTAIN FUEL SUPPLY
1-A DESERT WASH UNIT
TD 4590
COCONINO
RAMSEY
1 SENIOR
TD 3168
NA
BYRD-FROST
H.L. RATH 1-A
TD 2875
MOENKOPI
ENERGETICS
FEDERAL 12-17
TD 2370
MOENKOPI
ENERGETICS
RESERVE FED 23X-7
TD 3210
COCONINO
SHUMWAY URANIUM MINING
PARKER
TD 2627
MOENKOPI
AMERICAN LIBERTY OIL
GOVERNMENT-BLISS
TD 4493
COCONINO
ENERGETICS
FEDERAL 41X11
TD 3405
MOENKOPI
MOUNTAIN FUEL SUPPLY
LAST CHANCE UNIT #1-A
TD 8518'
LYNCH
RAMSEY
1-X SENIOR
TD 2753
MOENKOPI
MOUNTAIN FUEL SUPPLY
SOUTH LAST CHANCE 1-A
TD 8518
OPHIR
RAMSEY
1
NA
NA
BYRD-FROST
ENGLISH 1
TD 2875
MOENKOPI
BYRD-FROST
ENGLISH 1-X
TD 2753
MOENKOPI
SHUMWAY URANIUM MINING
EDNA PARKER 1
TD 2620
MOENKOPI
SHELL
FEDERAL LAST CHANCE UNIT #1
TD 6704
LYNCH
RAMSEY
1
NA
NA
ENERGETICS
ENERGETICS FED 21-20
TD 3090
KAIBAB
TIGER OIL
FEDERAL 11-4
TD 4865
NA
R-5-E
R-6-E
R-7-E
T 25 S
T 26 S
NORTH
LEGEND
PROPOSED UNIT OUTLINE
INITIAL TEST WELL OBJECTIVE: TAPEATS SANDSTONE
NEAREST TAPEATS PENETRATION:
RANGELAND EXPLORATION #1 TEASDALE
SECTION 16, T-35-S, R-6-E
WAYNE COUNTY, UTAH
APPROXIMATELY 20 MILES SOUTH of PROPOSED UNIT
McCabe Petroleum Corporation
LAST CHANCE PROSPECT
EMERY and WAYNE COUNTIES, UTAH

EXHIBIT B

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: / /

API NO. ASSIGNED: 43-015-20367

WELL NAME: LAST CHANCE UNIT 1 *ReEntry

OPERATOR: MARALO LLC (N1885)

CONTACT: BRIAN WOOD, AGENT

PHONE NUMBER: 505-466-8120

PROPOSED LOCATION:

NWNW 19 260S 070E
SURFACE: 0652 FNL 0590 FWL
BOTTOM: 0652 FNL 0590 FWL
EMERY
LAST CHANCE (145)

LEASE TYPE: 1 - Federal
LEASE NUMBER: UTU-69699
SURFACE OWNER: 1 - Federal

PROPOSED FORMATION: ~~MSSP~~ TAPTS

INSPECT LOCATN BY: / /

Tech Review	Initials	Date
Engineering		
Geology		
Surface		

RECEIVED AND/OR REVIEWED:

✓ Plat
✓ Bond: Fed[1] Ind[] Sta[] Fee[]
(No. RLB0003634)
N Potash (Y/N)
N Oil Shale 190-5 (B) or 190-3 or 190-13
✓ Water Permit
(No. 94-1146)
N RDCC Review (Y/N)
(Date:)
N/A Fee Surf Agreement (Y/N)

LOCATION AND SITING:

___ R649-2-3. Unit LAST CHANCE
✓ R649-3-2. General
Siting: 460 From Qtr/Qtr & 920' Between Wells
___ R649-3-3. Exception
___ Drilling Unit
Board Cause No:
Eff Date:
Siting:
___ R649-3-11. Directional Drill

COMMENTS:

STIPULATIONS: 1-Fed. Aprvl.

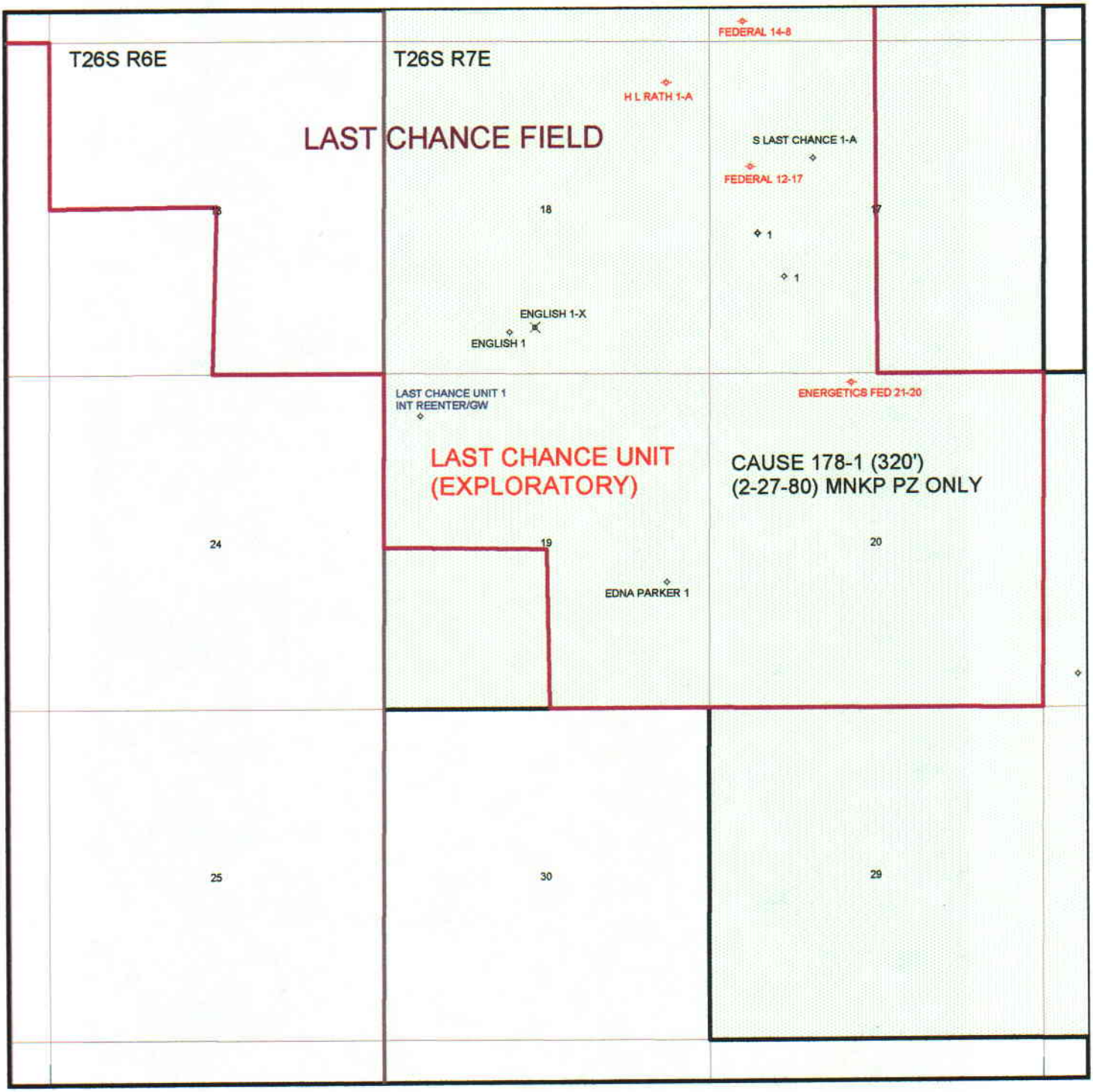
Utah Oil Gas and Mining

OPERATOR: MARALO LLC (N1885)

SEC. 19, T26S, R7E

FIELD: LAST CHANCE (145)

COUNTY: EMERY UNIT: LAST CHANCE
SPACING: R649-3-2/GEN ST



PREPARED BY: LCORDOVA
DATE: 20-AUGUST-2001

United States Department of the Interior

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

IN REPLY REFER TO
UT-922

COPY

September 6, 2001

McCabe Petroleum Corporation
P.O. Box 11188
Midland, Texas 79702

Re: Last Chance Unit
Emery and Wayne Counties, Utah

Gentlemen:

This letter is to acknowledge your request for a change in the location of the unit obligation well and an extension of time in which to commence drilling the initial obligation well for the Last Chance Unit.

The initial obligation well was a re-entry and deepening of the South Last Chance Unit Well No. 1A located in the SE¼ NW¼ of Section 18, Township 26 South, Range 7 East, SLB&M. The proposed change would be to re-enter and deepen the Last Chance Unit Well No. 1 located in the NW¼ NW¼ of Section 19, Township 26 South, Range 7 East, SLB&M and to test 200 feet below the top of the Tapeats Formation.

Your request for change of location for the obligation well is hereby approved. Also, you are granted an extension of time in which to commence drilling the initial obligation well to 30 days after approval of your application for permit to drill.

Sincerely,

Robert A. Henricks

Robert A. Henricks
Chief, Branch of Fluid Minerals

cc: UnitSource, Incorporated

bcc: Field Manager - Moab
Division Oil, Gas & Mining
File - Last Chance Unit
Tickler File (Mickey)
Agr. Sec. Chron.
Fluid Sec. Chron

UT922:TATHOMPSON:tt:9/6/01

United States Department of the Interior

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

IN REPLY REFER TO
UT-922

COPY

September 19, 2001

Maralo, LLC
c/o UnitSource Incorporated
11184 Huron Street, Suite 16
Denver, Colorado 80234

Re: Last Chance Unit
Emery & Wayne Counties, Utah

Gentlemen:

On September 18, 2001, we received an indenture dated August 22, 2001, whereby McCabe Petroleum Corporation resigned as Unit Operator and Maralo, LLC was designated as Successor Unit Operator for the Last Chance Unit, Emery & Wayne Counties, Utah.

This indenture was executed by all required parties and the signatory parties have complied with Sections 5 and 6 of the unit agreement. The instrument is hereby approved effective September 19, 2001. In approving this designation, the Authorized Officer neither warrants nor certifies that the designated party has obtained all required approval that would entitle it to conduct operations under the Last Chance Unit Agreement.

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

Sincerely,

/s/ Teresa A. Thompson

for Robert A. Henricks
Chief, Branch of Fluid Minerals

Enclosure

bcc: Field Manager - Moab (w/enclosure)
Division of Oil, Gas & Mining
Minerals Adjudication Group
File - Last Chance Unit (w/enclosure)
Agr. Sec. Chron
Fluid Chron

UT922:TAThompson:tt:9/19/01

Lisha, We don't have anything file here. Mick ----- Original Message ----- **From:** Lisha Cordova **To:** mcoultha@ut.blm.gov **Sent:** Monday, August 20, 2001 12:33 PM **Subject:** New APD-Maralo LLC-Last Chance Unit

Hi Mick, Is there a unit operator change in progress from McCabe Petro Corp to Maralo LLC? (Proposed PZ Tapeats) 43-015-20367 Last Chance Unit 1 Sec. 19, T26S, R7E 0652 FNL 0590 FWL (Re-Entry) Thank you!

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

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

IN REPLY REFER TO
3104
UTU-69699
(UT-924)

AUG 3 1 2001

DECISION

Principal:
Maralo, LLC
5151 San Felipe, Suite 400
Houston, Texas 77056

Surety:
RLI Insurance Company
8 Greenway Plaza, Suite 400
Houston, Texas 77046

Bond Amount: $10,000

Bond Type: Individual Oil & Gas Lease Bond

Lease Number: UTU-69699

BLM Bond No.: UT-1235

Oil and Gas Individual Lease Bond Accepted

On August 15, 2001, this office received Surety Bond No. RLB0003634, issued by the above surety, in the amount of $10,000. The bond has been examined, found to be satisfactory, and is accepted the date of filing.

The bond will be maintained by this office and constitutes coverage of all operations conducted by Maralo, LLC on this lease. The bond provides coverage for the principal where they have interest in, and/or responsibility for operations on, lease UTU-69699.

If you have any questions, please contact Connie Seare of this Office at (801) 539-4111.

Robert Lopez
Chief, Branch of
Minerals Adjudication

cc: Price Field Office

cc: Dorothea Logan

Dorothea Logan

From: Kathy Norberg [kathynorberg@maralo.com]
Sent: Wednesday, August 29, 2001 2:47 PM
To: Dorothea Logan
Subject: Doing Business in Utah

We are now registered to do business in the state of Utah. Our certificate was issued 8/28/01 and will be mailed to our registered agent (CT Corporation System in Salt Lake City). I will ask them for a copy and send one to you. Our entity number is 4964891-0161. I will follow up with you next July to see if we need to renew it. Currently it is good through 8/17/02 and the renewal is $10.00 per year.

Let me know if you need anything else.

8/29/01

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87505 (505) 466-8120

Fax Transmittal Cover

From: Brian

Permits West, Inc.

phone: (505)-466-8120
fax: (505)-466-9682

To: Leslie Date: 9-15

Office:

Fax No. No. pages to follow 2

Comments:

For Maralo's Last Chance #1

Michael O. Leavitt
Governor
Kathleen Clarke
Executive Director
Lowell P. Braxton
Division Director

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

September 20, 2001

Maralo, LLC
233 West Wall St., Suite 900
Midland, TX 79701

Re: Last Chance Unit 1 Well, 652' FNL, 590' FWL, NW NW, Sec. 19, T. 26 South, R. 7 East, Emery 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 43-015-20367.

Sincerely,

John R. Baza
Associate Director

dm
Enclosures
cc: Emery County Assessor
Bureau of Land Management, Moab District Office

Operator: Maralo, LLC

Well Name & Number Last Chance Unit 1

API Number: 43-015-20367

Lease: UTU 69699

Location: NW NW **Sec.** 19 **T.** 26 South **R.** 7 East

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 of spudding the well.

   - Contact Carol Daniels at (801) 538-5284.

   Notify the Division prior to commencing operations to plug and abandon the well.

   - Contact Dan Jarvis at (801) 538-5338

3. Reporting Requirements

   All required reports, forms and submittals will 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.

4. State approval of this well does not supersede the required federal approval, which must be obtained prior to drilling.

CONFIDENTIAL

Form 3160-5
(August 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires November 30, 2000

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

5. Lease Serial No. UTU-69699

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

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

1. Type of Well
☐ Oil Well ☑ Gas Well ☐ Other

8. Well Name and No. LAST CHANCE UNIT 1

2. Name of Operator MARALO, LLC

9. API Well No. 43-015-20367

3a. Address 233 W. WALL ST., SUITE 900 MIDLAND, TX. 79701

3b. Phone No. *(include area code)* (915) 684-7441

10. Field and Pool, or Exploratory Area LAST CHANCE

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
652' FNL & 590' FWL 19-26s-7e

11. County or Parish, State 19, 26S, 7E EMERY, UT

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

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

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

Will use fresh water from surface to 1,474'. Will use mud program previously described on pages 4 & 5 of the APD from 1,474' to TD.

