TETRA TECH, INC.

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

DAILY GEOLOGICAL REPORT

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

Present Depth 100' ± (conductor) Previous Depth _____ Footage 24 Hrs. _____

Formation(s) _____ Top _____

Present Activity: _____

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
	NOTE: Estimate spudding well late today (2-25-81) at earliest.	
	REQUEST: Log, core and sample transmittal forms.	

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 JERRY RITENOUR

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 2/26/81 Time 0600

Present Depth 100+ (conductor) Previous Depth _____ Footage 24 Hrs. _____

Formation(s) _____ Top _____

Present Activity: Rigging Up

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
	NOTE: Anticipate spudding noon today.	

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			

Geologist Jerry Ritenour

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 2/27/81 Time 0600

Present Depth 730' Previous Depth 105' Footage 24 Hrs. 625'

Formation(s) U. Torok Top est. 100'

Present Activity: DRILLING

LITHOLOGIC DESCRIPTION

Interval Reported 120-720 Sampling Interval 30 ft. Sample Quality Fair
Lag Time: 10.7 min. @ 700 ft.

Interval	Description	Avg. Drill Rate min./ft.
120-720	Clyst, v sft, lt gy, some slt, frequent plant frags, tr carbon frags, calc, lig tr	1.0

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 8 Connection - Trip - Peaks -

Mud: Wt. 9.6 Vis 34 W.L. 18.6 ph 7.0 cc Oil - % Cl_2 32000 Temp. NC °F. in NC °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 JERRY RITENOUR

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 2/28/81 Time 0600

Present Depth 1570' Previous Depth 730' Footage 24 Hrs. 840'

Formation(s) Torok Shale Top 100±

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 720-1530' Sampling Interval 30 ft. Sample Quality Good
Lag Time: 33 min. @ 1500 ft.

Interval	Description	Avg. Drill Rate min./ft.
720-930	Ss, m - lt gy, v f - f grn, slty in pt, grdg to sltst, sl fri, SA - SR, calc, cly filled in pt, occ dk grns of (?), fr srtg, tr por; clyst, lt gy, v sft, calc, occ carb frags, slty in pt; sh, m gy, sub - fis, firm, calc, occ pyr xls, freq fos frags, pred mol shell frags & some bry, slty grdg to sltst; intr was pred clyst & sh w/ few s slt or ss bds.	5.0
930-1080	Clyst as for 720-930	1.0
1080-1350	Clyst, lt - m gy, sl brn, v sft, slty in pt, grdg to sltst, occ fos frags, pred mol shell frags, sl calc, carb in pt, intv pred clyst w/ few s slt bds	1.0
1350-1410	Ss, lt gy, v f grn, SA - SR, fri, slty in pt grdg to sltst, occ dk grns mostly coal clast, cly filled, calc, fr - g srtg,	1.0

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/1/81 Time 0600

Present Depth 2136' Previous Depth 1570' Footage 24 Hrs. 566'

Formation(s) Torok (Bottomset Beds) Top 1945' (Bottomset Bds)

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 1530-2070 Sampling Interval 30 ft. Sample Quality GOOD
Lag Time: 42 min. @ 2100 ft.

Interval	Description	Avg. Drill Rate min./ft.
1530-1590	As in 1350-1410; tr ls, med brn-gy, hd, v f xl, occ calc spar; this intv pred sh & sltst w/occ bd sd	1.5
1590-1620	As in 1350-1410; this intv is intbd sh & sltst w/occ v s strg sd	1.5
1620-1710	Ss, m-lt gy, brn in pt, v f grn, slty, grdg to sltst, calc in pt, cly filled, occ dk grns (coal), fr-g srtg, tr por; sh, m brn-gy, firm-sft, sub-fis, carb in pt, tr pyr, slty grdg to sltst; this intv pred sh & sltst w/few s sds	1.5
1710-1950	As in 1620-1710 w/only tr ss	1.5
1950-2040	Ss, m-lt gy, v f grn, SA - SR, fri, calc in pt, cly filled, slty grdg to sltst, occ dk grns (coal & mica), some v f carb mat in mtx, fr-g srtg, tr por; sh, m brn-gy, firm - sft, carb in pt, slty grdg to sltst, tr sid; this intv mostly sltst & sh w/some s sds	1.5
2040-2070	As in 1950-2040, w/only tr ss, also tr bent, lt gy, fis, waxy, micromicac NOTE: Mud weight & temp. in & out data units are not functioning.	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
1455-1470	50	-	15	15	10000	(no heavies)			
1575-1645	38	-	5	8	7600	(no heavies)			
1735-1755	40	-	14	12	8000	(no heavies)			

Ditch Gas (Units): Background 15 Connection none Trip 184 @ 2883' Peaks as abv

Mud: Wt. 10.1 Vis 38 W.L. 25 ph 7.0 cc Oil - % Cl_2 42,000 Temp. 65 °F. in 67 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
2050	2.21	1.14	
2100	2.26	1.35	

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)	105-1320	1	1
Unwashed Ditch (USGS)	105-1500	1	1
GeoChem (canned)	105-1530	4	1
Cores	No		

Geologist JERRY RITENOUR

TETRA TECH, INC.
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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/2/81 Time 0600

Present Depth _____ Previous Depth _____ Footage 24 Hrs. _____

Formation(s) _____ Top _____

Present Activity: _____

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
2540-2560	As in 2530-2540 w/ tr pyr	1.0
2560-2700	Sh, dk gy to near bl, firm, sub - fis, some slt, occ pyr clus (s. .1 - .2 mm xls), frequent qtz or cht pebs (SR - rd, fros), bent, lt gy-- lt gn, fis, waxy, mica; this intv pred dk sh w/ some m brn - gy sh	1.5
	NOTE: Top pebble shale picked @ 160' below estimated top	

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 JERRY RITENOUR

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/3/81 Time 0600

Present Depth 2730' Previous Depth - Footage 24 Hrs. 0

Formation(s) Pebble Shale Top 2510'

Present Activity: Waiting on Schlumberger - replacing part.

LITHOLOGIC DESCRIPTION

Interval Reported 2700-2730 Sampling Interval 10 ft. Sample Quality Good - Fair
Lag Time: 50 min. @ 2600 ft.

Interval	Description	Avg. Drill Rate min./ft.
2700-2730	Sh as in 2560-2570 w/ incr in pyr	2.0

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 20 Connection - Trip 120 @ 2730' Peaks -

Mud: Wt. 10.1 Vis 47 W.L. 19.5 ph 7.0 cc Oil 0 % Cl_2 47000 Temp. 82 °F. in 84 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	120-2730	4	
Unwashed Ditch (Paleo)	1320-2730	3	
Unwashed Ditch (USGS)	1500-2730	2	
GeoChem (canned)	1530-2610	2	
Cores	No.		

Geologist JERRY RITENOUR

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/4/81 Time 0600

Present Depth 2730' Previous Depth _____ Footage 24 Hrs. _____

Formation(s) Pebble Shale Top _____

Present Activity: Going in hole w/ Core Gun

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
	LOGGING REPORT: Drillers depth 2730, Loggers depth 2726', GL 10', KB 27'.	
	Logs Run - Dual Laterolog/GR/SP, 2726-110'	
	BHCS/GR/TTI, 2726-110'	
	LSS/GR/TTI, 2726-110'	
	FDC/CNL/GR/CAL, 2726-110'	
	HDT Dipmeter, 2726-110'	
	Zones of Interest: None	
	Top Torok Shale: (?)	
	Torok bottomset beds: 1925	
	GR/Pebble Shale: 2504	
	Additional valuat on plans: None	
	NOTE: MSFL was not run because logging unit on location was not capable of opening tool (outdated equipment). Since no sands developed in this particular section, the wellsite geologist felt it uncecessary to change out logging unit. Geology manager in Anchorage concurs.	

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. 10.1 Vis 49 W.L. 19.5 ph 7.0 cc Oil 0 % Cl_2 45000 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 JERRY RITENOUR

TETRA TECH, INC.

