

sperry-sun
DRILLING SERVICES LOGGING SYSTEMS

APPLIED DRILLING TECHNOLOGY
MORNING REPORT

DATE Aug 24 93
 TIME 04:00

OPERATOR	ARCO ALASKA, INC.	WELL NAME	KUVLUK NO. 2	FIELD/BLOCK	006 BLK 072 NR0-1
CONTRACTOR	CANMAR	RIG NAME	KULLUK	AREA	BEAUFORT SEA
START DATE	Jul 28 93	LOC.	OFFSHORE	STATE	ALASKA

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA	4.03 Deg at 11125'
BACKGROUND CONNECTION TRIP	NA		LITHOLOGY	80% CLAY 20% SILTSTONE
FLOWLINE TEMP			SAMPLE DEPTH	11125
			TRIP CHLORIDES	
			LAG DOWN DP	
			LAG OFF BOTTOM	
			DRILL RATE ft/hr	
			CORRECTED 'D' EXP.	
			SHALE DENSITY g/cc	NA
			EWB Res.	

FORMATION PRESSURE DATA

	CASING			BOTTOM HOLE			OPEN HOLE					
PORE PRESSURE	1800	psi	8.7	ppg	5727	psi	9.9	ppg		psi	ppg	ft
FRACTURE PRESSURE	3081	psi	14.9	ppg	9545	psi	18.5	ppg		psi	ppg	ft
ECD		psi		ppg		psi		ppg		psi	ppg	ft

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	1900 22 AUG 93	BIT NO.	5	PUMPS	1. ID1600	2. ID1600
TYPE	GENERIC #2	TYPE	D8-40H	SIZE inches	6.5X12	6.5X12
WEIGHT IN	10.9	IADC CODE	PDC	CAPACITY gal/stk	4.91	4.91
FUNNEL VIS.	80	SIZE	12.25	PUMP RATE stk/min		
PV/VP	28/33	JETS	5-15	FLOW RATE gal/min		
GELS	3/14	DEPTH OUT	11125	PRESSURE psi	STATIC	
pH	8.5	ROT HRS.	25.1	PD SURF / DB psi		
FILT/CAKE API	2.6/1	FOOTAGE	1825	ANN / BIT psi		
HPHT	8.0 @ 150	AVG ft/hr	85	JET VELOCITY ft/sec		
CHLORIDES ppm	17000	GRADE	4-4-X-1/8	JET IMPACT lbs		
CALCIUM ppm	960	HOLE DEV.	4.03	BIT HP		
OIL/WATER/SOLIDS	TR/12/88	COST/FT	517	HP RATIO / HPAN2		
DAILY/CUM. COST		RPM	152	REDUCED 1	psi at	stk/min
		WOB	11	RATE 2	psi at	stk/min

ANNULAR DATA

		LENGTH - FT.	VOLUME BBLs/FT.	VELOCITY FT/ANN	CRIT-VEL FT/MIN	ANN VOL BBLs
5X20	DP-RISER	171	.3844			
5X13 3/8	DP-CGD	3002	.1255			
5X12.25	DP-HOLE	6090	.1215			
8X12.25	DC-HOLE	476	.0836			

PIPE DATA

	DRILL STRING			CASING DEPTH	RISER	COND.	SURF.	INT.
	DP	HWDP	Dc		171	301	1017	3878
OD-inches	5.0	5.0	8		21.9	20	20	13.975
ID-inches	4.278	3.0	2.875		20.0	28	16.75	12.415
CAP-bbls/ft	.0178	.0087	.0076		.0007	.7818	.3408	.1496
D16P-bbls/ft	.0075	.0181	.0545		NA	.113	.0478	.024
LENGTH-ft	8921	728	476		170.5	95	811	3772
WEIGHT-lbs/ft	19.5	49	149			310	133	68

REMARKS AND RECOMMENDATIONS

MW	GPM	JETS	ft/ml	sec/stk
E LOG LOST 70 BBLs MUD TO HOLE IN 56 HRS. RIH FOR CLEANOUT RUN. HOLE TIGHT AT 10897'. WASH TO BOTTOM. CBU. TRIP GAS=1400. GOOD FOR MORE E LOGS.				
ADT O. WALTERS				

Aug. 23, 1993

8:11 AM

ARCO ALASKA INC

DCS District Office No. 2480

P. 4/7

08/24/93

06:22

KULLUK 11 - 907 265 1393

NO. 833

006

sperry-sun DRILLING SERVICES A Baroid Company

LOGGING SYSTEMS Management Service go, Alaska

WELL NO. 11125 LOCATION ELOG (AGE)

APPLIED DRILLING TECHNOLOGY MORNING REPORT

No. 28 DATE Aug 23 1993 TIME 04:00

Table with 3 columns: OPERATOR (ARCO ALASKA, INC.), CONTRACTOR (CANMAR), START DATE (Jul 28 93); WELL NAME (KUYLUM NO. 2), RIG NAME (KULLUK), LOC. (OFFSHORE); FIELD/BLOCK (OC6 BLK 672 NR0-4), AREA (BEAUFORT SEA), STATE (ALASKA)

LOGGING DATA

Table with columns: AVG GAS (units), MAX GAS (units), AT DEPTH (feet), SURVEY DATA (4.03 Deg at 11125'), LITHOLOGY (40% CLAY 60% BILTSTONE), SAMPLE DEPTH (11125), TRIP CHLORIDES, LAG DOWN DP, LAG OFF BOTTOM, DRILL RATE (11/1r), CORRECTED 'D' EXP., SHALE DENSITY (g/cc), EWR Res.

FORMATION PRESSURE DATA

Table with columns: CASING, BOTTOM HOLE, OPEN HOLE; PORE PRESSURE, FRACTURE PRESSURE, ECD

MUD DATA

BIT DATA

HYDRAULIC DATA

Large table containing MUD, BIT, and HYDRAULIC data including TIME, TYPE, WEIGHT IN, FUNNEL VIS., PV/YP, GELS, BH, FILT/CAKE API, CHLORIDES ppm, CALCIUM ppm, OIL/WATER/SOLIDS, DAILY/CUM. COST, BIT NO., TYPE, IADC CODE, SIZE, JETS, DEPTH OUT, ROT HRG., FOOTAGE, AVG ft/hr, GRADE, HOLE DEV., COST/FT, RPM, WOB, PUMPS, SIZE inches, CAPACITY gal/mk, PUMP RATE stks/min, FLOW RATE gal/min, PRESSURE psi, PD SURF / DS psi, ANN / BIT psi, JET VELOCITY ft/sec, JET IMPACT lbs, BIT HP, HP RATIO / HP/IN2, REDUCED 1, RATE 2

ANNULAR DATA

Table with columns: LENGTH - FT., VOLUME BBLs/FT., VELOCITY FT/MIN, CRIT-VEL FT/MIN, ANN-VOL BBLs; Rows for 5X20 DP-RISER, 5X13 3/8 DP-C&G, 5X12.25 DP-HOLE, 8X12.25 DC-HOLE

PIPE DATA

Table with columns: DRILL STRING, CASING, RISER, COND., SURF., INT.; Rows for DP, HWDP, DC, DEPTH

REMARKS AND RECOMMENDATIONS

MW _____ GPM _____ JETS _____ ft/mf = _____ sec/std
F - 0.0 HOLE TAKING .5 - 1.0 BBLs/HR
ADT _____ D. WALTERS

sperry-sun
DRILLING SERVICES **LOGGING SYSTEMS**

A Baroid Company

DEPTH 11125
OPERATION E LOG
FOOTAGE _____

No. 24
DATE Aug 21 93
TIME 04 00

APPLIED DRILLING TECHNOLOGY
MORNING REPORT

OPERATOR <u>ARCO ALASKA, INC.</u>	WELL NAME <u>KUVLUM NO. 2</u>	FIELD/BLOCK <u>OCB BLK 672 NR 4</u>
CONTRACTOR <u>CANMAR</u>	RIG NAME <u>KULLUK</u>	AREA <u>BEAUFORT SEA</u>
START DATE <u>Jul 28 93</u>	LOC. <u>OFFSHORE</u>	STATE <u>ALASKA</u>

LOGGING DATA

AVG GAS (w/m) _____	MAX GAS (w/m) _____	AT DEPTH (feet) _____	SURVEY DATA <u>4.00 Deg at 11125'</u>
BACKGROUND CONNECTION TRIP _____	FLOWLINE TEMP _____ degrees F	LITHOLOGY <u>40 % CLAY 60% SILTSTONE</u>	SAMPLE DEPTH <u>11125</u>
TRIP _____	_____	TRIP CHLORIDES _____	DRILL RATE R/hr _____
_____	_____	LAG DOWN DP _____	CORRECTED 'D' EXP. _____
_____	_____	LAG OFF BOTTOM _____	SHALE DENSITY g/cc <u>NA</u>
_____	_____	_____	EWB Nos. _____

FORMATION PRESSURE DATA

CASING		BOTTOM HOLE		OPEN HOLE	
PORE PRESSURE	<u>1800</u> psi	<u>8.7</u> ppg	<u>5727</u> psi	<u>9.9</u> ppg	_____ psi _____ ppg
FRACTURE PRESSURE	<u>3081</u> psi	<u>14.9</u> ppg	<u>8545</u> psi	<u>18.3</u> ppg	_____ psi _____ ppg
EGD	_____ psi	_____ ppg	_____ psi	_____ ppg	_____ psi _____ ppg

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME <u>1550 AUG 20 93</u>	BIT NO. <u>6</u>	PUMPS <u>1</u>	ID1800 <u>2</u>
TYPE <u>GENERIC #2</u>	TYPE <u>D6-40H</u>	SIZE inches <u>6.5X12</u>	0.5X12
WEIGHT IN <u>10.0</u>	IADC CODE <u>PDC</u>	CAPACITY gal/stk <u>4.91</u>	4.91
FUNNEL VIS. <u>56</u>	SIZE <u>12.25</u>	PUMP RATE stks/min _____	FLOW RATE gal/min _____
PV/VP <u>29/96</u>	JETS <u>5-15</u>	PRESSURE psi _____	STATIC
GELS <u>3/13</u>	DEPTH OUT <u>11125</u>	PD SURF / DS psi _____	ANN / BIR psi _____
pH <u>8.5</u>	ROT HRS. <u>25.1</u>	JET VELOCITY ft/sec _____	JET IMPACT lba _____
FILT/CAKE API <u>3.0 -1/32</u>	FOOTAGE <u>1825</u>	BIT HP _____	HP RATIO / HP/IN2 _____
HP+IT <u>0.2 @ 150</u>	AVG ft/hr <u>65</u>	REDUCED 1 _____ psi at _____ stk/min	RATE 2 _____ psi at _____ stk/min
Pm <u>.3</u>	GRADE <u>4.4-X-1/8</u>	_____	_____
PMM <u>.15/1.4</u>	HOLE DEV. <u>4.03</u>	_____	_____
CHLORIDES ppm <u>17000</u>	COST/FT <u>517</u>	_____	_____
CALCIUM ppm <u>220</u>	RPM <u>152</u>	_____	_____
OIL/WATER/SOLIDS <u>TR/11.5/88.5</u>	WOB <u>11</u>	_____	_____
DAILY/CUM. COST _____	_____	_____	_____

ANNULAR DATA

	LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBL @
<u>5X20 DP-RIBER</u>	<u>171</u>	<u>.3644</u>	_____	_____	_____
<u>5X13 3/8 DP-C90</u>	<u>3908</u>	<u>.1255</u>	_____	_____	_____
<u>5X12.25 DP-HOLE</u>	<u>6098</u>	<u>.1215</u>	_____	_____	_____
<u>5X12.25 OC-HOLE</u>	<u>476</u>	<u>.0636</u>	_____	_____	_____

PIPE DATA

	DP	HWDP	DC	CASING DEPTH	RIGER	COND.	SURF.
OD-Inches	<u>5.0</u>	<u>5.0</u>	<u>0</u>	<u>171</u>	<u>21.0</u>	<u>301</u>	<u>1017</u>
ID-Inches	<u>4.279</u>	<u>0.0</u>	<u>2.675</u>	<u>21.0</u>	<u>28</u>	<u>20</u>	<u>13.375</u>
CAP-bbls/ft	<u>.0178</u>	<u>.0087</u>	<u>.0076</u>	<u>.3687</u>	<u>.7610</u>	<u>.3408</u>	<u>.1408</u>
DISP-bbls/ft	<u>.0075</u>	<u>.0181</u>	<u>.0545</u>	<u>NA</u>	<u>.112</u>	<u>.0470</u>	<u>.024</u>
LENGTH-ft	<u>6919</u>	<u>728</u>	<u>476</u>	<u>170.5</u>	<u>95</u>	<u>811</u>	<u>3772</u>
WEIGHT-lbs/r	<u>19.5</u>	<u>49</u>	<u>149</u>	<u>310</u>	<u>133</u>	<u>68</u>	<u>68</u>

REMARKS AND RECOMMENDATIONS

MW 10.5 GPM 700 JETS TFA: 75 ft/mi = 15 sec/std

RH AFTER SHORT TRIP. SHORT TRIP GAS = 69%. CIRC AND CONDITION HOLE. POH FOR E LOGS. NO PROBLEMS PULLING PIPE. E LOG.

