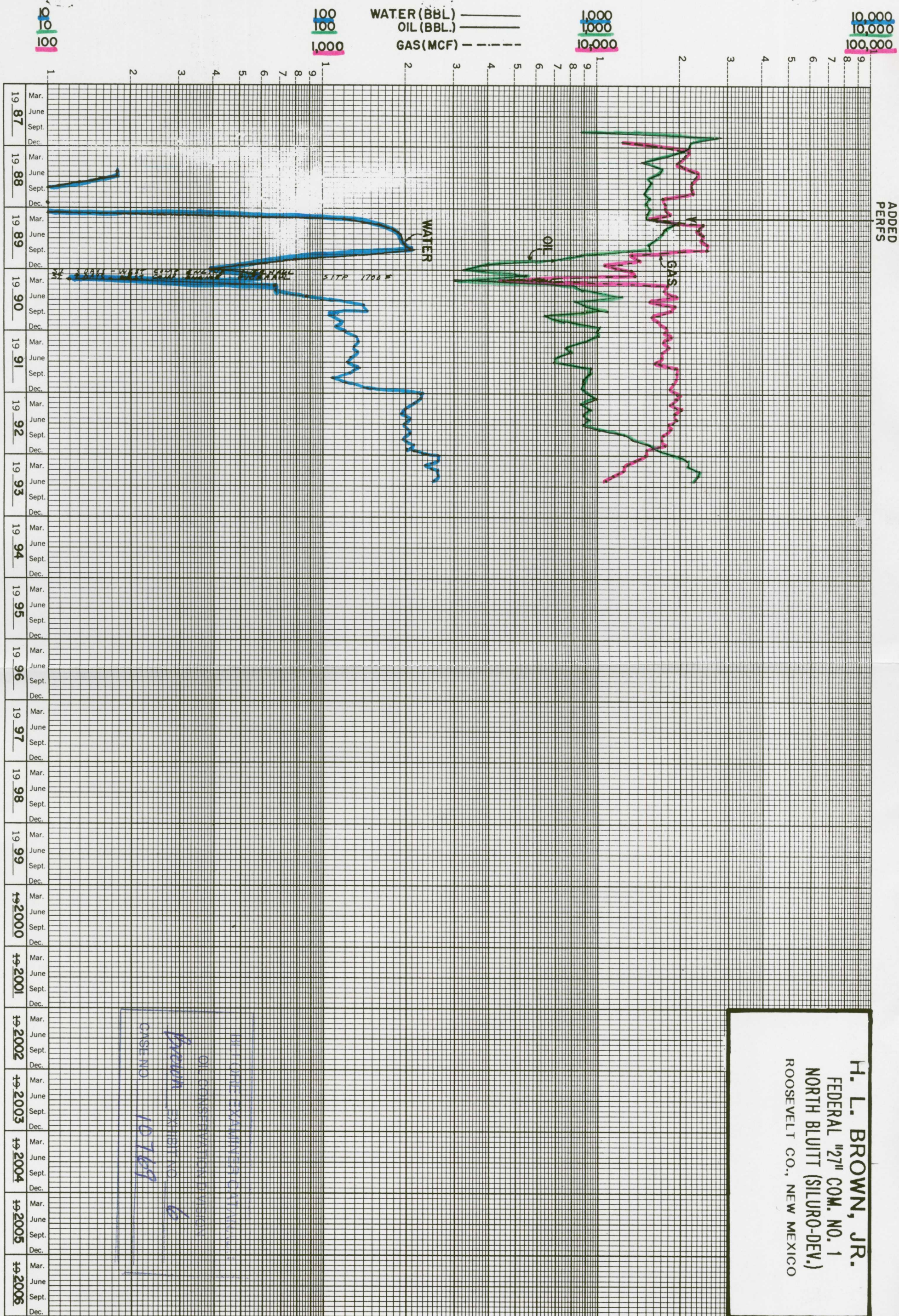
