TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL U.S.G.S. - #2 Walakpa Date 12/31/80 Time 06:00

Present Depth 105 Previous Depth 105 Footage 24 Hrs. 0

Formation(s) Nanushuk Top surface

Present Activity: Working on Derrick - Nippling up BOP

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	-42° wind 14 mph	
	Husky	Frank
	outr containers	Need -
	Gas containers	Clips for cans
		Tape measure
	Mud log copies (sepias) 3 or 4	Folding clips for 2 hole
		Spring clamps
		Stamp for Well

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL U.S.G.S. - #2 Walakpa Date 1/1/81 Time 06:00

Present Depth 105 Previous Depth 105 Footage 24 Hrs. 0

Formation(s) Nanushuk Top surf

Present Activity: Working on derrick

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	-12 wind 20 mph	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL U.S.G.S. - #2 Walakpa Date 1/1/81 Time 06:00

Present Depth 105 Previous Depth 105 Footage 24 Hrs. 0

Formation(s) Nanushuk Top surf

Present Activity: Working on derrick

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	-12 wind 20 mph	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL U.S.G.S. - #2 Walakpa Date 1/2/81 Time 06:00

Present Depth 105 Previous Depth 105 Footage 24 Hrs. 0

Formation(s) Nanushuk Top surf

Present Activity: WOC

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	Raised Derrick, Pumped Cmt. - conductor pipe	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist BROCKWAY

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL U.S.G.S. - #2 Walakpa Date 1/3/81 Time 06:00

Present Depth 105 Previous Depth 105 Footage 24 Hrs. 0

Formation(s) Nanushuk Top surf

Present Activity: Rigging up - Preparing to mix mud - Making up BHA

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	-4 calm.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

HUSKY

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-4-81 Time 0600

Present Depth 230' Previous Depth 105' Footage 24 Hrs. 125'

Formation(s) NANUSHUK Top Surface

Present Activity: Trip - unplug bit

LITHOLOGIC DESCRIPTION

Interval Reported 105 - 220' Sampling Interval 20 ft. Sample Quality poor - v. poor

Lag Time: 6 (est.) min. @ 220 ft.

Interval	Description	Avg. Drill Rate min./ft.
105-135'	No returns. Bypassing shaker.	1.0
135-220'	Intbdd - intlam Clyst, Ss, Sltst. Clyst: lt gy, sft, sl slty, sdy, w/tr coal chips, pyr, occ v. crs cht and Qtz grns; Ss: lt gy, v.f. gr - f. gr, med srt, sa, calc, clyey, rr green grns glau (?); sl por zone, no show; Sltst: lt gy, sl mica, ptly sdy, v. sft.	1.0

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
205	40	0	0	5		NONOPERABLE CHROMATOGRAPH			
225	50	0	5	-		"	"		

Ditch Gas (Units): Background 5 Connection 0 Trip 0 Peaks a/a

Mud: Wt. 8.5 Vis 36 W.L. 25 ph 7.5 cc Oil 0 % Cl_2 1500 Temp. NA °F. in NA °F. out

Data Unit: NA

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
Geochem (canned)			
Cores	No.		

RON BROCKWAY

HUSKY

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-5-81 Time 0600

Present Depth 685' Previous Depth 230' Footage 24 Hrs. 455'

Formation(s) NANUSHUK Top Surface

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 220-650' Sampling Interval 10 ft. Sample Quality poor

Lag Time: 10.5 min. @ 680 ft.

Interval	Description	Avg. Drill Rate min./ft.
220-230'	Intbdd Sltst, Ss, Clyst, as last reported.	3
230-233'	Ls, lt brn,crpxl, sl slty, arg w/calc filled frac.	3
233-265'	Intbdd Ss, Sltst, Clyst, as last reported w/Ls ptg & nod.	0.5
265-330'	Ss, lt gy - gy, v.f. grn, f. grn in pt, sa, mod srt, rr glau grn, v. calc, to sl calc, Cly in pt, tuf, carb flks, even lt yel fluor, v. slow cut, good lt yel crushed cut, pt mnrl fluor, thn intbdd Clyst, Sltst, lt gy, sft.	1
330-433'	Decr Ss, incr Sltst and Clyst, a/a, becomes intbdd. Some Ss apppears to be chips from Sltst, Clyst; fluor becomes spotty and v. dull yel. No cut, rr Ls nod.	1.4
433-436'	Ss, lt gy, f. grn to v.f. grn, sa to sr, carb, clyey, slty, sl tuf, tr biot, rr pyr incl; lt pale yel fluor, instant v. fnt pale yel cut, tt.	4.2
436-454'	Intbdd Clyst and Sltst, lt gy, v. sft.	2.1
454-457'	Ss, gy, v.f. grn, sa, mod srtd, mod to v. calc, mod hd, tt no show.	--
457-650'	Pred Clyst, lt gy, slt, sft, carb flks, w/thn Ss, lt gy to gy, v. f. grn to f. grn, pt slty, pt calc, carb; also in lenses, incl, chips in Clyst, Sltst; Sltst bds lt gy, v. sft and clyey, carb flks; scat f. pyr incl; thn gy - brn Ls bd at 623-625'.	3.8

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
386' (connection gas)	38	0	6	6		7600	0	0	0

Ditch Gas (Units): Background 6 Connection 18 @ 355', 38 @ 386', 30 @ 417', 28 @ 450' Trip 22 @ 292' Peaks 0

Mud: Wt. 9.8 Vis 30 W.L. 25 ph 7.5 cc Oil 0 % Cl_2 1300 Temp. 72 °F. in 64 °F. out

Data Unit: NA

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

RON BLOCKWAY

8/76

HUSKY

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-6-81 Time 0600

Present Depth 1315' Previous Depth 685' Footage 24 Hrs. 630'

Formation(s) NANUSHUK Top Surface

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 650-1300' Sampling Interval 10 ft. Sample Quality poor

Lag Time: 21 min. @ 1500 ft.

Interval	Description	Avg. Drill Rate min./ft.
650-922	Clyst & Sltst, lt gy, sft, carb flks w/Ss occurring as thn bds, lenses, incl and chips. Thn Ls strg 783-786' and 889-891'.	1.5 - 2.0
922-926'	Ss, lt gy to gy, v.f. grn w/f. grn strg, sa, slty, sl calc, carb, f. grn strg w/sl por; 200 units gas kick, no fluor or cut.	1.0
926-957'	Clyst, Sltst intbdd, lt gy, sft, carb flks; thn Ss ptg, lenses, incl, w/occ Ls nod.	1.0 - 2.6
957-987'	Intbdd Ss, v. lt gy to gy, sa to sr Cly, slty, carb flks, occ glau grns, sl por, no show, w/Sltst, lt gy, sft, carb flks and Clyst, lt gy, sft, slty.	0.6 - 2.0
987-1173'	Intbdd Clyst, lt gy, v. sft, gummy, slty; Sltst, lt gy to lt gy brn, Cly, sl carb; Ss, v. lt to lt gy, v.f. grn to f. grn, sa, mod srtd, slty, Cly, carb, occ coal chips, rr glau, pyr incl, occ Ls nod and thn bds.	1.0 - 2.5
1173-1300'	Intbdd Sh, brn gy to lt gy, v. sft, fis, pt slty, sl carb, occ pyr incl; w/Sltst, lt gy brn to lt gy, Cly, sl carb, sl micromica and thn Ss, lt gy to lt brn gy, v.f. grn, slty, sa, mod srtd, tt, carb, no show.	2.0
	REQUEST: Daily Geological Report form.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
885'	100	0	10	68	10,000	0	0	0	0
921'	200	0	68	34	20,000	0	0	0	0
1135'	60	8	22	30	12,000	0	0	0	0
1195'	75	0	22	34	15,000	0	0	0	0
1290'	55	0	20	40	11,000	200	0	0	0

Ditch Gas (Units): Background 24 Connection 0 Trip 0 Peaks a/a

Mud: Wt. 9.5 Vis 28 W.L. 25 ph 7.5 cc Oil 0 % Cl_2 600 Temp. 62 °F. in 54 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	130-750'	2, Box #1	1&2
Unwashed Ditch (Paleo)	130-1270'	3, Boxes 1,2 & 3	1
Unwashed Ditch (USGS)	130-1060'	2, Boxes 1&2	1
GeoChem (canned)	130-1200'	3, Boxes 1,2&3	1
Cores	No.		

ROY BROCKWAY

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-7-81 Time 0600

Present Depth 1690' Previous Depth 1515' Footage 24 Hrs. 375'

Formation(s) TOROK Top 1350' (?)

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 1300-1650' Sampling Interval 10 ft. Sample Quality poor - fair
Lag Time: 26 min. @ 1600 ft.

Interval	Description	Avg. Drill Rate min./ft.
1300-1350'	Sh: as last reported.	2.7
1350-1650'	Sh: lt brn gy to gy, sft, fis, pt slty, micromica, sl carb, w/intbdd and intlam Sltst, lt brn gy to gy, sft. micromica, carb, & Ss, v. lt to med gy, S&P in pt, v.f. grn, occ f. grn, sa, generally v. slty, Cly, carb, occ some por, no show, rr scat pyr incls, and Cht grnls; Sh becomes much darker when dry, pt dk gy, Ss observed in v. thn vds.	1.0 - 2.0 (1300-1580') 2.0 - 3.0 (1586-1650')

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
1335-1345'	300	0	15	60	60 K	0	0	0	0
1410'	70	0	26	40	14 K	0	0	0	0
1435'	70	0	40	24	14 K	0	0	0	0
1490-1570'	300	0	16	?	60 K	0	0	0	0
1640'	156	0	Breakdown		31.2 K	Tr	Tr	0	0

Ditch Gas (Units): Background 100 Connection 0 Trip 532 @ 1486' Peaks a/a

Mud: Wt. 9.5 Vis 28 W.L. 2.0 ph 7.5 cc Oil 0 % Cl_2 500 Temp. 52 °F. in 54 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
1000'	-	1.16	-
1050'	-	1.09	-
1100'	-	1.17	-
1150	-	1.17	-
1200	-	1.22	-
1250'	-	1.20	-
1300'	-	1.20	-
1350'	-	1.23	-
1400'	-	1.19	-
1450'	-	1.23	-
1500'	-	1.37	-
1500'	-	1.39	-
1600'	-	[illegible]	-

U.S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-8-81 Time 0600

Present Depth 2067' Previous Depth 1690' Footage 24 Hrs. 377

Formation(s) TOROK Top 1350'

Present Activity: Repairing rotary.

LITHOLOGIC DESCRIPTION

Interval Reported 1650-2050' Sampling Interval 10 ft. Sample Quality fair
Lag Time: 35 @ 2000' min. @ 125 ft.

