

ARCO Alaska, Inc.
Post Office Box 90360
Anchorage Alaska 99510-0360
Telephone 907 276 1215



March 5, 1993

U.S. Minerals Management Service
Attention: Mr. Allen D. Powers, Regional Director
949 East 36th Avenue, Room 603
Anchorage, Alaska 99508-4302

Received
OCS District Office

Re: Determination of Well Producibility
Kuvlum #1 Well
OCS-Y-0866, Block 673
Flaxman Island Area
Eastern Beaufort Sea

APR 23 1993
Minerals Management Service
Anchorage, Alaska

Gentlemen:

We hereby respectfully request that the Kuvlum #1 Well be determined as a well capable of producing oil in paying quantities, as provided under 30 CFR 250.11.

The production test on this well began on September 30, 1992 and was completed on October 4, 1992. A representative from your office, Mr. Jim Reggs was present during the time of the testing of the well. The test results from this well have already been provided to your office. Additionally, we have included the PVT data from the oil sample that was taken, as well as a breakdown of lifting costs associated with the Kuvlum #1 Well. Should you need additional information to qualify the Kuvlum #1 Well, please advise the undersigned and I will be happy to provide it to you. We would respectfully request that this data be held confidential in accordance with 30 CFR 250.18.

We intend to unitize Block 673 with additional leasehold around the block and plan to have a formal unit proposal and a request for suspension of production submitted to you no later the end of this month. Therefore your attention to this request prior to that date would be very much appreciated.

If you have any questions, please feel free to call me at (907) 263-4933.

Very truly yours,

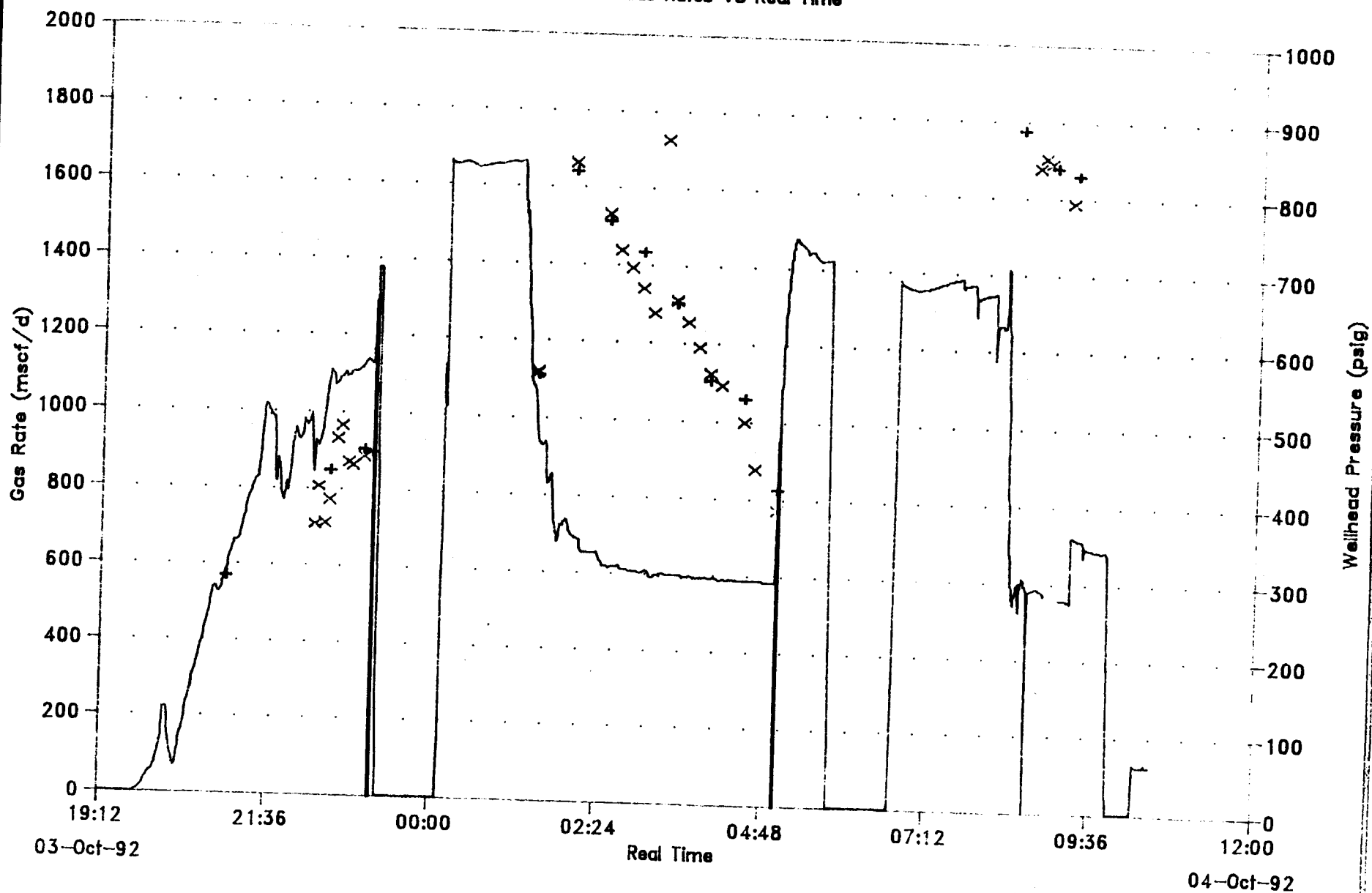
David A. Sutter
District Landman

:jls

cc: Kuvlum Working Interest Owners

Halliburton Reservoir Services

Wellhead Press & Gas Rates VS Real Time



— Wellhead

× Barton Gas Rate + SCAN Gas Rate

Halliburton Reservoir Services Surface Test Data

Company: ARCO Alaska, Inc.