ADT D. WALTERS

SECURE-FX TRANSMISSION
 AUG 20 '93 07:10 AM ALASKA EXPLOR/DRILLING
 SECURE-FX TRANSMISSION
 08/21/93 06:23 ARCO KUULUM 11 - 907 265 1393

Received
 District Office

P.6
 NO. B23 024

Minerals Management Service
 Anchorage, Alaska

sherry-sun
 LOGGING SYSTEMS
 A Service Company

NO. 71
 DATE Aug 20 93
 TIME 04 00

WELL ID 11125
 FRACTION 5 TRIP
 FOOTAGE 574

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

OPERATOR	ARCO ALASKA, INC.	WELL NAME	KUULUM NO. 2	FIELD/BLOCK	OC6 BLK 672 NR6-4
CONTRACTOR	CANMAR	RIG NAME	KULLUK	AREA	BEAUFORT SEA
START DATE	Aug 20 93	LOC.	OFFSHORE	STATE	ALASKA

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA	4.03 Deg at 11125'
40	130	10555	LITHOLOGY	40% CLAY 60% SILTSTONE
BACKGROUND CONNECTION TRIP	10	10827	SAMPLE DEPTH	11125
TRIP	883	10551	TRIP CHLORIDES	
FLOWLINE TEMP		degrees F	LAG DOWN DP	
			LAG OFF BOTTOM	
			DRILL RATE ft/hr	20
			CORRECTED 'D' EXP.	
			SHALE DENSITY g/cc	NA
			EWR Res.	

FORMATION PRESSURE DATA

	CASING	BOTTOM HOLE	OPEN HOLE
PORE PRESSURE	1800 psi 5.7 ppg	5432 psi 9.8 ppg	
FRACTURE PRESSURE	3081 psi 14.0 ppg	8053 psi 16.5 ppg	
ECD			

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	24:00 AUG 19 93	BIT NO.	8	PUMPS	1. ID1600 2. ID1600
TYPE	GENERIC #7	TYPE	DS-40H	SIZE inches	5.5X12 0.5X12
WEIGHT IN	10.7	IADC CODE	PDC	CAPACITY gal/stk	4.01 4.91
FUNNEL VISC.	69	SIZE	12.25	PUMP RATE stk/min	
PV/VP	27/34	JET#	5-15	FLOW RATE gal/min	
GELS	3/8	DEPTH OUT	11125	PRESSURE psi	STATIC
pH	8.8	ROT HRG.	25.1	PD SURF / DS psi	
FILT/CAKE API	2.1 - 1/32	FOOTAGE	1025	ANN / BIT psi	
IIP/HT	8.0 @ 150	AVG HRV	85	JET VELOCITY ft/sec	
MI	27.5	GRADE		JET IMPACT lbs	
CHLORIDES ppm	17000	HOLE DEV.	4.03	BIT HP	
CALCIUM ppm	860	COST/FT	517	HP RATIO / HP/IN2	
OIL/WATER/SOLIDS	TR/11.5/86.5	RPM	152	REDUCED 1	psi at stk/min
DAILY/CUM. COST		WOR	11	RATE 2	psi at stk/min

ANNULAR DATA

	LENGTH-FT.	VOLUME BBL/FT.	VELOCITY FT/ANN	CRIT-VEL FT/ANN	ANN-VOL. RBLS
5X20 DP-RISER	171	.8644			
5X13 3/4 DP-CSG	3906	.1255			
5X12.25 DP-HOLE	6098	.1215			
8X12.25 DC-HOLE	476	.0836			

PIPE DATA

	DRILL STRING	CASING	RISER	COND.	SURF.
OD-inches	DP 5.0 MWDP 5.0 DC 8	DEPTH	171	901	1017
ID-inches	4.278 3.0 2.875		21.0	30	20
CAP-bbls/ft	.0170 .0087 .0076		.5027	.7616	.3408
DISP-bbls/ft	.0075 .0161 .0545		NA	.113	.0479
LENGTH-ft	8819 728 476		170.5	95	811
WEIGHT-lbs/ft	19.5 49 149			310	139
					3678
					13,975
					12,415
					1486
					.024
					3772
					68

REMARKS AND RECOMMENDATIONS

MW 10.5 GPM 700 JETS TFA: 75 ft/mi = 15 sec/stk
 4 AFTER SHORT TRIP SHORT TRIP GAS = 883. DRILL AHEAD WITH BIT NO 8 THRU SILTSTONE/CLAY TO 11125', SHORT TRIP TO SHOE TO
 ADDITION HOLE TO RUN E LOGS. HOLE PULLED TIGHT AT 10281-10271' AND 6057-6047'

ADT D. WALTERS

SPARV-AIR LOGGING SYSTEMS
 A DAIKOKI Company

Minerals Management Service
 Storage / Alaska

TRIP NO. 1051
 TRIP STAGE 5 TRIP
 STAGE 1051

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

DATE Aug 19 93
 TIME 04 00

OPERATOR	ARGO ALASKA, INC.	WELL NAME	KUVLUM NO. 2	FIELD/BLOCK	OCS BLK 672 NR0-4
CONTRACTOR	CANMAR	RIG NAME	KULLUK	AREA	BEAUFORT OEA
START DATE	Jul 28 93	LOC.	OFFSHORE	STATE	ALASKA

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA	80 @ 9370	1.45 @ 10852
BACKGROUND CONNECTION TRIP	80	140	LITHOLOGY	80% CLAY 40% SLTSTONE TR SANDSTONE	
FLOWLINE IEMP	1541	9500	SAMPLE DEPTH	9500	
	105	degrees F	TRIP CHLORIDE		
			LAG DOWN DP	1505	
			LAG OFF BOTTOM	11750	
			DRILL RATE #/hr	05	
			CORRECTED 'D' EXP.	.81	
			SHALE DENSITY g/cc	NA	
			EWR Rec.	3.5	

FORMATION PRESSURE DATA

	CASING		BOTTOM HOLE		OPEN HOLE	
PORE PRESSURE	1800	psi	8.7	ppg	5432	psi
FRACTURE PRESSURE	3081	psi	14.9	ppg	8053	psi
ECD	2113	psi	10.7	ppg	5870	psi

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	24:00 AUG 18 93	BIT NO.	6	RRS	PUMPS	1. 101600	2. 101600
TYPE	GENERIC 20	TYPE	D9-40H	D9-40H	SIZE inches	6.6X12	6.6X12
WEIGHT IN	10.5	IADC CODE	PDC	PDC	CAPACITY gal/sk	4.91	4.91
FUNNEL VIS.	64	SIZE	12.25	12.25	PUMP RATE stks/min	69	69
PV/YP	25/34	JETS	3-13	2-14, 3-13	FLOW RATE gal/min	678	
GELS	4/12	DEPTH OUT		9500	PRESSURE psi	3200	
PH	8.8	ROT HRG.	11.6	27.4	PD SURF / D0 psi	100/3400	
FILT/CAKE AM	3.4 - 1/32	FOOTAGE	1051	2768	ANN / BIT psi	100/600	
HPHT	6.8 @ 150	AVG ft/hr	90	101	JET VELOCITY ft/sec	252	
	.45	GRADE	INC	40% - 1/8	JET IMPACT lbs	929	
CHLORIDE ppm	25/1.5	HOLE DEV.			BIT HP	985	
CALCIUM ppm	17000	COBT/FT	503	331	HP RATIO / HP/IN2	19% - 2.0/IN2	
OIL/WATER/SOLIDS	920	RPM	155	180	REDUCED 1	psi at	stk/min
DAILY/CUM. COST	TR/10/90	WOB	8-10	14	RATE 2	psi at	stk/min

ANNULAR DATA

		LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBL6
5X20	DP-RISER	171	.3644	44	321	
5X13 3/8	DP-C&G	3008	.1255	129	385	
5X12.25	DP-HOLE	6090	.1215	133	359	
8X12.25	DC-HOLE	478	.0836	183	410	

PIPE DATA

	DRILL STRING			CASING DEPTH	RISER	COND.	6URF.
OD-inches	DP	HWDP	DC	171	171	301	1017
ID-inches	5.0	5.0	6	21.0	20	20	13.375
CAP-bbls/ft	4.278	3.0	2.875	20.0	20	16.75	12.115
DISP-bbls/ft	.0176	.0087	.0076	3807	7818	3408	1498
LENGTH-ft	.0075	.0181	.0545	NA	.113	.0478	.024
WEIGHT-lbs/ft	8847	728	478	170.5	95	811	3772
	19.5	49	149		310	133	58

REMARKS AND RECOMMENDATIONS

MW 10.5 GPM 700 JETS TFA: 75 ft/mi = 15 sec/std
 DRILL AHEAD WITH BIT NO. 6. MAX GAS FROM BOTTOM ON TRIP - 1543 UNITS. VERY GOOD PENETRATION RATES WITH NEW BIT.
 VISISTIVITY DATA INDICATING INCREASING PORE PRESSURE GRADIENT CONTINUOUS TO ABOUT 10,000'. RAISED PORE PRESSURE ESTIMATE
 TO 9.8 PPG AT THIS DEPTH. TREND APPEARS TO STABILIZE BELOW 10,000'. DRILL TO 10551'. SHORT TRIP PAST 8,500' TO CONDITION THE
 HOLE.
 ADI J. PATTON

sperry-sun
 DRILLING SERVICES LOGGING SYSTEMS
 A Boreid Company

WELL NO. 9500
 LOCATION:
 FOOTAGE: 0

No. 21
 DATE: Aug 17 93
 TIME: 04 00

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

OPERATOR	ARCO ALASKA, INC.	WELL NAME	KULUM NO. 2	FIELD/BLOCK	DCS BLK 672 NBS-4
CONTRACTOR	CANMAR	RIG NAME	KULLUK	AREA	BEAUFORT SEA
START DATE	Jul 29 93	LOC.	OFFSHORE	STATE	ALASKA

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA	80 @ 8378
0	350	8. REM	LITHOLOGY	80% CLAY 40% SILTSTONE TR SANDSTONE
BACKGROUND CONNECTION	185	9488	SAMPLE DEPTH	9500
TRIP	625	7898	TRIP CHLORIDES	
FLOWLINE TEMP	80	degrees F	LAG DOWN DP	1345
			LAG OFF BOTTOM	10450
			DRILL RATE ft/hr	88
			CORRECTED 'D' EXP.	88
			SHALE DENSITY g/cc	NA
			EWR Res.	3.5

FORMATION PRESSURE DATA

CASING			BOTTOM HOLE			OPEN HOLE		
PORE PRESSURE	1800	psi	9.7	ppg	3844	psi	9.7	ppg
FRACTURE PRESSURE	3081	psi	14.8	ppg	6544	psi	16.2	ppg
ECD	2131	psi	10.8	ppg	4212	psi	10.6	ppg

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	24:00 AUG 17 93	BIT NO.	8	RRS		PUMPS	1. ID1600	2. ID1600
TYPE	GENERIC #2	TYPE	DS-40H	DS-40H		SIZE inches	6.5X12	6.5X12
WEIGHT IN	10.4	IADC CODE	PDC	PDC		CAPACITY gal/stk	4.91	4.91
FUNNEL VIS.	88	SIZE	12.25	12.25		PUMP RATE stks/min	69	70
PV/VP	20/35	JETS	5-15	2-14, 3-10		FLOW RATE gal/min	nao	
GELS	4/7	DEPTH OUT		9500		PRESSURE psi		3600
pH	6.8	ROY HRS.		27.4		PD SURF / DS psi		100/2450
FILT/CAKE API	2.8 - 1/82	FOOTAGE		2788		ANN / BIT psi		1.05/845
HP-HI	6.8 @ 150	AVG ft/hr		101		JET VELOCITY ft/sec		61.8
T/M	.1/1.5	GRADE		INC		JET IMPACT lbx		1170
CHLORIDES ppm	17500	HOLE DEV.				BIT HP		380
CALCIUM ppm	920	COST/FT		331		HP RATIO / HP/IN2		26% - 3.3/IN2
OIL/WATER/SOLIDS	TR/10/90	RFM		180		REDUCED 1		psi at stk/min
DAILY/CUM. COST		WOB		14		RATE 2		psi at stk/min

ANNULAR DATA

		LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBLs
3X20	DP-RISER	171	.3644	45	361	
5X13 3/8	DP-C60	3906	.1255	130	432	
5X12.25	DP-HOLE	5046	.1216	134	403	
6X12.25	OO-HOLE	470	.0936	195	466	

PIPE DATA

	DRILL STRING				CASING DEPTH	RISER	COND.	SURF.	
	DP	HWDP		DC		171	301	1017	3978
OD inches	5.0	5.0		8		21.0	30	20	13.975
ID inches	4.276	3.0		2.875		20.0	28	18.75	12.415
CAP-bbls/ft	.0178	.0087		.0079		3887	.7610	.3408	.1488
DISP-bbls/ft	.0075	.0181		.0545		NA	.115	.0479	.024
LENGTH-ft	6296	728		470		170.5	65	611	3772
WEIGHT-lbs/ft	19.5	49		149			310	139	68

REMARKS AND RECOMMENDATIONS

MW 10.4 GPM 700 JETS IFA: 75 r/mi = 15 sec/std
 UMP OUT OF HOLE ON FIRST 20 STANDS. HOLE PULLED GOOD FOR THE REST OF THE WAY OUT. TEST BOP. PICK UP ADDITIONAL
 HILL PIPE ON THE WAY BACK IN.
 ADT J. PATTON

sperry-sun
DRILLING SERVICES LOGGING SYSTEMS
 A Boreid Company

DEPTH 8500
 OPERATION FOOT
 CONTACT 1A35

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

No. 20
 DATE Aug 17 93
 TIME 04 00

OPERATOR ARCO ALASKA INC. WELL NAME KULUM NO. 2 FIELD/BLOCK OCS BLK 672 NR6.4
 CONTRACTOR CANMAR RIG NAME KULLUK AREA BEAUFORT SEA
 START DATE Jul 20 93 LOC. OFFSHORE STATE ALASKA

