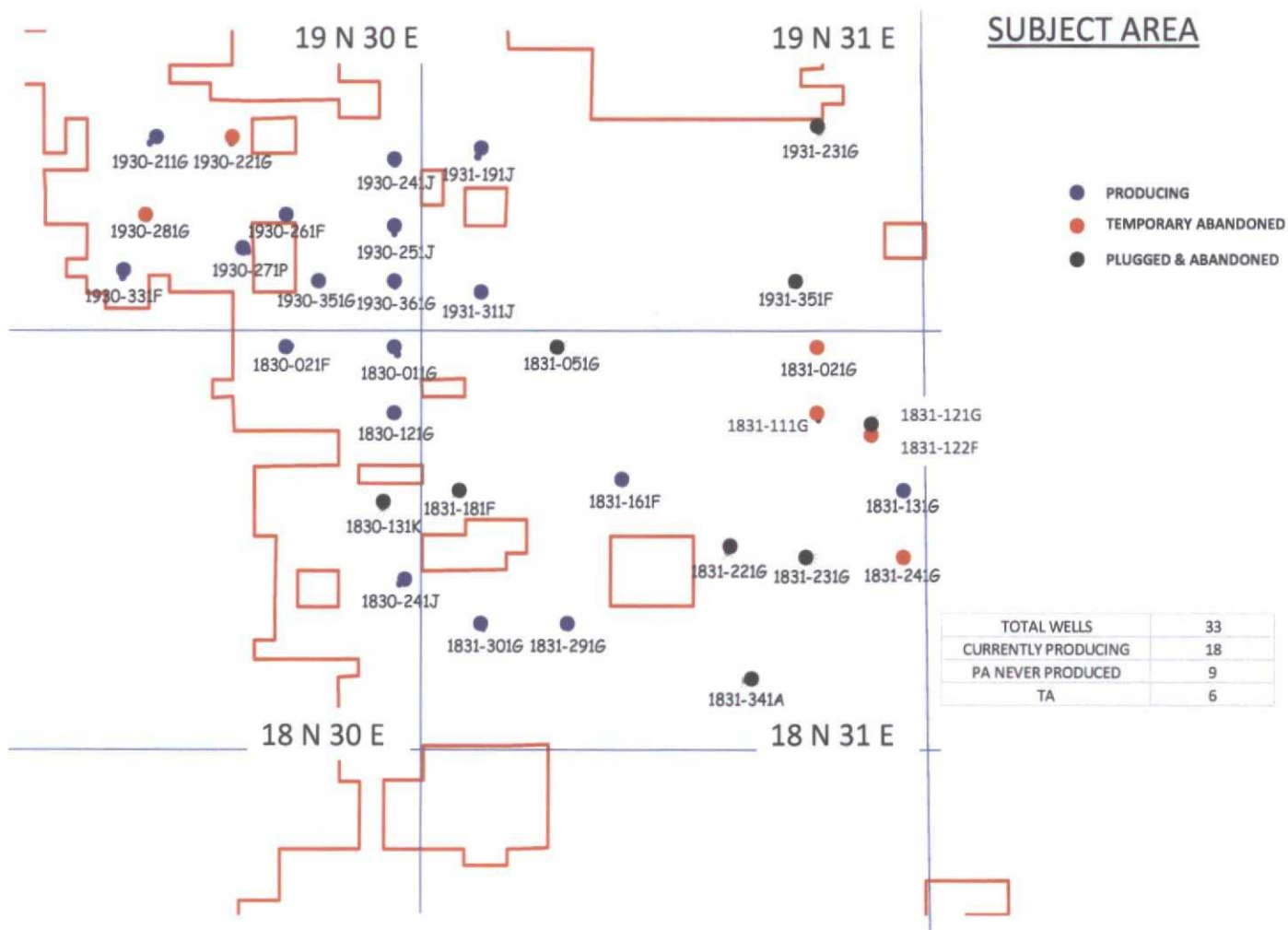


BRAVO DOME CARBON DIOXIDE GAS UNIT

WEST AREA

160 VS 640 SPACING



METHODOLOGY

- RECOVERY EFFICIENCY IS DEFINED AS THE RATIO OF ESTIMATED ULTIMATE RECOVERY (EUR) DIVIDED BY THE ESTIMATE OF THE ORIGINAL GAS IN PLACE.
- ESTIMATED ULTIMATE RECOVERY IS OBTAINED BY DECLINE CURVE ANALYSIS ON EACH INDIVIDUAL WELL.
- HISTORICAL FIELD PERFORMANCE OF BDU WELLS SHOWS THAT EXPONENTIAL DECLINE IS THE MOST COMMON FORM OF DECLINE.
- ORIGINAL GAS IN PLACE IS CALCULATED BY USING THE STANDARD EQUATION:

$$\text{— OGIP} = 7758 * A * H_{\text{net}} * \Phi * (1 - S_{\text{wi}}) / B_{\text{gi}} = \text{MSCF}$$

$$\text{— } B_{\text{gi}} = 5.02 * Z_i * T_i / P_i = \text{Reservoir Barrels/MSCF}$$

