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INTRODUCTION

A Seismic Velocity Survey was conducted for Husky Oil NPR Operations, Inc: Operator For Office Of National Petroleum Reserve Alaska, in the Tunalik Test Well No. 1 located in the National Petroleum Reserve Alaska. The survey was conducted by the Birdwell Division of Seismograph Service Corporation on June 1, 1979 (Run 1), July 31, 1979 (Run 2), November 6, 1979 (Run 3), and December 27, 1979 (Run 4).

A borehole compensated Sonic Log, digitized and integrated from 172 ft. K.B. to 20,322 ft. K.B., was calibrated to the geophone survey data.

OPERATION STATISTICS

Location:	Sec. 20, Twp. 10N, Rge 36W
Surface conditions:	Favorable
K.B. elevation:	+ 110 ft.
Casing depth:	14,719 ft. K.B.
Seismic datum elevation:	Sea level
Well T.D. driller:	20,335 ft. K.B.
Depth logger:	20,329 ft. K.B.
Shotpoint locations:	See Shooting Plat
Survey based on:	K.B. elevation
Number of levels tested:	33

OPERATION STATISTICS - contd.

Upper geophone level tested:	6500 ft. K.B.
Deepest geophone level tested:	20,278 ft. K.B.
Quality of geophone breaks:	Good to poor
Elevation velocity (V_e):	10,000 ft./sec.

INSTRUMENTATION

Energy source:	Explosives
Downhole detector:	Six 15 Hz. geophones connected in parallel
Downhole amplification:	40 db
Borehole coupling:	Surface controlled arm
Surface amplification:	Floating point amplifier
Recording:	S.S.C. model IDPC-1100 floating point digital well survey recording system
Tape format:	9 track, IBM compatible
Recording mode:	800 bpi NRZI
Sample rate:	1 millisecond
Trace polarity:	
Digital tape playouts:	Time breaks: down Geophone breaks: down

FIELD PROCEDURE

Standard practice, using the wall-coupled geophone, is to lower the instrument to the level to be tested, open the coupling device,

FIELD PROCEDURE - contd.

slacken the cable, shoot, pick up the slack, retract the coupling device and then move to the next level where the cycle is repeated.

Slackening the cable while the phone is coupled to the wall minimizes the effect of any cable-borne energy.

RESULTS AND INTERPRETATION

Seismic

The data used for the calculations consist of the times picked from the digital records for each level. These time data are tabulated with the velocities and calculation steps on the velocity calculation sheets in the appendix. A computer plot of the time-depth, average and interval velocities, with a reduced scale plot of the calibrated velocity log, is included in the appendix. The individual digital records are also shown in the appendix. The traces were edited and arranged according to depth.

Velocity Log

The time depth values obtained from the velocity survey are used to calibrate the interval transit time log. The measured timed intervals from the survey are compared with the corresponding integrated time intervals from the interval transit time log. A plot is made indicating the differences between the geophone data and the log, and from this plot adjustments are determined and applied to the log. This

Velocity Log - contd.

plot is labeled Deviation Plot, and is included in the appendix. The adjustments determined from the deviation plot are applied by moving the interval transit time curve laterally in such a way that when re-integrated the log times will agree closely with the well geophone times. The lateral adjustments consist of a linear or differential shift.

Linear shifts are calculated using the equation:

$$\text{Shift} = \frac{t_{A2} - t_{A1}}{D_1 - D_2} \times 10^6$$

where D is the depth of the adjustment point, and t_A is the amount of time adjustment indicated by the adjustment point. The result is expressed in $\mu\text{s}/\text{ft}$. The linear shifts are applied only when the equation is positive as the log error in this case is assumed to be instrumental in origin. When the equation is negative a differential shift is used.

Differential shifts are calculated using the equation:

$$\% \text{ Shift} = \frac{(t_L - t_A)_2 - (t_L - t_A)_1}{t_{L2} - t_{L1}} \times 100$$

where t_L is the travel time from the interval transit time log at the adjustment point, and t_A is the amount of time adjustment indicated by the adjustment point. Differential shifts are applied whenever the calibration data indicates a shift towards higher velocities. The lower velocities, due to borehole effects, are assumed to have contributed

Velocity Log - contd.

more transit time error than higher velocities. Therefore, lower velocity sections of the log receive larger corrections than higher velocity sections. Differential shifts are expressed as a percentage of the interval transit time log values. In both equations above, subscript 1 corresponds with the shallow adjustment point, and subscript 2 corresponds with the deep adjustment point. (See Deviation Plot)

The adjustments to the log interval time data are listed on the calibrated log heading, and have been absorbed into the natural velocity contrasts as recorded on the interval transit time log. The total travel times for the geophone levels as shown by the calibrated log, and indicated time differences between the geophone and calibrated log data, are listed on the calibrated velocity log data sheets in the appendix. The time differences are minimal.

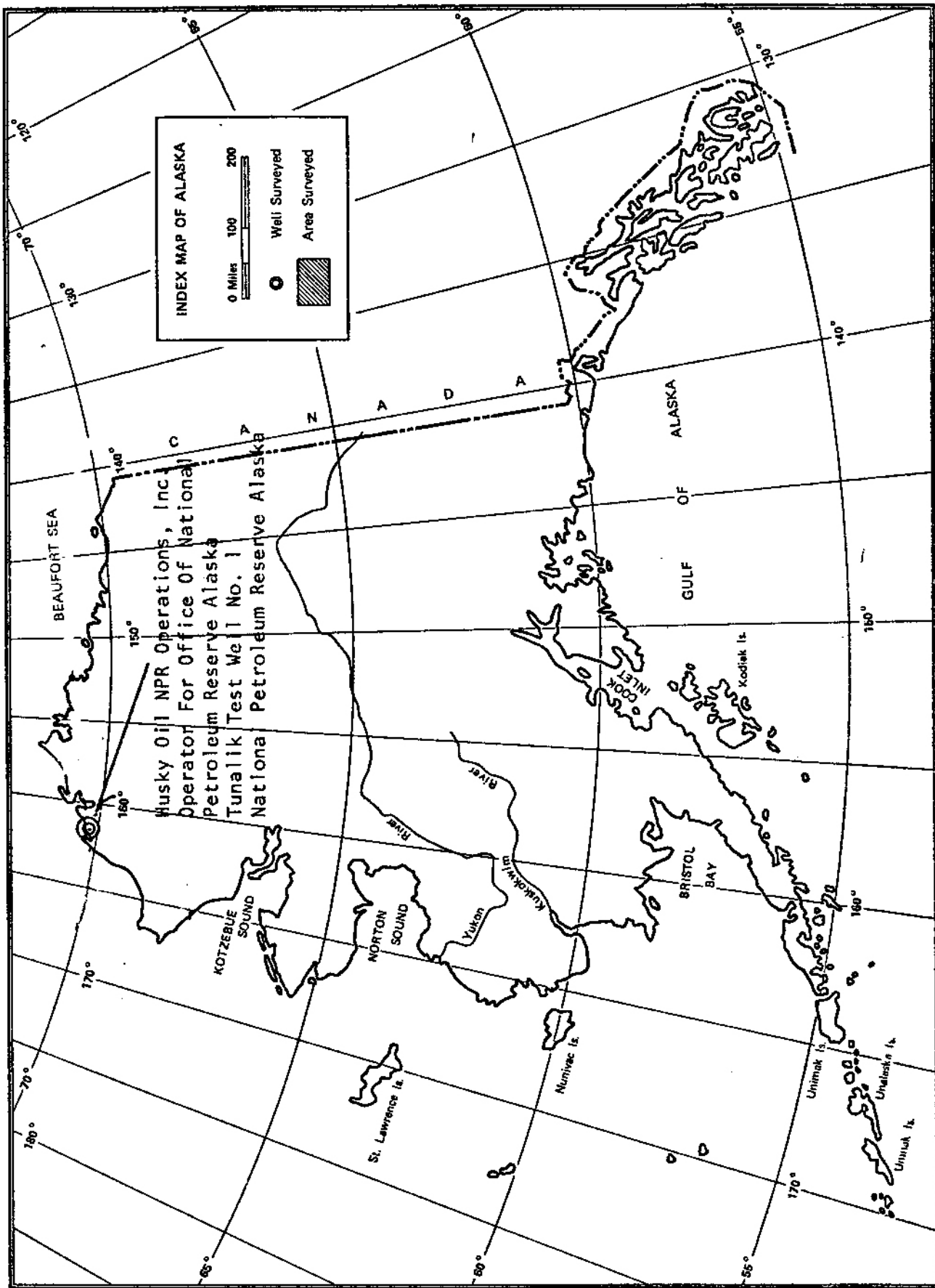
Three copies of the calibrated interval transit time log are included in the report pocket: One at a linear depth scale of 1" = 100', one at a linear time scale of 2 1/2" per second, two way time, and one at a linear time scale of 5" per second, two way time. A computer printout of the calibrated log data, listing one and two way travel times, depth, interval and average velocities, is included in the appendix.

The results from the combined survey and velocity log are good,
and the data are considered reliable.

Respectfully submitted,

Birdwell Division of
Seismograph Service Corporation

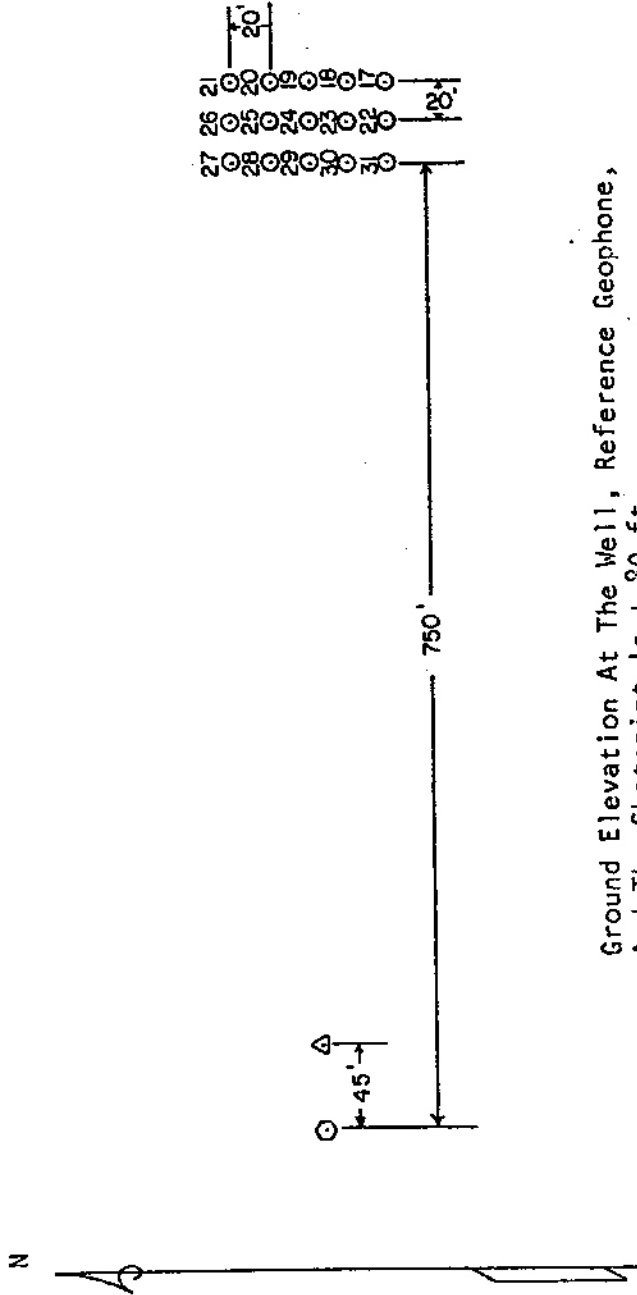
Date _____ By _____
Jim Doye



Shooting Plat

Run No. 1 - June 1, 1979

Husky Oil NPR Operations, Inc.
Operator For Office Of
National Petroleum Reserve Alaska
Tunalik Test Well No. 1
National Petroleum Reserve Alaska



Ground Elevation At The Well, Reference Geophone,
And The Shotpoint Is + 30 ft.

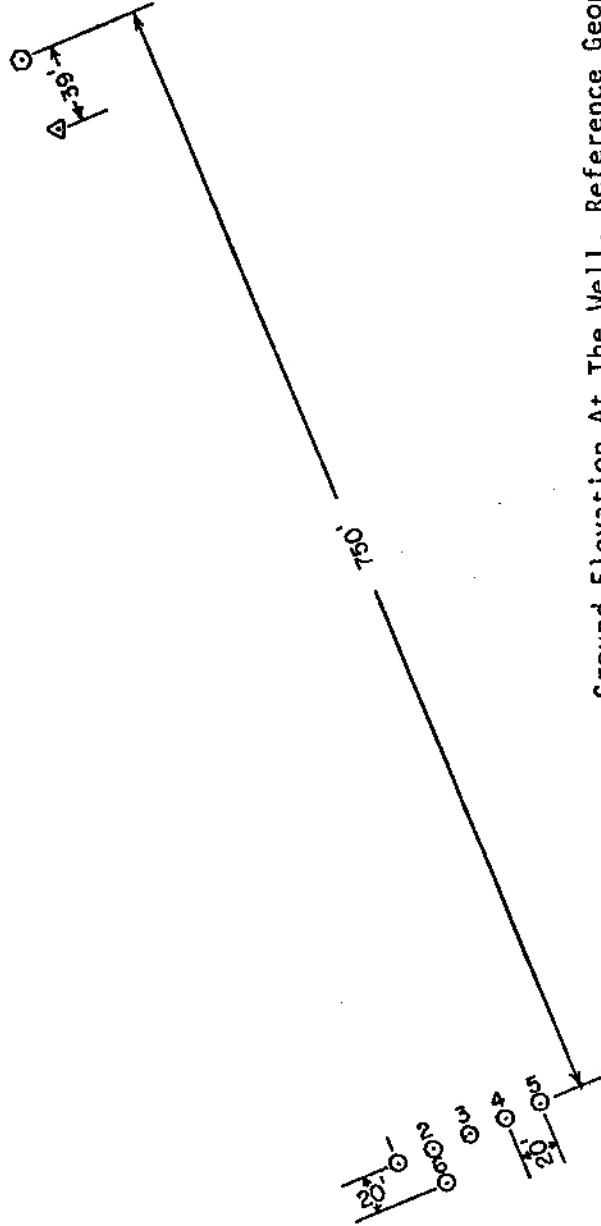
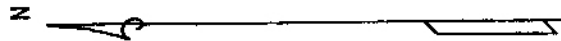
Elevation Datum: Sea Level

- Legend: ● Well
○ Shotpoint
△ Reference Geophone

Shooting Plat

Run No. 2 - July 31, 1979

Husky Oil NPR Operations, Inc.
Operator For Office Of
National Petroleum Reserve Alaska
Tunalik Test Well No. 1
National Petroleum Reserve Alaska



Ground Elevation At The Well, Reference Geophone,
And The Shotpoints Is + 80 ft.