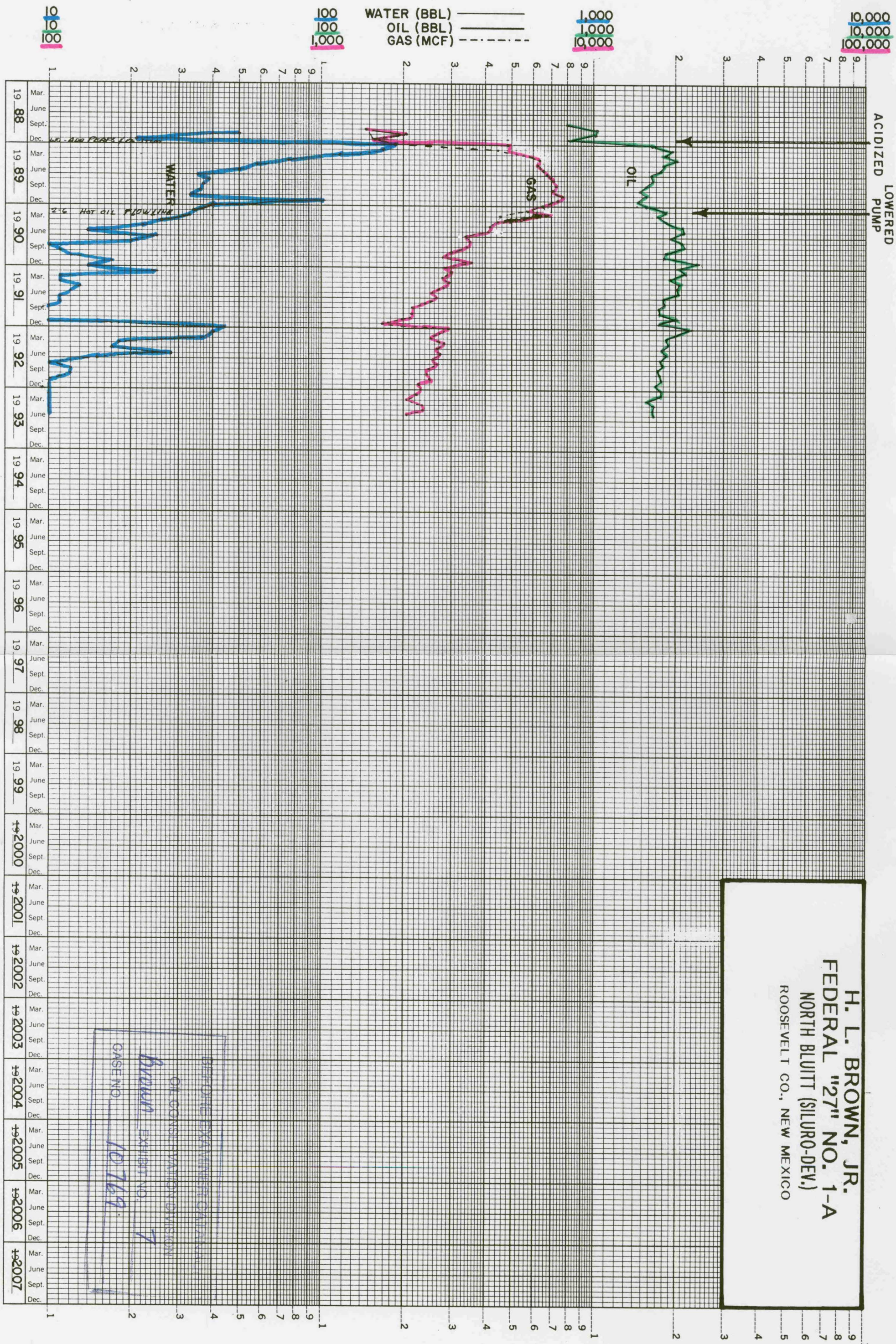