- Equations can be found in : Gas Reservoir Engineering , J. Lee & R.A. Wattenbarger. Chapter 10, page 231
- A =Area in acres, Hnet = Net thickness, Phi = Porosity, Swi = Initial water saturation, Bgi = Formation volume factor.
- Values of Z, can be read off the enclosed graph under Gas Property Section.
- Standard conditions are: t = 60 F = 520 R, p= 14.65 psia., included in the 5.02 constant.

TYPICAL RECOVERY EFFICIENCIES FOR VARIOUS TYPES OF RESERVOIR AND PRIMARY DRIVE MECHANISM

DRIVE MECHANISM	EXPECTED RECOVERY % OOIP OR OGIP			
	OIL		GAS	
OIL EXPANSION	2	5		
GAS EXPANSION			70	95
SOLUTION GAS	10	30		
GAS CAP	20	50		
WATER DRIVE	25	50	45	70
GRAVITY SEGREGATION	30	70		

DESORCY 1979

 BRAVO DOME

- DeSorcy D.J. "Estimation Methods for Proved Recoverable Reserves for Oil and Gas, ." Proceedings 10th world Petroleum Congress, Bucharest, Romania (1979).

THEORETICAL RECOVERY EFFICIENCY FOR A DRY GAS RESERVOIR

- Gas Recovery Efficiency Estimates:
 - J Lee and R.A. Wattenberger, “ Gas reservoir Engineering” , page 231.
- $F = 1 - (B_{gi}/B_{ga}) = 1 - (P_a \cdot Z_i)/(P_i \cdot Z_a)$
- PRESSURE RANGE IN SUBJECT AREA: 500 – 650 PSI
- F RANGE = .74 - .81