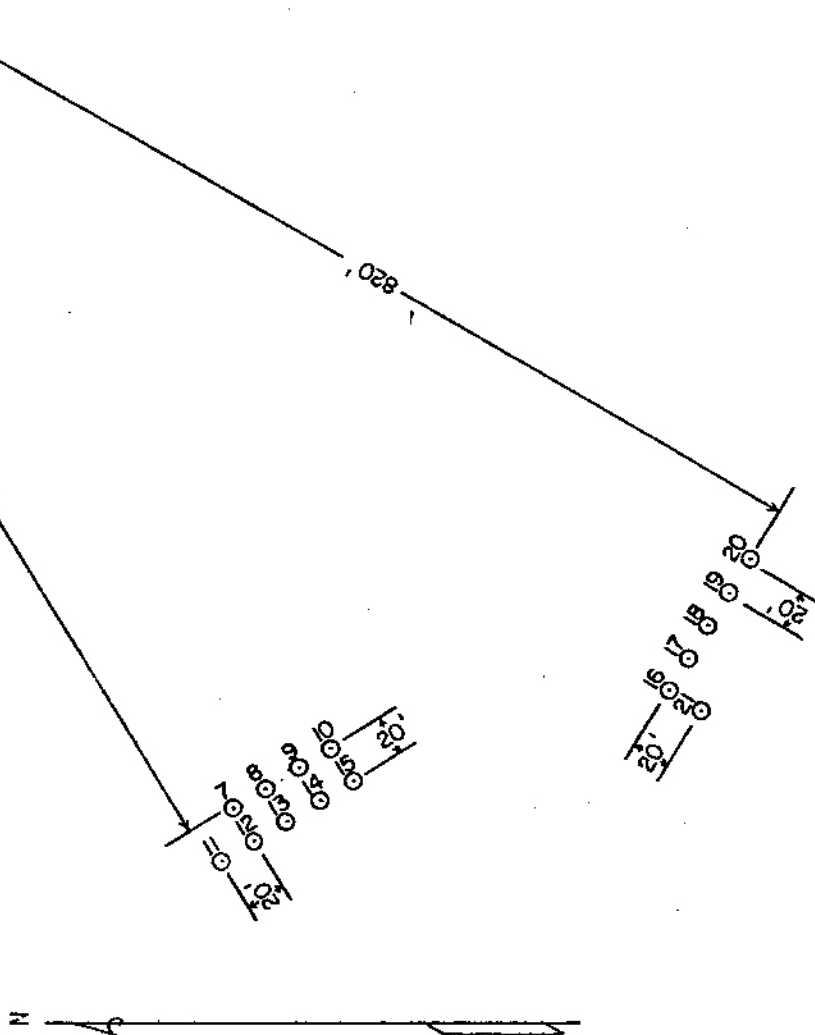
Elevation Datum: Sea Level

Legend: ● Well
○ Shotpoint
△ Reference Geophone

Shooting Plat

Run No. 3 - November 6, 1979

Husky Oil NPR Operations, Inc.
 Operator For Office Of
 National Petroleum Reserve Alaska
 Tunalik Test Well No. 1
 National Petroleum Reserve Alaska



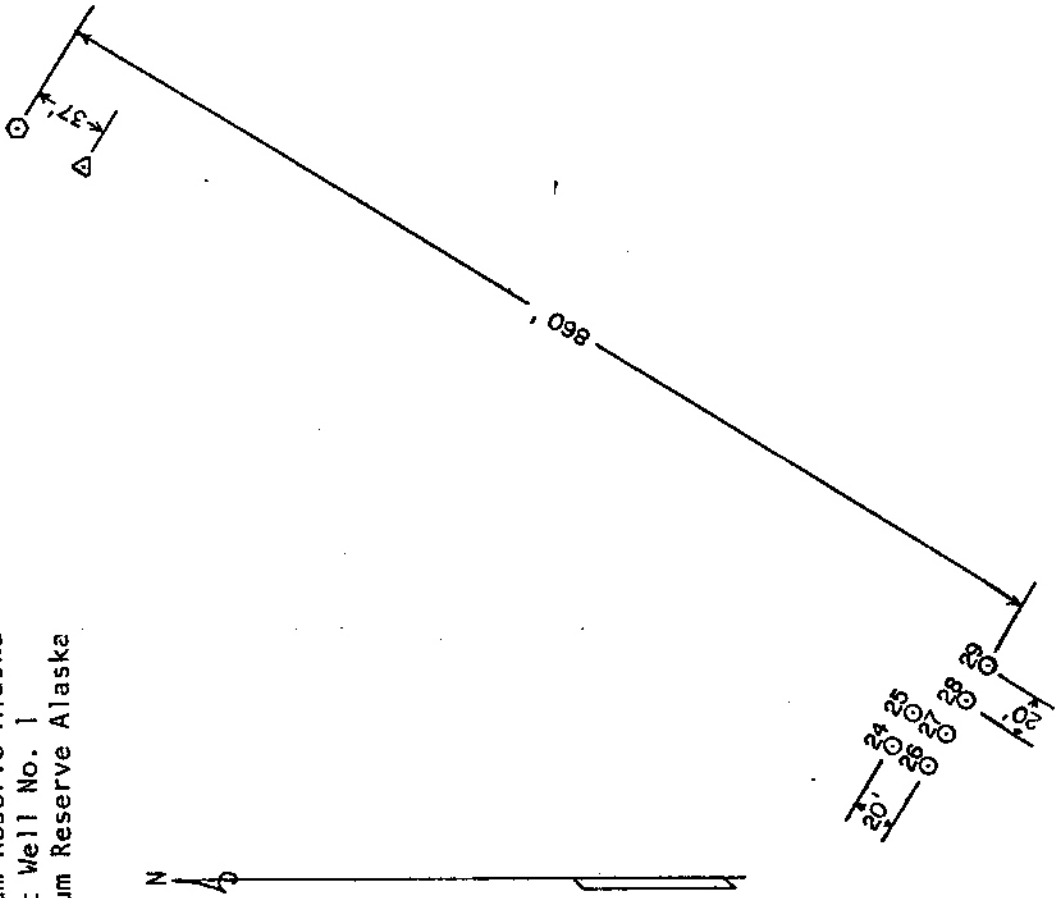
Ground Elevation At The Well, Reference Geophone,
 And The Shotpoints Is + 80 ft.

Elevation Datum: Sea Level

- Legend: \odot Well
 \ominus Shotpoint
 \triangle Reference Geophone

Shooting Plat

Run No. 4 - December 27, 1979
Husky Oil NPR Operations, Inc.
Operator For Office Of
National Petroleum Reserve Alaska
Tunalik Test Well No. 1
National Petroleum Reserve Alaska



Ground Elevation At The Well, Reference Geophone,
And The Shotpoints Is + 80 ft.

Elevation Datum: Sea Level

- Legend: Well
 Shotpoint
 Reference Geophone



Husky Oil NPR Operations, Inc.
 Operator For Office Of National Petroleum Reserve Alaska
 Tunalik Test Well No. 1
 National Petroleum Reserve Alaska

ELEV.		ELEV. DAT.	T.D.	DATE	
K.B. = 110 ft.		Sea Level	20,335 ft. K.B.	June 1, July 31, Nov. 6, Dec. 27, 1979	
DEPTH BELOW		ITEM	LOG Tgd	GEO. Tgd	DIFF.
K.B.	DATUM				
6500	6390	Geophone Level	.6230	.6227	+ .0003
8280	8170	Geophone Level	.7648	.7648	.0000
9010	8900	Geophone Level	.8241	.8241	.0000
9610	9500	Geophone Level	.8732	.8733	- .0001
10,305	10,195	Geophone Level	.9274	.9275	- .0001
10,630	10,520	Geophone Level	.9527	.9524	+ .0003
10,656	10,546	Geophone Level	.9550	.9545	+ .0005
10,910	10,800	Geophone Level	.9798	.9794	+ .0004
11,460	11,350	Geophone Level	1.0175	1.0167	+ .0008
11,615	11,505	Geophone Level	1.0290	1.0276	+ .0014
12,030	11,920	Geophone Level	1.0641	1.0656	- .0015
12,355	12,245	Geophone Level	1.0938	1.0947	- .0009
12,505	12,395	Geophone Level	1.1090	1.1099	- .0009
12,875	12,765	Geophone Level	1.1449	1.1441	+ .0008
13,300	13,190	Geophone Level	1.1877	1.1871	+ .0006
13,960	13,850	Geophone Level	1.2511	1.2521	- .0010
14,350	14,240	Geophone Level	1.2951	1.2942	+ .0009
14,690	14,580	Geophone Level	1.3227	1.3223	+ .0004
14,819	14,709	Geophone Level	1.3346	--	--
15,135	15,025	Geophone Level	1.3657	--	--
15,560	15,450	Geophone Level	1.4011	1.4023	- .0012
16,890	16,780	Geophone Level	1.5001	1.4985	+ .0016
17,100	16,990	Geophone Level	1.5131	1.5126	+ .0005
17,150	17,040	Geophone Level	1.5157	1.5156	+ .0001
17,228	17,118	Geophone Level	1.5197	1.5206	- .0009



Husky Oil NPR Operations, Inc.
 Operator For Office Of National Petroleum Reserve Alaska
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ELEV.		ELEV. DAT.	T.D.	DATE	
K.B. = 110 ft.		Sea Level	20,335 ft. K.B.	June 1, July 31, Nov. 6, Dec. 27, 1979	
DEPTH BELOW		ITEM	LOG Tgd	GEO. Tgd	DIFF.
K.B.	DATUM				
17,563	17,453	Geophone Level	1.5385	1.5384	+ .0001
17,796	17,686	Geophone Level	1.5524	1.5513	+ .0011
18,000	17,890	Geophone Level	1.5651	1.5664	- .0013
18,250	18,140	Geophone Level	1.5792	--	--
18,279	18,169	Geophone Level	1.5808	1.5803	+ .0005
18,383	18,273	Geophone Level	1.5866	1.5853	+ .0013
19,062	18,952	Geophone Level	1.6212	1.6204	+ .0008
20,278	20,168	Geophone Level	1.6890	1.6905	- .0015

Seismic Velocity Survey
And
Log Calibration

MGG 88005007

Husky Oil NPR Operations, Inc.
Operator For Office Of
National Petroleum Reserve Alaska
Tunalik Test Well No. 1
National Petroleum Reserve Alaska

Conducted For
Husky Oil NPR Operations, Inc.

Birdwell Division



Seismograph Service Corporation

A SUBSIDIARY OF BAYNEON COMPANY

P.O. BOX 1590

TULSA, OKLAHOMA 74102

EXPLOSIVE SEISMIC VELOCITY SURVEY

HUSKY OIL NPR Operations, Inc.
 Operator For Office of National Petroleum Reserve Alaska
 Tunalik Test Well No. 1
 National Petroleum Reserve Alaska

LEVEL	FILE NO. OR CORR. NO.	S.P. NO.	Chg.	t _s	t _r	MEASURED Dgm	VERTICAL Dgm	Dgd	% S.P. (Elev. Elev. - Dot. - d _s = Δ s)	Dbs	H Dist.	Cos i	Avg. T	Gr.	Tos	Δ s _{ed} / 10,000 ft./sec.	Tgd	Avg. Tgd	V _a	Δ Dgd	Δ Tgd	V _i	DATE				
																							ELEV. DATUM	ELEV. VEL., V _v	Sea Level	10,000 ft./sec.	June 1, July 31,
																							TOTAL DEPTH				
																							20,335 ft. K.B.	14,719 ft. K.B.			
A	1	30	27	20	.009	.075	6500	6500	6390	80	0	60	20	6410	751	.9932	.629	G	.6247	-.0020	.6227	.6227	10,262	6390	.6227	10,262	
B	1	31	28	20	.008	.075	8280	8280	8170	80	0	60	20	8190	750	.9958	.770	G	.7668	-.0020	.7648	.7648	10,683	1780	.1421	12,526	
C	1	32	29	20	.009	.076	9010	9010	8900	80	0	60	20	8920	750	.9965	.829	G	.8261	-.0020	.8241	.8241	10,800	730	.0593	12,310	
D	1	33	30	20	.008	.075	9610	9610	9500	80	0	60	20	9520	750	.9969	.878	G	.8753	-.0020	.8733	.8733	10,878	600	.0492	12,195	
E	1	35	31	20	.009	.075	10,305	10,305	10,195	80	0	60	20	10,215	751	.9973	.932	G	.9295	-.0020	.9275	.9275	10,992	695	.0542	12,823	
F	1	39	26	40	.007	.077	10,630	10,630	10,520	80	0	60	20	10,540	771	.9973	.957	G	.9544	-.0020	.9524	.9524	11,046	325	.0249	13,052	
G	1	40	25	40	.008	.078	10,656	10,656	10,546	80	0	60	20	10,566	770	.9974	.959	G	.9565	-.0020	.9545	.9545	11,049	26	.0021	12,381	
H	1	47	20	40	.010	.080	10,910	10,910	10,800	80	0	60	20	10,820	790	.9973	.984	G	.9813	-.0020	.9793	.9793	11,027	254	.0249	10,201	
I	1	41	24	40	.008	.078	10,910	10,910	10,800	80	0	60	20	10,820	770	.9975	.984	G	.9815	-.0020	.9795	.9795	11,027	550	.0373	14,745	
I	1	42	23	40	.009	.077	11,460	11,460	11,350	80	0	60	20	11,370	770	.9977	1.021	G	1.0187	-.0020	1.0167	1.0167	11,164	155	.0109	14,220	
J	1	46	19	40	.010	.080	11,615	11,615	11,505	80	0	60	20	11,525	790	.9977	1.032	G	1.0296	-.0020	1.0276	1.0276	11,196	415	.0380	10,921	
K	1	43	17	40	.009	.080	12,030	12,030	11,920	80	0	60	20	11,940	791	.9978	1.070	G	1.0676	-.0020	1.0656	1.0656	11,186	325	.0291	11,168	
L	1	44	18	40	.009	.080	12,355	12,355	12,245	80	0	60	20	12,265	790	.9979	1.099	G	1.0967	-.0020	1.0947	1.0947	11,186	150	.0152	9868	
M	2	407	6	40	.011	.067	12,505	12,505	12,395	80	0	70	10	12,405	770	.9981	1.113	G	1.1109	-.0010	1.1099	1.1099	11,168	370	.0342	10,819	
N	2	406	5	40	.013	.062	12,875	12,875	12,765	80	0	70	10	12,775	751	.9983	1.147	G	1.1451	-.0010	1.1441	1.1441	11,157	425	.0430	9884	
O	2	404	4	40	.011	.062	13,300	13,300	13,190	80	0	70	10	13,200	750	.9984	1.190	G	1.1881	-.0010	1.1871	1.1871	11,111	660	.0650	10,154	
P	2	403	3	40	.010	.063	13,960	13,960	13,850	80	0	70	10	13,860	750	.9985	1.255	G	1.2531	-.0010	1.2521	1.2521	11,061	390	.0421	9264	
Q	2	402	2	40	.011	.062	14,350	14,350	14,240	80	0	70	10	14,250	750	.9986	1.297	G	1.2952	-.0010	1.2942	1.2942	11,003	340	.0281	12,100	
R	3	414	21	60	.010	.075	14,690	14,690	14,580	80	0	90	-10	14,570	841	.9983	?	-	-	+	.0010	-	-	1.3223	11,026		
S	3	411	14	40	.010	.067	14,819	14,819	14,709	80	0	70	10	14,719	750	.9987	?	-	-	-.0010	-	-	-	-	870	.0800	10,875
T	3	412	15	40	.010	.066	15,135	15,135	15,025	80	0	70	10	15,035	751	.9988	?	-	-	-.0010	-	-	-	-	1330	.0962	13,825
U	3	410	13	40	.010	.064	15,560	15,560	15,450	80	0	70	10	15,460	750	.9988	1.405	P	1.4033	-.0010	1.4023	1.4023	11,018	210	.0141	14,894	
V	3	408	11	40	.010	.067	16,890	16,890	16,780	80	0	70	10	16,790	751	.9990	1.501	P	1.4995	-.0010	1.4985	1.4985	11,198	50	.0030	16,667	
W	3	407	10	40	.012	.065	17,100	17,100	16,990	80	0	70	10	17,000	731	.9991	1.515	F	1.5136	-.0010	1.5126	1.5126	11,232	78	.0020	15,600	
X	3	406	9	40	.010	.063	17,150	17,150	17,040	80	0	70	10	17,050	730	.9991	1.518	F	1.5166	-.0010	1.5156	1.5156	11,243				