H. L. BROWN, JR.
FEDERAL "27" COM. NO. 1
NORTH BLUITT (SILURO-DEV.)
ROOSEVELT CO., NEW MEXICO



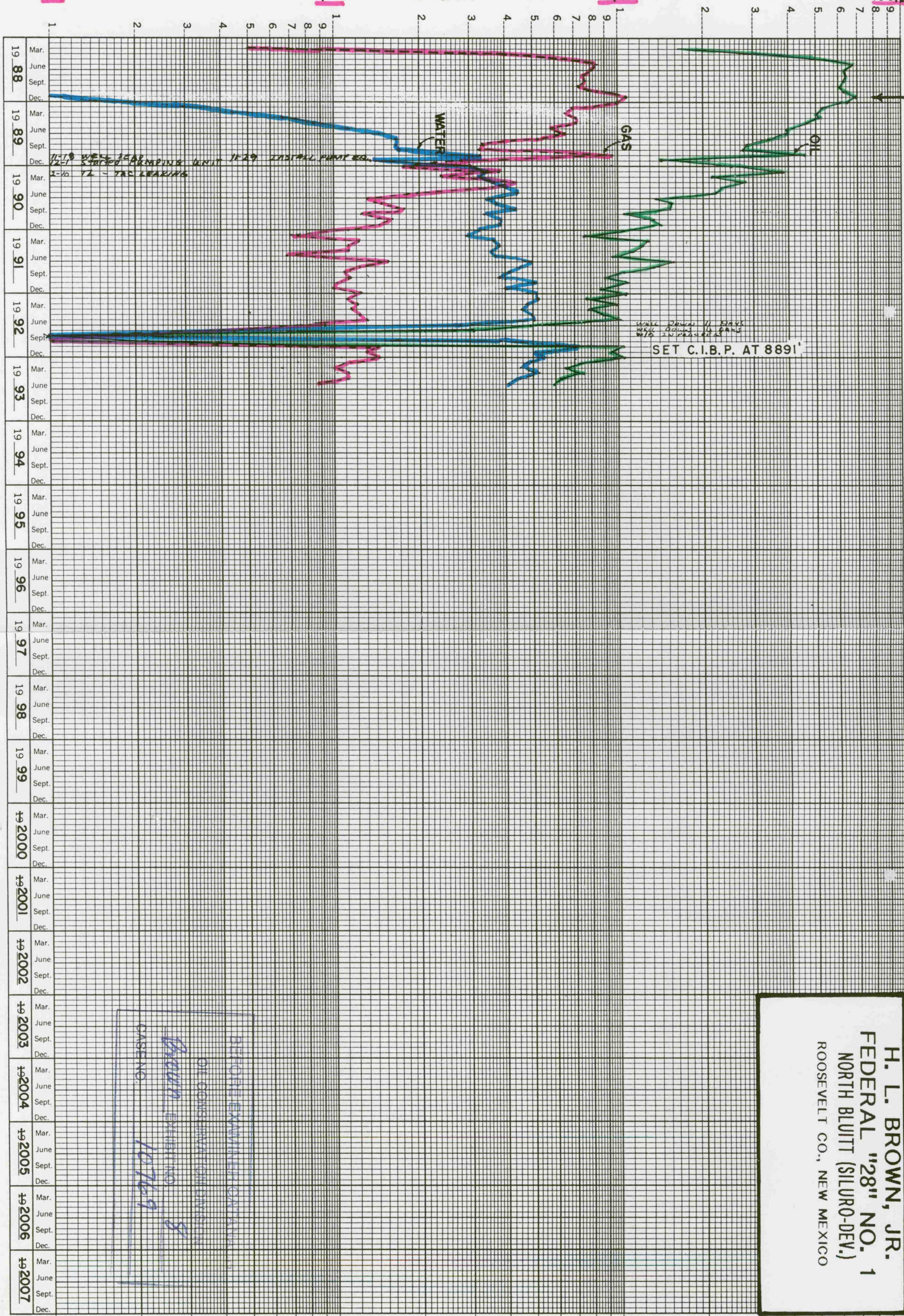
47 6840

WATER (BBL) _____
OIL (BBL.) _____
GAS (MCF) - - - - -

10,000
1,000
10,000

100,000
10,000
100,000

50 B.O.P.D.
INCREASE



H. L. BROWN, JR.
FEDERAL "28" NO. 1
NORTH BLUITT (SILURO-DEV.)
ROOSEVELT CO., NEW MEXICO

DRAINAGE CALCULATIONS

NORTH BLUIT (DEVONIAN) FIELD
ROOSEVELT COUNTY, NEW MEXICO

FORMULAS ARE: $OOIP = [7758 * POR * H * A * (1 - Scw)] / Bo$

$EUR = OOIP * RF$

OOIP = ORIGINAL OIL IN PLACE, BARRELS OF OIL
POR = POROSITY, DECIMAL FRACTION
H = PAY HEIGHT, FEET
A = DRAINAGE AREA, ACRES
Scw = CONNATE WATER SATURATION, DECIMAL FRACTION
Bo = FORMATION VOLUME FACTOR, DECIMAL FRACTION
EUR = ESTIMATED ULTIMATE RECOVERY, BARRELS OF OIL
RF = RECOVERY FACTOR, DECIMAL FRACTION

TO GET DRAINAGE AREA, SOLVE FOR A,

$A = [(EUR / RF) * Bo] / [7758 * POR * H * (1 - Scw)]$

EXAMPLE: $A = (294757/.3)*1.5/(7758*.1*84*(1-.35)) = 34.79$ ACRES

@ 4% POROSITY CUTOFF

WELL	EUR	RF	Bo	POR	H	Scw	A
	BO	%	%	%	FEET	%	ACRES
FEDERAL 27 - 1	294757.00	0.30	2.00	0.10	84.00	0.35	46.39
FEDERAL 27 A - 1	300683.00	0.30	2.00	0.08	34.00	0.44	178.56
FEDERAL 28 - 1	162296.00	0.30	2.00	0.10	40.00	0.29	49.11

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
Brown EXHIBIT NO. 9
CASE NO. 10769

DECLINE CURVE ANALYSIS

