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PROJECT RULISON - SITE EVALUATION**PRE-SHOT R-EX WELL TEST DATA**

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**AUSTRAL OIL COMPANY INCORPORATED
CER GEONUCLEAR CORPORATION**

Contract No. AT-(26-1)-429 between the United States of America acting jointly through the Atomic Energy Commission and the Department of Interior and the Austral Oil Company Incorporated and CER Geonuclear Corporation, Program Manager.

October 20, 1969

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PROJECT RULISON - SITE EVALUATION

PRE-SHOT R-EX WELL TEST DATA

INTRODUCTION

The technical objective of Project Rulison is to determine whether nuclear stimulation has potential as a commercial completion technique in the low productivity, deep thick, gas bearing Mesaverde formation in the Rulison Field.

Project Rulison is expected to provide additional data to evaluate the economic feasibility of nuclear stimulation. The technical data on the reservoir performance, before and after the shot, are needed to evaluate the feasibility of nuclear stimulation as a commercial method of unlocking the tremendous reserves of natural gas in the Mesaverde formation. Other information to be gained includes the effect of increased temperature and pressure on the device performance at the greater depths encountered in the Rulison area, the amount of radioactivity contained in the gas, and the seismic and structural response in the area.

This report covers the pre-shot testing of the exploratory well, R-EX (Hayward 25-95), which is in close proximity to the emplacement well. (Figure 1)

Core data and well logs from R-EX have already been placed in the open file and hence will not be included in this report. The results of the hydrologic testing of the well have been reported in the open file literature by the USGS⁽¹⁾.

R-EX WELL HISTORY

Detailed drilling, completion and testing summaries are included in the appendix, but for completeness, a brief outline of the drilling, completion and testing procedures are included here.

R-EX was spudded November 9, 1967 in the SW-1/4, Section 25, T-7S, R-95W, Garfield County, Colorado. The well was drilled to a TD of 8516, 7-5/8 intermediate casing was set at 6367 and a 5-1/2 liner set at 8514. (See Figure 2)

Eleven conventional cores were taken, six in the Wasatch and five in the Mesaverde formations. Fourteen side wall cores were taken, of which twelve were recovered. DST's and flow tests were conducted at selected intervals. Details of each of the tests are covered in the hydrologic report and in the completion summaries.

- (1) Voegeli, P. T., Geology and Hydrology of the Project Rulison Exploratory Hole, Garfield County, Colorado, USGS Open File Report 474-16, April 4, 1969.

The Mesaverde formation was perforated in four selected intervals from 7302 to 8464. Individual tests were run in each interval and flow tests and buildup tests over the entire gross section. Results of these tests indicated severe formation damage was present throughout the interval. During September 1968, three separate temperature surveys were run. The data are included in the appendix.

In order to determine true formation characteristics from flow and build-up tests, a typical interval (8140' - 8172') was isolated and given a small volume fracture treatment so that the true reservoir properties beyond the damage radius could be evaluated. The fracture treatment consisted of 5,500# 20/40 mesh sand and 5,500# glass beads. The treatment record is included in the appendix.

After completion of the fracturing treatment on 10/05/68, the well was flowed until 10/11/68 to allow it to clean up. The well was shut-in from 10/11/68 to 10/16/68 for buildup prior to testing. From 10/16/68 to 10/23/68 attempts were made to test the well but equipment failures negated this effort. On 10/23/68 Flow Test No. 1 was started but was terminated on 10/29/68 due to wellbore mechanical problems.

The well was shut-in for Buildup No. 1 from 10/29/68 to 11/14/68, at which time the well was blown down to change out the tubing and install the tree. A leak around the pipe rams on the BOP's had occurred after about 360 hours of the buildup and the leak had continued for the remainder of the buildup test. The bottom hole pressures were obtained using a Ball Brothers Pressure Sentry MK-9P, 0-3000 psi element, landed at 8000' KBM. Figure 3 is a schematic diagram of the surface testing and production equipment.

The pressure- rate -time data for Drawdown and Buildup Test No. 1 are presented in Tables I and II, and Figures 4 and 5 in the appendix.

Due to mechanical problems occurring during the test period and also because the duration of the test was not sufficient to allow evaluation of the true formation characteristics a second flow period and buildup period was necessary.

The well was shut-in from 11/14/68 to 12/12/68, at which time Flow Test No. 2 was initiated as a constant rate drawdown test at an average rate of 32.6 MCF/D. The Ball Brothers surface recording bottom hole pressure gauge, was used along with a Deadweight surface pressure measurement. The flow test was terminated on January 9, 1969 and Buildup No. 2 was recorded from January 9 to March 15, 1969. The data for Drawdown and Buildup Test No. 2 are found in Table III and IV and Figures 6 and 7.

LOCATION R-E AND R-EX

FIGURE 1

R-EX
(HAYWARD 25-95)

SCHEMATIC DIAGRAM

FIGURE 2

FIGURE 3

TABLE I

Pressure Drawdown Data
Flow Test No. 1

Hayward 25-95 (R-EX)
Rulison Field
Mesaverde Formation
Interval Tested 8148-8172
10/23/68 to 10/29/68

<u>Date</u>	<u>Time</u>	<u>ΔT</u> (Hrs)	<u>Bottom</u> <u>Hole</u> <u>Pressure</u> (psia)	<u>Casing</u> <u>Pressure</u> (psig)	<u>Tubing</u> <u>Pressure</u> (psig)	<u>Flow</u> <u>Rate</u> (mcf/d)	<u>Cum.</u> <u>Liquid</u> <u>Production</u> (Bbls)
10/23/68	9:00 am	0	-	-	-	1500	-
NOTE: 9:00 - Blew well to clean out H ₂ O - Reduce pressure to run pressure sentry 11:00 to 11:40 Ran MK 9P Sentry to 8000' KB							
	11:40	2.6	765			0	
11:40 to 12:30 Shut well in to connect control unit and separator.							
	12:00	3.0	1011			0	
	12:30	3.5	1303			0	
	1:10 pm	4.16				1500	
	1:20	4.3	1204		690	1500	
	1:30	4.5	1005		500	1500	
	1:45	4.75	747		300	1500	
	2:00	5.0	536			1500	
	2:15	5.25	642	1240	240	186	9
	2:20	5.37	647			186	
	2:45	5.75	677			186	
	3:00	6.0	712			186	
	4:00	7.0	776		260	186	
	5:00	8.0	818		300	186	
	6:00	9.0	841		340	186	
	7:00	10.0	853		360	186	
	8:00	11.0		1240	370	187	14
	9:00	12.0	829		370	186	
	10:00	13.0	800	1240	365	187	
	11:00	14.0	794		360	186	
	12:00	15.0	765		340	187	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psia)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
10/24/68	1:00 am	16.0	741		320	187	
	2:00	17.0	712		300	187	
	3:00	18.0	683		260	187	
	4:00	19.0	642		220	187	
	5:00	20.0	607		190	187	
	6:00	21.0	571		150	187	
	7:00	22.0	528		110	187	
	8:00	23.0	507	1240	70	187	(Heading Water)
	9:00	24.0	671		50	154	19
	10:00	25.0	642	1230	240	187	
	11:00	26.0	580	1210	180	186	
	12:00	27.0	528	1220	120	186	
10/24/68	1:00 pm	28.0	483	1240	70	186	21
	2:00	29.0	525		60	153	(Well Loading Up)
	3:00	30.0	525		60	153	
	4:00	31.0	466		30	193	
	5:00	32.0	548		10	188	(Installed $\frac{1}{2}$ " Plate)
	6:00	33.0	545	1240	95	145	25
	7:00	34.0	557		90	138	(Installed $\frac{3}{4}$ " Plate)
	8:00	35.0	571		90	139	
	9:00	36.0	560		93	143	(Installed $\frac{1}{4}$ " Plate)
	10:00	37.0	557		94	144	
	11:00	38.0	548		94	144	
	12:00	39.0	542		94	144	
10/25/68	1:00 am	40.0	536		92	141	
	2:00	41.0	536		90	138	
	3:00	42.0	531		89	137	
	4:00	43.0	528		89	137	
	5:00	44.0	528		87	135	
	6:00	45.0	531		87	135	
	7:00	46.0	531		86	133	
	8:00	47.0	531		86	133	
	9:00	48.0	531	1230	86	133	30
	10:00	49.0	531		85	132	
	11:00	50.0	571		110	119	
	12:00	51.0	595	1235	140	119	
	1:00 pm	52.0	601	1240	160	119	31
	2:00	53.0	645		180	119	
	3:00	54.0	665		200	119	
	4:00	55.0	683		220	119	
	5:00	56.0	692		230	119	
	6:00	57.0	695		230	119	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psia)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
10/25/68	7:00	58.0	698		230	119	
	8:00	59.0	698		230	119	
	9:00	60.0	695		225	120	
	10:00	61.0	695		220	119	
	11:00	62.0	692		210	120	
	12:00	63.0			205	120	
10/26/68	1:00 am	64.0	689		200	120	
	2:00	65.0			195	120	
	3:00	66.0	683		190	120	
	4:00	67.0			185	120	
	5:00	68.0	680		180	120	
	6:00	69.0	674		180	119	
	7:00	70.0	671		180	119	35
	8:00	71.0	665	1240	175	119	
	9:00	72.0			170	120	
	10:00	73.0			170	120	
	11:00	74.0		1240	170	119	
	12:00	75.0	668		170	119	
10/26/68	1:00 pm	76.0	671		170	119	
	2:00	77.0			170	119	
	3:00	78.0			170	119	
	4:00	79.0			170	119	
	5:00	80.0			170	119	
	6:00	81.0	665		165	119	
	7:00	82.0	647		160	119	
	8:00	83.0	642		155	119	
	9:00	84.0	639		140	119	
	10:00	85.0	618		130	119	
	11:00	86.0			125	121	
	12:00	87.0	595		120	121	
10/27/68 MDT	1:00 am	88.0	589		110	121	
	" 1:00 am	89.0	577		100	121	
	2:00	90.0	565		95	121	
	3:00	91.0	557		90	121	
	4:00	92.0	548		85	121	
	5:00	93.0	542		80	121	
	6:00	94.0			75	118	
	7:00	95.0	545	1240	70	111	
	8:00	96.0	548		70	113	42
	9:00	97.0	554		70	114	
	10:00	98.0			75	118	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psia)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
10/27/68	11:00	99.0			75	119	
	12:00	100.0			75	120	
	1:00 pm	101.0	560		75	118	43
	2:00	102.0			76	119	
	3:00	103.0			76	118	
	4:00	104.0	554		77	120	
	5:00	105.0	548		73	114	
	6:00	106.0			73	115	
	7:00	107.0	545		72	113	
	8:00	108.0	542		71	112	
	9:00	109.0			70	111	
	10:00	110.0	536		71	113	
	11:00	111.0			72	114	
	12:00	112.0			69	110	
10/28/68	1:00 am	113.0	533		70	111	
	2:00	114.0	536		69	110	
	3:00	115.0			69	110	
	4:00	116.0			69	110	
	5:00	117.0			68	108	
	6:00	118.0			68	108	
	7:00	119.0			69	110	
	8:00	120.0	536		68	108	46
	9:00	121.0		1240	68	109	
	10:00	122.0			71	112	
10/28/68	11:00 am	123.0	539		71	111	
	12:00	124.0			72	113	47
	1:00 pm	125.0	545		71	111	
	2:00	126.0	548		72	112	
	3:00	127.0			73	113	
	4:00	128.0			72	112	
	5:00	129.0	545		73	114	
	6:00	130.0			69	109	
	7:00	131.0			68	108	
	8:00	132.0			67	107	
	9:00	133.0			68	108	
	10:00	134.0	548		66	106	
	11:00	135.0			66	106	
	12:00	136.0			67	107	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psia)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
10/29/68	1:00 am	137.0			66	106	
	2:00	138.0			66	106	
	3:00	139.0			67	107	
	4:00	140.0			65	105	
	5:00	141.0	545		66	106	
	6:00	142.0			67	107	
	7:00	143.0			64	103	
	8:00	144.0	548		64	103	50
	9:00	145.0		1240	65	104	

Well shut-in for pressure build up at 9:00 am 10/29/68

Bottom hole pressure measured with Ball Brothers Research Corp.
Slim Sentry MK 9P 0-3000 psi element
Serial No. SS 107-30
Sentry landed at 8000' KB

HAYWARD 25 - 95
 DRAWDOWN TEST NO. 1
 10/23/68 TO 10/29/68

FIGURE 4

TABLE II

Pressure Buildup Data
Buildup No. 1

Hayward 25-95 (R-EX)
Rulison Field
Mesaverde Formation
Interval Tested 8148-8172
10/29/68 to 11/14/68

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psia)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
10/29/68	9:00 am	0	548	1245	65
	9:15	.25	653		
	9:30	.50	712		
	9:45	.75	759		
	10:00	1.00	794		265
	10:15	1.25	829		
	10:30	1.50	864		
	10:45	1.75	896		
	11:00	2.0	929		370
	11:30	2.5	969		
	12:00	3.0	1016	1250	460
	12:30	3.5	1063		
	1:00 pm	4.0	1087		535
	1:30	4.5	1122		
	2:00	5.0	1145		585
	3:00	6.0	1198		625
	4:00	7.0	1215		645
	5:00	8.0	1259		655
	6:00	9.0	1297		665
	7:00	10.0	1341		670
	8:00	11.0	1362		675
	9:00	12.0	1391		675
	10:00	13.0	1400		680
	11:00	14.0	1415		685
	12:00	15.0	1429		700
10/30/68	1:00 am	16.0	1441		715
	2:00	17.0	1447		725
	3:00	18.0	1461		745
	4:00	19.0	1482		755
	5:00	20.0	1491		775
	6:00	21.0	1508		790

TABLE II

Date	Time	Δt (Hrs)	Bottom Hole Pressure (psia)	Casing Pressure (psig)	Tubing Pressure (psig)
10/30/68	7:00	22.0	1514		805
	8:00	23.0	1529	1255	825
	9:00	24.0	1532		850
	10:00	25.0	1543		870
	11:00	26.0	1554		890
	12:00	27.0	1567		900
	1:00 pm	28.0	1579		915
	2:00	29.0	1582		930
	3:00	30.0	1599		945
	4:00	31.0	1602		955
	5:00	32.0	1614		965
	6:00	33.0	1625		975
	7:00	34.0			985
	8:00	35.0	1637		995
	9:00	36.0	1649		1010
	10:00	37.0	1655		1020
	11:00	38.0	1667		1030
	12:00	39.0	1672		1040
10/31/68	1:00 am	40.0	1678		1055
	2:00	41.0	1684		1065
	3:00	42.0	1696		1080
	4:00	43.0	1702		1090
	5:00	44.0	1707		1100
	6:00	45.0	1719		1115
	7:00	46.0			1125
	8:00	47.0	1725	1265	1135
	9:00	48.0	1737		1145
	10:00	49.0	1743		
	12:00	51.0	1749		
	1:00 pm	52.0	1755		
	2:00	53.0	1766		
	3:00	54.0	1772		
	5:00	56.0	1778		
	6:00	57.0	1787		
	7:00	58.0	1789		
	8:00	59.0	1795		
	9:00	60.0	1798		
	10:00	61.0	1807		
	11:00	62.0	1813		
	12:00	63.0	1816		