Well: Kuvlum #1

DST #2

Date: 02-Oct-1992

Tank And Separator Data

SCAN Data

Time	Whp (psig)	Wht (deg F)	Choke (64ths)	Inc Vol (bbls)	Rate (bbl/day)	Cum Vol (bbls)	Gas Rate Total (mcf/day)	Cum Gas (mcf)	Mtr Corr Vol (bbls)	Oil Rate (0.80446) (bbl/day)	Mtr Prod Vol (bbls)	Gas Rate Total (mcf/day)	Cum Gas (mcf)	Comments
04-Oct-92														Page No. 6.1.4
03:00:00	302.50	47.38	60 Adj	65.85	3160.63	388.83	1435.90	163.98	100.58	3883.80	307.30	1389.88033	127.81	BS&W=0.1% Emulsion. Trace Sand.
03:30:00	299.50	48.66	60 Adj	61.68	2960.59	450.51	1301.30	181.09	101.83	3924.35	408.93	1438.267	157.774	BS&W=0.1% Emulsion. Trace Sand.
04:00:00	298.25	49.83	60 Adj	67.93	3260.65	518.44	1101.92	204.05	93.09	3594.58	502.02	1188.303	182.53	BS&W=0.0% Trace Sand. OG=31.8 @60 D.F.
04:30:00	294.50	50.74	60 Adj	70.01	3380.67	588.45	1059.25	226.12	98.55	3805.42	600.57	1045.22	204.305	
05:00:00	292.25	51.64	Closed	95.02	4560.91	683.47	823.50	243.27	98.24	3793.45	698.81	823.88	221.47	Close Well In @ Choke Manifold.
05:12:00	737.00	49.01	Closed											Close LPR-N Valve.
05:41:00	711.50	39.13	Closed											Close Sub Sea Retainer Valve.
05:50:00	0.00	31.63	Closed											Rig Down PLT & Rig Up SRO Gauge w/"E" Probe.
06:42:00	0.00	31.73	Closed											Open Sub Sea Valve.
06:45:00	688.00	40.72	Closed											Run In Hole w/SRO Gauge.
07:28:00	687.75	31.89	closed											Latch "E" Probe. Pull 1100# Over Line Wt.
08:09:00	673.50	29.20	Closed											2 Attempts Can Not Open Valve. Remain Latched.
08:18:00	630.25	31.60	Closed											Open LPR-N Valve.
08:19:00	653.00	30.97	18 Adj											Open Well @ Choke Man. Increase Slowly.
08:30:00	287.25	44.55	128 Adj	22.09	2891.49	705.58	1774.84	256.83						BS&W=0.25% H2O. Trace Sand.
09:00:00	279.83	48.75	128 Adj	60.43	2900.58	765.99	1676.68	291.76				1697.27	233.256	BS&W=0.0% Trace Sand. Oil Grav.=31.8 @60 D.F.
09:18:00	275.75	49.22	Closed	62.51	5001.00	828.50	1658.23	326.31						Close Well In @ LPR-N And Ch. Man. For Ice Event.
09:20:00	359.53	49.44	Closed											Unlatch "E" Probe And POOH.
09:47:00	342.99	39.44	Closed											OOH w/Wireline.
09:51:00	338.03	38.55	Closed											Close Sub Sea Retainer Valve. Bleed Off Press.
10:20:00														Rig Down CoFlex Line. Rig Up Kill Line.

Halliburton Reservoir Services Surface Test Data

Company: ARCO Alaska, Inc.

Well: Kuvlum #1

DST #2

Date: 02-Oct-1992

Time	Tank And Separator Data							SCAN Data							Comments
	Whp	Wht	Choke	Inc Vol	Rate	Cum Vol	Gas Rate	Cum	Mtr	Oil Rate	Mtr	Gas Rate	Cum		
	(psig)	(deg F)	(64ths)	(bbls)	(bbl/day)	(bbls)	Total	Gas	Corr Vol	(0.80446)	Prod Vol	Total	Gas		
							(mcsf/day)	(mcsf)	(bbls)	(bbl/day)	(bbls)	(mcsf/day)	(mcsf)		
03-Oct-92															Page No. 6.1.3
20:15:00	55.33	38.60	36 Adj	12.50	1200.24	55.01									Sample - Clean Diesel.
20:19:00	34.35	38.55	36 Adj												Trace Formation Fluids To Surface.
20:30:00	125.88	39.62	36 Adj	3.75	360.07	58.76									BS&W=75% H2O Salinity=110,000 ppm PH=7.5.
20:45:00	230.65	39.91	36 Adj	15.84	1520.30	74.60									BS&W=90% H2O 0.3% Solids PH=8.
21:00:00	289.25	40.24	36 Adj	3.33	320.06	77.93	567.80	5.91							BS&W=30% H2O 0.2% Solids CO2=0.15%.
21:15:00	356.50	40.47	36 Adj												BS&W=6% H2O 0.1% Solids Sal.=108,000 ppm.
21:30:00	449.00	40.85	36 Adj	0.00	0.00	77.93						342.78	1.19021		BS&W=0.3% H2O Salinity=108,000 ppm PH=7.5.
21:45:00	439.25	41.06	40 Adj									336.5	2.35861		BS&W=5% H2O Trace Solids.
22:00:00	478.75	42.00	40 Adj	20.00	960.19	97.94									BS&W=0.5% H2O Trace Solids.
22:30:00	553.75	43.01	40 Adj	35.42	1700.34	133.36	847.71	23.58				750.52	9.13414		BS&W=0.5% H2O Trace Solids.
23:00:00	584.50	41.89	40 Adj	26.87	1280.28	180.03	904.86	42.42	44.87	1724.89	44.87	902.384	27.9334		BS&W=0.1% H2O. Oil Grav.= 31.5 @60 D.F.
23:07:00	576.00	41.88	Closed	2.08	428.68	182.12	898.25	46.79	6.06	1002.29	50.73	878.436	32.2064		Shut Well In @ Choke Manifold.
23:11:00	688.75	42.71	Closed												Shut Sub Sea Retainer Valve.
23:12:00	688.50	42.24	Closed												Bleed Off Press. To Rig Up Wireline PLT.
23:15:00	0.00	31.17	Closed												Rig Up Wireline PLT.
04-Oct-92															
00:11:00	831.00	52.24	Closed												Open Sub Sea Retainer Valve And RIH w/PLT.
01:15:00	933.25	39.05	16 Adj												Open Well @ Choke Manifold. Increase Choke Slow
01:30:00	511.75	39.52	46 Adj	3.75	360.07	165.87	1110.43	58.36				1118.55	33.7592		BS&W=0.5% H2O Trace Solids.
01:37:00	468.75	40.93	52 Adj												Increase Choke.
01:44:00	425.00	42.23	60 Adj												Increase Choke.
02:00:00	351.75	43.78	60 Adj	91.27	4360.88	257.14	1640.30	92.53	49.06	5711.89	99.79	1664.27	66.9341		BS&W=0.1% H2O Trace Solids CO2=0.15%.
02:30:00	309.25	45.91	60 Adj	65.85	3160.63	322.98	1513.79	124.07	106.93	4129.07	206.72	1532.17	98.8543		BS&W=0.3% Emulsion. @02:00 Start Defoamer.

Halliburton Reservoir Services Surface Test Data

Company: ARCO Alaska, Inc.