NORTH BLUIT (DEVONIAN) FIELD
ROOSEVELT COUNTY, NEW MEXICO

FORMULA IS: (CURRENT PRODUCTION - ECONOMIC LIMIT) * DELINE FACTOR = REMAINING RESERVES.
(MCF/M - MCF/M) * DF = RESERVES

EXAMPLE: (2250 - 147) * 29.96 = 63005.88 BO

WELL	CURRENT PRODUCTION	ECONOMIC LIMIT	DECLINE FACTOR	REMAINING RESERVES	CUMULATIVE PRODUCTION	ESTIMATED ULTIMATE RECOVERY
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I. OIL RESERVES	BOPM	BOPM	%, FACTOR	BO	BO	BO
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FEDERAL 27 - 1	2250.00	1200.00	33%, 29.96	31458.00	89175.00	294757.08
	1200.00	147.00	7%, 165.36	174124.08		
FEDERAL 27 A - 1	1650.00	99.00	9%, 127.24	197349.24	103334.00	300683.24
FEDERAL 28 - 1	600.00	456.00	22%, 48.3	6955.20	155341.00	162296.20

II. GAS RESERVES	MCFPM	MCFPM	%, FACTOR	MCF	MCF	MCF
FEDERAL 27 - 1	10700.00	23.00	43%, 21.35	227953.95	1204434.00	1432387.95
FEDERAL 27 A - 1	2100.00	98.00	13%, 86.17	172512.34	205939.00	378451.34
FEDERAL 28 - 1	900.00	77.00	15%, 73.84	60770.32	201001.00	261771.32

III. GAS OIL RATIO	GOR
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WELL	SCF/BO
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FEDERAL 27 - 1	4859.56
FEDERAL 27 A - 1	1258.64
FEDERAL 28 - 1	1612.93

CUMULATIVE PRODUCTION IS THROUGH MAY, 1993.

ECONOMIC LIMIT IS BASED ON CURRENT COSTS WITH NO ESCALATION FACTOR.