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U.S. GEOLOGICAL SURVEY/ONPRA

LOGGING REPORT

WELL NAME TULAGEAK #1

Date March 4, 1981 Driller Depth 2730'

Elevation GL 10' KB 27' Logger Depth 2726'

Logs Ran and Intervals

DLL/GR/SP	2726 - 110	(surface casing)
BHCS/GR/TTI	2726 - 110	(surface casing)
LSS/GR/TTI	2726 - 110	(surface casing)
FDC/DNL/GR/CAL	2726 - 110	(surface casing)
HDT Dipmeter	2726 - 110	(surface casing)

Additional Logs to Run

CST Sidewall cores

Zones of Interest None

Depth	Gross Thickness	Net Feet of Porosity	Lith	Porosity	Probable Fluid Content

Discussion:

Log Tops & Correlations:

Torok sh	?	Torok sh	?
Torok bottom set	1925 ?	Torok bottom set	2442 ?
GR/Pebble Sh	2504	GR/Pebble Sh	2919

Additional Evaluation Plans:

NONE

NOTE: MSFL was not run, because logging unit on location was not capable of opening tool. (Outdated equipment) Since no sands developed in this particular section, the wellsite geologist thought it was unnecessary to change out logging unit.

Gerald Ritenour

Wellsite Geologist

Log Analyst

TETRA TECH, INC.

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/5/81 Time 0600

Present Depth 2730' Previous Depth - Footage 24 Hrs. -

Formation(s) Pebble Shale Top 2510 (sample); 2504 (log)

Present Activity: Circulate & condition hole prior to cementing

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. 10.0 Vis 44 W.L. 19 ph 7.0 cc Oil - % Cl_2 43000 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 Jerry Ritenour

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3-6-81 Time 0600

Present Depth 2730' Previous Depth 2730' Footage 24 Hrs. 0

Formation(s) PEBBLE SH Top 2510'

Present Activity: Nippling up.

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. _____ 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 G. RIFENOUR

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/7/81 Time 0600

Present Depth 2730' Previous Depth 2730' Footage 24 Hrs. 0

Top Formation(s) Pebble Shale Top 2504' (log) Formation(s)

Present Activity: Testing csg.

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
	Core #1 est. start coreing at 1800 hrs.	

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. 9.0 Vis 33 W.L. 14 ph 7.0 cc Oil 0 % Cl_2 33K 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 (Pacco)			
Unwashed Ditch (USGS)			
Geochem (canned)			
Cores			

No.

Geologist JERRY RITENOUR

TETRA TECH, INC.

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/8/81 Time 0600

Present Depth 2947' Previous Depth 2730' Footage 24 Hrs. 217'

Formation(s) Pebble Sh. Top 2504' (log)

Present Activity: Coring

LITHOLOGIC DESCRIPTION

Interval Reported 2730-2940 Sampling Interval 10 ft. Sample Quality Poor-Good
Lag Time: 20 min. @ 2900 ft.

Interval	Description	Avg. Drill Rate min./ft.
2730-2770	Sh as in 2700-2710, w/ abunt cmt (80% of sample)	2.0
2770-2800	Sh, dk - m gy, carb, sub-fis, sli calc, firm, freq. qtz & cht pbl, sr - r, tr slt, ls, m - lt gy, sli brn, hard to earthy, sli arag, micro - v f xl. Interval predominently sh w/ occ small strg. ls.	2.5
2800-2840	Sh as in 2770-2800. Ls, lt gy - mot earthy v f - micro xl sli arag. Interval predominently sh w/ tr ls	2.0
2840-2870	Sh pred. dk gy - blk, firm, sub-fis, v sli calc in part carb, freq. flty qtz or cht pbl r - sr	2.5
2870-2940	Sh as in 2840-2870 w/ incr slt, occ. grading to sltstn bentonite, v lt gy, soft, mica. Interval pred. sh w/ few small sltstn strd., tr bentonite	3.0

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 4 Connection - Trip 20 @ 2940' Peaks -

Mud: Wt. 9.6 Vis 36 W.L. 13 ph 7.0 cc Oil 0 % Cl_2 36K Temp. 68 °F. in 70 °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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TETRA TECH, INC.
U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/9/81 Time 0600

Present Depth 3095' Previous Depth 2947' Footage 24 Hrs. 148'

Formation(s) Kingak Sh. Top 2949'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 2940-3090 Sampling Interval 10 ft. Sample Quality Fair
Lag Time: 27 min. @ 3100 ft.

Interval	Description	Avg. Drill Rate min./ft.
2940-2982	Core #1 Cut 42, Rec. 38'	
	2940-2948 - sh, blk - v dk gy, firm - brit, v carb, some slt,	8.0
	abunt fltg sd grn. abunt, fltg. cht & qtz peb. occ gvl or	
	cbl size R - SR, occ pyr strg.	
	2948-2980 - Sh m gy firm, sub fis, thn bed, sli mica,	10.0
	tr pyr, ss, lt brn-gy, v f grn, SA-SR, fri, calc &/or dol	
	in part, occ grn mica, slty, cly-filled in part, poor-fair	
	sort, poor por., bri yel fluo. w/ good cut. This intv is	
	lightly bioturbated sh, sds, & sltstn.	
2980-3090	Sh - clyst, m gy, sub fis in part, slty, occ grdg to sltstn	6.0
	sli mica, ss, lt gy-brn, v f grn, slty, SA-SR, calc. occ	
	grn mica. sli cly filled - poor por., fair sort, bri yel.	
	fluo. w/ good cut when dry. This intv predom. sh w/ freq.	
	sm sd lense.	

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 6 Connection 0 Trip 16 Peaks none

Mud: Wt. 9.9 Vis 47 W.L. 7.5 ph 7.0 cc Oil 0 % Cl_2 41,000 Temp. 80 °F. in 84 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3000	2.40	1.66	-
3050	2.38	1.58	-

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)			
Unwashed Ditch (USGS)			
GeoChem (canned)	2610-3090	2	
Cores	No. 1 2940-2978	14	

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/10/81 Time 0600

Present Depth _____ Previous Depth _____ Footage 24 Hrs. _____

Formation(s) _____ Top _____

Present Activity: _____

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
3240-3310	Sh, m gy, occ lt gy, firm, sub-fis, occ fis, slty in pt grdg to sltst, mica, v sl calc and/or dol, tr pyr, tr sid pels, contains hydratable cly; this intv pred sh w/ occ sltst.	5.5

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

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 JERRY RITENOUR

TETRA TECH, INC.

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/10/81 Time 0600

Present Depth 3327' Previous Depth 3095' Footage 24 Hrs. 227'

Formation(s) Kingak Shale Top 2948'

Present Activity: Tripping for new bit

LITHOLOGIC DESCRIPTION

Interval Reported 3090-3310 Sampling Interval 10 ft. Sample Quality Poor-Good
Lag Time: 33 min. @ 3320 ft.

Interval	Description	Avg. Drill Rate min./ft.
3090-3100	As in 2980-3090, note abunt cvg	5.0
3100-3120	As in 2980-3090 w/ occ lt gy sh; note abunt cvg	5.0
3120-3130	Ss as in 2980-3090, sh - clyst, m gy, sub-fis to fis in pt, micromicac, firm - sft; sl calc and/or dol in pt, slty grdg to sltst; this intv pred sh & clyst w/ occ sltst bd & tr ss; note abunt cav, note also abunt calc xls, pos frac zn	6.0
3130-3150	As in 3120-3130 w/ no calc xls; note abunt cav	4.5
3150-3200	Ss, v lt gy, sl brn, v f grn, slty, frl, SA-SR, occ grn mica, sl cly-filled, sl calc and/or dol, fr srtg, p to tr por; tr bri yel flour, w/ q cut when dry; sh, lt - m gy, firm, sub-fis to fis, mica, slty grdg to sltst, occ sid pels; this intv pred sh w/ occ slt bds	5.5
3200-3240	Ss as in 3150-3200 w/ no flour; sh to clyst, lt - m gy, firm - sft, sub-fis in pt, mica slty grdg to sltst, tr pyr, occ sid pels, tr mas sid; this intv pred sh & clyst w/ occ slt bds & tr sd.	5.0

(CONTINUED ON PAGE #2)

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 4 Connection - Trip - Peaks -

Mud: Wt. 9.9 Vis 45 W.L. 10.6 ph 7.0 cc Oil 0 % Cl_2 37000 Temp. 78 °F. in 82 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3100	2.36	1.50	8.7
3150	2.36	1.46	NC
3200	2.38	1.45	NC
3250	2.42	1.42	NC
3300	2.45	1.42	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 JERRY RITENOUR

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/11/81 Time 0600

Present Depth 3439' Previous Depth 3327' Footage 24 Hrs. 112'

Formation(s) KINGAK Top 2948'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 3310-3430 Sampling Interval 10 ft. Sample Quality Fair
Lag Time: 37 min. @ 3400 ft.