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)* BRIAN WOOD Title CONSULTANT (505) 466-8120

Signature Date 10-22-01 cc: BLM (M&P), Gill, UDOGM

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by Title Date

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

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

RECEIVED
OCT 26 2001
DIVISION OF
OIL, GAS AND MINING

Form 3160-5
(August 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires November 30, 2000

RECEIVED
UTAH STATE OFFICE
2001 OCT 30 P 2:05
DEPT OF THE INTERIOR
BUREAU OF LAND MGMT

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

5. Lease Serial No. UTU-69699

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

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

1. Type of Well
☐ Oil Well ☑ Gas Well ☐ Other

8. Well Name and No. LAST CHANCE UNIT 1

2. Name of Operator MARALO, LLC

9. API Well No. 43-015-20367

3a. Address 233 W. WALL ST., SUITE 900 MIDLAND, TX. 79701

3b. Phone No. *(include area code)* (915) 684-7441

10. Field and Pool, or Exploratory Area LAST CHANCE

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
652' FNL & 590' FWL 19-26s-7e

11. County or Parish, State EMERY, UT

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

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

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

Will use fresh water from surface to 1,474'. Will use mud program previously described on pages 4 & 5 of the APD from 1,474' to TD.

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)* BRIAN WOOD Title CONSULTANT (505) 466-8120

Signature B. Wood Date 10-22-01 cc: BLM (M&P), Gill, UDOGM

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by /S/ WILLIAM C. STRINGER Title Assistant Field Manager, Division of Resources Office Date APR - 9 2002

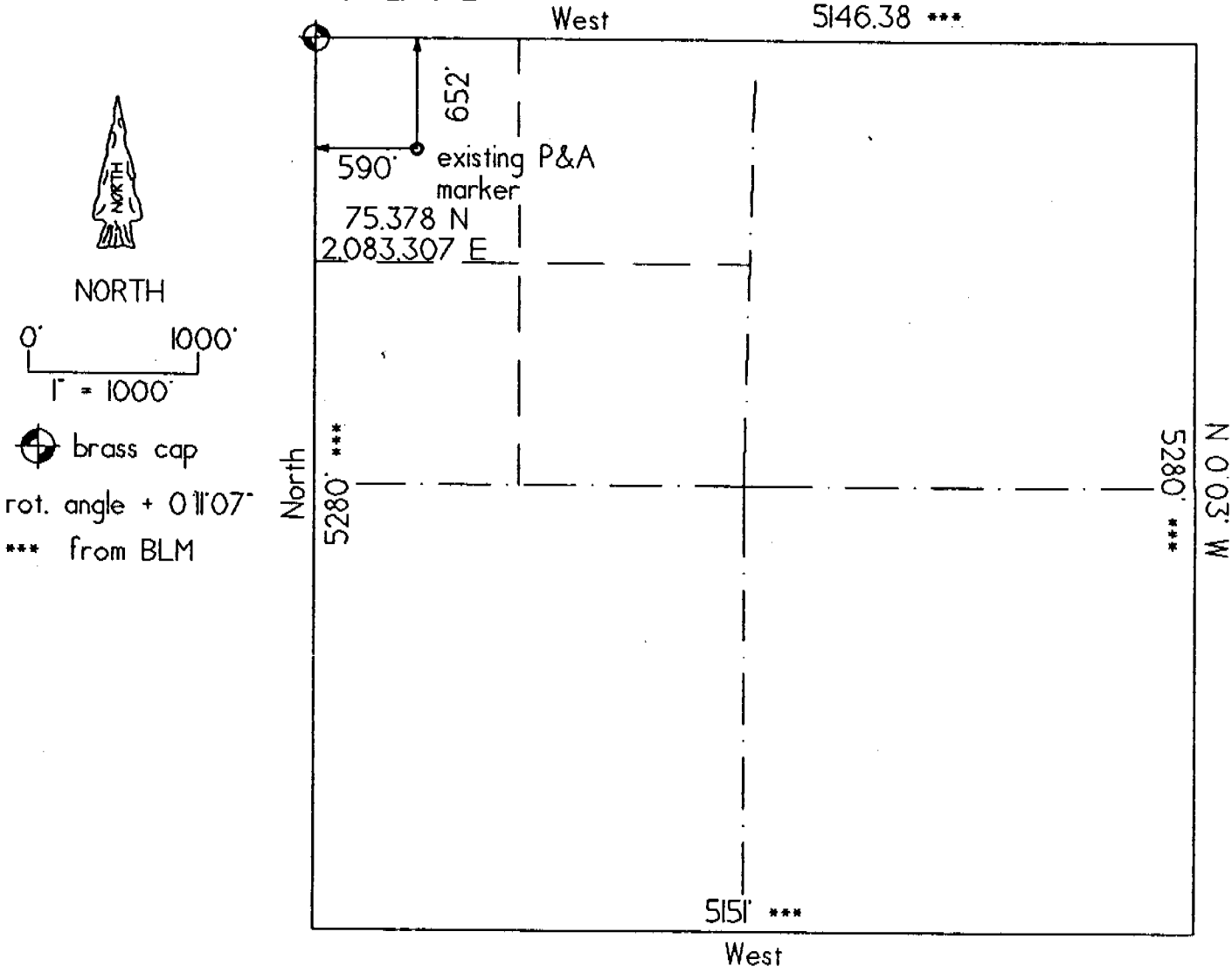
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

APPROVE APD: ecj 4-8-2

NAD 27 Utah Central
76.028 N
2.082.716 E

Well Location Plat



NORTH

0' 1000'

1" = 1000'

brass cap

rot. angle + 0°11'07"

*** from BLM

Well Location Description

Maralo LLC
Last Chance Unit # 1
652' FNL & 590' FWL
Section 19. T.26 S.. R.7 E.. SLM
Emery County. UT
5963' grd. el. (by GPS)

REGISTERED LAND SURVEYOR
GERALD G. HUDDLESTON
No. 161297
STATE OF UTAH

6 July 2001

Gerald G. Huddleston. LS

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

HUDDLESTON LAND SURVEYING - BOX KK - CORTEZ. CO - (970) 565 -3330

Maralo, LLC
Last Chance Unit No. 1
U-69699
Last Chance Unit (U-79323-X)
NW/NW Section 19, T26S, R7E
Emery County, Utah

A COMPLETE COPY OF THIS PERMIT SHALL BE KEPT ON LOCATION through well completion, and shall be available to contractors to ensure compliance.

CONDITIONS OF APPROVAL

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

Be advised that Maralo, LLC is considered to be the operator of the above well and is responsible under the terms and conditions of the lease for the operations conducted on the leased lands.

Bond coverage for this well is provided by UT 1235 (Principal - Maralo, LLC) via surety consent as provided for in 43 CFR § 3104.2.

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

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

All lease operations will be conducted in full compliance with applicable regulations (43 CFR § 3100), Onshore Oil and Gas Orders, lease terms, notices to lessees, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors.

A. DRILLING PROGRAM

1. The proposed 5M BOPE system is adequate. Installation, maintenance and testing of BOPE shall be in conformance with API RP 53 and Onshore Order No. 2.

2. A cement bond log (CBL), or similar tool, shall be run, on the first casing string that is set, across the interval from the DV tool to top-of-cement.

B. SURFACE

Location of Facilities and Timing of Construction

1. Final well pad and berm shall not extend beyond the existing pad footprint.

2. No earthmoving work shall be done to the existing well pad access spur road running from the county road to the well pad which would cause disturbance to adjacent undisturbed soils.

3. Construction shall not occur on frozen or saturated soils, or when watershed damage is likely, unless an adequate plan is submitted to the BLM that demonstrates potential impacts shall be mitigated. BLM may limit construction activity at times when soils are dry or frozen or have snow cover. BLM shall determine what is "wet", "muddy", or "frozen" based on weather and field conditions at the time. The limitation does not apply to maintenance and operation of producing wells.

Reclamation

1. All pits must be reclaimed to a natural condition similar to the rest of the reclaimed area, and must be restored to a safe and stable condition.

2. Reclamation shall start immediately upon completion of construction, unless prevented by weather conditions.

3. Disturbed areas shall be revegetated after the site has been satisfactorily prepared. Site preparation may include ripping, contour furrowing, terracing, reduction fo steep cut and fill slopes, waterbarring, or other procedures.

4. Seeding shall be done by drilling on the contour whenever practical, or by other approved method. Where broadcast seeding is used, seeding shall take place after the soil surface is recontoured and scarified. A harrow or similar implement shall be dragged over the area to assure seed cover.

5. Seeding and/or planting shall be repeated until satisfactory revegetation is accomplished, as determined by BLM. Mulching, fertilizing, fencing or other practices may be required.

6. Seeding shall be done October 1 to November 15.

7. Sufficient topsoil to facilitate revegetation shall be segregated from subsoils during all construction operations, where feasible. Topsoil stockpiles shall be revegetated or otherwise protected to prevent erosion and maintain some soil microflora and microfauna. Stockpiled topsoil shall be spread evenly over the recontoured area. All disturbed areas and vehicle tracks from overland access shall be ripped 4 to 12 inches deep within the contour.

General Requirements

1. With BLM approval, existing roads or trails may be improved (bladed) if impassable by vehicles or equipment. No widening or realignment shall be allowed unless approved by BLM.

2. Reserve pits for oil and gas drilling operations may be required to be lined with commercial grade bentonite or plastic liners sufficient to prevent seepage. At least half of the capacity shall be in a cut.

Water Resources

1. Portable chemical toilets shall be provided on site during drilling.

2. No oil, lubricants, or toxic substances may be drained onto the ground surface. Pads shall be designed so that any oil, lubricants, etc., shall drain into a collection system.

Cultural Resources

1. If human remains are discovered at any point during the project, they shall be treated according to state and federal law, and according to the wishes of concerned Native American tribes, pursuant to the native American Graves Protection and Repatriation Act. The county sheriff, coroner, land managing official and State Archaeologist shall be notified. The remains shall not be disturbed until the appropriate officials have examined them.

Livestock Management

1. Within existing range and livestock management facilities, such as fences, wells, reservoirs, watering pipelines, troughs, and trailing systems, shall not be disturbed without prior approval of BLM. Where disturbance is necessary, the facility shall be returned to its original condition.

2. The abandoned corrugated stock tank on the well site shall be disassembled for re-use by the Richfield BLM Office. The Richfield Office shall be notified at 435-896-1500 when the tank is ready for transport off site.

3. Access to grazing areas shall be maintained at all times. Livestock operators shall have access to grazing and trailing areas where the road closures are implemented during periods of authorized livestock use.

Visual Resources

1. All permanent (in place for six months or longer) structures constructed or installed (including oil well pump jacks) will be painted Desert Brown (10YR 6/3) or a flat, non-

reflective color to match the standard environmental colors as determined by the Rocky Mountain Five State Interagency Committee. All facilities will be painted within six months of installation. Facilities required to comply with the Occupational Safety and Health Act (OSHA) may be excluded.

2. Construction areas and access roads shall be kept litter-free. The operator must provide a trash pit or trash cage, and trash must be collected and contained during the operation. All garbage, trash, flagging, lath, etc. shall be removed from the area and hauled to an authorized dump site.

3. If a pump jack is necessary, the smallest, low profile, commercially available pump jack should be utilized.

BLM SEED MIXTURES

The following seed mixture shall be used for temporary and final seeding of topsoil storage piles and for final seeding of the well pad and access spur when the well is abandoned. Substitute species may be used if approved by the BLM.

Common Name	Scientific Name	Pounds per acre/PLS*
Grasses		
Indian ricegrass	Oryzopsis hymenoides	2
Galleta	Hilaria jamesii	1
Squirreltail	Elymus elymoides	1
Forbs		
Gooseberryleaf Globemallow	Spaeralcea grossularifolia	0.5
Lewis flax	Linum perenne lewisii	1
Palmer penstemon	Penstmon palmerii	1
Small bumet	Sanguisorba minor	1
Shrubs		
Forage kochia	Kochia prostrata	1
Shadscale	Atriplex confertifolia	1
Whitestem rabbitbrush	Chrysothamnus nauseosus allicaulis	0.5
Fourwing saltbush	Atriplex conescens	1
	TOTAL	11

*Seeding rate is listed as pounds per acre of pure live seed (PLS) drilled. Rate is increased by 50 percent if broadcast seeded.
Formula: purl live seed (PLS) = % seed germination.
Shrub seed sources will be from the states of Colorado or Utah and from areas above elevations or 4,000 feet above sea level. Seed from these sources will provide more winter tolerant plants, thus increasing over-winter survival rates.

C. REQUIRED APPROVALS, REPORTS AND NOTIFICATIONS

Required verbal notifications are summarized in Table 1, attached.

Spud- The spud date will be reported to BLM 24-hours prior to spudding, or in this case, re-entry. Written notification in the form of a Sundry Notice (Form 3160-5) will be submitted to the Moab Field Office within 24-hours after spudding.

Monthly Reports of Operations- In accordance with Onshore Oil and Gas Order No. 1, this well shall be reported on Minerals Management Service (MMS) Form 3160, "Monthly Report of Operations," starting the month in which operations commence and continuing each month until the well is physically plugged and abandoned. This report will be filed directly with MMS.

Sundry Notices- There will be no deviation from the proposed drilling and/or workover program without prior approval. "Sundry Notices and Reports on Wells" (Form 3160-5) will be filed, with the Moab Field Office, for approval of all changes of plans and subsequent operations in accordance with 43 CFR § 3162.3-2. Safe drilling and operating practices must be observed.

Drilling Suspensions- Operations authorized by this permit shall not be suspended for more than 30 days without prior approval of the Moab Field Office. All conditions of this approval shall be applicable during any operations conducted with a replacement rig.

Undesirable Events- Spills, blowouts, fires, leaks, accidents, or any other unusual occurrences shall be immediately reported to the BLM in accordance with requirements of NTL-3A.

First Production- Should the well be successfully completed for production, the Moab Field Office will be notified when the well is placed in producing status. Such notification may be made by phone, but must be followed by a sundry notice or letter not later than five business days following the date on which the well is placed into production.

A first production conference will be scheduled as soon as the productivity of the well is apparent. This conference should be coordinated through the Price Field Office. The Price Field Office shall be notified prior to the first sale.

