WELL REPORT
NORTH AMERICAN EXPLORATION COMPANY
TESORO PETROLEUM CORPORATION
BOUNDARY #1
SAN JUAN COUNTY, NEW MEXICO

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NORTH AMERICAN EXPLORATION COMPANY & TESORO PETROLEUM CORPORATION

BOUNDARY #1

SAN JUAN COUNTY, NEW MEXICO

LOCATION

790' from the south line and 790' from the east line of Section 22, Township 31 North, Range 11 West, NMPM.

ELEVATION

6253' Ground: 6266' Kelley Bushing

CONTRACTOR

Aztec Well Servicing Company, Rig #73, Rotary Tools

SPUD AND COMPLETION DATA

Well Commenced: February 28, 1972
Well Completed: March 7, 1972, Plugged and Abandoned
Total Depth 4015' Driller: 4011' Logger

Plugging Program:

Surface	- 10 sacks
400' - 500'	- 35 sacks
1800' - 1900'	- 35 sacks
2800' - 2950'	- 55 sacks
3700' - 3800'	- 35 sacks

CASING

8 5/8" - 168' w/120 sacks, Class A, 2% CaCl.

ELECTRICAL SURVEYS

Schlumberger - Dual Induction Laterolog - 168' to 4008'
Schlumberger - Formation Density Log - 160' to 4009'
Schlumberger - Sonic Log - 160' to 4007'

FORMATION TOPS

Cretaceous	Depth	KB Datum
Menefee (Kmf)	Surface	+6266
Point Lookout (Kpl)	1740'	+4526
Upper Mancos (Kmu)	1885'	+4381
Gallup (Kg)	2752'	+3514
Hospah Gallup (Khg)	2860'	+3406
Massive Gallup (Kmg)	2930'	+3336
Lower Mancos (Kml)	3046'	+3220

FORMATION TOPS - CONTINUED

Cretaceous	Depth	KB Datum
Sanastee (Kms)	3317'	+2949
Greenhorn (Kgh)	3668'	+2598
Graneros (Kgr)	3720'	+2546
Dakota "A" (Kda)	3754'	+2512
Dakota "B" (Kdb)	3860'	+2406
Dakota "D" (Kdd)	3936'	+2330
Total Depth (Logger)	4011'	+2255
Total Depth (Driller)	4015'	+2251

WELL CUTTINGS

30' samples from 200' to 1500'
10' samples from 1500' to 4015' (Driller TD)

Samples described below from 200' to 4015'

SAMPLE DESCRIPTION

200-30	50% ss, lt gy, f-g, arkosic, SA-SR, por & friable, Tr intstl clay, carb inclus, N-S: 50% sh, dk gy, carb, sdy & silty in part: Tr coal
230-60	70% ss, as above, bcm f-m-g, bcm domin uncons, N-S: 30% sh, as above: Tr coal
260-90	100% ss, as above, uncons, domin f-g, N-S: Tr coal: Tr sh, as above
290-320	80% ss, as above, domin cons, intstl clay, bcm tite & finer grained: 20% sh, as above
320-50	No sample
350-80	100% ss, uncons, f-m-g, domin f-g, as above, N-S: Tr sh, as above: Tr coal
380-410	90% ss, uncons, clr, f-c-g, domin f-g, SR-A, arkosic, N-S: 10% sh, as above: Tr coal
410-40	70% ss, wht-lt gy, f-m-g, SA-SR, arkosic, por & friable in part, intstl clay, sl/calc in part, occ ang c-g's, N-S: 30% sh, as above: Tr coal
440-70	100% ss, wht, uncons, f-m-g, SA-SR, arkosic, N-S: Tr sh, as above: Tr coal
470-500	80% ss, wht, cons-uncons, intstl clay, por as above, N-S: 20% sh, as above
500-60	100% ss, lt gy, cons-uncons, f-m-g, SA-SR, arkosic, por & friable, N-S: Tr sh, as above: Tr coal