Interval	Description	Avg. Drill Rate min./ft.
1650-1727'	Sh, as last reported, increasing Ss.	2.2
1727-1736'	Ss, lt gy, v.f. grn, sl S&P, sa, sft, slty, clyey, pt sil, carb, arg grn, tt to v. sl por, no show.	2.0
1736-1890'	Intbdd Sh, gy brn - dk gy, fis, sft, sl carb, w/Sltst, lt gy - brn gy, pt shy, sft, mica, carb, and Ss a/a, bds to 5'.	2.0 - 3.3
1890-1913	Ss, lt gy, pt S&P, f. grn, pt v.f. grn, sa, mod srtd, arg, slty, calc, carb ptgs, rr glau, sl por strks, no show. Thn intbdd Sltst and Sh, tr coal chips.	2.2
1913-1948'	Intbdd Sltst, gy - gy brn, carb, pt sdy, tr mica; Sh, gy - gy brn, dk gy strks, pyr incls, fis, pt slty; Ss a/a.	2.3
1948-1960'	Sh, brn gy to dk gy, fis, sft, carb strks, micromica.	3.7
1960-1970'	Ss, lt gy, f. grn, sa, mod srtd, pt sil, tt, no show.	2.2
1970-1986'	Sltst, gy - brn gy, carb, sl micromica, w/Sh and Ss lams.	2.7
1986-2050'	Sh, gy brn - brn gy, occ lt gy and dk gy strks, fis, carb flks and ptgs, occ Ss and Sltst bds.	4.5

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
1675-1690'	280	21	80	100	53.7 K	1700	600	0	0
1690-1720'	240	28	100	90	46 K	1500	500	0	0
1745-1765'	250	8	150	150	49 K	1000	Tr	0	0
1765-1785'	280	9	160	120	55 K	1000	Tr	0	0
1785-1825'	288	22	180	150	51.6 K	6000	Tr	0	0
1825-1840'	250	0	150	150	43 K	6000	1000	Tr	0
1940-1950'	280	18	140	104	50.5 K	5000	500	Tr	0

Ditch Gas (Units): Background 80 Connection 0 Trip 0 Peaks a/a

Mud: Wt. 9.5 Vis 29 W.L. 2.0 ph 7.5 cc Oil 0 % Cl_2 400 Temp. 59 °F. in 62 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
1650'	-	1.37	9.4
1700'	-	1.39	9.7
1750'	-	1.38	9.6
1800'	-	1.42	9.3
1850'	-	1.42	9.3
1900'	-	1.43	9.3
1950'	-	1.43	9.3
2000'	-	1.43	9.3
2050'	-	1.51	10.2 (?)

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	750-1550'	2, Box #2	1&2
Unwashed Ditch (Paleo)	1270-1880'	1, Box #4	1
Unwashed Ditch (USGS)	1060-1760'	1, Box #3	1
GeoChem (canned)	1200-1920'	2, Boxes 4&5	1
Cores	No.		

Geologist RON BROCKWAY

8/78

HUSKY

U.S. GEOLOGICAL SURVEY, ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-9-81 Time 0600

Present Depth 2330' Previous Depth 2067' Footage 24 Hrs. 263'

Formation(s) PEBBLE SHALE Top 2050'

Present Activity: Tripping - cond hole for logging

LITHOLOGIC DESCRIPTION

Interval Reported 2050-2330' Sampling Interval 10 ft. Sample Quality fair

Lag Time: 45 min. @ 2300 ft. 112 strokes/min.

Interval	Description	Avg. Drill Rate min./ft.
2050-2080'	Sh, gy brn to brn gy, fis, as last reported, tr coal and calc grns.	4.5
2080-2088'	Ss, lt gy - sl brn, v.f. to f. grn, sa, mod srtd, Cly, slty, tt to sl por, no show.	1.9
2088-2160'	Sh, brn gy, w/dk and v. dk gy strks, carb flks and ptgs, fis, micromica, pyr lams and incls; intbdd Sltst, brn gy, Cly, sl carb; Ss, lt to v. lt gy, f. grn, sa, pt calc, pt to mod fri, carb, occ w/sl fros. No show.	3.5
2160-2167'	Ss, v. lt gy, S&P, f. grn, sa, mod to w. srtd, Cly mtx, rr glau, carb, coaly ptgs, 10% por. No show.	2.2
2167-2172'	Sh, brn gy w/tr coal.	3.6
2172-2176'	Ss a/a.	2.4
2176-2212'	Intbdd Sh, Sltst, Ss a/a.	3.3
2212-2330'	Sh, v. dk gy, fis, v. carb, tr coal w/green and lt gy zeolite and creamy bent mat; becomes pt blky at 2250'.	2.0

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
2085'	70	5	28	29	13300	700	Tr	0	0
2135'	100	Tr	27	20	18200	1600	200	0	0
2165'	400	0	56	60	79200	800	Tr	0	0
2200'	180	0	26	62	31400	300	Tr	0	0

Ditch Gas (Units): Background 20 Connection 0 Trip 0 Peaks a/a

Mud: Wt. 9.5 Vis 43 W.L. 9 ph 7.0 cc Oil 0 % Cl_2 45,000 Ca 70,000 Temp. 74 °F. in 82 °F. out

Adding $CaCl_3$

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
2100'	Unit on way to well.	1.48	9.8
2150'		1.49	9.9
2200'		1.46	9.7
2250'		1.46	9.6
2300'		1.37	8.7

Dc Exp used to derive Pore Press. Running cross-check by calculating PP as function of temp.

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
Chem (Canned)			

RECEIVED

ONPRA
MENLO PARK

HUSKY

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-10-81 Time 0600

Present Depth 2330' Previous Depth 2330' Footage 24 Hrs. 0

Formation(s) PEBBLE SH Top 2050'

Present Activity: Circ on wiper trip.

LITHOLOGIC DESCRIPTION

Interval Reported 0 Sampling Interval 0 ft. Sample Quality -

Lag Time: - min. @ - ft.

Interval	Description	Avg. Drill Rate min./ft.
	In w/DLL - hit bridge at 1497'. Making wiper Run #3.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

RON BROCKWAY

HUSKY

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-11-81 Time 0600

Present Depth 2330' Previous Depth 2330' Footage 24 Hrs. 0

Formation(s) PEBBLE SH Top 2201' (log)

Present Activity: Circulating - w/o delivery of cement.

LITHOLOGIC DESCRIPTION

Interval Reported - Sampling Interval - ft. Sample Quality -

Lag Time: - min. @ - ft.

Interval	Description	Avg. Drill Rate min./ft.
	RAN SCHLUMBERGER LOGS:	
	DLL - 109-2250'	
	CNL/FDC - 109-2310'	
	BHCS - 109-2308'	
	HDT DIPMETER - 109-2308'	
	SWC - Not initiated due to poor cond of hole.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 9.5 Vis 46 W.L. 12 ph 7.0 cc Oil 0 % Cl_2 Ca 70K 45K Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	1560-2330'	2 bxs, Bx #3	1&2
Unwashed Ditch (Paleo)	1880-2330'	1 bx, Bx #5	1
Unwashed Ditch (USGS)	1760-2230'	1 bx, Bx #4	1
Chem (canned)	1920-2280'	1 bx, Bx #6	1
[illegible]	No.		

RON BROCHWAY

TETRA TECH
U.S. GEOLOGICAL SURVEY/ONPRA

LOGGING REPORT

WELL NAME WALAKPA #2

Date 1-11-81 Driller Depth 2330'

Elevation 44' GR, 61' KB Logger Depth

Logs Ran and Intervals

	SCHLUMBERGER
DLL	109-2250'
CNL/FDC	109-2310'
BHCS	109-2308'
HDT DIPMETER	109-2308'

Additional Logs to Run

None

Zones of Interest

Depth	Gross Thickness	Net Feet of Porosity	Lith	Porosity	Probable Fluid Content
		NONE			

Discussion:

SWC not initiated due to poor cond. of hole.

Log Tops & Correlations:

PEBBLE SH	2201'
TOROK	1173'

Additional Evaluation Plans:

None at well.

RON BROCKWAY
Wellsite Geologist

Log Analyst

HUSKY

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-12-81 Time 0600

Present Depth 2330' Previous Depth 2330' Footage 24 Hrs. 0

Formation(s) PEBBLE SH Top 2050' (log)

Present Activity: Prep to cmt 9 5/8" csg.

LITHOLOGIC DESCRIPTION

Interval Reported 0 Sampling Interval 0 ft. Sample Quality -

Lag Time: - min. @ - ft.

Interval	Description	Avg. Drill Rate min./ft.

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-13-81 Time 0600

Present Depth 2330' Previous Depth 2330' Footage 24 Hrs. 0

Formation(s) PEBBLE SH Top 2201' (log)

Present Activity: W/o cmt - tripping in hole - mixing mud.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____

Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	Set 9 5/8" csg - installed BOP, tested BOP, w/o cmt.	
	REQUEST: Blank lith log mylar	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No		

Geologist RON BROCKWAY

HUSKY

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-14-81 Time 0600

Present Depth 2405' Previous Depth 2330' Footage 24 Hrs. 75

Formation(s) PEBBLE SH Top 2201' (log)

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 2330-2400' Sampling Interval 10 ft. Sample Quality good

Lag Time: 22 min. @ 2400 ft.

Interval	Description	Avg. Drill Rate min./ft.
2330-2400'	Sh: dk - v.dk gy, fis to pt blky, carb, rd, sl fros Qtz grns and grnls, pt slty, occ pyr incls, occ Sltst strgs, Ls strgs at 2365-2367', tn, crpxl, v. arg, calc filled frac.	2.6 - 19.5

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
			NONE						

Ditch Gas (Units): Background 17 Connection 0 Trip 0 Peaks 0

Mud: Wt. 10.2 Vis. 40 W.L. 11 ph 7.0 cc Oil 0 % Cl_2 45K Temp. 69 °F. in 70 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
2350'	2.38	1.46	9.1
2400'	2.33	1.43	9.0

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No		

HUSKY

U.S. GEOLOGICAL SURVEY OTPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-15-81 Time 0600

Present Depth 2585' Previous Depth 2405' Footage 24 Hrs. 180

Formation(s) PEBBLE SH Top 2201' (log)

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 2405-2505' Sampling Interval 10 ft. Sample Quality fair

Lag Time: 29 min. @ 2535 ft.

Interval	Description	Avg. Drill Rate min./ft.
2405-2585'	Sh: dk gy, fis, sl blky, carb, rd Qtz grns and grnls, occ Cht pbls, rr fos frag, thn Ls and siderite ptgs and nods 2550-2585', occ lt - m. gy strgs, scat glau pels and grns.	2.5 - 5.0

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
2525'	40	0	7	6	7000	700	0	0	0

Ditch Gas (Units): Background 4 Connection 0 Trip 10 @ 2430' Peaks a/a

Mud: Wt. 10.3 Vis 41 W.L. 11 ph 7.5 cc Oil 0 % Cl_2 26.8K Ca 48 K Temp. 65 °F. in 66 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
2400'	2.33	1.43	9.0
2450'	2.39	1.49	9.1
2500'	2.38	1.29	8.3
2550'	2.40	1.38	8.4

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
Geo-Chem (canned)			

RON BROCHMAN

HUSKY

U.S. GEOLOGICAL SURVEY (NPRC)

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-16-81 Time 0600

Present Depth 2636' Previous Depth 2585' Footage 24 Hrs. 51

Formation(s) WALAKPA SS Top 2607'

Present Activity Cutting core

LITHOLOGIC DESCRIPTION

Interval Reported 2585-2611' Sampling Interval 10 ft. Sample Quality fair

Log Time 25 min. = 2610 ft.