Well Completion Report- Whether the well is completed as a dry hole or as a producer, "Well Completion and Recompletion Report and Log" (Form 3160-4) will be submitted to the Moab Field Office not later than thirty-days after completion of the well or after completion of operations being performed, in accordance with 43 CFR § 3162.4-1. Two copies of all logs, core descriptions, core analyses, well test data, geologic summaries, sample description, and all other surveys or data obtained and compiled during the drilling, workover, and/or completion operations, will be filed with Form 3160-4. When requested, samples (cuttings and/or samples) will be submitted to the Moab Field Office. Please do not resubmit logs that were provided when the well was originally drilled.

Venting/Flaring of Gas- Gas produced from this well may not be vented/flared beyond an initial, authorized test period of 30 days or 50 MMcf, whichever first occurs, without the prior, written approval of the Moab Field Office. Should gas be vented or flared without approval beyond the authorized test period, the well may be ordered shut-in until the gas can be captured or approval to continue the venting/flaring as uneconomic is granted. In such case, compensation to the lessor shall be required for that portion of the gas that is vented/flared without approval and which is determined to have been avoidably lost.

Produced Water- An application for approval of a permanent disposal method and location will be submitted to the Moab Field Office for approval pursuant to Onshore Oil and Gas Order No.7.

Off-Lease Measurement, Storage, Commingling- Prior approval must be obtained from the Moab Field Office for off-lease measurement, off-lease storage and/or commingling (either down-hole or at the surface).

Plugging and Abandonment- If the well is completed as a dry hole, plugging instructions must be obtained from the Moab Field Office prior to initiating plugging operations.

A "Subsequent Report of Abandonment" (Form 3160-5) will be filed with the Moab Field Office within thirty-days following completion of the well for abandonment. This report will indicate where plugs were placed and the current status of surface restoration. Upon completion of approved plugging, a regulation marker will be erected in accordance with 43 CFR § 3162.6. Final abandonment will not be approved until the surface reclamation work required by the approved APD or approved abandonment notice has been completed to the satisfaction of the Price Field Office or the appropriate surface managing agency.

TABLE 1

NOTIFICATIONS

Notify Don Stephens (work: 435-636-3608, home: 435-637-7967)
or Mike Kaminski (work: 435-636-3640, home: 435-637-2518)
of the BLM, Price Field Office for the following:

48 hours prior to beginning dirt work

1 day prior to starting re-entry

Upon drilling plugs and reaching the original TD at 6704 ft., call Eric Jones, Moab BLM

If the people at the above numbers cannot be reached, notify the Moab Field Office at (435) 259-2100. If unsuccessful, contact the person listed below.

Well abandonment operations require 24 hour advance notice and prior approval. In the case of newly drilled dry holes, verbal approval can be obtained by calling the Moab Field Office at (435) 259-2100. If approval is needed after work hours, you may contact the following:

Eric Jones, Petroleum Engineer	Office: (435) 259-2117 Home: (435) 259-2214

Form 3160-5
(June, 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-013
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-69699

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

7. If Unit or CA, Agreement Designation: Last Chance

SUBMIT IN TRIPLICATE

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other Drilled and Abandoned

8. Well Name and No.: Last Chance Unit #1

2. Name of Operator: Marallo, LLC

9. API Well No.: 43-015-20367

3. Address and Telephone No.: PO Box 932, Midland, TX 79702 (915) 684-7441

10. Field and Pool, or Exploratory Area: Wildcat

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 652' FNL and 590' FWL, (NWNW), Section 19, T26S-R7E
Latitude Longitude

11. County or Parish, State: Emery County, Utah

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

TYPE OF SUBMISSION	TYPE OF ACTION	
[X] Notice of Intent	[ ] Abandonment	[X] Change Plans
[ ] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non- Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut- Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[ ] Other _____	[ ] 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.

Should unstable hole conditions dictate, operator proposes setting intermediate casing as follows:
7", 23-26#, J-55, STC (design attached) set to 6700' and cemented with 300 sx Class G mixed at 15.8 ppg and 1.15 cf/sx (Stage 1) followed by 200 sx HiFill cement mixed at 11.0 ppg and 3.80 cf/sx + 100 sx Class G cement mixed at 15.8 ppg and 1.15 cf/sx (Stage 2). Stage cementing tool to be run at a depth of 3000' and cement top intended to be above 1450'. Actual cement volume to be determined from caliper log.

If the decision is made to run production casing, operator proposes setting 4-1/2" casing as follows:
4-1/2", 11.6#, N-80, LTC (design attached) set to 9200'.
a) If intermeidate casing was not previously run, 4-1/2" will be cemented with 150 sx HiFill cement mixed at 11.0 ppg and 3.80 cf/sx and 300 sx Class G (Stage 1) followed by 250 sx HiFill cement + 100 sx Class G (Stage 2). Stage cementing tool to be run at 3000' and cement top intended to be above 1450'
b) If intermediate casing has been previously run, 4-1/2" will be cemented with 150 sx HiFill cement mixed at 11.0 ppg and 3.80 cf/sx and 300 sx Class G mixed at 15.8 ppg and 1.15 cf/sx. Intended cement top to be at approximately 6700'. Actual cement volume to be determined from caliper.

14. I hereby certify that the foregoing is true and correct.
Signed: [signature] Title: Agent Date: 4/4/02

This space for Federal or State office use)
Approved by: /S/ WILLIAM C. STRINGER Title: Assistant Field Manager, Division of Resources APR - 9 2002
Conditions of approval, if any:

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

*See Instructions On Reverse Side

ENERGY OPERATING COMPANY

Operator: MARALO LLC	Well Name: Last Chance Unit #1
Project ID:	Location: Emery County, UT

Design Parameters:

Mud weight (9.50 ppg) : 0.494 psi/ft
Shut-in surface pressure : 3859 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"

Design Factors:

Collapse	: 1.125	
Burst	: 1.00	
8 Round	: 1.80	(J)
Buttress	: 1.60	(J)
Body Yield	: 1.50	(B)

	Length (feet)	Size (in.)	Weight (lb/ft)	Grade	Joint	Depth (feet)	Drift (in.)	Cost
1	5,000	7"	23.00	J-55	ST&C	5,000	6.241	
2	1,700	7"	26.00	J-55	ST&C	6,700	6.151	

	Collapse Load (psi)	Collapse Strgth (psi)	Collapse S.F.	Burst Load (psi)	Min Int Yield Strgth (psi)	Burst S.F.	Tension Load (kips)	Tension Strgth (kips)	Tension S.F.
1	2468	3145	1.274	4359	4360	1.00	159.20	309	1.94 J
2	3306	4320	1.307	4529	4980	1.10	44.20	364	8.24 J

Prepared by : Dan Hall, Denver, Colorado
Date : 04-04-2002
Remarks :

Contingency String
Design is for a Intermediate - Drlg string.
Minimum segment length for the 6,700 foot well is 1,500 feet.
Additional details regarding deeper string(s):
Next string will set at 9,200 ft. with 10.00 ppg mud (pore pressure of 4,779 psi.) The frac gradient of 1.000 at the casing seat results in an injection pressure of 6,700 psi. Effective BHP (for burst) is 4,529 psi.

NOTE: The design factors used in this casing string design are as shown above. As a general guidline, Lone Star Steel recommends using minimum design factors of 1.125 - Collapse (with evacuated casing), 1.0 - Burst, 1.8 - 8 Round Tension, 1.6 - Buttress Tension, and 1.5 - Body Yield. 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 1993 pricing model. (Version 1.00)

ENERGY OPERATING COMPANY

Operator: MARALO, LLC	Well Name: Last Chance Unit #1
Project ID:	Location: SESE Sec 19-26S-7E

Design Parameters:

Mud weight (11.00 ppg) : 0.571 psi/ft
Shut in surface pressure : 6440 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"

Design Factors:

Collapse : 1.125
Burst : 1.00
8 Round : 1.80 (J)
Buttress : 1.80 (J)
Body Yield : 1.50 (B)

	Length (feet)	Size (in.)	Weight (lb/ft)	Grade	Joint	Depth (feet)	Drift (in.)	Cost
1	9,200	4-1/2"	11.60	N 80	LT&C	9,200	3.875	

	Collapse Load (psi)	Collapse Strgth (psi)	S.F.	Burst Load (psi)	Min Int Yield Strgth (psi)	S.F.	Tension Load (kips)	Tension Strgth (kips)	S.F.
1	5257	6350	1.208	7360	7780	1.06	106.72	223	2.09 J

Prepared by : Dan Hall, Denver, Colorado
Date : 08-04-2001
Remarks :

Production Casing
Design is for a Production - Frac string.
Minimum segment length for the 9,200 foot well is 1,500 feet.
Additional details regarding deeper string(s):
Next string will set at 9,200 ft. with 19.25 ppg mud (pore pressure of 9,200 psi.) The frac gradient of 0.800 at the casing seat results in an injection pressure of 7,360 psi. Effective BHP (for burst) is 7,360 psi.

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 - Burst, 1.8 - 8 Round Tension, 1.8 Buttress Tension, and 1.5 - Body Yield. 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 1993 pricing model. (Version 1.0G)

Form 3160-3
(July 1992)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

FORM APPROVED
OMB NO. 1004-0136
Expires: February 28, 1995

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK: DRILL ☑ DEEPEN ☐

b. TYPE OF WELL: OIL WELL ☐ GAS WELL ☑ OTHER — SINGLE ZONE ☑ MULTIPLE ZONE ☐

2. NAME OF OPERATOR: Maralo, LLC

3. ADDRESS AND TELEPHONE NO.: (915) 684-7441
233 West Wall St., Suite 900, Midland, Tx. 79701

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 652' FNL & 590' FWL
At proposed prod. zone: Same

CONFIDENTIAL

5. LEASE DESIGNATION AND SERIAL NO.: UTU-69699

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

7. UNIT AGREEMENT NAME: Last Chance

8. FARM OR LEASE NAME, WELL NO.: Last Chance Unit 1

9. API WELL NO.: 43-015-20367

10. FIELD AND POOL, OR WILDCAT: Last Chance

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 19-26s-7e SLBM

12. COUNTY OR PARISH: Emery — 13. STATE: UT

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 28 air miles south of Emery

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 590'

16. NO. OF ACRES IN LEASE: 684

17. NO. OF ACRES ASSIGNED TO THIS WELL: 160

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

19. PROPOSED DEPTH: 9,200'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 5,963' ungraded

22. APPROX. DATE WORK WILL START*: September 25, 2001

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
26"	16"	Conductor	40'	≈43 sx & to surface
13-1/2"	10-3/4"	40.5	1,474'	>702 cu. ft. & to surface
9" to 7-7/8"	N-80 4-1/2"	11.6	9,200'	345 cu ft & to 1,000' above Tapeats

Well was originally drilled to 6,704' by Shell and P&A in 1960.
Slight difference in footages due to more accurate survey today.

RECEIVED
APR 15 2002
DIVISION OF
OIL, GAS AND MINING

RECEIVED
MOAB FIELD OFFICE
2001 AUG 17 P 1:57
DEPT OF THE INTERIOR
BUREAU OF LAND MGMT

CONDITIONS OF APPROVAL ATTACHED

cc: BLM (M&M), Grill, Hall, UDOGM

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

24.

SIGNED [signature] TITLE Consultant (505) 466-8120 DATE 8-14-01

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

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

CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY /S/ WILLIAM C. STRINGER TITLE Assistant Field Manager, Division of Resources DATE APR 9 2002

*See Instructions On Reverse Side

CONFIDENTIAL

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

Name of Company: MARALO LLC

Well Name: LAST CHANCE UNIT 1

Api No.. 43-015-20367 LEASE TYPE: FEDERAL

Section 19 Township 26S Range 07E County EMERY

Drilling Contractor SAUERS RIG # 37

SPUDDED:

Date 04/27/2002

Time

How DRY

Drilling will commence

Reported by RUSS BURDICK

Telephone #

Date 04/30/2002 Signed: CHD

Form 3160-5
August 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires November 30, 2000

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

CONFIDENTIAL

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator
MARALO, LLC

3a. Address
P. O. BOX 832, MIDLAND, TX 79702

3b. Phone No. *(include area code)*
(915) 684-7441

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
652' FNL & 590' FWL
SEC. 19, 26S, 7E, SLMB, EMERY, COUNTY, UTAH

5. Lease Serial No.
UTU-69699

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

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

8. Well Name and No.
LAST CHANCE UNIT #1

9. API Well No.
43-015-20367

10. Field and Pool, or Exploratory Area
LAST CHANCE

11. County or Parish, State
EMERY, UTAH

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other SET & CEMENT CASING.
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

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

05/01 thru 05/03/02 6991' Wash and ream from 3224' – 6691' original TD. Reached original TD @ 2:00PM MST 05/02/02. BLM (Jones), Moab UT notified.

05/03 thru 05/07/02 6691' Wash and ream tight spots @ 3803' – 3864', 4111' – 4173', 5595' – 5666' and 6636' to 6691'. RU csg. crew and run 152 jts. 7" 23# & 26# J-55 LT&C casing. Set at 6690'. DV tool @ 3000'. Cement 1st stage: Pump 300 sx Class "G" w/3% KCl + ¼# celloflake + 4#/sx K-seal + .5 FL-25 mixed 15.8 ppg & 1.18 cf/sx. 2nd stage: lead w/200 sx Prem-Lite II + 3# BA-90 + 3% KCl + ¼# celloflake + 4#/sx K-seal + 10% gel + .5% SMS + 2% CaCl2 mixed @ 11.0 ppg + 3.5 cf/sx. Tail w/100 sx Class "G" w/3% KCl + ¼# celloflake + 4#/sx K-seal + .5% FL-25 mixed @ 15.8 ppg + 1.18 cf/sx.

05/08/02 6691' In 11 hrs. ND set slips. Install csg spool. Test void to 2300 psi. Test pack off to 5000 psi w/Cameron. NU BOP. C/o pipe rams, C/o Kelly, test BOPs.

