U.S. DEPARTMENT OF THE INTERIOR
U.S GEOLOGICAL SURVEY

Rock-Eval pyrolysis data from well cuttings samples, Eastern Nevada, collected during 1991

by

Charles E. Barker[1], R.J. Szmajter[1], Ted A. Daws[1] and Charles N. Threlkeld[1]

Open-File Report 93-186

[1] U.S. Geological Survey, Box 25046, MS 971
Denver Federal Center, Denver, Colorado 80225 U.S.A.

1993

CONTENTS

INTRODUCTION

This report makes available recent Rock-Eval analyses measured as part of a thermal maturity study of eastern Nevada. The release of the data to the State of Nevada is required as part of their sampling agreement.

The well cuttings samples were collected from the Nevada Bureau of Mines and Geology (NBMG) core library at the University of Nevada, Reno. Additional well information including formation tops, if available, is given in Garside et al. (1988); Hess and Purkey (1992) and in the files of the NBMG.

METHODS

For this study, mudrock intervals at about 1000 foot spacing were selected from well logs and formation tops. The target sample for analysis was the most carbonaceous (e.g. darkest gray) mudrock. The depth interval used was selected for its lithologic homogeneity and(or) lack of contamination by well mud additives, but the samples were not individually picked for certain rock types. Visible organic contaminants were removed. The samples were pulverized for analysis.

Analyses were performed on a Delsi[1] Rock-Eval II instrument. The method is described by Espitalie et al. (1977). Recent general discussions of the interpretation of Rock-Eval data are: Katz, 1983; Peters, 1986; Langford and Blanc-Valleron, 1990. Specific definitions for Rock Eval data reports are as follows: S1 and S2 are the first and second pulses of hydrocarbon yield occurring during pyrolysis of the sample; S3 is the amount of CO_2 generated during pyrolysis; TOC is total organic carbon; Tmax is the temperature of maximum pyrolysis yield in the S2 pulse; Hydrogen index (HI) = (S2/TOC)x100; Oxygen index (OI) = (S3/TOC)x100; PI = Transformation ratio = S1/(S1+S2).

REFERENCES

Espitalie, J., Laporte, J.L., Madec, M., Marquis, F., Leplat, P., Paulet, J., Boutefeu, A., 1977, Rapid method of characterizing source rocks and their petroleum potential and degree of maturity: Revue de l'Institut Francais du Petrole, v. 32, p. 23-42.

Garside, L.J., Hess, R.H., Fleming, K.L., and Weimer, B.S., 1988, Oil and gas developments in Nevada: Nevada Bureau of Mines and Geology Bulletin 104. 136 p.

Hess, R.H., and Purkey, B.W., 1992, Oil and gas wells drilled in Nevada since 1986: Nevada Bureau of Mines and Geology List L-8. 4 p.

Katz, B.J., 1983, Limitations of 'Rock-Eval' pyrolysis for typing organic matter: Organic Geochemistry, v. 4, p. 195-199.

Langford, F.F. and Blanc-Valleron, M.-M., 1990, Interpreting Rock-Eval pyrolysis data using graphs of pyrolizable hydrocarbons vs. total organic carbon: American Association of Petroleum Geologists Bulletin, v. 74, no. 6, p. 799-804.

Peters, K.E., 1986, Guidelines for evaluating petroleum source rock using programmed pyrolysis: American Association of Petroleum Geologists Bulletin, v. 70, no. 3, p. 318-329.