SEC 801-9

48

EXPLOSIVE SEISMIC VELOCITY SURVEY

Husky Oil RPR Operations, Inc.
 Operator For Office of National Petroleum Reserve Alaska
 Tunalik Test Well No. 1
 National Petroleum Reserve Alaska

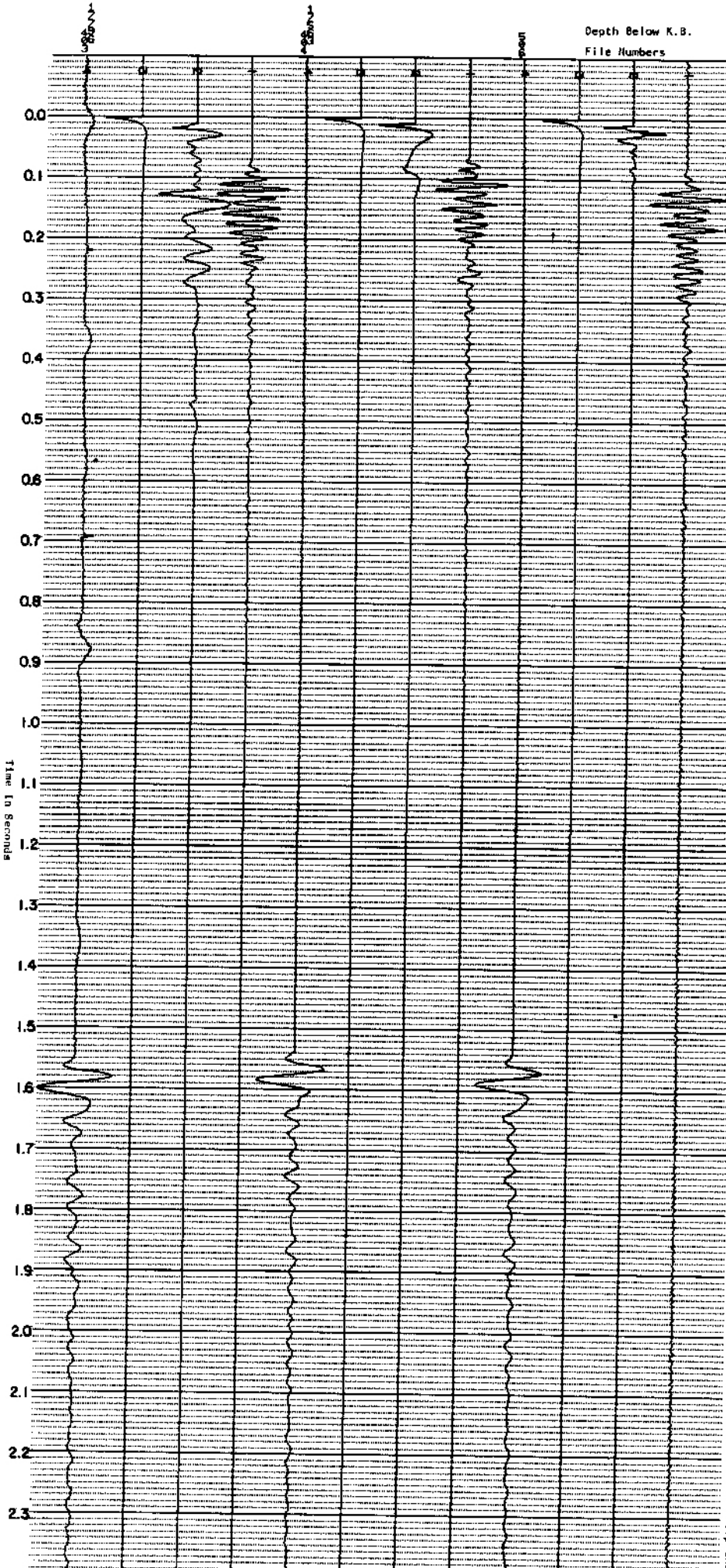
LEVEL	FILE NO. RECORD NO.	S.P. NO.	Chp.	1'	10'	TOTAL DEPTH		Dgd	Dsp. (Elev. - Dat. Elev.)	Dsp. = Δsd	Dsp	H. Dist.	Cos i	Avg. t	Gr.	Tss	Δsd / Vgd	Tgd	Avg. Tgd	Vo	Δ Dgd	Δ Tgd	Vi				
						110 ft.	20,335 ft. K.B.																				
							14,719 ft. K.B.																				
							ELEV. DATUM Sea Level																				
							ELEV. VEL., V.																				
							10,000 ft./sec.																				
							DATE June 1, July 31, November 6, Dec. 27, 1979																				
Y	3	405	8	40	.010	.063	17,228	17,228	17,228	17,118	80	0	70	10	17,128	730	.9991	1.523	P	1.5216	-.0010	1.5206	11,257	78	.0030	15,600	
Z	4	506	28	60	.010	.082	17,563	17,563	17,453	17,453	80	0	90	-10	17,443	860	.9988	1.541	G	1.5392	+.0010	1.5402	11,345	335	.0178	18,820	
	3	404	7	40	.010	.063	17,563	17,563	17,453	17,453	80	0	70	10	17,463	731	.9991	1.539	G	1.5376	-.0010	1.5366	11,401	233	.0129	18,062	
AA	3	403	18	60	.010	.072	17,796	17,796	17,686	17,686	80	0	90	-10	17,676	820	.9989	1.552	G	1.5503	+.0010	1.5513	11,421	204	.0151	13,510	
AB	3	402	17	60	.010	.075	18,000	18,000	17,890	17,890	80	0	90	-10	17,880	820	.9990	1.567	G	1.5654	+.0010	1.5664	11,421	279	.0139	20,072	
AC	3	401	16	60	.010	.071	18,250	18,250	18,140	18,140	80	0	90	-10	18,130	821	.9990	?	-	+	.0010	-	-	-	-	-	-
AD	4	505	27	60	.010	.080	18,279	18,279	18,169	18,169	80	0	90	-10	18,159	860	.9989	1.581	G	1.5793	+.0010	1.5803	11,497	104	.0030	20,800	
AE	4	504	26	60	.010	-	18,383	18,383	18,273	18,273	80	0	90	-10	18,263	861	.9989	1.586	G	1.5843	+.0010	1.5853	11,527	679	.0351	19,345	
AF	4	503	25	60	.010	.079	19,062	19,062	18,952	18,952	80	0	90	-10	18,942	840	.9990	1.621	G	1.6194	+.0010	1.6204	11,696	1216	.0701	17,347	
AG	4	502	24	60	.009	.078	20,278	20,278	20,168	20,168	80	0	90	-10	20,158	841	.9991	1.691	G	1.6895	+.0010	1.6905	11,930				

SEC. 101-B

49

Depth Below K.B.
File Numbers

Husky Oil WPR Operations, Inc.
Operator For Office Of
National Petroleum Reserve Alaska
Tunaliik Test Well No. 1
National Petroleum Reserve Alaska



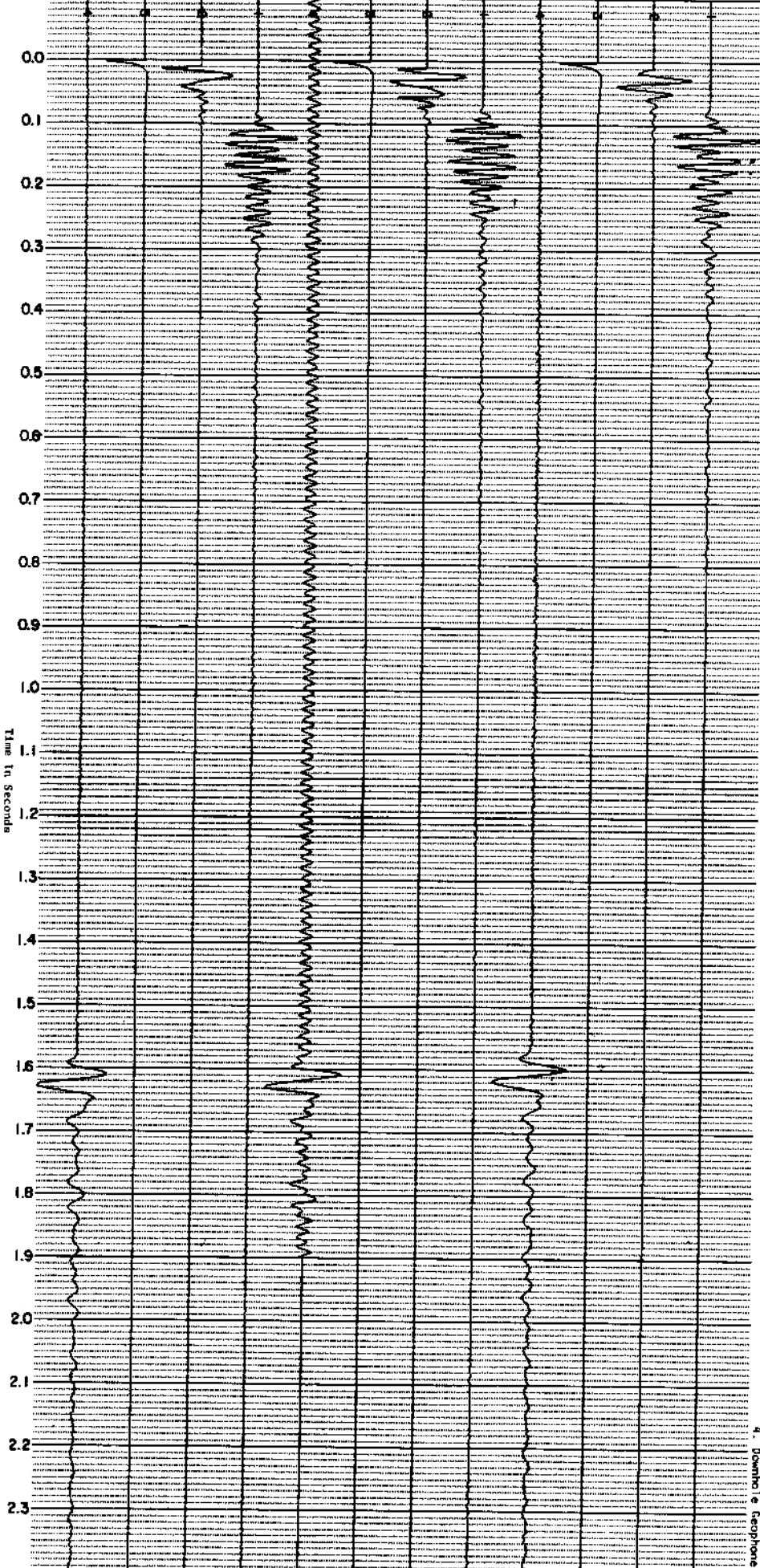
Digital Record Display

Legend: 1. Reference Geophone
2. Uphol Geophone
3. Time Break
4. Downhole Geophone

Depth Below K.B.

File Numbers

Husky Oil Operations, Inc.
Operator For Office Of
National Petroleum Reserve Alaska
Tunaliik Test Well No. 1
National Petroleum Reserve Alaska



Digital Record Display

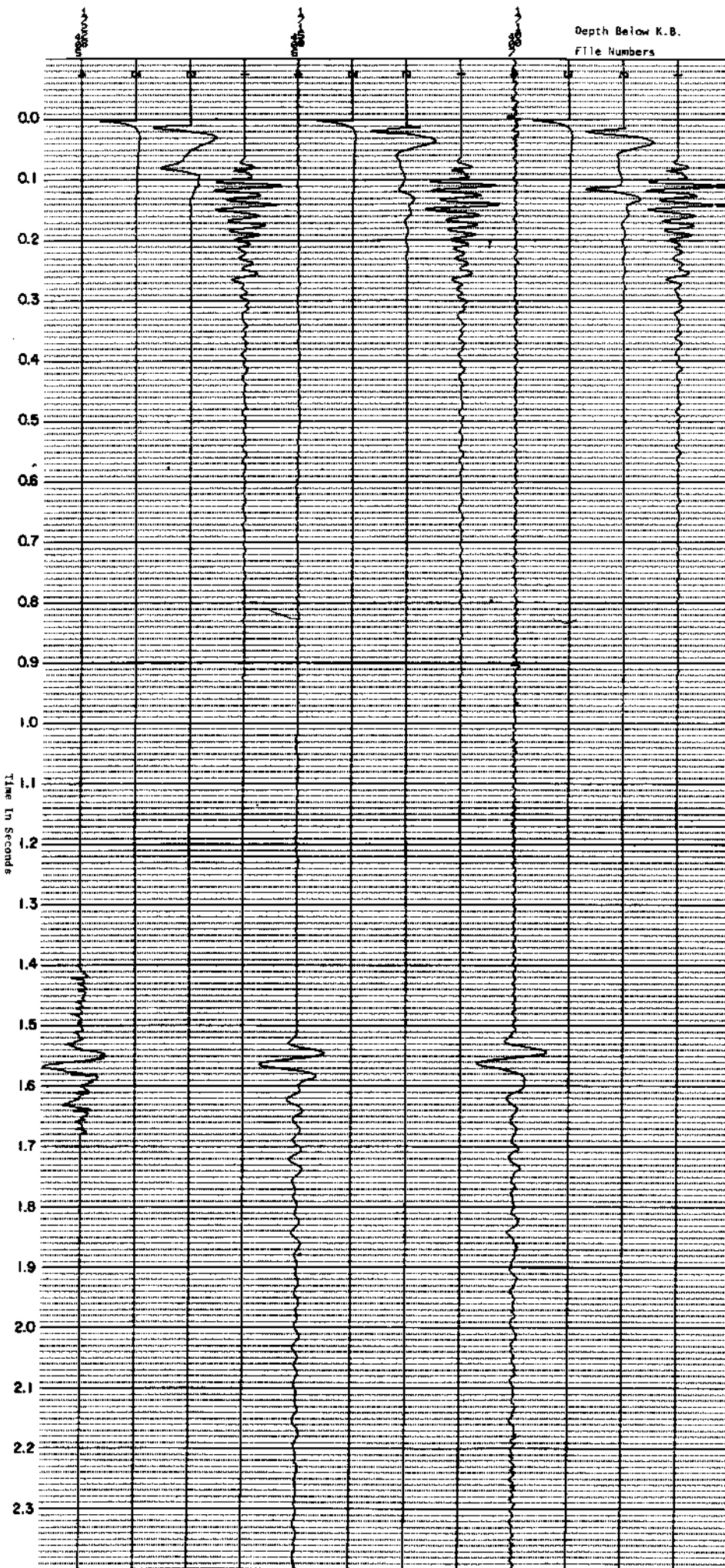
Legend:

- 1. Reference Geophone
- 2. Uphole Geophone
- 3. Time Break
- 4. Downhole Geophone

Depth Below K.B.