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

Title REGULATORY ANALYST

Signature Dorothea Logan

Date MAY 8, 2002

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

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

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

LAST CHANCE UNIT #1, Field: , EMERY, UT
Pros: LAST CHANCE, UT-4 , PTD: 9200' TAPEATS
Acct #: 25%

CONFIDENTIAL

05/08/02 6691' (0')(Day 11) RU 3 1/2" DP. Lynch dolo. Bit #2 - 6 1/8" HTC (SN: ZS06JY). 11 hrs ND set slips. Install csg spool. Test void to 2300 psi. Test pack off to 5000 psi w/Cameron. NU BOP. C/O pipe rams. 2 hrs unload 3 1/2" DP & 4 3/4" DC. 1 1/2 hrs C/O kelly. RU floor. 5 1/2 hrs test BOP's w/double jack testing: rams & valves to 5000 psi, annular to 2500 psi, csg to 2000 psi w/8.9 ppg mud, 1 hr RU LD machine, 3 hrs PU BHA & DP. MW 8.9, Visc 42, WL 13.4, FC 2, PV 18, YP 8, pH 9.5, solids 4.5%, chl 1200 ppm, LCM 20%. NOTE: 7" csg cemt by BJ Services on 5/7/02 as follows: 1st stage: pump 300 sx Class "G" w/3% KCl + 1/4# celloflake + 4#/sx K-seal + .5% FL-25 mixed @ 15.8 ppg & 1.18 cf/sx. 2nd stage: lead w/200 sx Prem-Lite II + 3# BA-90 + 3% KCl + 1/4# celloflake + 4#/sx K-seal + 10% gel + .5% SMS + 2% CaCl2 mixed @ 11.0 ppg + 3.5 cf/sx. Tail w/100 sx Class "G" w/3% KCl + 1/4#@ celloflake + 4#/sx k-seal + .5% FL-25 mixed @ 15.8 ppg + 1.18 cf/sx.
Daily Cost: $73,263 Cum Cost: $563,096

05/09/02 6700' (9')(Day 12) Drlg. Lynch dolo. Bit #2 - 6 1/8" HTC STR-40, 9' in 1/2 hr. 3 1/2 hrs PU 3 1/2" DP, 1 1/2 hrs move LD machine. Rack & strap DP. 1/2 hr PU DP, 1 hr drld DV tool & circ btms up. 5 1/2 hrs PU 3 1/2" DP. 3 1/2 hrs drld FC, cemt & shoe, 4 hrs circ & shake out LCM. W/O shorter kelly. 4 hrs C/O kelly. Install corrosion ring. 1/2 hr drld formation f/6691-6700'. MW 8.9, Visc 42, WL 13.4, FC 2, PV 18, YP 8, pH 9.5, solids 4.5%, chl 1200 ppm.
Daily Cost: $27,534 Cum Cost: $590,630

05/10/02 7041' (341')(Day 13) Drlg. Lynch dolo. Bit #2 - 6 1/8" HTC STR-40 350' in 23 1/2 hrs. 5 hrs drld f/6700-6756', 1/2 hr rig service - function pipe rams. 18 hrs drld f/6756-7041', Carbide lag @ 6851' (same as calculated). 1/2 hr rig service - clean mud tank. MW 8.8, Visc 32, WL 14, FC 1, PV 12, YP 6, pH 11, solids 3.5%, chl 200 ppg. NOTE: rig inspection by BLM (Mike Kaminski, Thomas Rasmussen & Eric Jones, BLM District Engineer). Written inspection report to follow.
Daily Cost: $20,123 Cum Cost: $610,753

05/11/02 7345' (304')(Day 14) Drlg. Lynch dolo. Bit #2 - 6 1/8" HTC STR-40, 654' in 45 1/2 hrs. 8 1/2 hrs drld f/7041-7169', 1 hr slope test (3 deg @ 7125'), 2 hrs drld f/7169-7201', 1/2 hr rig service: function pipe rams, 10 hrs drld f/7201-7327', 1/2 hr rig service, 1 1/2 hrs drld f/7327-7345'. MW 8.6, Visc 32, WL 8, FC 1, PV 10, YP 4, pH 10, solids 3.5%, chl 200 ppm.
Daily Cost: $21,816 Cum Cost: $632,569

05/12/02 7570' (225')(Day 15) Drlg. Bowman. Bit #2 - 6 1/8" HTC STR-40, 879' in 68 1/2 hrs. 11 hrs drld f/7345-7454', 1/2 hr rig service: function pipe rams, 10 hrs drld f/7454-7549', 1/2 hr rig service, 2 hrs drld f/ 7549-7570'. MW 8.8, Visc 36, WL 8, FC 1, PV 12, YP 4, pH 9, solids 3.5%, chl 200 ppm.
Daily Cost: $21,666 Cum Cost: $654,235

05/13/02 7665' (95')(Day 16) Drlg. Bowman/Hartman. Bit #2 - 6 1/8" HTC STR-40, 889' in 70 hrs. Depth out 7580'. Bit #3 - 6 1/8" HTC STR-40 (SN: X93JG), 85' in 8 1/2 hrs. 1 1/2 hrs drld f/7570-7580', 1/2 hr circ btms up, 1 hr slope test (3 deg @ 7538'), Pump pill. 5 1/2 hrs TOH f/bit change. Function pipe rams, 2 hrs TIH w/bit #3 to 2200', 1 1/2 hrs slip & cut DL, 3 1/2 hrs TIH, fill pipe @ 6350'. Install rotating head. Wash 73' to btm, no fill, 8 1/2 hrs drld f/7580-7665', MW 8.8, Visc 36, WL 8.6, FC 1, PV 13, YP 15, pH 10, solids 3.5%, chl 200 ppm.
Daily Cost: $14,727 Cum Cost: $668,962

Pros: LAST CHANCE, UT-4 , TD: 9200' TAPEATS
Acct #: 25%

CONFIDENTIAL

05/14/02 7885' (220')(Day 17) Drlg. Bowman/Hartman. Bit #3 - 6 1/8" HTC STR-40, 305' in 31 1/2 hrs. 3 hrs drld f/7665-7686', 1/2 hr rig service: function pipe rams. 14 1/2 hrs drld f/7686-7834'. Pump carbide to check lag time @ 7708', ok. 1/2 hr rig service. 5 1/2 hrs drld f/7834-7885'. MW 8.8, Visc 40, WL 8.6, FC 1, PV 14, YP 7, pH 10, solids 3.5%, chl 200 ppm.
Daily Cost: $22,485 Cum Cost: $691,447

05/15/02 8095' (210')(Day 18) Drlg. Hartman. Bit #3 - 6 1/8" HTC STR-40, 515' in 54 1/2 hrs. 10 hrs drld f/7885-7977', 1/2 hr rig service: function pipe rams, 12 1/2 hrs drld f/7977-8088', 1/2 hr rig service: function pipe rams, 1/2 hr drld f/8088-8095'. MW 8.7, Visc 36, WL 8.2, FC 1, PV 13, YP 6, pH 10, solids 2.7%, chl 200 ppm.
Daily Cost: $24,699 Cum Cost: $716,146

05/16/02 8625' (170')(Day 19) Trip f/bit #4. Hartman Bit #3 - 6 1/8" HTC STR-40, 685' in 74 1/2 hrs. Depth out 8625'. 3 hrs drld f/8095-8120', 1 1/2 hrs survey (3 deg @ 8076'), 2 1/2 hrs drld f/8120-8151', 1/2 hr rig service: function pipe rams, 14 1/2 hrs drld f/8151-8265', 2 hrs pump pill & TOH. MW 8.7, Visc 34, WL 8.8, FC 1, PV 10, YP 4, pH9.5, solids 2.7%, chl 200 ppm.
Daily Cost: $20,566 Cum Cost: $736,712

05/17/02 8360' (95')(Day 20) (Correct 05/16/02 depth to 8265'). Hartman/Ophir. 95' in 14 1/2 hrs. 3 hrs trip f/bit #4 6 1/8" HTC Str-50 serial #M45JR in @ 8265', 1/2 hrs function blind rams, change bits, check float, change one shaker screen, 5 1/2 hr TIH, fill pipe @ 6650: change corrosion ring, install rotating head, 1/2 hr wash 20' to Btm, no fill, 14 1/2 hrs drld f/8265-8360', MW 8.8, Visc 36, WL 8, FC 1, PV 12, YP 5, pH 9.5, solids 2.7%, chl 200 ppm.
Daily Cost: $15,049 Cum Cost: $751,761

05/18/02 8390' (30')(Day 21) Reaming out of gauge hole. Hartman/Ophir. Bit #4 - 6 1/8" HTC STR-50, 125' in 21 hrs. Depth out 8390'. BiT #5 - 6 1/8" HTC STRDS50FPX (SN: W76JB). 6 1/2 hrs drld f/8360-8390', 2 hrs work tight hole, 1/2 hr mix & pump pill, 4 hrs TOH, severe bit damage, lost all 3 cones, spindalls & shirt tails. Only 1" of leg remaining below nozzles. 1 hr W/O fishing tools, 6 1/2 hrs PU & TIH w/bit #5 & junk basket. Fill pipe @ 6600', 1/2 hr wash f/8246-8356', 3 hrs ream out of gauge hole f/8356-8377'. MW 8.8, Visc 36, WL 8, FC 1, PV 14, YP 7, pH 9.5, solids 2.7%, chl 200 ppm.
Daily Cost: $30,189 Cum Cost: $781,950

05/19/02 8390' (0')(Day 22) LD mill, PU globe basket. Harman/Ophir. Bit #5 - 6 1/8" HTC STRDS40PFX, 33'in 6 1/2 hrs. 3 1/2 hrs ream out of gauge hole f/8377-8389', 1/2 hr C&C, mix & pump pill, 4 1/2 hrs TOH, 1/2 hr function blind rams. LD Bit. Clean out junk basket. PU mill & junk basket. 1 1/2 hrs RIH, 1/2 hr rig service, 3 1/2 hrs TIH, fill pipe @ 6660'. Install rotating rubber. 5 hrs mill on junk & work junk basket. Mix & pump pill. 4 hrs TOH, 1/2 hr function blind rams. LD mill. Left 2" x 4" x 1/2" piece of mill in hole. Clean out junk basket. PU globe basket & junk basket. MW 8.8, Visc 36, WL 8, FC 1, PV 14, YP 7, pH 9.5, solids 2.7%, chl 200 ppm.
Daily Cost: $14,739 Cum Cost: $796,689

LAST CHANCE UNIT #1, Field: , EMERY, UT
Pros: LAST CHANCE, UT-4 , PTD: 9200' TAPEATS
Acct #: 25%

CONFIDENTIAL

05/20/02 8390' (0')(Day 23) TOH w/magnet. Harman/Ophir. Bit #5 - 6 1/8" HTC STRDS50FPX, 33' in 6 1/2 hrs. 1 hr LD mill. PU globe gasket & junk basket. 5 hrs TIH fill pipe @ 6600'. Install rotating head. 1 1/2 hrs core w/globe basket. Made 2' w/18,000# weight, 1/2 hr mix & pump pill. 5 1/2 hrs chain OOH, 1/2 hr LD globe basket. Clean out junk basket. Recovered missing piece of mill. PU magnet & junk basket. 5 hrs TIH. Fill pipe @ 6600'. Install rotating rubber, 1/2 hr work magnet. 4 1/2 hrs chain OOH w/magnet. MW 8.8, Visc 36, WL 8, FC 1, PV 14, YP 7, pH 9.5, solids 2.7%, chl 200 ppsm.
Daily Cost: $14,739 Cum Cost: $811,428

05/21/02 8390' (0')(Day 24) TIH w/Poor boy basket. Hartman/Ophir. Bit #5 - 6 1/8" HTC STRDS50FPX, 33' in 6 1/2 hrs. 1 hr chain OOH w/magnet, 1 hr function blind rams.LD magnet. Clean out junk basket. PU mill, 4 1/2 hrs TIH to 6600'. Fill pipe & install rotating rubber, 1 1/2 hrs slip & cut DL, 1 hr TIH, 5 1/2 hrs mill on junk & work junk basket. Milled 2 1/2', 4 hrs mix & pump pill. TOH. 1 hr function blind rams. LD mill. Clean out junk basket. PU poor boy basket, 4 1/2 hrs TIH. Fill pipe @ 6500' & install rotating rubber. MW 8.8, VIsc 36, WL 8, FC 1, PV 14, YP 7, pH 9.5, solids 2.7%, chl 200 ppm.
Daily Cost: $22,374 Cum Cost: $833,802

05/22/02 8508' (118')(Day 25) Drlg. Ophir. Bit #5 - 6 1/8" HTC STRDS50FPX, 151' in 15 hrs. 1 1/2 hrs work poor boy basket & made 1 1/2', 7 hrs chain OOH wet. Slow due to high winds. 1 1/2 hrs clean out poor boy basket & junk basket. Recovered 1 1/2' of Quartzite. No iron. 5 hrs TIH w/bit #5 (RR). LD 1 jt DP. Break circ. Install rotating rubber @ 6600'. 1/2 hr wsh 49' to btm. No fill & no iron. 8 1/2 hrs drld f/8390-8508'. MW 8.7, Visc 35, WL 7.8, FC 1, PV 16, YP 4, pH 9.5, solids 2.7%, chl 200 ppm.
Daily Cost: $14,660 Cum Cost: $848,462

05/23/02 8690' (182)(Day 26) Drlg. Ophir. 90%-Sand 10%-Shale. Bit #5. 13 hrs drld f/8508-8627', 1 hr circ Btms up, 1/2 hr slope test (4 degrees @ 8585'), 9 hrs drld f/8627-8690', 1/2 hr svc rig, function pipe rams. MW 8.7, Visc 36, WL 6.2, pH 10, chl 200 ppm. Note: Lost 50 bbls mud @ 8469' on 5/22/01. No treatment and no othr losses since.
Daily Cost: $16,834 Cum Cost: $865,296

05/24/02 8785' (95)(Day 27) Drlg. Ophir. 80%-Sand 10%-Shale 10%-Biotite. Bit #5 6 1/8" HTC STRDS50 FPX 346' in 39 hrs out @ 8703'. Bit #6 6 1/8" HTC STRDS 70 FPX S/N T63JX in @ 8703', 82' in 9 1/2 hrs. 2 hrs drlg f/8690-8703', 1 hr circ samples, 1/2 hr mix & pump pill, 9 1/2 hrs trip f/Bit #6, funtion blind rams, break circ @ 6600', install rotating rubber, LD 4 jts DP, 1 hr wash 120' to Btm, no out of guage hole - no fill, 9 1/2 hrs drlg f/8703-8785', 1/2 hr rig svc, function blind rams.
Daily Cost: $20,765 Cum cost: $869,227

Form 3160-5
(August 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires November 30, 2000

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

CONFIDENTIAL

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator
MARALO, LLC

3a. Address
P. O. BOX 832, MIDLAND, TX 79702

3b. Phone No. *(include area code)*
(915) 684-7441

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
652' FNL & 590' FWL
SEC. 19, 26S, 7E, SLMB, EMERY, COUNTY, UTAH

5. Lease Serial No.
UTU-69699

6. If Indian, Allottee or Tribe Name
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7. If Unit or CA/Agreement, Name and/or No.
LAST CHANCE

8. Well Name and No.
LAST CHANCE UNIT #1

9. API Well No.
43-015-20367

10. Field and Pool, or Exploratory Area
LAST CHANCE

11. County or Parish, State
EMERY, UTAH

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other COMMENCE REENTRY AND DEEPEN.
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

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

(SEE ATTACHED REPORT)

RECEIVED
MAY 20 2002
DIVISION OF
OIL, GAS AND MINING

RECEIVED
MOAB FIELD OFFICE
2002 MAY -6 P 1:34
DEPT OF THE INTERIOR
BUREAU OF LAND MGMT

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)* DOROTHEA LOGAN
Title REGULATORY ANALYST
Signature Dorothea Logan
Date APRIL 30, 2002

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by ACCEPTED
Title Division of Resources
Moab Field Office
Date MAY 7 2002

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

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

CONFIDENTIAL

ast Chance Unit #1
Emery County, Utah

OPERATION: Re-entry & deepen from 6704' to +/- 9200' (Tapeats formation)
Current Status: 16" conductor set @ 40' and cement circulated to surface.
10-3/4" 40.50# set @ 1474' and cement circulated to surface.