LOGGING DATA

AVO GAS (units)	MAX GAS (units)	AT GAS (units)	SURVEY DATA	80 @ 8370	LITHOLOGY	60% CLAY 40% SILTSTONE TR SANDSTONE
BACKGROUND CONNECTION TRIP FLOWLINE TEMP	90 166 825 85	1513 2468 7888 degrees F	DEPTH (feet)	9020	SAMPLE DEPTH	9500
			TRIP CHLORIDE		LAG DOWN DP	1345
			LAG OFF BOTTOM	10450	DRILL RATE ft/hr	88
					CORRECTED 'D' EXP.	86
					SHALE DENSITY g/cc	NA
					GWR Res.	3.5

FORMATION PRESSURE DATA

	CASING		BOTTOM HOLE		OPEN HOLE	
PORE PRESSURE	1800 psi	8.7 PPG	3844 psi	8.7 PPG	psi	PPG
FRACTURE PRESSURE	3081 psi	14.9 PPG	6544 psi	18.2 PPG	psi	PPG
ECD	2151 psi	10. PPG	4212 psi	PPG	psi	PPG

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	24:00 AUG 16 93	BIT NO.	CB-1	RR5	PUMPS	1. ID1000	2. ID1600
TYPE	GENERIC #2	TYPE	RO-412	06-40H	SIZE inches	6.5X12	6.5X12
WEIGHT IN	10.4+	IADC CODE	CORE #1	PDC	CAPACITY gal/stk	4.91	4.91
FUNNEL VIS.	70	SIZE	8.5	12.25	PUMP RATE stks/min	89	70
PV/VP	90/40	JETS	TFA: 7	2-14, 3-13	FLOW RATE gal/min	688	
GELS	3/15	DEPTH OUT	8732	9500	PRESSURE psi	3600	
pH	8.8	ROT HRG.	0	27.4	PD SURF / DP psi	100/2450	
FILT/CAKE API	2.9 - 1/32	FOOTAGE	2	2788	ANN / BIT psi	105/945	
MP-HT	0.8 @ 150	AVG ft/hr	3.3	101	JET VELOCITY ft/sec	319	
Fm	3	GRADE		INC	JET IMPACT lbs	1179	
F/MF	1/1.4	HOLE DEV.			BIT HP	990	
CHLORIDES ppm	17000	COST/FT	NA	331	HP RATIO / HP/IN2	26% - 3.2/IN2	
CALCIUM ppm	820	RPM	80	160	REDUCED 1	psi at stk/min	
OIL/WATER/SOLIDS	TR/10.5/0.5	WOB	10	14	RATE 2	psi at stk/min	
DAILY/CUM. COST							

ANNULAR DATA

		LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT. VEL FT/MIN	ANN-VOL BBL/s
5X20	DP-RISER	171	.3644	45	361	
5X10 3/8	DP-CEG	3008	.1255	130	432	
5X12.25	DP-HOLE	5048	.1215	134	409	
8X12.25	DC-HOLE	476	.0838	195	466	

PIPE DATA

	DRILL STRING			CASING: RISER COND. SURF.				
	DP	HWDP	DC	DEPTH	171	301	1017	3078
OD-inches	5.0	5.0	8	21.0	30	20	13.375	
ID-inches	4.276	3.0	2.872	20.0	28	18.75	12.415	
CAP-inches	.0178	.0087	.0078	3887	7616	.9408	1488	
DISP-bbls/ft	.0075	.0181	.0545	NA	113	.0479	.024	
LENGTH-ft	8286	728	476	170.5	95	811	3772	
WEIGHT-lbs/ft	19.5	49	149		310	133	68	

REMARKS AND RECOMMENDATIONS

MW 10.4 GPM 850 JETS TFA: 88 ft/ml = 15 sec/std
 DRILL AHEAD WITH BIT NO. 5. SLIGHT INCREASE IN BACKGROUND GAS AND CONNECTION GAS LOGGED WITH INCREASING DEPTH. RAISED PORE PRESSURE ESTIMATE TO REFLECT TREND DEVELOPING ON D-EXPONENT AND RESISTIVITY PLOT. CURRENT ESTIMATE IS 8.7 PPG AT THIS DEPTH. THE MUD WEIGHT WAS RAISED IN TWO STAGES TO 10.4 PPG FOR ADDITIONAL OVERBALANCE. CBU AT 8500. FOOT
 ADT J. PATTON

sperry-sun
DRILLING SERVICE LOGGING SYSTEMS
 A Baroid Company

DEPTH 7865
 OPERATION DRILLING
 FOOTAGE 560

No. 19
 DATE Aug 16 93
 TIME 04 00

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

OPERATOR ARCO ALASKA, INC. WELL NAME KUVLUK NO. 2 FIELD/BLOCK 009 BLK 972 NR6-4
 CONTRACTOR CANMAR RIG NAME KULLUK AREA BEAUFORT SEA
 START DATE JUL 28 93 LOC. OFFSHORE STATE ALASKA

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA	.85 at 7094'
40	160	7250	LITHOLOGY	40% CLAY 60% SLTSTONE
CONNECTION	NA		SAMPLE DEPTH	7070
TRIP	825	7608	TRIP CHLORIDES	
FLOWLINE TEMP	01	degrees F	LAG DOWN DP	896
			LAG OFF BOTTOM	7950
			DRILL RATE ft/hr	160
			CORRECTED 'D' EXP.	76
			SHALE DENSITY g/cc	NA
			EWR Res.	7

FORMATION PRESSURE DATA

	CAGING		BOTTOM HOLE		OPEN HOLE	
PORE PRESSURE	1800	psi	6.7	ppg	2844	psi
FRACTURE PRESSURE	3081	psi	14.9	ppg	8544	psi
ECD	2151	psi	10.3	ppg	4212	psi

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	24:00 AUG 15 93	BIT NO.	CB-1	RR5	PUMPS	1. ID1900	2. ID1000
TYPE	GENERIC #2	TYPE	RC-412	D8-40H	SIZE inches	6.5X12	6.5X12
WEIGHT IN	10.0	IADC CODE	CORE #1	PDC	CAPACITY gal/stk	4.91	4.91
FUNNEL VIS.	59	SIZE	6.5	18.85	PUMP RATE stks/min	72	71
PV/YP	25/30	JETS	TFA: 7	2-14, 3-13	FLOW RATE gal/min	704	
GEL9	3/8	DEPTH OUT	8732		PRESSURE psi	2800	
pH	8.9	ROT HR9.	.9	12.1	PD GURF / D8 psi	100/1678	
FILT/CAKE API	2.8 - 1/32	FOOTAGE	3	1133	ANN / BIT psi	65/860	
HPHT	8.0 @ 150	AVG ft/hr	3.3	94	JET VELOCITY ft/sec	320	
Pm	.3	GRADE		INC	JET IMPACT lbs	1195	
P/AM	1/1.3	HOLE DEV.			BIT HP	395	
CHLORIDES ppm	17500	COST/FT	NA	598	HP RATIO / HP/IN2	33% - 3.3/IN2	
CALCIUM ppm	880	RPM	00	100	REDUCED 1	psi at	stk/min
OIL/WATER/SOLIDS	TR/9/31	WOB	10	15	RATE 2	psi at	stk/min
DAILY/CUM. COST							

ANNULAR DATA

		LENGTH - FT.	VOLUME BBLs/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBLs
5X20	DP-RISER	171	.8644	46	295	
5X13 3/8	DP-CSG	3905	.1255	134	380	
5X12 25	DP-HOLE	3411	.1215	188	338	
8X12 25	DC-HOLE	476	.0838	201	393	

PIPE DATA

	DP	HWDP	DC	CASING DEPTH	RISER	COND.	SURF.
OD-inches	5.0	5.0	8		171	307	1017
ID-inches	4.276	3.0	2.875		21.0	30	13.075
CAP-bbls/ft	.0178	.0087	.0076		3887	7610	3408
DISP-bbls/ft	.0075	.0181	.0545		NA	.113	.0478
LENGTH-ft	6661	728	470		170.5	95	611
WEIGHT-lbs/ft	10.6	49	149			310	133

REMARKS AND RECOMMENDATIONS

MW 10.0 GPM 700 JETS TFA: 68 ft/ml = 15 sec/std
 DRILL AHEAD LOOKING FOR CORE POINT. PRESSURE TEND STARTING TO DEVELOPE ON D-EXPONENT PLOT AT 7000'. INCREASE HOP APPROXIMATELY 50% BY ADDING WEIGHT ON BIT AND ADDITIONAL RPM BELOW 7500'. SLIGHT INCREASE IN GAS LOGGED FROM BOTTOMS UP ON CONNECTIONS. RAISED PORE PRESSURE ESTIMATE TO 9.4 PPG AT 7075'. DRILL TO 7090'. CBU, POOH TO SHOE. PUMP OUT OF THE HOLE ON STANDS 9,10,11, AND 12. REPAIR TOP DRIVE. RH. DRILL AHEAD. BOTTOMS UP FROM TRIP = 825 UNITS.

ADT J. PATTON

sperry-sun
DRILLING SERVICES
 A Halliburton Company

LOGGING SYSTEMS

DEPTH 7206
 OPERATION DRILLING
 FOOTAGE 1/2

APPLIED DRILLING TECHNOLOGY
MORNING REPORT

No. 15
 DATE Aug 15, 93
 TIME 04 00

OPERATOR <u>ARGO ALASKA, INC.</u>	WELL NAME <u>KULLUM NO. 2</u>	FIELD/BLOCK <u>008 BLK 672 NR6-4</u>
CONTRACTOR <u>CANMAR</u>	RIG NAME <u>KULLUM</u>	AREA <u>BEAUFORT SEA</u>
START DATE <u>Jul 28 93</u>	LOC. <u>OFFSHORE</u>	STATE <u>ALASKA</u>

LOGGING DATA

AVG GA8 (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA <u>05 N 7084'</u>	LITHOLOGY <u>40% CLAY 60% SILTSTONE</u>
BACKGROUND <u>00</u>	<u>464</u>	<u>6755</u>	SAMPLE DEPTH <u>7070</u>	TRIP CHLORIDES <u>998</u>
CONNECTION <u>00</u>		<u>7127</u>	LAG DOWN DP <u>998</u>	LAG OFF BOTTOM <u>7660</u>
TRIP <u>08</u>		<u>8732</u>	DRILL RATE ft/hr <u>90</u>	CORRECTED 'D' EXP. <u>75</u>
FLOWLINE TEMP <u>83</u> degrees F			SHALE DENSITY g/cc <u>NA</u>	EWR Rec. <u>5</u>

FORMATION PRESSURE DATA

CASING		BOTTOM HOLE		OPEN HOLE	
PORE PRESSURE	<u>1800</u> psi <u>8.7</u> ppg	<u>3372</u> psi <u>9.0</u> ppg			
FRACTURE PRESSURE	<u>2081</u> psi <u>14.9</u> ppg	<u>5820</u> psi <u>15.8</u> ppg			
ECD	<u>2151</u> psi <u>10.9</u> ppg	<u>3880</u> psi <u>10.4</u> ppg			

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME <u>24:00 AUG 14 93</u>	BIT NO. <u>CB-1</u>	<u>RR5</u>	PUMPS 1. <u>ID1600</u>	2. <u>ID1600</u>
TYPE <u>GENERIC #2</u>	TYPE <u>RC-412</u>	<u>DB-40M</u>	SIZE inches <u>6.5X12</u>	<u>6.5X12</u>
WEIGHT IN <u>10.1</u>	IADC CODE <u>CORE #1</u>	<u>PDC</u>	CAPACITY gal/stk <u>4.01</u>	<u>4.01</u>
FUNNEL VISC. <u>99</u>	SIZE <u>8.5</u>	<u>12.25</u>	PUMP RATE stks/min <u>71</u>	<u>70</u>
PV/VP <u>24/34</u>	JETS <u>TRF-7</u>	<u>2-14, 3-13</u>	FLOW RATE gal/min <u>603</u>	
GELS <u>5/12</u>	DEPTH OUT <u>6732</u>	<u>NA</u>	PRESSURE psi <u>2050</u>	
pH <u>8.9</u>	ROT HRS. <u>.0</u>	<u>5.8</u>	PD SURF / D9 psi <u>100/1610</u>	
FILT/CAKE API <u>3.0 - 1/32</u>	FOOTAGE <u>3</u>	<u>473</u>	ANN / BIT psi <u>70/940</u>	
HP-HI <u>6.8 @ 150</u>	AVG ft/hr <u>3.3</u>	<u>84</u>	JET VELOCITY ft/sec <u>322</u>	
Fm <u>.3</u>	GRADE <u>INC</u>		JET IMPACT lbs <u>1170</u>	
Ft/M <u>.1/1.3</u>	HOLE DEV. <u>NA</u>	<u>650</u>	BIT HP <u>380</u>	
CHLORIDES ppm <u>17000</u>	COST/FT <u>NA</u>	<u>130</u>	HP RATIO / HP/IN2 <u>36% - 3.2/IN2</u>	
CALCIUM ppm <u>920</u>	RPM <u>80</u>	<u>130</u>	REDUCED 1 <u>psi at stk/min</u>	
OIL/WATER/SDI/D9 <u>TR/11/89</u>	WOB <u>70</u>	<u>6-10</u>	RATE 2 <u>psi at stk/min</u>	
DAILY/CUM. COST				

ANNULAR DATA

	LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT. VEL FT/MIN	ANN-VOL BBL
<u>5X20</u> DP-RISER	<u>171</u>	<u>.3644</u>	<u>45</u>	<u>334</u>	
<u>5X13 3/8</u> DP-CSG	<u>3908</u>	<u>.1255</u>	<u>132</u>	<u>396</u>	
<u>5X12.25</u> DP-HOLE	<u>2751</u>	<u>.1215</u>	<u>136</u>	<u>369</u>	
<u>8X12.25</u> DC-HOLE	<u>476</u>	<u>.0836</u>	<u>197</u>	<u>423</u>	

PIPE DATA

	DRILL STRING			GAGING DEPTH	RISER	COND.	SURF.	3978
	DP	HWDP	DC					
OD-inches	<u>5.0</u>	<u>5.0</u>	<u>8</u>		<u>21.0</u>	<u>30</u>	<u>30</u>	<u>13.375</u>
ID-inches	<u>4.276</u>	<u>3.0</u>	<u>2.875</u>		<u>20.0</u>	<u>28</u>	<u>18.75</u>	<u>12.415</u>
GAP-bbls/ft	<u>.0178</u>	<u>.0087</u>	<u>.0076</u>		<u>.3887</u>	<u>.7816</u>	<u>.3408</u>	<u>.1499</u>
DISP-bbls/ft	<u>.0075</u>	<u>.0181</u>	<u>.0545</u>		<u>NA</u>	<u>.113</u>	<u>.0479</u>	<u>.024</u>
LENGTH-ft	<u>6001</u>	<u>728</u>	<u>476</u>		<u>170.5</u>	<u>85</u>	<u>811</u>	<u>872</u>
WEIGHT-lbs/ft	<u>18.5</u>	<u>49</u>	<u>148</u>		<u>310</u>	<u>133</u>	<u>99</u>	

REMARKS AND RECOMMENDATIONS

MW 10.0 GPM 600 JETS 3-13, 1-11 ft/ml = 15 sec/std

RH FOR CORE NO. 1. ATTEMPT TO CORE. MAX TRIP GAS FROM BOTTOM = 246 UNITS. POOH AFTER PENETRATING 3 FEET OF HOLE. CORE BIT APPEARED TO BALL UP WITH CLAY. RH BIT NO. 5. DRILL AHEAD.