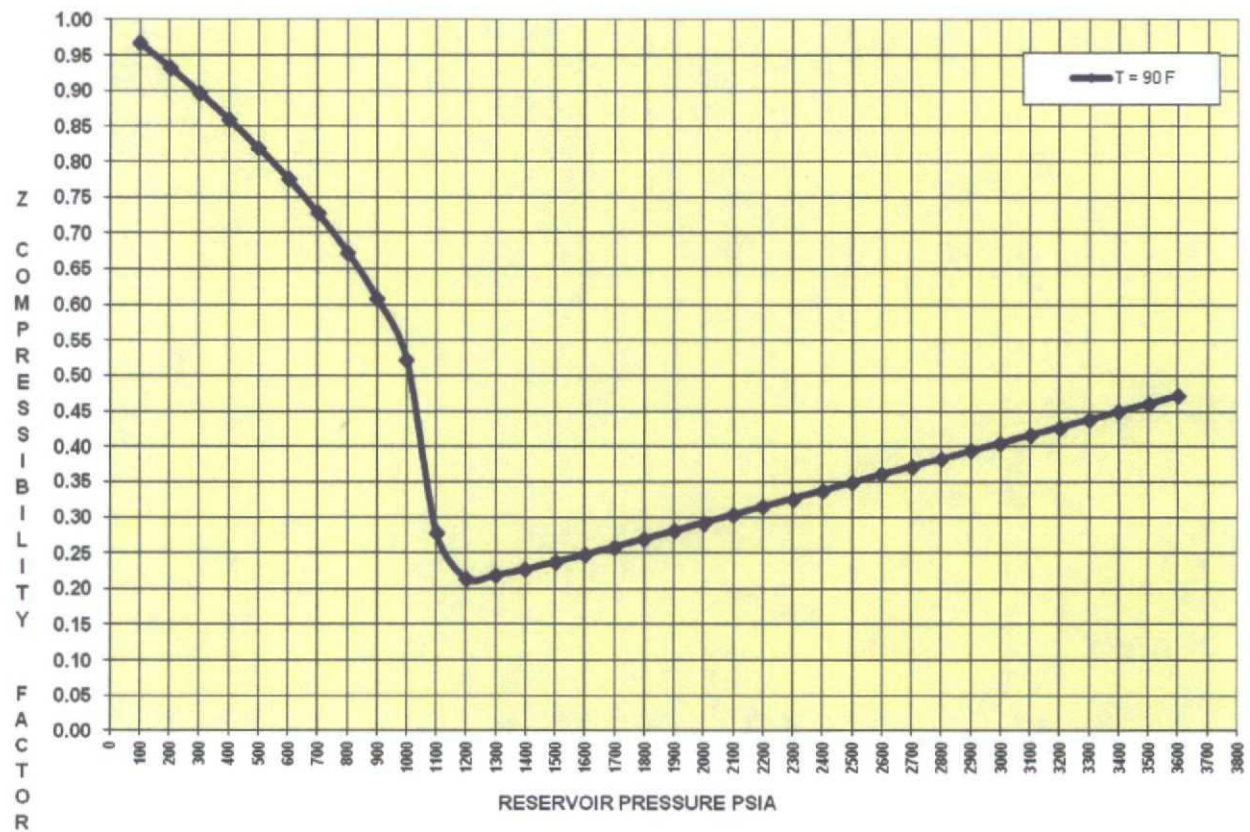
SUMMARY OF OGIP CALCULATIONS

ORIGINAL GAS IN PLACE :										
ASSUMED DRAINAGE AREA = 640 ACRES										
	WELL	AREA ACRES	PHI*HNET	PSIA	ZI	Bgl BBL/MCF	TI RANKINE	SG	OGIP BCF	
1	18 30 01 1 G	ACTIVE	640	12.99	656	0.758	3.192	550	0.716	14.466
2	18 30 02 1 F	ACTIVE - ANOMALOUS PERFORMER	640	11.37	656	0.758	3.192	550	0.637	11.270
3	18 30 12 1 G	ACTIVE	640	13.21	661	0.756	3.158	550	0.841	17.454
4	18 30 13 1 K	PA, NEVER PRODUCED								
5	18 30 24 1 J	ACTIVE	640	10.30	639	0.766	3.307	550	0.677	10.469
6	18 31 02 1 G	TA ON 2008, ONLY TESTED								
7	18 31 05 1 G	PA, NEVER PRODUCED								
8	18 31 11 1 G	TA ON 2008, ONLY TESTED								
9	18 31 12 1 F	PA, NEVER PRODUCED								
10	18 31 12 2 F	TA ON 2012	640	3.58	534	0.814	4.205	550	0.566	2.394
11	18 31 13 1 G	ACTIVE	640	4.64	522	0.820	4.337	550	0.552	2.933
12	18 31 16 1 F	ACTIVE	640	7.09	594	0.786	3.654	550	0.538	5.180
13	18 31 18 1 F	PA, NEVER PRODUCED								
14	18 31 22 1 G	PA, NEVER PRODUCED								
15	18 31 23 1 G	PA, NEVER PRODUCED								
16	18 32 1 24 1 G	TA ON 2009	640	2.20	514	0.824	4.422	550	0.578	1.428
17	18 31 29 1 G	ACTIVE	640	6.78	592	0.787	3.674	550	0.548	5.023
18	18 31 30 1 G	ACTIVE	640	5.67	611	0.778	3.514	550	0.652	5.225
19	18 31 34 1 A	PA, NEVER PRODUCED								
20	19 30 21 1 G	ACTIVE	640	7.75	551	0.806	4.038	550	0.575	5.481
21	19 30 22 1 G	TA ON 2009	640	6.62	600	0.783	3.600	550	0.591	5.393
22	19 30 24 1 J	ACTIVE	640	15.70	593	0.786	3.662	550	0.682	14.519
23	19 30 25 1 J	ACTIVE	640	13.38	604	0.781	3.570	550	0.686	12.760
24	19 30 26 1 F	ACTIVE	640	9.87	637	0.767	3.326	550	0.657	9.687
25	19 30 27 1 P	ACTIVE - ANOMALOUS PERFORMER	640	6.49	638	0.766	3.317	550	0.642	6.235
26	19 30 28 1 G	TA, NEVER PRODUCED								
27	19 30 33 1 F	ACTIVE	640	9.71	629	0.770	3.382	550	0.648	9.235
28	19 30 35 1 G	ACTIVE	640	10.88	658	0.758	3.179	550	0.632	10.731
29	19 30 36 1 G	ACTIVE	640	11.33	637	0.767	3.322	550	0.659	11.156
30	19 31 19 1 J	ACTIVE	640	8.55	573	0.795	3.831	550	0.593	6.573
31	19 31 23 1 G	PA, NEVER PRODUCED								
32	19 31 31 1 J	ACTIVE	640	11.14	610	0.779	3.526	550	0.697	10.937
33	19 31 35 1 F	PA, NEVER PRODUCED								
					TOTAL OGIP EXCLUDING ANOMALOUS WELLS					161.04