Well: Kuvlum #1

DST #2

Date: 02-Oct-1992

Time	Tank And Separator Data							SCAN Data						Comments	
	Whp	Wht	Choke	Inc Vol	Rate	Cum Vol	Gas Rate	Cum	Mtr	Oil Rate	Mtr	Gas Rate	Cum		
	(psig)	(deg F)	(64ths)	(bbls)	(bbl/day)	(bbls)	Total	Gas	Corr Vol	(0.80446)	Prod Vol	Total	Gas		
							(mcsf/day)	(mcsf)	(bbls)	(bbl/day)	(bbls)	(mcsf/day)	(mcsf)		
03-Oct-92															Page No. 6.1.2
17:55:00	642.50	36.39	Closed											Finish Displacing w/Diesel. 44 bbls Pumped.	
18:05:00	2176.75	36.01	Closed											Cycle OMNI Valve To Well Test Pos.	
18:21:00	0.00	34.05	28 Adj											Open Well To Flow @ LPR-N And Ch. Man.	
18:23:00	151.60	43.47	32 Adj												
18:24:00	97.52	41.22	37 Adj												
18:24:30	42.82	39.05	40 Adj												
18:25:00	28.02	39.53	44 Adj												
18:30:00	0.00	42.15	44 Adj	4.56	733.48	18.87								Sample - Clean Diesel.	
18:36:00	0.00	41.88	40 Adj											Sample - Clean Diesel.	
18:37:00	0.00	41.61	36 Adj											Sample - Clean Diesel.	
18:38:00	0.00	41.57	32 Adj											Sample - Clean Diesel.	
18:42:00	0.00	41.37	28 Adj											Sample - Clean Diesel.	
18:45:00	0.00	41.27	28 Adj	7.06	680.14	23.76								Sample - Clean Diesel.	
18:49:00	0.00	41.54	20 Adj											Sample - Clean Diesel.	
18:52:00	0.00	41.52	16 Adj											Sample - Clean Diesel.	
19:00:00	0.00	41.23	16 Adj	4.56	440.09	28.34								Sample - Clean Diesel.	
19:15:00	0.00	40.82	16 Adj	3.33	320.06	31.67								Sample - Clean Diesel.	
19:30:00	0.00	40.31	16 Adj	2.50	240.05	34.17								Sample - Clean Diesel.	
19:45:00	1.88	39.61	16 Adj	3.33	320.06	37.51								Sample - Clean Diesel.	
19:55:00	21.95	39.47	20 Adj											Sample - Clean Diesel.	
19:58:00	29.90	39.41	24 Adj											Sample - Clean Diesel.	
20:00:00	31.30	39.25	28 Adj	5.00	480.10	42.51								Sample - Clean Diesel.	
20:07:00	75.27	40.63	36 Adj											Sample - Clean Diesel.	

Halliburton Reservoir Services Surface Test Data

Company: ARCO Alaska, Inc.