04/16/02 Pit construction will require blasting.
04/17/02 Repair road and build location
04/18/02 Blast pit and cellar.

04/19 thru 04/21/02 Dig Rathole. MI & set camps, water tanks and septics. Start hauling fresh water to pit. Watering and repairing road as needed and required by BLM. Preparing to MI RU Sauer Drilling rig #37.

04/27/02 19 hrs. MI RU Sauer Drilling Rig #37, 5 hrs. NU BOP.

04/28/02 (Day 1) 11 hrs. work on BOP valves and manifold to comply with BLM Specs. NU BOP, 5 hrs. Test BOP w/Double Jack Testing: blinds, pipe rams and valves to 5000 psi, annular to 2500 psi, ½ hr. drilled out surface plug, tighten Kelly, test Kelly and Kelly valves to 5000 psi, 2 hrs. mix spud mud. 1 hr. filled up bottom of cellar w/rock to stop pipe movement, 4-1/2 hrs work on BOP valves and manifold to comply with BLM specifications.

04/29/02 76' (Day 2) Drilled cement plug. Surface casing (set at 1474'). Drilled 76' in 5 hours. Worked 6 hrs. on BOP valves and manifold to comply with BLM Specs. 2 hrs. to test new valves to 5000 psi, test casing to 1500 psi, 2-1/2 hrs. PU and strap in hole w/BHA, ½ hr. tag up @ 92', PU Kelly and change out lower Kelly valve, ½ hr. prime pumps, ½ hr. wash 72' and circulate for 10 min., 1 hr. set Kelly back, PU BHA and uncocked jars, 1 hr. PU Kelly, flowing over bell nipple, PU 1 joint DP and install rotating head. Circulate. Rack and strap DP, 2 hrs. PU DP, ½ hr. PU Kelly and circulate at 900', 12 hrs. PU DP, tag cement @ 1279', ½ hr circulate and center up BOP, 5 hrs. drilled cement from 1279' – 1355' (76').

04/30/02 3224' (1869') (Day 3) Drilling cement plug. Kaibab. 9 hrs. drld cement f/1355' – 1548', ½ hr. wash down to 1589' and circulate, 2-1/2 hrs. PU DP and circulate @ 1896'. Rack and strap DP. 1 hr. PU DP & circ. @ 2000' and 2175'. 1-1/2 hrs. wash & ream from 2175 ' – 2206', ½ hr. PU DP to 2301', 2 hrs. wash & ream from 2301' – 2608', 1-1/2 hrs. PU DP to 2884', ½ hr. wash & ream to 2915', 1 hr. PU DP to 3009', 2-1/2 hrs. wash & ream from 3009' – 3195', circ. btms up, 1-1/2 hrs. drld cemt from 3195' – 3224'.

RECEIVED
MAY 20 2002
DIVISION OF
OIL, GAS AND MINING

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

FORM 6

ENTITY ACTION FORM

Operator: MARALO, LLC

Operator Account Number: N 1885

Address: P. O. BOX 832

city MIDLAND

state TEXAS zip 79702

Phone Number: (915) 684-7441

Well 1

API Number	Well Name		QQ	Sec	Twp	Rng	County
43-015-20367	LAST CHANCE UNIT #1		NWSE	19	26S	17E	EMERY
Action Code	**Current Entity Number**	**New Entity Number**	**Spud Date**			**Entity Assignment Effective Date**	
A	99999	13485	APRIL 27, 2002			5-20-02	

Comments: REENTRY AND DEEPEN CONFIDENTIAL

Well 2

API Number	Well Name		QQ	Sec	Twp	Rng	County
Action Code	**Current Entity Number**	**New Entity Number**	**Spud Date**			**Entity Assignment Effective Date**	

Comments:

Well 3

API Number	Well Name		QQ	Sec	Twp	Rng	County
Action Code	**Current Entity Number**	**New Entity Number**	**Spud Date**			**Entity Assignment Effective Date**	

Comments:

ACTION CODES:

- **A** - Establish new entity for new well (single well only)
- **B** - Add new well to existing entity (group or unit well)
- **C** - Re-assign well from one existing entity to another existing entity
- **D** - Re-assign well from one existing entity to a new entity
- **E** - Other (Explain in 'comments' section)

RECEIVED
MAY 20 2002
DIVISION OF
OIL, GAS AND MINING

DOROTHEA LOGAN
Name (Please Print)

Dorothea Logan
Signature

REGULATORY ANALYST
Title

MAY 17, 2002
Date

(5/2000)

facsimile
TRANSMITTAL

DATE: 05-24-02

5 PAGES TO FOLLOW

FAX # (915) 684-9836

DELIVER TO: DUSTIN DOUCET, ENGR.

COMPANY: OGC, UTAH DIV. OIL, GAS + MINING

FAX NUMBER: 801.359.3940

FROM: DOROTHEA LOGAN, REGULATORY ANALYST

REMARKS: NOTICE OF INTENT TO P+A (PROPOSED)
LAST CHANCE UT. #1, EMERY CO. UT.
43-015-20367.

REQUEST FOR APPROVAL + 24 HR. ADVANCE
NOTICE FAXED TO BLM/MOAB.
W/P+A. DESIGN.

COPY - (2) SUNDRY NOTICES.
COPY - DAILY DRILLING REPORTS
5/8 THRU 5/24/02.

Maralo, LLC P.O. Box 832 Midland, Texas 79702 (915) 684-7441

rm 3160-5
ugust 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
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SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

5. Lease Serial No.
UTU-69699

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

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

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

CONFIDENTIAL

8. Well Name and No.
LAST CHANCE UNIT #1

2. Name of Operator
MARALO, LLC

9. API Well No.
43-015-20367

3a. Address
P. O. BOX 832, MIDLAND, TX 79702

3b. Phone No. *(include area code)*
(915) 684-7441

10. Field and Pool, or Exploratory Area
LAST CHANCE

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
652' FNL & 590' FWL
SEC. 19, 26S, 7E, SLMB, EMERY, COUNTY, UTAH

11. County or Parish, State
EMERY, UTAH

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

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

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

Proposed Cement Plugs to Plug and Abandon:

Plug #1 6640– 6740' (100') Centered across 7" casing shoe @ 6690'.

Plug #2 +/- 5350 - +/- 5450' (100') Centered across calculated TOC from 7"casing lst stage cement job. Actual TOC to be determined by required Cement Bond Log (CBL).

Plug #3 2950 – 3050' (100') Centered across 7" casing DV Tool @ 3000'.

Plug #4 1424 – 1524' (100') Centered across 10-3/4 Surface casing shoe @ 1474'.

Plug #5 Surface - +/- 45' (45') Calculated TOC from 7" casing 2nd stage cement job. 7" casing will be perforated and cement circulated to surface. Actual TOC to be determined by required Cement Bond Log (CBL)

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

Title REGULATORY ANALYST

COPY SENT TO OPERATOR
Date: 5-28-02
Initials: CHD

Signature Dorothea Logan

Date MAY 24, 2002 (FAXED AT 2:30PM CST, ORIGINAL BY USPS)

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

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

Office

Accepted by the
Utah Division of
Oil, Gas and Mining

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

Federal Approval Of This
Action Is Necessary

Date: 5/28/02

By: Dustin Doucet

facsimile
TRANSMITTAL

DATE: 05-28-02

1 PAGES TO FOLLOW

FAX # (915) 684-9836

DELIVER TO: DUSTIN DOUCET, ENGR

COMPANY: OGC, UTAH DIV. O/G + MINING

FAX NUMBER: 801-359-3940

FROM: DOROTHEA LOGAN, REG ANALYST

REMARKS: INFORMATION COPY:
PROPOSAL TO BLM/MOAB TO EXTEND T.D. TO 9,450'.

ORIG. FAXED TO BLM/MOAB 05-28-02, 8:09 AM MST.

Maralo, LLC P.O. Box 832 Midland, Texas 79702 (915) 684-7441

Form 3160-5
(August 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires November 30, 2000

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

5. Lease Serial No.
UTU-69699

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

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

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

CONFIDENTIAL

8. Well Name and No.
LAST CHANCE UNIT #1

2. Name of Operator
MARALO, LLC

9. API Well No.
43-015-20367

3a. Address
P. O. BOX 832, MIDLAND, TX 79702

3b. Phone No. *(include area code)*
(915) 684-7441

10. Field and Pool, or Exploratory Area
LAST CHANCE

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
652' FNL & 590' FWL
SEC. 19, 26S, 7E, SLMB, EMERY, COUNTY, UTAH

11. County or Parish, State
EMERY, UTAH

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

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

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

Maralo, LLC proposes to drill beyond the permitted and approved total depth of 9200' for an additional 250 feet. Plans are to drill to the base of the Tapeats formation plus 50'. We anticipate this to occur within the next 250'. New total depth (TD) expected is 9450'.

Drilling will cease when the base of the Tapeats formation (plus 50') is reached.

Accepted by the
Utah Division of
Oil, Gas and Mining

Date: 5/28/02
By: [signature]

COPY SENT TO OPERATOR
Date: 5-28-02
Initials: CHD

Federal Approval Of This
Action Is Necessary

RECEIVED
MAY 28 2002
DIVISION OF
OIL, GAS AND MINING

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

Title REGULATORY ANALYST

Signature [signature]

Date MAY 28, 2002 (SIGNED ORIG./COPIES SENT USPS)
(FAXED 8:09AM MST 5/28/02 MOAB BLM)

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

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

Office

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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 (August 1999) INFO COPY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: November 30, 2000

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No. UTU-69699

1a. Type of Well ☐ Oil Well ☐ Gas Well ☒ Dry Other
b. Type of Completion: ☐ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr,.
Other RE-ENTRY

6. If Indian, Allottee or Tribe Name

CONFIDENTIAL

7. Unit or CA Agreement Name and No. LAST CHANCE

2. Name of Operator MARALO, LLC

8. Lease Name and Well No. LAST CHANCE UNIT #1

3. Address P. O. BOX 832, MIDLAND, TX 79702

3a. Phone No. *(include area code)* (915) 684-7441

9. API Well No. 43-015-20367

4. Location of Well *(Report location clearly and in accordance with Federal requirements)**

At surface 652' FNL & 590' FWL, SEC. 19, 26S, 7E, SLMB, EMERY COUNTY, UTAH

10. Field and Pool, or Exploratory LAST CHANCE

At top prod. interval reported below SAME

11. Sec., T., R., M., on Block and Survey or Area SEC 19, 26S, 7E, SLMB

At total depth SAME

12. County or Parish EMERY

13. State UTAH

14. Date Spudded 04/28/02

15. Date T.D. Reached 05/29/02

16. Date Completed ☒ D & A ☐ Ready to Prod. 06/03/02

17. Elevations (DF, RKB, RT, GL)* 5963' GL

18. Total Depth: MD 9246' TVD -

19. Plug Back T.D.: MD 8612' TVD -

20. Depth Bridge Plug Set: MD - N/A TVD -

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
GR/HALS/CNL-LDT/CBL/BHC - Rec 7-18-02

22. Was well cored? ☒ No ☐ Yes (Submit analysis)
Was DST run? ☐ No ☒ Yes (Submit report) 7-18-02
Directional Survey? ☒ No ☐ Yes (Submit copy)

23. Casing and Liner Record *(Report all strings set in well)*

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
	CURRENT STATUS								
26"	16"			40'		43	UNK.	SURF.	
13-1/2"	10-3/4"	40.50#		1474'		702 CU. FT.	UNK	SURF.	
	REENTRY								
	7"	23 & 26#		6690'	3000' DV	300 "G" +	63	543' CBL	
						200 PREMLITE +	120		
						100 "G" (TAIL)	21		

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
N/A								

25. Producing Intervals

Formation	Top	Bottom
A)		
B)		
C)		
D)		

26. Perforation Record

Perforated Interval	Size	No. Holes	Perf. Status

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material

CONFIDENTIAL PERIOD EXPIRED ON 7-3-03

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status

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JUL 0 1 2002
DIVISION OF OIL, GAS AND MINING

See instructions and spaces for additional data on reverse side)

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status

29. Disposition of Gas *(Sold, used for fuel, vented, etc.)*

30. Summary of Porous Zones (Include Aquifers):

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.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth	
TAPEATS SS	8288	8488		NAVAJO	535	(+5440)
				CHINLE	1910	(+4065)
				MOENKOPI	2292	(+3683)
				KAIBAB	3222	(+2753)
				LYNCH	6720	(+ 745)
				BOWMAN	7590	(-1615)
				BRIGHT ANGEL SH	7990	(-2015)
				TAPEATS SS	8288	(-2313)
				IGNACIO QUARTZITE	8488	(-2513)

32. Additional remarks (include plugging procedure):

SEE DETAILED SUNDRY NOTICE OF JUNE 10, 2002.

33. Circle enclosed attachments:

1. Electrical/Mechanical Logs (1 full set req'd.) 2. Geologic Report 3. DST Report 4. Directional Survey
5. Sundry Notice for plugging and cement verification 6. Core Analysis 7. Other:

SENT UNDER SEPARATE COVER 06/10/02

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name *(please print)* DOROTHEA LOGAN Title REGULATORY ANALYST

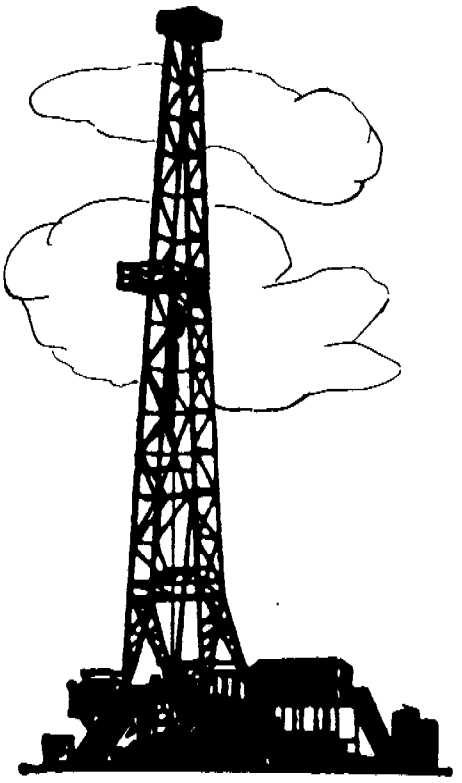
Signature Dorothea Logan Date JUNE 25, 2002

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

*U.S. GPO: 1999—573-624

Well File

Emery County
T 26S R 07E Sec 19
43-015-30367



CONFIDENTIAL

RECEIVED

JUL 1 8 2002

DIVISION OF
OIL, GAS AND MINING

REBEL TESTING, INC.