Date	Time	Δt (Hrs)	Bottom Hole Pressure (psia)	Casing Pressure (psig)	Tubing Pressure (psig)
11/1/68	1:00 am	64.0	1819		
	2:00	65.0	1825		
	3:00	66.0	1834		
	4:00	67.0	1836		
	6:00	69.0	1842		
	7:00	70.0	1854		
	8:00	71.0	1857	1275	
	9:00	72.0	1860		
	10:00	73.0	1865		1435
	11:00	74.0			1445
	12:00	75.0	1871		1455
	1:00 pm	76.0			1465
	2:00	77.0	1883		1475
	3:00	78.0			1490
	4:00	79.0	1889		1500
	5:00	80.0	1895		1505
	6:00	81.0	1904		1510
	7:00	82.0	1907		1520
	8:00	83.0	1930		1525
	9:00	84.0	1936		1530
	10:00	85.0	1953		1540
	11:00	86.0	1959		1550
	12:00	87.0	1977		1560
11/2/68	1:00 am	88.0	1983		1570
	2:00	89.0	1995		1575
	3:00	90.0	2000		1580
	4:00	91.0			1585
	5:00	92.0	2006		1590
	6:00	93.0	2012		1595
	7:00	94.0	2024		1600
	8:00	95.0			1605
	9:00	96.0		1290	1610
	10:00	97.0	2029		1620
	11:00	98.0	2041		1625
	12:00	99.0	2047		1630
	1:00 pm	100.0			1635
	2:00	101.0	2053		1640
	3:00	102.0			1645
	4:00	103.0	2059		1645
	5:00	104.0			1645

Date	Time	Δt (Hrs)	Bottom Hole Pressure (psia)	Casing Pressure (psig)	Tubing Pressure (psig)
11/02/68	6:00	105.0	2071		1645
	7:00	106.0			1645
	8:00	107.0	2077		1645
	9:00	108.0			1645
	10:00	109.0	2080		1645
	11:00	110.0	2085		1645
	12:00	111.0	2091		1650
11/3/68	1:00 am	112.0	2094		1655
	2:00	113.0			1655
	3:00	114.0			1660
	4:00	115.0	2103		1665
	5:00	116.0	2106		1665
	6:00	117.0			1670
	7:00	118.0	2111		1670
	8:00	119.0	2117		1675
	9:00	120.0		1310	1675
	10:00	121.0			1685
	11:00	122.0	2123		
	12:00	123.0	2129		
	1:00 pm	124.0	2135		
	2:00	125.0	2138		
	3:00	126.0	2141		
	4:00	127.0			1710
	7:00	130.0	2147		
	8:00	131.0	2153		
	10:00	133.0			1715
	11:00	134.0	2164		
11/4/68	1:00 am	136.0	2170		
	3:00	138.0	2173		
	4:00	139.0	2182		1725
	6:00	141.0	2188		
	9:00	144.0	2193	1335	
	10:00	145.0			1735
	11:00	146.0	2196		
	1:00 pm	148.0	2202		
	2:00	149.0	2205		
	3:00	150.0	2211		
	4:00	151.0			1750
	6:00	153.0	2217		
	9:00	156.0	2229		
	10:00	157.0	2232		1755
	12:00	159.0	2235		

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psia)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
11/5/68	1:00 am	160.0	2238		
	2:00	161.0	2240		
	4:00	163.0			1770
	8:00	167.0	2243		
	9:00	168.0		1360	
	10:00	169.0	2246		1790
	11:00	170.0	2252		
	12:00	171.0	2258		
	3:00 pm	174.0	2261		
	4:00	175.0	2264		1800
	6:00	177.0	2266		
	7:00	178.0	2269		
	8:00	179.0	2272		
	9:00	180.0	2275		
	10:00	181.0	2278		1800
	11:00	182.0	2281		
11/6/68	2:00 am	185.0	2284		
	3:00	186.0	2287		
	4:00	187.0			1815
	8:00	191.0	2393	1380	
	10:00	193.0			1825
	2:00 pm	197.0	2305		
	4:00	199.0			1830
	6:00	201.0	2311		
	9:00	204.0	2317		
	10:00	205.0	2320		1825
11/7/68	1:00 am	208.0	2322		
	3:00	210.0	2325		
	4:00	211.0	2328		1835
	9:00	216.0	2331	1390	
	10:00	217.0	2334		1855
	1:00 pm	220.0	2337		
	2:00	221.0	2340		
	10:00	229.0	2351		1860

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psia)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
11/8/68	3:00 am	234.0	2354		
	4:00	235.0			1860
	6:00	237.0	2357		
	9:00	240.0		1420	
	10:00	241.0			1870
	12:00	243.0	2360		
	1:00 pm	244.0	2363		
	2:00	245.0	2366		
	3:00	246.0	2369		
	4:00	247.0			1880
	7:00	250.0	2372		
	9:00	252.0	2375		
	10:00	253.0			1880
11/9/68	4:00 am	259.0			1890
	8:00	263.0		1490	
	9:00	264.0	2381		
	10:00	265.0	2384		1895
	11:00	266.0	2387		
	4:00 pm	271.0			1900
	10:00	277.0			1895
	11:00	278.0	2387		
11/10/68	4:00 am	283.0			1895
	9:00	288.0		1555	
	10:00	289.0			1895
	11:00	290.0	2381		
	12:00	291.0	2375		
	2:00 pm	293.0	2363		
	3:00	294.0	2357		
	4:00	295.0	2351		1875
	5:00	296.0	2340		
	7:00	298.0	2334		
	9:00	300.0	2328		
	10:00	301.0			1850

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psia)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
11/11/68	2:00 am	305.0	2331		
	4:00	307.0	2334		1855
	7:00	310.0	2337		
	8:00	311.0	2340		
	9:00	312.0		1710	
	10:00	313.0			1875
	12:00	315.0	2351		
	3:00 pm	318.0	2357		
	4:00	319.0	2357		1885
	7:00	322.0	2360		
	8:00	323.0	2366		
	9:00	324.0	2368		
	10:00	325.0	2371		1885
	11:00	326.0	2374		
11/12/68	3:00 am	330.0	2381		
	4:00	331.0			1895
	5:00	332.0	2387		
	8:00	335.0	2396		
	9:00	336.0	2398	1865	1915
	3:00 pm	342.0	2404		
	4:00	343.0			1925
	6:00	345.0	2410		
	7:00	346.0	2413		
	9:00	348.0	2416		
	10:00	349.0			1925
	11:00	350.0	2422		
11/13/68	4:00 am	355.0			1925
	9:00	360.0	2428	1900	1930
	10:00	361.0	2433		
	3:00 pm	366.0	2439		
	4:00	367.0	2445		1940
	10:00	373.0			1940

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psia)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
11/14/68	1:00 am	376.0	2448		
	2:00	377.0	2454		
	3:00	378.0	2457		
	4:00	379.0			1945
	5:00	380.0	2460		
	7:00	382.0	2463		
	9:00	384.0	2466	1920	1940
	10:00	385.0	2469	1920	1940

End Bottom Hole Pressure Build-up at 10:00 AM 11/14/68

Attempted to pull Ball Bros. Pressure Sentry up hole in order to get gradient stops - line immediately froze in stuffing box - Had to blow well down to retrieve Sentry - Blew well down to 60 psi at surface tubing pressure. Recovered 1.5 Bbls liquid. Estimate 75% of liquid to be condensate.

NOTES: At Δt of 360 hrs pipe rams on BOP leaking very slightly - Estimate 0.5 MCF/D leaked slightly throughout remainder of build-up.

Temperature correction made from Ball Bros. curve dated 11/18/68.
Curve made on instrument used in test immediately after build up test was terminated.

FIGURE 5

TABLE III

Pressure Drawdown Data
Flow Test No. 2

Hayward 25-95 (R-EX)
Rulison Field
Mesaverde Formation
Interval Tested 8148-8172
10/23/68 to 10/29/68

<u>Date</u>	<u>Time</u>	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/12/68	1:00 pm	0	2358	635	1880	0	0
	2:00	1.0	2335		1865	34.0	
	2:45	1.75	2322		1860	34.4	
	3:30	2.5	2317		1850	34.4	
	4:30	3.5	2306		1840	42.4	
	5:00	4.0	2302		1835	34.1	
	6:00	5.0	2294		1830	34.1	
	7:00	6.0	2294		1820	34.3	
	8:00	7.0	2282		1815	34.4	
	9:00	8.0	2282		1810	34.4	
	10:00	9.0	2270		1805	34.4	
	11:00	10.0	2259		1800	34.4	
	12:00	11.0	2259		1800	34.5	
12/13/68	1:00 am	12.0	2253		1800	34.2	
	2:00	13.0	2253		1800	34.4	
	3:00	14.0	2247		1795	34.1	
	4:00	15.0	2247		1795	34.1	
	5:00	16.0	2229		1790	33.9	
	6:00	17.0	2235		1785	33.9	
	7:00	18.0	2229		1785	33.9	
	8:00	19.0	2229		1785	33.5	
	9:00	20.0	2229		1790	33.5	
	10:00	21.0	2226		1795	34.6	
	11:00	22.0	2223		1800	34.2	
	12:00	23.0	2223		1805	33.4	
	1:00 pm	24.0	2223	645	1805	32.8	0.1
	2:00	25.0	2223		1805	32.8	

TABLE III

Pressure Drawdown Data
Flow Test No. 2

Hayward 25-95 (R-EX)