RESERVES EQUATION IS FROM A CONTINUOUS TABLES COPYRIGHT 1967 BY
PETROLEUM ENGINEERS PUBLISHING COMPANY.

VOLUMETRIC RESERVES

NORTH BLUIT (DEVONIAN) FIELD
ROOSEVELT COUNTY, NEW MEXICO

I. OIL RESERVES

FORMULA IS: $OOIP = 7758 * POR * H * A * (1 - Scw) / Bo$

OOIP = ORIGINAL OIL IN PLACE, STOCK TANK BARRELS

POR = POROSITY, DECIMAL FRACTION

H = NET PAY HEIGHT, FEET

A = DRAINAGE AREA, ACRES

Scw = CONNATE WATER SATURATION, DECIMAL FRACTION

Bo = OIL FORMATION VOLUME FACTOR

WELL	H	A	POR	Scw	Bo	OOIP
FEDERAL 27 - 1	84	80	0.1	0.35	2	1694347.2
FEDERAL 27 A - 1	34	80	0.075	0.44	2	443136.96
FEDERAL 28 - 1	40	80	0.1	0.29	2	881308.8
TOTAL						3018792.96

POROSITY AVERAGES

DENSITY NEUTRON CROSSPLOT

FEDERAL 28 - 1

ROOSEVELT COUNTY, NEW MEXICO

KB = 4083

@ 4% POROSITY CUTOFF

DEPTH	INTERVAL MIDPOINT	SUBSEA DEPTH	NET INTEVAL	POR %	POR- FEET	Scw %	WATER- FEET
8870 - 8872	8871	-4788	2	6	12	37	74
8872 - 8874	8873	-4790	2	15	30	37	74
8874 - 8876	8875	-4792	2	15	30	37	74
8876 - 8878	8877	-4794	2	13	26	37	74
8878 - 8880	8879	-4796	2	12	24	37	74
8880 - 8882	8881	-4798	2	9	18	37	74
8882 - 8884	8883	-4800	2	9	18	37	74
8884 - 8886	8885	-4802	2	8	16	24	48
8886 - 8888	8887	-4804	2	6	12	24	48
8888 - 8890	8889	-4806	2	5	10	24	48
8890 - 8892	8891	-4808	2	5	10	24	48
8892 - 8894	8893	-4810	2	6	12	24	48
8894 - 8896	8895	-4812	2	5	10	24	48
8896 - 8898	8897	-4814	2	8	16	24	48
8898 - 8900	8899	-4816	2	13	26	24	48
8900 - 8902	8901	-4818	2	15	30	24	48
8902 - 8904	8903	-4820	2	17	34	24	48
8904 - 8906	8905	-4822	2	17	34	24	48
8906 - 8908	8907	-4824	2	16	32	24	48
8908 - 8910	8909	-4826	2	7	14	24	48
			40	207	414	571	1142