Drill Stem Test Report

COMPANY MARALO, LLC.
LEASE NAME & NO LAST CHANCE #1
INTERVAL TESTED 8251'- 8612'

COUNTY EMERY
STATE UTAH
FORMATION TAPEATS

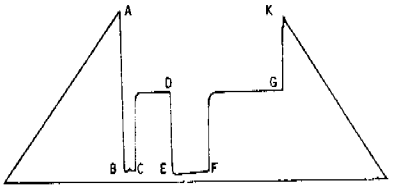
DATE 05-31-2002
TICKET # 2123
TEST # 1

Box 296
Gillette, WY 82716

Phone
(307) 682-9626

GUIDE TO INTERPRETATION AND IDENTIFICATION OF DST CHARTS

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.



A – Initial Hydrostatic
B – First Initial Flow
C – First Final Flow
D – Initial Shut-in
E – Second Initial Flow
F – Second Final Flow
G – Second Shut-in
H – Third Initial Flow
I – Third Final Flow
J – Third Shut-in
K – Final Hydrostatic

NOMENCLATURE

Symbol	Definition	DST Unit
k	permeability	millidarcys (md)
h	pay thickness	feet (ft.)
u	viscosity	centipoise
T	reservoir temperature	°Rankin (°R)
Z	gas compressibility factor at average condition	——
qsc	gas production rate	MCF/d
M	Horner slope for liquid analysis	PSI/Cycle
Mg	Horner slope for (P^2) gas analysis	PSI ^{2}/Cycle
Pi	initial static reservoir pressure	PSI
Pwf	flowing bottom hole pressure	PSI
Ø	porosity	(fraction)
rw	well bore radius	ft.
S	skin factor	——
AOF	absolute open flow	MCF/d
D.R.	damage ratio	——
re	external drainage radius	ft.
ISIP	initial shut-in pressure	PSI
FSIP	final shut-in pressure	PSI
b	approx. radius of investigation	ft.
t	flowing time	hrs.
B	formation volume factor	——
q	liquid production rate	bbls/day
c̄	gas compressibility	1/PSI
c	liquid compressibility	1/PSI

Build-Up Analysis Equations

Pressure Analysis

$$kh = \frac{162.6\ Q\mu\beta}{M}$$

$$S = 1.151\left[\frac{P_{1hr} - P_{wf}}{M} - \log\frac{k}{\phi\mu c_t r_w^2} + 3.23\right]$$

$$\Delta P_{Skin} = \frac{141.2\ Q\mu\beta\ S}{kh}$$

$$L = \sqrt{\frac{0.000148\ k\ \Delta t_x}{\phi\mu c_t}}$$

$$\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$$

Pseudo–Pressure Analysis

$$kh = \frac{1.632 \times 10^3\ Q_g\ T}{M}$$

$$S = 1.151\left[\frac{\Psi_{1hr} - \Psi_{wf}}{M} - \log\left(\frac{k}{\phi\mu c_t r_w^2}\right) + 3.23\right]$$

$$\Delta\Psi_{Skin} = \frac{1422\ Q_g\ T\ S}{kh}$$

$$L = \sqrt{\frac{0.000148\ k\ \Delta t_x}{\phi\mu c_t}}$$

$$\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$$

Type Curve P Method

$$kh = 141.2\ Q\mu\beta\ \frac{P_{MD}}{\Delta P}$$

$$S = \frac{1}{2}\ \ln\left[\frac{C_D e^{2s}}{\frac{2.637\times10^{-3}\ k\ \Delta t}{\phi\mu c_t r_w^2}\ t_p/C_p}\right]$$

$$\Delta P_{Skin} = \frac{141.2\ Q\mu\beta\ S}{kh}$$

$$\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$$

Type Curve ^{P} Method

$$kh = 141.2\ Q\mu\beta\ \frac{P_{MD}}{\Delta t \Delta P}$$

$$S = \frac{1}{2}\ \ln\left[\frac{C_D e^{2s}}{\frac{2.637\times10^{-3}\ k\ \Delta t}{\phi\mu c_t r_w^2}\ t_p/C_p}\right]$$

$$\Delta P_{Skin} = \frac{141.2\ Q\mu\beta\ S}{kh}$$

$$\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$$

Fall-Off Analysis Equations

Semi–Log Analysis

Eq. (3.9) $$kh = \frac{162.6\ Q\mu\beta}{M}$$

$$S = 1.151\left[\frac{P_{1hr} - P_{wf}}{M} - \log\left(\frac{k}{\phi\mu c_t r_w^2}\right) + 3.23\right]$$

Eq. (3.10)

Log–Log Analysis

Eq. (4.4) $$kh = 141.2\ Q\mu\beta\ \frac{P_{MD}}{\Delta P}$$

$$S = \frac{1}{2}\ \ln\left[\frac{C_D e^{2s}}{\frac{2.637\times10^{-3}\ k\ \Delta t_{1hr}}{\phi\mu c_t r_w^2}\ t_p/C_p}\right]$$

Pressure drop due to skin

Eq. (2.9) $$\Delta P_{Skin} = \frac{141.2\ Q\mu\beta}{kh}\ S$$

Flow Efficiency

$$FE = \frac{P - P_{wf} - \Delta P_{Skin}}{P - P_{wf}}$$

Eq. (2.12)

Investigation radius

$$= 0.029\sqrt{\frac{k\ \Delta t}{\phi\mu c_t}}$$

Eq. (2.41)

Skin due to Partial Perforations

$$Sp = \left(\frac{h_t}{h_p} - 1\right)\left[\ln\left(\frac{h_t}{h_p}\sqrt{\frac{k_H}{k_V}}\right) - 2\right]$$

Eq. (2.20)

Advances in Well Test Analysis
Robert C. Earlougher Jr.
Monograph Volume 5 of
the Henry L. Doherty Series

Well Testing
John Lee
SPE Textbook Series Vol 1

Drill-Stem-Test Reporting By:

Michael Hudson
DATA REPORTING SERVICES

P.O. Box 722 Ph. (520) 505-8389
LAKE HAVASU CITY, AZ 86405

Phone (307) 682-9626

REBEL TESTING, INC.

Gillette WY

Contractor	Sauer Drilling	Surface Choke	Bubble hose	Mud Type	L.S.N.D.		
Rig No.	37	Bottom Choke	3/4"	Weight	8.7		
Spot	SE/SE	Hole Size	6 1/8"	Viscosity	37		
Sec	19	Core Hole Size		Water Loss	9.0		
Twp	26 S	DP Size & Wt	3 1/2" 13.30	Filter Cake			
Rng	7 E	Wt Pipe		RW	.99 @ 82	Deg F	
Field	Oil Well Bench	ID of DC	2"		5,038	Ppm	
County	Emery	Length of DC	680'				
State	Utah	Total Depth	8612' (plug back)	B.H.T.	136	Deg F	
Elevation	5975' KB	Type of Test	Conventional	Co. Rep.	Russ Burdick		
Formation	Tapeats	Interval	8251'- 8612'	Tester	Dan Williams		

COMPANY MARALO, LLC.
LEASE NAME & NO LAST CHANCE #1
INTERVAL TESTED 8251'- 8612'

Pipe recovery:
711' Water cut mud = 2.88 bbl.

Top rw: .99 @ 84 Deg F/4,921 ppm NaCl.
Middle rw: 1.0 @ 80 Deg F/5,107 ppm NaCl.
Bottom rw: 1.1 @ 80 Deg F/4,617 ppm NaCl.

Surface blow:

Pre-Flow: Tool opened with a 1" blow, decreased to 1/4" in 5 minutes and weak surface bubbles in 15 minutes. After shut-in blow died immediately.
Final Flow: Tool opened with a 1/2" blow, decreased to 1/4" in 5 minutes, weak surface bubbles in 10 minutes, very weak surface bubbles in 30 minutes and remained thru flow period. After shut-in blow died immediately.

Pressure in Sampler	0	psig
Volume of Sampler	2150	cc
Volume of Sample	2150	cc
Oil:	0	cc
Water:	1075	cc
Mud:	1075	cc
Gas:	0	cu ft
Other:	0	

Rw: 1.1 @ 80 Deg F/.67 @ Res Temp/ 4,617 ppm NaCl., 2,806 ppm Cl.

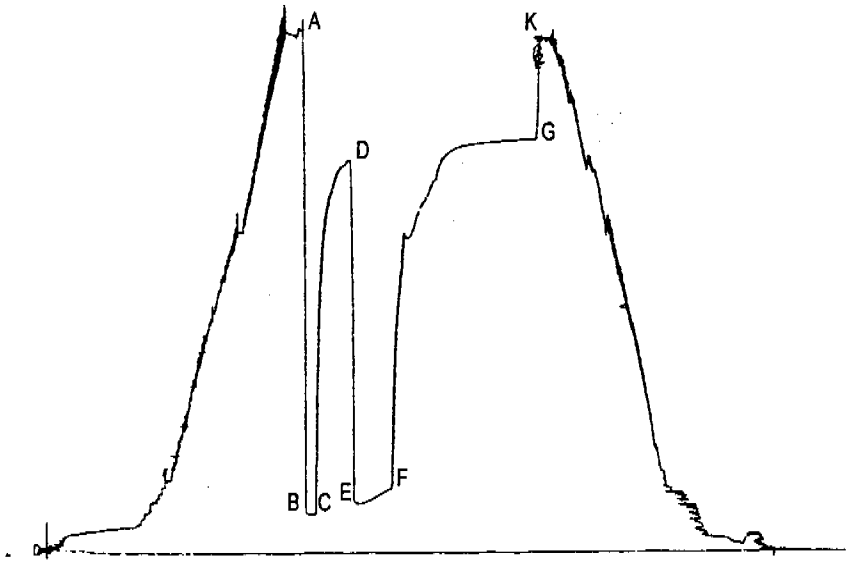
Gas/Oil Ratio

Gravity API @ 60 Deg F

COUNTY EMERY
STATE UTAH
FORMATION TAPEATS

Gauge Type	Mechanical		
No.	13197	Cap	6075 psi
Depth	8612		ft.
Inside		Outside	X

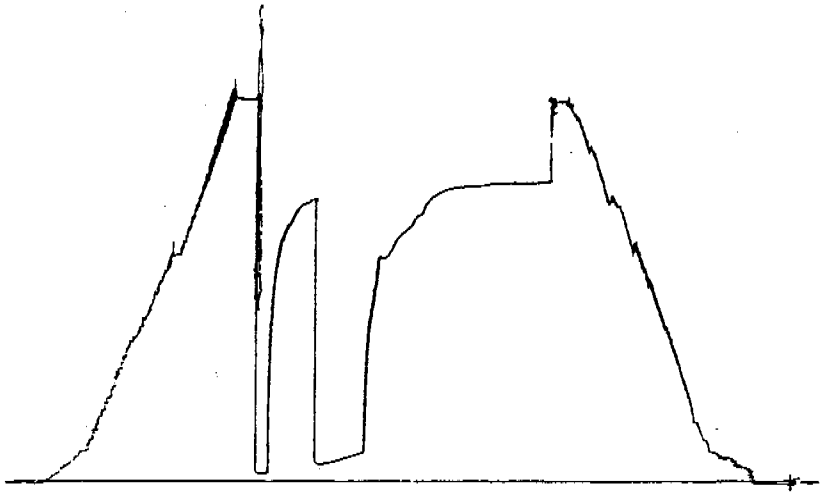
DATE 05-31-2002
TICKET # 2123
TEST # 1



Initial Hydrostatic	A	3972		
Final Hydrostatic	K	3944		
Initial Flow 1	B	337		
Final Flow 1	C	322		
Initial Flow 2	E	419		
Final Flow 2	F	514		
Initial Flow 3	H			
Final Flow 3	I			
Shut-in 1	D	3020		
Shut-in 2	G	3177		
Shut-in 3	J			

	Reported	Corrected	
Opened Tool @	08:48		hrs
Flow 1	15	16	min
Shut-in 1	60	57	min
Flow 2	60	61	min
Shut-in 2	240	236	min
Flow 3			min
Shut-in 3			min

D.R.S.



Gauge Type	Mechanical		
No.	2015	Cap.	5750 psi
Depth	8230		ft.
Inside	x		Outside

Initial Hydrostatic	A	3845
Final Hydrostatic	K	3817
Initial Flow 1	B	103
Final Flow 1	C	120
Initial Flow 2	E	196
Final Flow 2	F	334
Initial Flow 3	H	
Final Flow 3	I	
Shut-in 1	D	2863
Shut-in 2	G	3034
Shut-in 3	J	

Gauge Type			
No.		Cap.	psi
Depth			ft.
Inside			Outside

Initial Hydrostatic	A
Final Hydrostatic	K
Initial Flow 1	B
Final Flow 1	C
Initial Flow 2	E
Final Flow 2	F
Initial Flow 3	H
Final Flow 3	I
Shut-in 1	D
Shut-in 2	G
Shut-in 3	J

Gauge Type			
No.		Cap.	psi
Depth			ft.
Inside			Outside

Initial Hydrostatic	A
Final Hydrostatic	K
Initial Flow 1	B
Final Flow 1	C
Initial Flow 2	E
Final Flow 2	F
Initial Flow 3	H
Final Flow 3	I
Shut-in 1	D
Shut-in 2	G
Shut-in 3	J

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Comments relative to analysis of the pressure data from well test which was run in the Tapeats formation by Rebel Testing, Inc.

This analysis has been prepared on the basis of the gas recovery and equations applicable to gas recovery tests. However, a significant amount of the pressure data appears to be anomalous which is probably due to well conditions. In an effort to obtain calculations for the various reservoir properties, radial flow analysis and derivative analysis techniques have been used on the portions of the build-up curves that appear to be somewhat reliable. Also, a vertical gas well model has been generated and type curve matching was done by eliminating the erratic pressure data and weighting the data that appears to be more reliable. Because of the unreliable pressure data and the conditions of the test, the results obtained in this analysis should be used as indicators only. It has been assumed, for purposes of this analysis, that the tested reservoir system consisted of a single porosity zone 10 in thickness with an average porosity of 12 percent.