Rulison Field

Mesa Verde Formation

Interval Tested 8148-8172

10/23/68 to 10/29/68

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/12/68	1:00 pm	0	2358	635	1880	0	0
	2:00	1.0	2335		1865	34.0	
	2:45	1.75	2322		1860	34.4	
	3:30	2.5	2317		1850	34.4	
	4:30	3.5	2306		1840	42.4	
	5:00	4.0	2302		1835	34.1	
	6:00	5.0	2294		1830	34.1	
	7:00	6.0	2294		1820	34.3	
	8:00	7.0	2282		1815	34.4	
	9:00	8.0	2282		1810	34.4	
	10:00	9.0	2270		1805	34.4	
	11:00	10.0	2259		1800	34.4	
	12:00	11.0	2259		1800	34.5	
12/13/68	1:00 am	12.0	2253	645	1800	34.2	0.1
	2:00	13.0	2253		1800	34.4	
	3:00	14.0	2247		1795	34.1	
	4:00	15.0	2247		1795	34.1	
	5:00	16.0	2229		1790	33.9	
	6:00	17.0	2235		1785	33.9	
	7:00	18.0	2229		1785	33.9	
	8:00	19.0	2229		1785	33.5	
	9:00	20.0	2229		1790	33.5	
	10:00	21.0	2226		1795	34.6	
	11:00	22.0	2223		1800	34.2	
	12:00	23.0	2223		1805	33.4	
	1:00 pm	24.0	2223		1805	32.8	
	2:00	25.0	2223		1805	32.8	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/13/68	3:00	26.0	2206		1800	32.8	
	4:00	27.0	2206		1790	32.9	
	5:00	28.0	2206		1775	32.8	
	6:00	29.0	2200		1770	32.7	
	7:00	30.0	2200		1770	32.9	
	8:00	31.0	2200		1765	32.9	
	9:00	32.0	2200		1765	32.9	
	10:00	33.0	2200		1765	32.8	
	11:00	34.0	2194		1760	32.8	
	12:00	35.0	2194		1760	32.8	
12/14/68	1:00 am	36.0	2182		1755	32.7	
	2:00	37.0	2182		1755	32.7	
	3:00	38.0	2182		1755	32.7	
	4:00	39.0	2182		1755	32.7	
	5:00	40.0	2182		1755	32.8	
	6:00	41.0	2182		1755	32.8	
	7:00	42.0	2182		1750	32.8	
	8:00	43.0	2179		1750	32.8	
	9:00	44.0	2179		1750	32.7	
	10:00	45.0	2179		1755	32.6	
	11:00	46.0	2179	665	1770	32.7	0.1
	12:00	47.0	2179		1770	32.9	
	1:00 pm	48.0	2176		1780	32.7	
	2:00	49.0	2173		1780	33.3	
	3:00	50.0	2171		1775	33.0	
	4:00	51.0	2171		1760	32.8	
	5:00	52.0	2171		1750	33.0	
	6:00	53.0	2171		1740	32.8	
	7:00	54.0	2171		1740	32.6	
	8:00	55.0	2159		1740	32.7	
	9:00	56.0	2159		1740	32.7	
	10:00	57.0	2159		1740	32.7	
	11:00	58.0	2159		1740	32.6	
	12:00	59.0	2159		1735	32.6	
12/15/68	1:00 am	60.0	2153		1735	32.7	
	2:00	61.0	2136		1735	32.6	
	3:00	62.0	2142		1735	32.6	
	4:00	63.0	2142		1730	32.6	
	5:00	64.0	2142		1730	32.2	
	6:00	65.0	2142		1730	32.2	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/15/68	7:00	66.0	2139		1730	32.6	
	8:00	67.0	2139		1730	32.5	
	9:00	68.0	2139		1735	32.5	
	10:00	69.0	2130	675	1735	32.4	0.1
	11:00	70.0	2130		1735	32.4	
	12:00	71.0	2130		1735	32.3	
	1:00 pm	72.0	2130		1740	32.6	
	2:00	73.0	2130		1740	32.5	
	3:00	74.0	2124		1740	32.4	
	4:00	75.0	2121		1730	32.1	
	5:00	76.0	2118		1720	32.3	
	6:00	77.0	2118		1715	32.4	
	7:00	78.0	2118		1715	32.2	
	8:00	79.0	2115		1710	32.2	
	9:00	80.0	2112		1710	32.2	
	10:00	81.0	2112		1710	32.3	
	11:00	82.0	2112		1705	32.3	
	12:00	83.0	2112		1705	32.2	
12/16/69	1:00 am	84.0	2112		1705	32.2	
	2:00	85.0	2106		1705	32.2	
	3:00	86.0	2106		1705	32.2	
	4:00	87.0	2106		1705	32.2	
	5:00	88.0	2106		1705	32.2	
	6:00	89.0	2094		1705	32.2	
	7:00	90.0	2094		1700	32.2	
	8:00	91.0	2094		1700	32.5	
	9:00	92.0	2094		1700	32.4	
	10:00	93.0	2089	690	1700	32.4	0.1
	11:00	94.0	2089			32.2	
	12:00	95.0	2083			32.2	
	1:00 pm	96.0	2083			32.2	
	2:00	97.0	2083			32.1	
	3:00	98.0	2083			32.2	
	4:00	99.0	2077		1685	32.2	
	5:00	100.0	2071			32.3	
	6:00	101.0	2071			32.4	
	7:00	102.0	2065			32.1	
	8:00	103.0	2065			32.2	
	9:00	104.0	2065			32.2	
	10:00	105.0	2060		1665	32.2	
	11:00	106.0	2060			32.2	
	12:00	107.0	2060			32.0	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/17/68	1:00 am	108.0	2060			31.9	
	2:00	109.0	2060			32.1	
	3:00	110.0	2060			32.1	
	4:00	111.0	2060		1650	31.8	
	5:00	112.0	2051			31.8	
	6:00	113.0	2051			31.7	
	7:00	114.0	2048			31.8	
	8:00	115.0	2048			31.8	
	9:00	116.0	2048	700		31.5	0.1
	10:00	117.0	2048		1640	31.5	
	11:00	118.0	2048			31.7	
	12:00	119.0	2048			31.6	
	1:00 pm	120.0	2048			31.5	
	2:00	121.0	2048			31.5	
	3:00	122.0	2048			31.5	
	4:00	123.0	2048		1630	31.5	
	5:00	124.0	2048			31.5	
	6:00	125.0	2048			31.5	
	7:00	126.0	2048			31.6	
	8:00	127.0	2048			31.6	
	9:00	128.0	2045			31.4	
	10:00	129.0	2045		1615	31.4	
	11:00	130.0	2045			31.4	
	12:00	131.0	2045			31.4	
12/18/68	1:00 am	132.0	2042			31.4	
	2:00	133.0	2042			31.1	
	3:00	134.0	2042			31.1	
	4:00	135.0	2042		1595	31.4	
	5:00	136.0	2036			31.4	
	6:00	137.0	2036			31.4	
	7:00	138.0	2036			31.4	
	8:00	139.0	2036			31.4	
	9:00	140.0	2036			31.8	
	10:00	141.0	2036	710	1590	31.8	0.1
	11:00	142.0	2036			32.8	
	12:00	143.0	2036			32.6	
	1:00 pm	144.0	2036			32.9	
	2:00	145.0	2036			32.4	
	3:00	146.0	2036			32.3	
	4:00	147.0	2036		1585	32.3	
	5:00	148.0	2036			32.5	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/18/68	6:00	149.0	2036			32.4	
	7:00	150.0	2036			32.6	
	8:00	151.0	2033			32.7	
	9:00	152.0	2033			32.7	
	10:00	153.0	2030		1560	32.7	
	11:00	154.0	2030			33.1	
	12:00	155.0	2030			32.8	
12/19/68	1:00 am	156.0	2030			32.1	
	2:00	157.0	2030			32.0	
	3:00	158.0	2030			31.6	
	4:00	159.0	2030		1545	31.6	
	5:00	160.0	2027			31.7	
	6:00	161.0	2027			31.7	
	7:00	162.0	2027			31.7	
	8:00	163.0	2027			31.7	
	9:00	164.0	2027			32.0	
	10:00	165.0	2024	725	1535	32.3	0.1
	11:00	166.0	2024			31.9	
	12:00	167.0	2024			31.7	
	1:00 pm	168.0	2018			31.6	
	2:00	169.0	2018			31.7	
	3:00	170.0	2018			31.8	
	4:00	171.0	2018		1525	31.9	
	5:00	172.0	2018			31.9	
	6:00	173.0	2018			31.9	
	7:00	174.0	2018			31.6	
	8:00	175.0	2018			31.7	
	9:00	176.0	2018			31.7	
	10:00	177.0	2012		1510	31.7	
	11:00	178.0	2012			31.7	
	12:00	179.0	2012			31.7	
12/20/68	1:00 am	180.0	2012			31.6	
	2:00	181.0	2012			31.7	
	3:00	182.0	2012		1500	31.4	
	4:00	183.0	2012			31.4	
	5:00	184.0	2012			31.3	
	6:00	185.0	2012			31.3	
	7:00	186.0	2012			31.3	
	8:00	187.0	2012			31.3	
	9:00	188.0	2012			31.3	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/20/68	10:00	189.0	2012	740	1490	31.4	0.1
	11:00	190.0	2012			31.2	
	12:00	191.0	2012			30.9	
	1:00 pm	192.0	2012			30.9	
	2:00	193.0	2012			31.1	
	3:00	194.0	2012			31.1	
	4:00	195.0	2012		1470	31.1	
	5:00	196.0	2012			31.1	
	6:00	197.0	2012			30.9	
	7:00	198.0	2012			30.9	
	8:00	199.0	2012			30.9	
	9:00	200.0	2007			30.9	
	10:00	201.0	2007		1455	30.9	
	11:00	202.0	2007			30.9	
	12:00	203.0	2001			30.9	
12/21/68	1:00 am	204.0	2001	750	1440	30.9	0.1
	2:00	205.0	2001			30.8	
	3:00	206.0	2001			30.8	
	4:00	207.0	2001		1445	30.8	
	5:00	208.0	2001			30.8	
	6:00	209.0	2001			30.8	
	7:00	210.0	1995			30.9	
	8:00	211.0	1995			30.9	
	9:00	212.0	2001			30.9	
	10:00	213.0	2001			30.8	
	11:00	214.0	2001			30.8	
	12:00	215.0	2001			30.7	
	1:00 pm	216.0	2001			30.7	
	2:00	217.0	2001			30.8	
	3:00	218.0	2001			30.8	
	4:00	219.0	1995		1430	30.8	
	5:00	220.0	1995			30.8	
	6:00	221.0	1989			30.8	
	7:00	222.0	1995			30.8	
	8:00	223.0	1995			30.8	
	9:00	224.0	1995			30.8	
	10:00	225.0	1995		1415	30.8	
	11:00	226.0	1995			30.8	
	12:00	227.0	1995			30.8	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/22/68	1:00 am	228.0	1995			30.8	
	2:00	229.0	1995			30.9	
	3:00	230.0	1995			30.6	
	4:00	231.0	1995		1405	30.6	
	5:00	232.0	1995			30.6	
	6:00	233.0	1989			30.7	
	7:00	234.0	1989			30.8	
	8:00	235.0	1989			30.9	
	9:00	236.0	1989			30.9	
	10:00	237.0	1989	760	1400	30.9	0.1
	11:00	238.0	1989			32.3	
	12:00	239.0	1989			32.8	
	1:00 pm	240.0	1989			33.0	
	2:00	241.0	1989			32.2	
	3:00	242.0	1989			31.9	
	4:00	243.0	1989		1395	31.2	
	5:00	244.0	1989			31.1	
	6:00	245.0	1989			30.8	
	7:00	246.0	1989			30.9	
	8:00	247.0	1989			30.7	
	9:00	248.0	1989			30.3	
	10:00	249.0	1989		1380	30.3	
	11:00	250.0	1989			30.2	
	12:00	251.0	1989			30.2	
12/23/68	1:00 am	252.0	1989			30.1	
	2:00	253.0	1989			29.8	
	3:00	254.0	1989			29.8	
	4:00	255.0	1989		1370	29.4	
	5:00	256.0	1989			29.4	
	6:00	257.0	1989			29.1	
	7:00	258.0	1989			29.1	
	8:00	259.0	1989			29.0	
	9:00	260.0	1989			29.0	
	10:00	261.0	1989	770	1365	28.9	0.1
	11:00	262.0	1989			32.4	
	12:00	263.0	1984			33.0	
	1:00 pm	264.0	1984			32.7	
	2:00	265.0	1984			32.7	
	3:00	266.0	1984			32.4	
	4:00	267.0	1984		1345	32.4	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/23/68	5:00	268.0	1984			32.5	
	6:00	269.0	1984			32.2	
	7:00	270.0	1984			32.2	
	8:00	271.0	1984			32.2	
	9:00	272.0	1984			32.2	
	10:00	273.0	1984		1330	32.2	
	11:00	274.0	1984			31.9	
	12:00	275.0	1984			32.1	
12/24/68	1:00 am	276.0	1978			32.1	
	2:00	277.0	1972			32.1	
	3:00	278.0	1972			31.8	
	4:00	279.0	1972		1315	31.7	
	5:00	280.0	1972			31.3	
	6:00	281.0	1972			31.3	
	7:00	282.0	1972			31.3	
	8:00	283.0	1972			31.2	
	9:00	284.0	1972			31.1	
	10:00	285.0	1972	780	1310	31.1	0.1
	11:00	286.0	1972			31.2	
	12:00	287.0	1972			32.3	
	1:00 pm	288.0	1972			32.6	
	2:00	289.0	1966			32.7	
	3:00	290.0	1966			32.8	
	4:00	291.0	1966		1290	32.7	
	5:00	292.0	1966			32.7	
	6:00	293.0	1966			32.6	
	7:00	294.0	1966			32.7	
	8:00	295.0	1966			32.8	
	9:00	296.0	1966			33.1	
	10:00	297.0	1966		1270	33.5	
	11:00	298.0	1966			33.5	
	12:00	299.0	1966			33.5	
12/25/68	1:00 am	300.0	1966			33.4	
	2:00	301.0	1966			33.4	
	3:00	302.0	1951			33.4	
	4:00	303.0	1951		1255	33.4	
	5:00	304.0	1951			33.4	
	6:00	305.0	1954			33.4	
	7:00	306.0	1954			33.3	
	8:00	307.0	1954			33.0	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/25/68	9:00	308.0	1954			32.9	
	10:00	309.0	1954	790	1240	32.9	0.1
	11:00	310.0	1954			32.8	
	12:00	311.0	1954			32.4	
	1:00 pm	312.0	1948			32.4	
	2:00	313.0	1948			32.4	
	3:00	314.0	1948			32.4	
	4:00	315.0	1948		1220	32.0	
	5:00	316.0	1948			32.0	
	6:00	317.0	1954			32.1	
	7:00	318.0	1954			32.2	
	8:00	319.0	1954			31.8	
	9:00	320.0	1954			31.8	
	10:00	321.0	1954		1205	31.9	
	11:00	322.0	1954			31.9	
	12:00	323.0	1954			31.9	
12/26/68	1:00 am	324.0	1954			31.9	
	2:00	325.0	1954			31.8	
	3:00	326.0	1954			31.8	
	4:00	327.0	1954		1200	31.8	
	5:00	328.0	1954			31.8	
	6:00	329.0	1948			31.9	
	7:00	330.0	1942			31.9	
	8:00	331.0	1942			31.8	
	9:00	332.0	1942			31.9	
	10:00	333.0	1942	800	1190	31.9	0.1
	11:00	334.0	1942			32.7	
	12:00	335.0	1942			32.7	
	1:00 pm	336.0	1942			32.4	
	2:00	337.0	1942			31.8	
	3:00	338.0	1942			31.6	
	4:00	339.0	1942		1170	31.3	
	5:00	340.0	1942			31.5	
	6:00	341.0	1942			31.5	
	7:00	342.0	1942			31.3	
	8:00	343.0	1942			31.3	
	9:00	344.0	1942			31.2	
	10:00	345.0	1942		1160	31.2	
	11:00	346.0	1942			31.4	
	12:00	347.0	1942			31.6	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/27/68	1:00 am	348.0	1942			31.6	
	2:00	349.0	1942			31.4	
	3:00	350.0	1942			31.4	
	4:00	351.0	1942		1150	31.0	
	5:00	352.0	1942			30.9	
	6:00	353.0	1942			30.9	
	7:00	354.0	1942			31.1	
	8:00	355.0	1942			31.1	
	9:00	356.0	1942			31.1	
	10:00	357.0	1942	810	1140	31.2	
	11:00	358.0	1942			31.5	
	12:00	359.0	1942			31.7	
	1:00 pm	360.0	1942			31.5	
	2:00	361.0	1942			31.2	
	3:00	362.0	1942			31.3	
	4:00	363.0	1942		1135	31.4	
	5:00	364.0	1942			31.3	
	6:00	365.0	1942			31.4	
	7:00	366.0	1942			31.4	
	8:00	367.0	1942			31.5	
	9:00	368.0	1942			31.4	
	10:00	369.0	1942		1115	31.4	
	11:00	370.0	1942			31.8	
	12:00	371.0	1936			31.8	
12/28/68	1:00 am	372.0	1936			32.1	
	2:00	373.0	1936			31.7	
	3:00	374.0	1936			31.3	
	4:00	375.0	1936		1110	31.0	
	5:00	376.0	1936			30.9	
	6:00	377.0	1936			31.0	
	7:00	378.0	1936			31.0	
	8:00	379.0	1936			31.1	
	9:00	380.0	1936			31.0	
	10:00	381.0	1936	815	1100	30.9	0.1
	11:00	382.0	1936			30.9	
	12:00	383.0	1936			31.3	
	1:00 pm	384.0	1936			31.2	
	2:00	385.0	1936			31.1	
	3:00	386.0	1936			31.1	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/28/68	4:00	387.0	1936		1085	31.1	
	5:00	388.0	1931			31.2	
	6:00	389.0	1931			31.3	
	7:00	390.0	1931			31.3	
	8:00	391.0	1931			31.3	
	9:00	392.0	1931			31.3	
	10:00	393.0	1931		1070	31.3	
	11:00	394.0	1931			31.3	
	12:00	395.0	1931			31.4	
12/29/68	1:00 am	396.0	1931			31.1	
	2:00	397.0	1925			31.1	
	3:00	398.0	1925			31.1	
	4:00	399.0	1925		1060	30.7	
	5:00	400.0	1925			30.7	
	6:00	401.0	1925			30.7	
	7:00	402.0	1925			30.7	
	8:00	403.0	1925			30.6	
	9:00	404.0	1925			31.0	
	10:00	405.0	1925	825	1050	30.9	0.1
	11:00	406.0	1925			30.9	
	12:00	407.0	1919			30.9	
	1:00 pm	408.0	1919			31.2	
	2:00	409.0	1925			32.3	
	3:00	410.0	1925			32.6	
	4:00	411.0	1925		1030	32.3	
	5:00	412.0	1925			32.3	
	6:00	413.0	1919			32.1	
	7:00	414.0	1919			32.1	
	8:00	415.0	1919			32.1	
	9:00	416.0	1919			33.1	
	10:00	417.0	1919		1010	34.5	
	11:00	418.0	1919			34.4	
	12:00	419.0	1919			34.1	
12/30/68	1:00 am	420.0	1890			33.4	
	2:00	421.0	1896			33.5	
	3:00	422.0	1896			33.3	
	4:00	423.0	1896		960	33.1	
	5:00	424.0	1896			33.0	
	6:00	425.0	1890			32.8	
	7:00	426.0	1890			32.9	
	8:00	427.0	1890			33.0	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
12/30/68	9:00	428.0	1890			33.0	
	10:00	429.0	1890	830	925	33.0	0.1
	11:00	430.0	1890			33.3	
	12:00	431.0	1890			33.0	
	1:00 pm	432.0	1890			32.7	
	2:00	433.0	1890			32.4	
	3:00	434.0	1890			32.1	
	4:00	435.0	1890		925	32.1	
	5:00	436.0	1890			31.7	
	6:00	437.0	1890			31.4	
	7:00	438.0	1890			31.5	
	8:00	439.0	1890			31.5	
	9:00	440.0	1890			31.4	
	10:00	441.0	1890		915	31.4	
	11:00	442.0	1890			31.4	
	12:00	443.0	1890			31.3	
12/31/68	1:00 am	444.0	1890			31.3	
	2:00	445.0	1890			31.4	
	3:00	446.0	1890			31.4	
	4:00	447.0	1890		905	31.1	
	5:00	448.0	1890			31.1	
	6:00	449.0	1890			31.1	
	7:00	450.0	1890			31.1	
	8:00	451.0	1890			31.1	
	9:00	452.0	1890			31.0	
	10:00	453.0	1890	840	900	31.0	0.1
	11:00	454.0	1890			31.3	
	12:00	455.0	1890			31.1	
	1:00 pm	456.0	1890			31.3	
	2:00	457.0	1890			31.5	
	3:00	458.0	1890			31.1	
	4:00	459.0	1890		895	32.0	
	5:00	460.0	1890			33.1	
	6:00	461.0	1890			34.5	
	7:00	462.0	1890			38.8	
	8:00	463.0	1878			38.8	
	9:00	464.0	1878			38.8	
	10:00	465.0	1878		840	38.8	
	11:00	466.0	1872			38.8	
	12:00	467.0	1872			38.8	