POROSITY AVERAGE = $414/40$ = 10.35

WATER SATURATION AVERAGE = $1142/40$ = 28.55

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POROSITY AVERAGES

DENSITY NEUTRON CROSSPLOT

FEDERAL 27 - 1

ROOSEVELT COUNTY, NEW MEXICO

KB = 4074

@ 4% POROSITY CUTOFF

DEPTH	INTERVAL MIDPOINT	SUBSEA DEPTH	NET INTEVAL	POR %	POR-FEET	Scw %	WATER- FEET
8844 - 8846	8845	-4771	2	7	14	23	46
8846 - 8848	8847	-4773	2	10	20	23	46
8848 - 8850	8849	-4775	2	15	30	23	46
8850 - 8852	8851	-4777	2	5	10	23	46
8862 - 8864	8863	-4789	2	7	14	37	74
8864 - 8866	8865	-4791	2	20	40	37	74
8866 - 8868	8867	-4793	2	15	30	37	74
8868 - 8870	8869	-4795	2	13	26	17	34
8870 - 8872	8871	-4797	2	7	14	17	34
8872 - 8874	8873	-4799	2	12	24	38	76
8874 - 8876	8875	-4801	2	15	30	38	76
8876 - 8878	8877	-4803	2	6	12	38	76
8878 - 8880	8879	-4805	2	20	40	38	76
8880 - 8882	8881	-4807	2	14	28	38	76
8882 - 8884	8883	-4809	2	7	14	38	76
8884 - 8886	8885	-4811	2	13	26	38	76
8886 - 8888	8887	-4813	2	12	24	39	78
8888 - 8890	8889	-4815	2	15	30	39	78
8890 - 8892	8891	-4817	2	21	42	39	78
8892 - 8894	8893	-4819	2	10	20	39	78
8898 - 8900	8899	-4825	2	8	16	36	72
8900 - 8902	8901	-4827	2	13	26	36	72
8902 - 8904	8903	-4829	2	11	22	36	72
8904 - 8906	8905	-4831	2	16	32	36	72
8906 - 8908	8907	-4833	2	5	10	36	72
8908 - 8910	8909	-4835	2	4	8	36	72
8910 - 8912	8911	-4837	2	4	8	36	72
8912 - 8914	8913	-4839	2	7	14	36	72
8916 - 8918	8917	-4843	2	7	14	33	66
8918 - 8920	8919	-4845	2	8	16	33	66
8920 - 8922	8921	-4847	2	8	16	33	66
8922 - 8924	8923	-4849	2	5	10	33	66
8924 - 8926	8925	-4851	2	7	14	33	66
8926 - 8928	8927	-4853	2	11	22	33	66
8928 - 8930	8929	-4855	2	4	8	33	66
8930 - 8932	8931	-4857	2	4	8	44	88
8936 - 8938	8937	-4863	2	10	20	44	88
8938 - 8940	8939	-4865	2	10	20	44	88
8940 - 8942	8941	-4867	2	9	18	41	82
8942 - 8944	8943	-4869	2	13	26	41	82
8944 - 8946	8945	-4871	2	9	18	41	82
8946 - 8948	8947	-4873	2	8	16	48	96

84	425	850	1481	2962
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POROSITY AVERAGE = 850/84 = 10.119047

WATER SATURATION AVERAGE = 2962/84 = 35.2619

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POROSITY AVERAGES

DENSITY NEUTRON CROSSPLOT

FEDERAL 27 A - 1

ROOSEVELT COUNTY, NEW MEXICO

KB = 4075

@ 4% POROSITY CUTOFF

DEPTH	INTERVAL MIDPOINT	SUBSEA DEPTH	NET INTEVAL	POR %	POR-FEET	Scw %	WATER-FEET
8908 - 8910	8907	-4832	2	4	8	37	74
8922 - 8924	8923	-4848	2	4	8	37	74
8924 - 8926	8925	-4850	2	8	16	35	70
8926 - 8928	8927	-4852	2	11	22	35	70
8928 - 8930	8929	-4854	2	11	22	35	70
8930 - 8932	8931	-4856	2	14	28	35	70
8932 - 8934	8933	-4858	2	7	14	48	96
8934 - 8936	8935	-4860	2	7	14	52	104
8936 - 8938	8937	-4862	2	5	10	52	104
8938 - 8940	8939	-4864	2	4	8	54	108
8940 - 8942	8941	-4866	2	5	10	56	112
8942 - 8944	8943	-4868	2	6	12	60	120
8944 - 8946	8945	-4870	2	6	12	66	132
8946 - 8948	8947	-4872	2	5	10	44	88
8948 - 8950	8949	-4874	2	9	18	36	72
8950 - 8952	8951	-4876	2	14	28	34	68
8952 - 8954	8953	-4878	2	9	18	34	68
			34	129	258	750	1500

POROSITY AVERAGE = 258/34 = 7.5882352

WATER SATURATION AVERAGE = 1500/34 = 44.1176

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PRODUCTION SUMMARY
 NORTH BLUIT (DEVONIAN) FIELD
 ROOSEVELT COUNTY, NEW MEXICO