The radial plots indicate a maximum initial reservoir pressure of 3247 psi and a maximum final reservoir pressure of 3235 psi which is equivalent to a subsurface pressure gradient of 0.376 psi/ft at gauge depth.

The Average Production Rate which was used in this analysis has been estimated on the basis of the surface pressures which were observed during the final flowing period.

The calculated Skin Factors indicate well-bore damage was present at the time of this formation test.

The evaluation criteria used in the drillstem test analysis system indicate the reliability of the pressure data obtained from this test is very questionable and as noted above, the results obtained in this analysis should be used as indicators only.

Michael Hudson
Analyst
(877) 505-8540

DRS

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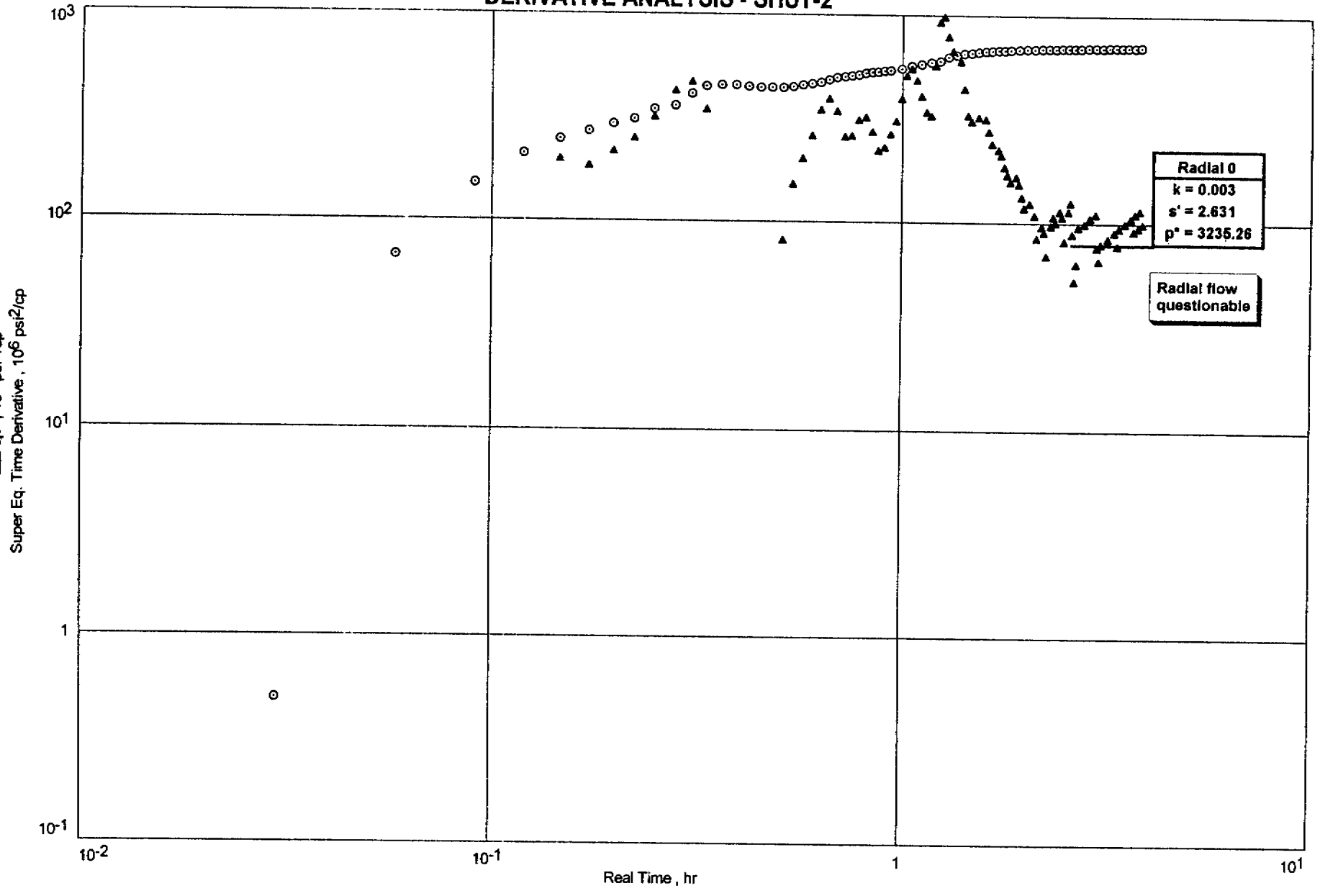
DERIVATIVE ANALYSIS - SHUT-2



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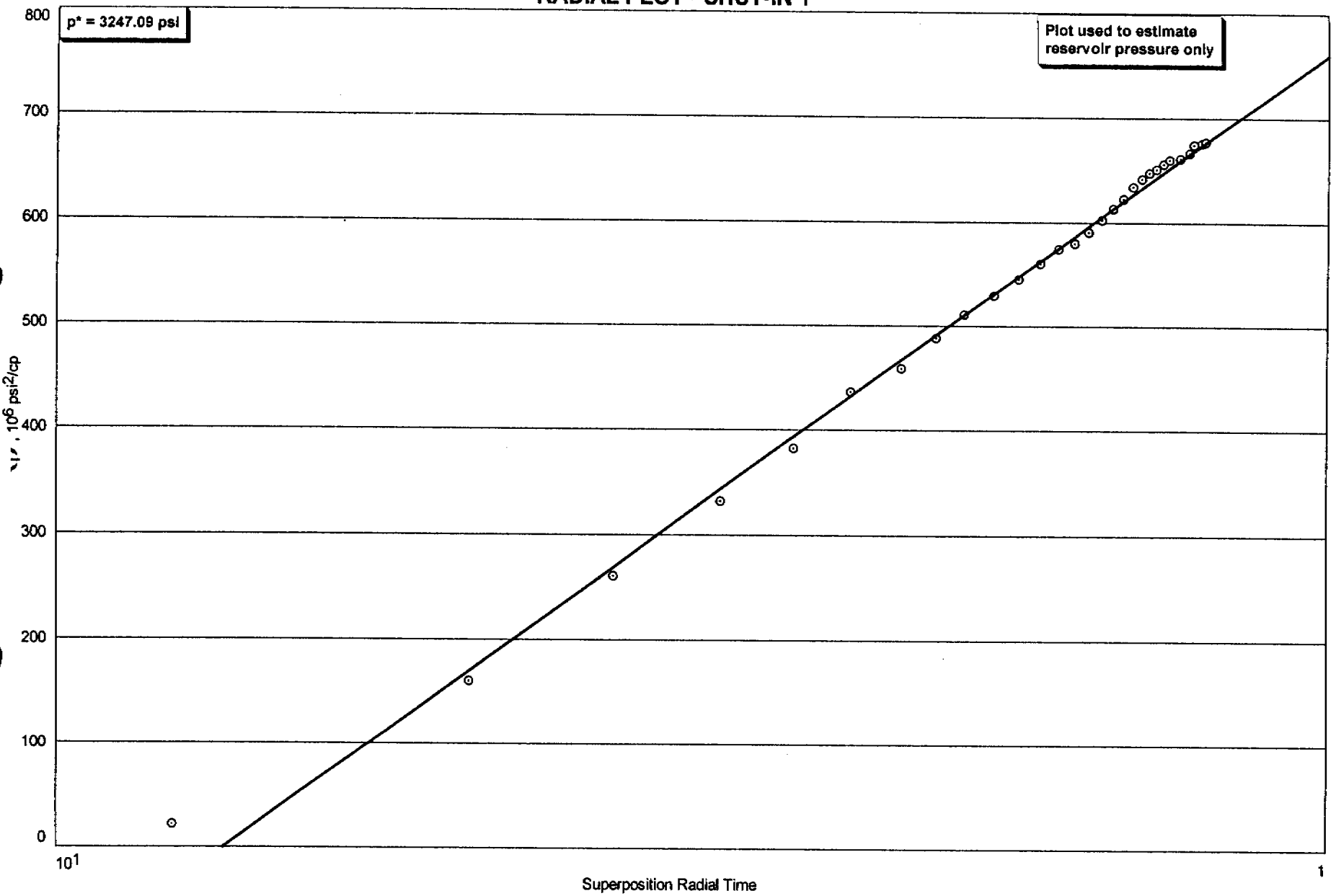
RADIAL PLOT - SHUT-IN 1



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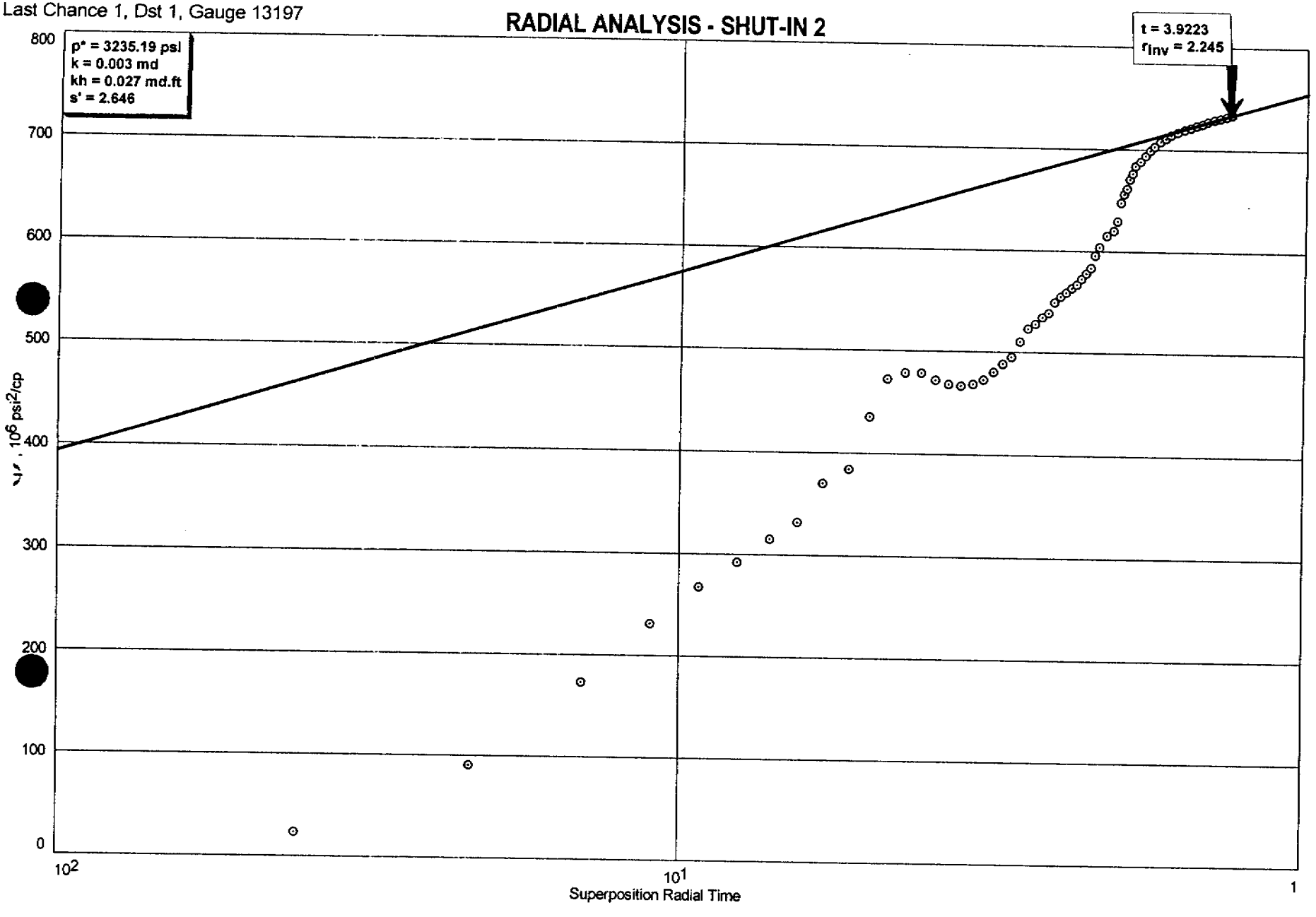

Fast

Gas Well Test - Buildup
Radial Flow Analysis

R1A
1
1

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Analysis Results

Total Sandface Rate ($q_t B_t$)	4.034 bbl/d	Apparent Skin (s')	2.646
Semilog Slope (m)	181.568	Skin - Damage	2.646
Gas Permeability (k_g)	0.003 md	Pressure Drop Due to Skin (Δp_s)	1836.98 psi
Flow Capacity (kh)	0.027 md.ft	Damage Ratio (DR)	2.418
Total Mobility (k/μ_t)	0.13 md/cp	Flow Efficiency (FE)	0.414
Total Transmissivity(kh/μ_t)	1.34 md.ft/cp		

Reservoir Parameters

Net Pay (h)	10.000 ft
Total Porosity (ϕ_t)	12.00 %
Water Saturation (S_w)	20.00 %
Oil Saturation (S_o)	0.00 %
Gas Saturation (S_g)	80.00 %
Wellbore Radius (r_w)	0.26 ft
Formation Temperature (T)	136.0 °F
Formation Compressibility (c_f)	4.508e-6 psi^{-1}
Total Compressibility (c_t)	2.125e-4 psi^{-1}

Fluid Properties

Gas Gravity (G)	0.650
N_2	0.00 %
CO_2	0.00 %
H_2S	0.00 %
Critical Pressure (P_c)	670.91 psi
Critical Temperature (T_c)	373.97 R
PVT Reference Pressure (p_{PVT})	3177.18 psi
Gas Compressibility (c_g)	2.59254e-4 psi^{-1}
Gas Compressibility Factor (z)	0.840
Gas Viscosity (μ_g)	0.0203 cp
Gas Formation Volume Factor (B_g)	0.000791 bbl/scf

Pressures

Initial Pressure (p_i)	3177.18 psi
Extrapolated Pressure (p^*)	3235.19 psi
Ave. Reservoir Press	3235.18 psi
Final Flowing Pressure (p_{wfo})	510.39 psi

