

## OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Colorado Interstate Gas Exploration Company's Blue Gap II Unit Well 5 drilled in the SW1/4NE1/4 (1955 feet FNL, 1994 feet FEL) of sec. 23, T 15 N, R 93 W, Carbon County, Wyoming

Surface elevation: 6,693 feet

Sample number	Run No.	Yield of product				Specific gravity of oil at 60°/60° F	Properties of spent shale		Remarks
		Weight percent		Spent shale	Gas + loss		Gal per ton		
Laramie	Their	Oil	Water					Oil <sup>1/</sup>	Water
SBR76-9519-49	100-420					No Oil			
SBR76-9550	420-430					b			
SBR76-9551-87	430-800					No Oil			
SBR76-9588-89	800-820					b			
SBR76-9590-91	820-840					c			
SBR76-9592-93	840-860					Trace			
SBR76-9594-95	860-880					No Oil			
SBR76-9596-97	880-900					Trace			
SBR76-9598	900-910					c			
SBR76-9599	910-920					b			
SBR76-9600	920-930					c			
SBR76-9601	930-940					b			
SBR76-9602	940-950					Trace			
SBR76-9603	950-960					No Oil			
SBR76-9604	960-970					b			
SBR76-9605	970-980					Trace			
SBR76-9606-07	980-1000					b			
SBR76-9608-11	1000-1030					c			
SBR76-9612	1030-1040					b			
SBR76-9613-15	1040-1070					Trace			
SBR76-9616	1070-1080					b			
SBR76-9617-18	1080-1100					c			
SBR76-9619-20	1100-1120					Trace			
SBR76-9621-25	1120-1170					No Oil			
SBR76-9626	1170-1180					Trace			
SBR76-9627-9708	1180-2000					No Oil			2000-6490 missing
SBR76-9709	6490-6500					b			
SBR76-9710	6500-6510	23290	0.0	1.8	96.3	1.9	0.1a	4.3	None
SBR76-9711	6510-6520	23291	.1	2.4	95.3	2.2	.4a	5.8	None
SBR76-9712	6520-6530	23292	1.1	3.1	94.3	1.5	2.7a	7.4	None

See footnote at end of table.

Drill cuttings received May 13, 1976; assays made on air-dried samples

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Samples from Colorado Interstate Gas Exploration Company's Blue Gap II Unit Well 5

Surface elevation: 6,693 feet

Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60° F	Properties of spent shale Tendency to coke	Remarks
			Weight percent		Spent shale	Gas + loss			
Laramie	Their		Oil	Water					
SBR76-9713	6530-6540	23293	0.2	2.6	96.2	1.0	0.5a	6.2	None
SBR76-9714	6540-6550	23294	.2	3.0	94.5	2.3	.6a	7.2	None
SBR76-9715	6550-6560	23295	.1	2.6	96.4	.9	.2a	6.2	None
SBR76-9716	6560-6570	23296	.1	3.1	95.1	1.7	.3a	7.4	None
SBR76-9717	6570-6580	23297	.2	2.7	95.2	1.9	.6a	6.5	None
SBR76-9718	6580-6590	23298	.1	2.4	96.1	1.4	.4a	5.8	None
SBR76-9719	6590-6600	23299	.4	2.9	95.2	1.5	1.0a	7.0	None
SBR76-9720	6600-6610	23300	.1	2.8	96.4	.7	.3a	6.7	None
SBR76-9721	6610-6620						c		
SBR76-9722	6620-6630						b		
SBR76-9723-25	6630-6660						c		
SBR76-9726	6660-6670						b		
SBR76-9727-29	6670-6700						c		
SBR76-9730	6700-6710						b		
SBR76-9731	6710-6720	23301	.6	2.6	95.0	1.8	1.5a	6.2	None
SBR76-9732	6720-6730	23302	.4	2.1	96.4	1.1	1.2a	5.0	None
SBR76-9733	6730-6740	23303	.6	2.5	95.4	1.5	1.6a	6.0	None
SBR76-9734	6740-6750	23304	.6	2.1	96.3	1.0	1.7a	5.0	None
SBR76-9735	6750-6760	23305	.4	2.4	95.4	1.8	1.2a	5.8	None
SBR76-9736	6770-6780						No Oil		
SBR76-9737	6780-6790						Trace		
SBR76-9738	6810-6820	23306	.6	2.1	95.1	2.2	1.5a	5.0	None
SBR76-9739	6820-6830	23307	.6	1.9	96.4	1.1	1.6a	4.6	None
SBR76-9740	6830-6840	23308	.4	2.0	96.4	1.2	1.0a	4.8	None
SBR76-9741	6840-6850	23309	.5	2.9	94.0	2.6	1.3a	7.0	None
SBR76-9742	6850-6860	23310	.3	1.8	96.9	1.0	.9a	4.3	None
SBR76-9743	6860-6870	23311	3.5	3.2	90.6	2.7	9.1a	7.7	None
SBR76-9744	6870-6880	23312	.4	2.7	95.4	1.5	1.2a	6.5	None
SBR76-9745	6880-6890	23313	.4	2.5	96.0	1.1	1.0a	6.0	None
SBR76-9746	6890-6900	23314	.4	1.9	96.3	1.4	1.0a	4.6	None

