

UNION OIL COMPANY

CASING RECORD

WELL NO. P-0131 Fulmar #1Continental Shelf - Offshore

(FIELD)

Oregon

(COUNTY)

SEC.      T.      R.      B. & M.     

## DRILLING REPORT

Bluewater #2

(TOOLS)

(PERIOD ENDING)

24" & 13-3/8" at 622'11-3/4" at 2302'9-5/8" at 5034'

(NOTE INEFFECTIVE CASING)

NO. TOURS	DATE	DEPTHS		INCLINATION		DETAILS OF OPERATIONS, DESCRIPTIONS AND RESULTS
		FROM	TO	DEPTH	CORRECT ANGLE	
						<p><u>LOCATION:</u> Offshore Oregon Coast</p> <p>X = 910,394 Y = 899,300</p> <p><u>ELEVATION:</u> Rotary Table to ocean floor: 472' Water Depth: 404'</p> <p><u>CONTRACTOR:</u> Santa Fe Drilling Company Bluewater #2</p> <p><u>RIG:</u> Lee C. Moore - 142' x 40' 1,000,000# static hook capacity</p> <p><u>DRILLWORKS:</u> National 1625 D.E.</p> <p><u>ROTARY TABLES:</u> National 27-1/2"</p> <p><u>MUD PUMPS:</u> Two National N-1300 slush pumps</p> <p><u>MEASUREMENTS:</u></p> <p>All measurements taken from top of Rotary table at zero point, which is 58' above ocean at mean low tide.</p> <p><u>NOTE:</u> Two 12 hour tours per 24 hour period.</p>

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OregonBluswater #2

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(COUNTY)

(TOOLS)

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(PERIOD ENDING)

(NOTE INEFFECTIVE CASING)

NO. TOURS	DATE	DEPTHS		INCLINATION		DETAILS OF OPERATIONS, DESCRIPTIONS AND RESULTS
		FROM	TO	DEPTH	CORRECT ANGLE	
	1966					
2	7-4					Rig released from Shell Oil Company, OCS-P-075 #1RT Astoria district, Offshore Oregon at 0530 hours. De-Ballast Barge to towing draft at 1200 hours. Under tow at 2335 hours.
2	7-5					Under tow - general maintenance.
2	7-6					Arrived at location at 1645 hours. No. 4 anchor set at 1755 hours. No. 5 anchor set at 1910 hours. No. 7 anchor set at 2005 hours. No. 2 anchor set at 2110 hours. No. 1 anchor set at 2225 hours. No. 8 anchor set at 2355 hours.
2	7-7					Picked up ball joint and blowout prevention stack. Set on spider beams. Ballast barge to 39' working draft. Release tug Thor at 0120 hours. No. 6 anchor set at 0100 hours, No. 3 anchor set at 0155 hours. Test blowout prevention stack with 2000#/10 minutes. O.K. Check water depth 404' mean low low water (472' Rotary table) Rig up and run Marine conductor. Land yellow joint on beams.
		0'	637'			Make up spudding assembly. Spudded well at 2000 hours, 7-7-1966. Drill 12-1/4" hole, opened to 28" from 0' to 637'. Drill with sea water. Returns to ocean floor.
2	7-8	637'	722'			Continue to drill 12-1/4" hole opened to 28" from 637' to 722'. Circulated and spot viscous gel pill. Rig up and run 13-3/8" x 24" casing and pile joint assembly on Regan EL-3 disconnect (EL-3 mandrel) on Shaffer double gate 12" Series 900, 3000# blowout prevention equipment with 5" rams and 3-1/2" rams, on one single Shaffer 12" Series 900, 3000# blowout prevention equipment with blind rams, on Hydril 12"-3000# Type GK blowout preventor on 16" flex joint, on Regan CW-5 disconnect 16" Series 400 (CW-5 Regan mandrel) on 16" Marine conductor on 16" x 40' slip joint. Retrieve spudding drilling assembly. Run in hole with cement string landed on index pad. Test choke and kill lines with 2000# O.K. Mix and pump 600 sacks of construction cement, mixed with 5# Perlite per sack and 2% CaCl <sub>2</sub> .