Interval	Description	Avg. Drill Rate min./ft.
3310-3360	Sh, m gy, occ lt gy, firm, sub-fis, occ fis, slty in pt, grdg to sltst, mica, sl calc, tr pyr, tr sid pels, tr mas sid, contains hydratable cly in pt; this intv pred sh w/ occ sltst bds.	7.5
3360-3430	Sh to clyst, m gy, occ lt gy, firm - sft, sub-fis in pt, calc in pt, contains hydratable cly, slty grdg to sltst, tr mas orng-tan sid, tr sid pels, mica; ss, lt gy, v f grn, slty, SA-SR, v fri, cly-filled, mica, calc, f srtg, tr por; this intv pred sh w/ occ slt bds, tr of ss	8.0
	NEED: 50 Geochem cans	

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 6 Connection 0 Trip 28 @ 3322' Peaks None

Mud: Wt. 9.9 Vis 47 W.L. 8 ph 7.0 cc Oil 0 % Cl_2 44000 Temp. 52 °F. in 82 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3350	2.42	1.52	8.6
3400	2.45	1.57	8.7
		NOTE:	
		No automatic driller	

Dispatched Samples:

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

Geologist JERRY RITENOUR

BioStratigraphics
Consulting Micropaleontology

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

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11 March 1981

TO: SAM HEWITT/HARRY HAYWOOD

TETRA TECH/USGS

Tulageak #1

Preliminary Biostratigraphic Report #1

Foraminifera ---

1320 - 1410': Early Cretaceous (Probable Albian) F-9 to F-10.

1410 - 2130': Early Cretaceous (Late Aptian to Early Albian) F-10.

2130 - 2490': Early Cretaceous (Aptian) F-11.

2490 - 2730': Early Cretaceous (Hauterivian to Barremian) F-12 to F-13.

NOTE: Above based on 90' sample examination.

Palynology

1350 - 2520': in Early Cretaceous. Aptian - Early Albian (P-M 18).

2520 - 2700': Early Cretaceous. Possible Neocomian (P-M 18a).

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

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3-12-81 Time 0600

Present Depth 3541' Previous Depth 3449' Footage 24 Hrs. 92

Formation(s) KINGAK SH Top 2948'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 3430-3530' Sampling Interval 10 ft. Sample Quality poor
Lag Time: 33 min. @ 3535 ft.

Interval	Description	Avg. Drill Rate min./ft.
3430-3460'	Ss, v.f. grn, lt gy, slty, SA-SR, v. fri, cly filled, calc, mica, f. srtg, tr por; Sh, m gy, tr lt gy, firm - sft, subfis, calc in pt, contains hydratable clys in pt, tr sid pels, tr pyr, mica, slty grdg to sltst; this intb pred sh w/occ sltst bds, tr ss; note abunt cvg.	8.0
3460-3470'	Ss, lt - m gy, f. grn w/occ m or crs grns, fri, cly filled, SR, calc in pt, occ dk grns cht and mica, slty in pt, p. srtg, p. por; sh as in 3430-3460'; note abunt cvg.	5.0
3470-3530'	Ss, lt gy, v.f. - f. grn, SA-SR, cly filled, fri, calc, mica, f. srtg, tr por; sh as in 3430-3460'; this intv pred sh w/occ sltst bds, tr ss; note abunt cvg.	12.0

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
3460-3470'	16		8	7	3200	tr	tr	-	-

Ditch Gas (Units): Background 4 Connection Trip 20 @ 3505' Peaks

Mud: Wt. 9.9 Vis 40 W.L. 12 ph 7.0 cc Oil 0 % Cl_2 40,000 Temp. 79 °F. in 82 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3450'	2.46	1.49	9.1
3500'	2.46	1.69	8.8

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)	2730-3470'	2 - Bxs 5, 6	
Unwashed Ditch (USGS)	2730-3240'	1	1 - Bx 4
GeoChem (canned)	3090-3450'	1 - Bx 11	
Cores	No.		

Geologist JERRY RITENOUR

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/13/81 Time 0600

Present Depth 3644' Previous Depth 3541' Footage 24 Hrs. 103'

Formation(s) Kingak Top 2948'

Present Activity: Tripping for new bit.

LITHOLOGIC DESCRIPTION

Interval Reported 3530-3640 Sampling Interval 10 ft. Sample Quality FAIR
Lag Time: 31 min. @ 3630 ft.

Interval	Description	Avg. Drill Rate min./ft.
3560	Ss, lt gy, f. - v. f. grn, SA-SR, v. fri, cly - filled, some grns flty, occ dk grn (coal, mica, glau), f. srtg, tr - v. p por; clyst, m gy, sft, occ slty, grdg to sltst; this intv is 1/2 clyst & 1/2 ss.	5
3600	As in 3550-3560, w/ tr fos wood; this intv pred cly - filled sd.	7
3610	Ss as in 3550-3560, sh to clyst, m gy sub-fis in pt, sft - firm, slty, grdg to sltst, mica, tr sid, occ pyr sph (0.5 - 2.0 mm), tr fos wood; this intv is intbd ss, sh, sltst	12
3620	Ss, lt gy, f. - v. f. grn, SA-SR, fri, cly - filled in pt, sl calc, occ dk grns (mostly coal, glau, mica), occ pyr, slty, intbd sil, mod flu, grads into sltst as in 3560-3610; this intv is intbd sh, ss & sltst.	15
3630	As in 3610-3620 w/ tr oil stn.	15
3640	As in 3610-3620 w/ tr oil stn.	15

RRENCE/SHOWS (NONE)

GAS OCCU

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

nits): Background 6 Connection None Trip None Peaks None

Ditch Gas (U

10 Vis 42 W.L. 8.5 ph 7.0 cc Oil 0 % Cl_2 42000 Temp. 78 °F. in 80 °F. out

Mud: W

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3500	2.46	1.69	8.5
3550	2.44	1.59	8.8
3600	2.45	1.47	9.4

Samples:

Dispatched

Type	Interval	No. of Boxes	Set No.
Dried Ditch			
Ditch (Paleo)			
Ditch (USGS)			
(canned)			
	No.		

Washed &
Unwashed
Unwashed
GeoChem
Cores

JERRY RITENOUR

Geologist

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/14/81 Time 0600

Present Depth 3670' Previous Depth 3644' Footage 24 Hrs. 26'

Formation(s) Kingak Top 2948'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 3640-3660 Sampling Interval 10' ft. Sample Quality Fair
Lag Time: 37 min. @ 3660 ft.

Interval	Description	Avg. Drill Rate min./ft.
3640-3650	As in 3610-3620; no oil stn	10
3650-3660	Ss, lt gy, f grn, SA-SR, fri, m clean w/ some slt & cly, occ dk grns, mostly coal & mica w/ tr glau, v sl calc, f - p por, q srtg; sh, m gy, sub-fis, firm, mica, slty in pt, grdg to sltst; this intv pred ss w/ some small sh & slt strgs.	5

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 4 Connection - Trip 20 @ 3644' Peaks -

Mud: Wt. 10.1 Vis 41 W.L. 7 ph 7.0 cc Oil 0 % Cl_2 38000 Temp. 70 °F. in 80 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3650	2.39	1.65	8.7

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch	2730-3640	2	(A & B) 3rd set
Unwashed Ditch (Paleo)	3240-3640	1 (Box #5)	
Unwashed Ditch (USGS)			
GeoChem (canned)			
Cores	No.		