File Numbers

Husky Oilier Operations, Inc.
Operator For Office of
National Petroleum Reserve Alaska
Tunaliik Test Well No. 1
National Petroleum Reserve Alaska



Digital Record Display

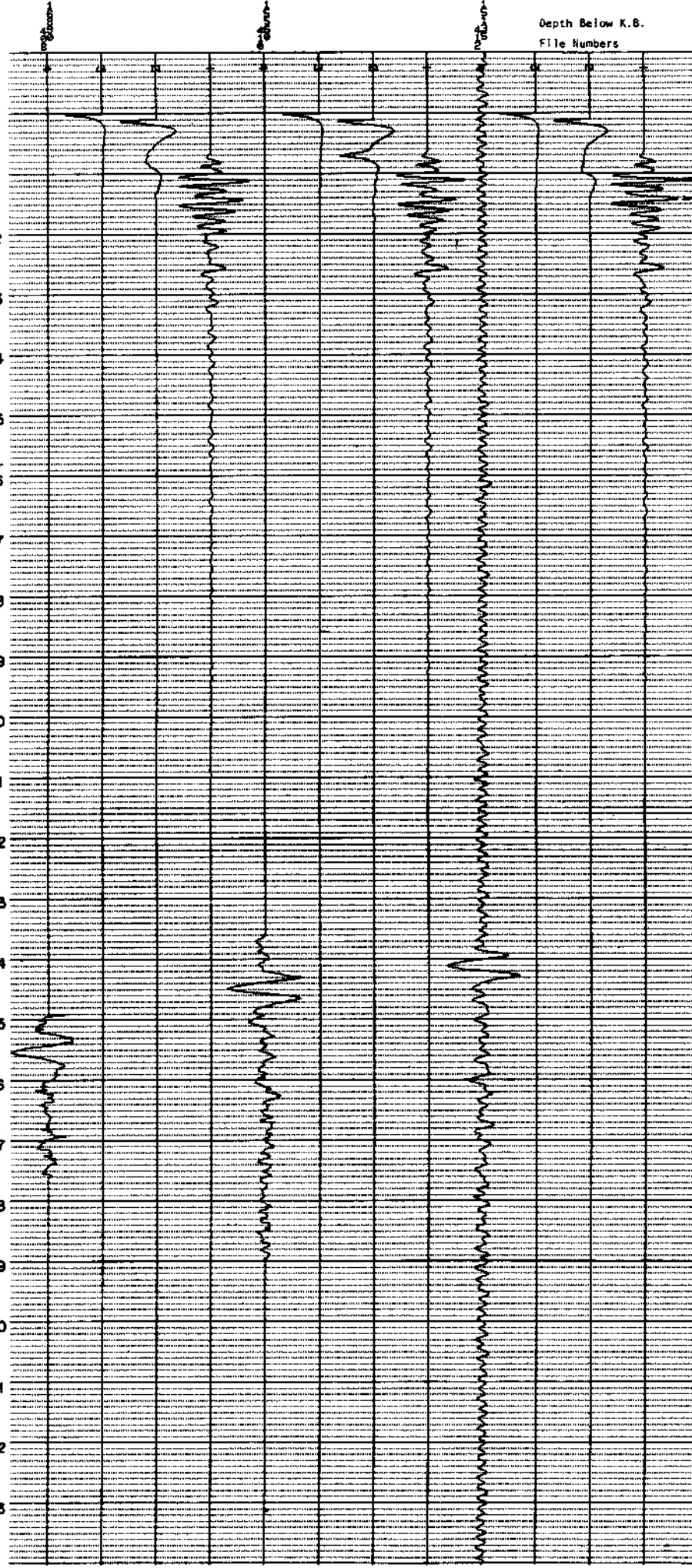
Legend: 1. Reference Geophone
2. Uphole Geophone
3. Time Stack
4. Downhole Geophone

Depth Below K.B.

File Numbers

Husky Oil Operations, Inc.
Operator for Office of
National Petroleum Reserve Alaska
Tudik K Test Well No. 1
National Petroleum Reserve Alaska

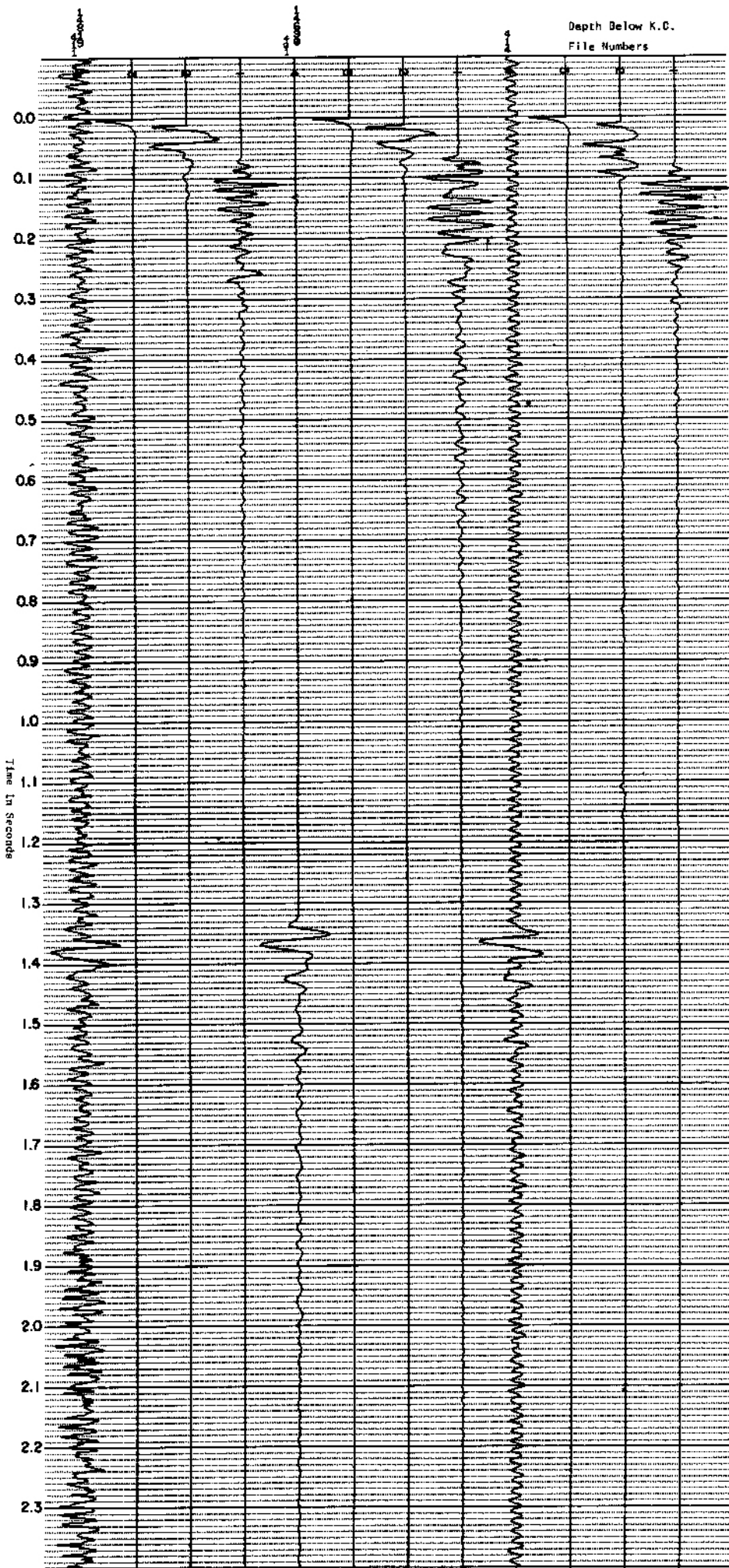
Time in Seconds



Digital Record Display

Legend:

- 1. Reference Geophone
- 2. Uphole Geophone
- 3. Time Break
- 4. Downhole Geophone



Husky Oil Corp. Operations, Inc.
 Operator For Office Of
 National Petroleum Reserve Alaska
 Tongalik Test Well No. 1
 National Petroleum Reserve Alaska

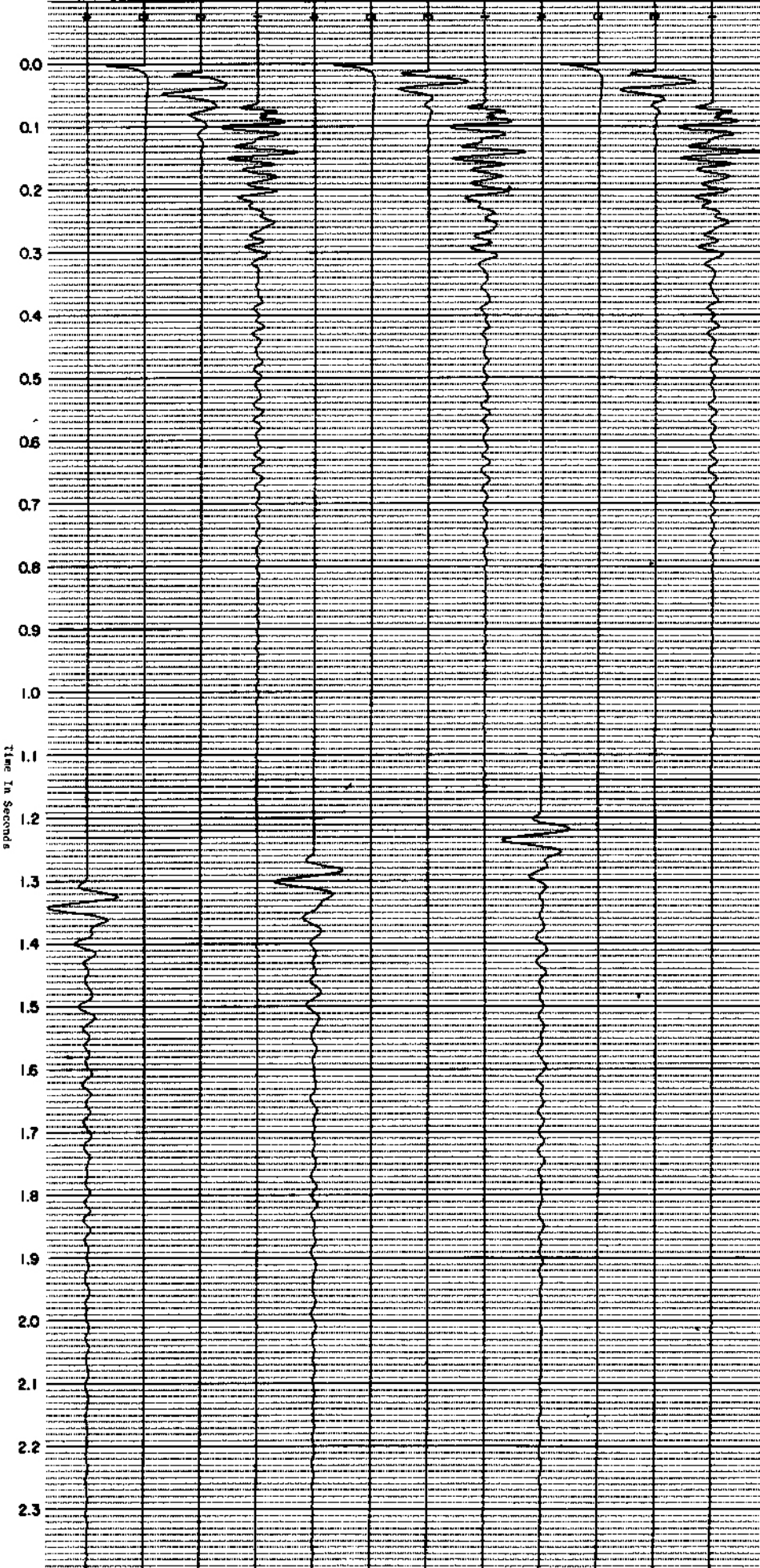
Digital Record Display

Legend: 1. Reference Geophone
 2. Uphole Geophone
 3. Time Break
 4. Downhole Geophone

Depth Below K.B.

File Numbers

Muskie 011 IPR Operations, Inc.
Operator for Office of
National Petroleum Reserve Alaska
Tunaliik Test Well No. 1
National Petroleum Reserve Alaska



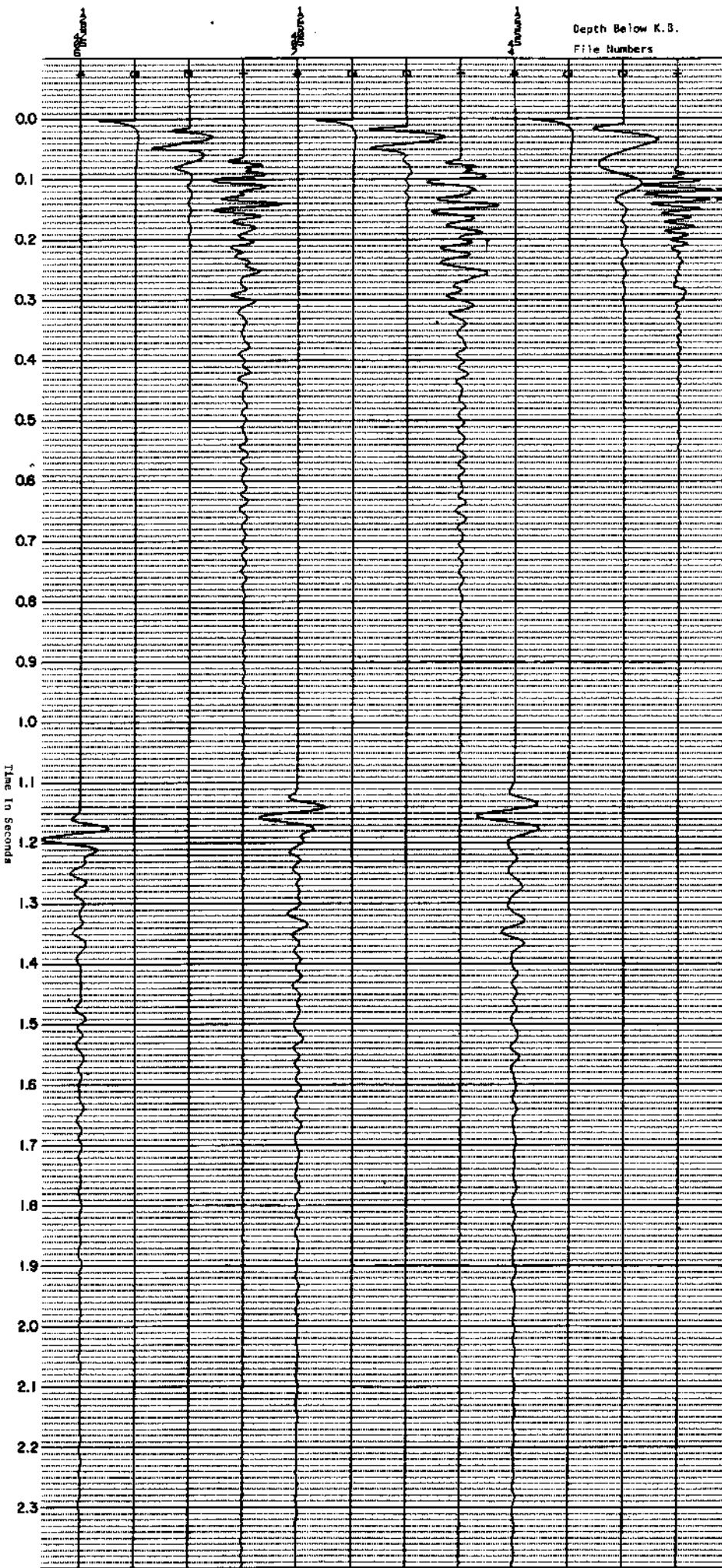
Digital Record Display

Legend: 1. Reference Geophone
2. Up-hole Geophone
3. Time Break
4. Down-hole Geophone

Depth Below K.B.