Well: Kuvlum #1

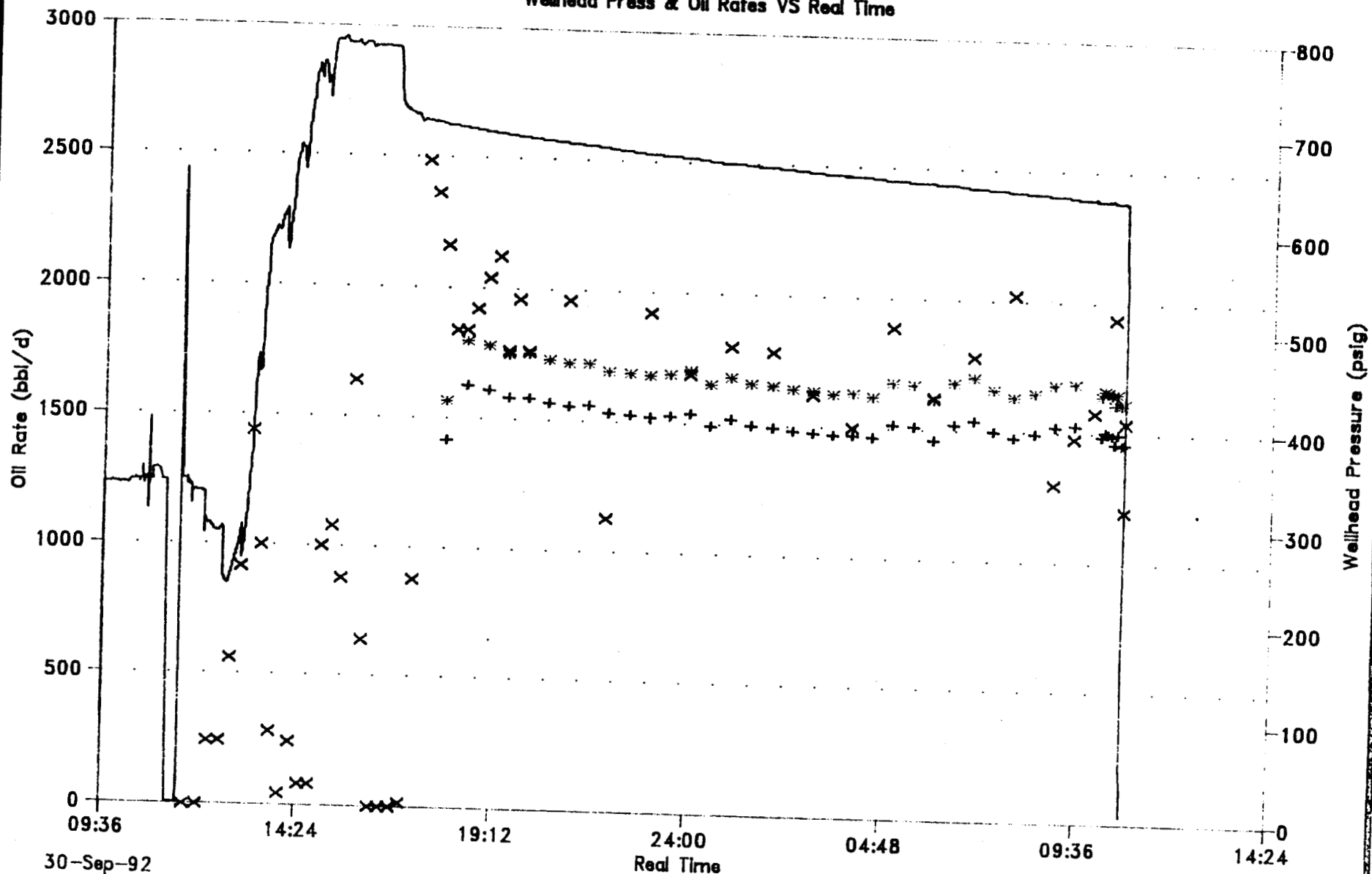
DST #2

Date: 02-Oct-1992

Time	Whp (psig)	Wht (deg F)	Choke (64ths)	Inc Vol (bbls)	Tank And Separator Data				SCAN Data					Comments
					Rate (bbl/day)	Cum Vol (bbls)	Gas Rate Total (mscf/day)	Cum Gas (mscf)	Mtr Corr Vol (bbls)	Oil Rate (0.80446) (bbl/day)	Mtr Prod Vol (bbls)	Gas Rate Total (mscf/day)	Cum Gas (mscf)	
03-Oct-92														Page No. 6.1.1
10:36:00	0.00	36.71	16 Adj											Open LPR-N For Flow.
11:00:00	0.00	37.56	28 Adj	6.25	375.08	6.25								Diesel Returns.
11:30:00	0.00	36.55	28 Adj	2.08	100.02	8.34								No Sample - Gas Only.
12:00:00	0.00	36.35	28 Adj	0.42	20.01	8.75								No Sample - Gas Only.
12:30:00	0.00	35.74	28 Adj	0.83	40.01	9.59								No Sample - Gas Only.
13:00:00	0.00	35.61	28 Adj	0.42	20.01	10.00								No Sample - Gas Only.
13:30:00	0.00	36.36	28 Adj	0.00	0.00	10.00								No Sample - Gas Only.
14:00:00	0.00	35.96	28 Adj	1.67	80.02	11.67								No Sample - Gas Only.
14:30:00	0.00	34.48	28 Adj											No Sample - Gas Only.
15:00:00	0.00	32.99	28 Adj	0.42	20.01	12.09								No Sample - Gas Only.
15:30:00	0.00	31.49	28 Adj											No Sample - Gas Only.
15:43:00	0.00	30.80	Closed	0.00	0.00	12.09								Close In Well @ LPR-N & Cycle OMNI To Cir Pos
15:55:00	0.00	30.02	Closed											LPR-N Valve Closed - OMNI Valve In Cir. Pos.
16:03:00	179.50	35.16	28 Adj											Open Choke Manifold To Reverse Out To Tanks.
16:15:00	406.10	39.42	28 Adj											Oil & Gas Returns.
16:18:00	415.13	39.79	28 Adj											Emulsified H2O @ Data Header.
16:20:00	382.63	40.05	32 Adj											
16:23:00	380.08	40.75	36 Adj											
16:30:00	391.48	42.53	36 Adj											BS&W=90% H2O 0.25% Solids.
16:45:00	367.50	43.76	36 Adj											BS&W=99.8% H2O 0.2% Solids.
16:55:00	296.75	44.13	Closed											Finish Reversing Out. 61 bbls Returned To Tank.
17:05:00	10.65	42.32	Closed											Start Displacing w/Diesel. Returns Going To Rig.
17:30:00	307.62	38.59	Closed											Continue Pumping Diesel.

Halliburton Reservoir Services

Wellhead Press & Oil Rates VS Real Time



— Wellhead

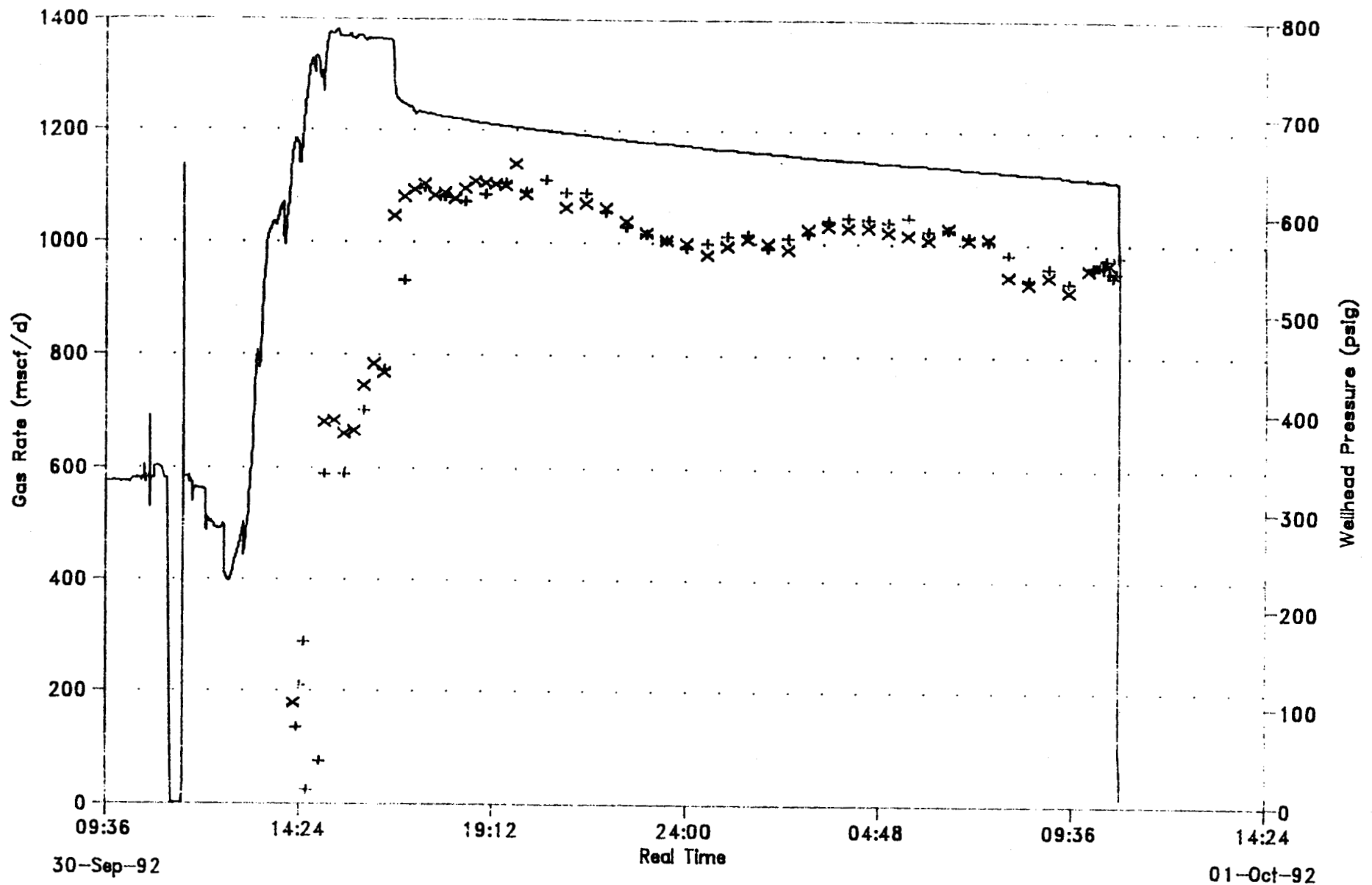
+ Raw SCAN Oil Rate

X Oil Tank Rate

* Corr. SCAN Oil Rate

Halliburton Reservoir Services

Wellhead Press & Rates VS Real Time



— Wellhead + Barton Gas Rate X SCAN Gas Rate

Halliburton Reservoir Services Surface Test Data

Company: ARCO Alaska, Inc.