THROUGH MAY, 1993

WELL	OIL STB	GAS MCF	WATER BBL
FEDERAL 27 # 1	89175	1204434	8312
FEDERAL 27 A # 1	103334	205939	2009
FEDERAL 28 # 1	155341	201001	183677
TOTAL	347850	1611374	193998

GAS ANALYSIS COMPARISONS

NORTH BLUIT (DEVONIAN) FIELD
ROOSEVELT COUNTY, NEW MEXICO

FEDERAL 27 - 1							
		10/5/87				1/27/92	
COMPONENT	MOL%		GPM		MOL%		GPM
METHANE	73.053				70.66		
ETHANE	8.955		2.388		7.73		2.062
PROPANE	5.58		1.532		4.85		1.327
ISO-BUTANE	0.707		0.231		0.73		0.237
N-BUTANE	1.956		0.615		2.05		0.643
ISO-PENTANE	0.405		0.149		0.56		0.204
N-PENTANE	0.477		0.172		0.69		0.249
HEXANES+	0.324		0.133		0.75		0.325
NITROGEN	5.895				8.99		
CARBON DIOXIDE	2.648				2.99		
SPECIFIC GRAVITY AT 60 F = .7653					= 0.7911		DRY

FEDERAL 27 A - 1							
		1/18/89				1/27/92	
COMPONENT	MOL%		GPM		MOL%		GPM
METHANE	64.03				65.68		
ETHANE	12.8		3.405		11.68		3.115
PROPANE	8.5		2.326		8.08		2.211
ISO-BUTANE	1.01		0.329		1.08		0.351
N-BUTANE	2.54		0.796		2.86		0.897
ISO-PENTANE	0.45		0.164		0.56		0.204
N-PENTANE	0.49		0.177		0.61		0.22
HEXANES+	0.44		0.191		0.65		0.282
NITROGEN	6.28				5.23		
CARBON DIOXIDE	3.46				3.57		
SPECIFIC GRAVITY AT 60 F = .8447					= .8391		

FEDERAL 28 - 1							
		2/24/88				1/27/92	
COMPONENT	MOL%		GPM		MOL%		GPM
METHANE	68.759				61.98		
ETHANE	11.558		3.083		11.81		3.15
PROPANE	7.742		2.125		9.46		2.589
ISO-BUTANE	0.891		0.291		1.4		0.455
N-BUTANE	2.14		0.673		3.66		1.147
ISO-PENTANE	0.401		0.148		0.74		0.269
N-PENTANE	0.456		0.165		0.81		0.292
HEXANES+	0.197		0.081		0.69		0.299
NITROGEN	4.088				4.75		
CARBON DIOXIDE	3.768				4.7		
SPECIFIC GRAVITY AT 60 F = .8038					= .8930		

WATER ANALYSIS COMPARISONS

NORTH BLUITT FIELD

ROOSEVELT COUNTY, NEW MEXICO

FEDERAL 28 A 1 WOLFCAMP 3-13-91	HOLLY FEDERAL SAN ANDRES 2-6-91	FEDERAL 28 COM 1 DEVONIAN 1-9-91	FEDERAL 27 A 1 DEVONIAN 1-9-91	FEDERAL 27 COM 1 DEVONIAN 1-9-91
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RESISTIVITY	.058854 @ 73	.049 @ 77	0.117	0.105	0.074
SPECIFIC GRAVITY	1.125	1.173	1.063	1.058	1.064
pH	5.2	6.5	6.22	6.23	6.43
CALCIUM	12850	19600	3998	5071	4193
MAGNESIUM	3210	4250	650	2068	709
CHLORIDES	139500	163600	52988	50989	54988
SULFATES	188	600	1000	575	950
BICARBONATES	152.5	66500	748	538	908
SOLUBLE IRON	54	13.8	225	180	250
SODIUM/POTASSIUM		76000	29313	23826	30311
TOTAL DISSOLVED SOLIDS		264550	88698	83067	92059

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