Geologist JERRY PITENOUF

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/15/81 Time 0600

Present Depth _____ Previous Depth _____ Footage 24 Hrs. _____

Formation(s) _____ Top _____

Present Activity: _____

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
3740-3750	Ss, v lt gy, v f - m grn, slty, v cly-filled, v fri to uncons, pred SR, occ dk grns (mostly meta rk frags & cht), tr pyr, p srtg, tr to nil por; sh as in 3670-3680; mrlst as in 3710-3730; this intv pred ss	4.5
3750-3770	Sltst to ss, brn to lt gy, v f sd to slt w/ tr f grn, v hd, sl calc, pos sid cmt, sil, occ dk grns, fr - g srtg, tr - nil por, v dull orng fluor, no cut; ss, lt gy, brn in pt, gn in pt, v f - crs grn, pred f grn, SA-R, pred SR, sl calc, occ grn glau, cht & meta rk frags, cly-filled in pt, clean in pt, occ fros grns, v fri - sl hd, p srtg w/ occ fr srtg, p w/ occ fr por; sh, m gy, firm, sub-fis, slty in pt grdg to sltst; this intv pred ss & hd sltst w/ some sh.	6.5
3770-3780	Ss, lt gy, v f - f grn, some slt, SA-SR, fri, calc, sl cly-filled in pt, occ dk grns (mica, glau, others), fr w/occas srtg, generally fr por, yel fluor & c strmg cuts; when dry, col of cut is dk straw, sp oil stn in pt.	3.0

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 JEPPY RITENOUR

TETRA TECH, INC.

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U. S. GEOLOGICAL SURVEY/ONPRA

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/15/81 Time 0600

Present Depth 3783' Previous Depth 3644' Footage 24 Hrs. 139'

Formation(s) Sag River (?) Top 3775'

Present Activity: Circulate for trip.

LITHOLOGIC DESCRIPTION

Interval Reported 3660-3780 Sampling Interval 10 ft. Sample Quality Fair-Good
Lag Time: 35 min. @ 3780 ft.

Interval	Description	Avg. Drill Rate min./ft.
3660-3670	As in 3650-3660	6.5
3670-3680	Ss, lt gy, v f - f grn, slty, grdg to sltst, calc in pt, sl fri to mod hd, occ dk grns (mostly coal & mica, tr	9.0

v p to tr por; sh as abv w/ frequent wood
lusca shell frags); this intv pred ss w/ some

- f grn, slty, grdg to sltst, SA-SR, sl dk grns, v p por, cly-filled in pt, f - p vel fluor, g cut; sh as abv; this intv is & ss	10.0
0 w/ s amt mrlst, v lt gy - wh, sl arg, occ	10.0
orn in pt, v f - f grn, slty, sl fri - mod hd, grns mica, glau, or coal, calc, por w/ tr srtg; sh as in 3670-3680; this intv pred ss.	9.0

(CONTINUED ON PAGE #2)

glau), r srtg
frags & tr Mol
sh & sltst

3680-3710	Ss, lt gy, v f calc, fri, occ srtg, v sl tr intbd sh, slts
3710-3730	As in 3680-371 fltg sd grns
3730-3740	Ss, lt gy, sl SA-SR, occ dk fr por, fr - g

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

GAS OCCURRENCE/SHOWS

INTERVAL	Total Gas Units	Cuttings Gas Units

Connection - Trip - Peaks -

ph 7.0 cc Oil 0 % Cl_2 35000 Temp. 80 °F. in 84 °F. out

Ditch Gas (Units): Background 4

Mud: Wt. 9.7 Vis 37 W.L. 6.8

Data Unit:

le Density	Dc Exponent	Pore Pressure
2.42	1.48	9.4
2.42	1.48	9.4

Depth	Sh
3700	
3750	

Interval	No. of Boxes	Set No.

Dispatched Samples:

Type	
Washed & Dried Ditch	
Unwashed Ditch (Paleo)	
Unwashed Ditch (USGS)	
GeoChem (canned)	
Cores	No.

Geologist JERRY RITENOU

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/16/81 Time 0600

Present Depth 3816' Previous Depth 3783' Footage 24 Hrs. 33'

Formation(s) Sag River Top 3775'

Present Activity: Lay down Core #2.

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 2 Connection - Trip 4 Peaks -

Mud: Wt. 9.9 Vis 43 W.L. 12.5 ph 7.0 cc Oil - % Cl_2 44000 Temp. 70 °F. in 79 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3800	2.39	1.37	9.5

Dispatched Samples:

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

Geologist JERRY RITENOUR

TETRA TECH, INC.

U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

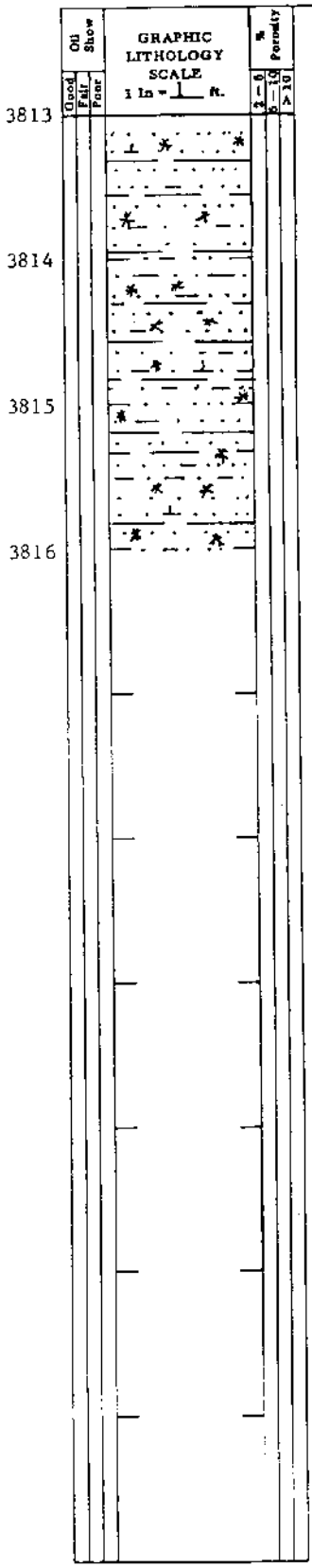
Well: Tulageak #1 Core No: 2

Date: 3-16-81 T.D.

Interval Cored: 3783'-3816' Formation: Sag River

Recovery: 33' Core Diameter: 4 Inches

GENERALIZED CORE DESCRIPTION: 33' of arlg ss w/ some small zones of porosity w/ spotty oil stain



DETAILED CORE DESCRIPTION
Prepared By Gerald Ritenour

TETRA TECH, INC.

U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

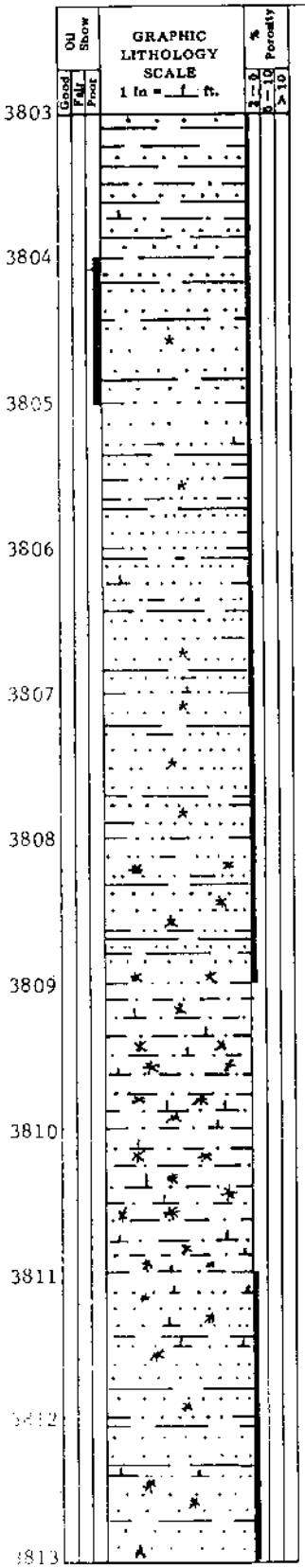
Well: Tulageak #1 Core No: 2

Date: 3-16-81 T.D.