ORIGINAL GAS IN PLACE:											
ASSUMED DRAINAGE AREA = 160 ACRES											
			AREA		P	ZI	Bgl	TI	SG	OGIP	
	WELL		ACRES	PHI*HNET	PSIA		BBL/MCF	RANKINE		BCF	
1	18 30 01 1 G	ACTIVE	160	12.99	656	0.758	3.192	550	0.716	3.616	
2	18 30 02 1 F	ACTIVE - ANOMALOUS PERFORMER	160	11.37	656	0.758	3.192	550	0.637	2.818	
3	18 30 12 1 G	ACTIVE	160	13.21	661	0.756	3.158	550	0.841	4.364	
4	18 30 13 1 K	PA, NEVER PRODUCED									
5	18 30 24 1 J	ACTIVE	160	10.30	639	0.766	3.307	550	0.677	2.617	
6	18 31 02 1 G	TA ON 2008, ONLY TESTED									
7	18 31 05 1 G	PA, NEVER PRODUCED									
8	18 31 11 1 G	TA ON 2008, ONLY TESTED									
9	18 31 12 1 F	PA, NEVER PRODUCED									
10	18 31 12 2 F	TA ON 2012	160	3.58	534	0.814	4.205	550	0.566	0.598	
11	18 31 13 1 G	ACTIVE	160	4.64	522	0.820	4.337	550	0.552	0.733	
12	18 31 16 1 F	ACTIVE	160	7.09	594	0.786	3.654	550	0.538	1.295	
13	18 31 18 1 F	PA, NEVER PRODUCED									
14	18 31 22 1 G	PA, NEVER PRODUCED									
15	18 31 23 1 G	PA, NEVER PRODUCED									
16	18 32 1 24 1 G	TA ON 2009	160	2.20	514	0.824	4.422	550	0.578	0.357	
17	18 31 29 1 G	ACTIVE	160	6.78	592	0.787	3.674	550	0.548	1.256	
18	18 31 30 1 G	ACTIVE	160	5.67	611	0.778	3.514	550	0.652	1.306	
19	18 31 34 1 A	PA, NEVER PRODUCED									
20	19 30 21 1 G	ACTIVE	160	7.75	551	0.806	4.038	550	0.575	1.370	
21	19 30 22 1 G	TA ON 2009	160	6.62	600	0.783	3.600	550	0.591	1.348	
22	19 30 24 1 J	ACTIVE	160	15.70	593	0.786	3.662	550	0.682	3.630	
23	19 30 25 1 J	ACTIVE	160	13.38	604	0.781	3.570	550	0.686	3.190	
24	19 30 26 1 F	ACTIVE	160	9.87	637	0.767	3.326	550	0.657	2.422	
25	19 30 27 1 P	ACTIVE - ANOMALOUS PERFORMER	160	6.49	638	0.766	3.317	550	0.642	1.559	
26	19 30 28 1 G	TA, NEVER PRODUCED									
27	19 30 33 1 F	ACTIVE	160	9.71	629	0.770	3.382	550	0.648	2.309	
28	19 30 35 1 G	ACTIVE	160	10.88	658	0.758	3.179	550	0.632	2.683	
29	19 30 36 1 G	ACTIVE	160	11.33	637	0.767	3.322	550	0.659	2.789	
30	19 31 19 1 J	ACTIVE	160	8.55	573	0.795	3.831	550	0.593	1.643	
31	19 31 23 1 G	PA, NEVER PRODUCED									
32	19 31 31 1 J	ACTIVE	160	11.14	610	0.779	3.526	550	0.697	2.734	
33	19 31 35 1 F	PA, NEVER PRODUCED									
					TOTAL OGIP EXCLUDING ANOMALOUS WELLS						40.26