Well identification and location			Operator and well name	Sample Interval		Rock-Eval results							
API no.	Latitude (decimal degrees) (X 100,000)	Longitude (X 100,000)		Top feet	Bottom feet	Tmax Celsius	S1 mgHC/ gRock	S2 mgHC/ gRock	S3 mgCO2/ gRock	S2/S3 mgHC/ mgCO2	TOC Wt-%	HI mgHc/ gC	OI mgCO2/ gC
9270030522400000001	3643664	11420213	Ruby 1-20 DEVILS THROAT	2410	2420	375	0.05	0.1	0.19	0.52	0.08	125	237
9270030520600000018	3663844	11439572	MOBIL VIRGIN RIVER 1-A	17440	17450	367	0.11	0.15	0.54	0.27	0.12	125	450
9270030520600000019	3663844	11439572	MOBIL VIRGIN RIVER 1-A	17490	17500	406	0.06	0.12	0.72	0.16	0.21	57	342
9270030520600000020	3663844	11439572	MOBIL VIRGIN RIVER 1-A	17580	17600	334	0.11	0.52	1.64	0.31	0.52	100	315
9270170520800000001	3736574	11550151	6-1 TICKABOO V	5490	5520	340	0.02	0.04	0.37	0.1	0.2	20	185
9270170520800000002	3736574	11550151	6-1 TICKABOO V	7500	7530	335	0.03	0.15	0.76	0.19	0.27	55	281
9270230538500000001	3835722	11505585	AMOCO 1 SUNNYSIDE UNIT	3700	3720	435	0.23	9.93	1.8	5.51	3.57	278	50
9270230538500000002	3835722	11505585	AMOCO 1 SUNNYSIDE UNIT	3790	3800	429	0.03	0.27	0.68	0.39	0.96	28	70
9270230538500000003	3835722	11505585	AMOCO 1 SUNNYSIDE UNIT	4200	4210	432	0.09	3.23	1.53	2.11	1.88	171	81
9270230538500000004	3835722	11505585	AMOCO 1 SUNNYSIDE UNIT	5000	5010	437	0.04	0.69	0.79	0.87	1.21	57	65
9270230538500000005	3835722	11505585	AMOCO 1 SUNNYSIDE UNIT	5800	5810	441	0.24	1.58	0.69	2.28	1.18	133	58
9270230538500000006	3835722	11505585	AMOCO 1 SUNNYSIDE UNIT	6520	6550	428	0.1	0.29	0.98	0.29	0.3	96	326
9270230540700000001	3845747	11564256	TRUE OIL TRUEBIRD 31-23	10070	10110	439	0.04	0.13	0.63	0.2	0.2	65	315
9270230540700000002	3845747	11564256	TRUE OIL TRUEBIRD 31-23	11020	11080	421	0.03	0.07	0.39	0.17	0.12	58	325
9270230540700000003	3845747	11564256	TRUE OIL TRUEBIRD 31-23	11900	11912	387	0.01	0.04	0.35	0.11	0.15	26	233
9270170520000000001	3843636	11492354	TENNECO GB CORE HOLE 13	260	270	376	0.12	0.22	0.68	0.32	0.24	91	283
9270170520000000002	3843636	11492354	TENNECO GB CORE HOLE 13	300	330	434	0.46	9.53	2.21	4.31	3.4	280	65
9270170520000000003	3843636	11492354	TENNECO GB CORE HOLE 13	470	480	436	0.82	21.23	4.48	4.73	5.43	390	82
9270170521000000001	3852225	11480173	1-28 CAVE VALLEY	2990	3020	441	0.01	0.04	0.36	0.11	0.02	200	1800
9270170521000000002	3852225	11480173	1-28 CAVE VALLEY	3760	3790	361	0	0.02	0.26	0.07	0.04	50	650
9270170520900000001	3856516	11456970	AMOCO 1 SAGUARO UNIT	5010	5050	458	0.06	0.27	0.43	0.62	0.51	52	84
9270170520900000002	3856516	11456970	AMOCO 1 SAGUARO UNIT	6050	6080	406	0.01	0.05	0.29	0.17	0.11	45	263
9270170520900000003	3856516	11456970	AMOCO 1 SAGUARO UNIT	6440	6500	390	0.04	0.06	0.53	0.11	0.17	35	311
9270230523400000002	3861615	11564841	NORTHWEST 9 TRAP SPRING	6335	6335	356	0.02	0.11	0.41	0.26	0.05	220	820
9270230541500000001	3884375	11582675	EXXON 1 WILDHORSE UNIT	100	150	444	0.17	1.82	0.63	2.88	0.9	202	70
9270230541500000002	3884375	11582675	EXXON 1 WILDHORSE UNIT	500	550	445	0.27	3.1	0.85	3.64	1.32	234	64
9270230541500000003	3884375	11582675	EXXON 1 WILDHORSE UNIT	1000	1040	442	0.1	0.27	0.45	0.6	0.21	128	214
9270230541500000004	3884375	11582675	EXXON 1 WILDHORSE UNIT	2600	2620	441	0.22	0.79	0.93	0.84	0.34	232	273
9270230541500000005	3884375	11582675	EXXON 1 WILDHORSE UNIT	3500	3520	411	0.03	0.06	0.39	0.15	0.09	66	433
9270230541500000006	3884375	11582675	EXXON 1 WILDHORSE UNIT	3800	3820	299	0.02	0.04	0.36	0.11	0.13	30	276
9270110524700000001	3945180	11633272	WILLIAMS 10-6 TWIN SPRING F	6620	6690	427	0.05	0.21	0.79	0.26	0.15	140	526
9270110524700000002	3945180	11633272	WILLIAMS 10-6 TWIN SPRING F	8000	8022	442	0.01	0.06	0.36	0.16	0.12	50	300
9270110520400000001	3972302	11594580	HUNT 1 PLASKETT	7580	7590	427	0.03	0.58	0.75	0.77	0.54	107	138
9270110520400000002	3972302	11594580	HUNT 1 PLASKETT	8000	8010	424	0.04	0.53	0.78	0.67	0.51	103	152
9270110520400000003	3972302	11594580	HUNT 1 PLASKETT	9270	9280	428	0.08	1.54	0.95	1.62	0.74	208	128
9270110520400000004	3972302	11594580	HUNT 1 PLASKETT	10200	10230	428	0.12	2.04	1.17	1.74	0.76	268	153
9270110520400000005	3972302	11594580	HUNT 1 PLASKETT	10580	10600	427	0.57	3.89	1.52	2.55	1.05	370	144
9270110524700000003	3979680	11424615	REMKIN 1 Federal	1720	1730	448	0.11	0.38	0.48	0.79	0.45	84	106
9270110524700000004	3979680	11424615	REMKIN 1 Federal	2490	2500	424	0.34	0.37	0.65	0.56	1.98	18	32
9270110524700000005	3979680	11424615	REMKIN 1 Federal	2580	2590	363	0.25	0.25	0.7	0.35	0.56	44	125
9270110524700000006	3979680	11424615	REMKIN 1 Federal	2950	2960	319	0.19	0.35	0.65	0.53	0.87	40	74
9270110524700000007	3979680	11424615	REMKIN 1 Federal	3460	3498	377	0.08	0.16	0.43	0.37	0.5	32	86
9270110520600000001	3995285	11595709	HUNT 1-24 DIAMOND VALLEY	8260	8270	523	0	0.23	0.44	0.52	0.08	287	550
9270070523100000001	4016449	11498045	MARLIN 1-4 FEDERAL	8000	8020	528	0	0.18	0.45	0.4	0.08	225	562