ADT J. PATTON

sperry-sun
 DRILLING SERVICES **LOGGING SYSTEMS**
 A Boreid Company

DEPTH 9720
 OPERATION RH/CORE #1
 FOOTAGE 138

NO. 17
 DATE Aug 14 83
 TIME 04 00

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

OPERATOR <u>ARCO ALASKA, INC.</u>	WELL NAME <u>KUVLUM No. 2</u>	FIELD/BLOCK <u>OC'S BLK 672 NR6-4</u>
CONTRACTOR <u>CANMAR</u>	RIG NAME <u>KULLUK</u>	AREA <u>BEAUFORT SEA</u>
START DATE <u>Jul 28 83</u>	LOC. <u>OFFSHORE</u>	STATE <u>ALASKA</u>

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA	1.25 at 8525'
45	525	8700	LITHOLOGY	30% CLAY, 30% SILTSTONE, 40% SAND
CONNECTION	85	8562	SAMPLE DEPTH	8728
TRIP	142	8593	TRIP CHLORIDES	
FLOWLINE TEMP	88	degrees F	LAG DOWN DP	940
			LAG OFF BOTTOM	7500
			DRILL RATE ft/hr	85
			CORRECTED 'D' EXP.	72
			SHALE DENSITY g/cc	NA
			EWR Res.	15

FORMATION PRESSURE DATA

	CASING	BOTTOM HOLE	OPEN HOLE
PORE PRESSURE	1800 psi 8.7 ppG	3149 psi 8.0 ppG	psi ppG
FRACTURE PRESSURE	3081 psi 14.9 ppG	5484 psi 15.7 ppG	psi ppG
ECD	2108 psi 10.2 ppG	3589 psi 10.2 ppG	psi ppG

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	24:00 AUG 13 83	BIT NO.	8	PUMPS	1. ID1600	2. ID1600
TYPE	GENERIC #2	TYPE	CB-1	DS-40 PDC	SIZE inches	6.5X12
WEIGHT IN	10.0	IADC CODE			CAPACITY gal/stk	4.01
FUNNEL VIS.	79	SIZE	8.5	12.25	PUMP RATE stks/min	71
PV/VP	26/32	JETS	TFA: .7	2-14, 3-13	FLOW RATE gal/min	700
GELS	5/10	DEPTH OUT		8728	PRESSURE psi	8800
pH	9.0	ROT HRS.		1.8	PD SURF / D6 psi	100/1900
FILT/CAKE API	2.0 - 1/32	FOOTAGE		138	ANN / BIT psi	50/250
HP-MT		AVG ft/hr		76	JET VELOCITY ft/sec	326
Pm	.5	GRADE		INC	JET IMPACT lbs	1180
PI/M	.171.3	HOLE DEV.			BIT HP	387
CHLORIDES ppm	17300	COST/FT		1360	HP RATIO / HP/IN2	36% - 3.3/IN2
CALCIUM ppm	1040	RPM		130	REDUCED 1	psi at stk/min
OIL/WATER/SOLIDS	.5/90.5/9	WOB		5-10	RATE 2	psi at stk/min
DAILY/CUM. COST						

ANNULAR DATA

	LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBL6
6X20 DP-RISER	171	.0844	48	314	
5X13 9/8 DP-CSG	3606	.1256	133	380	
5X12.25 DP-HOLE	2284	.1215	137	355	
6X12.25 DC-HOLE	476	.0836	100	414	

PIPE DATA

	DRILL STRING			CASING: RISER COND. SURF.				
OD-inches	DP	HWDP	DC	DEPTH	171	301	1017	3978
ID-inches	5.0	5.0	8	21.0	30	20	10.75	13.375
CAP-bbls/ft	.0178	.0087	.0076	20.0	26	16.75	12.415	
DISP-bbls/ft	.0075	.0181	.0645	3887	7818	3408	1488	
LENGTH-ft	5525	728	478	NA	.173	.0478	.024	
WEIGHT-lbs/ft	19.5	49	140	170.5	85	811	3772	
					310	133	88	

REMARKS AND RECOMMENDATIONS

MW 10.0 GPM 600 JETS 3-13,1-11 ft/mi = 15 sec/std
 RH WITH NB # 3 REAM LAST TWO STANDS TO BOTTOM. DRILL AHEAD. BREAK IN BIT WITH LOW WEIGHT ON BIT. DRILL AHEAD TO 8728'.
 CIRCULATE OUT HOLE VOLUME ON POTENTIAL SHOW INDICATED BY MWD TOOL. ZERO DISCHARGE DRILL CUTTINGS FROM ZONE OF
 INTEREST. MAX GAS FROM SAND FORMATION AT 8700' = 525 UNITS. CIRCULATE AND CONDITION HOLE FOR CORING. BACKGROUND GAS
 TO LESS THAN 50 UNITS. POOH. HOLE PULLED GOOD ON THIS TRIP. PICK UP CORE BARREL. RH FOR CORE NO. 1.

ADT J. PATTON

sperry-sun
 DRILLING SERVICES **LOGGING SYSTEMS**
 A Baroid Company

AUG 13 1993

DEPTH 6593
 RATION POOH
 PAGE 068

Minerals Management Service
 DATE Aug 13 93
 TIME 0400

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

OPERATOR	ARCO ALASKA, INC.	WELL NAME	KUYLUM NO. 2	FIELD/BLOCK	OCS BLK 672 NR6-4
CONTRACTOR	CANMAR	RIG NAME	KULLUK	AREA	BEAUFORT BEA
START DATE	Jul 28 93	LOC.	OFFSHORE	STATE	ALASKA

LOGGING DATA

AVG GAS (UNITS)	MAX GAS (UNITS)	AT DEPTH (feet)	SURVEY DATA	1.40 at 6593'
40	125	6593	LITHOLOGY	80% CLAY 20% SALTSTONE
BACKGROUND CONNECTION TRM	85	6562	SAMPLE DEPTH	6580
85		4525	TRIP CHLORIDES	
FLOWLINE TEMP	94	degrees F	LAG DOWN DP	805
			LAG OFF BOTTOM	7250
			DRILL RATE ft/hr	49
			CORRECTED D'EXP.	1.32
			SHALE DENSITY g/cc	NA
			EWR Res.	3.5

FORMATION PRESSURE DATA

CASING			BOTTOM HOLE			OPEN HOLE		
PORE PRESSURE	1800 psi	8.7 ppg	3120 psi	9.1 ppg		psi	ppg	ft
FRACTURE PRESSURE	3081 psi	14.9 ppg	5383 psi	15.7 ppg		psi	ppg	ft
ECD	2108 psi	10.2 ppg	6581 psi	10.3 ppg		psi	ppg	ft

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	24:00 AUG 12 93	BIT NO.	4	RRS	PUMPS	1. ID1000	2. ID1000
TYPE	GENERIC #2	TYPE	FDTG	FDTG/H.O.	SIZE inches	6.5X12	6.5X12
WEIGHT IN	10.0+	IADC CODE			CAPACITY gal/stk	4.91	4.91
FUNNEL VIS.	59	SIZE	12.25	12.25/17.5	PUMP RATE stk/min	82	83
FV/VF	22/28	JETS	4-12'S	TFA:1.44	FLOW RATE gal/min	615	
GELS	5/8	DEPTH OUT	6593	1009	PRESSURE psi	3250	
pH	9.1	ROT HRS.	34.1	10.1	PD SURF / D0 psi	100/1920	
FILT/CAKE API	2.7 - 1/32	FOOTAGE	2588	2887	ANN / BIT psi	50/1780	
MP-HI	5	AVG ft/hr	76	284	JET VELOCITY ft/sec	447	
BRIDEs ppm	17000	GRADE	INC	INC	JET IMPACT lbs	1422	
CALCIUM ppm	820	HOLE DEV.	1.4 @ 6593'	NA	BIT HP	640	
OIL/WATER/SOLIDS	0/91.5/8.5	COST/FT	370	NA	HP RATIO / HP/IN2	55% - 5.4/IN2	
DAILY/CUM. COST		RPM	130	145	REDUCED 1	psi at stk/min	
		WOB	40	10-20	RATE 2	psi at stk/min	

ANNULAR DATA

		LENGTH-FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBLs
5X20	DP-RIBER	171	.3844	40	281	
6X18 3/8	DP-CEG	3008	.1255	117	351	
5X12.25	DP-HOLE	2139	.1215	121	327	
8X12.25	DC-HOLE	476	.0836	178	380	

PIPE DATA

	DRILL STRING			DC	CASING: DEPTH	RIBER	COND.	SURF.
	DP	HWOP						
OD-inches	5.0	5.0		8		171	301	1017
ID-inches	4.276	3.0		2.875		21.0	30	20
CAP-bbls/ft	.0178	.0087		.0076		20.0	28	18.75
DISP-bbls/ft	.0076	.0181		.0546		.3887	.7618	.3400
LENGTH-ft	4721	728		476		NA	.113	.0479
WEIGHT-lbs/ft	19.5	49		149		170.5	95	611
							810	133
								88

REMARKS AND RECOMMENDATIONS

MW 10.0 GPM 800 JETS 3-13, 1-11 ft/ml = 15 sec/stk
 DRILL AHEAD WITH BIT NO. 4. RAISE MUD WEIGHT TO 10.0 PPG TO STABILIZE HOLE CONDITIONS ON TRIP. CONNECTION GAS AVERAGING
 150 UNITS ABOVE BACKGROUND. DRILL TO 6593'. DRU. POOH ON SLOW PENETRATION RATES AND BIT HOURS. SMALL SHOWS NOTED
 ANDS LOGGED DURING THE LAST 100' OF DRILLING. BACKREAM WHILE PULLING OUT OF THE HOLE. AVERAGE GAS WHILE CIRCULATING
 1748 100 UNITS. MAX GAS RECORDED FOR PAST 24 HRS WAS 344 UNITS - ALSO LOGGED FROM BACKREAMING OUT OF THE HOLE.