File Numbers

Husky Oil MPR Operations, Inc.
Operator for Office of
National Petroleum Reserve Alaska
Tunaliik Test Well No. 1
National Petroleum Reserve Alaska

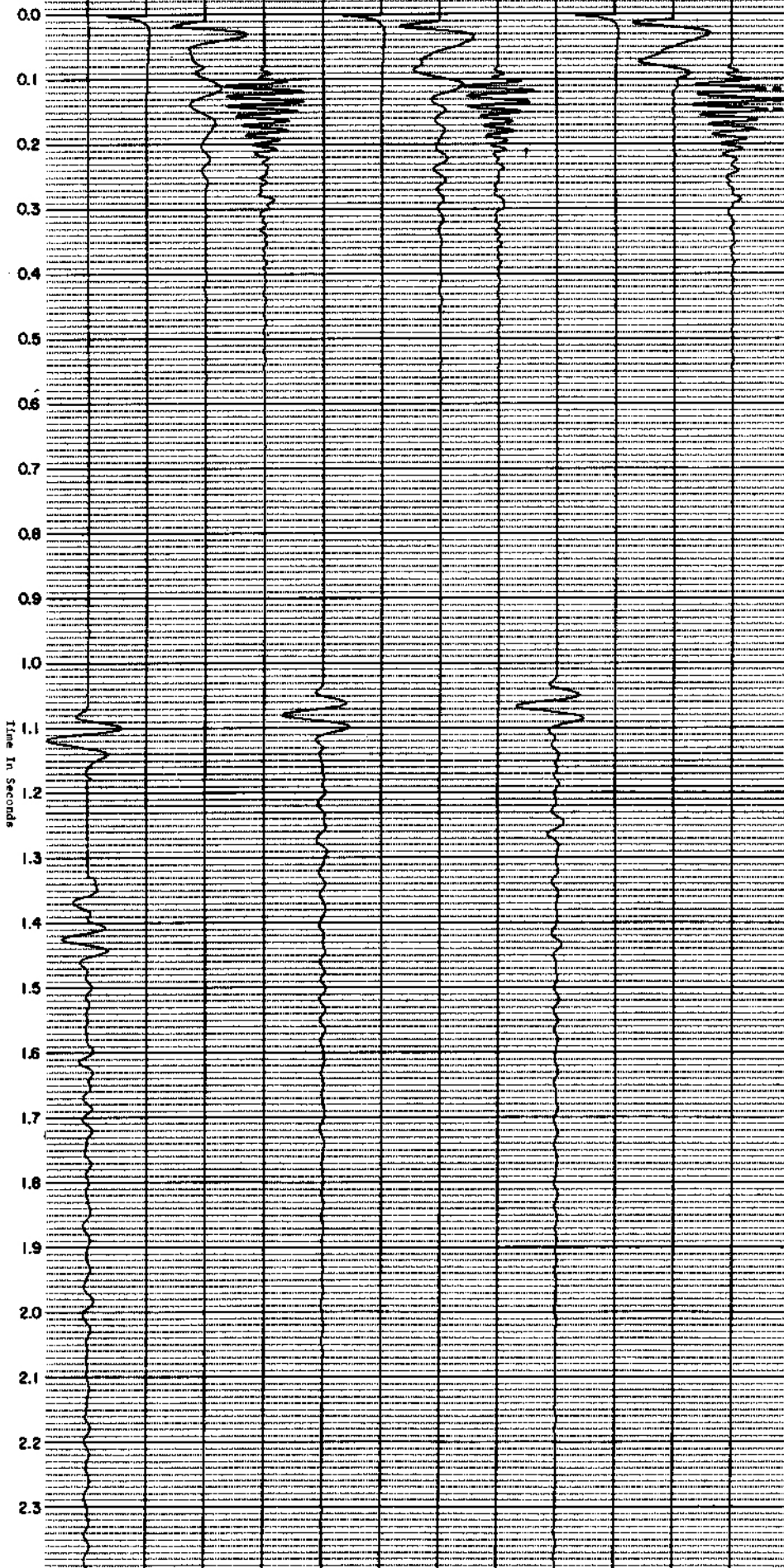


Digital Record Display

Legend: 1. Reference Geophone
2. Uphole Geophone
3. Time Break
4. Downhole Geophone

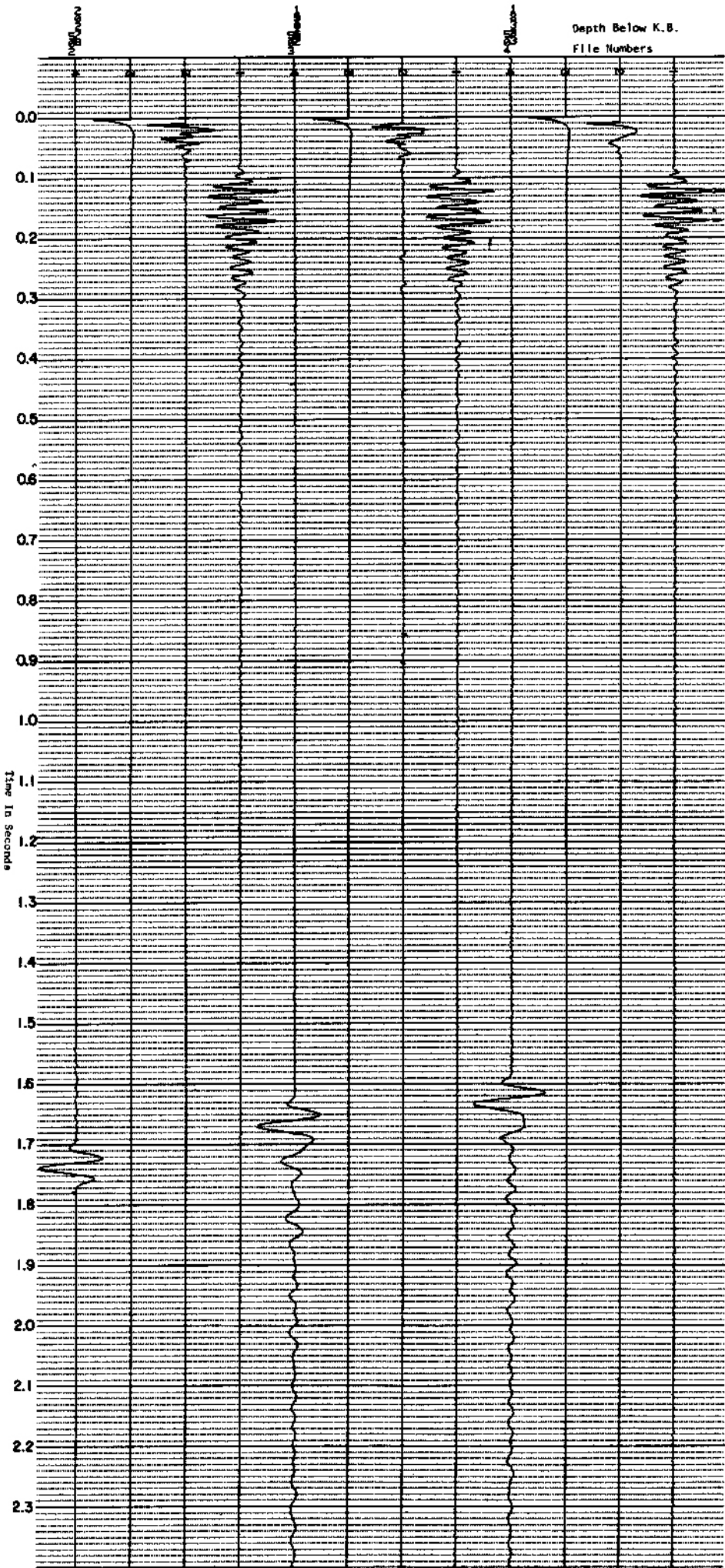
Depth Below K.E.
File Numbers

Kusky Oil MPR Operations, Inc.
Operator For Office Of
National Petroleum Reserve Alaska
Tunaliik Test Well No. 1
National Petroleum Reserve Alaska



Digital Record Display

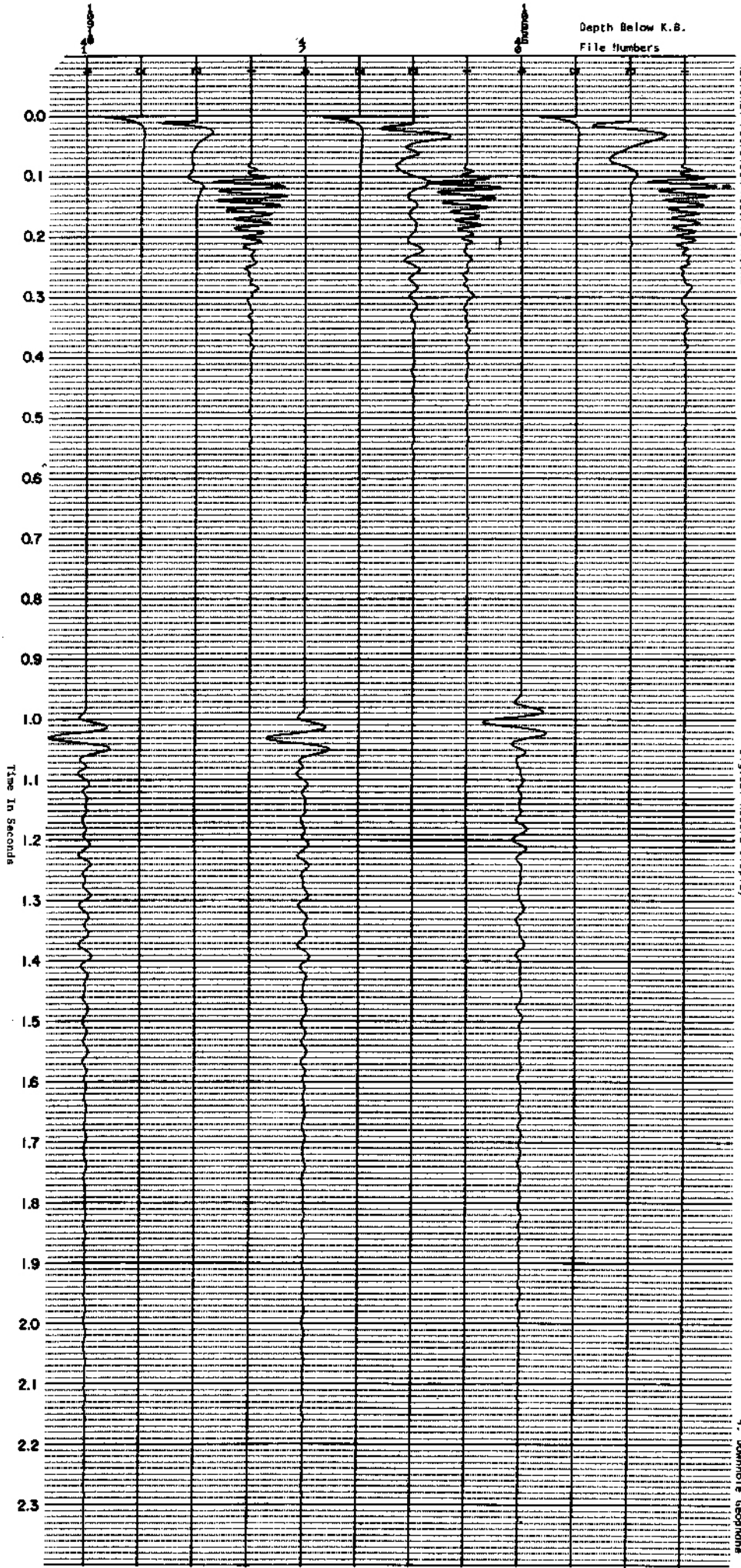
Legend: 1. Reference Geophone
2. Uphole Geophone
3. Time Break
4. Downhole Geophone



Husky Oil Operations, Inc.
 Operator For Office of
 National Petroleum Reserve Alaska
 Tunalik Test Well No. 1
 National Petroleum Reserve Alaska

Digital Record Display

Legend: 1. Reference Geophone
 2. Uphole Geophone
 3. Time Break
 4. Downhole Geophone



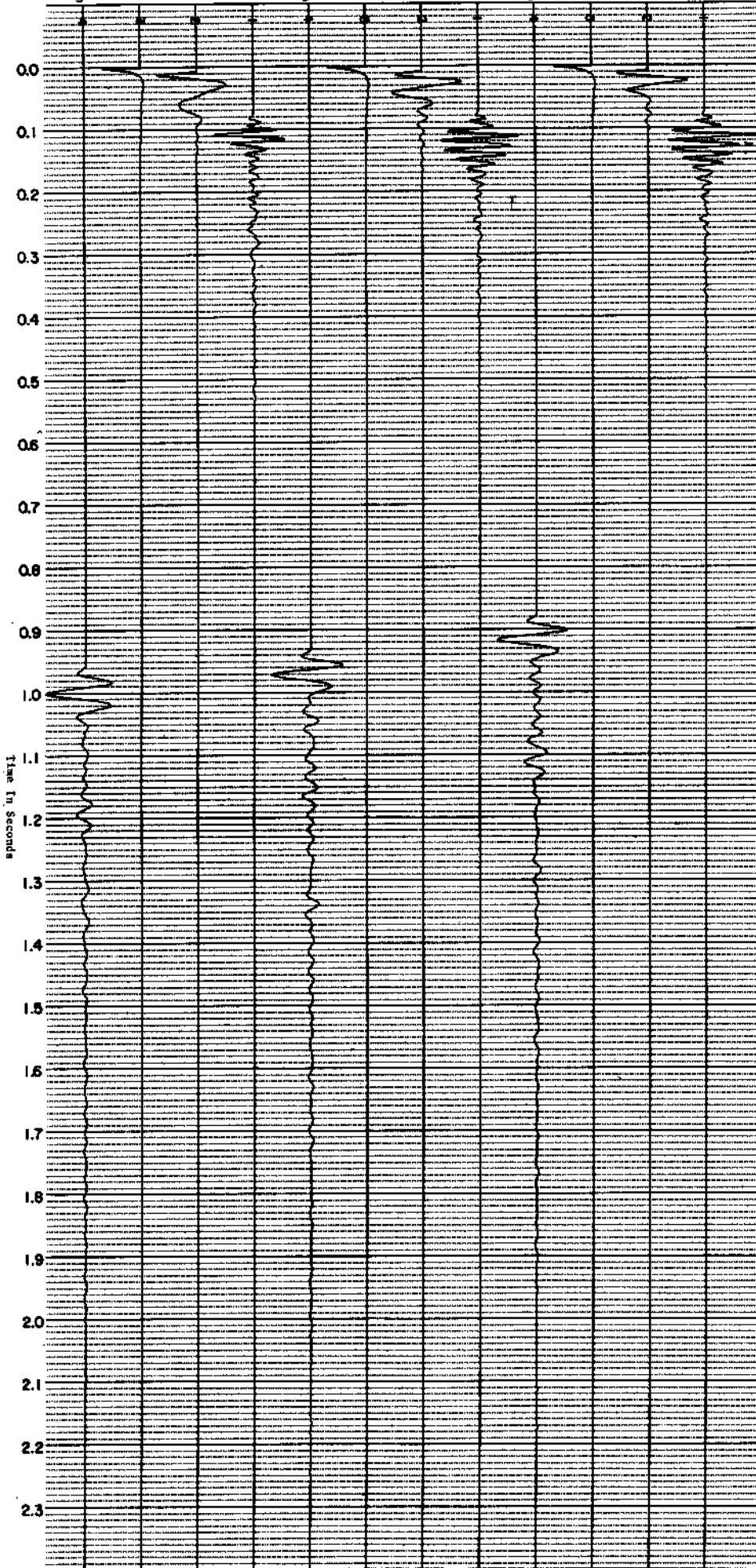
Husky Oil WPR Operations, Inc.
 Operator For Office of
 National Petroleum Reserve Alaska
 Tunaliik Test Well No. 1
 National Petroleum Reserve Alaska