Interval Cored: 3783'-3816' Formation: Sag River

Recovery: 33' Core Diameter: 4 Inches

GENERALIZED CORE DESCRIPTION: 33' of argl ss w/ some small zone of porosity w/ spotty oil stain



DETAILED CORE DESCRIPTION
Prepared By Gerald Ritenour

3803'-3804'
SH, dk gy, sbfis, slty, sdy, carb, tr pyrite
SS, m gy, v f grn, occ f grn, slty grdg to SLTST, sl fri, sl calc, occ dk grn, tr glau, poor srtg; tr porosity

3804'-3805'
SS, m gy, w/ sl greenish cast, w/ occ dk-gy argl ptg, or burrow filling, v f-f grn, w/ some slt, calc, fri, occ dk grn, tr glau, fair srtg; poor por; tr yel fluor

3805'-3807'
SS, m gy, w/ sl greenish cast, freq dk-gy argl ptg & burrow & trail fillings, v f-f grn, slty grdg to SLTST, v sl calc, occ dk grn, tr glau, fair srtg; poor-tr por

3807'-3808'
SS, m gy, sl greenish in pt, occ dk-gy argl lam, v f-f grn, slty, mod hd, occ dk grn, occ glau grn, poor srtg; tr por

3808'-3809'
SS m gy gn-dk brn gy(mottled), v f-f grn, slty, mod hd-sl fri, occ arlg ptg, (dk gy sh), freq glau, occ other dk grn, clyfd, tr por, v poor srtg

3809'-3811'
SLTST, dk gy brn, w/ abunt large (up to .5mm) glau grns, some v f sd, hd, calc

3811'-3816'
SS, m gy gn, mod hd, v f-f grn, slty, clyfd, occ-abunt glau, occ other dk grn, v sl calc; freq dk-gy-brn sh lam; tr por; poor-fair srtg

TETRA TECH, INC.

U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

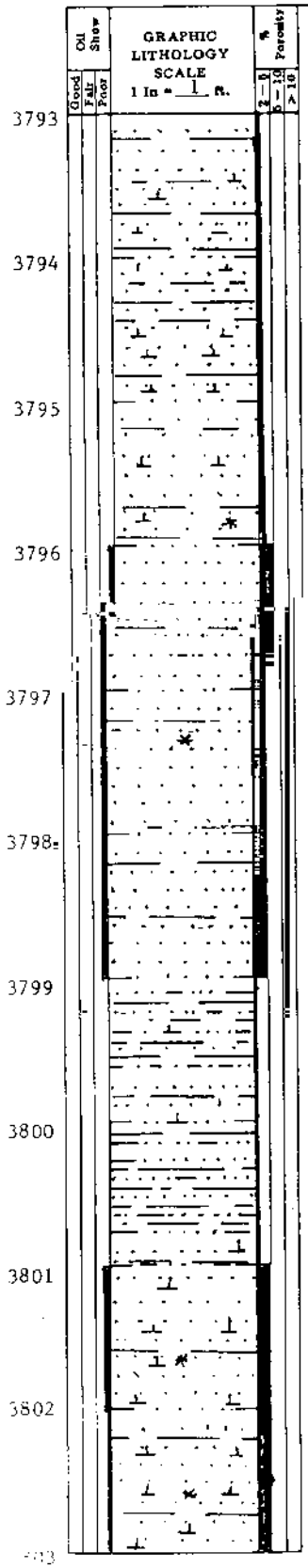
Well: Tulageak #1 Core No: 2

Date: 3-16-81 T.D.

Interval Cored: 3783'-3816' Formation: Sag River

Recovery: 33' Core Diameter: 4 Inches

GENERALIZED CORE DESCRIPTION: 33' of argl ss w/ some small zones of porosity, w/ spotty oil stain



DETAILED CORE DESCRIPTION
Prepared By Gerald Ritenour

3793'-3794'
SS m gy, w/ numerous dk-gy argl parts, sl fri, v f-f grn, slty grdg to SLTST,occ dk grn, calc, clyfld; tr-v poor por

3794'-3796'
SS as in 3793'-3794' w/ occ clyfld burrow

3796'-3798'
SS m gy, w/ tr dk-gy argl partings, v f-f grn, sa-sbrd, sl fri, occ dk grn, tr glau, tr clyfld burrows & trails; poor por; fair-good srtg; tr fluor; occ calc-filled fractures

3798'-3799'
SS as in 3796'-3798' w/ increase in argl partings, trail & burrows

3799'-3801'
SS m gy, w/ freq thin argl partings, v f-slt, grdg to SLTST, occ f grn, clyfd, v sl calc, occ dk grn; tr por; poor srtg

Note:argl partings make up 50% of sample

3801'-3802'
SS m gy, w/ sl gn cast, few argl partings, some slt, clyfd in pt, calc, occ dk grn, tr glau, fair srtg; poor por; occ spotty oil stain (light brn) w. yel fluor, good cut

3802'
SS as in 3801'-3802' w/ increase in argl partings and decrease in oil stain

TETRA TECH, INC.

U.S. GEOLOGICAL SURVEY/ONPRA

CONVENTIONAL CORE DESCRIPTION FORM

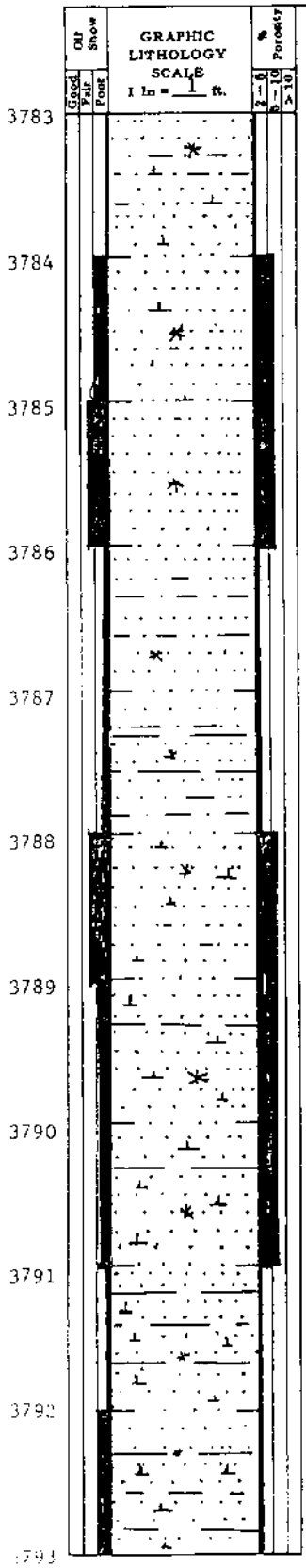
Well: Tulageak # 1 Core No: 2

Date: 3-16-81 T.D.