SAMPLE DESCRIPTION - CONTINUED

560-90	70% ss, as above, bcm domin f-g, N-S: 30% sh, as above: Tr clinker
590-680	50% ss, lt gy, f-g, SA-SR, arkosic, por, intstl clay, carb inclus, calc in part, N-S: 50% sh, as above: Tr coal
680-800	80% ss, lt gy, uncons, f-m-g, SA-SR, arkosic, N-S: Tr ss, gy, v-f-f-g, shy, N-S: 20% sh, as above
800-30	50% ss, as above, N-S: 50% sh, as above
830-60	100% ss, as above, N-S: Tr sh, as above
860-90	50% ss, as above, bcm finer grained & shy: 50% sh, as above
890-920	90% sh, gy, gy brn, carb, silty & sdy in part: 10% ss, as above
920-80	80% sh, as above: 20% ss, as above, N-S: Tr coal
980-1010	80% sh, as above: 20% ss, wht-lt gy, f-m-g, SA-SR, por & friable, N-S
1010-40	50% ss, as above, cons-uncons, N-S: 50% sh, as above
1040-70	80% ss, as above, occ c-g's, N-S: 20% sh, as above: Tr coal
1070-1130	100% ss, uncons, f-m-g, occ c-g's, SA-SR, arkosic, N-S: Tr sh, as above: Tr coal
1130-60	90% ss, as above: 10% sh, as above: Tr coal
1160-1220	100% ss, wht-lt gy, f-m-g, occ c-g's, cons-uncons, SA-SR, arkosic, por & friable, intstl clay, calc & tite in part, N-S: Tr sh, as above: Tr coal
1220-50	50% ss, as above, domin uncons, N-S: 50% sh, as above: Tr coal
1250-1310	90% sh, gy, gy brn, carb, silty & sdy in part: 10% ss, as above
1310-1500	90% sh, as above: 10% ss, gy, f-m-g, domin f-g, calc & tite in part, shy & clay filled in part, as above, N-S: Tr coal
1500-10	80% sh, as above: 20% ss, as above, N-S: Tr coal
1510-80	No sample
1580-90	as 1500-10

SAMPLE DESCRIPTION - CONTINUED

1590-1740 90% sh, as above: 10% ss, as above, carb inclus, N-S: Tr coal

TOP POINT LOOKOUT 1740' LOGS

1740-70 80% sh, as above: 20% ss, as above, domin uncons, N-S: Tr coal

1770-80 50% ss, wht, cons-uncons, f-m-g, SA-SR, arkosic, por & friable, Tr intstl clay, N-S: 50% sh, as above: Tr coal

1780-90 90% ss, as above, N-S: 10% sh, as above: Tr coal

1790-1800 100% ss, as above, N-S: Tr sh, as above: Tr coal

1800-50 100% ss, as above, domin f-g, bcm shy in part, N-S: Tr sh, as above: Tr coal

1850-60 70% ss, as above, N-S: 30% sh, gy, gy brn, carb

TOP UPPER MANCOS 1885' LOGS

1860-1910 70% ss, lt gy, v-f-f-g, SA-SR, arkosic, Tr porosity, domin shy, calc & tite, N-S: 30% sh, as above: occ uncons, m-g's: Tr ss, buff, f-m-g, as above, v/calc, tite

1910-20 50% ss, as above: 50% sh, as above

1920-2050 80% ss, as above, bcm v/shy: 20% sh, as above: Tr ss, wht-buff, f-m-g, as above: Tr diss pyrite

2050-2100 80% ss, gy, v-f-f-g, SR, arkosic, shy in part, silty in part, sl calc, carb inclus, N-S: Tr ss, wht-buff, f-m-g, SA-SR, arkosic, v/calc, tite, N-S: 20% sh, as above

2100-90 70% ss, as above: 30% sh, as above: Tr ss, wht-buff, f-m-g, as above

2190-2200 50% ss, as above: 50% sh, as above: Tr ss, wht-buff, f-m-g, as above

2200-20 70% ss, gy, v-f-f-g, SR, arkosic, shy in part, silty in part, sl/calc, carb inclus, N-S: 30% sh, gy, gy brn, carb, silty & sdy in part: Tr sltstn, gy, hd, calc, shy, Tr ss, wht-buff, f-m-g, SA-SR, arkosic, v/calc, tite, w/diss pyrite inclus, N-S