Well identification and location			Operator and well name	Sample interval		Rock-Eval results							
API no	Latitude (decimal degrees) (X 100,000)	Longitude (X 100,000)		Top feet	Bottom feet	Tmax Celsius	S1 mgHC/ gRock	S2 mgHC/ gRock	S3 mgCO2/ gRock	S2/S3 mgHC/ mgCO2	TOC Wt-%	HI mgHc/ gC	OI mgCO2/ gC
9270070524400000001	4029567	11589185	EXXON 1 ASPEN UNIT	610	640	404	0.01	0.03	1.44	0 02	0.06	50	2400
9270070524400000002	4029567	11589185	EXXON 1 ASPEN UNIT	1000	1020	432	0.06	0.36	0.42	0.85	0 19	189	221
9270070524400000003	4029567	11589185	EXXON 1 ASPEN UNIT	2020	2050	454	0.13	0.72	0.34	2 11	0.63	114	53
9270070524400000004	4029567	11589185	EXXON 1 ASPEN UNIT	2900	2930	370	0.1	0.36	0.42	0.85	0.63	57	66
9270070524400000005	4029567	11589185	EXXON 1 ASPEN UNIT	3960	4000	328	0.07	0.22	0.6	0.36	0 38	57	157
9270070524400000006	4029567	11589185	EXXON 1 ASPEN UNIT	5000	5030	351	0.1	0.13	0.48	0 27	0.31	41	154
9270070524400000007	4029567	11589185	EXXON 1 ASPEN UNIT	5860	5890	352	0.05	0.06	0.32	0.18	0.18	33	177
9270070524400000008	4029567	11589185	EXXON 1 ASPEN UNIT	7000	7030	362	0.06	0.14	0.72	0.19	0.25	56	288
9270070524400000009	4029567	11589185	EXXON 1 ASPEN UNIT	8040	8060	358	0.06	0.11	0.3	0.36	0.67	16	44
92700705244000000010	4029567	11589185	EXXON 1 ASPEN UNIT	9000	9030	311	0 02	0.07	0.19	0.36	0.11	63	172
9270070524400000011	4029567	11589185	EXXON 1 ASPEN UNIT	10080	10100	356	0.08	0.16	0.44	0.36	0.84	19	52
9270070524400000012	4029567	11589185	EXXON 1 ASPEN UNIT	11000	11030	282	0.05	0.09	0.19	0.47	0.86	10	22
9270070524400000013	4029567	11589185	EXXON 1 ASPEN UNIT	11940	11970	298	0.03	0.08	0.15	0.53	0 4	20	37
9270070521100000001	4114861	11512791	SHELL 1 MARYS RIVER	7460	7470	436	0.07	1.26	1.16	1.08	0.73	172	158
9270070521100000002	4114861	11512791	SHELL 1 MARYS RIVER	10090	10100	414	0.05	0.16	0.76	0.21	0.38	42	200
9270070524500000001	4135523	11483552	EXXON 1 RATTLESNAKE UNIT	200	220	298	0.05	0.05	0.37	0.13	1.09	4	33
9270070524500000002	4135523	11483552	EXXON 1 RATTLESNAKE UNIT	570	600	309	0.09	0.1	0.31	0.32	1.06	9	29
9270070524500000003	4135523	11483552	EXXON 1 RATTLESNAKE UNIT	1020	1050	307	0.05	0.08	0.09	0.88	0.84	9	10
9270070524500000004	4135523	11483552	EXXON 1 RATTLESNAKE UNIT	2000	2020	321	0.08	0.1	0.12	0.83	0.78	12	15
9270070524500000005	4135523	11483552	EXXON 1 RATTLESNAKE UNIT	3090	3120	269	0.06	0.09	0.2	0.45	0.68	13	29
9270070524500000006	4135523	11483552	EXXON 1 RATTLESNAKE UNIT	4020	4060	351	0.07	0.11	0.3	0.36	1.67	6	17
9270070524500000007	4135523	11483552	EXXON 1 RATTLESNAKE UNIT	5000	5030	270	0.06	0.08	0.23	0.34	0.74	10	31
9270070524500000008	4135523	11483552	EXXON 1 RATTLESNAKE UNIT	6000	6020	292	0.05	0.06	0.3	0.2	0.63	9	47