Well: Kuvlum #1

DST #1

Date: 30-Sep-1992

Time	Tank And Separator Data							SCAN Data					Comments	
	Whp	Wht	Choke	Inc Vol	Rate	Cum Vol	Gas Rate	Cum	Mtr	Oil Rate	Mtr	Gas Rate		Cum
	(psig)	(deg F)	(64ths)	(bbls)	(bbl/day)	(bbls)	Total	Gas	Corr Vol	(1.108)	Prod Vol	Total		Gas
							(mcsf/day)	(mcsf)	(bbls)	(bbl/day)	(bbls)	(mcsf/day)	(mcsf)	
01-Oct-92														Page No. 3.1.4
04:30:00	655.00	48.00	28 Pos				1027.76	574.33	30.58	1623.37	689.48	1043.70	566.55	
05:00:00	653.00	47.00	28 Pos	78.77	1890.38	986.45	1019.84	595.58	31.62	1678.66	701.10	1037.76	588.17	BS&W=0.0% Oil Grav= 34.8 @ 60 D.F.
05:30:00	652.00	47.00	28 Pos				1016.07	616.75	31.45	1669.55	732.54	1047.78	610.00	
06:00:00	651.00	48.00	28 Pos	67.51	1620.32	1053.96	1007.72	637.74	30.45	1616.47	763.00	1023.64	631.32	BS&W=0.0% OG= 32.1 @ 60 D.F. CO2=0.2%.
06:30:00	649.00	48.00	28 Pos				1026.29	659.16	31.66	1661.09	794.66	1026.56	652.71	
07:00:00	647.00	48.00	28 Pos	74.18	1780.36	1128.14	1007.06	680.14	32.09	1703.80	826.75	1012.53	673.61	BS&W=0.0% Oil Grav= 32.9 @ 60 D.F.
07:30:00	646.00	48.00	28 Pos				1009.29	701.17	31.25	1659.23	856.00	1005.23	694.75	
08:00:00	644.00	48.00	28 Pos	84.18	2020.40	1212.33	942.29	720.80	30.76	1633.26	886.77	962.16	715.21	BS&W=0.0% OG= 33.2 @ 60 D.F. CO2=0.2%.
08:30:00	643.00	49.00	28 Pos				931.59	740.21	31.08	1650.14	919.85	937.87	734.75	
09:00:00	642.00	49.00	28 Pos	54.18	1300.26	1266.50	942.94	759.85	31.69	1662.17	951.54	959.12	754.73	Started 30 Minute Tank Straps.
09:30:00	640.00	49.00	28 Pos	30.84	1480.30	1297.34	918.01	776.98	31.77	1666.86	983.32	933.33	774.18	Attempt To Close LPR-N Valve. Did
10:00:00	637.00	49.00	28 Pos	32.92	1580.32	1330.27	956.13	796.90						Not Close. Continue To Cycle Annulus
10:30:00	635.00	49.00	28 Pos	40.42	1940.39	1370.69	966.90	819.04				962.52	794.23	Pressure With No Success.
10:46:00	558.00	47.00	28 Pos	17.09	1537.81	1387.76						957.75	804.20	Close OMNI Valve.
10:47:00	160.00	41.00	Closed	0.83	1200.24	1388.61								Close Sub Sea Retainer Valve.

Halliburton Reservoir Services Surface Test Data

Company: ARCO Alaska, Inc.

Well: Kuvlum #1

DST #1

Date: 30-Sep-1992

Time	Tank And Separator Data							SCAN Data						Comments	
	Whp (psig)	Wht (deg F)	Choke (64ths)	Inc Vol (bbls)	Rate (bbl/day)	Cum Vol (bbls)	Gas Rate	Cum	Mtr	Oil Rate	Mtr	Gas Rate	Cum		
							Total	Gas	Corr Vol	(1.106)	Prod Vol	Total	Gas		
							(mcsf/day)	(mcsf)	(bbls)	(bbl/day)	(bbls)	(mcsf/day)	(mcsf)		
30-Sep-92															Page No. 3.1.3
19:00:00	693.00	40.00	28 Pos	21.25	2040.41	270.05	1107.18	167.27	33.54	1760.57	67.47	1085.41	154.80	BS&W=0.1% Gel OG= 33.9 @ 60 D.F. CO2=0.4%	
19:15:00	691.00	40.00	28 Pos	22.09	2121.42	292.14	1102.43	178.75							
19:30:00	690.00	40.00	28 Pos	18.34	1760.35	310.48	1102.01	190.23	32.99	1751.01	100.46	1107.25	177.87		
19:45:00	689.00	40.00	28 Pos	20.42	1960.39	330.90	1140.28	202.11							
20:00:00	687.00	41.00	28 Pos	18.34	1760.35	349.24	1086.31	213.42	33.02	1752.98	133.48	1091.94	200.62	BS&W=0.0% OG= 34.0 @ 60 D.F. CO2=0.02%	
20:30:00	685.00	41.00	28 Pos				984.98	233.94	32.81	1731.53	166.09	1110.89	223.76	Started One Hour Tank Straps.	
21:00:00	683.00	42.00	28 Pos	81.68	1960.39	430.92	1081.68	256.06	32.45	1722.63	198.54	1087.78	246.43	BS&W=0.0% OG= 33.9 @ 60 D.F. CO2=0.4%.	
21:30:00	680.00	42.00	28 Pos				1068.90	278.33	32.49	1724.55	231.03	1088.37	269.10		
22:00:00	678.00	43.00	28 Pos	47.09	1130.23	478.01	1061.40	300.44	31.96	1696.71	262.99	1054.75	291.07	BS&W=0.0% OG= 33.6 @ 60 D.F. CO2=0.4%.	
22:30:00	675.00	44.00	28 Pos				1038.21	322.07	31.83	1689.75	294.82	1029.88	312.53		
23:00:00	672.00	44.00	28 Pos	80.02	1920.38	558.03	1018.32	343.29	31.71	1683.55	326.53	1016.98	333.71	BS&W=0.0% OG= 33.8 @ 60 D.F. CO2=0.3%.	
23:30:00	672.00	44.00	28 Pos				1005.92	364.24	31.83	1689.88	358.36	1005.74	354.67		
01-Oct-92															
00:00:00	671.00	44.00	28 Pos	70.43	1890.34	628.46	1000.98	385.10	32.08	1702.94	390.44	991.84	375.33	BS&W=0.0% OG= 33.7 @ 60 D.F. CO2=0.3%.	
00:30:00	668.00	45.00	28 Pos				979.35	405.50	31.18	1655.24	421.62	1001.11	396.19	Gas Gravity = 0.730.	
01:00:00	666.00	45.00	28 Pos	75.02	1800.36	703.47	995.71	426.24	31.89	1682.44	453.31	1012.74	417.29	BS&W=0.0% Oil Grav= 33.6 @ 60 D.F.	
01:30:00	664.00	45.00	28 Pos				1006.68	447.22	31.28	1659.82	484.57	1014.50	438.42		
02:00:00	663.00	46.00	28 Pos	74.18	1780.36	777.66	1000.11	468.05	31.14	1652.85	515.71	991.20	459.07	BS&W=0.0% OG= 33.9 @ 60 D.F. CO2=0.3%.	
02:30:00	661.00	46.00	28 Pos				990.80	486.69	30.95	1643.39	546.66	1009.60	480.10		
03:00:00	659.00	46.00	28 Pos	67.51	1620.32	845.17	1024.99	510.05	30.85	1637.43	577.51	1018.51	501.32	BS&W=0.0% Oil Grav= 33.6 @ 60 D.F.	
03:30:00	657.00	46.00	28 Pos				1030.16	531.51	30.67	1628.28	608.18	1041.28	523.02		
04:00:00	656.00	47.00	28 Pos	62.51	1500.30	907.68	1027.72	552.92	30.71	1630.81	638.90	1045.93	544.81	BS&W=0.0% OG= 33.8 @ 60 D.F. CO2=0.2%.	