Interval Cored: 3783'-3816' Formation: Sag River

Recovery: 33' Core Diameter: 4 Inches

GENERALIZED CORE DESCRIPTION: 33' of argl ss w/ some zones of porosity w/ spotty oil stain



DETAILED CORE DESCRIPTION

Prepared By Gerald Ritenour

3783'-3784'
SS, m gy, v f-slt, grdg to SLTST, sa-sbrd, mod hd, occ dk grn, calc, arg in pt, occ calcite-filled fracture, tr glau, fair sortg; tr por; sl tr of oil w/ yw flor, good cut

3784'-3785'
SS, m gy, v f-f grn, slty in pt, sa-sbrd, sl fri, occ dk grn, tr glau, sl calc, sl cly fil in pt; poor por; good-fair sortg; spotty brown oil stain, dull orange fluor, good cut

3785'-3786'
SS, brn (oil stain), v f-f grn, sa-sbrd, some slt, fri, sl calc, sl cly fil in pt; poor w/ some fair por; fair-good srtg; even brown oil stain, dull orange fluor, good cut

3786'-3787'
SS, m gy, mottle w/ dk gy, v f grn-slt, some f grn, sa-sbrd, sl fri, occ dk grn, tr glau, tr calc cmt, clyfil, fair srt; very poor-tr porosity; tr dull orange fluor

3787'-3788'
SS as in 3786'-3787' more argl, pred dk gy; occ very thn parting of shale

3788'-3789'
SS, m gy, w/ spotty brown oil stain, v f-f grn, some slt, sa-sbrd, sl fri, calc, occ dk grn, tr glau, sl cly fil in pt; poor w/ some fair porosity; fair-good srtg; dull orng fluor w/ good cut

3789'-3791'
SS as in 3788'-3789' w/ less oil stain; occ very thn argl parting

3791'-3792'
SS, m gy w/ dk-gy arlg part & burrow or trails, v f-f grn, slty in pt, tr glau, calc; poor-tr porosity; fair srtg; tr orng fluor, tr brn stain, good cut

3792'-3793'
SS as in 3791'-3792' w/ increase in stain ~30%

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/17/81 Time 0600

Present Depth _____ Previous Depth _____ Footage 24 Hrs. _____

Formation(s) _____ Top _____

Present Activity: _____

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
3850-3870	Ss, m gy-gn, v f - f grn, SR, sl fri, calc, abunt glau, slty grdg to sltst, cly-filled, p srtg, tr por; sh, m - dk gy-gn, occ brn, firm, sub - fis, slty, sdy; this intv mostly sh w/ freq ss bds.	12

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 JERRY RITENOUR

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/17/81 Time 0600

Present Depth _____ Previous Depth _____ Footage 24 Hrs. _____

Formation(s) _____ Top _____

Present Activity: _____

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
	3805-3807 - Ss, m gy, v sl greenish, freq dk gy arg ptgs, v f - f grn, slty grdg to sltst, v sl calc, mod hd, occ grn glau, f srtg, p to tr por	
	3807-3808 - Ss, m gy, sli greenish in pt, occ dk gy arg lams, v f - f grn, slty, mod hd, occ - freq dk grns, occ grn glau, p srtg, tr por.	
	3808-3809 - Ss, m gy-gn to dk brn-gy, mottled, v f - f grn, slty, mod hd to sli fri, occ dk gy arg ptgs, freq glau grns, occ other dk grns, cly-filled, tr por, v p srtg	
	3809-3811 - Sltst, dk gy-brn w/ freq large (up to .5mm) gn glau grns, some v f sd, hd, calc.	
	3811-3816 - Ss, m gy-gn, mod hd, v f - f grn, slty, cly - filled, occ to abunt glau, v sl calc to calc, freq dk gy-brn sh ptgs, tr por, p w/ some f srtg.	
3816-3820	Abunt cvgs	12
3820-3850	Ss, lt gy to m gy-gn, v f - f grn, sl fri - hd, occ m. grn, slty in pt, calc, freq to occ grn glau p w/ tr por, p - fr srtg; sh, m - dk gy, firm, slty, sdy, calc in pt; this intv intbd sh & ss w/ occ slt bds.	12

GAS OCCURRENCE/SHOWS

(CONTINUED ON PAGE #5)

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 JERRY RITENOUR

TETRA TECH, INC.
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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/17/81 Time 0600

Present Depth _____ Previous Depth _____ Footage 24 Hrs. _____

Formation(s) _____ Top _____

Present Activity: _____

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
	3799-3801 - Ss, m gy, w/ f dk arg ptgs, v f - slt, grdg to sltst, occ f grn, cly-filled, v sl calc in pt, tr por, p srtg, note fine arg ptgs make up 50% of rock.	
	3801-3802 - Ss, m gy, w/ few dk arg ptgs or burrows, v sl greenish cast, v f - f grn, some slt, cly - filled in pt, calc, occ dk grns, tr glau, f srtg, p por, occ spotty lt brn oil stn w/ yel fluor.	
	3802-3803 - Ss as in 3801-02, w/ inc in arg ptgs & decrease in oil stn & fluor.	
	3803-3804 - Ss, m gy, v f grn, occ f grn, v slty grdg to sltst, sl fri, sl calc, occ dk grn, tr glau, p srtg, tr por; sh, dk gy, sub-fis, slty, sdy, carb, tr pyr; this intv thin lams sd & sh, mostly sh.	
	3804-3805 - Ss, m gy, w/ v sl greenish cast, occ dk gy carb ptgs or burrow trails, v f - f grn, some slt, calc, fri, occ dk grns, tr glau, f srtg, p por, tr yel fluor.	
	(CONTINUED ON PAGE #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

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 JERRY RITENOUR

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/17/81 Time 0600

Present Depth _____ Previous Depth _____ Footage 24 Hrs. _____

Formation(s) _____ Top _____

Present Activity: _____

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
	3788-3789 - Ss, m gy, w/ spty brn oil stn, v f - f grn, some slt, SA-SR, sl fri, calc, occ dk grns, tr glau, sl cly-filled in pt, p w/ some fr por, fairly g srtg, dull or fluor	
	3789-3791 - Ss, as in 3788-89, less oil stn & occ v s arg ptg	
	3791-3792 - Ss m gy, w/ dk gy arg ptgs, v f - f grn, slty in pt, occ dk grns, tr glau, calc, p - tr por, f srtg, tr dull or fluor, tr stn.	
	3792-3793 - SS, as in 3791-92 w/ incr in brn oil stn (approx. 30%)	
	3793-3794 - Ss, m gy, w/ numerous dk gy arg ptgs, v f - f grn, slty grdg to sltst, occ dk grns, sl fri, calc, cly-filled, tr p por, no fluor or stn.	
	3794-3796 - Ss, as in 3793-94 w/ occ cly-filled burrow.	
	3796-3798 - Ss, m gy w/ tr dk gy arg ptgs, v f - f grn, SA-SR, sl fri, occ dk grn, tr glau, tr cly - filled burrows and/or trails, p por, fairly g srtg, tr fluor, occ calcite-filled frac or ptg.	
	3798-3799 - Ss, as in 3796-3798 w/ inc arg ptgs & burrows, no fluor.	

GAS OCCURRENCE/SHOWS

(CONTINUED ON PAGE #3)

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 JERRY RITENOUR

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/17/81 Time 0600

Present Depth 3880' Previous Depth 3816' Footage 24 Hrs. 64'

Formation(s) Sag River Top 3775'

Present Activity: Thawing out Kelley

LITHOLOGIC DESCRIPTION

Interval Reported 3816-3870' Sampling Interval 10 ft. Sample Quality Fair-Poor
Lag Time: 41 min. @ 3850 ft.