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		FROM	TO	DEPTH	CORRECT ANGLE	
	7-8	637'	722'			CIP at 1600 hours, 7-8-1966. Standing cemented 3 hours, shut in, opened rams, pulled cement string. Waiting on cement. Hipped up flow line, mixed mud. <u>Shoe 13-3/8" at 622'.</u>
2	7-9	722'	857'			<p><u>Mud:</u> Weight 63, Vis. 45 Sec, WL-3.0 cc</p> <p>Run in hole with 12-1/4" bit and drilling assembly, found top of cement at 618', rotary table. Cleaned out to 638' - lost circulation. Pull out of hole with drilling assembly. Run in hole with cementing string. Cement Job No. 2: Cemented with 200 sacks of construction cement mixed with 50 Perlite per sack and 2% CaCl<sub>2</sub>, followed by 200 sacks neat cement mixed with 2% CaCl<sub>2</sub>. CIP at 0300 hours. Waited on cement 3 hours. Released pressure at cementing head. Pulled out of hole. Make up and run in hole with 12-1/4" bit, found top of cement at 586' rotary table. Clean out cement to 722'. Circulate and change over to fresh water mud. Pull out of hole. Make up 12-1/4" bit and 15" hole opener. Run in hole and ream from 638' to 722'. Drill 12-1/4" opened to 15" from 722' to 840'. Lost circulation at 840'. Mixed and pump lost circulation material to build volume. Pull out of hole, mix mud and lost circulation material. Run in hole drill from 840' to 857'. Gained returns for 1/2 hour at 500#. Lost Circulation again. Drilling ahead without returns.</p> <p><u>Mud:</u> Weight 66, Vis. 52, WL 1.5 cc, pH 10</p>
2	7-10	857'	2151'	1616'	0°15' N36W	Continued to drill 12-1/4" hole opened to 15" from 857' to 2151'. Drill without returns. Make wiper run. Spot viscous gel pill, pull out of hole. Rig up and run Schlumberger IES log to bottom. Run Sonic log and stopped at 1214'. Pull out. Run sidewall sample gun to total depth. Pull out of hole, load out Schlumberger tools. Run in hole with 12-1/4" bit and 15" hole opener.
2	7-11					Spot 600 barrels of viscous gel mud. Pull out of hole. Rig up and run 38 joints, 1480' of 11-3/4", #42, J-55 8rd casing, lowered and landed casing on 11-3/4" casing, seat 522' below rotary table. <u>Hung Baker guide shoe</u>

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NO. TOURS	DATE	DEPTHS		INCLINATION		DETAILS OF OPERATIONS, DESCRIPTIONS AND RESULTS
		FROM	TO	DEPTH	CORRECT ANGLE	
	7-11	(Continued)				at 2002' rotary table. Pull up 8' off of hanger seat and cemented with 800 sacks construction cement mixed with 5% Perlite per sack and 2% CaCl <sub>2</sub> . 96% cubic feet slurry weight displaced with 780 cubic feet sea water. <u>No returns to surface throughout cement job.</u> Lowered and landed 11-3/4" casing on casing seat 8' after completion of cementing operations. Released running tool pull one stand and circulated riser and flush blowout prevention equipment. Laid down cementing string. Waited on cement 10 hours. Run in hole with 10-5/8" bit and drilling assembly. Found top of cement at 1578'. Clean out cement to 2010'.
2	7-12	2151'	2678'	2321' 2544'	0°45' N50W 2°30' N34W	Continued to clean out hole to 2151'. Circulated and displace sea water with mud. Pull out of hole. Rig up and run Schlumberger cement bond log. Laid down Schlumberger tools and make up and run in hole with 10-5/8" bit and 12-1/4" hole opener assembly. Drill 10-5/8" hole and open to 12-1/4" from 2151' to 2678'.  <u>Mud:</u> Weight 96#, Vis. 60, WL 2.0 cc, pH 11, Sd 1/2%
2	7-13	2678'	3180'	2667' 3100'	1°45' N23W 0°45' N 2 E	Continued to drill 10-5/8" hole opened to 12-1/4" from 2678' to 3180'.  <u>Mud:</u> Weight 93, Vis. 57, WL 2.2 cc, pH 9, Sd 1%
2	7-14	3180'	3629'	3378'	0°45' S70W	Continued to drill 10-5/8" hole opened to 12-1/4" from 3180' to 3629'.  <u>Mud:</u> Weight 93, Vis. 47, WL 2.4 cc, pH 9, Sd. 3/4%
2	7-15	3629'	4284'	3748' 4160'	2° N15W 4°15'	Continued to drill 10-5/8" hole opened to 12-1/4" from 3629' to 4177'. Pull out of hole and laid down 10-5/8" bit and 12-1/4" hole opener. Make up and run in hole with 8-3/4" bit and stabilized drilling assembly. Drill 8-3/4" hole from 4177' to 4284'.  <u>Mud:</u> Weight 93, Vis. 53, WL 2.8 cc, pH 8.5,
2	7-16	4284'	5041'	4373'	3°30' N35E	Continued to drill 8-3/4" hole from 4284' to 5041'. Circulated, make 11 stand wiper run. Circulate. Pull