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Samples from Colorado Interstate Gas Exploration Company's Blue Gap II Unit Well 5

Surface elevation: 6,693 feet

Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60° F	Properties of spent shale		Remarks
			Weight percent		Gal per ton			Tendency to		
Laramie	Their		Oil	Water	Spent shale	Gas + loss	Oil <sup>1/</sup>	Water	coke	
SBR76-9747	6900-6910	23315	0.4	2.9	96.0	0.7	1.1a	7.0	None	
SBR76-9748	6910-6920	23316	.2	3.0	96.2	.6	.7a	7.2	None	
SBR76-9749	6920-6930	23317	.1	3.3	95.0	1.6	.2a	7.9	None	
SBR76-9750	6930-6940						c			
SBR76-9751	6940-6950						b			
SBR76-9752	6950-6960						Trace			
SBR76-9753-54	6960-6980						b			
SBR76-9755-58	6980-7020						Trace			
SBR76-9759	7020-7030	23318	.2	1.6	95.5	2.7	.6a	3.8	None	
SBR76-9760	7030-7040	23319	.1	2.1	97.4	.4	.3a	5.0	None	
SBR76-9761-64	7040-7080						Trace			
SBR76-9765	7080-7090						b			
SBR76-9766	7090-7100	23320	.2	1.2	97.0	1.6	.6a	2.9	None	
SBR76-9767-77	7100-7210						b			
SBR76-9778-79	7210-7230						Trace			
SBR76-9780	7230-7240						b			
SBR76-9781	7240-7250						No Oil			
SBR76-9782-93	7260-7380						No Oil			
SBR76-9794	7380-7390						b			
SBR76-9795	7390-7400						Trace			
SBR76-9796-9800	7400-7450						b			
SBR76-9801-02	7450-7470						c			
SBR76-9803-04	7470-7490						b			
SBR76-9805	7490-7500						Trace			
SBR76-9806-07	7500-7520						b			
SBR76-9808	7520-7530						Trace			
SBR76-9809-10	7530-7550						b			
SBR76-9811-12	7550-7570						Trace			
SBR76-9813-15	7570-7600						No Oil			
SBR76-9816-17	7600-7620						Trace			

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Drill cuttings received May 13, 1976; assays made on air-dried samples

## OIL-SHALE ASSAYS BY MODIFIED FISCHER RETORT METHOD

Samples from Colorado Interstate Gas Exploration Company's Blue Gap II Unit Well 5

Surface elevation: 6,693 feet

Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60° F	Properties of spent shale Tendency to coke	Remarks
			Weight percent		Gal per ton	Spent shale			
Laramie	Their		Oil	Water			Oil <sup>1/</sup>	Water	
SBR76-9818-19	7620-7640							No Oil	
SBR76-9820-21	7640-7660							Trace	
SBR76-9822	7660-7670	23321	0.0	1.5	97.7	0.8	3.5	Trace	None
SBR76-9823-24	7670-7690							Trace	
SBR76-9825	7690-7700							c	
SBR76-9826	7700-7710							b	
SBR76-9827	7710-7720							c	
SBR76-9828	7720-7730							Trace	
SBR76-9829	7730-7740							c	
SBR76-9830-31	7740-7760							b	
SBR76-9832	7760-7770							c	
SBR76-9833-35	7770-7800							b	
SBR76-9836-37	7810-7830							b	
SBR76-9838-41	7830-7870							Trace	
SBR76-9842	7870-7880							b	
SBR76-9843-45	7880-7910							Trace	
SBR76-9846	7910-7920							No Oil	
SBR76-9847	7920-7930							b	
SBR76-9848	7930-7940							Trace	
SBR76-9849	7940-7950							b	
SBR76-9850	7950-7960							Trace	
SBR76-9851-52	7960-7980							b	
SBR76-9853	7980-7990							c	
SBR76-9854	7990-8000							b	
SBR76-9855-59	8000-8050							Trace	
SBR76-9860-61	8050-8070							c	
SBR76-9862	8070-8080							b	
SBR76-9863-67	8080-8130							c	
SBR76-9868	8130-8140							b	
SBR76-9869	8140-8150							c	