GAS PROPERTIES

BRAVO DO ME CO2 GAS UNIT - CO2 GAS PROPERTIES



SUMMARY OF ESTIMATED ULTIMATE RECOVERY CALCULATIONS BASED ON DECLINE CURVE ANALYSIS

	ESTIMATED ULTIMATE RECOVERIES					
	WELL		CUMULATIVE PRODUCTION	REMAINING	EUR MMSCF	
			PRE LEG 10			
1	18 30 01 1 G	ACTIVE		643.9	1,768.0	2,411.8
2	18 30 02 1 F	ACTIVE - ANOMALOUS PERFORMER		3,995.6	10,949.0	14,944.6
3	18 30 12 1 G	ACTIVE		1,404.5	3,132.1	4,536.6
4	18 30 13 1 K	PA, NEVER PRODUCED				
5	18 30 24 1 J	ACTIVE		150.0	118.9	269.0
6	18 31 02 1 G	TA ON 2008, ONLY TESTED				
7	18 31 05 1 G	PA, NEVER PRODUCED				
8	18 31 11 1 G	TA ON 2008, ONLY TESTED				
9	18 31 12 1 F	PA, NEVER PRODUCED				
10	18 31 12 2 F	TA ON 2012		37.9		
11	18 31 13 1 G	ACTIVE		206.4	46.0	252.4
12	18 31 16 1 F	ACTIVE		501.1	749.5	1,250.6
13	18 31 18 1 F	PA, NEVER PRODUCED				
14	18 31 22 1 G	PA, NEVER PRODUCED				
15	18 31 23 1 G	PA, NEVER PRODUCED				
16	18 32 1 24 1 G	TA ON 2009		35.1		
17	18 31 29 1 G	ACTIVE		22.1	211.9	234.0
18	18 31 30 1 G	ACTIVE		272.8	228.3	501.1
19	18 31 34 1 A	PA, NEVER PRODUCED				
20	19 30 21 1 G	ACTIVE		31.3	162.2	193.5
21	19 30 22 1 G	TA ON 2009		10.6		
22	19 30 24 1 J	ACTIVE		141.0	66.0	207.0
23	19 30 25 1 J	ACTIVE	740.0	1,790.2	1,665.2	4,195.5
24	19 30 26 1 F	ACTIVE		173.0	105.3	278.3
25	19 30 27 1 P	ACTIVE - ANOMALOUS PERFORMER	4,209.0	5,352.8	5,677.9	15,239.7
26	19 30 28 1 G	TA, NEVER PRODUCED				
27	19 30 33 1 F	ACTIVE		650.3	1,695.3	2,345.7
28	19 30 35 1 G	ACTIVE		1,212.1	3,000.8	4,212.9
29	19 30 36 1 G	ACTIVE	771.5	1,533.2	2,564.4	4,869.1
30	19 31 19 1 J	ACTIVE		1,407.2	2,196.8	3,604.0
31	19 31 23 1 G	PA, NEVER PRODUCED				
32	19 31 31 1 J	ACTIVE		87.5	330.8	418.3
33	19 31 35 1 F	PA, NEVER PRODUCED				
			TOTAL EUR EXCLUDING ANOMALOUS WELLS			29,780

ESTIMATED ULTIMATE RECOVERY

- **TOTAL VOLUME RECOVERED FROM CURRENT ACTIVE WELLS:**
- **EUR = 29.780 BCF**
- **NUMBER OF CURRENT ACTIVE WELLS: 16**
 - Excludes 2 anomalous wells: 19 30 27 1 P and 18 30 02 1 G
- **ESTIMATED AVERAGE RECOVERY PER WELL = 1.9 BCF**