Digital Record Display

Legend: 1. Reference Geophone
 2. Uphole Geophone
 3. Time Break
 4. Downhole Geophones

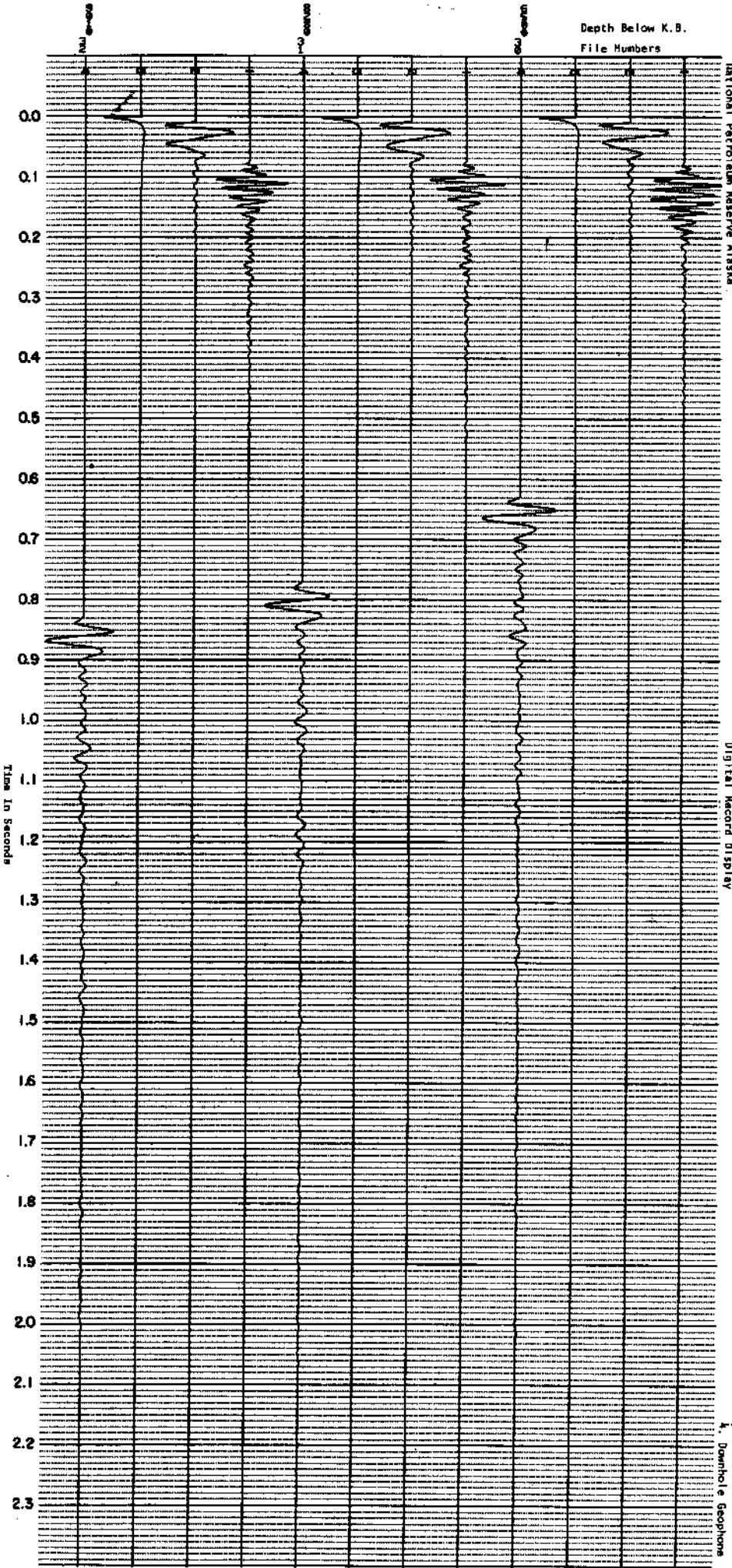
Depth Below K.B.
File Numbers

Husky Oil IPR Operations, Inc.
Operator For Office Of
National Petroleum Reserve Alaska
Tunaliik Test Well No. 1
National Petroleum Reserve Alaska



Digital Record Display

Legend: 1. Reference Geophone
2. Upper Geophone
3. Time Break
4. Downhole Geophone



Husky Oil Operations, Inc.
 Operator For Office Of
 National Petroleum Reserve Alaska
 Tunnel Test Well No. 1
 National Petroleum Reserve Alaska

Digital Record Display

Legend: 1. Reference Geophone
 2. Uphole Geophone
 3. Time Break
 4. Downhole Geophones

HUSKY OIL NPR OPERATIONS, INC.
TUNALIK TEST WELL NO. 1
NATIONAL PETROLEUM RESERVE ALASKA

INTEGRATED ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
1	2	10	10266	10262
2	4	20	10262	10262
3	6	30	10262	10262
4	8	41	10262	10262
5	10	51	10262	10262
6	12	61	10262	10262
7	14	72	10262	10262
8	16	82	10262	10262
9	18	92	10262	10262
10	20	102	10262	10262
11	22	112	10262	10262
12	24	122	10262	10262
13	26	132	10262	10262
14	28	142	10262	10262
15	30	152	10262	10262
16	32	162	10262	10262
17	33	165	10262	10262
18	33	165	10262	10262
19	33	165	10262	10262
20	34	165	10262	10262
21	34	165	10262	10262
22	34	165	10262	10262
23	34	165	10262	10262
24	34	165	10262	10262
25	34	165	10262	10262
26	34	165	10262	10262
27	34	165	10262	10262
28	34	165	10262	10262
29	34	165	10262	10262
30	34	165	10262	10262
31	34	165	10262	10262
32	34	165	10262	10262
33	34	165	10262	10262
34	34	165	10262	10262
35	34	165	10262	10262
36	34	165	10262	10262
37	34	165	10262	10262
38	34	165	10262	10262
39	34	165	10262	10262
40	34	165	10262	10262
41	34	165	10262	10262
42	34	165	10262	10262
43	34	165	10262	10262
44	34	165	10262	10262
45	34	165	10262	10262
46	34	165	10262	10262
47	34	165	10262	10262
48	34	165	10262	10262
49	34	165	10262	10262
50	34	165	10262	10262

HUSKY OIL NPR OPERATIONS, INC.
 TUNALIK TEST WELL NO. 1
 NATIONAL PETROLEUM - RESERVE ALASKA

CNE-TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
51	102	356.2	7605	6991
52	104	364.9	7638	7003
53	106	370.9	6758	6999
54	108	377.5	6531	6990
55	110	385.4	8218	7013
56	112	392.2	6728	7008
57	114	399.9	6702	7003
58	116	405.9	6688	6998
59	118	412.6	6687	6993
60	120	420.1	8170	7002
61	122	428.3	8170	7021
62	124	436.4	8150	7039
63	126	443.3	6971	7038
64	128	450.3	6962	7037
65	130	457.3	6940	7035
66	132	463.5	6260	7023
67	134	475.9	5360	6999
68	136	475.1	6198	6987
69	138	481.3	6114	6975
70	140	488.9	7014	6976
71	142	495.2	7594	6984
72	144	510.5	7339	6989
73	146	517.5	7279	6993
74	148	517.5	7008	6993
75	150	517.5	7619	7002
76	152	523.3	7188	7004
77	154	532.7	5736	6988
78	156	544.7	6676	6984
79	158	552.2	7416	6989
80	160	560.3	8156	7004
81	162	568.7	8397	7021
82	164	576.1	7431	7026
83	166	583.3	7259	7028
84	168	597.9	7335	7031
85	170	605.2	7262	7035
86	172	611.0	6361	7037
87	174	629.2	8361	7030
88	176	639.1	9941	7045
89	178	650.0	10946	7069
90	180	658.0	17911	7101
91	182	664.6	6631	7143
92	184	672.0	7382	7152
93	186	680.4	8414	7149
94	188	688.3	7940	7162
95	190	697.3	8681	7170
96	192	705.1	8130	7186
97	194	712.2	7069	7195
98	196	720.2	7949	7194
99	198			720
100	200			720

HUSKY OIL NPR OPERATIONS, INC.
 TUNALIK TEST WELL NO. 1
 NATIONAL PETROLEUM RESERVE ALASKA

GNE-TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
101	202	729.0	8827	7218
103	204	737.5	8474	7230
104	206	744.4	7035	7228
105	210	752.4	7949	7235
106	212	761.2	8736	7249
107	214	769.6	8460	7261
108	216	778.4	8979	7277
109	218	788.4	7725	7300
110	220	796.1	7766	7304
111	222	804.2	8865	7311
112	224	813.0	8896	7321
113	226	822.3	9149	7341
114	228	832.9	7617	7341
115	230	843.8	6905	7337
116	232	852.4	8438	7347
117	234	860.0	8180	7355
118	236	869.2	8600	7365
119	238	878.9	9129	7380
120	240	886.1	8753	7391
121	242	894.9	8182	7389
122	244	901.9	7792	7393
123	246	909.8	7940	7397
124	248	917.9	9367	7413
125	250	927.9	8674	7423
126	252	936.3	9060	7436
127	254	945.0	8340	7443
128	256	953.0	7709	7445
129	260	961.2	8256	7451
130	262	969.6	8388	7459
131	264	979.3	9654	7475
132	266	986.4	7373	7475
133	268	995.0	8525	7484
134	272	1012.7	8595	7492
135	274	1022.2	9580	7501
136	276	1032.1	9550	7517
137	278	1041.6	9954	7534
138	280	1051.9	8572	7543
139	282	1061.4	8219	7547
140	284	1074.9	10106	7552
141	286	1083.5	8919	7570
142	288	1092.0	18577	7577
143	290	1101.0	8969	7586
144	292	1111.8	8410	7592
145	294	1118.7	9319	7604
146	296	1126.3	8408	7617
147	298	1134.5	8746	7617
148	299	1141.4	801	7624
149	300	1145.0	801	7633

HUSKY OIL NPR OPERATIONS, INC.
 TUNALIK TEST WELL NO. 1
 NATIONAL PETROLEUM RESERVE ALASKA

INTEGRATED ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
151	302	1154.0	8999	7642
152	304	1162.3	8842	7650
153	306	1172.3	8498	7662
154	308	1181.9	9517	7674
155	310	1190.3	8460	7679
156	312	1197.8	7578	7679
157	314	1207.3	9932	7693
158	316	1218.3	10485	7711
159	318	1228.4	10050	7726
160	322	1239.4	11085	7747
161	324	1248.9	19460	7757
162	326	1257.4	9648	7769
163	328	1267.4	8875	7776
164	330	1276.2	9125	7784
165	332	1287.4	10637	7801
166	334	1296.8	7343	7810
167	336	1303.4	8609	7817
168	338	1312.4	9999	7812
169	340	1322.9	9963	7825
170	342	1334.0	8538	7837
171	344	1348.0	7128	7841
172	346	1356.7	8675	7837
173	348	1366.7	10015	7842
174	350	1377.6	11566	7855
175	352	1389.1	19297	7872
176	354	1398.5	9097	7893
177	356	1407.5	9064	7901
178	358	1416.6	8978	7914
179	360	1425.6	9037	7922
180	362	1435.3	10030	7932
181	364	1444.0	8746	7941
182	366	1454.4	8310	7945
183	368	1463.0	9205	7953
184	370	1472.2	9231	7960
185	372	1482.9	10165	7971
186	374	1492.7	19175	7989
187	376	1501.7	8784	7993
188	378	1510.7	10498	8006
189	380	1521.2	10001	8017
190	382	1531.0	18794	8021
191	384	1540.0	10010	8031
192	386	1550.0	10210	8042
193	388	1560.2	10210	8054
194	390	1570.7	10255	8065
195	392	1580.2	11049	8077
196	394	1591.2	9179	8084
197	396	1600.6	9257	8090
198	398	1609.6	10786	8103
199	400	1620.6		

HUSKY OIL NPR OPERATIONS, INC.
 TUNALIK TEST WELL NO. 1
 NATIONAL PETROLEUM RESERVE ALASKA

INTEGRATED CNE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
1	402	1629.7	92115	81109
2023	404	1638.6	88881	81112
2045	406	1647.0	88881	81116
2067	408	1657.0	94608	81130
2089	412	1666.7	100110	81139
2110	414	1676.7	84115	81146
2123	416	1685.1	92202	81156
2145	418	1694.6	10742	81173
2167	422	1704.3	11743	81182
2189	424	1716.5	11012	81189
2210	426	1726.5	11012	81194
2232	428	1734.4	80637	82117
2254	430	1744.2	94077	82219
2276	432	1753.5	11966	82222
2298	434	1765.8	92263	82232
2320	436	1774.0	98272	82243
2342	438	1783.7	88729	82252
2364	440	1802.0	10309	82268
2386	442	1813.8	10810	82276
2408	444	1823.4	10404	82288
2430	446	1833.7	19413	82298
2452	448	1843.3	10067	82307
2474	450	1853.1	19347	82311
2496	452	1863.3	10503	82326
2518	454	1873.3	10503	82332
2540	456	1882.9	19303	82345
2562	458	1892.4	9534	82350
2584	460	1902.7	8271	82367
2606	462	1910.9	9169	82372
2628	464	1919.0	9115	82380
2650	466	1931.9	18908	82390
2672	468	1939.6	8724	82395
2694	470	1948.9	9225	82400
2716	472	1957.2	10318	82407
2738	474	1968.9	10642	82413
2760	476	1978.6	10703	82420
2782	478	1989.8	11238	82423
2804	480	2002.0	11183	82430
2826	482	2022.0	7701	82437
2848	484	2029.7	7856	82440
2870	486	2037.5	10770	82445
2892	488	2048.9	10357	82451
2914	490	2059.6	11314	82457
2936	492	2070.8	11158	82457
2958	494	2082.2	11406	82457
2980	496	2093.3	11096	82457
3002	498	2104.4	1999	82457
3024	500	2114.4	1999	82457

HUSKY OIL NPR OPERATIONS, INC.
 TUNALIK TEST WELL NO. 1
 NATIONAL PETROLEUM RESERVE ALASKA

INTEGRATED ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
252	502	2122.7	8067	8455
253	504	2132.0	10501	8463
254	506	2142.3	19550	8471
255	508	2151.6	9390	8478
256	510	2161.8	10170	8488
257	512	2172.0	11025	8500
258	514	2184.4	11164	8512
259	516	2196.6	11174	8525
260	518	2208.1	11184	8534
261	520	2217.5	9845	8536
262	522	2223.6	9022	8544
263	524	2227.7	10535	8552
264	526	2227.7	19073	8562
265	530	2227.6	10836	8571
266	532	2228.8	11094	8588
267	534	2229.9	11091	8596
268	536	2231.0	11071	8607
269	538	2232.1	11356	8617
270	540	2233.2	11310	8627
271	542	2234.3	11316	8636
272	544	2235.5	9347	8646
273	546	2237.4	10375	8654
274	548	2238.4	10922	8662
275	550	2239.4	10897	8669
276	552	2240.5	11547	8673
277	554	2241.7	10795	8679
278	556	2242.5	10795	8690
279	558	2243.6	10270	8698
280	560	2244.5	10787	8707
281	562	2245.6	10854	8716
282	564	2246.8	11353	8723
283	566	2247.8	11353	8741
284	568	2249.0	11225	8752
285	570	2251.5	11185	8772
286	572	2253.7	11185	8778
287	574	2255.4	11170	8783
288	576	2256.7	11040	8786
289	578	2257.9	10212	8798
290	580	2258.9	9617	8808
291	582	2260.9	9617	8808
292	584	2261.8	1116	8808
293	586	2263.0	1116	8808
294	588	2264.2	1116	8808
295	590	2264.2	1116	8808
296	592	2264.2	1116	8808
297	594	2264.2	1116	8808
298	596	2264.2	1116	8808
299	598	2264.2	1116	8808
300	600	2264.2	1116	8808