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NO. TOURS	DATE	DEPTHS		INCLINATION		DETAILS OF OPERATIONS, DESCRIPTIONS AND RESULTS
		FROM	TO	DEPTH	CORRECT ANGLE	
	7-15			4596'	3°15' N30E	out of hole.
				5041'	1°45' N31E	<u>Mud</u> : Weight 95#, Vis. 57, WL 2.9 cc, pH 9
2	7-17	5041'				Rig up and ran Schlumberger IES log, Sonic log, dipmeter and one side-wall sample gun. Load out Schlumberger tools. Run in hole with 8-3/4" drilling assembly and 12-1/4" expanding type hole opener, open 8-3/4" hole to 12-1/4" from 4177 to 4614'.  <u>Mud</u> : Weight 95.5, Vis. 55, WL 3.0 cc
2	7-18	5041'				Continued to open 8-3/4" hole to 12-1/4" from 4614' to 5041'. Circulate, make 33 stand wiper run, circulate. Pull out of hole. Rig up and run 112 joints (4544') of 9-5/8", 36#, J-55 buttress thread casing. Hung Baker guide shoe at 5004', cemented with 900 sacks construction cement mixed with 5# Perlite per sack, 2% gel and 2% CaCl <sub>2</sub> . Displaced with 30 cubic feet sea water behind followed by 509 cubic feet mud. CIP at 2400 hours.  <u>Mud</u> : 95.5#, Vis. 55, WL 3.0 cc
2	7-19	5041'	5115'			Waited on cement 10 hours. Run in hole with 8-3/4" bit and drilling assembly, pressure test casing and blind runs with 2000# for 5 minutes O.K. Found top of cement at 4844', drill out cement and shoe 9-5/8" casing. Drill 8-3/4" hole from 5041' to 5115'.  <u>Mud</u> : 102#, Vis. 46, WL 3.0 cc
2	7-20	5115'	5862'	5501'	1°15' N 1 W	Continued to drill 8-3/4" hole from 5115' to 5862'. Build mud weight to 105# cubic feet.  <u>Mud</u> : 105#, Vis. 46, WL 3.3 cc
2	7-21	5862'	6501'	6180'	0°45' N 7 E	Continued to drill 8-3/4" hole from 5862' to 6501'.  <u>Mud</u> : 150#, Vis. 45, WL 3.3 cc, pH 11.6

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NO. TOURS	DATE	DEPTHS		INCLINATION		DETAILS OF OPERATIONS, DESCRIPTIONS AND RESULTS
		FROM	TO	DEPTH	CORRECT ANGLE	
2	7-22	6501'	6596'	6572'	1°45' N 5 W	Continued to drill 8-3/4" hole from 5862' to 6572'. Circulate, make 17 stand wiper run, circulate, pull out of hole. Make up and run in hole with core barrel, Core #1 from 6572' to 6596', 24' in 8-1/2 hours. Full recovery.  Mud: 105#, Vis. 52, WL 2.6 cc, pH 11.4
2	7-23	6596'	7040'	7006'	1° true north	Run in hole with 8-3/4" bit and drilling assembly, ream 8-9/16" core hole from 6572' to 6596', drill 8-3/4" hole from 6596' to 7040'.  Mud: 105#, Vis. 47, WL 2.8 cc, pH 11.0
2	7-24	7040'	7476'			Continue to drill 8-3/4" hole from 7040' to 7476'.  Mud: 107#, Vis. 56, WL 2.6 cc, pH 10
2	7-25	7476'	7669'	7476'	2°15' S80E	Continued to drill 8-3/4" hole from 7476' to 7669'.  Mud: 106#, Vis. 53, WL 2.6, pH 10
2	7-26	7669'	8040'	7669'	3°30' S83E	Continued to drill 8-3/4" hole from 7669' to 8040'.  Mud: 107#, Vis. 57, WL 3.0 cc, pH 9
2	7-27	8040'	8279'	7937'	3°15' N75E	Continued to drill 8-3/4" hole from 8040 to 8297'.  Mud: 109#, Vis. 57, WL 2.4 cc, pH 9
2	7-28	8279'	8328'	8297'	3°15' N70E	Circulate at 8297', condition hole for logging. Pull out of hole. Rig up and run Schlumberger IES log, Sonic log, continuous dipmeter, formation density log and one sidewall sample gun. Load out Schlumberger tools. Run in hole, test blowout prevention equipment and remote control stations. Drill 8-3/4" hole from 8297' to 8328'.  Mud: Weight 109, Vis. 53, WL 2.2 cc, pH 9
2	7-29	8328'	8564'	8410'	3°15' S80E	Continued to drill 8-3/4" hole from 8328' to 8564'. Mud: 109#, 53 Sec. 2.2 cc, pH 9