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Samples from Colorado Interstate Gas Exploration Company's Blue Gap II Unit Well 5

Surface elevation: 6,693 feet

Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60° F	Properties of spent shale		Remarks
			Weight percent		Gal per ton	Tendency to				
Laramie	Their		Oil	Water		Spent shale	Gas + loss	Oil <sup>1/</sup>	Water	coke
SBR76-9870-71	8150-8170						b			
SBR76-9872	8170-8180						Trace			
SBR76-9873-74	8180-8200						c			
SBR76-9875-90	8200-8360						Trace			
SBR76-9891	8360-8370						No Oil			
SBR76-9892-96	8380-8430						No Oil			
SBR76-9897	8450-8460						No Oil			
SBR76-9898-9913	8470-8630						No Oil			
SBR76-9914	8630-8640						Trace			
SBR76-9915	8640-8650						b			
SBR76-9916-17	8650-8670						Trace			
SBR76-9918-21	8670-8710						No Oil			
SBR76-9922-27	8710-8770						Trace			
SBR76-9928-35	8780-8860						Trace			
SBR76-9936-37	8860-8880						b			
SBR76-9938	8880-8890						Trace			
SBR76-9939-41	8890-8920						b			
SBR76-9942-43	8920-8940						Trace			
SBR76-9944-73	8940-9240						No Oil			
SBR76-9974	9240-9250						Trace			
SBR76-9975-78	9250-9290						No Oil			
SBR76-9979	9290-9300						b			
SBR76-9980	9300-9310						Trace			
SBR76-9981	9310-9320						b			
SBR76-9982	9320-9330						c			
SBR76-9983-86	9360-9400						b			
SBR76-9987	9420-9430	23322	0.5	2.0	96.0	1.5	1.4a	4.8	None	
SBR76-9988	9430-9440	23323	3.1	4.4	84.8	7.7	8.2a	10.4	None	
SBR76-9989	9470-9480	23324	1.4	1.5	82.8	14.3	3.7a	3.6	None	
SBR76-9990	9490-9500	23325	1.0	2.0	95.5	1.5	2.6a	4.8	None	

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			Weight percent		Gal per ton			Tendency to		
Laramie	Their		Oil	Water	Spent shale	Gas + loss	Oil <sup>1/</sup>	Water	coke	
SBR76-9991	9510-9520						b			
SBR76-9992	9530-9540						c			
SBR76-9993	9540-9550						b			
SBR76-9994	9550-9560						c			
SBR76-9995-96	9560-9580						Trace			
SBR76-9997-99	9580-9610						b			
SBR76-10000	9620-9630						b			
SBR76-10001-05	9650-9700						b			
SBR76-10006-07	9710-9730						c			
SBR76-10008	9730-9740						b			
SBR76-10009-10	9750-9770						b			
SBR76-10011-12	9770-9790						c			
SBR76-10013-17	9790-9840						b			
SBR76-10018-19	9840-9860						Trace			
SBR76-10020-27	9860-9940						b			
SBR76-10028	9950-9960	23328	0.1	.6	98.3	1.0	0.3a	1.4	None	
SBR76-10029	9960-9970	23329	.6	2.3	96.1	1.0	1.5a	5.5	None	
SBR76-10030	9970-9980	23330	.4	1.6	97.2	.8	1.0a	3.8	None	
SBR76-10031-35	9980-10030						c			
SBR76-10036	10030-10040						b			
SBR76-10037-38	10040-10060						c			
SBR76-10039	10060-10070						b			
SBR76-10040	10070-10080						Trace			
SBR76-10041	10080-10090						b			
SBR76-10042	10090-10100						Trace			
SBR76-10043	10100-10110						c			
SBR76-10044	10110-10120						Trace			
SBR76-10045	10120-10130						b			
SBR76-10046	10130-10140	23331	.8	1.7	94.2	3.3	2.1a	4.1	None	
SBR76-10047	10140-10150	23332	.9	1.6	94.8	2.7	2.4a	3.8	None	