Interval	Description	Avg. Drill Rate min./ft.
2585-2607'	Sh: dk - v.dk gy, fis to sl blky, carb, pyr incls and repls, rd, sl fros Qtz grns and grnls, sid and Mrlst strgs and incls, dk Cht pbls, scat glau grns and pels, tr forams.	5.5
2607-2611'	Ss: v. lt brn to wh, pt S&P, f. grn, sa, calc, sl sil, occ glau grn, poor por, lt pale yel fluor, no cut (mineral fluor).	2.6
	Coring: Avg rate 17-19 min/ft. to 2623'. Slowed to 40 min/ft.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background 4 Connection 0 Trip 0 Peaks 12 units @ 2610'

Mud: Wt. 10.2 Vis 47 W.L. 9 ph 7.0 cc Oil 0 % Cl_2 Ca 55 K 35 K Temp. 71 °F. in 71 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
2600'	2.4	1.47	9.0

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist RON BROCKWAY

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HUSKY OIL NPR OPERATIONS, INC.
U.S. GEOLOGICAL SURVEY/ONPRA

HUSKY

CONVENTIONAL CORE DESCRIPTION FORM

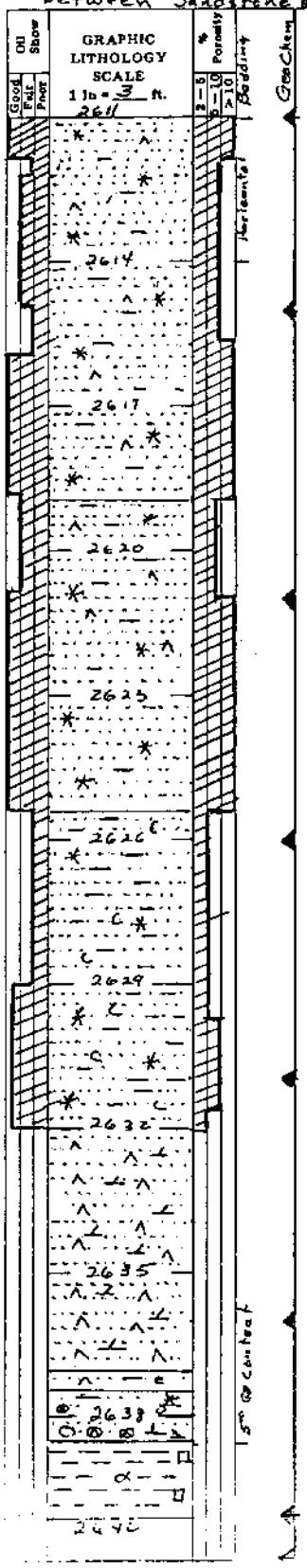
Well: U.S.G.S/Husky - #2 Walakpa Core No: 1

Date: 1/16/81 T.D. 2640

Interval Cored: 2611 - 2640 Formation: Walakpa Sd

Recovery: 100% 29' Core Diameter: 4" Inches

GENERALIZED CORE DESCRIPTION: Sandstone 2611 - 2639, Sh 2639 - 2640
@5° fractures thruout, Horizontal bedding in upper 1 ft, Contact between Sandstone & shale @ 2638.6 with 5° dip



DETAILED CORE DESCRIPTION

Prepared By R. Brockway

2611-2619
Ss, v lt gy, sap, f gr, SA-SR, w sort, qtz, scat glau gr, tr wh cly, sl sil, mod fri, fair to good por, bri lt bly-yel to pale lt yel flor, str dull yel, ~~#~~ inst lt yel to lt yel strong cut, sl pet odor

2619 - 2625.5
Sandstone, v lt gy, sap, f-vf gr, SA, qtz, acc glau gr, incr cly, sl sil, tr mica, sl alt sub gr carb, mod fri, poor to fair por, lt yel flor to bri yell flor, slow lt yel cut to inst lt yel cut, v sl pet odor.

incr glau

2625-2629
Ss, lt gy, f-vf gr, pt sap SA, mod sort, qtz, wh cly ints, tr mica, sl sil, bcm carb, sl bnd, poor por, sil to fair dull yel flor, slow lt yel crush cut, Bri yel-wh mnrl flor 2625.5-2626

2629 - 2632.4
Ss, v lt gy, sl sap, SA, mod sort, f-vf gr, slty, cly, scat glau, tr wh slt gr, sl carb, poor to fair por, lt yel flor, mod fast lt yel cut, sl odor

2632.4 - 2637
Ss, lt gy-tan, f gr, acc med gr, SA, qtz, dol, v hd, tt, rr glau, ~~lls~~

bcms vf-f gr

2637 - 2637.5
Ss, lt brn, vf gr, SA, slty, sil, cly, carb flk, sl bnd, hd tt
Ss, lt brn, f gr, SA-SR, v cly, glau, tt/mod gr, ggl str, lt & dk cst, pil, qtz gnl
2638 - 2638.6
Ss lt brn, vf gr, SA, sil & Cgl. lt brn, SR-SA, tri cst pbls & rd qtz gnl, calc sil cmt, hd, tt. No chips taken in order to retain cgl-Sh contact
2638.6 - 2640
Sh, dk brn-gy, fis, splintery, well ind, ~~[illegible]~~ pal & incl, rr fish frag

HUSKY

U. S. GEOLOGICAL SURVEY ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-17-81 Time 0600

Present Depth 2706' Previous Depth 2636' Footage 24 Hrs. 70

Formation(s) KINGAK SH Top 2639'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 2611-2700' Sampling Interval +10' Core ft. Sample Quality good

Lag Time: 33 min. @ 2700 ft. @ 75 strokes/min.

Interval	Description	Avg. Drill Rate min./ft.
2611-2640'	Core #1, Cut 29', Rec. 29' (100%), 85° frac through, 5° dip contact 2638.6'.	
	2611-2619 - Ss: v. lt gy, S&P, f. grn, sa-sr, w. srtd, Qtzs, scat glau, tr wh Cly, sl sil, mod fri, fr - g por, bri lt blue yel fluor to pale lt yel fluor strks, dull yel fluor instant lt yel streaming cut, sl pet odor.	18.75
	2619-2625.5 - Ss: v. lt gy, S&P, f. - v.f. grn, sa, Qtzs, occ glau grns, incr Cly, sl sil, tr mica, sl alt wh grns (Fld ?, Cht ?), mod fri, p. - fr por, lt yel - bri yel fluor, slow - instant lt yel cut, v. sl pet odor.	16.0
	2625.5-2629 - Ss: lt gy, f. - v.f. grn, ptly S&P, sa, mod srtd, Qtzs, wh Cly mtx, tr mica, sl sil, becoming carb, sl bnd, p. por, nil - fnt dull yel fluor, slow lt yel crushed cut, bri yel - wh min fluor 2625-2626'.	16.25
	2629-2632.4 - Ss: v. lt gy, sl S&P, sa, mod srtd, f. - v.f. grn, slty, Cly, scat glau, tr wh alt grn, sl sl carb, p. - fr por, lt yel fluor, m - fast lt yel cut, sl odor.	18.3
	2632.4-2637 - Ss: lt gy tn, f. grn, occ m grn, sa, qtzc,	35.2

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
2670	28	4	4	9	Tr	0	0	0	0

Ditch Gas (Units): Background 10-20 Connection 0 Trip 20 @ 2640' Peaks a/a

Mud: Wt. 10.2 Vis 47 W.L. 6.4 ph 7.0 cc Oil 0 % Cl 46K Ca 71.7K Temp. 62 °F. in 66 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
2650'	2.34	1.7	10.1
2700'	NA	1.55	9.2

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)	2330-2690'	1 Bx, Bx 6	1
Unwashed Ditch (USGS)	2330-2690'	1 Bx, Bx 5	1
GeoChem (canned)	2611-2640', core: 2380-2640'	2 Bxs Bxs 7, 8	1
Cores	No. 1, 2611-2640'	10 Bxs	-

Geologist: _____

8/78

HUSKY

HUSKY OIL NPR OPERATIONS, INC.
U. S. GEOLOGICAL SURVEY CNPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-17-81 Time

Present Depth Previous Depth Footage 24 Hrs.

Formation(s) Top

Present Activity:

LITHOLOGIC DESCRIPTION

Interval Reported Sampling Interval ft. Sample Quality
Log Time: min. @ ft.

Interval	Description	Avg. Drill Rate min./ft.
	dol, v. hd, tt, rr glau, no show.	
	2637-2638' - Ss: lt brn, f. grn, sa-sr, v. clyey, sil, glau, tt, w/m grn, cgl strks, lt and dk Cht pbls, Qtz grnls.	23.0
	2638-2638.6 - Ss: lt brn, v.f. grn, sid, tt and cgl, lt brn, sr-sa, trip Cht pbls and rd Qtz grnls, calc, sid cmt, hd, tt.	37.0
	2638.6-2640 - Sh: dk brn gy, fis, splty, w. ind, f. pyr, pel and incls, rr fish frags.	37.0
2640-2700'	Sh: dk brn gy - dk brn, fis, sl blky, sl carb, rr pyr incls, rr shell frag.	3.0 - 6.0

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background Connection Trip Peaks

Mud: Wt. Vis W.L. ph cc Oil % Cl_2 Temp. °F. in °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist RON BROCKWAY

HUSKY

U.S. GEOLOGICAL SURVEY, ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-18-81 Time 0600

Present Depth 2940' Previous Depth 2706' Footage 24 Hrs. 234

Formation(s) KINGAK SH Top 2639'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 2700-2930' Sampling Interval 10 ft. Sample Quality fair - good
Lag Time: 31 min. @ 2900 ft.

Interval	Description	Avg. Drill Rate min./ft.
2700-2835'	Sh: dk brn - brn, occ dk gy strg, fis to blky, pt sil, pyr incls, carb, scat foram and fos frags, thn Ls strgs 2733-2736', 2782-2785', intbdd brn Sltst and occ Ss.	3.0 - 12.5 Avg. 5.0
2835-2893'	Sltst: brn - lt brn, shly, pt calc, sl carb, tr mica, glau. pels com, intbdd Sh a/a.	5.0
2893-2930'	Sh: brn - dk brn, fis to sl blky, pt sil, occ pyr incls, glau pels, sid nods and pels, rr fos frags.	7.0

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
2755'	20	0	4	10	6000	500	0	0	0
2805'	16	0	10	11	3100	200	0	0	0

Ditch Gas (Units): Background 12 Connection 18 @ 2859' Trip 16 @ 2703' Peaks a/a

Mud: Wt. 10.2 Vis 40 W.L. 7.5 ph 7.5 cc Oil 0 % Cl_2 Ca 63.9K 41K Temp. 69 °F. in 72 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
2700'	2.38	1.55	8.0
2750'	2.36	1.57	8.0
2800'	2.34	1.62	8.0
2850'	2.40	1.59	8.0
2900'	2.41	1.46	8.5

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist RON BROOKWAY

HUSKY

XXXXXXXXXXXXXXXXXXXXXXXXXX.
U. S. GEOLOGICAL SURVEY, ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-19-81 Time 0600

Present Depth 2984' Previous Depth 2940' Footage 24 Hrs. 44

Formation(s) KINGAK SH Top 2639'

Present Activity: Reaming down core bbl.

LITHOLOGIC DESCRIPTION

Interval Reported 2930-2984' Sampling Interval 10 ft. Sample Quality fair
Lag Time: 18 min. @ 2984' ft.