2220-30 50% ss, gy, v-f-f-g, as above, N-S: 50% sh, as above: Tr ss, wht-buff, f-m-g, as above: N-S

2230-80 60% sh, as above: 40% ss, as above, N-S: Tr coal

2280-2300 80% sh, as above: 20% ss, as above, N-S

SAMPLE DESCRIPTION - CONTINUED

2300-10 90% ss, as above, N-S: Tr ss, wht-buff, f-m-g, as above, N-S: 10% sh, as above

2310-70 80% ss, as above: 20% sh, as above: Tr buff ss, as above

2370-2470 50% ss, as above, bcm domin shy: 50% sh, as above: Tr ss, wht-buff, f-m-g, as above, N-S

2470-2500 80% ss, as above: 20% sh, as above

2500-10 80% ss, gy, v-f-f-g, SA-SR, arkosic, carb inclus, por in part, silty, calc, shy in part, occ thin sh lamin, N-S: 20% sh, gy, gy brn, carb

2510-2650 90% ss, as above, N-S: 10% sh, as above

2650-2700 70% ss, as above, bcm domin shy & tite: 30% sh, as above

2700-10 100% ss, as above, bcm v/silty: Tr sh, as above

2710-20 90% ss, as above, N-S: 10% sh, as above: 70 unit gas kick

2720-40 80% ss, as above: 20% sh, as above: Tr diss pyrite

TOP GALLUP 2752' LOGS

2740-80 50% ss, as above, bcm shy & silty: 50% sh, gy, gy brn, gy grn, carb in part

2780-2800 70% sh, as above: 30% ss, as above: Tr ss, buff, f-m-g SA-SR, arkosic, v/calc, tite, N-S: Tr aragonite

2800-20 100% ss, lt gy, v-f-f-g, SA-SR, arkosic, calc, silty & shy in part, N-S: Tr sh, gy, gy brn, carb: occ cse-ang qtz grs

2820-30 80% ss, as above: 20% ss, uncons, f-m-g, SA-SR, arkosic, N-S: Tr ang cse qtz grs: Tr sh, as above

2830-40 100% ss, uncons, as above, N-S: Tr sh, as above

2840-50 50% ss, lt gy, v-f-f-g, SR, arkosic, calc, tite, N-S: 50% sh, as above: Tr diss pyrite

2850-60 20% ss, as above, N-S: 50% ss, uncons, f-c-g, A-SR, arkosic, N-S: 30% sh, as above

TOP HOSPAH GALLUP 2860' LOGS

2860-70 80% sh, as above, silty & sdy in part: 20% ss, gy, v-f-f-g, calc, as above

SAMPLE DESCRIPTION - CONTINUED

2870-80 50% ss, wht-lt gy, v-f-f-g, SR, por in part, intstl clay, calc & tite in part, N-S: 50% sh, as above

2880-2900 80% ss, cons-uncons, f-m-g, domin f-g, domin por, as above, N-S: 20% sh, as above: Tr diss pyrite

2900-10 50% ss, cons, lt gy, f-g, domin calc & tite, as above, N-S: 50% sh, as above

TOP MASSIVE GALLUP 2930' LOGS

2910-40 80% ss, as 2880-2900: Tr aragonite, occ SA c-g's: 20% sh, as above

2940-50 90% ss, uncons, fstd-clr qtz, f-c-g, A-SR, arkosic, N-S: 10% sh, as above

2950-70 50% ss, as above, bcm f-g, calc & tite in part: 50% sh, as above

2970-3000 70% ss, uncons, f-m-g, domin f-g, as above, N-S: 30% sh, as above: Tr coal

3000-20 50% ss, as above: 50% sh, as above: Tr coal

TOP LOWER MANCOS 3046' LOGS

3020-90 90% ss, uncons, f-c-g, SR-A, arkosic, N-S: 10% sh, as above

3090-3100 50% ss, as above: 50% sh, as above

3100-30 80% sh, gy, gy brn, carb: 20% ss, as above, N-S

3130-90 90% sh, as above: 10% ss, as above: Tr ss, gy, cons, v-f-f-g, calc, shy, tite