Instrument Line
Frozen

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
1/01/69	1:00 am	468.0	1872			38.8	0.1
	2:00	469.0	1872			38.8	
	3:00	470.0	1854			38.8	
	4:00	471.0	1860		810	38.8	
	5:00	472.0	1872			38.8	
	6:00	473.0	1872			38.8	
	7:00	474.0	1872			38.8	
	8:00	475.0	1860			38.8	
	9:00	476.0	1854			38.8	
	10:00	477.0	1854	845	785	38.8	
	11:00	478.0	1872			32.9	
	12:00	479.0	1872			32.7	
	1:00 pm	480.0	1872			32.7	
	2:00	481.0	1872			32.7	
	3:00	482.0	1872			32.7	
	4:00	483.0	1872		780	32.7	
	5:00	484.0	1872			32.8	
	6:00	485.0	1872			33.0	
	7:00	486.0	1872			33.1	
	8:00	487.0	1872			33.1	
	9:00	488.0	1872			33.2	
	10:00	489.0	1878		790	33.2	
	11:00	490.0	1872			33.2	
	12:00	491.0	1872			33.2	
1/02/69	1:00 am	492.0	1872			33.2	0.1
	2:00	493.0	1875			33.2	
	3:00	494.0	1875			33.2	
	4:00	495.0	1875		750	33.3	
	5:00	496.0	1872			33.3	
	6:00	497.0	1872			33.2	
	7:00	498.0	1872			33.2	
	8:00	499.0	1872			33.1	
	9:00	500.0	1872			33.1	
	10:00	501.0	1872	850	740	33.1	
	11:00	502.0	1872			33.1	
	12:00	503.0	1872			33.0	
	1:00 pm	504.0	1872			33.0	
	2:00	505.0	1872			32.8	
	3:00	506.0	1872			32.7	
	4:00	507.0	1872		725	32.5	

Instrument Line
Frozen

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
1/02/69	5:00	508.0	1872			32.6	
	6:00	509.0	1872			32.6	
	7:00	510.0	1872			32.7	
	8:00	511.0	1872			32.8	
	9:00	512.0	1872			32.8	
	10:00	513.0	1872		715	33.0	
	11:00	514.0	1872			33.1	
	12:00	515.0	1872			33.1	
1/03/69	1:00 am	516.0	1872			33.2	
	2:00	517.0	1872			33.2	
	3:00	518.0	1872			33.2	
	4:00	519.0	1872		690	32.9	
	5:00	520.0	1872			33.0	
	6:00	521.0	1872			33.1	
	7:00	522.0	1872			33.1	
	8:00	523.0	1854			33.1	
	9:00	524.0	1854			33.1	
	10:00	525.0	1854	855	675	33.1	0.1
	11:00	526.0	1854			32.9	
	12:00	527.0	1872			32.9	
	1:00 pm	528.0	1872			33.1	
	2:00	529.0	1872			33.1	
	3:00	530.0	1860			33.1	
	4:00	531.0	1860		665	32.7	
	5:00	532.0	1860			32.5	
	6:00	533.0	1866			32.8	
	7:00	534.0	1866			33.3	
	8:00	535.0	1860			33.5	
	9:00	536.0	1860			33.6	
	10:00	537.0	1860		640	33.7	
	11:00	538.0	1860			33.7	
	12:00	539.0	1860			33.7	
1/04/69	1:00 am	540.0	1854			33.7	
	2:00	541.0	1854			33.7	
	3:00	542.0	1854			33.7	
	4:00	543.0	1854		620	33.7	
	5:00	544.0	1854			33.7	
	6:00	545.0	1854			33.6	
	7:00	546.0	1854			33.5	
	8:00	547.0	1854			33.1	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
1/04/69	9:00	548.0	1854			32.9	
	10:00	549.0	1854	860	605	32.8	0.1
	11:00	550.0	1854			33.0	
	12:00	551.0	1854			33.0	
	1:00 pm	552.0	1854			33.0	
	2:00	553.0	1854			33.0	
	3:00	554.0	1854			33.0	
	4:00	555.0	1854		595	33.0	
	5:00	556.0	1854			32.6	
	6:00	557.0	1854			32.6	
	7:00	558.0	1854			33.0	
	8:00	559.0	1854			33.1	
	9:00	560.0	1854			33.2	
	10:00	561.0	1854		580	33.6	
	11:00	562.0	1854			34.0	
	12:00	563.0	1854			34.0	
1/05/69	1:00 am	564.0	1854			33.8	
	2:00	565.0	1854			33.8	
	3:00	566.0	1854			33.3	
	4:00	567.0	1849		560	33.0	
	5:00	568.0	1849			33.0	
	6:00	569.0	1849			33.0	
	7:00	570.0	1849			33.0	
	8:00	571.0	1849	860	545	33.3	0.1
	9:00	572.0	1849			33.2	
	10:00	573.0	1849		545	32.8	
	11:00	574.0	1849			32.6	
	12:00	575.0	1849			32.5	
	1:00 pm	576.0	1849			32.5	
	2:00	577.0	1849			32.5	
	3:00	578.0	1849			32.5	
	4:00	579.0	1849		565	32.5	
	5:00	580.0	1849			32.6	
	6:00	581.0	1849			32.7	
	7:00	582.0	1849			32.8	
	8:00	583.0	1849			32.8	
	9:00	584.0	1849			32.8	
	10:00	585.0	1849		510	32.8	
	11:00	586.0	1849			32.8	
	12:00	587.0	1849			32.8	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
1/06/69	1:00 am	588.0	1843			32.8	
	2:00	589.0	1843			32.9	
	3:00	590.0	1843			32.9	
	4:00	591.0	1843		485	32.8	
	5:00	592.0	1843			32.8	
	6:00	593.0	1843			32.8	
	7:00	594.0	1843			32.8	
	8:00	595.0	1843			32.8	
	9:00	596.0	1843			32.8	
	10:00	597.0	1843	865	475	32.8	0.1
	11:00	598.0	1843			32.6	
	12:00	599.0	1843			32.5	
	1:00 pm	600.0	1843			32.7	
	2:00	601.0	1843			32.3	
	3:00	602.0	1843			32.7	
	4:00	603.0	1843		475	32.5	
	5:00	604.0	1843			32.5	
	6:00	605.0	1843			32.6	
	7:00	606.0	1843			32.6	
	8:00	607.0	1843			32.6	
	9:00	608.0	1843			32.6	
	10:00	609.0	1843		470	32.6	
	11:00	610.0	1843			32.6	
	12:00	611.0	1843			32.6	
1/07/69	1:00 am	612.0	1843			32.6	
	2:00	613.0	1843			32.6	
	3:00	614.0	1843			32.6	
	4:00	615.0	1843		470	32.6	
	5:00	616.0	1843			32.6	
	6:00	617.0	1843			32.6	
	7:00	618.0	1843			33.0	
	8:00	619.0	1843			33.0	
	9:00	620.0	1849			33.0	
	10:00	621.0	1849	870	465	32.9	0.1
	11:00	622.0	1849			32.8	
	12:00	623.0	1849		460	33.1	
	1:00 pm	624.0	1831			32.7	
	2:00	625.0	1831		465	32.6	
	3:00	626.0	1831			32.6	
	4:00	627.0	1831		485	32.7	
	5:00	628.0	1849			33.1	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
1/07/69	6:00	629.0	1843		520	33.2	
	7:00	630.0	1843			33.3	
	8:00	631.0	1831		480	33.3	
	9:00	632.0	1825			33.0	
	10:00	633.0	1831		475	33.0	
	11:00	634.0	1831			33.4	
	12:00	635.0	1849		465	33.4	
1/08/69	1:00 am	636.0	1831			33.4	
	2:00	637.0	1808		440	33.0	
	3:00	638.0	1808			33.1	
	4:00	639.0	1808		420	33.1	
	5:00	640.0	1808			33.0	
	6:00	641.0	1808		445	33.0	
	7:00	642.0	1825			33.1	
	8:00	643.0	1819		480	33.1	
	9:00	644.0	1808			33.2	
	10:00	645.0	1808	875	425	33.2	2.4
	11:00	646.0	1808			33.6	
	12:00	647.0	1808		445	33.4	
	1:00 pm	648.0	1814			33.6	
	2:00	649.0	1808		445	33.5	
	3:00	650.0	1808			33.2	
	4:00	651.0	1808		455	33.2	
	5:00	652.0	1808			33.0	
	6:00	653.0	1814		480	33.0	
	7:00	654.0	1808			33.4	
	8:00	655.0	1802		435	33.6	
	9:00	656.0	1796			33.7	
	10:00	657.0	1802		455	33.6	
	11:00	658.0	1802			33.9	
	12:00	659.0	1808		495	33.9	

Date	Time	ΔT (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)	Flow Rate (mcf/d)	Cum. Liquid Production (Bbls)
1/09/69	1:00 am	660.0	1808			34.1	
	2:00	661.0	1796		460	34.2	
	3:00	662.0	1784			34.3	
	4:00	663.0	1778		445	34.3	
	5:00	664.0	1784			34.2	
	6:00	665.0	1802		500	34.1	
	7:00	666.0	1802			34.3	
	8:00	667.0	1784		465	34.4	
	9:00	668.0	1772			34.4	
	10:00	669.0	1761		430	34.3	
	11:00	670.0	1772	885	430	33.9	12.4

Well shut in for BHP Buildup at 11:00 am 1/09/69.

This flow test conducted with Ball Brothers Research Corporation Slim Sentry MK9P, 0 to 3000 psig element, Serial No. SS 107-30- Instrument landed at 8000' RB. Temperature corrections are from Temperature Correction Chart for this BHP Instrument. 205°F Line Calibration date 11/18/68 by Ball Brothers Research.

FIGURE 6

TABLE IV

Pressure Buildup Data
Buildup No. 2

Hayward 25-95 (R-EX)
Rulison Field
Mesaverde Formation
Interval Tested 8148-8172
10/23/68 to 10/29/68

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
1/09/69	11:00 am	0	1772	885	430
	11:15	0.25	1808		
	11:30	0.50	1814		
	11:45	0.75	1814		
	12:00	1.0	1814		630
	12:30	1.5	1831		
	1:00 pm	2.0	1843		735
	2:00	3.0	1849		795
	3:00	4.0	1860		830
	4:00	5.0	1872		855
	5:00	6.0	1872		
	6:00	7.0	1878		
	7:00	8.0	1890		
	8:00	9.0	1896		
	9:00	10.0	1896		
	10:00	11.0	1896		890
	11:00	12.0	1896		
	12:00	13.0	1907		
1/10/69	1:00 am	14.0	1907	885	
	2:00	15.0	1919		
	3:00	16.0	1919		
	4:00	17.0	1925		950
	5:00	18.0	1930		
	6:00	19.0	1936		
	7:00	20.0	1936		
	8:00	21.0	1936		
	9:00	22.0	1942		
	10:00	23.0	1942		1010
	11:00	24.0	1948		
	12:00	25.0	1948		

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
1/10/69	1:00 pm	26.0	1954		
	2:00	27.0	1954		
	3:00	28.0	1954		
	4:00	29.0	1966		1060
	5:00	30.0	1966		
	6:00	31.0	1966		
	7:00	32.0	1972		
	8:00	33.0	1972		
	9:00	34.0	1978		
	10:00	35.0	1983		1105
	11:00	36.0	1983		
	12:00	37.0	1989		
1/11/69	1:00 am	38.0	1989		
	2:00	39.0	1989		
	3:00	40.0	1989		
	4:00	41.0	1989		1150
	5:00	42.0	1995		
	6:00	43.0	1995		
	7:00	44.0	2001		
	8:00	45.0	2001		
	9:00	46.0	2001		
	10:00	47.0	2013		1200
	11:00	48.0	2013		
	12:00	49.0	2013		
	1:00 pm	50.0	2013		
	2:00	51.0	2013		
	3:00	52.0	2018		
	4:00	53.0	2018		1240
	5:00	54.0	2024		
	6:00	55.0	2024		
	7:00	56.0	2030		
	8:00	57.0	2030		
	9:00	58.0	2036		
	10:00	59.0	2036		1270
	11:00	60.0	2036		
	12:00	61.0	2036		

Date	Time	Δt (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)
1/12/69	1:00 am	62.0	2036		
	2:00	63.0	2036		
	3:00	64.0	2036		
	4:00	65.0	2036		1305
	5:00	66.0	2042		
	6:00	67.0	2042		
	7:00	68.0	2048		
	8:00	69.0	2048		
	9:00	70.0	2048		
	10:00	71.0	2048	895	1340
	11:00	72.0	2048		
	12:00	73.0	2060		
	1:00 pm	74.0	2060		
	2:00	75.0	2060		
	3:00	76.0	2060		
	4:00	77.0	2060		1385
	5:00	78.0	2060		
	6:00	79.0	2066		
	7:00	80.0	2066		
	8:00	81.0	2066		
	9:00	82.0	2066		
	10:00	83.0	2071		1405
	11:00	84.0	2071		
	12:00	85.0	2071		
1/13/69	1:00 am	86.0	2077		1425
	2:00	87.0	2077		
	3:00	88.0	2077		
	4:00	89.0	2083		1425
	5:00	90.0	2083		
	6:00	91.0	2083		
	7:00	92.0	2083		
	8:00	93.0	2083		
	9:00	94.0	2083		
	10:00	95.0	2083		1460
	11:00	96.0	2089	910	
	12:00	97.0	2089		
	1:00 pm	98.0	2089		
	2:00	99.0	2089		
	3:00	100.0	2095		
	4:00	101.0	2095		1495
	5:00	102.0	2095		
	6:00	103.0	2095		
	7:00	104.0	2095		
	8:00	105.0	2095		

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
1/13/69	9:00	106.0	2106		
	10:00	107.0	2106		1510
	11:00	108.0	2106		
	12:00	109.0	2106		
1/14/69	1:00 am	110.0	2106		
	2:00	111.0	2106		
	3:00	112.0	2106		
	4:00	113.0	2106		1535
	5:00	114.0	2112		
	6:00	115.0	2112		
	7:00	116.0	2112		
	8:00	117.0	2118		
	9:00	118.0	2118		
	10:00	119.0	2118	920	1555
	11:00	120.0	2118		
	12:00	121.0	2118		
	1:00 pm	122.0	2118		
	2:00	123.0	2118		
	3:00	124.0	2118		
	4:00	125.0	2118		1580
	5:00	126.0	2130		
	6:00	127.0	2130		
	7:00	128.0	2130		
	8:00	129.0	2130		
	9:00	130.0	2130		
	10:00	131.0	2130		1590
	11:00	132.0	2130		
	12:00	133.0	2130		
1/15/69	1:00 am	134.0	2130		
	2:00	135.0	2130		
	3:00	136.0	2130		
	4:00	137.0	2136		1620
	5:00	138.0	2136		
	6:00	139.0	2136		
	7:00	140.0	2136		
	8:00	141.0	2136	920	
	9:00	142.0	2142		
	10:00	143.0	2142		1650
	11:00	144.0	2142		
	12:00	145.0	2142		
	1:00 pm	146.0	2142		
	2:00	147.0	2142		
	3:00	148.0	2153		
	4:00	149.0	2153		1670

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
1/15/69	5:00	150.0	2159		
	6:00	151.0	2159		
	7:00	152.0	2159		
	8:00	153.0	2159		
	9:00	154.0	2171		
	10:00	155.0	2171		1680
	11:00	156.0	2171		
	12:00	157.0	2177		
1/16/69	1:00 am	158.0	2177		
	2:00	159.0	2177		
	3:00	160.0	2182		
	4:00	161.0	2182		1715
	5:00	162.0	2182		
	6:00	163.0	2188		
	7:00	164.0	2188		
	8:00	165.0	2188		
	9:00	166.0	2194		
	10:00	167.0	{ No Surface Recording Δt = 168 to 189 hrs }	925	1730
	5:00 pm	174.0			1745
	11:00	180.0			1750
1/17/69	5:00 am	186.0			1765
	9:00	190.0	2253		
	10:00	191.0	2253		
	11:00	192.0	2253		1790
	12:00	193.0	2253		
	1:00 pm	194.0	2258		
	2:00	195.0	2258		
	3:00	196.0	2258		
	4:00	197.0	2264		
	5:00	198.0	2264		1795
	6:00	199.0	2264		
	7:00	200.0	2264		
	8:00	201.0	2264		
	9:00	202.0	2264		
	10:00	203.0	2270		
	11:00	204.0	2270		1795
	12:00	205.0	2270		