Halliburton Reservoir Services Surface Test Data

Company: ARCO Alaska, Inc.

Well: Kuvlum #1

DST #1

Date: 30-Sep-1992

Time	Tank And Separator Data							SCAN Data						Comments
	Whp	Wht	Choke	Inc Vol	Rate	Cum Vol	Gas Rate	Cum	Mtr	Oil Rate	Mtr	Gas Rate	Cum	
	(psig)	(deg F)	(64ths)	(bbls)	(bbl/day)	(bbls)	Total (mcsf/day)	Gas (mcsf)	Corr Vol (bbls)	(1.106) (bbl/day)	Prod Vol (bbls)	Total (mcsf/day)	Gas (mcsf)	
30-Sep-92														Page No. 3.1.2
13:30:00	519.00	39.00	28 Adj	10.42	1000.20	45.84								BS&W=0.01% Solids 27% H2O and Diesel.
13:45:00	592.00	39.00	28 Adj	2.92	280.06	48.76								Oil At Surface.
14:00:00	611.00	41.00	28 Adj	0.42	40.01	49.18								Gas At Surface Divert To Lo Stage.
14:15:00	665.00	38.00	28 Adj	2.50	240.05	51.68	178.57	1.86						BS&W=1.0% H2O.
14:30:00	691.00	38.00	28 Adj	0.83	80.02	52.51	N/A							BS&W=1.0% H2O.
14:45:00	751.00	38.00	28 Adj	0.83	80.02	53.34	N/A							BS&W=0.5% H2O 0.001% Solids.
15:00:00	745.00	37.00	28 Adj	10.42	1000.20	63.76	683.05	6.96				588.06	2.04	BS&W=0.1% H2O 0.001% Solids CO2=0.2%.
15:15:00	784.00	38.00	28 Adj	11.25	1080.22	75.02	683.78	16.10						BS&W=0.75% H2O.
15:30:00	782.00	38.00	28 Adj	9.17	880.18	84.18	661.58	22.99				588.47	14.30	BS&W=0.75% H2O.
15:45:00	780.00	38.00	28 Adj	17.09	1640.33	101.27	665.24	29.92						BS&W=0.25% H2O.
16:00:00	782.00	38.00	28 Adj	6.67	640.13	107.94	745.60	37.69				701.95	28.93	BS&W=0.1% H2O CO2=0.3% Divert To HI Stage
16:15:00	780.00	38.00	28 Adj	0.00	0.00	107.94	785.32	45.87						BS&W=0.2% H2O.
16:30:00	780.00	38.00	28 Adj	0.00	0.00	107.94	768.97	53.88				775.11	45.07	BS&W=0.0%.
16:45:00	759.00	38.00	28 Adj	0.00	0.00	107.94	1047.53	64.79						BS&W=0.0%.
17:00:00	713.00	38.00	28 Pos	0.42	13.34	108.36	1081.17	76.05				834.13	64.53	BS&W=0.0% OG= 34 @ 60 D.F. CO2=0.2%
17:15:00	705.00	38.00	28 Pos	9.17	880.18	117.52	1093.88	87.44						BS&W=0.1% H2O Lo Stage Meter Freezing Up.
17:30:00	703.00	38.00	28 Pos	25.84	2480.50	143.36	1102.63	98.93				1094.68	87.34	BS&W=0.01%.
17:45:00	701.00	38.00	28 Pos	24.59	2360.48	167.95	1083.45	110.22						BS&W=0.02%. Inject Defoamer Data Header.
18:00:00	699.00	39.00	28 Pos	22.50	2160.43	190.45	1088.68	121.58				1079.40	109.83	BS&W=0.25% OG= 33.3 @ 60 D.F. CO2=0.35%
18:15:00	698.00	39.00	28 Pos	19.17	1840.37	209.63	1077.14	132.78						BS&W=0.1% Gel.
18:30:00	695.00	39.00	28 Pos	19.17	1840.37	228.80	1094.93	144.18	33.93	1801.65	33.93	1073.45	132.19	BS&W=0.1% Gel.
18:45:00	695.00	40.00	28 Pos	20.00	1920.38	248.80	1108.81	155.73						BS&W=0.05% Gel. Gas Gravity = 0.722.

Halliburton Reservoir Services Surface Test Data

Company: ARCO Alaska, Inc.