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(TOOLS)SEC.      T.      R.      B. & M.     

(PERIOD ENDING)

(NOTE INEFFECTIVE CASING)

NO. OF HOURS	DATE	DEPTHS		INCLINATION		DETAILS OF OPERATIONS, DESCRIPTIONS AND RESULTS
		FROM	TO	DEPTH	CORRECT ANGLE	
2	7-30	8564'	8828'	8672'	3° S47E	Continued to drill 8-3/4" hole from 8564' to 8828'. <u> Mud: 112#, 49 Sec. 3.5 cc, pH 10</u>
2	7-31	8828'	9100'	8921'	3°45' S37E 9100' 4° S26E	Continued to drill 8-3/4" hole from 8828' to 9100'. <u> Mud: 112#, 53 Sec., 3.0 cc, pH 10.3</u>
2	8-1	9100'	9291'			Continued to drill 8-3/4" hole from 9100' to 9291'. <u> Mud: 112#, 53 Sec., 3.0 cc, pH 10</u>
2	8-2	9291'	9465'	9296'	4°30' 9465' 4° S30E	Continued to drill 8-3/4" hole from 9291' to 9465'. <u> Mud: 112#, 57 Sec, 3.0 cc, pH 9.8</u>
2	8-3	9465'	9677'	9659'	4° S30E	Continued to drill 8-3/4" hole from 9465' to 9677'. <u> Mud: 112#, 58 Sec., 2.9 cc, pH 11</u>
2	8-4	9677'	9935'	9811'	3°15' S25E	Continued to drill 8-3/4" hole from 9677' to 9935'. <u> Mud: 114#, 55 Sec., 3.2 cc, pH 9.7</u>
2	8-5	9935'	10,121'	10,101'	3° S38E	Continued to drill 8-3/4" hole from 9935' to 10,101'. <u> Mud: 115#, 60 Sec. 3.6 cc, pH 9.1, Sd 3%</u>
2	8-6	10,121'	10,271'			Continued to drill 8-3/4" hole from 10,121' to 10,271'. Lost pump pressure and weight, indicating twist off. Pull out of hole, left 291' of fish in hole, 8-3/4" bit, monel, 1 drill collar, stabilizer, 3 drill collars, stabilizer, 2 drill collars, 4" stub and pin of drill collar in hole. Top of fish at 9980'.
2	8-7	10,271'	10,302'			Make up Bowen overshot with 6-3/4" grapple, run in hole with fishing tools, work over fish at 9980'. Pull out of hole, recovered total fish. Break down fishing tools. Run in hole with drilling assembly and drill 8-3/4" hole from 10,271' to 10,302', lost pump pressure at 10,302'. Pull out of hole. Bumper sub parted at top of service break of lower bumper sub, left 399' of

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(TOOLS)SEC. T. R. R. B. & M. 

(PERIOD ENDING)

(NOTE INEFFECTIVE CASING)