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Samples from Colorado Interstate Gas Exploration Company's Blue Gap II Unit Well 5

Surface elevation: 6,693 feet

Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60° F	Properties of spent shale		Remarks	
			Weight percent		Gal per ton			Tendency to			
Laramie	Their		Oil	Water	Spent shale	Gas + loss	Oil <sup>1/</sup>	Water	coke		
SBR76-10048	10150-10160	23333	0.6	2.1	92.5	4.8	1.6a	4.9	None		
SBR76-10049	10160-10170	23337	.5	1.3	96.6	1.6	1.3a	3.2	None		
SBR76-10050-52	10170-10200						b				
SBR76-10053	10200-10210	23338	.0	1.0	96.3	2.7	No Oil	2.4	None		
SBR76-10054	10210-10220	23339	1.0	.8	95.7	2.5	2.7a	1.8	None		
SBR76-10055	10220-10230	23340	.4	1.1	96.8	1.7	1.0a	2.5	None		
SBR76-10056-57	10230-10250						b				
SBR76-10058-59	10250-10270						c				
SBR76-10060	10270-10280						b				
SBR76-10061	10280-10290						c				
SBR76-10062-64	10290-10320						b				
SBR76-10065	10320-10330	23341	.4	1.4	96.1	2.1	1.1a	3.3	None		
SBR76-10066	10330-10340	23342	1.0	1.7	92.9	4.4	2.7a	4.0	None	Coal, swelling	
SBR76-10067	10340-10350	23343	3.4	2.2	91.7	2.7	8.9a	5.2	Heavy	Coal, swelling	
SBR76-10068	10350-10360	23344	3.2	2.6	90.9	3.3	8.4a	6.2	Heavy	Coal, swelling	
SBR76-10069	10360-10370	23345	3.3	2.6	90.4	3.7	8.3	6.2	0.955	Heavy	Coal, swelling
SBR76-10070	10370-10380	23346	3.3	2.4	91.8	2.5	8.3	5.9	.941	Heavy	Coal, swelling
SBR76-10071	10380-10390	23347	1.7	2.1	94.7	1.5	4.4a	5.0	Heavy	Coal, swelling	
SBR76-10072	10390-10400	23348	1.5	2.1	94.3	2.1	3.9a	5.1	Heavy	Coal, swelling	
SBR76-10073	10400-10410	23349	.7	1.7	95.5	2.1	1.9a	4.2	None	Coal, swelling	
SBR76-10074	10410-10420	23350	.0	1.9	94.3	3.8	No Oil	4.5	Heavy	Coal, swelling	
SBR76-10075	10420-10430	23351	5.6	.0	86.6	7.8	14.6a	Trace	Heavy	Coal, swelling	
SBR76-10076	10450-10460	23352	4.4	2.2	89.9	3.5	11.3a	5.3	Heavy	Coal, swelling	
SBR76-10077	10480-10490	23353	5.1	4.1	85.8	5.0	13.4a	9.9	Heavy	Coal, swelling	
SBR76-10078	10490-10500	23354	.0	5.0	82.6	12.4	No Oil	12.0	None	Coal, swelling	
SBR76-10080	10510-10520	23356	4.1	1.1	91.4	3.4	10.6a	2.8	Heavy	Coal, swelling	
SBR76-10081	10520-10530	23357	5.7	.4	91.4	2.5	15.0a	1.0	Heavy	Coal, swelling	
SBR76-10082	10530-10540	23358	5.6	.0	91.8	2.6	14.7a	Trace	Heavy	Coal, swelling	
SBR76-10083	10540-10550	23359	1.7	2.1	93.1	3.1	4.3a	5.1	Heavy	Coal, swelling	
SBR76-10084	10550-10560	23360	2.6	2.1	90.9	4.4	6.9a	5.0	Heavy	Coal, swelling	

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Surface elevation: 6,693 feet

Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60° F	Properties of spent shale		Remarks	
			Weight percent		Spent shale	Gas + loss		Gal per ton			Tendency to coke
Laramie	Their		Oil	Water					Oil <sup>1/</sup>	Water	
SBR76-10085	10560-10570	23361	2.7	1.6	94.6	1.1	7.1a	3.8		Heavy	Coal, swelling
SBR76-10086	10570-10580	23362	4.5	.5	93.7	1.3	11.8a	1.3		Heavy	Coal, swelling
SBR76-10087	10580-10590	23363	5.6	.7	91.7	2.0	14.7a	1.6		Heavy	Coal, swelling
SBR76-10088	10590-10600	23364	2.7	.6	93.0	3.7	7.1a	1.4		Moderate	Coal, swelling
SBR76-10089	10600-10610	23365	5.2	1.1	90.9	2.8	13.4	2.5	0.937	Heavy	Coal, swelling
SBR76-10090	10610-10620	23366	6.8	.4	86.9	5.9	17.3	1.0	.948	Heavy	Coal, swelling
SBR76-10091	10620-10630	23367	3.6	2.4	91.7	2.3	9.2	5.8	.948	Heavy	Coal, swelling
SBR76-10092	10630-10640	23368	3.6	1.3	92.9	2.2	9.3	3.1	.934	Heavy	Coal, swelling
SBR76-10093	10640-10650	23369	6.3	.8	87.8	5.1	16.1	1.9	.941	Heavy	Coal, swelling
SBR76-10094-95	10650-10670						b				
SBR76-10096	10670-10680						c				
SBR76-10097	10680-10690	23370	.0	1.7	95.5	2.8	No Oil	4.1		Heavy	Coal, swelling
SBR76-10098	10690-10700	23371	1.6	2.0	94.4	2.0	4.2a	4.8		Heavy	Coal, swelling
SBR76-10099	10700-10710	23372	2.3	2.4	92.9	2.4	5.9a	5.8		Heavy	Coal, swelling
SBR76-10100-01	10710-10730						b				
SBR76-10102-03	10730-10750						c				
SBR76-10104-05	10750-10770						Trace				
SBR76-10106	10770-10780						b				
SBR76-10107-13	10780-10850						Trace				
SBR76-10114-41	10850-11130						No Oil				
SBR76-10142	11130-11140						c				
SBR76-10143	11140-11150						No Oil				
SBR76-10144-46	11150-11180						Trace				
SBR76-10147	11180-11190						b				
SBR76-10148	11190-11200						c				
SBR76-10149-51	11200-11230						b				
SBR76-10152	11230-11240						c				
SBR76-10153-54	11240-11260						No Oil				
SBR76-10155-57	11260-11290						b				
SBR76-10158	11290-11300						c				

See footnote at end of table.

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Surface elevation: 6,693 feet

Sample number		Run No.	Yield of product				Specific gravity of oil at 60°/60° F	Properties of spent shale		Remarks
			Weight percent		Gas + loss	Gal per ton		Tendency to coke		
Laramie	Their		Oil	Water		shale			Oil <sup>1/</sup>	Water
SBR76-10159-61	11300-11330						b			
SBR76-10162	11330-11340	23373	0.6	1.8	96.9	0.7	1.5a	4.4		None
SBR76-10163	11340-11350	23374	.2	1.9	95.9	2.0	.5a	4.4		None
SBR76-10164-68	11350-11400						b			
SBR76-10169	11400-11410						c			
SBR76-10170	11410-11420						b			
SBR76-10171-79	11420-11510						Trace			
SBR76-10180-81	11510-11530						b			
SBR76-10182-83	11530-11550						c			
SBR76-10184	11550-11560						Trace			
SBR76-10185	11560-11570						c			
SBR76-10186	11570-11580						b			
SBR76-10187	11580-11590						c			
SBR76-10188	11590-11600						b			
SBR76-10189	11600-11610						Trace			
SBR76-10190	11610-11620						b			
SBR76-10191	11620-11630						Trace			
SBR76-10192-93	11630-11650						b			
SBR76-10194-95	11650-11670						Trace			
SBR76-10196-99	11670-11710						b			
SBR76-10200	11710-11720	23375	5.5	28.8	55.4	10.3	11.6	69.1	1.133	None
SBR76-10201	11720-11730	23376	.4	4.5	92.1	3.0	1.0a	10.8		None
SBR76-10202-06	11730-11780						c			
SBR76-10207-20	11780-11920						b			
SBR76-10221-28	11920-12000						Trace			

<sup>1/</sup> "a"--indicates specific gravity estimated as 0.92. Oil yields were estimated by a rapid test-tube method: "No Oil," "Trace," "b"--less than 1 gal oil/ton, "c"--1 to 3 gal oil/ton.

Drill cuttings received May 13, 1976; assays made on air-dried samples