ADT J. PATTON

AUG 12 1993

Minerals Management Service
 Anchorage, Alaska

sperry-sun
 DRILLING SERVICES **LOGGING SYSTEMS**
 A Baroid Company

DEPTH OPERATION DRILLING
 FLOWLINE TEMPERATURE 779

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

NO. 19
 DATE Aug 12 93
 TIME 04 00

OPERATOR <u>ARCO ALASKA, INC.</u>	WELL NAME <u>KULLUM No. 2</u>	FIELD/BLOCK <u>009 BLK 072 NFG-4</u>
CONTRACTOR <u>CANMAR</u>	RIG NAME <u>KULLUK</u>	AREA <u>BEAUFORT SEA</u>
START DATE <u>Jul 28 93</u>	LOC. <u>OFFSHORE</u>	STATE <u>ALASKA</u>

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA	<u>1.18 at 5773</u>
<u>35</u>	<u>250</u>	<u>5220</u>	LITHOLOGY	<u>90% CLAY 90% SILTSTONE 10% SAND</u>
BACKGROUND CONNECTION TRIP	<u>02</u>	<u>05</u>	SAMPLE DEPTH	<u>5050</u>
TRIP	<u>05</u>	<u>4525</u>	TRIP CHLORIDES	<u>805</u>
FLOWLINE TEMPERATURE	<u>94</u>	<u>degrees F</u>	LAG DOWN DP	<u>805</u>
			LAG OFF BOTTOM	<u>6800</u>
			DRILL RATE ft/hr	<u>85</u>
			CORRECTED 'D' EXP.	<u>1.18</u>
			SHALE DENSITY g/cc	<u>NA</u>
			EWR Res.	<u>2.5</u>

FORMATION PRESSURE DATA

	CASING		BOTTOM HOLE		OPEN HOLE	
PORE PRESSURE	<u>1800</u>	psi	<u>8.7</u>	ppg	<u>2775</u>	psi
FRACTURE PRESSURE	<u>3081</u>	psi	<u>14.9</u>	ppg	<u>4837</u>	psi
ECD	<u>2108</u>	psi	<u>10.2</u>	ppg	<u>8178</u>	psi

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	<u>24:00 AUG 11 93</u>	RIT NO.	<u>4</u>	RR3	PUMPS	<u>1. ID1600</u>	<u>2. ID1600</u>
TYPE	<u>GENERIC #2</u>	TYPE	<u>FDTG</u>	<u>FDTG/H.O.</u>	SIZE inches	<u>6.5X12</u>	<u>6.5X12</u>
WEIGHT IN	<u>10.0</u>	IADC CODE	<u>12.25</u>	<u>12.25/17.5</u>	CAPACITY gal/stk	<u>4.91</u>	<u>4.91</u>
FUNNEL VISC.	<u>55</u>	JETS	<u>4-12.8</u>	<u>TFA:1.44</u>	PUMP RATE stk/min	<u>66</u>	<u>66</u>
PV/YP	<u>20/23</u>	DEPTH OUT	<u>4005</u>		FLOW RATE gal/min	<u>670</u>	
GELS	<u>3/8</u>	ROT HR8.	<u>21.4</u>	<u>10.1</u>	PRESSURE psi	<u>3450</u>	
pH	<u>9.8</u>	FOOTAGE	<u>1820</u>	<u>2087</u>	PD SURF / DS psi	<u>100/1200</u>	
FILT/CAKE API	<u>3.0 - 1/32</u>	AVG ft/hr	<u>80</u>	<u>295</u>	ANN / BIT psi	<u>95/2116</u>	
HP-HT		GRADE	<u>INC</u>	<u>INC</u>	JET VELOCITY ft/sec	<u>487</u>	
Pm	<u>7</u>	HOLE DEV.	<u>1.19 @ 5773</u>		JET IMPACT lba	<u>1687</u>	
P	<u>15/1.4</u>	COST/FT		<u>NA</u>	BIT HF	<u>825</u>	
CHLORIDES ppm	<u>17500</u>	RPM	<u>120</u>	<u>145</u>	HP RATIO / HP/IN2	<u>61% - 7.0/IN2</u>	
CALCIUM ppm	<u>680</u>	WOB	<u>45</u>	<u>10-20</u>	REDUCED 1	<u>psi at stk/min</u>	
OIL/WATER/SOLIDS	<u>0/81.5/8.8</u>				RATE 2	<u>psi at stk/min</u>	
DAILY/CUM. COST							

ANNULAR DATA

		LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBL/S
<u>5X20</u>	<u>DP-RIGER</u>	<u>171</u>	<u>.3844</u>	<u>41</u>	<u>246</u>	
<u>5X13 3/8</u>	<u>DP-CAS</u>	<u>3800</u>	<u>.1265</u>	<u>127</u>	<u>302</u>	
<u>5X12.25</u>	<u>DP-HOLE</u>	<u>1452</u>	<u>.1215</u>	<u>131</u>	<u>282</u>	
<u>6X12.25</u>	<u>DC-HOLE</u>	<u>476</u>	<u>.0838</u>	<u>191</u>	<u>332</u>	

PIPE DATA

	DRILL STRING			CASING DEPTH	RIGER	COND.	SURF.
	DP	HWDP	DC		<u>171</u>	<u>301</u>	<u>1016</u>
OD inches	<u>5.0</u>	<u>5.0</u>	<u>8</u>		<u>21.0</u>	<u>30</u>	<u>20</u>
ID inches	<u>4.276</u>	<u>4.0</u>	<u>2.875</u>		<u>20.0</u>	<u>28</u>	<u>18.75</u>
CAP-bbls/ft	<u>.0178</u>	<u>.0087</u>	<u>.0078</u>		<u>.3987</u>	<u>.7818</u>	<u>.8408</u>
DiaP-bbls/ft	<u>.0075</u>	<u>.0181</u>	<u>.0545</u>		<u>NA</u>	<u>.119</u>	<u>.0479</u>
LENGTH-ft	<u>4721</u>	<u>726</u>	<u>478</u>		<u>170.5</u>	<u>85</u>	<u>812</u>
WEIGHT-lbs/ft	<u>19.5</u>	<u>49</u>	<u>149</u>		<u>210</u>	<u>133</u>	<u>68</u>

REMARKS AND RECOMMENDATIONS

MW 10.0 GPM 600 JETS 3-13,1-11 ft/ml = 15 sec/std

CONTROL DRILL WITH BIT NO. 4. CONSISTANT CONNECTION GAS READINGS AVERAGING ABOUT 50 UNITS ABOVE BACKGROUND.

DRILL TO 5526'. CBU. SHORT TRIP TO SHOE. HOLE TRYING TO SWAB WITH TIGHT HOLE ON THE WAY OUT. PUMP BACKREAM OUT OFF THE

NO EXCESS DRAG NOTED ON WAY BACK IN. MAX GAS RECORDED WHILE DRILLING AHEAD AFTER GETTING BACK TO BOTTOM - 95

UNITS. DRILL AHEAD.

ADT J. PATTON

Minerals Management Service
 Prudhoe Bay, Alaska

sperry-sun
 DRILLING SERVICES LOGGING SYSTEMS
 A Borealis Company

DEPTH 5146
 OPERATION DRILLING
 FOOTAGE 1141

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

Nr. 14
 DATE Aug 11 93
 TIME 04 00

OPERATOR	ARCO ALASKA, INC.	WELL NAME	KUULUM NO. 2	FIELD/NETWORK	PRUDHOE BAY
CONTRACTOR	CANMAR	RIG NAME	KULUK	AREA	BEAUFORT SEA
START DATE	Jul 28 93	LOG.	OFFSHORE	STATE	ALASKA

LOGGING DATA

AVG GAS (units)	50	MAX GAS (units)	228	AT DEPTH (feet)	4585	SURVEY DATA	48 @ 5043
BACKGROUND CONNECTION TRIP	105				4005	LITHOLOGY	70% CLAY 20% SILTSTONE 10% SAND
FLOWLINE TEMP	80					SAMPLE DEPTH	5050
						TRIP CHLORIDE	
						LAG DOWN DP	885
						LAG OFF BOTTOM	5950
						DRILL RATE ft/hr	105
						CORRECTED D' EXP.	1.03
						SHALE DENSITY g/cc	NA
						EWR Res.	2.5

FORMATION PRESSURE DATA

	CASING		BOTTOM HOLE		OPEN HOLE	
PORE PRESSURE	1800	psi	8.7	ppg	2392	psi
FRACTURE PRESSURE	3081	psi	14.0	ppg	4084	psi
ECD	2068	psi	10.0	ppg	2703	psi

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	04:00 AUG 10 93	BIT NO.	4	RR3	PUMPS	1. ID1600	2. ID1600
TYPE	GENERIC #2	TYPE	FDTG	FDTG/H.O.	SIZE (Inches)	6.5X12	6.5X12
WEIGHT IN FUNNEL VIS.	8.8+	IADC CODE			CAPACITY gal/stk	4.91	4.91
PV/VP	19/19	SIZE	12.25	12.25/17.5	PUMP RATE stks/min	01	01
GELS	3/4	JETS	4-12/8	TFA 1.44	FLOW RATE gal/min	600	
pH	9.8	DEPTH OUT		4005	PRESSURE psi		2725
FILTCAKE API MPHT	3.2 - 1/8"	ROT HRG.	12.4	18.1	PD SURF / DS psi		75/980
Pm	1.0	FOOTAGE	1141	2887	ANN / BIT psi		25/1065
PI/MH	3/1.6	AVG ft/hr	92	294	JET VELOCITY ft/sec		435
CHLORIDES ppm	17000	GRADE	INC	INC	JET IMPACT lba		1325
CALCIUM ppm	820	HOLE DEV.	48 @ 5043	NA	BIT HP		580
OIL/WATER/SOLIDS	0/32/8	COST/FT		NA	HP RATIO / HP/IN2		51% - 5.0/IN2
DAILY/CUM. COST		RPM	130	145	REDUCED 1		psi at stk/min
		WOB	25	10-20	RATE 2		psi at stk/min

ANNULAR DATA

SIZE	DP-RISE	LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBL/8
5X20	DP-RISE	171	.3644	39	210	
5X13 3/8	DP-CSG	728	.7255	114	285	
5X13 3/8	DC-CSG	8771	.0878	118	247	
5X12.25	DC-HOLE	478	.0636	171	298	

PIPE DATA

OD-Inches	DRILL STRING			CASING: RIGER COND. SURF.			
	OP	HWDP	DC	DEPTH			
5.0	5.0		8	171	301	1018	6077
4.278	3.0		2.875	21.0	20	20	13.375
.0178	.6087		.0076	20.0	26	18.75	12.415
.0075	.0181		.0646	3887	7616	3408	1488
3970	728		478	NA	.113	.0478	.024
19.5	49		149	170.5	95	812	8771
					81.0	133	88

REMARKS AND RECOMMENDATIONS

MW 9.8 CPM 600 JETS 2-14, 1-13 (OR 4-12'S) ft/ml = 15 sec/stk
 RIM WITH NB 4. TAG CEMENT AT 3900' CBU. TEST CASING TO 3300' PSI. DRILL OUT CEMENT AND SHIF PLUS 10' OF NEW HOLE. CBU
 RUN EAK OFF TEST TO 14.9 PPG WITHOUT BREAKING DOWN FORMATION. DRILL AHEAD. CONNECTION GAS LOGGED BELOW 4300' AVERAGING
 APP 60 UNITS OVER BACKGROUND. SLIGHT TREND NOTED ON PRESSURE PLOTS. RAISED PORE PRESSURE ESTIMATE TO 2.0 - 2.0 PPG.
 DRILL AHEAD.

ADT J. PATTON

Sperdy-Gun LOGGING SYSTEMS
 DRILLING SERVICES
 A Baroid Company

DEPTH 4005
 OPERATION CEMENT
 FOOTAGE 0

NO. 12
 DATE AUG 9 93
 TIME 0400

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

OPERATOR <u>ARGO ALASKA, INC.</u>	WELL NAME <u>KUYLUM NO. 2</u>	FIELD/BLOCK <u>OGS BLK 872 NR8-4</u>
CONTRACTOR <u>CANMAR</u>	RIG NAME <u>KULLUK</u>	AREA <u>BEAUFORT SEA</u>
START DATE <u>JUL 28 93</u>	LOC. <u>OFFSHORE</u>	STATE <u>ALASKA</u>

LOGGING DATA

AVG GAS (units) <u>5</u>	MAX GAS (units) <u> </u>	AT DEPTH (feet) <u> </u>	SURVEY DATA <u>30 at 3977</u>	LITHOLOGY <u>60% CLAY 30% SILTSTONE 10% SAND</u>	SAMPLE DEPTH <u>4005</u>	DRILL RATE ft/hr <u>NA</u>
BACKGROUND CONNECTION TRIP <u>10</u>	TRIP CHLORIDES <u> </u>	LAG DOWN DP <u>4805</u>	TRIP CHLORIDES <u> </u>	LAG OFF BOTTOM <u>4850</u>	CORRECTED "D" EXP. <u>NA</u>	SHALE DENSITY g/cc <u> </u>
FLOWLINE TEMP <u>48</u> degrees F	GWR Rec. <u> </u>					

FORMATION PRESSURE DATA

	CASING			BOTTOM HOLE			OPEN HOLE		
PORE PRESSURE	<u>450</u> psi	<u>8.5</u> ppg	<u> </u>	<u>1601</u> psi	<u>9.7</u> ppg	<u> </u>	<u> </u> psi	<u> </u> ppg	<u> </u> ft
FRACTURE PRESSURE	<u>597</u> psi	<u>12.9</u> ppg	<u> </u>	<u>3030</u> psi	<u>14.5</u> ppg	<u> </u>	<u> </u> psi	<u> </u> ppg	<u> </u> ft
ECD	<u>524</u> psi	<u>9.0</u> ppg	<u> </u>	<u>2082</u> psi	<u>10.0</u> ppg	<u> </u>	<u> </u> psi	<u> </u> ppg	<u> </u> ft

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME <u>24:00 AUG 9 93</u>	BIT NO. <u>3</u>	RMS <u> </u>	PUMPS <u>1</u>	ID1600 <u> </u>	ID1800 <u> </u>
TYPE <u>GENERIC #2</u>	TYPE <u>FDYC</u>	FDTC/H.B. <u> </u>	SIZE inches <u>6.5X12</u>	<u>6.5X12</u>	<u> </u>
WEIGHT IN <u>9.8</u>	IADC CODE <u> </u>	FDTC/H.B. <u> </u>	CAPACITY gal/stk <u>4.01</u>	<u>4.01</u>	<u> </u>
FUNNEL VIS. <u>50</u>	SIZE <u>12.25</u>	12.25/17.5 <u> </u>	PUMP RATE stks/min <u>87</u>	<u> </u>	<u> </u>
PV/YP <u>23/21</u>	JETS <u>3x14.1-10</u>	IFA(1.44 <u> </u>	FLOW RATE gal/min <u>427</u>	<u> </u>	<u> </u>
GELS <u>3/4</u>	DEPTH OUT <u>4005</u>	4005 <u> </u>	PRESSURE psi <u> </u>	<u>410</u>	<u> </u>
pH <u>9.4</u>	ROT HRG. <u>33.7</u>	10.1 <u> </u>	PD SURF / DØ psi <u> </u>	<u>50/353</u>	<u> </u>
FILT/CAKE API <u>3.8 - 1/32</u>	FOOTAGE <u>2966</u>	2967 <u> </u>	ANN / BIT psi <u> </u>	<u>5/-</u>	<u> </u>
HP-HT <u> </u>	AVG ft/hr <u>88</u>	294 <u> </u>	JET VELOCITY ft/sec <u> </u>	<u> </u>	<u> </u>
Pm <u>1.2</u>	GRADE <u>INC</u>	INC <u> </u>	JET IMPACT lbs <u> </u>	<u> </u>	<u> </u>
PI/M <u>4/1.4</u>	HOLE DEV. <u>.85</u>	<u> </u>	BIT HP <u> </u>	<u> </u>	<u> </u>
CHLORIDES ppm <u>18000</u>	COST/FT <u>311</u>	NA <u> </u>	HP RATIO / HP/IN2 <u> </u>	<u> </u>	<u> </u>
CALCIUM ppm <u>640</u>	APM <u>122</u>	145 <u> </u>	REDUCED 1 <u> </u> psi at <u> </u> stk/min	<u> </u>	<u> </u>
OIL/WATER/SOLIDS <u>0/91.7/8.3</u>	WOB <u>14</u>	10-20 <u> </u>	RATE 2 <u> </u> psi at <u> </u> stk/min	<u> </u>	<u> </u>
DAILY/CUM. COST <u> </u>					