Interval	Description	Avg. Drill Rate min./ft.
2930-2977'	Sltst: brn, shly, sl mica, occ sl carb, glau pels, occ sid, w/intbdd Sh dk brn - brn, occ fos frags, thn Ss strg at base.	4.0 - 2.0
2977-2980'	Sid strg, lt brn, slty, sdy.	1.6
2980-2984'	Ss: v. lt gy, v.f. grn, sa, v. slty, Cly, glau, v. sl calc in pt, tt, no show.	1.3
	Calculated: 2960-2985' - pore press 10.1 may be related to changes in drilling program; hydraulics, pump press (up 200%), different type bit, penetration rate (up 300%)	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
2980'	27	0	12	-	5000	200	Tr	0	0

Ditch Gas (Units): Background 12 Connection 0 Trip 0 Peaks a/a

Mud: Wt. 10.2 Vis 48 W.L. 8.4 ph 7.0 cc Oil 0 % Cl_2 39K Ca 69.8K Temp. 69 °F. in 72 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
2950'	2.41	1.50	8.3

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist: RON BROCKWAY

8/7

HUSKY

TETRA TECH
XXXXXXXXXXXXXXXXXXXXXXXXXXXX
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-20-81 Time 0600

Present Depth 2984' Previous Depth 2984' Footage 24 Hrs. 0

Formation(s) KINGAK SH Top 2639'

Present Activity: Reaming down core barrel.

LITHOLOGIC DESCRIPTION

Interval Reported - Sampling Interval - ft. Sample Quality -
Lag Time: - min. @ - ft.

Interval	Description	Avg. Drill Rate min./ft.
	Repairing transfer case on drawworks	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 10.2 Vis 42 W.L. 6.2 ph 7.0 cc Oil 0 % Cl_2 Ca 68.6K 44K Temp. 69 °F. in 72 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist RON BROCKWAY

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+2

BioStratigraphics
Consulting Micropaleontology

7202 Clairemont Mesa Boulevard
San Diego, CA 92111
Tel. (714) 560-4580

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ONPRA
MENLO PARK

20 January 1981

TO: SAM HEWITT/HARRY HAYWOOD
HUSKY OIL ONPRA

TETRA TECH/USGS

Walakpa #2

Preliminary Biostratigraphic Report #1

Foraminifera ---

130 - 1210': Early Cretaceous (Aptian to Albian) undifferentiated.

1210 - 1870': Early Cretaceous (Aptian to E. Albian) F-11.

NOTE: Based on 90' sample examination.

Palynology ---

130 - 1840': Early Cretaceous (Aptian to Albian). Probably in Aptian to E. Albian (P-M18). Marine to very marginal marine deposition.

CC: U.S.G.S. (Menlo Park) ✓
Tetra Tech (Houston)

BioStratigraphics
Consulting Micropaleontology

7202 Clairemont Mesa Boulevard
San Diego, CA 92111
Tel. (714) 560-4580

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ONPRA
MENLO PARK

21 January 1981

TO: SAM HEWITT/HARRY HAYWOOD
HUSKY OIL ONPRA

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Walakpa #2

Preliminary Biostratigraphic Report #2

Foraminifera ---

1060 - 2230': Early Cretaceous (Aptian to E. Albian) F-11.

2230 - 2560': Early Cretaceous (Hauterivian to Barremian) F-12 to F-13.

2560 - 2680': Early Cretaceous (Probable Berriasian to Valaginian) F-13 to F-14.

NOTE: Based on 90' sample examination.

Palynology ---

1840 - 2200': Early Cretaceous. Aptian to E. Albian (P-M18).

2200 - 2470': Early Cretaceous. Possible Neocomian (P-M18a).

2470 - 2650': Early Cretaceous. Neocomian (P-M19).

CC: U.S.G.S. (Menlo Park)✓
Tetra Tech (Houston)

HUSKY

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-21-81 Time 0600

Present Depth 3021 Previous Depth 2984' Footage 24 Hrs. 37

Formation(s) KINGAK SH Top 2639'

Present Activity: Rigging up bottom hole assembly.

LITHOLOGIC DESCRIPTION

Interval Reported 2984-3021 Sampling Interval Core ft. Sample Quality Good

Lag Time: 19 min. @ 3021 ft.

Interval	Description	Avg. Drill Rate min./ft.
2984-3021	Core #2 Cut 37' Rec 37' (100%)	
	2984-3021 - Sltst, gy brn - dk brn, shy, sh ptg & lam, ptly mica, occ pyr, pyr repl plant remains, sid incl. & nod, thn, intbd sh, dk brn, micromica, w/s, v f grn ss incl bds 2-3', sid strg & nod @ 2988-2989, 3001.5-3003, 3012-3015, lt gy, v f grn ss & sltst, incl (within sltst) w/occ cht pbls below 3003'.	15.8 Average
	75% frac @ 3002-3003	
	Need: "DO NOT FREEZE" Labels	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
3004	30	1	20	30	4000	Tr	0	0	0
3015	28	2	20	20	4000	Tr	0	0	0

Ditch Gas (Units): Background 28 Connection 0 Trip 20 @ 2984 Peaks a/a

Mud: Wt. 10.2 Vis 43 W.L. 6.6 ph 7.0 cc Oil 0 % Cl_2 44K Temp. 83 °F. in 84 °F. out

Data Unit: None

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	2330-2950	2 boxes, Box #4	1 & 2
Unwashed Ditch (Paleo)	2690-3020	1 box, Box #7	1
Unwashed Ditch (USGS)	2690-3010	1 box, Box #6	1
GeoChem (canned)	2984-3021 Core 2640-3000	2 boxes, Boxes 8 & 9	1
Cores	No.2 2984-3021	13 boxes	-

Fm. Brockway

TETRA TECH, INC.
U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

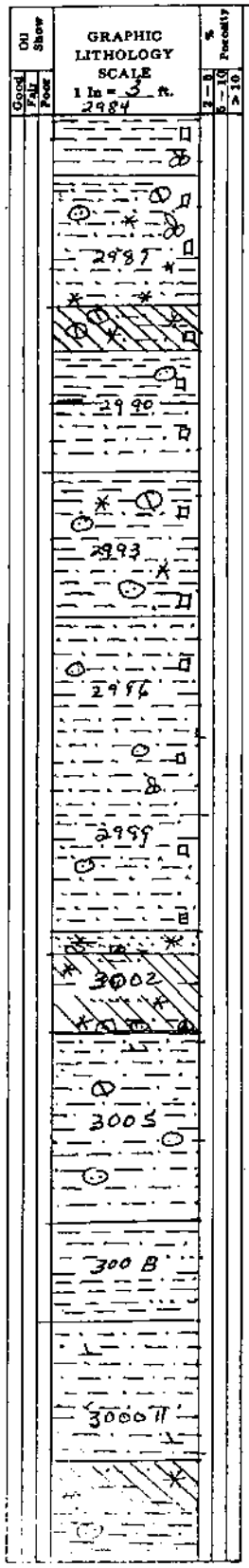
Well: U.S.G.S/Husky - #2 Walakpa Core No: 2

Date: 1-21/81 T.D. 3031

Interval Cored: 2984-3031 Formation: Kingak

Recovery: 37' 100% Core Diameter: 4 Inches

GENERALIZED CORE DESCRIPTION: sltst with sh intbd & sid strg
Unable to pick good bding planes
75° frac @ 3002-3003



DETAILED CORE DESCRIPTION
Prepared By R. Brockway

2984-2985.3 Sh, dk brn, fis, sl blky, scat pyr pel, occ fos frag, sl mica

2985.3-2988
Sltst, gy-brn, shy, mica, sl sdy, occ sid incl & ss incl, glau, glaucom @ 2988

2988-2989 - Sid, brn, hd, glau, pyr, w/ sltst & Sh, dk brn, sid, also occurs as nod

2989-2990 - Sh, brn, fis, mic-mica, pt flk, small ss incl & nod, 1-2 mm, tr pyr repl pl rmn,

2990-2991.5 sltst, dk brn, shy ptg & lam, mica, occ pyr repl pl rmn

2991.5-2994.5 Sh, dk brn, fis, slty in part, sltst lam & ptg, mica, occ sdy str, sid incl, occ pyr repl pl rmn, 2-3 mm vf gr ss incl, occ w/ glac

2994.5-3001
Sltst, dk brn, v shy, mic-mica, sh lam, occ pyr repl pl rmn, occ th ss pt & small lenses, v lt gy, lt brn, rr glau,

Frag xl fos frag

3001-3001.5 Ss, brn, v fgr, SA-SP, v slty & shy, pt sid, glau tt
3001.5-3003
Sid, lt brn, slty, sdy, v hd, w/ hairline frac/calc fl, & small incl glau pel, abnt, pt alt, 75° frac

3007-3009
Sh, dk brn, slty, sdy, sl sid, mod fir in

3009-3012
Sltst, gy-brn, shy, sl sid, occ mica

3012-3013
Sid [illegible], sdy, shy, glau

3013-3[illegible]
[illegible] occ sid, sh ptg, ss & sltst incl, occ [illegible]

TETRA TECH, INC.
U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

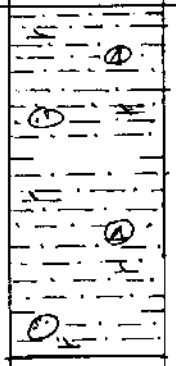
Well: U.S.G.S. - #2 Walakpa Core No: Core #2 Cont

Date: T.D.

Interval Cored: Formation:

Recovery: Core Diameter: Inches

GENERALIZED CORE DESCRIPTION:

Oil Show (Good / Fair / Poor)	GRAPHIC LITHOLOGY SCALE 1 In = ___ ft.	% Porosity (2–5 / 5–10 / >10)
		

DETAILED CORE DESCRIPTION
Prepared By

silt-st @ last described

HUSKY

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-22-81 Time 0600

Present Depth 3123' Previous Depth 3021' Footage 24 Hrs. 102

Formation(s) KINGAK SH Top 2639'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 3021-3120 Sampling Interval 10 ft. Sample Quality Fair

Lag Time: 26 min. @ 3123 ft.

Interval	Description	Avg. Drill Rate min./ft.
3021-3035	Sh, brn-gy brn, mica, ptly carb, sid & cly nod, glau.	3.5
3035-3090	SS, v lt gy, v f grn, sa, Qtzs, v slty, sltst in part, cly, ptly sil, tt, no show. fr glau, occ sid, strg. tan, w/intbd sltst, v lt gy - tr brn, ptly sdy, cly, tt & sh a/a	9.0
3090-3120	Intbd sltst a/a, ss a/a, & sh, d-lt gy, fis, tr glau. & sid, lt brn - tan, hd, slty, sdy, w/occ. calc incl., sid occures as thn bds & nod. SS 30% sltst 30%, sh 30% sid 10%	10.0

GAS OCCURRENCE/SHOWS

None

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background 9 Connection 0 Trip 28 @ 2021 Peaks 0

Mud: Wt. 10.2 Vis 40 W.L. 8 ph 7.0 cc Oil 0 % Cl_2 Ca 57.7K 37K Temp. 80 °F. in 84 °F. out

Data Unit: None

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist RON BROCKWAY

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-23-81 Time 0600

Present Depth 3275' Previous Depth 3123' Footage 24 Hrs. 152

Formation(s) KINGAK Top 2639'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 3120-3230 Sampling Interval 10 ft. Sample Quality Fair
Lag Time: 27 min. @ 3250 ft.