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
1/18/69	1:00 am	206.0	2270		
	2:00	207.0	2276		
	3:00	208.0	2276		
	4:00	209.0	2276		
	5:00	210.0	2276		1805
	6:00	211.0	2276		
	7:00	212.0	2276		
	8:00	213.0	2276		
	9:00	214.0	2282	960	
	10:00	215.0	2282		
	11:00	216.0	2282		1820
	12:00	217.0	2282		
	1:00 pm	218.0	2282		
	2:00	219.0	2282		
	3:00	220.0	2282		
	4:00	221.0	2282		
	5:00	222.0	2282		1830
	6:00	223.0	2282		
	7:00	224.0	2282		
	8:00	225.0	2282		
	9:00	226.0	2282		
	10:00	227.0	2282		
	11:00	228.0	2288		1815
	12:00	229.0	2288		
1/19/69	1:00 am	230.0	2288		
	2:00	231.0	2288		
	3:00	232.0	2288		
	4:00	233.0	2294		
	5:00	234.0	2294		1825
	6:00	235.0	2294		
	7:00	236.0	2294		
	8:00	237.0	2294		
	9:00	238.0	2294		
	10:00	239.0	2300		
	11:00	240.0	2300		1830
	12:00	241.0	2300		
	1:00 pm	242.0	2300		
	2:00	243.0	2300	948	1830
	3:00	244.0	2300		
	4:00	245.0	2300		
	5:00	246.0	2300		
	7:00	248.0	2306		
	11:00	252.0			1830

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
1/20/69	3:00 am	256.0	2311		
	5:00	258.0			1835
	11:00	264.0	3217	995	1845
	5:00 pm	270.0			1850
	6:00	271.0	2323		
	11:00	276.0			1845
1/21/69	5:00 am	282.0			1850
	9:00	286.0	2329		
	11:00	288.0		960	1855
	5:00 pm	294.0			1855
	11:00	300.0			1850
1/22/69	1:00 am	302.0	2334		
	5:00	306.0			1855
	9:00	310.0	2340		
	11:00	312.0		964	1860
	5:00 pm	318.0			1860
	9:00	322.0	2346		1855
	11:00	324.0			
1/23/69	5:00 am	330.0			1865
	10:00	335.0		965	
	11:00	336.0	2352		1875
	5:00 pm	342.0			1870
	9:00	346.0	2358		
	11:00	348.0			1870
1/24/69	4:00 am	353.0	2364		
	5:00	354.0			1870
	11:00	360.0			1875
	1:00 pm	362.0		970	
	5:00	366.0			1885
	11:00	372.0			1880
1/25/69	1:00 am	374.0	2370		
	5:00	378.0			1880
	11:00	384.0	2376	975	1885
	5:00 pm	390.0			1890
	11:00	396.0			1885

Date	Time	Δt (Hrs)	Bottom Hole Pressure (psig)	Casing Pressure (psig)	Tubing Pressure (psig)
1/26/69	4:00 am	401.0	2382		
	5:00	402.0			1895
	9:00	406.0	2388		
	11:00	408.0			1890
	3:00 pm	412.0		980	
	5:00	414.0			1900
	11:00	420.0			1900
1/27/69	3:00 am	424.0	2393		
	5:00	426.0			1900
	11:00	432.0			1910
	2:00 pm	435.0		985	
	5:00	438.0			1910
	6:00	439.0	2399		
	11:00	444.0			1905
1/28/69	3:00 am	448.0	2405		
	5:00	450.0			1910
	10:00	455.0	2411		
	11:00	456.0		985	1920
	5:00 pm	462.0			1920
	11:00	468.0			1920
1/29/69	5:00 am	474.0			1920
	11:00	480.0		990	1925
	4:00 pm	485.0	2417		
	5:00	486.0			1925
	11:00	492.0			1920
1/30/69	3:00 am	496.0	2422		
	5:00	498.0			1920
	11:00	505.0		995	1930
	12:00	506.0	2428		
	5:00 pm	510.0			1940
	7:00	512.0	2434		
	11:00	516.0			1940

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
1/31/69	5:00 am	522.0			1935
	11:00	528.0			1950
	4:00 pm	533.0		1000	
	5:00	534.0			1950
	11:00	540.0			1950
2/01/69	1:00 am	542.0	2440		
	5:00	546.0			1950
	8:00	549.0	2446		
	11:00	552.0		1000	1955
	11:00 pm	564.0	2452		
2/02/69	5:00 am	570.0			1950
	8:00	573.0	2458		
	6:00 pm	583.0			1960
2/03/69	6:00 pm	607.0			1970
2/04/69	7:00 am	620.0	2464		
	5:00 pm	630.0		1010	
	6:00	631.0			1980
	7:00	632.0	2469		
2/05/69	10:00 am	647.0	2475		
	4:00 pm	653.0			1985
	6:00	655.0	2481		
2/06/69	11:00 am	672.0		1020	
	6:00 pm	679.0			1985
	10:00	683.0	2487		
2/07/69	6:00 pm	703.0			1990
	8:00	705.0	2493		
2/08/69	4:00 am	713.0	2499		
	6:00 pm	727.0			1995
2/09/69	2:00 am	735.0	2504		
	8:00 pm	753.0			2005
2/10/69	10:00 am	767.0	2510	1035	
	8:00 pm	777.0			2015
2/11/69	3:00 am	784.0	2516		
	9:00 pm	802.0			2020

TABLE IV

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
2/12/69	3:00 am	808.0	2522		
	10:00	815.0		1040	
	8:00 pm	825.0	2528		
2/13/69	1:00 am	830.0			2025
	6:00 pm	847.0	2534		
	9:00	850.0			2025
2/14/69	8:00 pm	873.0			2030
2/15/69	1:00 am	878.0	2540		
	10:00	887.0		1050	
	7:00 pm	896.0			2035
	11:00	900.0	2546		
2/16/69	7:00 pm	920.0			2040
2/17/69	1:00 am	926.0	2552		
	10:00	935.0		1060	
	10:00 pm	947.0			2045
2/18/69	1:00 am	950.0	2557		
	8:00 pm	969.0			2050
2/19/69	6:00 pm	991.0			2050
2/20/69	7:00 am	1004.0	2563		
	6:00 pm	1015.0			2055
	8:00	1017.0	2569		
2/21/69	3:00 pm	1036.0		1080	
	6:00	1039.0			2060
2/22/69	1:00 am	1046.0	2575		
	7:00 pm	1064.0			2065
2/23/69	1:00 pm	1082.0	2581		
	7:00	1088.0			2065
2/24/69	10:00 pm	1115.0			2070

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
2/25/69	4:00 am	1121.0	2586		
2/26/69	5:00 am	1146.0	2592		
	9:00	1150.0			2075
2/27/69	6:00 am	1171.0	2598		
	8:00 pm	1185.0			2085
2/28/69	8:00 pm	1209.0			2090
3/01/69	12:00 am	1225.0		1240	
	8:00 pm	1233.0			2090
3/02/69	9:00 pm	1258.0			2095
3/03/69	3:00 pm	1276.0		1250	
	4:00	1277.0	2604		
	8:00	1281.0			2095
3/04/69	5:00 pm	1302.0			2100
3/05/69	1:00 am	1310.0	2610		
	7:00 pm	1328.0			2100
3/06/69	9:00 am	1342.0	2616		
	6:00 pm	1351.0			2100
3/07/69	6:00 am	1363.0	2622		
	4:00 pm	1373.0			2105
3/08/69	5:00 pm	1395.0			2105
3/09/69	6:00 pm	1423.0			2110
3/10/69	4:00 am	1433.0	2628		
	10:00 pm	1439.0		1270	

<u>Date</u>	<u>Time</u>	<u>Δt (Hrs)</u>	<u>Bottom Hole Pressure (psig)</u>	<u>Casing Pressure (psig)</u>	<u>Tubing Pressure (psig)</u>
3/13/69	1:00 am	1502.0	2633		
	10:00	1511.0		1275	
3/14/69	11:00 pm	1548.0	2639		
3/15/69	11:00 am	1560.0	2639	1285	

END OF BUILD-UP TEST

Bottom Hole Pressure Gauge

Ball Brothers Research Corporation
Slim Sentry MK 9 P
0 to 3000 psi element
landed at 8000' KBM

FIGURE 7

REPORT OF ANALYSIS

F.S. - 11790 M.S. N-45097 ,H 0.00 OBS. PRES. 66.9 CAL. PRES. 64.0

STATE- COLORADO

COUNTY- GARFIELD

FIELD- RULISON

WELL NAME- HAYWARD NO. 25-95

LOCATION- SEC. 25, T7S, R95W

OWNER- AUSTRAL OIL CO.

DATE COMPLETED- 05/06/68

DATE SAMPLED-

SAMPLED BY-

NAME OF PRODUCING FORMATION- MESAVERDE

DEPTH IN FEET- 7302

THICKNESS IN FEET- 1162

SHUT IN WELLHEAD PRES., PSIG-

OPEN FLOW, MCF/D- 15

CHECK OF DATA-
THE WELL DATA ARE ACCURATE, () WITHOUT CORRECTION, () AS CORRECTED ABOVE.

REMARKS-

ANALYSIS-

METHANE	90.1 %	NORMAL PENTANE	TRACE %	OXYGEN	0.0 %
ETHANE	4.6 %	ISOPENTANE	.2 %	ARGON	0.0 %
PROPANE	1.2 %	CYCLOPENTANE	.1 %	HYDROGEN	TRACE %
NORMAL BUTANE	.2 %	HEXANES PLUS	.2 %	H2S	0.0 %
ISOBUTANE	.3 %	NITROGEN	.1 %	CO2	2.8 %
SPECIFIC GRAV	.634			HELIUM	0.00 %
				TOTAL	99.8 %
					1066.

CALCULATED GROSS BTU/CU. FT., DRY AT 60 DEG. F AND 30 IN. MERCURY-

PERMISSION FOR RELEASE:

Permission is hereby granted for the Bureau of Mines to release the above data, together with similar data released by other operators as public information and as parts of a series of papers on analyses of gases from various fields, states, or regions.

COMPANY AUSTRAL OIL COMPANY INCORPORATED

BY *Miles Reynolds, Jr.*
Miles Reynolds, Jr., Project Engineer

TITLE

COMPANY Austral Oil Co. Inc.COUNTY GarfieldFIELD RulisonSTATE ColoradoLEASE & WELL No. Hayward 25-95

FORMATION _____

TYPE OF TEST Temperature Survey #1DATE TESTED September 6, 1968

Time	Depth Feet	Defl. in	Temp. * Psig	
pm				
12:35	Surface	.000	100.0	Oil Level
	5000	.178	152.7	Water Level
	6000	.278	171.6	Temperature 214.2° @ 8400'
	6500	.341	181.9	Casing Pressure
	6600	.352	183.6	Tubing Pressure 400#
	6700	.364	185.3	Elevation
	6800	.374	186.8	Perforation
	6900	.385	188.3	BHP @ ft.
	7000	.397	190.1	Pressure Recorder No.
	7100	.408	191.6	Range (Psi) 100° to 320°
	7200	.421	193.4	Clock 3 Hour
	7300	.432	195.0	Surveyed By: Reed
	7400	.442	196.4	
	7500	.453	197.9	
	7600	.470	200.1	
	7700	.480	201.4	
	7800	.489	202.6	
	7900	.499	203.9	
	8000	.511	205.4	
	8100	.525	207.1	
	8200	.539	208.8	

COMPANY Austral Oil Co. Inc.

COUNTY Garfield

FIELD Rulison

STATE Colorado

LEASE & WELL No. Hayward 25-95

FORMATION.

TYPE OF TEST Temperature Survey #1

DATE TESTED September 6, 1968

[illegible]

COMPANY Austral Oil CompanyCOUNTY GarfieldFIELD RulisonSTATE ColoradoLEASE & WELL No. Hayward 25-95

FORMATION _____

TYPE OF TEST Temperature Survey #2DATE TESTED Sept 21, 1968

Time	Depth Feet	Defl. in	Temp Pressure Psig	
12:15pm	Surface	.000	100.0	Oil Level
	5000	.252	153.8	Water Level
	6000	.384	172.8	Temperature 217.0° @ 8400'
	6500	.464	182.7	Casing Pressure
	6600	.479	184.4	Tubing Pressure 1540
	6700	.494	186.2	Elevation
	6800	.507	187.7	Perforation
	6900	.523	189.3	BHP @ ft.
	7000	.540	191.1	Temp Recorder No. S/N RT7 25900
	7100	.555	192.7	Range (Psi) Temp 100°-290°
	7200	.577	195.0	Clock 3 Hour W/ DPLS
	7300	.594	196.7	Surveyed By: Marshall
	7400	.610	198.3	
	7500	.628	200.0	
	7600	.645	201.7	
	7700	.661	203.3	
	7800	.677	204.8	
	7900	.692	206.2	
	8000	.713	208.2	
	8100	.737	210.3	
	8200	.757	212.1	

COMPANY Austral Oil Company Inc.

COUNTY Garfield

FIELD Rulison

STATE Colorado

LEASE & WELL No. Hayward 25-95

FORMATION_____

TYPE OF TEST Temperature Survey #2

DATE TESTED Sept. 21, 1968

[illegible]

V-7

COMPANY Austral Oil Company Inc.COUNTY GarfieldFIELD RulisonSTATE ColoradoLEASE & WELL No. Hayward 25-95

FORMATION _____

TYPE OF TEST Temperature Survey #3DATE TESTED Sept. 21, 1968

Time	Depth Feet	Defl. in	Temp. Pressure Psig	
2:42pm	Surface	.000	100.0	Oil Level
	5000	.169	150.8	Water Level
	6000	.267	169.7	Temperature 214.7° @ 8400'
	6500	.328	179.8	Casing Pressure
	6600	.339	181.5	Tubing Pressure 1540
	6700	.351	183.4	Elevation
	6800	.361	184.9	Perforation
	6900	.372	186.5	BHP @ ft.
	7000	.384	188.2	Temp Pressure Recorder No. RT-7 SIN 17592
	7100	.396	189.9	Range (Psi) Temp 100°-320°
	7200	.412	192.2	Clock 3 Hour W/ DPLS
	7300	.426	194.1	Surveyed By: Marshall
	7400	.438	195.8	
	7500	.450	197.5	
	7600	.462	199.1	
	7700	.475	200.8	
	7800	.487	202.3	
	7900	.498	203.7	
	8000	.515	205.9	
	8100	.531	207.8	
	8200	.545	209.6	

COMPANY Austral Oil Company Inc.

COUNTY Garfield

FIELD Rulison

STATE Colorado

LEASE & WELL No. Hayward 25-95

FORMATION_____

TYPE OF TEST Temperature Survey #3

DATE TESTED Sept. 21, 1968

[illegible]

220

210

200

190

180

170

160

150

140

130

120

110

100

0

1000

2000

3000

4000

5000

6000

7000

8000

8500

Austral Oil Company Inc.

Garfield Co., Colorado

Rulison Field

Hayward 25-95

Temperature Survey #3

Range 100°-320° SIN 17592

Sept. 21, 1968

(Temperature)

(Depth in Feet)

01-10

TREATMENT REPORT

DWL-494-1 PRINTED IN U.S.A.