Interval	Description	Avg. Drill Rate min./ft.
3783-3816'	CORE #2: (Cut 33, rec. 33).	
	3783-3784 - Ss, m gy, v f - slt, occ grdg sltst, tr f grn, SA-SR, mod bd, occ dk cy matrix, calc cly-filled in pt, tr glau, occ calcite-filled fracs, tr por, sl tr oil w/ yel fluor.	
	3784-3785 - Ss, m gy, v f - f grn, slty in pt, SA-SR, sl fri, occ dk grns, tr glau, sl calc, sl cly - filled in pt, p por, g-fr srtg, spotty brn oil stn w/ dull orng fluor.	
	3785-3786 - Ss, brn, (oil stn), v f - f grn, SA-SR, some slt, fri, sl calc, sl cly-filled in pt, p por, fr - g srtg, even brn oil stn w/ dull orng fluor.	
	3786-3787 - Ss, m gy, w/ dk gy arg ptgs and/or burrows, v f grn to slt, some f grn, SA-SR, sl fri, occ dk grns, tr glau, sl tr calc cmt, cly - filled, v poor - tr por, fr srtg, tr dull or fluor, no visible stn.	
	3787-3788 - Ss as in 3786-87, pred dk gy, more arg, occ v thin sh ptgs.	
	(CONTINUED ON PAGE #2)	

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 4 Connection - Trip 8 @ 3816' Peaks -

Mud: Wt. 9.9 Vis 49 W.L. 13 ph 7.0 cc Oil 0 % Cl_2 43000 Temp. 72 °F. in 76 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3850	2.42	1.4	9.4

Dispatched Samples:

Type	Interval	No. of Boxes	Set No.
Washed & Dried Ditch			
Unwashed Ditch (Paleo)	3470-3750	1 (Box #7) and 1 box	core chip samples
Unwashed Ditch (USGS)			
GeoChem (canned)	3450-3816	2 (Box #11) and 1 box	core chip samples
Cores	No. 2 3783-3816	12	

Geologist JEFFRY RITENOUR

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/18/81 Time 0600

Present Depth 3980' Previous Depth 3880' Footage 24 Hrs. 100'

Formation(s) Argillite Top 3965'

Present Activity: Drilling

LITHOLOGIC DESCRIPTION

Interval Reported 3870-3970 Sampling Interval 10 ft. Sample Quality Good
Lag Time: 42 min. @ 3980 ft.

Interval	Description	Avg. Drill Rate min./ft.
3870-3900	As in 3850-3870; this intv pred sh w/ occ ss & sltst bd	8.0
3900-3910	Ss, m-lt gy, gn-gy in pt, v f - m grn, pred f grn, pred SR, sl fri-mod hd, calc, cly-filled in pt, some slt, abunt qlau, occ fos frags, fr-g srtg, generally p w/ some fr por; sh, m-dk gy-gn to dk gy-brn, sdy, slty, calc, sub-fis, firm, p srtd rks; this intv pred ss	3.0
3910-3930	As in 3900-3910 w/ tr ls biosparites, m gy, mod hd, sl arg, abunt broken fos	4.0
3930-3940	As in 3900-3910	7.0
3940-3960	As in 3900-3910 w/ decr in ss, w/ incr in sltst & sh	6.0
3960-3970	Argillite, blk, sp w/ wh & lt gy, hd, prob meta sediments, v freq qtz grns, tr free calc	9.0

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
3950-55	8	0	4	2	1600	-	-	-	-

Ditch Gas (Units): Background 2 Connection - Trip - Peaks -

Mud: Wt 9.8 Vis 41 W.L. 14.5 ph 7.0 cc Oil 0 % Cl_2 39000 Temp. 70 °F. in 76 °F. out

Data Unit:

Depth	Shale Density	Dc Exponent	Pore Pressure
3900	2.47	1.93	9.5
3950	2.56	1.70	9.5

Dispatched Samples:

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

Geologist JERRY RITENOUR

10

BioStratigraphics
Consulting Micropaleontology

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

18 March 1981

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MAR 24 1981
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MENLO PARK

TO: SAM HEWITT/HARRY HAYWOOD

TETRA TECH/USGS

Tulageak #1

Preliminary Biostratigraphic Report #2

Foraminifera ---

2490 - 3030'?: Early Cretaceous (Hauterivian to Barremian) F-12 to F-13.

3030?- 3470': Probable Early to Middle Jurassic F-17 to F-18.

NOTE: Above based on 90' sample examination. 3470 feet base of samples received to date.

Palynology ---

2700 - 2880': Early Cretaceous. Possible Neocomian (P-M 18a).

2880 - 2970': Early Cretaceous. Neocomian (P-M 19).

2970 - 3420': Early-Middle Jurassic (P-M 23).

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

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/19/81 Time 0600

Present Depth 4006' Previous Depth 3980' Footage 24 Hrs. 26'

Formation(s) Argillite Top 3965'

Present Activity: Cutting Core #3

LITHOLOGIC DESCRIPTION

Interval Reported 3980-4000 Sampling Interval 10 ft. Sample Quality Good
Lag Time: 33 min. @ 4000 ft.

Interval	Description	Avg. Drill Rate min./ft.
3980-4000	Argillite as abv in 3960-3980	12

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 0 Connection - Trip 2 Peaks -

Mud: Wt. 9.8 Vis 46 W.L. 5.9 ph 7.0 cc Oil 0 % Cl_2 38000 Temp. 68 °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 GERALD RITENOUR

U.S. GEOLOGICAL SURVEY/ONPRA

TETRA TECH, INC.

CONVENTIONAL CORE DESCRIPTION FORM

Well: Tulageak #1 Core No: 3

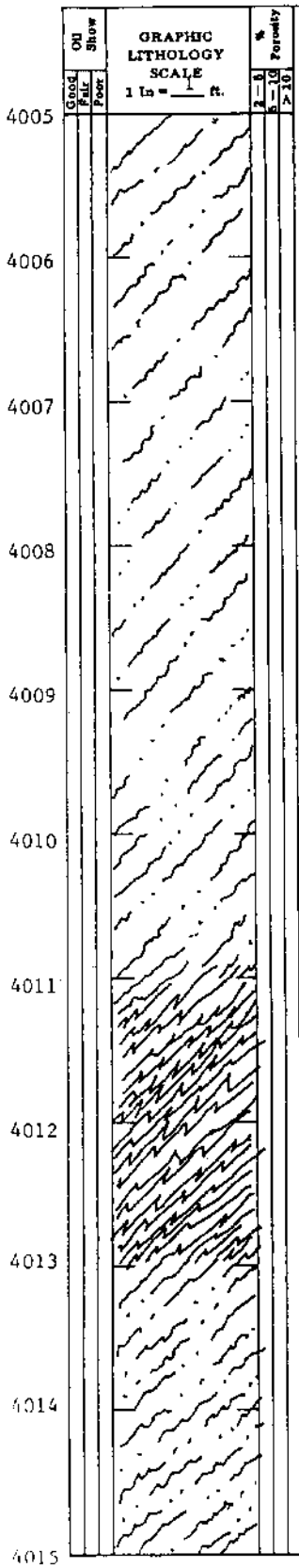
Date: 3-19-81 T.D. 4015'

Interval Cored: 4005'-4015' Formation: Argillite

Recovery: 10' Core Diameter: 4 Inches

#3

GENERALIZED CORE DESCRIPTION: 10' of low grade meta-sediments predominantly phylite w/ occasional zone of slate



DETAILED CORE DESCRIPTION Prepared By Gerald Ritenour

4005'-4011'
Phylite, v dk gy-blk, hd, steep cleveage poss original bedding surface, occ quartz or calcite-filled fracture (horizontal, freq small pyrite? xl

4011'-4013'
SLATE, v dk gy-black, hd, steep cleveage, occ pyrite xl

4013'-4015'
Phylite, as in 4005'-4011'

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DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/20/81 Time 0600

Present Depth 4015' Previous Depth 4006' Footage 24 Hrs. 9

Formation(s) Argillite Top 3965'

Present Activity: Logging

LITHOLOGIC DESCRIPTION

Interval Reported 4005-4015' Sampling Interval Core ft. Sample Quality GOOD
Lag Time: 47 min. @ 4015 ft.