Interval	Description	Avg. Drill Rate min./ft.
3120-3214	Sltst, lt gy; sh, lt gy - lt brn; ss v lt gy, occ sid nod & strg	4.0-21.0
3214-3230	Sh, lt gy - brn, fis, micromica, slty, pyr incl. sid str.	4.0
	NEED: Core Boxes	
	20 remaining	
	(1 60' Core)	
	Tape (sev. rolls filimait tape)	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
3180	10	5	6	6		- NOT CALCULATED-			

Ditch Gas (Units): Background 7 Connection 0 Trip 20 @ 3136 Peaks a/a

Mud: Wt. 10.2 Vis 43 W.L. 8 ph 7.0 cc Oil 0 % Cl_2 41K Ca. 63,960 Temp. 86 °F. in 85 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3100	unavailable	1.59	8.2
3150	unavailable	1.62	8.0
3200	unavailable	1.65	8.0

Dispatched Samples: None

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Core	No.		

TETRA TECH, INC.

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAPKA #2 Date 1/24/81 Time 0600

Present Depth 3503' Previous Depth 3275' Footage 24 Hrs. 228

Formation(s) KINGAK Top 2639'

Present Activity: Circulating up samples.

LITHOLOGIC DESCRIPTION

Interval Reported 3220-3500 Sampling Interval 10 ft. Sample Quality Fair
Lag Time: 32 min. @ 3500 ft.

Interval	Description	Avg. Drill Rate min./ft.
3230-3370	Sh, lt gy - gy & brn, fis, micromica, ptly flky, intbd, intlam sltst, lt gy, occ ss	4.5
3370-3500	Sltst lt gy, clyey, mica, sl sdy, increasing ss @ 3470'. No increase in drilling, v sl increase in gas.	6.0

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
3305-3325	12	5	5	5	1800	400	100	100	0
3360	10	2	5	5	1400	100	0	0	0
3370	20	8	10	14	3000	200	tr	0	0
3410	18	6	14	16	1700	100	0	0	0
3475	20	2	16	16	3000	0	0	0	0

Ditch Gas (Units): Background 15 Connection 0 Trip 0 Peaks a/a

Mud: Wt. 10.3 Vis 45 W.L. 8.4 ph 7.0 cc Oil 0 % Cl_2 Ca 70.2K 45K Temp. - °F. in - °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3250	unavailable	1.46	8.6
3300	unavailable	1.43	8.9
3350	unavailable	1.48	8.6
3400	unavailable	1.55	8.3
3450	2.38	1.55	8.3
3500	No up -	1.61	8.2

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	-	-	-
Unwashed Ditch (Paleo)	3030-3360	1 box, box #8	1
Unwashed Ditch (USGS)	3010-3360	1 box, box #7	1
GeoChem (canned)	3000-3360	1 box, box #10	1
Cores	No.		

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1/25/81 Time 0600

Present Depth 3685' Previous Depth 3503' Footage 24 Hrs. 182

Formation(s) KINGAK SH Top 2639'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 3500-3685 Sampling Interval 10 ft. Sample Quality Fair-Good
Lag Time: 34 min. @ 3650 ft.

Interval	Description	Avg. Drill Rate min./ft.
3500-3555	Sltst, lt gy, arg, mica, tr glau., sh, intbd, lt gy - brn, fis to sl blky	3.9
3555-3685	Sltst, lt gy, sdy, occ glau. w/ intbd thn, f grn ss, & lt gy sh	4.0
	NOTE: 0700 - Circulated up ss, f grn, slty, glau. @ 3689 - Coming out to pick up core barrel. Possible sag river.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
3560-3600	10	5	7	6	2000	5	0	0	0

Ditch Gas (Units): Background 8 Connection - Trip 42 Peaks 10 @ 3570-3575

Mud: Wt. 10.3 Vis 48 W.L. 6 ph 7.0 cc Oil 0 % Cl_2 38K Ca 59280 Temp. 86 °F. in 85 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3550	2.45	1.59	8.3
3600	2.41	1.57	8.3
3650	2.4	1.47	8.9

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

E. [illegible]

TETRA TECH, INC.
U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

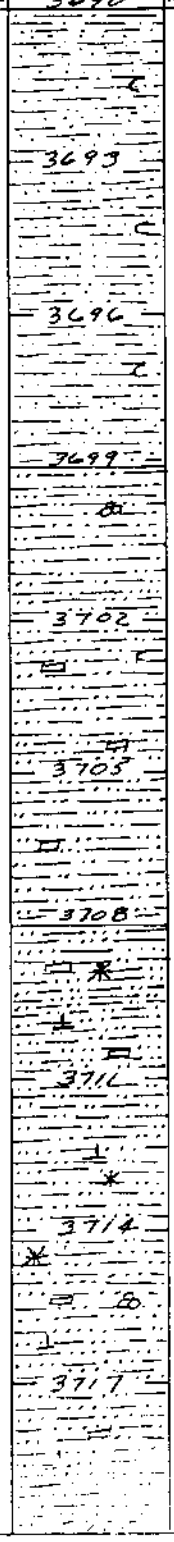
Well: USGS/Husky #2 Walakpa Core No: 3

Date: 1/26/81 T.D. 3749

Interval Cored: 3690 - 3749 Formation: Kingak

Recovery: 59' 100% Core Diameter: 4" Inches

GENERALIZED CORE DESCRIPTION: Sltst with ss strks, lam & blebs, cly & calc matrix



Oil Show (Good / Fair / Poor)	GRAPHIC LITHOLOGY SCALE 1 In = 3 ft.	% Porosity (2-5 / 5-10 / >10)	DETAILED CORE DESCRIPTION Prepared By W.C. Fackler
	3690		3690-3699 Sltst, med gy-brn gy, arg, vf-f grnd sd sub ang-ang, mica, scat carb frags.
	3693		
	3696		
	3699		3699-3708 Sltst med-lt gy, arg intbdd w/ ss strks, lt gy, sub-ang, vf gr, mic, cly matrix, scat fos frags, pyr, Fe-st concs.
	3702		
	3705		
	3708		3708-3723 Sltst, med gy, arg & calc cmt, w/ blebs, lenses & strks ss, lt-med gy, vf gr, subang, arg & calc cmt, mic, incr Fe-st conc, pyr strks ? worm trails, fos frags, casts & molds, scat glauc.
	3711		
	3714		
	3717		

TETRA TECH, INC.
U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

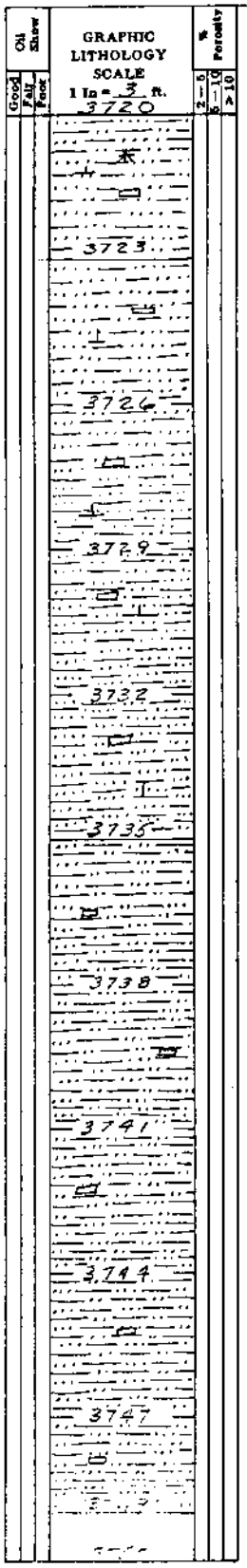
Well: U.S.G.S./Husky #2 Walakpa Core No: 3

Date: 1/26/81 T.D. 3749

Interval Cored: 3690 - 3749 Formation: Kingak

Recovery: 59' 100% Core Diameter: 4" Inches

GENERALIZED CORE DESCRIPTION: Slt st with ss strks, lam & blebs, cly & calc matrix



DETAILED CORE DESCRIPTION
Prepared By W.C. Fackler

3723-3735 Slt st, gy-brngy, mica, arg w/ ss lens & strks, gy-lt gy, v f gr, sub-ang, cly & calc cmt, mica, slty lam.

3735-3749 Slt st, med gy, arg, sdy, pyr, abt sh lam.

TETRA TECH, INC.
U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

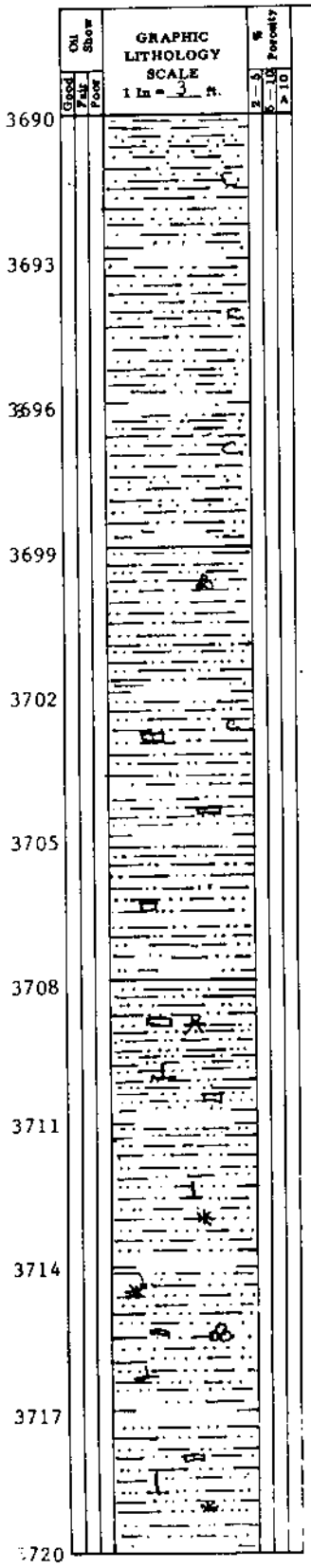
Well: U.S.G.S./Husky Walakpa No. 2 Core No: 3

Date: 1/26/81 T.D. 3749

Interval Cored: 3690'-3749' Formation: Kingak

Recovery: 59' 100% Core Diameter: 4" Inches

GENERALIZED CORE DESCRIPTION: Sltst with ss strks, lam & blebs, cly & calc matrix



DETAILED CORE DESCRIPTION

Prepared By W.C. Fackler

3690'-3699' Sltst, med gy-brn gy, arg, vr-f grnl sd sub ang-ang, mica, scat carb frags

3699'-3708' Sltst med-lt gy, arg intbdd w/ ss strks lt gy sub-ang, vf gr, mic, clg matrix, scat fos frags, pyr, Fe-st concs

3708'-3723' Sltst, med gy, arg & calc cmt, w/ blebs, lenses & strks, ss, lt-med gy, vf gr, sub ang, arg & calc cmt, mic, incr Fe-st conc, pyr strks? worm trails, fos frags, casts & molds, scat glau.