Well: Kuvlum #1

DST #1

Date: 30-Sep-1992

Time	Tank And Separator Data							SCAN Data						Comments
	Whp	Wht	Choke	Inc Vol	Rate	Cum Vol	Gas Rate	Cum	Mtr	Oil Rate	Mtr	Gas Rate	Cum	
	(psig)	(deg F)	(64ths)	(bbls)	(bbl/day)	(bbls)	Total	Gas	Corr Vol	(1.106)	Prod Vol	Total	Gas	
							(mcf/day)	(mcf)	(bbls)	(bbl/day)	(bbls)	(mcf/day)	(mcf)	
30-Sep-92														Page No. 3.1.1
08:43:15	0.00	21.00	12 Adj											Open Well For Initial Flow(Tank #2).
08:53:15	319.00	20.00	Closed	0.00	0.00	0.00								Close Well In @ LPR-N.
08:54:00	315.37	43.89	Closed											Close Sub Sea Retainer Valve.
09:00:00	0.00	42.01	Closed											Rig Up Wireline w/SRO Gauge & "E" Probe.
09:37:00	329.15	39.68	Closed											Press Up To Open Sub Sea Retainer Valve.
09:43:00	329.40	38.19	Closed											RIH w/Wireline.
10:19:00	332.20	33.57	Closed											Attempt To Latch "E" Probe. Pulls Out @700# Over
10:19:00	332.20	33.57	Closed											Line Wt. Make Five Attempts To Latch "E" Probe.
10:20:00	332.20	33.40	Closed											POOH w/Wireline.
11:12:00	331.70	30.81	Closed											Out Of Hole w/Wireline. Close Sub Sea Retainer.
11:31:00	0.00	34.03	Closed											WL Rigged Down. Open Sub Sea Retainer.
11:40:30	327.00	34.00	12 Adj	0.00	0.00	0.00								Open Well For Test(Tank #2).
12:00:00	321.00	42.00	16 Adj	0.00	0.00	0.00								Divert To Heater. Dirty Diesel Returns.
12:15:00	287.00	38.00	20 Adj	2.50	240.05	2.50								BS&W=0.01% Solids and Diesel Returns.
12:30:00	286.00	38.00	24 Adj	2.50	240.05	5.00								BS&W=0.001% Solids and Diesel Returns.
12:45:00	239.00	39.00	24 Adj	5.83	580.11	10.84								BS&W=0.02% Solids and Diesel Returns.
13:00:00	284.00	38.00	24 Adj	9.59	920.18	20.42								BS&W=0.001% Solids and Diesel Returns.
13:15:00	370.00	39.00	28 Adj	15.00	1440.29	35.42								BS&W=0.001% Solids and Diesel Returns.

Note:

- 1.) Opening Sub Sea Retainer Valve Requires Pressuring Up Tubing Above Retainer.
- 2.) Failed Attempts To Latch "E" Probe Could Be The Result Of Debris From Initial Flow. The Buffer Tube Assembly Still Plugged At Surface.
- 3.) Possible Failure Of LPR-N Invalidates Initial Flow And Buildup.

An example of the break-even oil rate needed to yield paying quantities given an oil price of 17.13 \$/STBO, an incremental well operating cost of 100,000 \$/year/well, and a federal royalty of 12.5% is shown below.

$$\begin{aligned}\text{Break-even Oil Rate} &= \frac{\text{Incremental Well Operating Cost}(\$/\text{Year}/\text{Well})}{\text{Oil Price}(\$/\text{STBO}) * (1 - \text{Royalty \%}) * 365(\text{Days}/\text{Year})} \\ &= \frac{100,000(\$/\text{Year}/\text{Well})}{(17.13(\$/\text{STBO}) * (1 - .125) * 365(\text{Days}/\text{Year}))} \\ &= 18.3 \text{ STBO}/\text{Day}/\text{Well}\end{aligned}$$

The break-even oil rate of 18.3 STBO/Day/Well from the above example corresponds to the minimum 1993 oil price estimate of 17.13 \$/STBO from the State of Alaska ANS price projection. This calculation is before federal income taxes (BFIT).

The break-even oil rate requirement to achieve economic returns in excess of operating costs was determined for a wide range of oil prices. The break-even oil rate as a function of oil price is shown in attachment 5. For the State of Alaska's 1993 range of oil price projections, the break-even oil rate to achieve economic returns is approximately 18 STBO/Day/Well. In a lower oil price scenario of 10 \$/STB, it can be seen that oil rates greater than 31 STBO/Day/Well provide returns in excess of operating costs. For a higher oil price scenario of 25 \$/STB, oil rates greater than 13 STBO/Day/Well provide returns in excess of operating costs.

Conclusion:

Based on the above calculations, the break-even oil rate required to achieve economic returns in excess of well operating costs and therefore achieve paying quantities ranges from 13-31 STBO/Day/Well. The drill stem testing of the Kuvlum #1 well demonstrated oil rate productivity up to 3550 STBO/Day. The Kuvlum #1 well therefore meets the MMS requirements of being capable of producing in paying quantities.

Production Operations:

A typical production completion for a Kuvlum well would consist of drilling through the productive sand interval and cementing production casing in place. The well would then be perforated through casing. The completion would consist of production tubing with gas lift mandrels, a production packer, and subsurface safety valve. The well would be manifolded to allow for gas lift operation as needed. Fluid production of a typical Kuvlum well would be by either natural flow or gas lift assisted flow. Replication of Kuvlum #1 testing parameters of wellhead pressure, tubing size, reservoir pressure drawdown, and oil production rate would be easily attainable in a continuous field production operation.

Incremental Well Operating Costs:

The incremental operating costs of a well are assumed to be those costs directly related to the operation of a given well such as chemical usage, metering, maintenance, and routine wireline work. Incremental well operating costs do not include a prorated share of the processing facility, drillsite or platform operating and maintenance costs.

Average incremental well cost for a typical Kuvlum well is estimated to be approximately 100,000 \$/Well/Year. This estimate is based on a study of routine Kuparuk River Field incremental well operating costs exclusive of significant remedial repair work. It is assumed that the typical Kuvlum well would be burdened by incremental well costs similar to those seen at the Kuparuk River Field.

Break-even Oil Rate to Yield Paying Quantities

The Kuvlum #1 well can be determined to be capable of producing in paying quantities if the production of oil and/or gas in quantities sufficient to yield a return in excess of incremental well operating costs is achieved. In addition, excess returns are considered after the payment of any production royalties. A federal royalty of 12.5% is included in the paying quantities calculation.

The incremental well operating costs and royalty payments described above were used to determine the break-even oil rate required to yield paying quantities for The Kuvlum #1 well. The oil price(s) used in these calculations are based on the West Coast ANS Oil Price Projections contained in the Revenue Source Book (Fall 1992) published by the Department of Natural Resources, State of Alaska. A copy of the pertinent price table is shown in attachment 4.