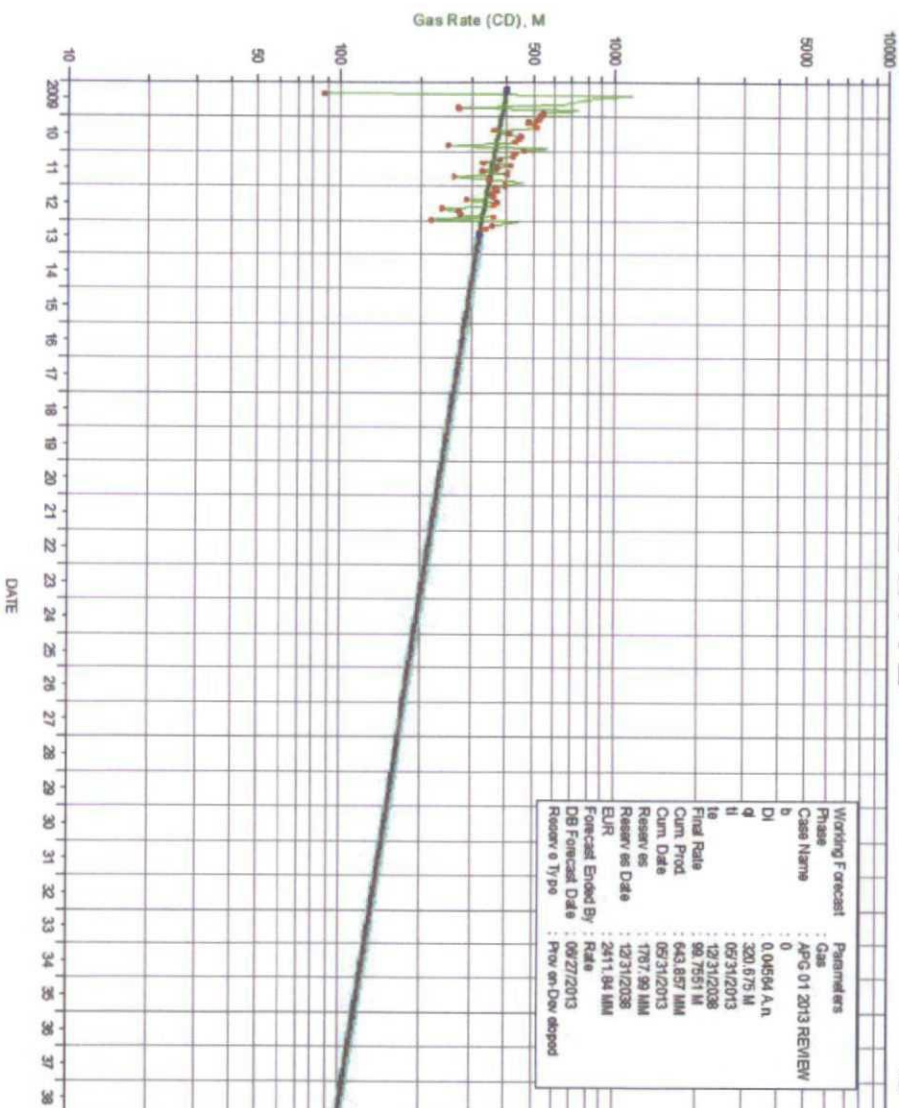
DECLINE CURVE ANALYSIS

ALL CURRENT ACTIVE WELLS

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1830-011G

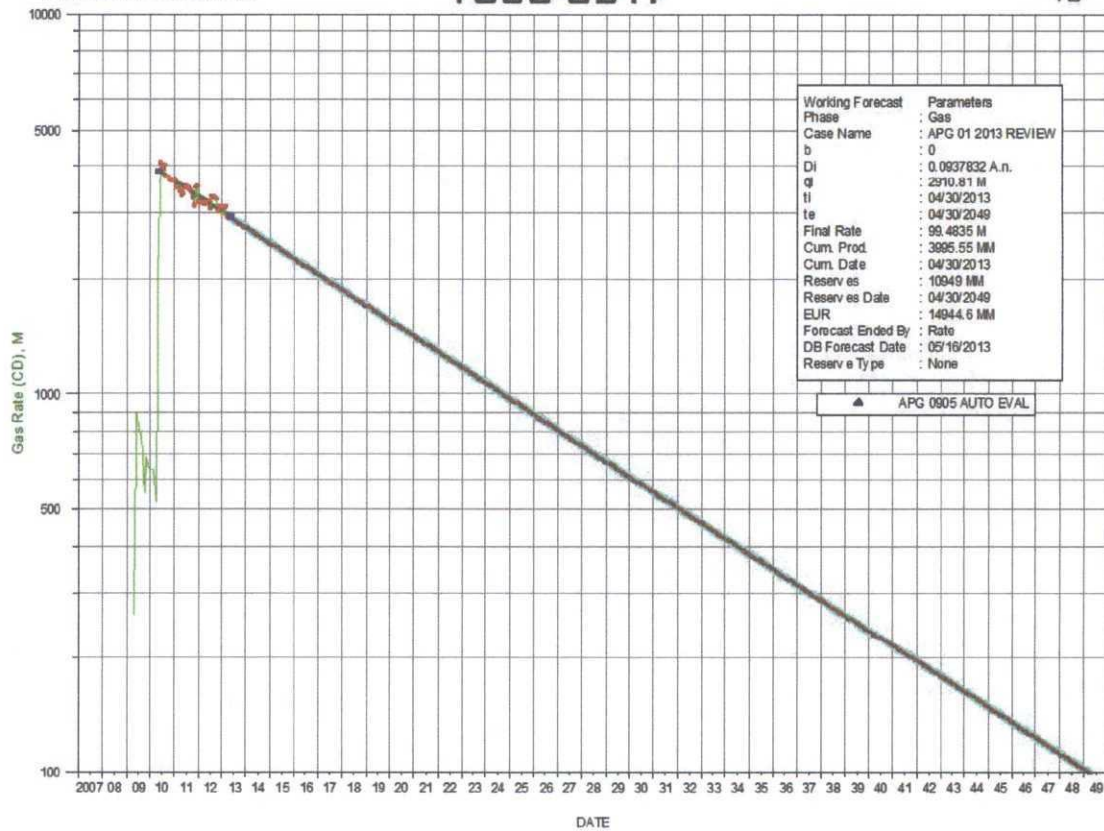
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1830-021F