RECEIVED
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MENLO PARK

TETRA TECH, INC.
U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

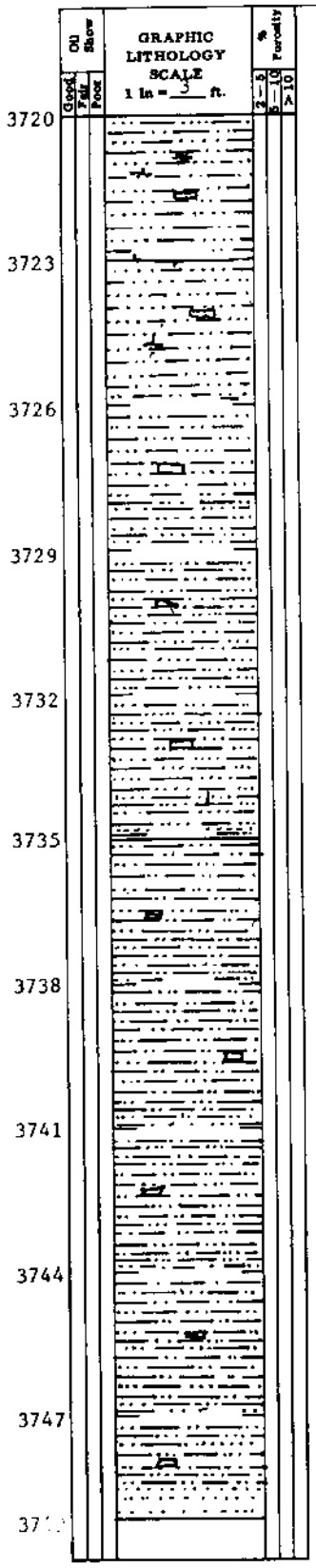
Well: U.S.G.S./ Husky Walakpa No. 2 Core No: 3

Date: 1/26/81 T.D. 3749'

Interval Cored: 3690'-3749' Formation: Kingak

Recovery: 59' 100% Core Diameter: 4 Inches

GENERALIZED CORE DESCRIPTION: Sltst with ss strks, lam & blebs, cly & calc matrix



DETAILED CORE DESCRIPTION
Prepared By W.C. Fackler

3723'-3735' Sltst, gy-brn gy, mica arg, w/ ss lens & strks, gy-lt gy, vf gr, sub-ang, clay & calc cmt, mica shly lam

3735'-3749' Sltst, med gy, arg, sdy, pyr, abt sh lam

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-26-81 Time 0600

Present Depth 3749' Previous Depth 3685' Footage 24 Hrs. 64

Formation(s) KINGAK ? Top 2639'

Present Activity: Circulating before trip to pull core #3.

LITHOLOGIC DESCRIPTION

Interval Reported 3685-3749 Sampling Interval 10 ft. Sample Quality Poor
Lag Time: 27 min. @ 3745 ft.

Interval	Description	Avg. Drill Rate min./ft.
3685-3749	Ss, wh - lt gy, v f - f grn. SA, SR, slty, glauc, fe st, conc. NSOCF, intbd, w/ sh lt gy - gy, slty, sl mic & sltst, gy, brn, gy grn, arg.	4.3 - 3690' 11.5 Coring
	NEED: Address Labels for Geology Manager Husky Oil NPR, Inc. Anchorage, AK	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
3685-3749	steady	- 8 units	8	8	-	-	-	-	-

Ditch Gas (Units): Background 8 Connection - Trip 24 Peaks -

Mud: Wt. 10.2 Vis 4.0 W.L. 8.2 ph 7.0 cc Oil - % Cl_2 39,000 Temp. 8.9 °F. in 9.1 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3650	2.4	1.47	8.9
3690	2.4	1.5	8.7

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

BioStratigraphics
Consulting Micropaleontology

7202 Clairemont Mesa Boulevard
San Diego, CA 92111
Tel. (714) 560-4580

27 January 1981

TO: SAM HEWITT/HARRY HAYWOOD
HUSKY OIL ONPRA

TETRA TECH/USGS

Walakpa #2

Preliminary Biostratigraphic Report #3

Foraminifera ---

2230 - 2530': Early Cretaceous (Hauterivian to Barremian) F-12 to F-13.

2530 - 2650': Early Cretaceous (Probable Berriasian to Valanginian) F-13 to F-14.

2650 - 3010': Probable Late Jurassic (Oxfordian to Kimmeridgian) F-16.

Note: 3010' last complete sample received to date.

Palynology ---

2650 - 3010': Late Jurassic (P-M22). Change in organic character at 2650'. Increase woody-fusinitic. No evidence of younger Late Jurassic in ditch samples.

CC: U.S.G.S. (Menlo Park) ✓
Tetra Tech (Houston)

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MENLO PARK

TETRA TECH, INC.

U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-27-81 Time 0600

Present Depth 3875' Previous Depth 3749' Footage 24 Hrs. 126

Formation(s) KINGAK SH Top 2639'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 3690-3875 Sampling Interval 10 ft. Sample Quality Fair
Lag Time: 42 min. @ 3850 ft. 8:55 PM

Interval	Description	Avg. Drill Rate min./ft.
	(CORE #3 REPORT LATE DUE TO COMMUNICATION FAILURE)	
3690-3749	Core #3 cut 59' Rec. 59' (100%) Sltst, m gy, - brn gy argl, matrix, intbd w/ ss str, lt gy, SA, v f grn, some cly, cal. cmt, scat fos. frag, pyr & fe-st conc.	
	3690-3699 - Sltst, m gy - brn gy, argl. matrix, v f - f grn, Qtz ss lam. SA-A Mica	
	3699-3708 - Sltst, m - lt gy, argl. intbd w/ ss str, lt gy, SA, v f grn. mica, clyey, matrix, scat fos frag, pyr, fe-st conc.	
	3708-3722 Sltst, m-gy, argl. cal. cmt, w/lenses & str SS lt gy, v f grn. SA, argl. & cal cmt, mica, increasing fe-st conc. pyr str (?) worm trails. Fos frag cast & molds, tr glau.	
	3722-3735 - Sltst, gy - brn gy, mica, argl, w/ ss lenses, & str. gy - lt gy, v f grn, SA, cly & cal cmt, mica & shy lam.	
	3735-3749 - Sltst, m gy - argl, sdy, pyr, abunt sh lam.	
3750-3845	Sltst, lt gy - gn gy, argl, w/ intlam ss, wh - lt gy, v. f grn, SA, clyey cmt. fe-st conc. some glau & sh str.	7.4
3845-3875	Sltst, lt gy - tan, sdy str, v f grn, SA, cal & clyey, cmt. scat wh cht grn. tt NSOCF.	5.0

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
3750-3850	8-10	2-4	-	-	2000	-	-	-	-
3850-3860	22	2-0	10	15	4400	-	-	-	-

Ditch Gas (Units): Background 10 Connection 0 Trip 48 Peaks 22 @ 3855

Mud: Wt. 10.2 Vis 41 W.L. 8.8 ph 7.0 cc Oil 0 % Cl 40K Ca 62,400 Temp. 85 °F. in 87 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3750	-	1.33 (from core)	9.8
3800	2.34	1.73	8.3
3850	2.4	1.73	8.3

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	2950-3570	2 boxes	1 & 2
Unwashed Ditch (Paleo)	3360-3750	1 box	1
Unwashed Ditch (USGS)	3360-3750	1 box	1
GeoChem (canned)	3360-3745	[illegible] boxes	[illegible]
Cores	No. 3 3690-3750	[illegible] boxes	[illegible]

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1-28-81 Time 0600

Present Depth 4004' Previous Depth 3875' Footage 24 Hrs. 129

Formation(s) Permo-Triassic Red Sh. Top 3955'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 3875-4000 Sampling Interval 10 ft. Sample Quality Fair-Good
Lag Time: 39.5 min. @ 4000 ft. 95 SPM:

Interval	Description	Avg. Drill Rate min./ft.
3875-3895	Sltst, lt gy - gn gy, sdy, ss, lt gy v f grn, SA, cly cmt, slty, scat glau. sh gy - m gy, slty, fis - blky	5.3
3895-3955	Ss lt gy - tan, v f grn, slty, SA, calc & clyey, cmt, glau. w/ sltst gy-tan sdy, calc. sh, m gy-gy, slty	9.1
3955-3960	Sh, rd-brn, soft, slty (circulated sample @ 3960; trip 3960)	3.6
3960-4000	Ss, lt gy-tan, v f grn, slty, SA-SR, calc, cmt, abunt d gr glau. poss. fos. frag. & fe-st conc.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
3875-3960	12	0	-	-	2400	-	-	-	-
3960-4000	8	0	-	-	1000	-	-	-	-

Ditch Gas (Units): Background 8 Connection 0 Trip 22 Peaks -

Mud: Wt. 10.3 Vis 49 W.L. 9.8 ph 7.0 cc Oil 0 % Cl_2 41K Temp. 83 °F. in 85 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3900	2.42	1.67	9.0
3950	2.41	1.78	8.3
4000	2.38	1.74	8.4

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist BILL FACKLER

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29 January 1981

TO: SAM HEWITT/HARRY HAYWOOD
HUSKY OIL ONPRA

TETRA TECH/USGS

Walakpa #2

Preliminary Biostratigraphic Report #4

Foraminifera ---

2650 - 3010': Late Jurassic (Oxfordian to Kimmeridgian) F-16.

3010 - 3220': Age Indeterminate. Lgt. gray v. f. gr. sandst. or siltst. No fauna older than Oxfordian found, but all fauna could be sloughed from overlying shale.

3220 - 3360': Probable Early to Middle Jurassic (F-17 to F-18).

NOTE: Based on 90' sample examination.

Palynology ---

3010 - 3280': Late Jurassic (P-M22). No evidence of older in ditch samples. Much caving Neocomian dinocysts and reworked Paleozoic spores.

CC: U.S.G.S. (Menlo Park)✓
Tetra Tech (Houston)

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1/29/81 Time 0600

Present Depth 4067' Previous Depth 4000' Footage 24 Hrs. 67

Formation(s) PERMO-TRIASSIC Top 3955' (?)