**Discussion in Support of the Kuvlum #1 Well
(OCS-Y-0866 #1 Well)**

APR 23 1993

Minerals Management Service
Anchorage, Alaska

Paying Quantities

The following discussion provides necessary information required to certify the Kuvlum #1 (OCS-Y-0866 #1) well as capable of producing in paying quantities. This discussion will include a review of tested oil rates from the well, a complete reservoir fluids analysis of the produced oil, a brief discussion of anticipated well production operations, the anticipated incremental well operating costs, and a paying quantities calculation. **It is understood that this information is confidential and should not be released to any 3rd party.**

Tested Oil Rate:

Two separate drill stem tests from the single hydrocarbon bearing perforated interval are available to illustrate the productive capability of the Kuvlum #1 well.

During the final 8 hours of the flow period of **DST #1** (Oct. 1, 0130-0930 hrs), the well flowed at a **stabilized oil rate of 1680 BOPD** of 33.5 Degree API oil with flowing tubing pressure of 652 psig. The detailed well production report for DST #1 is included as attachment 1.

During the final 3 hour flow period of **DST #2** (Oct. 4, 0200-0500 hrs) the well flowed at a **stabilized oil rate of 3550 BOPD** with flowing tubing pressure of 300 psig. The detailed well production report for DST #2 is included as attachment 2.

This information, along with additional test information, is available in the report entitled "Kuvlum #1, September 30 - October 4, 1992, Drill Stem Test" prepared by Halliburton Reservoir Services of which two (2) copies were previously sent to your office. Mr. Jim Regg of your office was present to witness testing of the Kuvlum #1 well.

Reservoir Fluid Analysis:

Attachment 3 is a standard reservoir fluid study of the Kuvlum #1 well prepared by Core Laboratories. For security purposes, the Kuvlum #1 well name was not referenced in the reservoir fluid analysis report. The laboratory measured oil gravity of 34.2 Degree API confirms the field oil gravity measurements and indicates that the produced oil is of high quality.

ARCO Alaska Inc.

Kuvlum #1

(OCS-Y-0866 #1 Well)

**Determination of Well as
Capable of Producing
in Paying Quantities**

Received
OCS District Office

APR 23 1993
Minerals Management Service
Anchorage, Alaska

ATTACHMENT

**Union Texas Petroleum Alaska Corporation
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Houston, TX 77056**

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**Mobil Exploration & Producing U.S. Inc.
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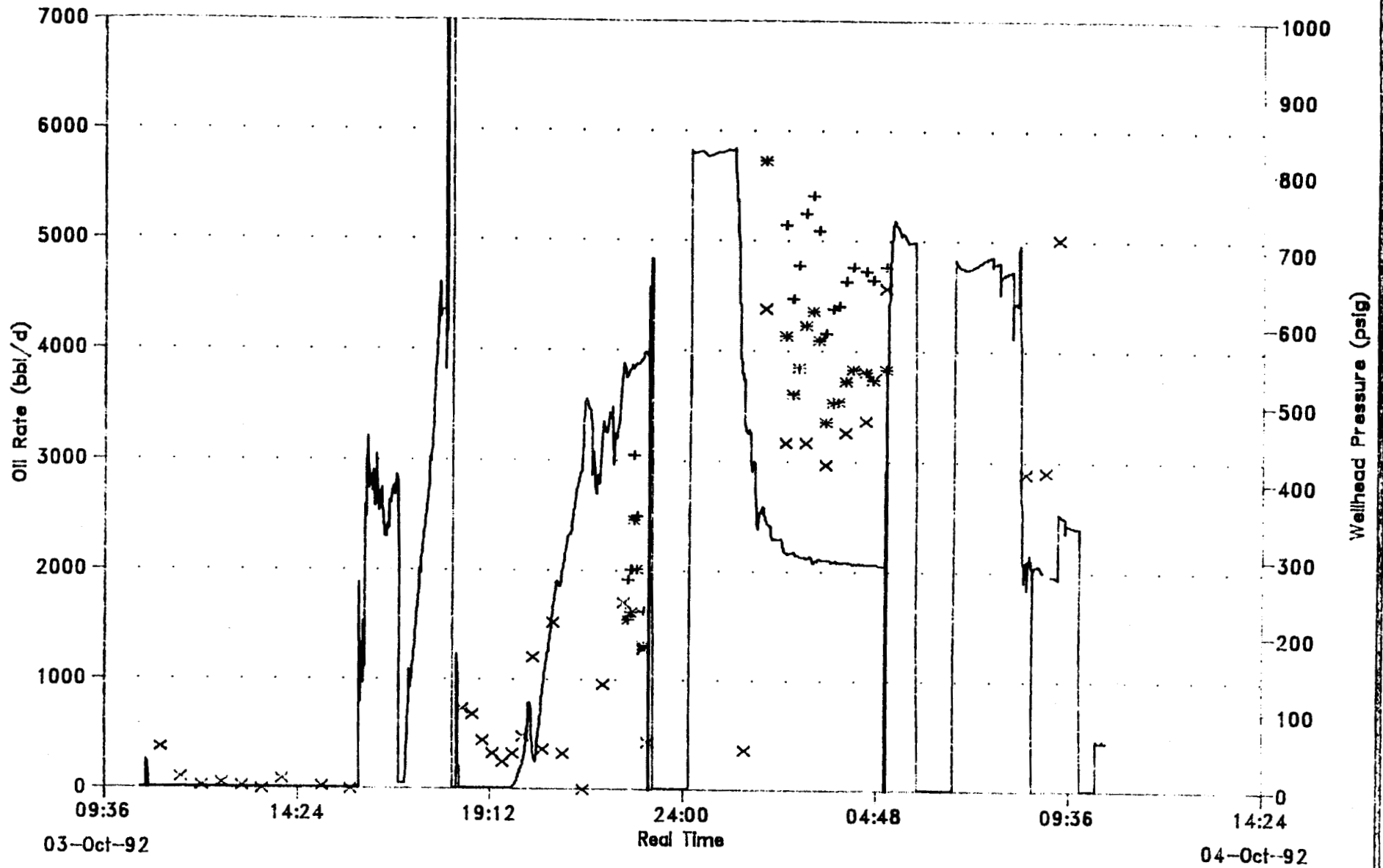
**Phillips Petroleum Company
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**Murphy Oil USA, Inc.
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Received
OCS District Office
APR 23 1993
Minerals Management Service
Anchorage, Alaska

Halliburton Reservoir Services

Wellhead Press & Oil Rates VS Real Time



-- Wellhead + Raw SCAN Oil Rate * Corr SCAN Oil Rate x Tank Oil Rate