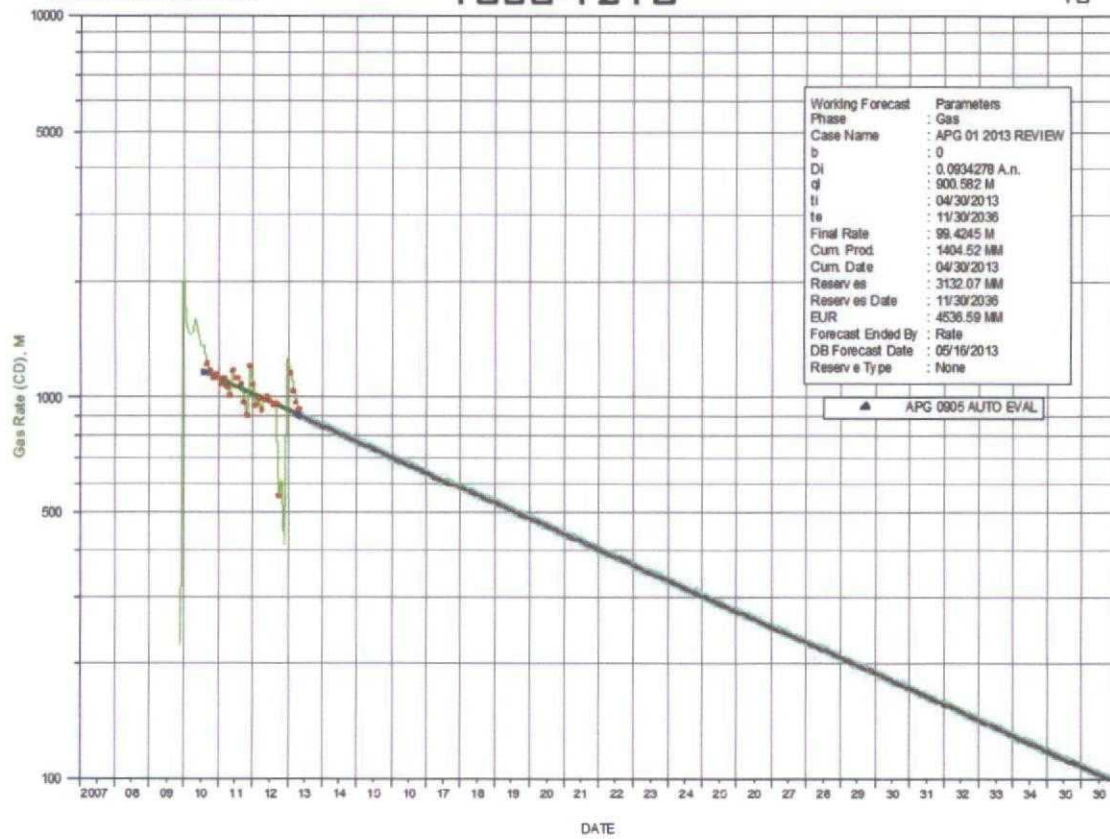
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1830-1216

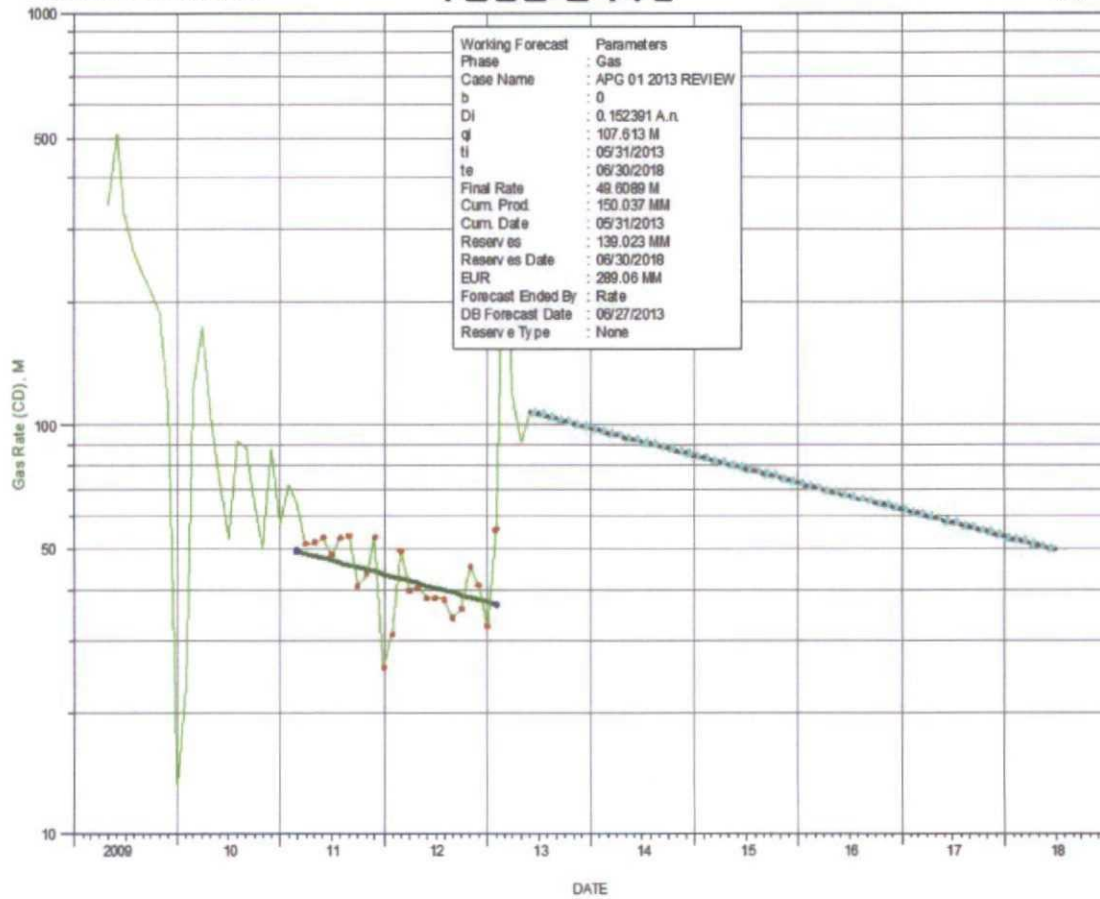
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1830-241J