DOWELL DIVISION OF THE DOW CHEMICAL COMPANY

DATE

10-5-68

WELL NAME AND NUMBER

Hayward 25-95

LOCATION

525 75 05W

CUSTOMER REPRESENTATIVE

Mr Ed Davis

TREATMENT NUMBER

15 03

Wildcat

COUNTY

Garfield

TYPE OF SERVICE

CO 2 Fracturing WF 40#

FORMATION

Mesa Verda

STATE

Colorado

JOB DONE DOWN
TUBING CASING ANNULUS
A ☒ B ☐ C ☐

ALLOWABLE PRESSURE
TBG: 6000 CSG

TYPE OF WELL
OIL GAS WATER INJ
A ☐ B ☒ C ☐ D ☐

AGE OF WELL
NEW WELL REWORK
A ☒ B ☐

TOTAL DEPTH
8400

CASING SIZE
7 5/8

CASING DEPTH
8400

TUBING SIZE
3 1/2 & 2 3/8

LINER SIZE
5 1/2

LINER DEPTH
1600

PACKER TYPE
Baker

PACKER DEPTH
8100

OPEN HOLE
CSG OR ANRL VOL

TBG VOLUME
60

STATIC BHT
218

CUST. NAME Austral Oil Company

ADDRESS 2700 Humble Bldg

Houston,

CITY STATE & ZIP CODE Texas

REMARKS: Using 2 turbines 3 Allison 5500 20/40

Sand 5500# 20/40 Glass beads 1,350 # J133

6 units R. A. Mart

FOR CONVERSION PURPOSES 24 BBLs EQUALS 1000 GALLONS

ARRIVED ON LOCATION: 10:00 A.M.

TIME	INJECTION		PRESSURE		SERVICE REMARKS
	RATE	BBLs IN	CSG.	TBG.	
					Safety Meeting
1:50				7000	Pressure test Dowell lines
2:15			400	2700	Spear head w/500 gals mud acid CO 2
2:17			400	2700	Pad CO 2
2:23	14	85	400	4300	Start 20/40 Sand 1/2# & R.A. Mart CO 2
2:33	24	345	400	5200	Start 20/40 Glass Beads & R. A. Mart. CO 2
2:44	24	610	400	5500	Flush CO 2
2:48	20	695	400	5500	Flush Complete
				2000	IMM CO 2 truck broke down
				1900	15 min had to get another tractor
				1500	30 min to pull trailer. On location 2 hours late
					Everything was water Frac 40#
					Using 20 tons CO 2
					5,500 # 20/40 Sand
					5,500 # 20/40 Glass beads HHP 2600
					6 units R. A. Mart
					1350 # J 133 5 gal J 133/4 breaker

TIME LEFT LOCATION	AVG. LIQUID INJ. RATE	ADJ. INJ. RATE (SOLIDS INJ.)	TOTAL FLUID PUMPED OIL WATER	PROPS AND LIQUIDS INJECTED
1600		20		TYPE SIZE OR PURPOSE AMOUNT
MAX. PRESSURE	AVG. PRESSURE	FINAL PUMP IN PRESSURE	SHUT IN PRESSURE IMMEDIATE 15 MINUTE	
5700	5300		2000 1900	
DOWELL LOCATION	DOWELL ENGINEER			
Vernal, Utah	K. D. Stringham			
DATE	CUSTOMER REP. CONTACTED	CUSTOMER SATISFACTORY CONSIDERED UNSATISFACTORY SERVICE UNKNOWN	PROD. BEFORE TREATMENT TEST ALLOWABLE	PROD. AFTER TREATMENT TEST ALLOWABLE
CALL BACK				

AUSTRAL OIL COMPANY

INCORPORATED

WELL HISTORY

WELL: Austral Oil Company Incorporated, Hayward #25-95

FIELD: Rulison

DRILLING BLOCK: 65-41 AFE NO.: 67-117

LOCATION: 2,235.93' east of west line and 1,694.81' north of south line of Section 25, T-7-S, R-95-W of 6th P. M., Garfield County, Colorado

ELEVATION: GL: 8,171.28'
KDB: 8,187.28'

DRILLING CONTRACTOR: Signal Drilling Company, Denver, Colorado

DRILLING SUMMARY:

11-9-67	Spudded well at 9:00 p.m.
11-10-67	Set and cemented 18" OD, #16 gauge corrugated conductor pipe (30') in 22" hole to a depth of 45 feet.
11-13-67	Ran I-ES and Acoustilog surveys at 518' and commenced reaming hole to 15 inches.
11-14-67	Set and cemented 10-3/4" OD 32.75# H-40 ST&C surface casing (484.58') in 15" hole to a depth of 500.58 feet.
11-15-67	Commenced air mist drilling below surface casing. Encountered formation water influx of 3 to 4 gallons per minute at 617 feet. Continued drilling to 865 feet.
11-16-67	Set Howco straddle packers at 591' and 641 feet. Pumped 3000 gallons of Zone Lock ARO 1 barrel/minute with 0 psi. Both packers leaked. Closed BOP and squeezed final 1500 gallons into formation with 200 psi.
11-17-67	Dried hole and began drilling ahead with air below 865 feet.
11-19-67	Continued drilling with air to 2010 feet. While pulling out of hole, stuck drill pipe after bit began dragging at 700 feet. Worked free after 4 hours. Reamed to bottom.
11-20-67	Well began making approximately 4 barrels water per hour. Attempted to dry hole. Commenced air mist drilling and continued to 2070 feet.
11-21-67	Continued air mist drilling to 2451 feet. Air mist with light foam drilling commenced below 2451 feet.
11-23-67	After drilling to 2785', reamed with stiff foam from 2290' to bottom.
11-24-67	Began drilling ahead with stiff foam.
12-1 & 2-67	Reamed and conditioned hole at depth of 4030 feet.
12-3-67	Ran Induction Gamma-Ray log from 500-1148' and High Resolution Temperature survey from 530-1050 feet. Began conversion to drilling mud media.
12-4-67	Washed, reamed and conditioned hole.
12-7-67	Drilled with mud to 4125 feet.
12-8-67	Cut Core #1 in interval 4125-77 feet.
12-9-67	Conditioned hole following loss of returns at 4177 feet.
12-10-67	Regained circulation. Resumed drilling ahead below 4177 feet.
12-14-67	Commenced aerating mud at 4973 feet. Penetration rate increased from 4-5 minutes/foot to 3-4 minutes/foot. Drilled to 5326' with aerated mud.

Hayward (6541) #25-95

DRILLING SUMMARY (Continued):

12-18-67 Ran I-ES from 496-5694 feet. Continued below 5700' with normal mud drilling.

12-21-67 Cut Cores #2 and #3 in respective intervals from 6009-16' and 6016-23 feet.

12-22-67 Cut Cores #4 and #5 in respective intervals from 6023-32' and 6032-55 feet.

12-23-67 Cut Core #6 in interval 6055-62 feet.

12-25-67 Ran open hole DST #1 in interval from 6026.5'-6062 feet. (See test data in DST Record of this history.)

12-26-67 Began drilling ahead with mud below 6062 feet.

12-27-67 Lost 50 barrels mud while drilling at 6208 feet. Mixed LCM, circulated and resumed drilling.

12-29-67 Ran I-ES from 5490-6234 feet.

12-30-67 Ran Compensated Acoustilog survey from 497-6244 feet.

12-31-67 Began drilling ahead with mud below 6265 feet.

1-2-68 Ran I-ES from 6050-6362', Compensated Acoustilog from 6050-6350' and Gamma-Ray Epithermal Neutron survey from 496-6365 feet.

1-3-68 Ran Compensated Densilog from 496-6361', Variable Amplitude Density log from 496-6359', Temperature survey from 496-6362' and Directional survey from 550-6300 feet.

1-5-68 Conditioned hole. Attempted 14 Sidewall Cores, recovered 12. Ran Formation Sample Test at 4226 feet.

1-6 - 9-68 Continued with Formation Sample Tests at 3920', 3288', 2310', 2053' and 2029 feet. (Stuck Sidewall Fluid Sampler at 3906' while attempting test at 3920 feet. Recovery operation required 48 hours.)

1-11 & 12-68 Set and cemented 7-5/8" OD 26.40# J-55, N-80 and S-95 Intermediate casing (6350.80') in 9-7/8" holes to a depth of 6367 feet.

1-14 & 15-68 Drilled DV tool and tested casing to 1200 psi. Ran Gamma Ray-Neutron (cased hole) log from 5350-6354' and Cement Bond log from GL to 6348 feet. Perforated with 4 SPF and ran DST #1 in intervals from 6145-48' and 6155-65' (ES). (See test data in DST Record of this history.)

1-16 & 17-68 Squeezed perforations 6145-48' and 6155-65' in four stages w/150 sacks cement per stage.

1-18 - 20-68 Drilled cement and set RTTS tool at 6110 feet. Broke perforations down at 3250 psi. Squeezed formation in three additional stages w/150 sacks cement per stage.

1-21-68 Drilled cement and set RTTS tool at 6053 feet. Tested perforations to 3000 psi.

1-22 & 23-68 Blew hole dry and began air mist drilling below 6367 feet.

1-26-68 Encountered very small amount of gas while making trip at 7060 feet. Cut Core #1 in interval 7060-84 feet. Experienced difficulty in rerunning core barrel. Reamed hole from 6750'-6840 feet.

1-27-68 Top of core barrel plugged with cement scale. Well unloaded small amount of water.

1-28-68 Bit plugged while attempting to clean out hole. Unloaded shale, soap, gas and small amount of condensate at 6500 feet.

1-29-68 Drill pipe attempted to stick while cleaning out hole. Set Howco retrievable bridge plug at 2340'.

1-30-68 Filled hole with water and spotted 400# of sand on bridge plug. Circulated 6000 gallons of mud acid through 6400' of drill pipe.

1-31-68 Displaced acid and recovered bridge plug. Continued cleaning well. While blowing and drying hole, began injecting Microseal Powder.

2-1-68 Continued drying hole using Calcium Stearate Powder at a rate of 25#/hour.

DRILLING SUMMARY (Continued):

2-2-68 While circulating and reaming, hole caved in. Began mixing mud with LCM material.

2-3-68 Reamed and washed to 7084 feet. While continuing to condition mud, lost partial returns.

2-4-68 Lowered viscosity and screened out heavy LCM material in preparation for additional coring.

2-5-68 Core barrel jammed while attempting Core #2.

2-6-68 Cut Cores #2 and #3 in respective intervals from 7087-100' and 7100-120 feet.

2-8 & 9-68 Cut Core #4 in interval from 7260-69 feet.

2-10-68 Cut Core #5 in interval from 7269-320 feet. Lost circulation (40 barrels) while drilling at 7338 feet. Increased LCM from 3 to 7# per barrel. Temporarily lost returns while drilling at 7345 feet. Continued drilling.

2-12-68 Cut Core #6 in interval from 7500-60 feet.

2-16 & 17-68 Cut Cores #7 and #8 in respective intervals from 7840-70' and 7870-900 feet.

2-19-68 Cut Core #9 in interval from 8060-95 feet.

2-20-68 Cut Core #10 in interval from 8095-120 feet.

2-23-68 Cut Core #11 in interval from 8350-410 feet.

2-24-68 Reached Total Depth 8516' at 11:00 a.m. Attempted to log. Tool stopped at 8480'. Cleaned out to bottom with bit.

2-25-68 Ran I-ES from 6362-8498', Compensated Acoustilog from 6360-8487', Variable Amplitude Density log from 6360-8492', Birdwell 3-Dimensional Velocity surveys in gross interval from 0-8479' and Gamma-Ray Epithermal Neutron survey from 6365-8496 feet.

2-26-68 Ran Compensated Densilog from 6360-8484', Temperature survey from 6362-8449' and Directional survey from 6400-8500 feet.

2-29-68 Set and cemented 5-1/2" OD 17# and 20# N-80 flush joint liner (2653.86') in 6-3/4" hole to a depth of 8514 feet. Top of 8514 feet. Top of liner at 5860.14 feet. After displacing 10 barrels of cement circulating pressure increased from 400 psi to 3500 psi. Was unable to move cement with pressure to 6500 psi. Pulled liner tools.

3-3-68 Drilled cement inside liner from 5871-910 feet. Set RTTS tool at 5855' and cemented top of liner with 400 sacks Class G cement.

3-4-68 Drilled cement from 5662-860 feet.

3-5 & 6-68 Attempted to blow hole dry and continued to drill cement inside liner from 5860-8484 feet.

3-7-68 Ran Gamma Ray-Neutron survey from 5750-8483' and Acoustic Cement Bond log from 5840-8478 feet.

3-8-68 Released drilling rig at 12:00 noon.

CASING RECORD:18" OD CONDUCTOR PIPE

Set 18" OD 16 gauge corrugated conductor pipe (30') in 22" hole at 45' and cemented w/75 sacks Class "G" cement w/2% CaCl₂. Job complete at 11:30 a.m., 11-10-67.

CASING RECORD
(Continued):10-3/4" OD SURFACE CASING

1 jt.	Larkin Float Shoe	1.30'
	10-3/4" OD 32.75# H-40 ST&C R-2 casing	32.43
	Larkin Float Collar	1.50
14 jts.	10-3/4" OD 32.75# H-40 ST&C R-2 casing	449.35
15 jts.	Total	484.58'
	Elevation (GL to top of KDB)	16.00
	Casing set w/respect to KDB	500.58'

Cemented with 400 sacks of 50-50 Lite Poz with 2% CaCl plus 1/8# per sack cellophane, followed by 100 sacks Class "C" with 2% CaCl with 1/8# per sack cellophane. Good cement returns to surface. Plug down at 2:00 a.m., 11-14-67.

7-5/8" OD INTERMEDIATE CASING

2 jts.	Howco Type "E" Float Shoe	1.82'
	7-5/8" OD 26.4# S-95 ST&C R-2 casing	55.23
	Howco Type "E" Float Collar	1.60
62 jts.	7-5/8" OD 26.4# S-95 ST&C R-2 casing	1,702.55
1 jt.	7-5/8" OD 26.4# N-80 ST&C/LT&C X-over	41.75
6 jts.	7-5/8" OD 26.4# N-80 LT&C R-3 casing	246.79
	Howco DV tool (2nd stage)	2.03
12 jts.	7-5/8" OD 26.4# N-80 LT&C R-3 casing	504.56
46 jts.	7-5/8" OD 26.4# J-55 LT&C R-2 casing	1,427.81
	Howco DV tool (3rd stage)	2.03
75 jts.	7-5/8" OD 26.4# J-55 LT&C R-2 casing	2,353.21
1 piece	7-5/8" OD 26.4# J-55 LT&C casing	11.42
204 jts. &	Total	6,350.80'
1 piece	Elevation (BHF to KDB)	16.20'
	Casing set w/respect to KDB	6,367.00'

Cemented using 20 barrels CW7 chemical wash, 294 sacks Lite Poz #3 with 4% gel and 2% CaCl plus 200 sacks Chem-Comp cement. Plug down at 12:15 p.m., 1-11-68. Opened DV tool at 4315 feet. Circulated 6 hours. Recovered approximately 10 bbls. cement from above DV tool. Cement Stage #2 - 20 barrels CW7 chemical wash, 825 sacks Lite Poz #3 with 4% gel and 2% CaCl. Plug down 8:40 p.m., 1-11-68, with 1400 psi. Opened DV tool at 2381'. Circulated 6 hours. Recovered no cement from above DV tool. Cement Stage #3 - 20 barrels chemical wash, 1010 sacks Lite Poz #3 with 4% gel and 2% CaCl. Plug down at 4:35 a.m., 1-12-68 with 1200 psi. No cement returns to surface.