Interval	Description	Avg. Drill Rate min./ft.
4005-4011	Phyllite, v dk gy to blk, hd, steep cleaveage, prob original bdg surf, occ qtz - or calc - filled fracs, frequent s pyr (?) xls	
4011-4013	Slate, v dk gy, hd, steep cleaveage, occ pyr xls	
4013-4015	As in 4005-4011	

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 2 Connection - Trip 22 Peaks -

Mud: Wt. 9.8 Vis 45 W.L. 6.2 ph 7.0 cc Oil 0 % Cl_2 34000 Temp. 68 °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	3640-4015	2	2
Unwashed Ditch (Paleo)	3750-4015	1 (Box #8)	
Unwashed Ditch (USGS)	3640-4015	1 (Box #6)	
GeoChem (canned)	3810-4015	1 (Box #12)	
Cores	No. 3 4005-4015	4 (plus core chips)	

Geologist GERALD RITENOUR

TETRA TECH, INC.

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LOGGING REPORT

WELL NAME TULAGEAK NO. 1

Date March 19, 20, 1981 Driller Depth 4015'

Elevation 27 K.B. Logger Depth 4002'

Logs Ran and Intervals

Temperature (2)	100-4000	CST Top Shot 2730 - Bottom Shot 3940'
GR/SP/DLL	2715-4000	
GR/CAL/CNL/FDC	2715-4001	
GR/BHC	2715-3994	
HDT - DIPMETER	2715-3998	

Additional Logs to Run

NONE

Zones of Interest

Depth	Gross Thickness	Net Feet of Porosity	Lith	Porosity	Probable Fluid Content
3764-90	26	21	55	18.5%	Water
3800-30	30	30	55	11.0%	"
3900-10	10	10	55	17.0%	"
3932-45	13	6	55	17.0%	"
NO ZONES OF ANY REAL INTEREST					

Discussion:

Absolutely no evidence of invasion in the above sands suggesting very low permeabilty but good porosity. Rwa computes 0.2Ω, or 25,000± ppm in all sands.

Log Tops & Correlations:

	TULAGEAK #1	W. DEASE #1
Kingak	2950	3370
U. Barrow	3542	3692
L. Barrow	3640	3800
Sag River	3764	3885
Argillite	3964	4020

Additional Evaluation Plans:

DST and Birdwell Velocity Survey

GERALD RITENOUR
Wellsite Geologist

A. KANE
Log Analyst

TETRA TECH, INC.
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DRILL STEM TEST REPORT FORM

WELL NAME TULAGEAK TW#1 DST. NO. 1 DATE 3/21/81

Formation Tested Sag River Sand

Test Interval 3770' to 3825'

Total Depth 4015'

Choke Size: Surface 1/8 & ¼" Bottom Hole 3/4"

Hole Size 8½"(nominal); 9-9½"(caliper)

Drill Collar Length 309' I.D. 2.25"

Drill Pipe Length 3408' I.D. 2.76"

Packer Depth(s) 3761', 3770', & 3825' Ft.

Depth Tester Valve 3740' Ft.

Cushion Type fresh water Amount 530'

TEST DATA

Tool open at 1630 hrs.
Initial flow period 30 min.
Initial shut-in period 30 min.
Final flow period 120 min.
Final shut-in period 240 min.
Unseated packer at 2330 hrs.

RESISTIVITY/CHLORIDE DATA

	Resistivity		Chloride Content
Recovery Water	@	°F.	— ppm
Recovery Mud	@	°F.	34,500 ppm
Recovery Mud Filtrate	@	°F.	34,500 ppm
Mud Pit Sample	@	°F.	32,500 ppm
Mud Pit Sample Filtrate	@	°F.	32,500 ppm
Mud Weight	vis		cp

Description of initial flow period Immediate weak blow (1" of water) increasing to bottom of bucket (20") in 15 miuntes. Continued moderate blow for the remaining 15 minutes.

Description of final flow period Immediate blow to bottom of bucket (20" of water) rapidly decreasing to 7" of water then slowlydecreasing to 4" of water by the end of the flow period.

PRESSURE DATA

TEMPERATURE	Gauge No. 597 Depth: 3746' ft.		Gauge No. 7582 Depth: 3807' ft.		Gauge No. 7581 Depth: 3811' ft.		TIME	
	24 Hour Clock		48 Hour Clock		24 Hour Clock		Tool Opened 1630	A.M. P.M.
Est. °F.	Blanked Off No		Blanked Off Yes		Blanked Off Yes			
Actual 58 °F.	Pressures		Pressures		Pressures		Opened Bypass 2330	A.M. P.M.
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	1955		1998		1993		—	—
First Period FLOW Initial	236		269		279			
First Period FLOW Final	521		537		545		30	
First Period Closed In	1820		1846		1841		30	
Second Period FLOW Initial	521		537		545		—	—
Second Period FLOW Final	643		676		684		120	
Second Period Closed In	1820		1846		1841		240	
Third Period FLOW Initial							—	—
Third Period FLOW Final								
Third Period Closed In								
Final Hydrostatic	1955		1998		1993		—	—

RECOVERY DATA

Cushion Water Type fresh Amount 530' Depth Back Pres. Valve 3740' Surface Choke 1/8" (hose) Bottom Choke 3/4" Meas. From Tester Valve

Recovered 620'/4.88 bbl Feet/bbl of Slightly water cut drilling mud.
Recovered Feet/bbl of
Recovered Feet/bbl of
Recovered Feet/bbl of

Remarks Good test. There was some packer slippage. Formation was tight and wet. Pulled 60,000 lbs over string weight (100,000 lbs) to pull packers and tools loose.

Arnold, Ritenour, Baker
Prepared by

TETRA TECH, INC.

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/21/81 Time 0600

Present Depth 4015' Previous Depth 4015' Footage 24 Hrs. 0

Formation(s) Argillite Top 3965 (3964 on log)

Present Activity: Circulating

LITHOLOGIC DESCRIPTION

Interval Reported _____ Sampling Interval _____ ft. Sample Quality _____
Lag Time: 47 min. @ 4015 ft.

Interval	Description	Avg. Drill Rate min./ft.
	Completed logging & SWC; preparing to DST.	

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 0 Connection 0 Trip - Peaks -

Mud: Wt. 9.8 Vis 47 W.L. 6.4 ph 7.0 cc Oil 0 % Cl_2 33000 Temp. 68 °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 _____ GEOLOGIST EXTENDER _____

TETRA TECH, INC.

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

DAILY GEOLOGICAL REPORT

WELL TULAGEAK #1 Date 3/22/81 Time 0600

Present Depth 4015' Previous Depth 4015' Footage 24 Hrs. 0

Formation(s) Argillite Top 3965'

Present Activity: WOO (ready to plug & abandon)

LITHOLOGIC DESCRIPTION

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

Interval	Description	Avg. Drill Rate min./ft.
	DST #1 (see attached report)	

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.		

FINAL REPORT

TERRY FITZHUGH

BioStratigraphics
Consulting Micropaleontology

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

RECEIVED
MAR 26 1981
ONPRA
MENLO PARK

23 March 1981

TO: SAM HEWITT/HARRY HAYWOOD

TETRA TECH/USGS

Tulageak #1

Preliminary Biostratigraphic Report #3

Foraminifera ---

3030 - 3710': Early to Middle Jurassic F-17 to F-18.

3710 - 3740': Possible Triassic F-19, but need to see some downhole samples to be sure this is not reworked.

Palynology ---

3420 - 3690': in Early to Middle Jurassic (P-M 23).

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

NOTE: Miss samples found at United Air Freight. Please notify us if samples shipped other than AIRBORNE.

BioStratigraphics
Consulting Micropaleontology

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

RECEIVED
MAR 30 1981
ONPRA
MENLO PARK

24 March 1981

TO: SAM HEWITT/HARRY HAYWOOD

TETRA TECH/USGS

Tulageak #1

Preliminary Biostratigraphic Report #4

Foraminifera ---

3710 - 3950': Probable Triassic F-19, but the fauna is not typical, and it might still be Early to Middle Jurassic F-17 to F-18.

3950 - 4010': Age Indeterminate. Black argillite.

Palynology ---

3690 - 3870': In Early-Middle Jurassic (P-M24 to P-M23)

3870 - 3960': Probably in Late Triassic (P-M26)

Much Neocomian and reworked Paleozoic throughout.

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