Production and Times

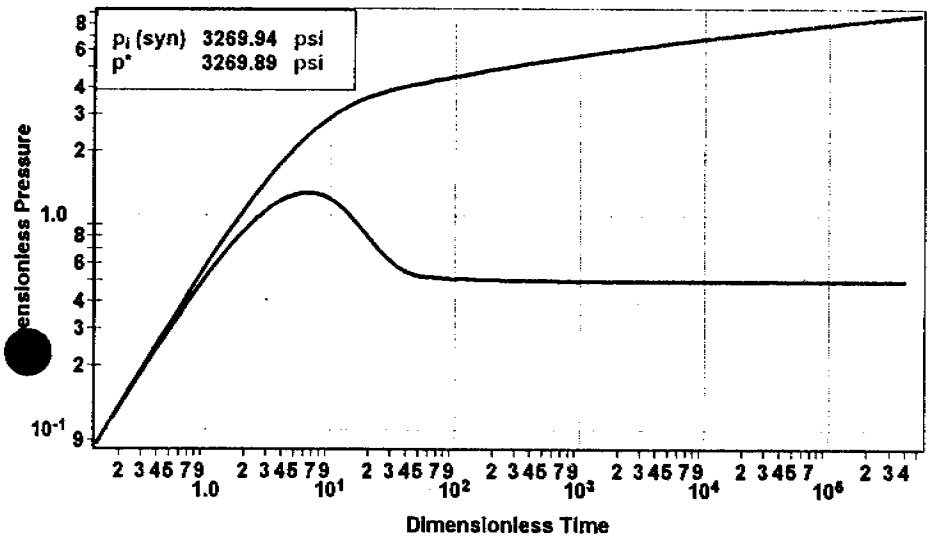
Corrected Flow Time (t_c)	1.3119 hr
Cumulative Gas Production	0.000 MMCF
Final Gas Rate	0.005 MMCF/D

Extended Rates Calculations

Drainage Area	80.0 acres
Specified Flowing Pressure	510.39 psi
Specified Reservoir Pressure	3235.18 psi
3 - Month Constant Rate	0.003 MMCF/D
6 - Month Constant Rate	0.003 MMCF/D
Stabilized Rate @ Current Skin	0.002 MMCF/D
Stabilized Rate @ Skin of 0	0.003 MMCF/D
Stabilized Rate @ Skin of -4	0.006 MMCF/D

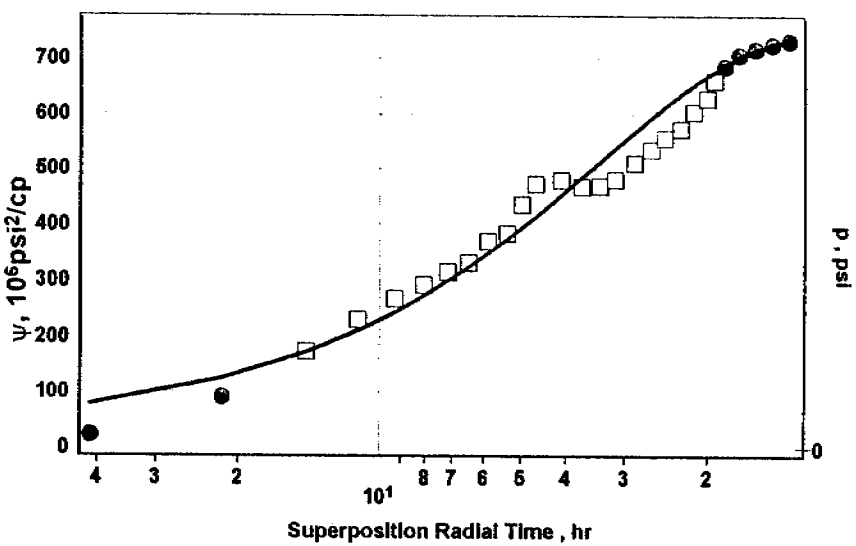
Vertical Gas Model

Dimensionless Typecurve



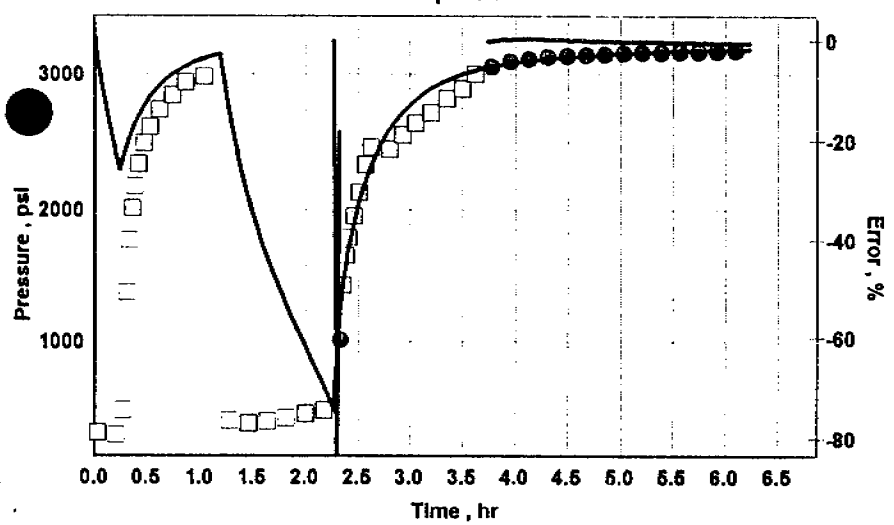
Vertical Gas Model

Radial



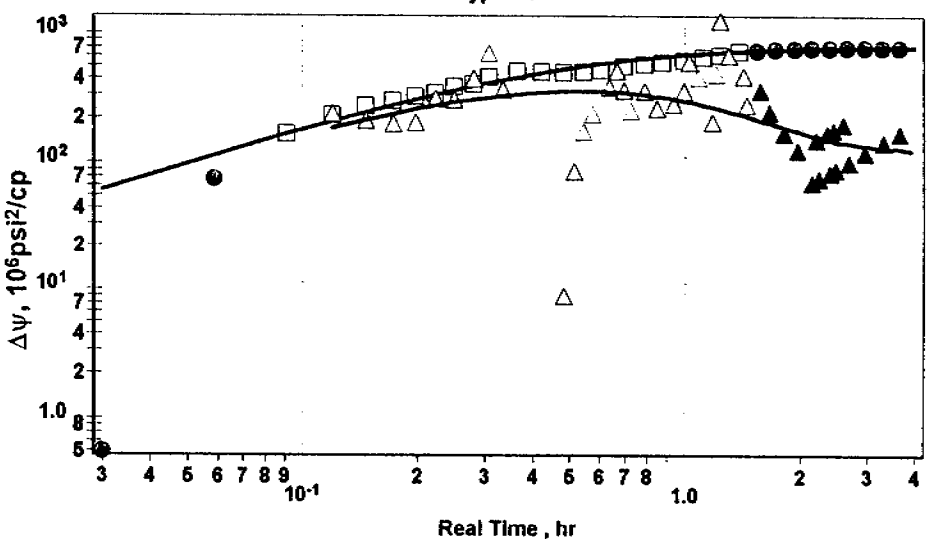
Vertical Gas Model

Strip Chart



Vertical Gas Model

Typecurve



Vertical Gas Well Model

Case Name : Vertical Gas Model

Maralo, LLC.

Last Chance 1, Dst 1, Gauge 13197

Model Parameters

Permeability (k)	0.002 md	Storativity Ratio (ω)	1.0000e0
Wellbore Storage Constant Dim. (C_D)	1.50	Skin (s)	1.846
Inter Porosity Coeff (λ)	1.0000e0	Turbulence Factor (D)	4.97e-15 $(MMCF/D)^{-1}$

Formation Parameters

Net Pay (h)	10.000 ft
Total Porosity (ϕ_t)	12.00 %
Gas Saturation (S_g)	80.00 %
Water Saturation (S_w)	20.00 %
Oil Saturation (S_o)	0.00 %
Wellbore Radius (r_w)	0.26 ft
Formation Temperature (T)	136.0 °F
Formation Compressibility (c_f)	4.508e-6 psi^{-1}
Total Compressibility (c_t)	2.125e-4 psi^{-1}

Fluid Properties

Gas Gravity (G)	0.650
N_2	0.00 %
H_2S	0.00 %
CO_2	0.00 %
Critical Pressure (P_c)	670.91 psi
Critical Temperature (T_c)	373.97 R
PVT Reference Pressure (p_{PVT})	3177.18 psi
Gas Compressibility (c_g)	2.59254e-4 psi^{-1}
Gas Compressibility Factor (z)	0.840
Gas Viscosity (μ_g)	0.0203 cp
Gas Formation Volume Factor (B_g)	0.000791 bbl/scf

Production and Pressure

Final Gas Rate	0.005 MMCF/D
Final Measured Pressure	3177.10 psi
Initial Pressure (p_i)	3177.18 psi

Synthesis Results

Average Error	-1.15 %
Synthetic Initial Pressure (p_i)	3269.94 psi
Extrapolated Pressure at Specified Time	3269.89 psi
Pressure Drop Due To Skin (Δp_s)	1632.95 psi
Flow Efficiency (FE)	0.408
Damage Ratio (DR)	2.450

Forecasts

Specified Flowing Pressure (p_{wfs})	510.39 psi
3 - Month Constant Rate	0.002 MMCF/D
6 - Month Constant Rate	0.002 MMCF/D
Specified Forecast Time	12.00 month
Forecast Constant Rate @ Current Skin	0.002 MMCF/D
Forecast Constant Rate @ Skin=0	0.003 MMCF/D
Forecast Constant Rate @ Skin=-4	0.008 MMCF/D

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Last Chance #1

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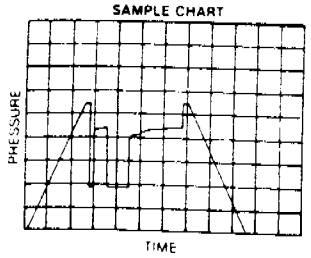
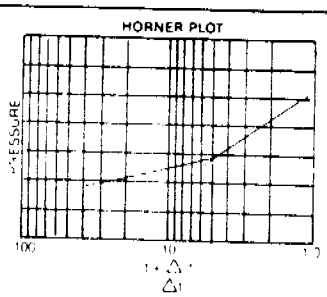
GUIDE TO DETECTION OF GEOLOGICAL ANOMALIES

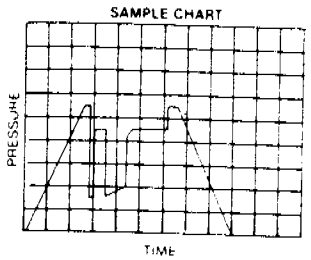


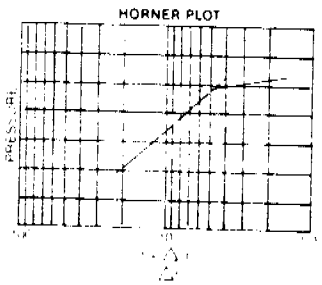


Horner Plot Slope Breaks Upward

Possible Causes

(1) decrease in pay thickness away from the wellbore
(2) decrease in permeability away from the wellbore
(3) increase in viscosity of reservoir fluid (fluid contact)
(4) barrier within the radius of investigation

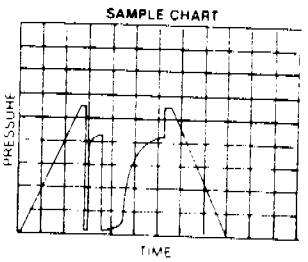


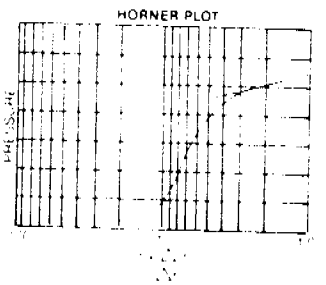


Horner Plot Slope Breaks Downward

Possible Causes

(1) increase in pay thickness away from the wellbore
(2) increase in permeability away from the wellbore
(3) decrease in viscosity away from the wellbore

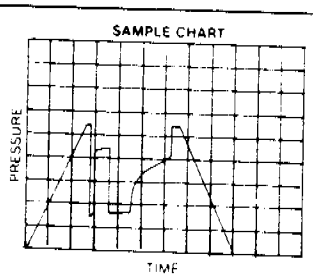


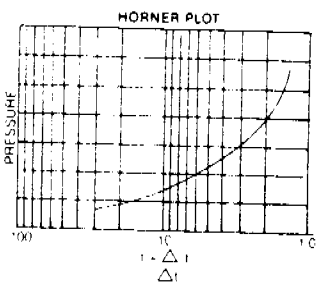


Early Time Deviation of Horner Plot

Possible Causes

(1) wellbore damage due to filtrate invasion, drilling solids, etc.
(2) partial penetration of pay zone
(3) plugging or choking of perforations (casing test only)
(4) wellbore storage effects (low permeability gas wells)

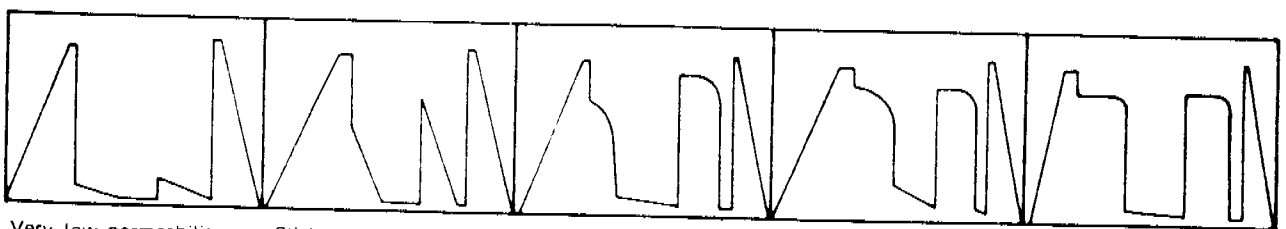




Horner Plot Slope Continually Increasing

Possible Causes

(1) well between two parallel boundaries (channel sand)
(2) induced hydraulic fractures



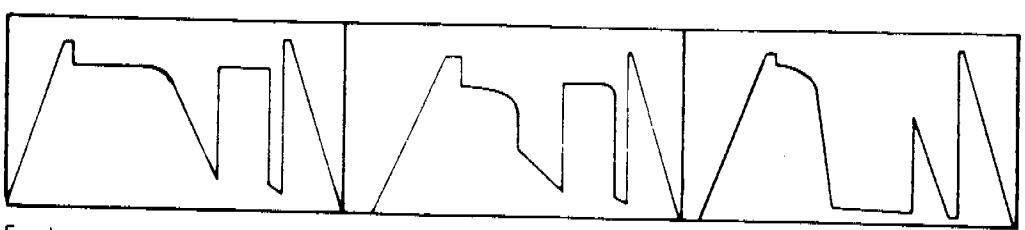
Very low permeability. Usually only mud recovered from interval tested. Virtually no permeability.

Slightly higher permeability. Again usually mud recovered.

Slightly higher permeability. Small recovery, less than 200 ft).

Average permeability. Final and initial shut-ins differ by 50 psi.

Average permeability. Strong damage effect. High shut-in pressure, low flow pressure.



Excelent permeability where final flow final shut-in pressure.

High permeability where ISIP and FSIP are within 10 psi.

Deep well bore invasion or damage. Final shut-in higher than the initial shut-in.