CASING RECORD
(Continued):5-1/2" LINER SETTING

1 jt.	5-1/2" OD BOT Shoe	1.66'
	5-1/2" OD 20# N-80 Hydril FJ R-3 casing	42.02
	5-1/2" OD Stall Collar	.70
11 jts.	5-1/2" OD 20# N-80 Hydril FJ R-3 casing (Ruff coated)	468.91
30 jts.	5-1/2" OD 20# N-80 Hydril FJ R-3 casing	1,287.96
	5-1/2" OD 20# N-80 FJ pin x 5-1/2" OD 17# N-80 FJ Box X-over	3.72
<u>20 jts.</u>	5-1/2" OD 17# N-80 Hydril FJ R-3 casing	<u>831.51</u>
<u>62 jts.</u>	Total	<u>2,636.48'</u>
	Liner Extension & BOT Hanger Type MC	17.38'
	Total Over all	<u>2,653.86'</u>

Bottom of liner w/respect to KDB	8,514.00'
Top of liner w/respect to KDB	5,860.14'

Mixed 500 sacks Ken-Comp cement with 2/10 D74 retarder. After displacing cement 10 barrels circulating pressure increased from 400 psi to 3500 psi. Unable to move cement with pressure up to 6500 psi. Pulled out of hole. Laid down 3800' of 3-1/2" drill pipe with cement. Found cement in top of liner at 5863 feet. Displaced hole with water. Attempted to unload water with air. Unable to dry up hole due to water from back of 5-1/2" liner. Filled hole with water. Drilled cement from 5871-5910' at rate of 50' per hour. Pulled bit. Set RTTS tool at 5855 feet. Pumped back of liner at 200 psi. Reset tool at 5455 feet. Mixed 400 sacks Class "G" cement with 1% B-60 and 2/10 D13 retarder. Pumped cement below tool to 5700' at 1-1/4 barrels per minute at 0 psi. Shut pump down. Drill pipe went on vacuum. Closed valve. Waited on cement 8 hours. Filled drill pipe with 1-1/2 barrels water. Pulled RTTS tool.

CORING RECORD:

Sidewall Cores - Attempted 14 sidewall cores and recovered 12.
(See Geological files for analysis data.)

Conventional Cores -

<u>NUMBER</u>	<u>FORMATION</u>	<u>INTERVAL</u>	<u>RECOVERY</u>
#1	Wasatch	4125-177'	34'
#2	Wasatch	6009-016'	6'6"-Hard sand & shale
#3	Wasatch	6016-023'	7' - Hard sand
#4	Wasatch	6023-032'	9' - Sand
#5	Wasatch	6032-055'	23' - Sand
#6	Wasatch	6055-062'	7' - Sand
#1	Mesaverde	7060-084'	10' - Sand w/6" shale
#2	Mesaverde	7087-100'	13'6"-Sand w/6" shale
#3	Mesaverde	7100-120'	19'6"-Sand, shale, black silkstone
#4	Mesaverde	7260-269'	8'4"-Sand w/shale streaks
#5	Mesaverde	7269-320'	51' -Sand and shale
#6	Mesaverde	7500-560'	-- Sand and shale
#7	Mesaverde	7840-870'	32.3' -Sand and shale
#8	Mesaverde	7870-900'	30' -Sand and shale

CORING RECORD (Continued):

<u>NUMBER</u>	<u>FORMATION</u>	<u>INTERVAL</u>	<u>RECOVERY</u>
#9	Mesaverde	8060-095'	35' - Sand and shale
#10	Mesaverde	8095-120'	25' - Sand and shale
#11	Mesaverde	8350-410'	60' - Sand and shale

DRILL STEM
TEST RECORD:

<u>NUMBER</u>	<u>INTERVAL</u>	<u>TEST DATA</u>
#1	6026.5-6062' (Open hole)	Opened tool at 1:35 p.m., 12-25-67 with very weak blow for 5 minutes. Shut tool in at 6:41 p.m. Took 30 minute SIP. Opened tool at 7:14 p.m. with very weak blow. No blow at 7:16 p.m. Closed tool at 8:25 p.m. Took 1 hour 10 minutes SI. Pulled tool at 9:35 p.m. Recovered 60' of mud. Mud titrated the same as the mud in mud system. ISIBHP 2100 psi, IFBHP 55 psi, FFBHP 55 psi, FSI BHP 1437 psi. Hydrostatic 2887 psi.
#1	6145-6165' (Cased hole)	Opened tool at 5:15 a.m., 1-15-68 with very weak blow. Well dead at 5:17 a.m. Closed tool at 5:20 a.m. Took 30 minute SIBHP. Pulled tool free. Lowered tool through perforations. Pulled tool. Recovered 60' of mud. 30 minute ISIBHP 103 psi, IFBHP 0 psi, FFBHP 9 psi, 30 minute stabilized SIBHP 83 psi. Hydrostatic 2964 psi.

LOGGING RECORD:

<u>NUMBER</u>	<u>COMPANY & TYPE</u>	<u>INTERVAL</u>	<u>DATE</u>
#1	Lane Wells - I-ES	48- 514'	11-13-67
#1	Lane Wells - Compensated Acoustilog	48- 510'	11-13-67
#1	Schlumberger - Temperature Survey	530-1050'	12-3-67
#1	Schlumberger - Induction Gamma-Ray	500-1148'	12-3-67
#2	Lane Wells - I-ES	496-5694'	12-18-67
#3	Lane Wells - I-ES	5490-6234'	12-29-67
#2	Lane Wells - Compensated Acoustilog	497-6244'	12-30-67
#4	Lane Wells - I-ES	6050-6362'	1-2-68
#3	Lane Wells - Compensated Acoustilog	6050-6350'	1-2-68
#1	Lane Wells - G-R Epithermal N.	496-6365'	1-2-68
#1	Lane Wells - Compensated Densilog	496-6361'	1-3-68
#1	Lane Wells - Variable Amplitude Density	496-6359'	1-3-68
#1	Lane Wells - Temperature Survey	496-6362'	1-3-68
#1	Lane Wells - Directional Survey	550-6300'	1-3-68
#1	Lane Wells - Formation Test	4226'	1-5-68
#2	Lane Wells - Formation Test	3920'	1-6-68
#3	Lane Wells - Formation Test	3288'	1-8-68
#4	Lane Wells - Formation Test	2310'	1-9-68
#5	Lane Wells - Formation Test	2053'	1-9-68
#6	Lane Wells - Formation Test	2029'	1-9-68
#1	Lane Wells - GR-N (Cased hole)	5350-6354'	1-14-68
#1	Lane Wells - Acoustic Cement Bond	0-6348'	1-14-68
#5	Lane Wells - I-ES	6362-8498'	2-25-68
#4	Lane Wells - Compensated Acoustilog	6360-8487'	2-25-68
#2	Lane Wells - Variable Amplitude Density	6360-8492'	2-25-68
#1	Birdwell - 3-Dimensional Velocity	6300-8474'	2-25-68

LOGGING RECORD
(Continued):

	<u>COMPANY & TYPE</u>	<u>INTERVAL</u>	<u>DATE</u>
#2	Birdwell - 3-Dimensional Velocity	6410-8479'	2-25-68
#3	Birdwell - 3-Dimensional Velocity	6300-8477'	2-25-68
#4	Birdwell - 3-Dimensional Velocity	0-6390'	2-25-68
#2	Lane Wells - G-R Epithermal N.	6365-8496'	2-25-68
#2	Lane Wells - Compensated Densilog	6360-8484'	2-26-68
#2	Lane Wells - Temperature Survey	6362-8449'	2-26-68
#2	Lane Wells - Directional Survey	6400-8500'	2-26-68
#2	Lane Wells - Acoustic Cement Bond	5840-8478'	3-7-68
#3	Lane Wells - GR-N (Cased hole)	5750-8483'	3-7-68

N O T E

This well history describes only the drilling of the Hayward #25-95 from the commencement of operations on 11-9-67 through the setting of the 5-1/2" OD liner at 8560' and rig release on 3-8-68. Upon completion of the well a supplement to this report covering the completion operation will be issued.

AUSTRAL OIL COMPANY

INCORPORATED

COMPLETION SUMMARY

WELL: Austral Oil Company Incorporated, Hayward #25-95

FIELD: Rulison

DRILLING BLOCK: 65-41 AFE NO.: 67-117

LOCATION: 2,235.93' east of west line and 1,694.81' north of south line of Section 25, T-7-S, R-95-W of 6th P.M., Garfield County, Colorado.

ELEVATION: ~~GL: 8,171.28'~~
KDB: 8,187.28'

COMPLETION CONTRACTOR: Barker Well Service, Grand Junction, Colorado.

COMPLETION SUMMARY:

3-16-68 Moved in completion rig.

3-20-68 Finished rigging up. Picked up 2-3/8" tubing workstring.

3-21-68 Washed to 8,485'. Ran GR-N survey from 5,800-8,485'. Perforated with 4 holes at 7,880' (GR). Set Baker Model K cement retainer at 7,010' (GR). Perforated 4 holes at 7,000' (GR).

3-22/23-68 Landed Baker stinger in retainer at 7,010'. Unable to break circulation behind casing. Pulled stinger and squeezed perforations at 7,000' in three stages with a total of 385 sacks cement. Tool set at 6,935'. Was unable to reverse third stage cement with 2,000 psi. Laid down 23 joints cemented tubing.

3-24-68 Drilled cement from 6,935' to 7,000' and tested perforations to 2,500 psi.

3-25/26-68 Squeezed perforations at 7,880' in two stages with a total of 270 sacks cement. Tool set at 7,800'. Final pressure 4200 psi. Drilled cement from 7,800' to 7,880' and cleaned hole to 8,460'.

3-27-68 Perforated 8,030-8,034' (GR), 2 holes per foot.

3-28-68 Ran Hydrologic Test #1 (See DST record). Ran Acoustic cement bond log from 5,800-8,455'.

3-29-68 Squeezed perforations 8,030-8,034' with 185 sacks cement, final pressure 4,000 psi. Perforated through tubing in interval 7,630' to 7,631', four (4) holes. Squeezed in three stages with a total of 550 sacks cement. Tool set at 7,595'. Final pressure 4200 psi.

4-1-68 Perforated through tubing in interval from 7,346' to 7,347' (GR), four (4) holes. Squeezed in three stages with a total of 550 sacks cement. Tool set at 7,315'. Final pressure 3300 psi. Drilled cement from 7,320' to 7,348' and 7,584' to 7,625'. Set tool at 7,318' and tested perforations 7,346-47' to 6,000 psi.

4-2-68 Drilled cement from 7,584 to 7,632' and washed and reamed to 7,687'. Drilled cement from 7,989 to 8,032' and washed to 8,460'.

COMPLETION
SUMMARY Cont'd.

4-3-68 Perforated 7,614-7,620' (GR), 2 holes per foot. Ran Hydrologic Test #2. (See DST record).

4-4-68 Squeezed perforations with 120 sacks cement. Tool set at 7,580'. Final pressure 4700 psi. Perforated 7,328-7,336' (GR), 2 holes per foot.

4-5-68 Ran Hydrologic Test #3. (See DST record). Squeezed perforations with 165 sacks cement. Tool set at 7,294'. Final pressure 4200 psi. Perforated 7,212-7,214' (GR), 2 holes per foot.

4-6/7-68 Ran Hydrologic Test #4. (See DST record). Squeezed perforations in three stages with a total of 600 sacks cement. Tool set at 7,185'. Final pressure 3000 psi.

4-8-68 Perforated 7,082-7,088' & 7,092-7,096' (GR), with 2 holes per foot. Ran Hydrologic Test #5. (See DST record).

4-9/10-68 Squeezed perforations in three stages with a total of 580 sacks cement. Tool set at 7,068'. Final pressure 1600 psi. Drilled cement from 7,058' to 7,106'. Tested perforations 7,082-7,088' and 7,092-7,096', broke down at 3200 psi.

4-11-68 Squeezed perforations with one additional stage, 40 sacks cement. Tool set at 7,060'. Final pressure 5500 psi.

4-12-68 Drilled cement from 7,061' to 7,619'. Ran Acoustic cement bond log from 8,461-7,900'.

4-14/15-68 Unloaded water in casing using air compressors.

4-16-68 Perforated Zone #1 intervals 8,200-08', 8,280-88', 8,318-26', 8,430-34', 8,440-44' and 8,448-64', 2 holes per foot. 30 minute test, well flowed 57 MCFD. Perforated 8,148-54', 8,156-72' and 8,200-08', 2 holes per foot. 1-1/2 hour test well flowed at rate of 80 MCFD.

4-17-68 Ran DST, Zone #1 (8,148-8,464'). (See DST record). Tested Zone #1, 27 MCFD. Perforated Zone #2 in intervals 8,050-60' and 8,066-72' with 2 holes per foot - no increase in flow rate. Perforated intervals 7,886-90', 7,892-14' and 7,952-66' with 2 holes per foot. No increase in flow rate.

4-18-68 Ran DST, Zone #2 (7,886-8,072'). (See DST record).

4-19/20-68 Set bridge plug at 8,090', tool at 8,020' and ran BHP bomb. No water influx detected from intervals 8,050-60' and 8,066-72'. Isolated remaining perforated intervals of Zone 2 - no water influx detected with BHP bomb.

4-21-68 Perforated Zone #3, intervals 7,634-42', 7,648-54', 7,668-78', 7,680-86', 7,720-34', 7,776-82', 7,812-24' and 7,834-44' with 2 holes per foot. Ran DST, Zone #3 (7,634-7,844'). Tested Zone 3, 3 MCFD. (See DST record).

4-22/23-68 Unable to recover bridge plug. Released same and pushed to bottom (top of junk 8,455'). Recovered 1,020' water inside tubing string. Titrated 4540 ppm/NaCl. Began unloading water from hole.

4-24/25-68 Blew hole dry.

4-26-68 Perforated Zone #4, intervals 7,302-08', 7,402-04', 7,410-16', 7,480-84', 7,526-30', 7,534-38', 7,540-44', 7,550-54', 7,556-68', and 7,570-76' with 2 holes per foot.

4-27-68 Tested Zone #4 (7,302-7,576'), 1.39 MCFD. (See DST record). Set bridge plug at 7,600'. Blew hole dry.

COMPLETION
COMPLETION
SUMMARY Cont'd.

4-28-68

Ran temperature survey from 7,100'-7,598'. Found water at 7,400'.
Continued blowing hole.

4-29-68

Ran temperature survey 7,000'-7,600'. Found water level at 7,564'.
Rate of influx estimated at 2 gallons per hour. Retrieved bridge
plug set at 7,600'.

4-30-68

Continued blowing hole. Well tested, 2.75 MCFD.

5-1/2-68

Continued blowing hole and testing well.

5-3-68

Ran temperature survey from 7,000-8,438' and continued testing
well.

5-4/5-68

Continued blowing hole. Hole dry.

5-6-68

Ran tubing with Guiberson RMC-1 Packer at 7,284'. Nippled up well-
head equipment. Tested 12.5 MCFD. Released rig at 12:00 midnight.