ANNULAR DATA

	LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBL6
<u>6X20</u>	<u>171</u>	<u>.3044</u>	<u>28</u>	<u>268</u>	<u> </u>
<u>13.375/18.75</u>	<u>847</u>	<u>.2038</u>	<u>61</u>	<u>367</u>	<u> </u>
<u>13.375/17.9</u>	<u>2950</u>	<u>.1298</u>	<u>82</u>	<u>371</u>	<u> </u>

PIPE DATA

	DP	HWDP	DRILL STRING	DC	CASING DEPTH	RIGER	COND.	SURF.	3977
OD-inches	<u>5.0</u>	<u>5.0</u>	<u> </u>	<u>8</u>	<u>171</u>	<u>301</u>	<u>1018</u>	<u>3977</u>	<u> </u>
ID-inches	<u>4.270</u>	<u>3.0</u>	<u> </u>	<u>2.875</u>	<u>21.0</u>	<u>30</u>	<u>20</u>	<u>13.375</u>	<u> </u>
CAP-bbls/ft	<u>.0178</u>	<u>.0087</u>	<u> </u>	<u>.0078</u>	<u>20.0</u>	<u>28</u>	<u>18.75</u>	<u>12.415</u>	<u> </u>
D15P-bbls/ft	<u>.0075</u>	<u>.0181</u>	<u> </u>	<u>.0545</u>	<u>3967</u>	<u>7016</u>	<u>3405</u>	<u>1488</u>	<u> </u>
LENGTH-ft	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>NA</u>	<u>.113</u>	<u>.0470</u>	<u>.004</u>	<u> </u>
WEIGHT-lbs/ft	<u>10.5</u>	<u>49</u>	<u> </u>	<u>149</u>	<u>170.5</u>	<u>85</u>	<u>812</u>	<u>3771</u>	<u> </u>
	<u> </u>	<u>310</u>	<u>195</u>	<u>68</u>	<u> </u>				

REMARKS AND RECOMMENDATIONS

MW 9.6 GPM 600 JETS 2-14.1-13 (OR 4-12'S) ft/ml = 15 sec/std
 POOH. RIG UP FOR RUNNING CASING. RUN AND LAND ON LB/PT - 13 3/8 CASING TO 3977. CIRCULATE TO CONDITION HOLE BEFORE
 CEMENTING. GOOD RETURNS NOTED WHILE RUNNING CASING. MAX GAS FROM BOTTOMS UP - 10 UNITS. PUMP AND DISPLACE APP. 400 BBL
 OF CEMENT AND SPACER.

Minerals Management Service
 Anchorage, Alaska

ADI J. PATTON

sperry-sun
 DRILLING SERVICES LOGGING SYSTEMS
 A Bardon Company

DEPTH 3000
 OPERATION CIRCULATE
 FOOTAGE 1100

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

NO. 11
 DATE Aug 8 93
 TIME 04 00

OPERATOR	<u>ARGO ALASKA, INC.</u>	WELL NAME	<u>KUVLUM NO. 2</u>	FIELD/BLOCK	<u>OC6 BLK 672 NR6-4</u>
CONTRACTOR	<u>CANMAR</u>	RIG NAME	<u>KULLUK</u>	AREA	<u>BEAUFORT SEA</u>
START DATE	<u>Jul 28 93</u>	LOC	<u>OFFSHORE</u>	STATE	<u>ALASKA</u>

LOGGING DATA

AVG GAS (units)	<u>5</u>	MAX GAS (units)	<u>28</u>	AT DEPTH (feet)	<u>3850</u>	SURVEY DATA	<u>39 at 3977</u>
BACKGROUND CONNECTION TRIP	<u>0</u>					LITHOLOGY	<u>60% CLAY 30% SLTSTONE 10% SAND</u>
FLOWLINE TEMP	<u>48</u>					SAMPLE DEPTH	<u>4005</u>
						TRIP CHLORIDES	
						LAG DOWN OF	<u>550</u>
						LAG OFF BOTTOM	<u>9700</u>
						DRILL RATE ft/hr	<u>140</u>
						CORRECTED D'EXP.	<u>.60</u>
						SHALE DENSITY g/cc	
						EWB Res.	

FORMATION PRESSURE DATA

	CASING		BOTTOM HOLE		OPEN HOLE	
PORE PRESSURE	<u>450</u>	psi	<u>8.5</u>	ppg	<u>1801</u>	psi
FRACTURE PRESSURE	<u>697</u>	psi	<u>12.9</u>	ppg	<u>3030</u>	psi
ECD	<u>518</u>	psi	<u>9.8</u>	ppg		psi

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	<u>24:00 AUG 7 93</u>	BIT NO.	<u>9</u>	RRS		PUMPS	<u>1</u>	ID1800	<u>2</u>	ID1000
TYPE	<u>GENERIC #2</u>	TYPE	<u>FDTG</u>	FOTG/H.O.		SIZE inches		<u>6.5X12</u>		<u>6.5X12</u>
WEIGHT IN	<u>9.8</u>	IADC CODE				CAPACITY gal/stk		<u>4.91</u>		<u>4.91</u>
FUNNEL VIS.	<u>52</u>	SIZE	<u>12.25</u>	<u>12.25/17.5</u>		PUMP RATE stks/min		<u>115</u>		<u>115</u>
PV/VP	<u>24/28</u>	JETS	<u>3x14,1-10</u>	TFA:1.44		FLOW RATE gal/min		<u>1198</u>		
GELS	<u>3/4</u>	DEPTH OUT	<u>4005</u>	<u>4005</u>		PRESSURE psi		<u>2475</u>		
pH	<u>9.3</u>	ROT HRS.	<u>33.7</u>	<u>10.1</u>		PD SURF / DS psi		<u>100/1815</u>		
FILT/CAKE API	<u>5.2 - 1/32</u>	FOOTAGE	<u>2988</u>	<u>2987</u>		ANN / BIT psi		<u>10/550</u>		
HP-HT		AVG ft/hr	<u>88</u>	<u>284</u>		JET VELOCITY ft/sec		<u>350</u>		
Pm	<u>1.2</u>	GRADE	<u>INC</u>	<u>INC</u>		JET IMPACT lbs		<u>1440</u>		
P/MI	<u>.4/1.6</u>	HOLE DEV.	<u>.39</u>			BIT HP		<u>365</u>		
CHLORIDES ppm	<u>18000</u>	COST/FT	<u>311</u>	<u>NA</u>		HP RATIO / HP/IN2		<u>28% - 1.5/IN2</u>		
CALCIUM ppm	<u>680</u>	RFM	<u>122</u>	<u>145</u>		REDUCED 1		psi at	stk/min	
OIL/WATER/SOLIDS	<u>0/91.7/8.3</u>	WOB	<u>14</u>	<u>10-20</u>		RATE 2		psi at	stk/min	
DAILY/GUM. COST										

ANNULAR DATA

	LENGTH - FT.	VOLUME BBLs/FT.	VELOCITY FT/MIN	CRIT. VEL FT/MIN	ANN-VOL BBLs
<u>5X20</u>	<u>195</u>	<u>.3844</u>	<u>71</u>	<u>221</u>	
<u>5X18.75</u>	<u>853</u>	<u>.3083</u>	<u>85</u>	<u>229</u>	
<u>5X17.5</u>	<u>2887</u>	<u>.2733</u>	<u>99</u>	<u>218</u>	
<u>5X12.25</u>		<u>.1215</u>			
<u>8X17.5</u>	<u>300</u>	<u>.2334</u>	<u>116</u>	<u>243</u>	

PIPE DATA

	DRILL STRING			CASING: DEPTH		
	OP	HWDP	DC	301	1018	
OD-inches	<u>5.0</u>	<u>5.0</u>	<u>8</u>	<u>30</u>	<u>20</u>	
ID-inches	<u>4.270</u>	<u>3.0</u>	<u>2.875</u>	<u>28</u>	<u>18.75</u>	
CAP-bbls/ft	<u>.0178</u>	<u>.0097</u>	<u>.0076</u>	<u>.7616</u>	<u>.3408</u>	
DISP-bbls/ft	<u>.0075</u>	<u>.0181</u>	<u>.0545</u>			
LENGTH-ft	<u>3278</u>	<u>428</u>	<u>300</u>	<u>90</u>	<u>790</u>	
WEIGHT-lbs/ft	<u>19.5</u>	<u>49</u>	<u>149</u>	<u>510</u>	<u>138</u>	

REMARKS AND RECOMMENDATIONS

MW 9.8 GPM JETS 13 3/8" CSG 160 ft/ml 15 sec/STK
 OPEN HOLE TO 17.5' TO 4005'. CRU. SHORT TRIP TO SHO. TIGHT HOLE CONDITIONS NOTED ON THE WAY OUT WITH THE HOLE TRYING TO SWAB. BACK REAM TO KEEP FROM SWABBING. WASH AND REAM TO BOTTOM. GAS FROM BOTTOM ON SHORT TRIP = 60 UNITS. CIRCULATE AND CONDITION HOLE FOR RUNNING CASING.
 OCS District Office
 AUG 09 1993
 ADT J. PATTON
 Minerals Management Service
 Anchorage, Alaska

sperry-sun
DRILLING SERVICES **LOGGING SYSTEMS**
 A Dracal Company

DEPTH 2005
 OPERATION OPEN HOLE
 FOOTAGE 1887

APPLIED DRILLING TECHNOLOGY
MORNING REPORT

No. 10
 DATE Aug 7 '93
 TIME 04:00

OPERATOR	ARCO ALASKA, INC.	WELL NAME	KUVLUM NO. 2	FIELD/BLOCK	OC# BLK 672 NR# 4
CONTRACTOR	CANMAR	RIG NAME	KUVLUM	AREA	BEAUFORT SEA
START DATE	Jul 28 93	LOC.	OFFSHORE	STATE	ALASKA

LOGGING DATA

AVG GAS (lb/min)	MAX GAS (lb/min)	AT DEPTH (feet)	SURVEY DATA	38 # 3977
5-10	22	3300	LITHOLOGY	60% CLAY 30% SILTYSTONE 10% SAND
CONNECTION	0		SAMPLE DEPTH	4005
TRIP	NA	4005	TRIP CHLORIDES	
FLOWLINE TEMP	NA	degrees F	LAG DOWN DP	375
			LAG OFF BOTTOM	7100
			DRILL RATE ft/hr	375
			CORRECTED 'D' EXP.	60
			SHALE DENSITY g/cc	
			KWR Rec.	

FORMATION PRESSURE DATA

	CASING	BOTTOM HOLE	OPEN HOLE
PORE PRESSURE	430 psi 8.5 ppg	1801 psi 8.7 ppg	psi ppg
FRACTURE PRESSURE	897 psi 12.9 ppg	3020 psi 14.5 ppg	psi ppg
ECD	518 psi 8.8 ppg	psi ppg	psi ppg

MUD DATA

TIME	24:00 AUG 6 93
TYPE	GENERIC #2
WEIGHT IN	8.8
FUNNEL VIS.	88
PV/VP	28/30
GELS	3/0
PH	9.2
FILT/CAKE API	4.2 - 1/32
HP-HT	
Pm	1.3
P/WH	57.6
CHLORIDES ppm	16000
CALCIUM ppm	600
OIL/WATER/SOLIDS	0/01.7/8.3
DAILY/0UM. COST	

BIT DATA

BIT NO.	3	RRS
TYPE	FDTG	FDTG/H.O.
IADD CODE		
SIZE	12.25	12.25/17.5
JETS	3X14.1-10	TFA:1.44
DEPTH OUT	4005	NA
ROT WRS.	30.7	4.3
FOOTAGE	2888	1887
AVG ft/hr	88	449
GRADE	INC	INC
HOLE DEV.	.30	
COE/FT	.11	NA
RPM	122	150
WOB	14	10-20

HYDRAULIC DATA

PUMPS	1. ID1800	2. ID1800
SIZE inches	6.5X12	6.5X12
CAPACITY gal/min	4.91	4.91
PUMP RATE stk/min	115	115
FLOW RATE gal/min	1132	
PRESSURE psi	2200	
PD SURF / DA psi	100/1545	
ANN / BIT psi	5/550	
JET VELOCITY ft/sec	250	
JET IMPACT lbs	1440	
BIT HP	365	
HP RATIO / HP/IN2	28% - 1.5/IN2	
REDUCED 1	psi at stk/min	
RATE 2	psi at stk/min	

ANNULAR DATA

	LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBL/S
5X20	185	.3844	74	241	
5X18.75	853	.3083	88	248	
5X17.5	1587	.2733	99	236	
5X16.25		.1215			
8X17.5	300	.2364	115	203	

PIPE DATA

	DP	HWDP	DC	CASING DEPTH	301	1018
60-inches	5.0	5.0	8		30	20
10-inches	4.278	3.0	2.875		25	18.75
CAP-bbls/ft	.0178	.0087	.0076		781.6	3408
DISP-bbls/ft	.0073	.0181	.0545			
LENGTH-ft	2179	428	300		90	783
WEIGHT-lbs/ft	18.5	49	149		310	168

REMARKS AND RECOMMENDATIONS

MW 9.8 GPM JETS ft/ml = sec/std

RUN ELECTRIC LOGS. MAKE UP NEW BOTTOM HOLE ASSEMBLY RR BIT & AND A 17.5' HOLE OPENER. RPH TO BOTTOM OF 20' CASING.
 OPEN HOLE TO 17.5' FOR NEXT CASING RUN. GOOD PENETRATION RATES WHILE REAMING.