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 4000-4050 Sampling Interval 10 ft. Sample Quality Fair-Good
Lag Time: 38.75 min. @ 4050 ft. 95 SPM

Interval	Description	Avg. Drill Rate min./ft.
4000-4050	Ss, lt gy-m gy-tan, v f grn, slty, calc cmt, SA - SR., w/ fos. frag. ls, tan-brn, sdy, slty, abund fos. frag.	11.9

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
4000-4050	8	2	-	-	1600	-	-	-	-

Ditch Gas (Units): Background 8 Connection - Trip 20 Peaks -

Mud: Wt. 10.3 Vis 51 W.L. 10.2 ph 7.0 cc Oil 0 % Cl_2 Ca 62.4K 40K Temp. 73 °F. in 78 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
4050	2.40	1.84	8.4

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

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DAILY GEOLOGICAL REPORT

ELL WALAKPA #2 Date 1/30/81 Time 0600

esent Depth 4197' Previous Depth 4067' Footage 24 Hrs. 130

rmation(s) Permo Triassic Red SH Top 3955' (?)

esent Activity: Tripping

THOLOGIC DESCRIPTION

terval Reported 4065-4195 Sampling Interval 10 ft. Sample Quality Fair-Good
g Time: 41.0 min. @ 4150 ft. 95 SPM

Interval	Description	Avg. Drill Rate min./ft.
4067-4095	Intbd ss, lt gy - v f grn, SA, slty, calc, w/ sltst gy-brn gy, calc. argl. & sh, m-gy - slty, blky, thn ls bds, tan-brn, argl. slty, sdy, fos frag.	11.8
4095-4175	Sltst, gy, argl. sl sdy, sh, gy-blk, micro mica, ptly soft, slty; @ 4157-4161 circulate drill break. sh, gy-blk, slty, soft, 3.7 MPF	6.8
4175-4195	Ss, gy, v f grn, calc. slty, SA, thn bds ls, brn, argl. w/ d gy-blk, pel.	12.4

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
4065-4195	8	2	-	-	1600	-	-	-	-

itch Gas (Units): Background 8 Connection - Trip - Peaks -

Mud: Wt. 10.3 Vis 52 W.L. 9.8 ph 7.0 cc Oil - % Cl_2 Ca 63,960 41K Temp. 80 °F. in 85 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
4100	2.42	1.81	8.6
4150	2.40	1.70	9.2

ispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)	3750-4170	1 box - #9	1
Unwashed Ditch (USGS)	3750-4170	1 box - #9	1
GeoChem. (canned)	3720-4050	1 box - #13	1
Cores	No		

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DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 1/31/81 Time 0600

Present Depth 4242' Previous Depth 4197' Footage 24 Hrs. 45

Formation(s) PERMO TRIASSIC Top 3955 (?)

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 4205-4240 Sampling Interval 10 ft. Sample Quality Fair-Good
Lag Time: 42.2 min. @ 4200 ft. 95 SPM

Interval	Description	Avg. Drill Rate min./ft.
4205-4215	Sh, gy-brn, slty, intbd, w/ sltst brn, argl. calc.	8.3
4215-4225	Sltst, brn, dns, argl, calc, cmt, scat pyr	18.5
4225-4230	Sltst brn, argl, calc. cmt	16.2

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
4200-4215	6	2	-	-	1200	-	-	-	-
4215-4235	3	0	-	-	600	-	-	-	-
4235-4240	9	-	-	-	1800	-	-	-	-

Ditch Gas (Units): Background 10 Connection - Trip 26 Peaks -

Mud: Wt. 10.3 Vis 47 W.L. 11.2 ph 7.0 cc Oil 0 % Cl_2 Ca 59,300 38K Temp. 70 °F. in 76 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
4200	2.41	1.88	8.5

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	3570-4160	2 boxes - #6 on ea.	1, 2
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist BILL PACKLER

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DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2/1/81 Time 0600

Present Depth 4291' Previous Depth 4242' Footage 24 Hrs. 49

Formation(s) PERMO TRIASSIC Top 3955 (?)

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 4240-4290 Sampling Interval 10 ft. Sample Quality Fair-Good
Lag Time: 42.7 min. @ 4250 ft. 95 SPM

Interval	Description	Avg. Drill Rate min./ft.
4240-4255	Sltst, gy-brn, calc, sdy, w/ intbd ls, gy-brn, sdy, argl, dns, hd; sh, gy-brn, slty.	26.0
4255-4270	Sltst, gy-brn, calc, sdy, argl, becoming ls, gy-brn, f xl, sdy, slty, argl, intbd sh, gy-brn slty, fis-blky	16.0
4270-4285	Ls, wh-tan, c-xl, fos, scat yel frag. sdy, pbl of Qtz & wh cht, pyr nod, occ blk min grn, pos argl & bryozooan frag.	11.8

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
4240-4285	4	0	0	0	800	-	-	-	-

Ditch Gas (Units): Background 4 Connection - Trip 20 Peaks -

Mud: Wt. 10.3 Vis 56 W.L. 10.3 ph 7.0 cc Oil - % Cl_2 38K Ca 58,280 Temp. - °F. in - °F. out 76°F Flow Line

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
4250	2.38	1.82	8.8

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

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DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2/2/81 Time 0600

Present Depth 4360' Previous Depth 4291' Footage 24 Hrs. 69

Formation(s) ARGILITE Top 4300'

Present Activity: Trip to run logs.

LITHOLOGIC DESCRIPTION

Interval Reported 4285-4360 Sampling Interval 10 ft. Sample Quality Fair-Good
Lag Time: 43.2 min. @ 4300 ft. 95 SPM

Interval	Description	Avg. Drill Rate min./ft.
4285-4300	Ls, wh-tan, f-c xln, fos, scat yel frag, sdy, grnl & peb Qtz, wh cht, d gy-blk, min or rk grns, pyr nod, bryozooans.	14.8
4300- 4360	Argl, charcoal gy-blk, mas hky frac, dns, scat pyr nod & frac fillings	14.8

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5
4290-4310	8	-	-	-	1600	-	-	-	-
4325-4330	84	36	48	38	16,800	-	-	-	-
4330-4360	50	82	38	41	10,000	tr	-	-	-

Ditch Gas (Units): Background 20 Connection - Trip 44 Peaks 84

Mud: Wt. 10.3 Vis 46 W.L. 8.6 ph 7.0 cc Oil 0 % Cl_2 Ca 63,960 41K Temp. 80 °F. in 84 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
4300	- (no sh)	1.80	9.0
4350	- (no sh)	1.83	9.1

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	4160-4360	2 box - #7	1 & 2
Unwashed Ditch (Paleo)	4170-4360	1 box - #10	1
Unwashed Ditch (USGS)	4170-4360	1 box - #10	1
GeoChem (canned)	4050-4360	1 box - #14	1
Cores	No.		

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DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2/3/81 Time 0600

Present Depth 4360' Previous Depth 4360' Footage 24 Hrs. -0-

Formation(s) ARGILITE Top 4303 (log)

Present Activity: Logging

LITHOLOGIC DESCRIPTION

Interval Reported -0- Sampling Interval -0- ft. Sample Quality -0-
Lag Time: -0- min. @ -0- ft.

Interval	Description	Avg. Drill Rate min./ft.
	Log Run #2, to TD	
	HRT TEMP. 4348-2306	
	DLL 4354-2306	
	FDC CNL. 4360-2200	
	DHT - DIPMETER ?	
	PRELIMINARY LOG ANALYSIS	
	BASAL CRET SS / RES / POR / FLUID CONTENT	
	2606-2632 / 30-40 ohms / 22% / Prob. Gas	
	TOPS	
	Basal Cret. SS (Walakpa #1 SS) 2606	
	Barrow Equiv. 3703-3748 (3-9% Por)	
	Sag River SS 3843-3946 (9-12% Por)	
	Argilite 4303	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 10.3 Vis 45 W.L 8.7 ph 7.0 cc Oil 0 Ca 63,960 % Cl_2 41K Temp. - °F. in - °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

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DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2/4/81 Time 0600

Present Depth 4360' Previous Depth 4360' Footage 24 Hrs. -0-

Formation(s) Argilite Top 4303 (log)

Present Activity: Coming out of Hole.

LITHOLOGIC DESCRIPTION

Interval Reported NA Sampling Interval ____ ft. Sample Quality ____
Lag Time: ____ min. @ ____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	Plug. 3600-4010	
	Finished E-log Run #2	
	Velocity Survey run.	
	Shot 27 SWC - Recovered 25	
	From Bottom:	
	1. 4314 16. 2978	
	2. 4265 17. 2957	
	3. 4162 18. 2912	
	4. 3952 19. 2878	
	5. 3871 20. 2810	
	6. 3861 21. 2713	
	7. 3846 22. 2630	
	8. 3782 (N.R.) 23. 2622	
	9. 3644 24. 2614	
	10. 3583 25. 2608	
	11. 3409 26. 2525	
	12. 3703 27. 2442	
	13. 3144 (N.R.)	
	14. 3072	
	15. 3028 (Need 12 1/2 pt. cans for SWC Geochem.)	

GAS OCCURRENCE/SHOWS NA

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): NA
Background ____ Connection ____ Trip ____ Peaks ____

Mud: Wt. NA Vis ____ W.L. ____ ph ____ cc Oil ____ % Cl_2 ____ Temp. ____ °F. in ____ °F. out

Data Unit: NA

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples: NA

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

FILL PACKLER

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2-5-81 Time 0600

Present Depth (4360') 2800' (btm of liner) Previous Depth 4360' Footage 24 Hrs. 0

Formation(s) _____ Top _____

Present Activity: WOC

LITHOLOGIC DESCRIPTION NA

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Ra min./ft.
	Running 7" liner. Prep to perf and test 2606-2634'.	
	Tetra Tech in concurrence: No zones below test interval indicate possible reservoir characteristics.	
	Bill Fackler: Prior to plugging the btm section of this well, Mr. A. Kane, Log Analyst, and I were asked to identify any zones of por which would require plugging. We examined the E. logs independently and reached the same conclusion: the strat section below 2800' in this well did not contain any zones indicating sig por to require specific plugging procedure.	
	As an extra precaution, the decision was made to set a cmt plug covering the interval 3610-4010'. This plug will seal off both the Basal Kingak Ss and Sag River Ss zones, preventing any pos contamination in any event.	

GAS OCCURRENCE/SHOWS NA

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores (SWC)	No. 4314-2442' Run #1	Shot 27, Rec. 25	

Geologist BILL FACKLER

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6 February 1981

TO: SAM HEWITT/HARRY HAYWOOD

TETRA TECH/USGS

Walakpa #2

Preliminary Biostratigraphic Report #5

Foraminifera ---

3220 - 3690'?:	Early to Middle Jurassic (F-17 to F-18).
3690? - 3990':	Late Triassic to Early Jurassic (F-18 to F-19). Sag River ss. @ 3840 feet.
3990 - 4170':	Triassic (F-19).

Based on 90' sample examination.

Possible Foram Correlations:

Walakpa #1	Walakpa #2
2370'	3010'
2580'	3220'
3087'	3690'?
3230'	3840'
3363'	3990'

Palynology ---

3280 - 3820':	In Early-Middle Jurassic (P-M 24 to P-M 23). Rare dinocyst occurrences.
3820 - 4170':	Late Triassic, In Norian (P-M 26).

NOTE: Last two shipments incorrectly addressed. Marked 702 - Should be 7202.

CC: U.S.G.S. (Menlo Park)
Tetra Tech (Houston)

TETRA TECH, INC.

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2-6-81 Time 0600

Present Depth 4360' (PBD 3610') Previous Depth _____ Footage 24 Hrs. -

Formation(s) - Top -

Present Activity: WOC

LITHOLOGIC DESCRIPTION NA

Interval Reported - Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.

GAS OCCURRENCE/SHOWS NA

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): NA
Background _____ Connection _____ Trip _____ Peaks _____

Mud: NA Wt _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit: NA

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

BILL FACHLER

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2-7-81 Time 0600

Present Depth 2800' (Btm 7" liner) Previous Depth 3610' (PB) Footage 24 Hrs. 0

Formation(s) – Top

Present Activity: WOC (re-cmt job at top 7" liner)

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.