3190-3220 100% sh, as above: Tr ss, uncons, as above: Tr ss, cons, as above

3220-40 50% ss, uncons, f-m-g, SA-SR, arkosic, N-S: 50% sh, gy, gy brn, gy grn, carb in part

TOP SANASTEE 3317' LOGS

3240-3400 70% sh, as above: 30% ss, as above, N-S

3400-50 70% sh, as above: 30% ss, as above, N-S: Tr ls, tan-mott brn, v-f-xln-ds

3450-3500 90% sh, dk gy, gy brn, silty & sdy in part, carb in part: 10% ss, as above, N-S: Tr ls, as above: Tr sltstn, gy, hd, calc, shy

3500-50 100% sh, dk gy, gy, gy brn, as above: Tr sltstn, as above: Tr ss, as above

SAMPLE DESCRIPTION - CONTINUED

3550-70 90% sh, as above: 10% sltstn, gy, hd, calc, sdy in part: Tr ss, as above

3570-80 70% sh, as above: 30% sltstn, as above: Tr ss, as above

3580-90 100% sh, as above: Tr sltstn, as above

3590-3600 70% sh, as above: 30% sltstn, as above: Tr ss, uncons, as above

3600-30 80% sh, as above: 20% sltstn, as above, w/intbdd v-f-g, calc ss, N-S: Tr ss, uncons, as above

3630-50 60% sh, as above: 40% sltstn, gy, hd, calc in part, silic in part, sdy in part

3650-60 70% sh, as above: 30% sltstn, as above

TOP GREENHORN 3668' LOGS

3660-70 70% sh, as above: 20% sltstn, as above: 10% ls, gy brn, ds, argill

3670-90 70% sh, as above: 20% sltstn, as above: 10% ls, as above: Tr ss, lt gy, f-g, SA-SR, arkosic, Tr por, N-S

3690-3700 70% sh, as above: 20% sh, dk gy, fissile: 10% ls, as above: Tr sltstn, as above: Tr ss, as above

TOP GRANEROS 3720' LOGS

3700-60 100% sh, dk gy, fissile: Tr bentonite: Tr sltstn, as above: Tr ss, as above

TOP DAKOTA "A" 3754' LOGS

3766 Circ samples

15" - as 3700-60

30" - 100% sh, as above: Tr ss, wht, cons-uncons, domin uncons, f-m-g, SA-SR, arkosic, sl/glauc, por & friable, No fluor, 10 unit gas kick: Tr bentonite

45" - 50% ss, as above: 50% sh, as above: Tr bentonite

3760-80 50% ss, as above: 50% sh, as above: Tr bentonite
26 unit gas kick, No fluor

3782 Circ samples

15" - 50% ss, as above: 50% sh, as above: Tr bentonite

30" - as above

SAMPLE DESCRIPTION - CONTINUED

3780-3800	50% ss, uncons, as above: occ A c-g's: 50% sh, as above: Tr diss pyrite: Tr bentonite
3800-10	80% sh, as above: 20% ss, uncons, as above: Tr bentonite
3810-20	50% ss, lt gy, f-g, SA-SR, arkosic, por & friable in part, calc & tite in part, N-S: 50% sh, as above: Tr diss pyrite: Tr bentonite
3820-30	70% ss, as above, bcm shy in part, Tr intstl clay: 30% sh, as above
3830-40	90% ss, as above, cons-uncons, N-S: 10% sh, as above
3840-60	80% sh, as above: 20% ss, as above, bcm shy, silic & tite

TOP DAKOTA "B" 3860' LOGS

3870	Circ samples
	45" - 80% ss, wht-lt gy, cons-uncons, f-m-g, domin f-g, SA-SR, arkosic, por & friable, No fluor, 24 unit gas kick: 20% sh, as above
Core #1	3870-3900
3900-20	80% sh, dk gy, carb: 20% ss, wht, cons-uncons, f-m-g, SA-SR, arkosic, por, N-S: Tr diss pyrite: Abt bentonite: Tr sltstn, gy, hd, silic
3920-30	70% ss, wht-lt gy, cons-uncons, domin uncons, f-c-g, A-SR, arkosic, por, N-S: 30% sh, as above: Tr diss pyrite