HUSKY OIL NPR OPERATIONS, INC.
 TUNALIK TEST WELL NO. 1
 NATIONAL PETROLEUM RESERVE ALASKA

INTEGRATED ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
301	602	2652.4	9993	8812
302	604	2662.3	9932	8816
303	606	2673.0	10659	8827
304	608	2683.3	110282	8836
305	610	2695.1	11798	8841
306	612	2705.5	110427	8844
307	614	2715.2	9675	8848
308	616	2725.3	10107	8848
309	618	2733.9	8646	8844
310	620	2741.5	7580	8844
311	622	2751.3	9776	8847
312	624	2760.8	9559	8849
313	626	2773.0	2217	8860
314	628	2786.1	13047	8873
315	630	2798.2	12138	8889
316	632	2808.9	110644	8896
317	634	2819.9	11078	8903
318	636	2831.3	113225	8910
319	638	2842.2	10904	8916
320	640	2853.1	109047	8921
321	642	2863.7	10560	8918
322	644	2871.6	79803	8916
323	646	2879.7	8019	8922
324	648	2890.5	10715	8929
325	650	2902.0	11530	8935
326	652	2912.7	10610	8937
327	654	2921.6	12827	8945
328	656	2934.6	11823	8955
329	658	2946.4	11876	8959
330	660	2955.2	10361	8966
331	662	2965.7	11167	8971
332	664	2976.5	11164	8978
333	666	2987.4	110744	8977
334	668	2996.8	118923	8987
335	670	3007.5	11699	8993
336	672	3019.5	11114	9001
337	674	3030.6	111792	9006
338	676	3042.0	10596	9010
339	678	3053.1	10353	9017
340	680	3062.7	11111	9023
341	682	3072.4	11111	9028
342	684	3083.8	110788	9034
343	686	3094.5	11116	9041
344	688	3105.6	111164	9047
345	690	3116.8	111568	9051
346	692	3129.3	11208	9058
347	694	3141.9	110427	9064
348	696	3161.2	11327	9064
349	698	3172.6	111	9064
350	700	3184.0	111	9064

HUSKY OIL NPR OPERATIONS, INC.
 TUNALIK TEST WELL NO. 1
 NATIONAL PETROLEUM RESERVE ALASKA

ONE-WAY TIME (MS)	INTEGRATED ONE-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
351	702	3182.6	10192	9067
352	704	3193.6	10937	9073
353	706	3204.1	10521	9077
354	708	3214.0	9921	9079
355	710	3224.5	10938	9083
356	712	3235.4	10949	9088
357	714	3244.9	10989	9089
358	716	3256.5	11649	9096
359	718	3266.8	10235	9100
360	720	3276.7	10398	9104
361	722	3288.2	11543	9111
362	724	3298.5	11111	9114
363	726	3308.9	11380	9121
364	728	3319.7	11798	9127
365	730	3331.0	11863	9130
366	732	3340.8	10435	9133
367	734	3350.6	10823	9145
368	736	3361.9	10676	9150
369	738	3373.8	11399	9155
370	740	3383.5	11397	9162
371	742	3405.8	10587	9170
372	744	3415.2	10675	9172
373	746	3427.9	10090	9173
374	748	3447.0	9549	9178
375	750	3458.5	10715	9182
376	752	3477.2	10587	9188
377	754	3489.5	10977	9193
378	756	3467.5	9837	9197
379	758	3478.2	10780	9201
380	760	3489.8	10760	9205
381	762	3501.7	10404	9211
382	766	3511.6	10404	9215
383	768	3521.4	10501	9219
384	770	3531.2	11256	9223
385	772	3542.3	11174	9225
386	774	3554.7	11693	9231
387	776	3574.8	11320	9235
388	778	3585.3	11640	9241
389	780	3607.4	11320	9250
390	782	3620.7	11640	9260
391	784	3631.9	11320	9270
392	786	3644.8	11364	9273
393	788	3657.9	11094	9278
394	790	3670.9	11094	9282
395	792	3681.6	11094	9286
396	794	3692.6	11094	9286
397	796	3703.5	11094	9286
398	798	3714.4	11094	9286
399	800			

HUSKY OIL NPR OPERATIONS, INC.
 TUNALIK TEST WELL NO. 1
 NATIONAL PETROLEUM RESERVE ALASKA

CNE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
401	802	3725.1	10543	9289
402	804	3736.1	11705	9295
403	806	3748.1	11369	9308
404	808	3760.4	11225	9315
405	810	3772.5	11187	9322
406	812	3784.0	11146	9327
407	814	3796.7	11105	9333
408	816	3807.9	11064	9340
409	818	3819.3	11023	9345
410	820	3831.0	10982	9348
411	822	3842.6	10941	9351
412	824	3854.5	10900	9357
413	826	3866.5	10859	9361
414	828	3875.5	10818	9365
415	830	3886.6	10777	9372
416	832	3898.6	10736	9378
417	834	3910.3	10695	9384
418	836	3922.3	10654	9387
419	838	3933.3	10613	9391
420	840	3944.5	10572	9394
421	842	3955.6	10531	9400
422	844	3966.6	10490	9405
423	846	3978.3	10449	9411
424	848	3990.1	10408	9415
425	850	4001.4	10367	9424
426	852	4014.7	10326	9426
427	854	4025.0	10285	9433
428	856	4037.3	10244	9439
429	858	4049.8	10203	9444
430	860	4060.7	10162	9445
431	862	4070.2	10121	9447
432	864	4081.0	10080	9453
433	866	4093.8	10039	9458
434	868	4105.4	9998	9461
435	870	4115.8	9957	9476
436	872	4128.2	9916	9476
437	874	4141.3	9875	9483
438	876	4153.7	9834	9487
439	878	4164.0	9793	9489
440	880	4175.0	9752	9495
441	882	4187.1	9711	9500
442	884	4209.1	9670	9501
443	886	4221.4	9629	9508
444	888	4233.3	9588	9517
445	890	4244.6	9547	9517
446	892	4257.1	9506	9524
447	894	4269.1	9465	9531
448	896	4281.2	9424	9535
449	898	4293.3	9383	9540

HUSKY OIL NPR OPERATIONS, INC.
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CNE- TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
451	902	4304.8	11113	9548
452	904	4315.1	11191	9548
453	906	4327.8	1113444	9552
454	908	4338.7	1113445	9557
455	910	4350.4	1119661	9562
456	912	4362.4	111699	9567
457	914	4374.6	1121448	9572
458	916	4386.4	111797	9577
459	918	4398.2	112410	9582
460	920	4410.6	1118569	9588
461	922	4422.5	111969	9593
462	924	4434.5	1110871	9598
463	926	4445.3	1110871	9601
464	928	4458.2	1110878	9608
465	930	4469.1	1110879	9611
466	932	4480.3	1110879	9614
467	934	4492.0	1121703	9619
468	936	4504.7	111799	9624
469	938	4515.7	111570	9628
470	940	4527.8	112758	9632
471	942	4539.5	1110879	9639
472	944	4551.4	110869	9646
473	946	4562.3	110879	9648
474	948	4573.3	111293	9655
475	950	4584.6	111777	9660
476	952	4595.8	111422	9663
477	954	4607.6	1118548	9668
478	956	4619.0	1126426	9674
479	958	4630.9	111688	9680
480	960	4643.5	1115828	9684
481	962	4656.0	1113457	9688
482	964	4667.7	111660	9692
483	966	4679.2	111638	9699
484	968	4690.8	111457	9703
485	970	4702.7	111656	9706
486	972	4713.3	111656	9710
487	974	4725.3	112719	9716
488	976	4736.2	111793	9720
489	978	4748.9	111656	9724
490	980	4760.9	110656	9726
491	982	4772.4	111729	9729
492	984	4784.8	111895	9733
493	986	4794.8	111395	9740
494	988	4806.0	111520	9745
495	990	4817.9	111110	9749
496	992	4830.5	111110	9752
497	994	4843.0	111110	9754
498	996	4855.0	111110	9754
499	998	4866.2	111110	9754
500	1000	4876.4	111110	9754

HUSKY OIL NPR OPERATIONS, INC.
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CNE-TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
501	1002	4889.5	2648	9759
502	1004	4901.0	11715	9763
503	1006	4914.1	112055	9769
504	1008	4926.1	112233	9774
505	1010	4938.9	112543	9779
506	1012	4950.1	1122538	9784
507	1014	4963.1	1119338	9789
508	1016	4975.6	1115942	9793
509	1018	4986.3	1116528	9797
510	1020	4998.7	1114310	9801
511	1022	5009.6	11091028	9804
512	1024	5021.7	1110848	9806
513	1026	5031.6	1111985	9808
514	1028	5043.6	1113299	9812
515	1030	5055.2	1113693	9817
516	1032	5069.5	1119922	9824
517	1034	5082.5	1112039	9831
518	1036	5094.6	1115339	9835
519	1038	5110.6	1115339	9839
520	1040	5118.1	1115339	9843
521	1042	5129.1	1115339	9846
522	1044	5141.8	112070	9850
523	1046	5153.0	112070	9854
524	1048	5167.8	112316	9857
525	1050	5177.0	113102	9862
526	1052	5190.3	113178	9868
527	1054	5202.7	112918	9872
528	1056	5214.7	1120258	9876
529	1058	5226.0	112258	9880
530	1060	5239.4	111402	9885
531	1062	5250.0	1116018	9888
532	1064	5262.9	1116018	9891
533	1066	5273.5	1115709	9895
534	1068	5285.6	1115709	9898
535	1070	5296.3	1116839	9900
536	1072	5308.1	1116839	9904
537	1074	5320.8	1123078	9907
538	1076	5332.9	1123078	9912
539	1078	5345.7	1124185	9918
540	1080	5359.4	1116318	9922
541	1082	5369.0	1116318	9925
542	1084	5381.8	1118329	9928
543	1086	5392.0	1118329	9932
544	1088	5405.9	112218	9936
545	1090	5417.3	112218	9941
546	1092	5431.7	112441	9947
547	1094	5443.4	112441	9952
548	1096	5456.4	112676	9957
549	1098	5468.1	111766	9960
550	1100	5480.1	111766	9964

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 NATIONAL PETROLEUM RESERVE ALASKA

INTEGRATED ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
551	1102	5492.0	11871	9967
552	1104	5504.2	12262	9971
553	1106	5516.4	12176	9975
554	1108	5528.8	12359	9980
555	1110	5541.2	12418	9984
556	1112	5553.6	12758	9988
557	1114	5566.0	12145	9993
558	1116	5578.4	11977	9997
559	1118	5590.8	12246	10000
560	1120	5603.2	11340	10004
561	1122	5615.6	11334	10008
562	1124	5628.0	11694	10011
563	1126	5640.4	12094	10013
564	1128	5652.8	11964	10016
565	1130	5665.2	12344	10019
566	1132	5677.6	13094	10023
567	1134	5690.0	12448	10027
568	1136	5702.4	13498	10033
569	1138	5714.8	13045	10038
570	1140	5727.2	12105	10042
571	1142	5739.6	11781	10045
572	1144	5752.0	11938	10048
573	1146	5764.4	11496	10052
574	1148	5776.8	11984	10056
575	1150	5789.2	11681	10059
576	1152	5801.6	11813	10062
577	1154	5814.0	11668	10065
578	1156	5826.4	12281	10068
579	1158	5838.8	12789	10072
580	1160	5851.2	12435	10076
581	1162	5863.6	12789	10081
582	1164	5876.0	12308	10085
583	1166	5888.4	12435	10089
584	1168	5900.8	12173	10093
585	1170	5913.2	12256	10096
586	1172	5925.6	12240	10100
587	1174	5938.0	12730	10104
588	1176	5950.4	12988	10107
589	1178	5962.8	12340	10111
590	1180	5975.2	12988	10115
591	1182	5987.6	13023	10119
592	1184	5999.9	13067	10123
593	1186	6012.3	12727	10127
594	1188	6024.6	13023	10131
595	1190	6037.0	13067	10135
596	1192	6049.3	13205	10139
597	1194	6061.7	13067	10143
598	1196	6074.0	13295	10147
599	1198	6086.4	13197	10151
600	1200	6098.7	13067	10155

HUSKY OIL NPR OPERATIONS, INC.
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 NATIONAL PETROLEUM RESERVE ALASKA

CNE-TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
601	1202	6109.8	13234	10165
602	1204	6122.1	13566	10171
603	1206	6135.1	12324	10174
604	1208	6147.9	12797	10179
605	1210	6160.5	12539	10183
606	1212	6173.0	12566	10187
607	1214	6185.7	12617	10191
608	1216	6198.5	13133	10195
609	1218	6211.1	12746	10200
610	1220	6224.0	12535	10203
611	1222	6237.0	12883	10208
612	1224	6249.5	12520	10212
613	1226	6262.2	12695	10216
614	1228	6274.7	12766	10220
615	1230	6287.7	12797	10224
616	1232	6300.3	12586	10228
617	1234	6313.3	12934	10232
618	1236	6326.8	12746	10236
619	1238	6339.8	12754	10240
620	1240	6351.8	13012	10245
621	1242	6364.7	12895	10249
622	1244	6377.5	12895	10253
623	1246	6403.2	12922	10257
624	1248	6415.9	12781	10261
625	1250	6428.1	12781	10266
626	1252	6441.1	12398	10270
627	1254	6453.3	12523	10273
628	1256	6466.2	12535	10277
629	1258	6478.7	12578	10280
630	1260	6491.7	12930	10284
631	1262	6504.5	12763	10288
632	1264	6517.3	13517	10292
633	1266	6531.3	13548	10297
634	1268	6544.4	13188	10302
635	1270	6557.5	13188	10306
636	1272	6570.5	13289	10311
637	1274	6584.5	13289	10315
638	1276	6597.4	13393	10320
639	1278	6611.4	13522	10325
640	1280	6624.4	13423	10330
641	1282	6637.2	13389	10335
642	1284	6650.1	12891	10338
643	1286	6663.0	12891	10342
644	1288	6676.0	13429	10346
645	1290	6689.0	13650	10351
646	1292	6703.0	13650	10356
647	1294	6717.0	13383	10361
648	1296	6731.0	13373	10367
649	1298	6745.2	13373	10372
650	1300	6745.2	13373	10377

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 NATIONAL PETROLEUM RESERVE ALASKA