GAS OCCURRENCE/SHOWS NA

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): NA
Background _____ Connection _____ Trip _____ Peaks _____

Mud: NA Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit: NA

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples: NA

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist BILL FACKLER

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DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2-8-81 Time 0600

~~Present Depth~~ TD Liner 2800' Previous Depth - Footage 24 Hrs. -

Formation(s) "WALAKPA SAND" ~~Prop~~ Proposed perf: 2606-2634'

Present Activity: Prep to mix $CaCl_2$, prep for CBL Log.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 8.3 Vis 28 W.L. - ph - cc Oil - % Cl_2 - Temp. - °F. in - °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist BILL FACKLER

BioStratigraphics
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7202 Clairemont Mesa Boulevard
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Tel. (714) 560-4580

9 February 1981

TO: SAM HEWITT/HARRY HAYWOOD

TETRA TECH/USGS

Walakpa #2

Preliminary Biostratigraphic Report #6

Foraminifera ---

3990 - 4290':	Triassic (F-19)
4290 - 4350':	Age Indeterminate. Argillite.

Palynology ---

4170 - 4260':	Probably continues in Late Triassic. Much caved Neocomian. Increase in very dark brown organics.
4260 - 4350':	Age indeterminate. Increase in dark brown - black organics and presence of black opaque minerals suggest in argillite.

CC: U.S.G.S. (Menlo Park) ✓
Tetra Tech (Houston)

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DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2/9/81 Time 0600

T.P. LINER ~~Present Depth~~ 2600' Previous Depth _____ Footage 24 Hrs. _____

Formation(s) "Walakpa" Sand Top Perforated 2606-2634'

Present Activity: _____

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	Perforated w/ 2 shots/ft a/a, Ran CBL/VDL/GR/CLL. Top cmt 2606'	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: $CaCl_2$ WK 8.3 Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist BILL FACKLER

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2/10/81 Time 0600

Perfs: ~~Present Depth~~ 2606-2634 (CNL/FDC Depth) ~~Previous Depth~~ Footage 24 Hrs.

Formation(s) "Walakpa" Sandstone Top

Present Activity: Pressure up annulus between casing & drill pipe to 500 psi in attempt to seal nitrogen leaks.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	Attempted 3 times to test zone of interest - unable to test due to leaks in drill pipe.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: ~~Wtx~~ Nitrogen _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			

Yes _____ No _____

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2/11/81 Time 0600

Perfs: ~~Present Depth~~ 2606-2634 Previous Depth _____ Footage 24 Hrs. _____

Formation(s) Walakpa SS Top _____

Present Activity: Running Production test, initial 24 hour flow period.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	Summary Production test to date:	
	Displaced drill pipe to nitrogen, pressured up annulus to stop leaks in drill pipe.	
	Opened tool @ 1406 hrs., 2-10-81 (IBHP 1001 psi, IBHT 75.8°F) on 6/64" choke w/ BHFP 807-836 psi and calculated rate 1.1 MMCFGPD, after approx 1 hr. changed to 20/64" choke w/ 1.4 MMCFGPD increasing to 1.7 MMCFGPD. Changed to 24/64" choke w/ 2.2 MMCFGPD and 882 psi BHFP, 64.2°F BHT. Flow line began to freeze up at 0530 hrs. Began methanol injection.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: Wt. 9.6 ~~WK~~ $CACl_2$ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)			
[illegible]	[illegible]		

FINAL REPORT

TETRA TECH, INC.

TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL WALAKPA #2 Date 2-12-81 Time 0600

Present Depth Perfs: 2606-2634' Previous Depth _____ Footage 24 Hrs. _____

Formation(s) WALAKPA SS Top _____

Present Activity: Rigging down from Production Test.

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: _____ min. @ _____ ft.

Interval	Description	Avg. Drill Rate min./ft.
	SUMMARY PRODUCTION TEST: (0600 2/11 t0 0400 2/12/81)	
	Flow test perfs 2606-2634' (FDC/CNL/GR interval) (58 holes @ 2 SPF) thru Otis test separator on 24/64" choke. Rate @ 0600 2.2 MMCFD w/882 psi FBHP and 64.2°F. FBHT. SI well @ 0819 hrs., 2-11-81. Rate immed before SI on 8/64" choke was 369 MCFD w/FBHP 1025 psi, FDPP 930 psi, FBHT 70.2°F. Reopen well @ 1301 hrs. on 8/64" choke. Last SIBHP 1042 psi before reopening well @ 1301 hrs. w/last SIDPP 960 psi and SIBHT 72.6°F. Immed incr to 12/64" then incr to 13/64" choke. Low rate on 12/64" choke was 540 MCFD w/FBHP 987 psi, FDPP 840 psi, FBHT 72.6°F. High rate on 13/64" choke was 919 MCFD w/FBHP 948 psi, FDPP 835 psi, FBHT 72.6°F. SI well @ 1624 hrs. Reopen well @ 2130 hrs. on 17/64" choke, SIBHP 1042 psi, SIDP 960 psi SIBHT 72.5°F. immed before reopening well. Flowed on 17/64" choke for 13 min. then incr to 18/64" for remainder of flow period. @ 2130 hrs SICP 1100 psi. Low rate on 17/64" was 1267 MCFD, w/FBHP 935 psi, FDPP 800 psi, FBHT 68.4°F. High rate on 18/64" was 1385 MCFD w/FBHP 919 psi, FDPP 820 psi, FBHT 69.2°F. SI well @ 2251 hrs. SIBHP incr to 1060 psi and then decr to 1040 psi by 0400 hrs. 2-12-81, while SIDPP incr to 940 psi and remained. SIBHT incr to 72°F. by 0400 hrs. 2-12-81.	

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units	Background Gas Units Before	Background Gas Units After	CHROMATOGRAPH (PPM) C_1	C_2	C_3	C_4	C_5

Ditch Gas (Units): Background _____ Connection _____ Trip _____ Peaks _____

Mud: 9.6 $CaCl_2$ Wt. _____ Vis _____ W.L. _____ ph _____ cc Oil _____ % Cl_2 _____ Temp. _____ °F. in _____ °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
Other Samples			

Serial Report

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : Keith Beardsley - USGS/ONPRA

DATE: 13 Feb 81

O&G/W/Wal
RJL:kw

FROM : Robert J. Lantz, Anchorage Bob

SUBJECT: Walakpa Test Well No. 2

Walakpa Test Well No. 2, located about 18 miles southwest of the community of Barrow, recovered gas on a drill stem test at the rate of 2.4 million cubic feet per day through a 24/64-inch choke. The gas is coming from a sandstone of low Cretaceous age penetrated from 2606 to 2634 feet (28 feet thick). The same sandstone produced gas in the Walakpa No. 1, where it was found from 2070 to 2086 (16 feet thick).

The size of the gas accumulation is not known. Walakpa No. 2 is approximately four miles south-southeast of Walakpa No. 1 and 536 feet lower structurally. The areal extent of the sandstone reservoir is not known, nor is the gas-water contact. It appears that the newly-discovered gas field is larger than the South Barrow gas field, presently supplying gas for the Barrow community, which contained originally recoverable reserves of 25 billion cubic feet of gas.

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Well File S

GRUY MANAGEMENT SERVICE CO.

PAGE 1 OF 3

SUBJECT Preliminary Conclusions
WalaKpa Test Well No. 2

JOB NO.

BY DTW DATE 2/13/81

1. Core and log analysis indicate the "WalaKpa" sand in the subject well to be an unbroken interval of porous and permeable, gas productive, sand with no evidence of a gas-water contact.
2. The porosity of the WalaKpa sand in WalaKpa Test Wells 1 and 2 averages 20%.
3. The geometric average core analysis permeability of the sand in WalaKpa No. 2, 110 md ±, is 3.5 times greater than that of WalaKpa No. 1
4. The absence of water production during test of WalaKpa No. 2 establishes a minimum hydrocarbon column of 550' (-2023' to -2573') in the WalaKpa sand reservoir.
5. The volumetric reserves value of 329 MCF/ac-ft stated in our letter of 3/21/80 is somewhat pessimistic. The volumetrically weighted average reservoir pressure will be higher than the 1026 psia determined in WalaKpa No. 1. Also, the water saturation, based on WalaKpa No. 2, appears to be lower than the 40% calculated in WalaKpa No. 1.
6. The flow rates achieved during the test of WalaKpa Test No. 2 were lower than would be expected for

the drawdowns recorded based on core permeability. Although higher rates would have only been expected for a short time (due to hydrate formation) they did not occur at all. Therefore, it is believed that the reservoir is damaged. This damage probably occurred during the liner cementing operation when cement returns were lost. The extent of the formation damage can only be determined by analysis of the pressure buildup data.

7. With annular flow similar to South Barrow, the Wala Kpa Test No. 1 should easily produce 1 to 2 MMCFD without any stimulation. The upper limit of the producing rate will have to be determined by flow tests and will be the rate at which either hydrates form in the annulus or the water content of the gas becomes too great to efficiently transport the gas on the surface.
Annular flow would minimize the need for fired surface vessels such as line heaters and dehydration units.
It is believed that the best downhole configuration for this well under annular flow would be with the existing casing and 2 1/16" tubing as the water

removal string.

8. To produce the well at higher rates than 2,000 MCFD will probably involve flow through tubing set in a packer with some external heat source applied to the tubing to prevent hydrates. This could possibly be accomplished by circulating a heated, low freezing point, liquid in the tubing-casing annulus through an open ended dual tubing string.
   There would probably be some surface subsidence of the ground adjacent to the wellhead associated with this technique and its use would require fired vessels on the surface.

9. The Walakpa sand appears to be a viable gas source for the town of Barrow, Alaska.

7

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Office of National Petroleum Reserve in Alaska
345 Middlefield Road
Menlo Park, California 94025

February 17, 1981

Memorandum

To: *Robert Forester, Chief, Geophysicist, Husky Oil NPR Operations, Inc.*

From: *Arthur L. Bowsher, Chief, Exploration Strategy, ONPRA*

Subject: *Location of Walakpa Test Well No. 2*

The location of Walakpa Test Well No. 2 is at Shot point 309 on seismic line B5-78 in NE¼ of NE¼ of sec. 31, T. 20 N., R. 19 W. Please note that Walakpa Test Well No. 2 is erroneously located on shot point 35, line B24-78 on the 1:250,000 base map for Plates in the Tetra Tech, Inc., Summary Report FY'80 (see Plate VI for example).

Arthur L. Bowsher

Arthur L. Bowsher

Anch RF
Reston RF
Menlo RF
File (M.P.)
ALBowsher:lmo

TETRA TECH, INC.
2550 DENALI STREET
SUITE 601
ANCHORAGE, ALASKA 99503
TELEPHONE (907) 279-6521

February 26, 1981

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Mr. Arthur L. Bowsher
Chief, Exploration Strategy
U.S. Department of Interior
Geological Survey
Office of National Petroleum Reserve,
Alaska
345 Middlefield Road
Menlo Park, California 94025

Reference: Graphic Core Logs for Walakpa Test Wells - No. 1, 2 and 3

Dear Mr. Bowsher:

In reference to your letter of February 18, 1981, please find enclosed Conventional Core Description Forms for Core Nos. 1, 2 and 3.

Sincerely,

TETRA TECH, INC.

Sam R. Aertker

S.R. Aertker
Assistant Geological Manager
N.P.R.A. Program

SRA:am

Enclosures

NOTED
MAR 02 1981
BOWSHER