TOP DAKOTA "D" 3936' LOGS

3930-50	80% sh, as above: 20% ss, as above, N-S: Tr diss pyrite
3950-60	90% sh, as above: 10% ss, as above, N-S: Tr ss, cons, lt gy, v-f-g, silty, tite, Tr diss pyrite
3960-80	70% sh, as above: 30% ss, cons-uncons, wht-lt gy, cons, f-g, SA-SR, arkosic, por & friable, N-S: occ m-c-g's, as above: Tr diss pyrite
3980-90	80% sh, as above: 20% ss, as above: Tr diss pyrite: Tr bentonite
3990-4000	100% sh, as above: Tr ss, as above: Tr sltstn, as above
4000-10	50% ss, uncons, f-m-g, SA-SR, arkosic, occ A m-c-g's, N-S: 50% sh, as above: Tr bentonite

SAMPLE DESCRIPTION - CONTINUED

4015 TD Driller
Circ samples

15" - 80% ss, as above, lt gy, cons-uncons, por, N-S:
20% sh, as above

30" - 50% ss, as above: 50% sh, as above

45" - 80% sh, as above: 20% ss, as above

CHRONOLOGICAL LOG

2-28-72 MIRT

2-29-72 TD 168' WOC
Spud: 4:00 P.M. 2-28-72
Ran 155.68, 8 5/8", 24.00#, set @ 168' w/120 sacks
Class A, 2% CaCl.
P.D. 11:00 P.M. 2-28-72

Move & rig up (9 hrs) Drill surf hole (3 hrs) Run surf csg & cement (7 hrs)

3-01-72 @ 1532' w/bit #4

Drlg (19 hrs) Trip (3 1/2 hrs) Pump repair (1 1/2 hrs)

3-02-72 @ 2686' w/bit #5
Mud Properties: Vis 30, Wt. 9.1

Drlg (21 hrs) Trip & strap drill pipe (3 hrs)

3-03-72 @ 3078' w/bit #6

Drlg (10 1/2 hrs) Circ & cond mud for DST (5 hrs)
Trips (2 1/2 hrs) DST (3 1/2 hrs) Trip out & lay down test tool (2 1/2 hrs)

3-04-72 @ 3517' w/bit #7
Mud Properties: Vis 39, Wt. 9.4

Drlg (15 hrs) Trips (6 hrs) Pump repair (3 hrs)

3-05-72 TD 3870' Circ samples
Mud Properties: Vis 44, Wt. 9.5

Drlg (15 3/4 hrs) Trips (4 1/4 hrs) Circ samples (2 hrs)
Rig repair (2 hrs)

3-06-72 @ 3965' w/bit #9

Circ cond mud (1 hr) Trip & pickup ¢ bbl (4 1/4 hrs)
Coring (6 1/4 hrs) Trip (3 1/4 hrs) Rig repair (4 1/2 hrs)
Lay down core (1/2 hr) Rmg core hole (1 hr) Drlg (2 1/4 hrs)

CHRONOLOGICAL LOG - CONTINUED

3-07-72 TD 4015'

Drlg (1/2 hr) Circ & WO Schlumberger (5 1/2 hrs)
Trip to log (2 hrs) Logging (8 hrs) WOO (8 hrs)

3-08-72 TD 4015' P & A

BIT RECORD

No.	Make	Size	Type	From	To	Footage	Hours Run
1	Hughes	12 1/4	RT	0'	168'	168'	2
2	Hughes	7 7/8	RR	168'	1410'	1242'	16
3	Hughes	7 7/8	OSCIG	1410'	2332'	922'	12
4	Hughes	7 7/8	OSCIG	2332'	2802'	470'	12
5	Hughes	7 7/8	OSCIG	2802'	3249'	447'	14
6	Hughes	7 7/8	OD4	3249'	3448'	199'	10
7	Hughes	7 7/8	OSCIG	3448'	3790'	342'	12
8	Hughes	7 7/8	V-2	3790'	3870'	80'	7
9	Christensen	Diamond		3870'	3900'	30'	6 1/4
10	Hughes	7 7/8	ODV	3900'	4015'	115'	3 3/4