NO. OF HOURS	DATE	DEPTHS		INCLINATION		DETAILS OF OPERATIONS, DESCRIPTIONS AND RESULTS
		FROM	TO	DEPTH	CORRECT ANGLE	
2	8-17	11,848	11,909			Continue to drill 8-3/4" hole from 11,848' to 11,909'. <u>Mud:</u> 116#, 58 Sec., 3.8 cc, 10.5 pH, 2.5% sand
2	8-18	11,909	12,024	11,904	2°30' S24E	Continue to drill 8-3/4" hole from 11,909' to 12,024'. <u>Mud:</u> 116#, 48 Sec., 3.2 cc, 11.5 pH, 3% sand
2	8-19	12,024	12,189	12,112	N.G.	Continued to drill 8-3/4" hole from 12,024' to 12,189'. <u>Mud:</u> 116#, 51 Sec., 3.0 cc, 8.5 pH, 2.5% sand
2	8-20	12,189	12,221			Continue to drill 8-3/4" hole from 12,189' to 12,221'. Circulate and condition hole for logging. Pull out of hole. Rig up and run Schlumberger IES log, Sonic log and dipmeter. Dipmeter sticking at 10,400'. Pulled free. Completed dipmeter log run. Lay down Schlumberger tools. Rig down Schlumberger prior to clean out run with bit. <u>Mud:</u> 116#, 57 Sec., 3.0 cc, 9. pH, 2% sand
2	8-21	12,221	12,221			Run in hole with 8-3/4" bit and drilling assembly. Circulate and condition mud at 12,221'. Pull out of hole. Rig up Schlumberger. Run Schlumberger formation density log and sidewall sample gun. Run velocity survey. Shot nine 20# charges. Rig down Schlumberger. Make up drilling assembly.
2	8-22	12,221	12,285			Run in hole with 8-3/4" bit and drilling assembly. Drill 8-3/4" hole from 12,221' to 12,285'. Circulate and rig up to lay down 5" drill pipe. Laid down 143 joints of 5" drill pipe. Set back 30 stands in derrick. <u>Mud:</u> 115#, 55 Sec., 3.5 cc, 10.5 pH, 3% sand
2	8-23	12,285	Total Depth of well			Run in hole with 5" open end drill pipe, hung tail at 6150', pumped 100 cubic feet of water ahead, mixed and pumped 185 sacks of cement mixed with sea water and 3% CaCl <sub>2</sub> , 112 cubic feet slurry weight, displaced with 475 cubic feet mud. CIP at 1435 hours. Waited on cement to 1900 hours. Run in hole found top cement at

DIVISION ENGINEER

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Blueswater #2  
(TOOLS)

(PERIOD ENDING)

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NO. TOURS	DATE	DEPTHS		INCLINATION		DETAILS OF OPERATIONS, DESCRIPTIONS AND RESULTS
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	8-23	12,285'	Total Depth of Well			(Continued)  4385'. Tested cement plug with 20,000# weight - tested O.K. #1 - 265 lineal feet plug, 146' cement outside of shoe of 9-5/8" and 119 lineal feet inside of 9-5/8" casing. Pulled up to 4675' tail of 5" open end drill pipe. Pumped 100 cubic feet of water ahead, mixed and pumped 50 sacks of neat cement mixed with sea water and 3% CaCl <sub>2</sub> . Displaced with 474 cubic feet mud, 108# cubic feet of slurry weight. CIP at 1935 hours. #2 - 128 lineal foot plug inside of 9-5/8" casing (9-5/8" casing shoe at 5004'). Circulate and flush drill pipe, paid down 100 joints of 5" drill pipe. Pick up 9-5/8" casing cutting assembly.
2	8-24	12,285'	Total Depth			Run in hole with 9-5/8" casing cutting assembly and cut 9-5/8" casing at 509' rotary table. Close pipe rams and Hydril, obtain 300# pressure build up, bled off and had returns to surface. "Definite bond between 9-5/8" casing and 11-3/4" and 13-3/8" x 24" Marine conductor". Pull out of hole and laid down cutting tools. Recovered 9-5/8" casing hanger and 43' of 9-5/8" casing that hung up on Service "K" mill knives. Run in hole with open end 5" drill pipe, hung tail at 624' rotary table. Pump 100 cubic feet of water ahead, mixed and pump 50 sack of neat cement mixed with sea water and 3% CaCl <sub>2</sub> . Displace with 50 cubic feet of mud. CIP at 0425 hours, 106# cubic feet of slurry weight. Theoretical top of cement at 497' rotary table or 25' below ocean floor (#2 - 127 lineal foot plug). Pull out of hole, make up blowout prevention equipment lifting tools and run in hole. Sheared 13-3/8" x 24" sub-marine conductor with 1500 psi. Pulled 350,000#. Pull up and land counter weight clamps on spider beams. Pull drill pipe and blowout prevention equipment lifting tools. Pull choke and kill lines. Pull Marine conductor - did not recover index pad - index pad sunk in creater on ocean floor and cemented in. Set blowout prevention equipment on spider beams at 1700 hours, 8-24-1966. Rig released at 1700 hours, 8-24-1966.

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						<p style="text-align: center;"><u>CASING RECORD</u></p> <p>24" and 13-3/8" at 632'</p> <p>11-3/4" at 2032'</p> <p>9-5/8" at 5004'</p>