ARCO District Office
 AUG 09 1993

ART J. PATTON

Minerals Management Service
 Anchorage, Alaska

sperry-sun Minerals Management Service
DRILLING SERVICES **LOGGING SYSTEMS** Anchorage, Alaska
 A Baroid Company

DEPTH 4005
 OPERATION E-LOG
 FOOTAGE 0

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

NO. 5
 DATE Aug 6 88
 TIME 04:00

OPERATOR <u>ARCO ALASKA, INC.</u>	WELL NAME <u>KUJLUM NO. 2</u>	FIELD/BLOCK <u>008 BLK 672 NR6-4</u>
CONTRACTOR <u>CANMAR</u>	RIG NAME <u>KULLUK</u>	AREA <u>BEAUFORT SEA</u>
START DATE <u>Jul 28 83</u>	LOC. <u>OFFSHORE</u>	STATE <u>ALASKA</u>

LOGGING DATA

AVG GAB (units) <u>0</u>	MAX GAB (units) <u>0</u>	AT DEPTH (feet) <u>4005</u>	SURVEY DATA <u>.39 at 3877</u>	LITHOLOGY <u>60% CLAY 30% SILTSTONE 10% SAND</u>	DRILL RATE ft/hr <u>NA</u>
BACKGROUND CONNECTION TRIP <u>0</u>	TRIP <u>85</u>	TRIP CHLORIDES <u>4005</u>	LAG DOWN DP <u>520</u>	LAG OFF BOTTOM <u>5800</u>	CORRECTED 'D' EXP. <u>NA</u>
FLOWLINE TEMP <u>NA</u>	degrees F		SHALE DENSITY g/cc <u> </u> LWR Res. <u> </u>		

FORMATION PRESSURE DATA

CASING			BOTTOM HOLE			OPEN HOLE		
PORE PRESSURE	<u>450</u> psi	<u>8.5</u> ppg	<u>1601</u> psi	<u>8.7</u> ppg	<u> </u> psi	<u> </u> ppg	<u> </u> k	<u> </u> ft
FRACTURE PRESSURE	<u>897</u> psi	<u>12.8</u> ppg	<u>2577</u> psi	<u>14</u> ppg	<u> </u> psi	<u> </u> ppg	<u> </u> k	<u> </u> ft
ECD	<u> </u> psi	<u> </u> ppg	<u> </u> psi	<u> </u> ppg	<u> </u> psi	<u> </u> ppg	<u> </u> k	<u> </u> ft

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME <u>2400 AUG 5 83</u>	BIT NO. <u>3</u>	PUMPS <u>1. ID1600</u>	<u>2. ID1600</u>
TYPE <u>GENERIC #2</u>	TYPE <u>FDTG</u>	SIZE inches <u>0.5X12</u>	<u>0.5X12</u>
WEIGHT IN <u>9.8</u>	IADC CODE <u> </u>	CAPACITY gal/stk <u>4.91</u>	<u>4.91</u>
FUNNEL VIS. <u>52</u>	ØSIZE <u>12.5</u>	PUMP RATE stks/min <u> </u>	<u> </u>
PV/VP <u>24/22</u>	JETS <u>3x14.1-10</u>	FLOW RATE gal/min <u> </u>	<u> </u>
GELS <u>3/5</u>	DEPTH OUT <u>4005</u>	PRESSURE psi <u>STATIC PAST</u>	<u> </u>
pH <u>8.5</u>	ROT HR. <u>33.7</u>	FD SURF / DØ psi <u>e4 HR6</u>	<u> </u>
FILT/CAKE API <u>3.8/1</u>	FOOTAGE <u>2988</u>	ANN / BIT psi <u> </u>	<u> </u>
HP-MT <u> </u>	AVG ft/hr <u>88</u>	JET VELOCITY ft/sec <u> </u>	<u> </u>
Pm <u>1.8</u>	GRADE <u> </u>	JET IMPACT lba <u> </u>	<u> </u>
Pf/M <u>8/1.9</u>	HOLE DEV. <u>.39</u>	BIT HP <u> </u>	<u> </u>
CHLORIDES ppm <u>18000</u>	COB/FT <u>311</u>	HP RATIO / HP/IN2 <u> </u>	<u> </u>
CALCIUM ppm <u>200</u>	RPM <u>122</u>	REDUCED 1 <u> </u> psi at <u> </u> stk/min	<u> </u>
DIL/WATER/SOLIDS <u>0/02.2/7.8</u>	WOB <u>14</u>	RATE 2 <u> </u> psi at <u> </u> stk/min	<u> </u>
DAILY/CUM. COST <u> </u>			

ANNULAR DATA

SIZE	LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBLs
<u>5X20</u>	<u>165</u>	<u>.9844</u>	<u> </u>	<u> </u>	<u> </u>
<u>5X18.75</u>	<u>833</u>	<u>.9083</u>	<u> </u>	<u> </u>	<u> </u>
<u>5X17.5</u>	<u>22</u>	<u>.2733</u>	<u> </u>	<u> </u>	<u> </u>
<u>5X12.5</u>	<u>2121</u>	<u>.1215</u>	<u> </u>	<u> </u>	<u> </u>
<u>8X12.5</u>	<u>384</u>	<u>.0836</u>	<u> </u>	<u> </u>	<u> </u>

PIPE DATA

	DRILL STRING			CASING:			
	DP	HWDP	DC	DEPTH	301	1018	
OD-inches	<u>5.0</u>	<u>5.0</u>	<u>6</u>	<u>30</u>	<u>20</u>	<u> </u>	<u> </u>
ID-inches	<u>4.278</u>	<u>3.0</u>	<u>2.875</u>	<u>28</u>	<u>18.75</u>	<u> </u>	<u> </u>
CAP-bbls/ft	<u>.0178</u>	<u>.0067</u>	<u>.0078</u>	<u>7018</u>	<u>.0408</u>	<u> </u>	<u> </u>
DISP-bbls/ft	<u>.0078</u>	<u>.0181</u>	<u>.0545</u>	<u>90</u>	<u>703</u>	<u> </u>	<u> </u>
LENGTH-ft	<u>2503</u>	<u>858</u>	<u>384</u>	<u>310</u>	<u>133</u>	<u> </u>	<u> </u>
WEIGHT-lbs/ft	<u>19.5</u>	<u>49</u>	<u>149</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

REMARKS AND RECOMMENDATIONS

MW 9.8 GPM 800 JETS 4-14'S ft/ml = sec/std

POOH FOR E-LOGS. HOLE PULLED WITHOUT EXCESS DRAG. RIG UP SCHLUMBERGER. RUN ELECTRIC LOGS.

ADT J. PATTON

AUG 03 1993

sperry-sun
 DRILLING SERVICES **LOGGING SYSTEMS**
 A Boreid Company

Log Management Service

DEPTH 2275
 OPERATION DRILL
 FOOTAGE 1225

Anchorage, Alaska
 No. 8
 DATE Aug 3 93
 TIME 04 00

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

OPERATOR <u>ARCO ALASKA, INC.</u>	WELL NAME <u>KUVIUM No. 2</u>	FIELD/BLOCK <u>OCS BLK 072</u>
CONTRACTOR <u>CANMAR</u>	RIG NAME <u>KULLUK</u>	AREA <u>BEAUFORT SEA</u>
START DATE <u>Jul 28 93</u>	LOC. <u>OFFSHORE</u>	STATE <u>ALASKA</u>

LOGGING DATA

AVG GAS (units) <u>14</u>	MAX GAS (units) <u>28</u>	AT DEPTH (feet) <u>1185</u>	SURVEY DATA <u>24 Deg #12210'</u>	LITHOLOGY <u>90% CLAY 10% SAND</u>	SAMPLE DEPTH <u>2200</u>	DRILL RATE R/W <u>100</u>
BACKGROUND CONNECTION TRIP <u>0</u>	LAG DOWN DP <u>252 silts</u>	LAG OFF BOTTOM <u>4015 silts</u>	TRIP CHLORIDES	CORRECTED TD EXP. <u>0.78</u>	SHALE DENSITY g/cc	EWR Rev. <u>2</u>
FLOWLINE TEMP <u>33</u> degrees F						

FORMATION PRESSURE DATA

CASING			BOTTOM HOLE			OPEN HOLE		
PORE PRESSURE <u>450</u> psi	<u>8.5</u> ppg		<u>1010</u> psi	<u>8.5</u> ppg				
FRACTURE PRESSURE <u>897</u> psi	<u>12.8</u> ppg							
ECD <u>524</u> psi	<u>9.9</u> ppg		<u>1175</u> psi	<u>10.0</u> ppg				

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME <u>2400 1 AUG 93</u>	BIT NO. <u>3</u>	PUMPS <u>1</u>	ID1800 <u>2</u>	ID1800
TYPE <u>GENERIC #2</u>	TYPE <u>FDTC</u>	SIZE inches <u>6.5X12</u>	<u>6.5X12</u>	
WEIGHT IN <u>0.8</u>	IADC CODE	CAPACITY gal/stk <u>4.91</u>	<u>4.91</u>	
FUNNEL VIS. <u>50</u>	SIZE <u>12.5</u>	PUMP RATE stks/min <u>88</u>	<u>88</u>	
PV/VP <u>24/21</u>	JETS <u>3x14.1-10</u>	FLOW RATE gal/min <u>334</u>	<u>334</u>	
GELS <u>4/5</u>	DEPTH OUT	PRESSURE psi <u>2040</u>		
pH <u>9.8</u>	ROT HR. <u>14.4</u>	PD SURF / DS psi <u>83/802</u>		
FILT/CAKE API <u>4.6/1</u>	FOOTAGE <u>1235</u>	ANN / BIT psi <u>11/1438</u>		
HF-MT	AVG R/W <u>85</u>	JET VELOCITY ft/sec <u>405</u>		
Pm <u>1.3</u>	GRADE	JET IMPACT lbs <u>1368</u>		
FI/M <u>8/1.7</u>	HOLE DEV. <u>.24</u>	BIT HP <u>558</u>		
CHLORIDES ppm <u>16000</u>	COST/FT	HP RATIO / HP/IN2 <u>4.7hp/in2</u>		
CALCIUM ppm <u>840</u>	RPM <u>125</u>	REDUCED 1 <u>psi at stk/min</u>		
OIL/WATER/SOLIDS <u>0/5.3/03.7</u>	WOB <u>0</u>	RATE 2 <u>psi at stk/min</u>		
DAILY/CUM. COST				

ANNULAR DATA

	LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT. VEL FT/MIN	ANN-VOL BBL/
<u>8X12.5</u>	<u>364</u>	<u>.0836</u>	<u>181</u>	<u>319</u>	<u>34</u>
<u>5X12.5</u>	<u>851</u>	<u>.1215</u>	<u>131</u>	<u>281</u>	<u>104</u>
<u>5X17.5</u>	<u>23</u>	<u>.2733</u>	<u>58</u>	<u>213</u>	<u>8</u>
<u>5X18.75</u>	<u>853</u>	<u>.3083</u>	<u>50</u>	<u>223</u>	<u>270</u>
<u>5X20</u>	<u>185</u>	<u>.3844</u>	<u>44</u>	<u>218</u>	<u>80</u>

PIPE DATA

	DRILL STRING				CASING DEPTH			
	DP	HWDP	DC		301	1018		
OD-inches	<u>5.0</u>	<u>5.0</u>	<u>8</u>		<u>30</u>	<u>20</u>		
ID-inches	<u>4.278</u>	<u>3.0</u>	<u>2.875</u>		<u>28</u>	<u>18.75</u>		
GAP-bbls/ft	<u>.0176</u>	<u>.0067</u>	<u>.0079</u>		<u>.7818</u>	<u>.3406</u>		
DIAP-bbls/ft	<u>.0076</u>	<u>.0181</u>	<u>.0545</u>		<u>80</u>	<u>793</u>		
LENGTH-ft	<u>1170</u>	<u>656</u>	<u>304</u>		<u>910</u>	<u>133</u>		
WEIGHT-lbs/ft	<u>18.5</u>	<u>48</u>	<u>148</u>					

REMARKS AND RECOMMENDATIONS

MW _____ GPM _____ JETS _____ ft/ml = _____ sec/std
RUN IN HOLE WITH 12.25" BIT NO. 3. DRILL AHEAD THRU CLAY/SAND WHILE CONTROL DRILLING AT 100R/W TO 2275'. NO APPARENT HOLE PROBLEMS.
ADT <u>DON WALTERS</u>

sperry-eun
 DRILLING SERVICES
 A Service Company

LOGGING SYSTEMS

DEPTH 1040
 OPERATION TRIP
 FOOTAGE 10

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

No. 6
 DATE Aug 2 93
 TIME 0600

OPERATOR ARCO ALASKA INC.	WELL NAME KUVLUM NO. 2	FIELD/BLOCK 099 DLK 072
CONTRACTOR CANMAD	RIG NAME KULLUK	AREA BEAUFORT SEA
START DATE Jul 28 93	LOG. OFFSHORE	STATE ALASKA