TOTAL ROTATING HOURS - 95

DEVIATION RECORD

No.	Depth	Degree	Date
1	170'	1/2°	2-28-72
2	1405'	1-1/2°	3-01-72
3	2332'	1/2°	3-02-72

ELECTRICAL SURVEY CALCULATIONS

Formation	Depth	R_t	ϕ_s	ϕ_d	R_w	S_w	Q
Dakota "A"	3754-70	9	20	18	.26	100%	1
Dakota "A"	3800-20	10	16	12	1.0	100%	.25
Dakota "B"	3860-3900	30	18	18	.8	100%	0
Dakota "D"	3949-52	30	16	12	1.2	100%	.25

Rw's calculated

CORE RECORD

Core #1: 3870-3900 (Dakota "B") Cut 30': Recovered 25'
(3866-96 adjusted to logs)

Feet	Depth	Description
1	3870-71	ss, lt gy, f-g, SA-SR, sl/arkosic, sl/ porous, w/occ thin hairline sh lamin, N-S
4	3871-75	ss, as above, f-m-g, domin f-g, porous appears water wet
1	3875-76	ss, as above, carb inclus
1	3876-77	ss, lt gy, f-m-g, SA-SR, arkosic, porous, N-S
1	3877-78	ss, as above, abt thin sh lamin
1	3878-79	ss, lt gy, f-g, SA-SR, arkosic, bcm less porous, w/abt thin sh lamin, N-S
1	3879-80	ss, lt gy, f-m-g, domin f-g, SA-SR, arkosic, porous, N-S
1	3880-81	ss, as above, bcm less porous, N-S
2	3881-83	ss, as above, thin sh lamin, N-S
1	3883-84	ss, as above, No sh lamin
2	3884-86	ss, as above, thin carb sh lamin
4	3886-90	ss, lt gy, f-m-g, domin f-g, SA-SR, arkosic, porous, w/occ thin sh lamin, N-S
5	3890-95	ss, lt gy, f-m-g, SA-SR, arkosic, porous, occ thin sh lamin, N-S: v/frag 94-95
5	3895-3900	No recovery
30'		

CORING TIME

3870-80 12-10-17-20-20-14-12-14-15-20

3880-90 17-17-17-16-13-13-13- 8- 8- 7

3890-3900 7- 7- 7- 5- 8- 6- 6-11-10-18

CORE ANALYSIS

Depth	K	Ø	S_o	S_w
3870-71	8.6	18.6	0.0	80.0
3873	34.0	18.9	0.0	81.0
3875	11.0	18.5	0.0	78.9
3877	43.0	19.2	0.0	89.1
3879	4.8	17.2	0.0	79.6
3881	20.0	18.9	0.0	88.4
3883	20.0	19.0	0.0	81.5
3885	17.0	18.5	0.0	79.9
3887	28.0	19.8	0.0	84.4
3889	63.0	19.9	0.0	82.3
3891	164.0	20.7	0.0	82.6
3893	106.0	18.9	0.0	86.2

DRILLSTEM TEST RECORD

DST #1: 2678-2802 (Crevasse Canyon)
2674-2798 (Adjusted to logs)

Open 15 minutes: very weak blow, dead 10 minutes

Shut In: 30 minutes

Open 30 minutes: No blow

Shut In: 60 minutes

Recovered: 30' drilling mud, N-S

Initial hydrostatic pressure	1341 psi
Final hydrostatic pressure	1341 psi
Initial flow pressure (1)	13 psi
Final flow pressure (1)	13 psi
Initial flow pressure (2)	13 psi
Final flow pressure (2)	13 psi
Initial shut in pressure	207 psi
Final shut in pressure	363 psi

Bottom Hole Temperature - 80°F