CASING RECORD:

TUBING RECORD:

TUBING SETTING

2-3/8" OD 8rd X 5-1/2" Model RMC-1 Guiberson Packer	5.44'
w/8rd coupling on bottom	
Camco CB-1 Sleeve with D top recess (1 13/16" ID)	2.63
2-3/8" OD 8rd X 2-3/8" OD 10rd Coupling	.37
208 Jts. 2-3/8" OD 4.6# J-55 Non-upset 10rd Tubing	6,372.58
2-3/8" OD 10rd X 2-3/8" OD EUE 8rd Nipple	.15
2-3/8" OD 8rd EUE Coupling	.41
28 Jts. 2-3/8" OD 4.7# J-55 8rd EUE Tubing	886.46
2-3/8" 8rd X 2-3/8" 8rd Tubing Hanger, Type UA-4	.66
Total	7,268.70'
Elevation (Tbg. head to KDB)	15.30'
Tubing set with respect to KDB	7,284.00'

DRILLSTEM TEST
RECORD:

Interval

Test Data

A. Hydrologic Tests:

Mesaverde 8030-34'

Open 3-3/4 hrs. Recovered 180' water,
790 ppm NaCl. IF 51#, FF 51#, 2 hr.
SI 71#.

" 7614-20'

Open 3 hrs. Recovered 120' water, 660
ppm NaCl. 1 hr. ISI 650#, IF 45#, FF
45#, 2 hr. FSI 52#.

" 7328-36'

Open 3 hrs. Recovered 90' water, 165
ppm NaCl. 1 hr. ISI 2134#, IF 26#, FF
26#, 2 hr. FSI 909#.

Hayward (65-41) #25-95

DRILLSTEM TEST
RECORD: Cont'd.

IntervalTest DataA. Hydrologic Tests, Cont'd.

Mesaverde 7212-14'

Open 3 hrs. No recovery-tool leaked.
1 hr. ISI 2875#, IF 64#, FF 129#,
3 hrs. FSI 2876#. (Recovered 4 bbls.
water with swab while tool open -
1320 ppm NaCl.)

" 7082-96'

Open 3 hrs. Recovered 60' water,
1400 ppm NaCl. 1 hr. ISI 587#, IF
45#, FF 45#, 3 hr. FSI 2096#.

NOTE: An additional test, also part of the Hydrologic Testing
Program, was taken in the Ohio Creek interval from 6,145-
65' and was summarized in the Well History (Drilling Record)
of this well.

B. Gas Tests:

Gas Zone #1 8148-464'

Open 7-1/2 hrs. Tested 24 MCFD. No
BHP data. 5 hr. SITP 125 psi.

Gas Zone #2 7886-8072'

Open 4-1/2 hrs. Tested 27 MCFD. 6 hr.
SITP 350 psi. Recovered 150' water,
9570 ppm NaCl. No BHP data.

Gas Zone #3 7634-7844'

Open 3 hrs. Tested 3 MCFD. Recovered
30' water, 4125 ppm NaCl. No BHP data.

Gas Zone #4 7302-576'

Open 4 hrs. Tested 2 MCFD. No recovery.
1 hr. ISI 26 psi., IF 9 psi, FF 9 psi,
6 hr. FSI 54 psi.

LOGGING RECORD:Company and TypeIntervalDate

#4

Lane Wells - GR&N

5800-8484.5'

3-21-68

#3

" - Acoustic Cement Bond

5800-8455'

3-28-68

#4

" - Acoustic Cement Bond

6900-8461'

4-12-68

#1

" - Temperature Survey

7100-7598'

4-28-68

#2

" - Temperature Survey

7000-7600'

4-29-68

#3

" - Temperature Survey

7000-8438'

5-3-68

COMPLETION RECORD:

Reached TD 8,516' on 2-24-68. 5-1/2" OD Liner casing was set from
5,860' to 8,514' and rig was released 3-8-68. Operations to complete
the well commenced on 3-20-68. The well was perforated in the gross
interval from 7302' to 8464' and on test flowed gas at a daily rate
of 12.5 MCF with a 16 psi flowing tubing pressure on a 1/8" plate.
Well completed on 5-6-68.

MR.
MR, Jr./RLT:nbk
6-4-68

Hayward (65-41) #25-95

R-EX SCHEMATIC DIAGRAM

AUSTRAL OIL COMPANY

INCORPORATED

TESTING SUMMARY

WELL: Austral Oil Company Incorporated, Hayward #25-95

FIELD: Rulison

DRILLING BLOCK: 65-41

LOCATION: 2,235.93' east of west line and 1,694.81' north of south line of Section 25, T-7-S, R-95-W of 6th P.M., Garfield County, Colorado.

ELEVATION: GL: 8,171.28'
KDB: 8,187.28'

SUMMARY:

5-10-68 Well shut in 4:00 p.m., 5-10-68, for initial pressure
to build-up. Surface wellhead pressure monitored and recorded
5-31-68 daily. Maximum shut-in surface pressure recorded 2,000 psi
(dwt) 5-31-68.

5-31-68 Initial draw-down test commenced 2:00 p.m., 5-31-68, at
to rate of approximately 160 MCFD. Static bottom hole pressure
6-22-68 survey was run 5-31-68. Two flowing bottom hole pressure
surveys and two flowing bottom hole temperature surveys
were run on 6-3-68 and 6-4-68. Schlumberger Packer Flowmeter
and computerized Differential Temperature surveys were run on
6-7-68. Flow rates monitored and recorded daily.

6-22-68 Kuster surface recording bottom hole pressure equipment placed
to in service on 6-22-68 with instrument installed at a depth of
7-28-68 7250'. Well shut in for pressure build-up test 8:30 p.m.,
6-22-68. Surface wellhead pressure and bottom hole pressure
monitored and recorded daily. Maximum shut-in surface pressure
recorded 2,002 psi (dwt), 7-28-68.

8-1-68 Moved in workover rig. Pulled tubing and packer. Removed
to water accumulation in bottom of wellbore with sandline bailer.
8-8-68 Reperforated lower two zones in the same gross intervals as
were originally perforated, 7,886'-8,072' and 8,148-8,464',
2 holes per foot with select fire bullet guns. Ran tubing &
packer - set packer immediately above reperforated zones at
a depth of 7,856'. Installed Kuster instrument at a depth of
7,850'.

8-8-68 Well shut in 11:00 a.m., 8-8-68, for additional pressure
to build-up. Surface wellhead pressure and bottom hole pressure
8-22-68 monitored and recorded daily. Test was terminated prematurely
due to malfunction of Kuster instrument. Tool became stuck in
the tubing sleeve at 7,850', and it was necessary to blow the
well down in order to retrieve the instrument.

8-23-68 Kuster instrument to be repaired and reinstalled at a depth of
7,850'. Build-up test to be resumed.

Hayward (65-41) #25-95

<u>LOG & SURVEY RECORD:</u>	<u>Company</u>	<u>Type</u>	<u>Maximum Depth</u>	<u>Date</u>
#1	Marshall Wireline Service	Static BHP Survey	8,475'	5-31-68
#1	"	Flowing BHP	8,200'	6 -3-68
#2	"	"	8,475'	6 -3-68
#1	"	BHT	8,450'	6 -3-68
#2	"	"	8,450'	6 -4-68
#1	Schlumberger	Packer Flowmeter Log		6 -7-68
#1	"	Differential Temp. Log	8,420'	6 -7-68
#1	Marshall Wireline Service	120 hr. BHP Build-up	7,250'	7-4/9-68
#2	"	90 hr. "	7,250'	7-11/15-68
#2	"	Static BHP Survey	8,450'	7-15-68

TUBING RECORD:

TUBING SETTING

	2-3/8" OD 8rd X 5-1/2" Model RMC-1 Guiberson Packer w/8rd coupling on bottom	5.44'
	Camco CB-1 Sleeve with D top recess (1 13/16" ID)	2.63
	2-3/8" OD 8rd X 2-3/8" OD 10rd Coupling	.37
208 Jts.	2-3/8" OD 4.6# J-55 Non-upset 10rd Tubing	6,372.58
	2-3/8" OD 10rd X 2-3/8" OD EUE 8rd Nipple	.15
	2-3/8" OD 8rd EUE Coupling	.41
46 Jts.	2-3/8" OD 4.7# J-55 8rd EUE Tubing	1,458.12
	2-3/8" 8rd X 2-3/8" 8rd Tubing Hanger, Type UA-4	.66
254 Jts.	Total	7,840.36'
	Elevation (Tbg. head to KDB)	15.30'
	Tubing set with respect to KDB	7,855.66'

MR.
MR, Jr. :nbk
8-23-68

Hayward (65-41) #25-95

AUSTRAL OIL COMPANY
INCORPORATED

SUPPLEMENTAL TESTING SUMMARY

WELL: Austral Oil Company Incorporated, Hayward #25-95

FIELD: Rulison

DRILLING BLOCK: 65-41

LOCATION: 2,235.93' east of west line and 1,694.81' north of south line of Section 25, T-7-S, R-95-W of 6th P.M., Garfield County, Colorado.

ELEVATION: GL: 8,171.28'
KDB: 8,187.28'

SUMMARY:

9-6-68 Ran bottom-hole temperature survey. Maximum BHT recorded at 8,400', 214.2°F.

9-7-68 Reinstalled Kuster instrument at 8,400'. Shut well in for
to additional build-up test. Kuster instrument failed - pulled
9-20-68 for repairs and recalibration on 9-12-68. Left well shut in.

9-21-68 Ran bottom-hole temperature survey using two individual Amerada
thermistors. Maximum BHT recorded at 8,400', 214.7°F and 217.0°F.

9-30-68 Pulled tubing and packer. Set Baker Model N bridge plug at 8,190'.
to Set Baker Model D packer at 8,100'. Ran tubing. Tested perfora-
10-11-68 tions 8,148-72' at rate of 5.64 MCFD. Treated perforations with
500 gallons MCA acid followed by 2,100 gallons Waterfrac-40 (pad
volume), 11,000 gallons Waterfrac-40 (1/2#/gal. 20-40 sand),
11,000 gallons Waterfrac-40 (1/2# gal. 20-40 glass beads), 2,100
gallons Waterfrac-40 (flush). All frac fluids pumped contained
600 cubic ft./bbl. CO₂. Six pounds radioactive sand dispersed
throughout sand and beads. Maximum injection pressure 5,700#,
average 5,300# @ 20 BPM. ISIP 2,000#, 15 min. 1,900#, 60 min.
1,300#. Job completed at 2:45 p.m., 10-5-68. Opened well to
pit at 3:45 p.m., 10-5-68, on 10/64" choke. Put well through
test unit at 9:00 a.m., 10-6-68.

<u>DATE</u>	<u>MCFD</u>	<u>CHOKE</u>	<u>FTP (psi)</u>
10-6-68	430	24/64	140
10-7-68	280	20/64	110
10-8-68	280	20/64	110
10-9-68	275	20/64	105
10-10-68	166	20/64	70
10-11-68	177	20/64	85

Shut well in at 1:00 p.m., 10-11-68.

Supplemental Testing Summary
Page 2

SUMMARY:

10-16-68 Ran Kuster BHP instrument to 8,000' - tool failed. Unable to
to make repairs. Secured Ball Brothers instrument and installed
10-19-68 same at 8,000'. Wireline stranded. Had to blow well to at-
mosphere in order to pull tools.
10-20-68 Re-ran Ball instrument to 8,000'. Opened well @ 11:20 a.m.,
to 10-21-68, 1,300# SITP, 900# SICP, and 2,684# SIBHP. Flowed
10-22-68 well at rate of 350 MCFD. Well began unloading water @ 3:30
p.m., 10-21-68, FTP 500#. BHP tool failed - pulled same and
shut well in. Repaired short circuit in line.
10-23-68 Opened well to pit at 9:00 a.m., 10-23-68, (SITP 1,760#, CP
to 1,010#). Blew well 2 hours at 1,500 MCFD, unloading 9 barrels
10-28-68 frac water. Re-ran Ball Brothers instrument to 8,000'. Shut
well in @ 11:45 a.m., 10-23-68, FBHP 744#. SIBHP 996# @ 12:00
noon, 1,296# @ 12:30 p.m. Opened well through test unit at
1:10 p.m., 10-23-68, rate 1,500 MCFD. Began constant rate test
at 2:10 p.m. Reduced rate to 124 MCFD @ 2:00 p.m., 10-24-68,
in order to unload water, back pressure control removed. Resumed
constant rate test at 10:00 a.m., 10-25-68, rate 104 MCFD.

<u>DATE</u>	<u>MCFD</u>	<u>FTP (psi)</u>	<u>BHP (psi)</u>
10-23-68	155	350	780
10-24-68	124	84	531
10-25-68	124	86	504
10-26-68	104	82	546
10-27-68	103	75	534
10-28-68	96	69	510
10-29-68	90	65	522

10-29-68 Shut well in at 9:00 a.m., 10-29-68 - final rate 90 MCFD, 65 psi
to FTP, 522 psi FBHP.
11-21-68

<u>DATE</u>	<u>SITP (psi)</u>	<u>SIBHP (psi)</u>
10-30-68	870	1542
10-31-68	1155	1746
11-1-68	1435	1872
11-2-68	1605	2034
11-3-68	1675	2130
11-4-68	1735	2208
11-5-68	1790	2262
11-6-68	1825	2310
11-7-68	1855	2352
11-8-68	1870	2376
11-9-68	1895	2403
11-10-68	1895	2406
11-11-68	1865	2358*
11-12-68	1915	2418
11-13-68	1930	2448
11-14-68	1940	2490

*Casing pressure increased from 1555 psi (11-10-68) to 1710 psi (11-11-68).

Supplemental Testing Summary
Page 3

SUMMARY:

10-29-68 Opened well through test unit @ 12:00 noon 11/14/68. Pulled
to pressure bomb. Pulled 3-1/2" tubing. Ran 2-3/8" tubing and
11-21-68 installed tree on November 21, 1968.
Cont'd.

LOG & SURVEY
RECORD:

	<u>Company</u>	<u>Type</u>	<u>Maximum Depth</u>	<u>Date</u>
#1	Marshall Wireline Service	Static BHT Survey	8,400'	9-6-68
#2	Marshall Wireline Service	Static BHT Survey	8,400'	9-21-68
#3	Marshall Wireline Service	Static BHT Survey	8,400'	9-21-68

TUBING RECORD:

(TUBING DETAIL FOR FRAC)

	Baker production tube & Seal assembly	14.76'
	Baker locator sub	.50
80 joints	2-3/8", 4.7#, N-80, 8R, EUE tubing	2,426.38
	2-3/8" X 3-1/2" 8R, EUE X-over sub	.62
181 joints	3-1/4" X 9.3#, N-80, 8R, EUE tubing	5,638.15
	3-1/2" pup joints	12.17
1 joint	3-1/2" X 9.3#, N-80, 8R, EUE tubing	31.85
	3-1/2" pup joint	4.12
		<u>8,113.89</u>
	less weight on packer	- 2.00
		<u>8,111.89'</u>

(COMPLETION TUBING DETAIL)

	Baker production tube & Seal assembly	14.76'
	Baker locator sub	.50
2 joints	2-3/8", 4.7#, N-80, 8R, EUE tubing	53.26
206 joints	2-3/8", 4.7#, J-55, 10R, NUE tubing	6,320.54
46 joints	2-3/8", 4.7#, J-55, 8R, EUE tubing	1,430.12
9 joints	2-3/8", 4.7#, N-80, 8R, EUE tubing	278.02
pup joint	2-3/8", 4.7#, N-80, 8R, EUE tubing	1.96
pup joint	2-3/8", 4.7#, N-80, 8R, EUE tubing	4.04
		<u>8,088.44'</u>
	plus KB elevation above tubing head	15.00
		<u>8,103.44'</u>
	less weight on packer	- 3.44
	Top of Baker Model D packer	<u>8,100.00'</u>

MR, Jr.:nbk
11-22-68