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (ft)	SURVEY DATA 100% 1.5 D ₉₀	LITHOLOGY 100% CLAY	SAMPLE DEPTH 1180	DRILL RATE ft/hr	CURRENTED TO EXP.	SHALE DENSITY g/cc	CWR Rev.
BACKGROUND CONNECTION TRIP			TRIP CHLORIDES	LAG DOWN DP	LAG OFF BOTTOM NA				
FLOWLINE TEMP NA		degrees F							

FORMATION PRESSURE DATA

CASING			BOTTOM HOLE			OPEN HOLE		
PORE PRESSURE 450	psi	8.5	ppg	500	psi	8.5	ppg	
FRACTURE PRESSURE 807	psi	12.0	ppg		psi		ppg	
ECD	psi		ppg		psi		ppg	

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME 2400 1 AUG 93	BIT NO. 3	2	PUMP 1. ID1800	2. ID1800
TYPE GENERIC #2	TYPE FULL	88986GJ4	SIZE inches 8.5X12	8.5X12
WEIGHT IN 0.8	IADC CODE		CAPACITY gal/stk 4.01	4.01
FUNNEL VIS 50	SIZE 12.5	17.5	PUMP RATE gals/min	
PV/YF 10/28	JET 3-14.1-10	3-10.1-11	FLOW RATE gal/min	
DLIS 6/8	DEPTH OUT 1040		PRESSURE psi	STATIC
PH 9.0	KDI HSE 2.8		PD SURF / D ₉₀ psi	
FILT/CAKE API 4.0/1	FOOTAGE 10		ANN / BIT psi	
HP HT	AVG ft/hr 3.8		JET VELOCITY ft/ann	
Pm 2.2	GRADE		JET IMPACT lbs	
PI/M 5/1.81/12.0	HOLF INV. 1.5		BIT HP	
CHLORIDES ppm 1/100	COBT/FT 4019		HP RATIO / HP/IN ²	
CALCIUM ppm 400	RPM 61		REDUCED 1 psi at	atk/min
OIL/WATER/SOLIDS 0/5.0/84.4	WOB		RATE 2 psi at	atk/min
DAILY/CUM. COST				

ANNULAR DATA

	LENGTH-FT.	VOLUME DBLS/FT.	VELOCITY FT/MIN	CRIT. VEL FT/MIN	ANN-VOL DBLS
8X12.5		.0836			Received
8X12.5		.1215			
8X17.5		.2733			OCS District Office
8X18.75		.3083			
8X20		.3644			
					AUG 02 1993

PIPE DATA

Minerals Management Service
 Anchorage, Alaska

	DP	HWDH	DC	CASING DEPTH	901	1010
OD-inches 5.0	5.0		8		90	20
ID-inches 4.276	4.0		2.875		20	18.75
CAP-Dbbls/ft .0176	.0087		.0078		7818	3808
DIGP-Dbbls/ft .00175	.0101		.0545			
LENGTH-ft	869		304		90	793
WEIGHT-lbs/ft 19.5	49		149		010	103

REMARKS AND RECOMMENDATIONS

MW	GPM	JETS	ft/ml	sec/stk
RIG UP STACK AND DIV. HIFR. RUN STACK AND DVERTER TO P99. TEST STACK, RIM AND TEST CASING TO 2200 psi. POOL, PICK UP BHA AND 17.5' BIT RIM TAG CUT AT 003'. DRILL CMT TO 1008'. CHANGE HOLE OVER TO 8.8 ppg GENERIC #2 MUD. DRILL CMT, SHOE AND 10' OF NEW HOLE. PERFORM LEAK OFF TEST-170 psi-12.8 ppg. POOL. LAY DOWN BHA AND 17.5' BIT. PICK UP NEW BHA, MWD TOOL AND 12.25' BIT NO. 3.				
ADT DON WALTERS				

sperry-sun
DRILLING SERVICES **LOGGING SYSTEMS**
 A Bardon Company

Aug 2 1993

No. 3
 DATE Jul 31 93
 TIME 04 00

DEPTH 1030
 OPERATION DRLO
 FOOTAGE 115

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT Minerals Management Service

OPERATOR <u>ARGO ALASKA, INC.</u>	WELL NAME <u>KUVLUM NO. 2</u>	Anchor <u>FIELD/BLOCK</u>	OCS BLK <u>672</u>
CONTRACTOR <u>OANMAR</u>	RIG NAME <u>KULLUK</u>	AREA <u>BEAUFORT SEA</u>	
START DATE <u>Jul 28 93</u>	LOC. <u>OFFSHORE</u>	STATE <u>ALASKA</u>	

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA <u>1030 1.5 Deg</u>
<u>5</u>	<u>5</u>		LITHOLOGY <u>NA</u>
BACKGROUND CONNECTION TRIP			SAMPLE DEPTH
FLOWLINE TEMP <u>NA</u>			TRIP OHLIMIDES
			LAG DOWN DP
			LAG OFF BOTTOM <u>NA</u>
			DRILL RATE <u>NA</u>
			CORRECTED '0' EXP.
			SHALE DENSITY <u>g/cc</u>
			EWR Rev.

FORMATION PRESSURE DATA

	CASING	BOTTOM HOLE	OPEN HOLE
PORE PRESSURE	<u>133</u> psi <u>8.5</u> PPG	<u>404</u> psi <u>8.5</u> PPG	psi PPG ft
FRACTURE PRESSURE	<u>NA</u> psi PPG	psi PPG	psi PPG ft
ECD	psi PPG	psi PPG	psi PPG ft

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME	TYPE <u>SEA WATER</u>	BIT NO. <u>1</u>	PUMPS <u>1</u>	ID1600 <u>2</u>
WEIGHT IN	<u>8.5</u>	TYPE <u>ATXG1</u>	SIZE inches <u>7.5x12</u>	<u>7.5x12</u>
FUNNEL VIS.		IADC CODE	CAPACITY gal/ask <u>6.54</u>	<u>6.54</u>
PV/YP		SIZE <u>28</u>	PUMP RATE stks/min	
GELS		JETS <u>3-21.1-22</u>	FLOW RATE gal/min	
pH		DEPTH OUT <u>1030</u>	PRESSURE psi <u>STATIC</u>	
FILT/CAKE API		HOT HRD. <u>30.0</u>	PD SURF / DS psi	
HP-MT		FOOTAGE <u>810</u>	ANN / BIT psi	
Pm		AVG R/hr <u>22.5</u>	JET VELOCITY ft/sec	
PI/MF		GRADE	JET IMPACT lbs	
CHLORIDES ppm		HOLE DEV. <u>1.5</u>	BIT HP	
CALCIUM ppm		COST/FT <u>1020</u>	HP RATIO / HP/AM2	
OIL/WATER/SOLIDS		HPM <u>111</u>	REDUCED <u>1</u>	psi at stk/min
DAILY/CUM. COST		WOB <u>21</u>	RATE <u>2</u>	psi at stk/min

ANNULAR DATA

	LENGTH - FT.	VOLUME BBL/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBLs
<u>20X30</u>	<u>101</u>	<u>.4857</u>			
<u>20X26</u>	<u>704</u>	<u>.2881</u>			

PIPE DATA

	DRILL STRING			CASING:		
	OD	HWDP	DC	DEPTH		
OD-inches	<u>5.0</u>	<u>5.0</u>	<u>8.5</u>	<u>301</u>	<u>1017</u>	
ID-inches	<u>4.276</u>	<u>3.0</u>	<u>2.675</u>	<u>30</u>	<u>20</u>	
OAP-bbls/ft	<u>.0178</u>	<u>.0087</u>	<u>.0080</u>	<u>7815</u>	<u>3408</u>	
DISP-bbls/ft	<u>.0075</u>	<u>.0181</u>	<u>.0707</u>			
LENGTH-ft				<u>90</u>	<u>805</u>	
WEIGHT-lbs/ft	<u>18.5</u>	<u>49</u>	<u>185</u>	<u>310</u>	<u>133</u>	

REMARKS AND RECOMMENDATIONS

MW _____ GPM _____ JETS _____ ft/mi = _____ sec/std

DRILL AHEAD WITH 28" BIT AND MUD MOTOR TO 1030. PUMP SWEEP DROP SURVEY. SHORT TRIP TO 375' RH. CIRC HOLE UNTIL AIRFILT.

CLEAN. DISPLACE HOLE WITH 8.9 PPG MUD. POOH. RIG UP TO RUN 20" CSG. RUN 18 JTS OF 190 LB/FT 20" OGG. LAND CGG AT 1017'. CNT

20 AND 30 INCH CASING TO MUD LINE.

ADT _____ DON WALTERS

sperry-sun
 DRILLING SERVICES **LOGGING SYSTEMS**
 A Bardon Company

DEPTH 915
 OPERATION DRLG
 FOOTAGE 619

No. 2
 DATE Jul 30 93
 TIME 04 00

APPLIED DRILLING TECHNOLOGY
 MORNING REPORT

OPERATOR ARCO ALASKA INC. WELL NAME KUVLUM NO. 2 FIELD/BLOCK OCS BLK 872
 CONTRACTOR CANMAR RIG NAME KULLUK AREA BEAUFORT SEA
 START DATE Jul 20 93 Loc. OFFSHORE STATE ALASKA

LOGGING DATA

AVG GAS (units)	MAX GAS (units)	AT DEPTH (feet)	SURVEY DATA	<u>NA</u>
<u>5</u>	<u>8</u>		LITHOLOGY	<u>NA</u>
BACKGROUND CONNECTION TRIP			SAMPLE DEPTH	
			TRIP CHLORIDES	
FLOWLINE TEMP	<u>NA</u>	degrees F	LAG DOWN DP	
			LAG OFF BOTTOM	<u>NA</u>
			DRILL RATE f/hr	<u>65</u>
			CORRECTED 'D' EXP.	
			SHALE DENSITY g/cc	
			GWR Max.	

FORMATION PRESSURE DATA

	CASING		BOTTOM HOLE		OPEN HOLE
PORE PRESSURE	<u>193</u> psi	<u>8.6</u> ppg	<u>404</u> psi	<u>8.5</u> ppg	psi ppg ft
FRACTURE PRESSURE	<u>NA</u> psi	ppg	psi	ppg	ft
ECD	<u>195</u> psi	<u>8.84</u> ppg	<u>419</u> psi	<u>8.8</u> ppg	ft

MUD DATA

BIT DATA

HYDRAULIC DATA

TIME		BIT NO.	<u>1</u>	PUMPS	<u>1</u>	<u>ID1600</u>	<u>2</u>	<u>ID1600</u>
TYPE	<u>SEA WATER</u>	TYPE	<u>ATXG1</u>	SIZE inches	<u>7.5x12</u>	<u>7.6x12</u>		
WEIGHT IN	<u>8.5</u>	IADC CODE		CAPACITY gal/stk	<u>8.54</u>	<u>6.54</u>		
FUNNEL VIS.		SIZE	<u>26</u>	PUMP RATE stk/min	<u>80</u>	<u>80</u>		
PV/VP		JETS	<u>9-21,1-22</u>	FLOW RATE gal/min	<u>523</u>	<u>523</u>		
GELS		DEPTH OUT		PRESSURE psi	<u>1900</u>			
pH		ROT HRG.	<u>33.4</u>	PD SURF / D5 psi	<u>170/801</u>			
FILT/CAKE API		FOOTAGE	<u>705</u>	ANN / BIT psi	<u>1/416</u>			
MP-HH		AVG f/hr	<u>20.6</u>	JET VELOCITY ft/sec	<u>234</u>			
Pm		GRADE		JET IMPACT lbs	<u>1040</u>			
P1/M1		HOLE DEV.		BIT HP	<u>245</u>			
CHLORIDES ppm		COST/FT		HP RATIO / HP/IN2	<u>5 hp/in2</u>			
CALCIUM ppm		RPM	<u>187</u>	REDUCED 1	psi at	stk/min		
OIL/WATER/SOLIDS		WOB	<u>22</u>	RATE 2	psi at	stk/min		
DAILY/CUM. COST								

ANNULAR DATA

	LENGTH - FT.	VOLUME BBLs/FT.	VELOCITY FT/MIN	CRIT-VEL FT/MIN	ANN-VOL BBLs
9.5x26	<u>890</u>	<u>.636</u>	<u>42</u>	<u>390</u>	<u>14</u>
5X26					

PIPE DATA

	DP	HWDP	DRILL STRING	DO	CASING:	DEPTH
OD-inches	<u>5.0</u>	<u>5.0</u>		<u>9.5</u>		<u>301</u>
ID-inches	<u>4.276</u>	<u>3.0</u>		<u>2.875</u>		<u>30</u>
CAP-bbls/ft		<u>.0067</u>		<u>.0080</u>		<u>26</u>
DISP-bbls/ft		<u>.0181</u>		<u>.0707</u>		<u>7616</u>
LENGTH-ft		<u>587</u>		<u>105</u>		<u>00</u>
WEIGHT-lbs/ft	<u>19.5</u>	<u>49</u>		<u>195</u>		<u>310</u>

REMARKS AND RECOMMENDATIONS

MW _____ GPM _____ JETS _____ f/ml = _____ Acc/stk
 LANU 90° BEG AT 301'. UNLATCH FROM CASING AND DRILL AHEAD WITH 26" BIT AND MUD MOTOR TO 915'. MONITORING WELL VIA GAS DETECTOR
 TO SHALE SHAKERS BACKGROUND GAS 4-6 UNITS. MAX GAS 8 UNITS.

JUL 30 1993

Minerals Management Service
 Anchorage, Alaska

AD1 DON WALTERS