INTEGRATED ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
651	1302	6758.3	13078	10381
652	1304	6771.4	13188	10386
653	1306	6784.6	13192	10390
654	1308	6797.8	13176	10394
655	1310	6810.3	13177	10398
656	1312	6823.3	12950	10401
657	1314	6836.1	12824	10405
658	1316	6848.0	12734	10408
659	1318	6861.7	12684	10411
660	1320	6873.5	12641	10415
661	1322	6886.2	12600	10418
662	1324	6899.3	13020	10422
663	1326	6912.4	13027	10426
664	1328	6925.6	13148	10430
665	1330	6938.7	13148	10434
666	1332	6951.8	13023	10438
667	1334	6964.8	13023	10442
668	1336	6977.8	13160	10446
669	1338	6990.7	13160	10450
670	1340	7003.9	12255	10454
671	1342	7016.1	12255	10456
672	1344	7028.1	11800	10459
673	1346	7040.1	12000	10461
674	1348	7052.1	12000	10463
675	1350	7064.1	12051	10465
676	1352	7076.1	12043	10468
677	1354	7088.2	12043	10470
678	1356	7100.3	12059	10472
679	1358	7112.3	12078	10475
680	1362	7124.3	12083	10477
681	1366	7136.3	12074	10477
682	1368	7148.3	12072	10479
683	1368	7160.3	12066	10481
684	1370	7172.3	11896	10484
685	1372	7184.4	11893	10486
686	1374	7196.4	11733	10488
687	1376	7208.4	11733	10490
688	1378	7220.4	11855	10493
689	1380	7231.5	11855	10494
690	1382	7243.5	11937	10496
691	1384	7255.5	11937	10498
692	1386	7267.5	11777	10500
693	1388	7279.5	11855	10502
694	1388	7290.6	11559	10504
695	1390	7302.6	11406	10505
696	1392	7313.7	11301	10506
697	1394	7324.7	11414	10508
698	1396	7336.7	11414	10509
699	1398	7347.5	11414	10510
700	1400	7359.5	11645	10514

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CNE-WAY TIME (MS)	INTEGRATED IND-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
701	1402	7371.4	11898	10516
702	1404	7383.0	111609	10519
703	1406	7394.6	111645	10520
704	1408	7406.3	111676	10522
705	1410	7417.9	111521	10523
706	1412	7429.5	111574	10525
707	1414	7441.0	111520	10527
708	1416	7453.6	112344	10530
709	1418	7465.9	112262	10532
710	1422	7477.9	112243	10535
711	1424	7490.5	112233	10538
712	1426	7503.4	112246	10541
713	1428	7515.4	112434	10543
714	1430	7527.9	112484	10546
715	1432	7540.4	112523	10548
716	1434	7552.9	112242	10551
717	1436	7564.3	112293	10553
718	1438	7577.8	112324	10555
719	1440	7589.3	112543	10556
720	1442	7602.8	112516	10559
721	1444	7614.3	112507	10561
722	1446	7627.8	112457	10564
723	1448	7639.3	112531	10567
724	1450	7652.9	112660	10570
725	1452	7664.4	112461	10572
726	1454	7677.4	112504	10575
727	1456	7689.4	112435	10578
728	1458	7702.0	112598	10583
729	1460	7715.0	112598	10586
730	1462	7727.5	112688	10589
731	1464	7740.5	112809	10592
732	1466	7753.4	112840	10597
733	1468	7766.0	112641	10597
734	1470	7778.2	112658	10600
735	1472	7791.9	112648	10603
736	1474	7803.6	112746	10609
737	1476	7829.5	112871	10615
738	1478	7842.4	112889	10618
739	1480	7855.1	112783	10618
740	1482	7868.8	112750	10622
741	1484	7880.3	112746	10624
742	1486	7893.6	112754	10627
743	1488	7906.3	112758	10630
744	1490	7919.1	112516	10633
745	1492	7932.4	112582	10635
746	1494	7944.7	112414	10638
747	1496	7957.0	112470	10642
748	1498	7970.3	113321	10645
749	1500	7983.8	113336	10645

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INTEGRATED ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
751	1502	7996.9	13086	10648
752	1504	8010.8	13219	10652
753	1506	8022.8	12660	10654
754	1508	8035.7	12410	10657
755	1510	8047.7	12521	10659
756	1512	8060.3	12641	10662
757	1514	8073.3	12973	10665
758	1516	8086.5	12645	10667
759	1518	8098.5	12508	10670
760	1520	8111.7	12793	10673
761	1522	8123.7	12457	10675
762	1524	8136.0	12328	10677
763	1526	8148.7	12449	10679
764	1528	8160.7	12449	10682
765	1530	8172.8	12027	10683
766	1532	8185.0	12242	10685
767	1534	8197.6	12612	10688
768	1536	8209.2	11580	10689
769	1538	8221.0	11580	10691
770	1540	8233.8	12176	10692
771	1542	8244.4	12173	10694
772	1544	8256.4	11598	10695
773	1546	8267.6	11250	10696
774	1548	8279.4	11730	10697
775	1550	8291.0	11848	10698
776	1552	8303.6	12535	10700
777	1554	8315.9	12512	10702
778	1556	8327.5	12402	10704
779	1558	8340.9	12426	10707
780	1560	8352.3	12426	10709
781	1562	8365.8	12426	10711
782	1564	8377.8	12548	10713
783	1566	8390.2	12648	10716
784	1568	8403.1	12648	10718
785	1570	8416.6	12895	10721
786	1572	8420.3	12230	10723
787	1574	8442.6	12082	10725
788	1576	8452.6	12082	10727
789	1578	8464.7	12051	10728
790	1580	8476.7	12074	10730
791	1582	8488.0	11957	10732
792	1584	8500.2	11898	10733
793	1586	8512.4	11777	10734
794	1588	8524.4	11789	10736
795	1590	8536.1	11929	10737
796	1592	8548.0	12059	10739
797	1594	8560.1	11987	10740
798	1596	8572.4	12172	10742
799	1598	8584.6	12012	10744
800	1600	8596.6	12012	10745

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CNE-TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
801	1602	8608.6	12180	10747
802	1604	8620.8	12243	10749
803	1606	8633.4	12243	10751
804	1608	8645.7	12234	10753
805	1610	8657.0	12239	10755
806	1612	8670.4	12226	10757
807	1614	8682.8	12238	10759
808	1616	8694.8	12244	10761
809	1618	8707.8	12244	10763
810	1620	8719.6	12259	10765
811	1622	8732.5	12275	10768
812	1624	8745.5	12271	10771
813	1626	8758.5	12271	10773
814	1628	8771.4	12288	10776
815	1630	8784.4	12310	10779
816	1632	8797.1	12298	10781
817	1634	8810.6	12298	10784
818	1636	8823.5	12281	10786
819	1638	8836.8	12281	10788
820	1640	8848.1	12266	10790
821	1642	8860.5	12309	10792
822	1644	8872.8	12331	10794
823	1646	8885.8	12331	10797
824	1648	8898.5	12296	10800
825	1650	8911.0	12264	10802
826	1652	8923.4	12244	10803
827	1654	8936.0	12144	10804
828	1656	8946.0	12133	10804
829	1658	8958.1	12174	10806
830	1660	8969.3	12174	10807
831	1662	8981.3	12192	10808
832	1664	8993.6	12181	10809
833	1666	9004.4	12181	10810
834	1668	9016.4	12181	10811
835	1670	9028.4	12181	10812
836	1672	9040.4	12151	10814
837	1674	9053.0	12270	10816
838	1676	9065.3	12270	10818
839	1678	9078.9	12265	10820
840	1680	9090.4	12259	10822
841	1682	9103.4	12251	10824
842	1684	9115.9	12234	10826
843	1686	9127.3	12244	10828
844	1688	9140.3	12244	10830
845	1690	9151.6	12160	10831
846	1692	9163.2	12160	10833
847	1694	9175.2	12171	10834
848	1696	9187.2	12171	10835
849	1698	9199.0	12171	10836
850	1700	9210.6	12171	10836

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CNE-TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
851	1702	9223	11724	10837
852	1704	9234	11224	10839
853	1706	9246	11221	10840
854	1708	9259	11256	10842
855	1710	9271	11262	10844
856	1712	9284	11244	10846
857	1714	9296	11244	10848
858	1716	9309	11225	10850
859	1718	9322	11285	10853
860	1720	9335	11241	10855
861	1722	9347	11207	10857
862	1724	9359	11232	10858
863	1726	9372	11193	10860
864	1728	9383	11238	10861
865	1730	9396	11252	10863
866	1732	9408	11185	10865
867	1734	9420	11220	10866
868	1736	9432	11270	10867
869	1738	9445	11302	10869
870	1740	9457	11337	10871
871	1742	9470	11380	10873
872	1744	9484	11422	10876
873	1746	9497	11479	10879
874	1748	9509	11528	10880
875	1750	9521	11580	10882
876	1752	9534	11630	10884
877	1754	9546	11681	10885
878	1756	9558	11731	10887
879	1758	9571	11781	10889
880	1760	9583	11830	10891
881	1762	9595	11879	10892
882	1764	9607	11929	10893
883	1766	9619	11979	10894
884	1768	9632	12029	10896
885	1770	9644	12079	10897
886	1772	9656	12129	10899
887	1774	9668	12179	10902
888	1776	9682	12229	10906
889	1778	9695	12279	10908
890	1780	9708	12329	10910
891	1782	9720	12379	10912
892	1784	9733	12429	10914
893	1786	9746	12479	10916
894	1788	9758	12529	10918
895	1790	9771	12579	10920
896	1792	9784	12629	10922
897	1794	9797	12679	10924
898	1796	9809	12729	10926
899	1798	9822	12779	10928
900	1780	9835	12781	10928

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 NATIONAL PETROLEUM RESERVE ALASKA

INTEGRATED ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
901	1802	9848.3	12969	10930
902	1804	9861.2	12930	10933
903	1806	9874.2	12863	10935
904	1808	9886.8	12821	10937
905	1810	9899.7	12785	10939
906	1812	9912.9	12738	10941
907	1814	9925.9	12692	10944
908	1816	9938.4	12647	10945
909	1818	9951.3	12605	10947
910	1820	9964.3	12560	10950
911	1822	9977.3	12519	10952
912	1824	9990.6	12484	10955
913	1826	10003.9	12441	10957
914	1828	10016.9	12405	10959
915	1830	10029.3	12365	10962
916	1832	10043.4	12324	10964
917	1834	10056.9	12285	10967
918	1836	10069.6	12245	10969
919	1838	10082.8	12209	10971
920	1840	10096.3	12174	10974
921	1842	10109.7	12139	10977
922	1844	10122.0	12109	10979
923	1846	10136.0	12079	10982
924	1848	10149.5	12051	10984
925	1850	10162.5	12023	10986
926	1852	10176.0	11998	10989
927	1854	10189.5	11974	10992
928	1856	10202.3	11950	10994
929	1858	10215.8	11927	10996
930	1860	10228.7	11905	10998
931	1862	10241.0	11883	11001
932	1864	10255.5	11862	11003
933	1866	10267.6	11843	11005
934	1868	10279.8	11825	11007
935	1870	10291.7	11807	11009
936	1872	10304.2	11793	11011
937	1874	10318.1	11774	11014
938	1876	10333.4	11754	11017
939	1878	10345.8	11737	11019
940	1880	10357.4	11720	11021
941	1882	10367.4	11703	11023
942	1884	10377.0	11689	11025
943	1886	10387.9	11670	11027
944	1888	10399.4	11653	11029
945	1890	10402.5	11637	11031
946	1892	10416.0	11624	11032
947	1894	10427.2	11612	11033
948	1896	10440.9	11601	11034
949	1898	10446.0	11595	11036
950	1899	10448.5	11592	11038

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INTEGRATED ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
951	1902	10499.0	13129	11040
952	1904	10511.4	12773	11042
953	1906	10524.4	12652	11043
954	1908	10535.6	11156	11044
955	1910	10546.5	11097	11044
956	1912	10556.8	10254	11043
957	1914	10566.7	9863	11041
958	1916	10577.1	10430	11041
959	1918	10587.8	10699	11040
960	1920	10598.3	10957	11040
961	1922	10609.7	10582	11040
962	1924	10619.8	10383	11039
963	1926	10629.7	10063	11038
964	1928	10639.4	9922	11037
965	1930	10649.4	9730	11036
966	1932	10659.5	10043	11035
967	1934	10669.7	10195	11034
968	1936	10680.0	10313	11033
969	1938	10690.7	10707	11033
970	1940	10701.1	10364	11032
971	1942	10711.3	10167	11031
972	1944	10720.3	9117	11029
973	1946	10729.4	8941	11027
974	1948	10739.7	10105	11026
975	1950	10749.8	10340	11025
976	1952	10759.9	10082	11024
977	1954	10769.9	10059	11023
978	1956	10780.1	10250	11023
979	1958	10790.4	10289	11022
980	1960	10802.8	11410	11021
981	1962	10817.4	11275	11021
982	1964	10832.0	11410	11021
983	1966	10846.4	11517	11031
984	1968	10858.4	11363	11035
985	1970	10872.1	11405	11038
986	1972	10886.1	11371	11041
987	1974	10900.3	11394	11044
988	1976	10914.9	11422	11047
989	1978	10927.9	11400	11049
990	1980	10941.7	11374	11052
991	1982	10955.7	11342	11055
992	1984	10969.0	11318	11058
993	1986	10985.8	11284	11062
994	1988	11001.4	11244	11066
995	1990	11014.9	11198	11070
996	1992	11029.1	11151	11074
997	1994	11045.1	11098	11078
998	1996	11061.4	11033	11083
999	1998	11076.0	11060	11087
1000	2000	11091.0	11060	11091

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 NATIONAL PETROLEUM RESERVE ALASKA

ONE-WAY TIME (MS)	INTEGRATED TWO-WAY TIME (MS)	DEPTH BELOW DATUM (FEET)	INTERVAL VELOCITY (FEET/SEC)	AVERAGE VELOCITY (FEET/SEC)
1001	2002	11106.5	15504	11095
1002	2004	11121.3	14308	11099
1003	2006	11135.3	14309	11102
1004	2008	11149.3	13809	11105
1005	2010	11164.4	15168	11109
1006	2012	11179.5	15234	11113
1007	2014	11195.5	15594	11117
1008	2016	11210.2	15367	11122
1009	2018	11226.2	15719	11126
1010	2020	11241.3	14871	11130
1011	2022	11255.4	14172	11133
1012	2024	11270.2	15102	11137
1013	2026	11285.3	14832	11140
1014	2028	11300.0	14121	11143
1015	2030	11313.0	13677	11146
1016	2032	11327.5	14477	11149
1017	2034	11342.8	15359	11153
1018	2036	11357.1	14273	11156
1019	2038	11371.2	14074	11159
1020	2040	11385.9	13977	11162
1021	2042	11400.2	13699	11164
1022	2044	11414.6	14059	11167
1023	2046	11428.8	13022	11170
1024	2048	11443.5	13613	11172
1025	2050	11457.8	13383	11174
1026	2052	11471.2	13340	11177
1027	2054	11485.7	13347	11178
1028	2056	11499.1	12958	11180
1029	2058	11512.3	12414	11181
1030	2060	11525.7	12129	11182
1031	2062	11539.3	12465	11183
1032	2064	11552.4	12406	11184
1033	2066	11565.4	12398	11185
1034	2068	11579.4	12363	11187
1035	2070	11591.3	11949	11188
1036	2072	11603.0	11824	11189
1037	2074	11615.2	11765	11189
1038	2076	11627.5	11705	11190
1039	2078	11638.5	11680	11191
1040	2080	11650.2	11680	11191
1041	2082	11661.5	11631	11191
1042	2084	11673.6	11578	11191
1043	2086	11684.4	11531	11192
1044	2088	11696.7	11504	11192
1045	2090	11709.1	11570	11193
1046	2092	11721.5	11387	11193
1047	2094	11734.2	11582	11193
1048	2096	11747.5	11484	11194
1049	2098	11753.5	11484	11194
1050	2100	11753.5	11484	11194