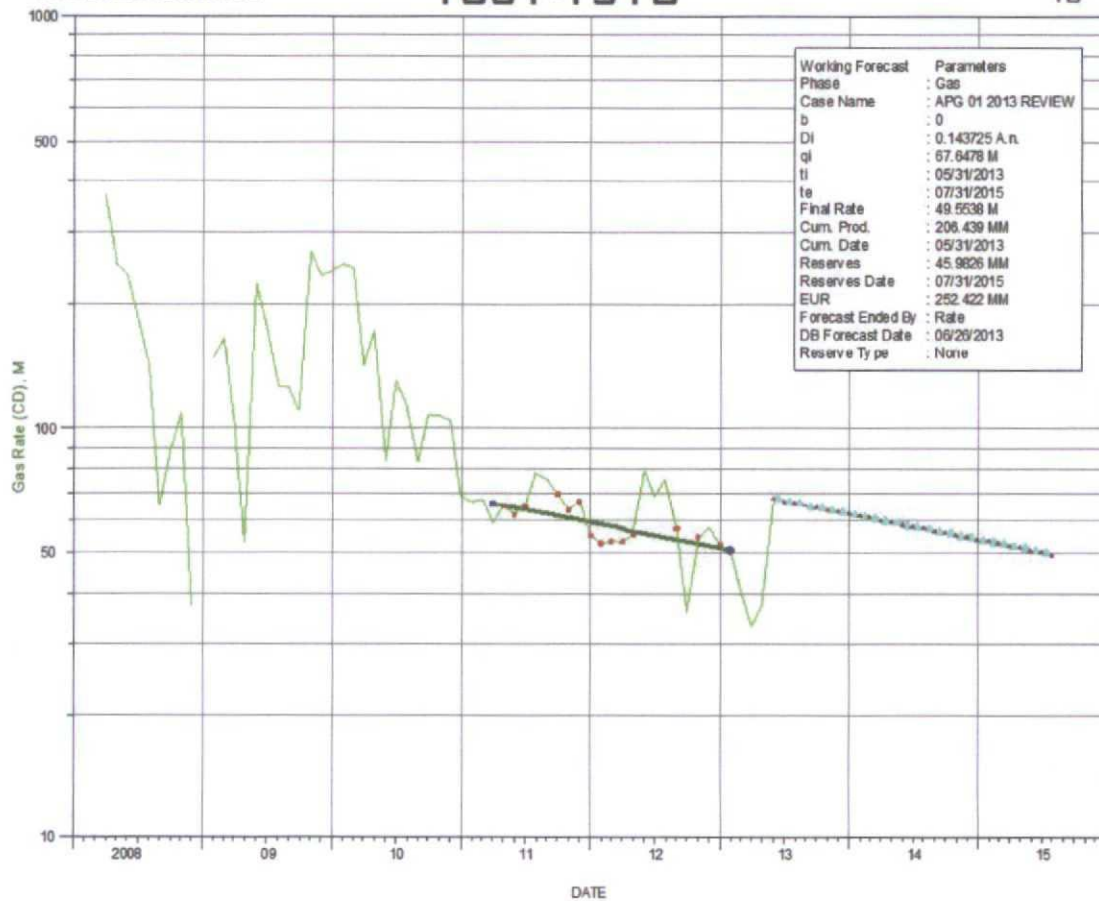
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1831-1316

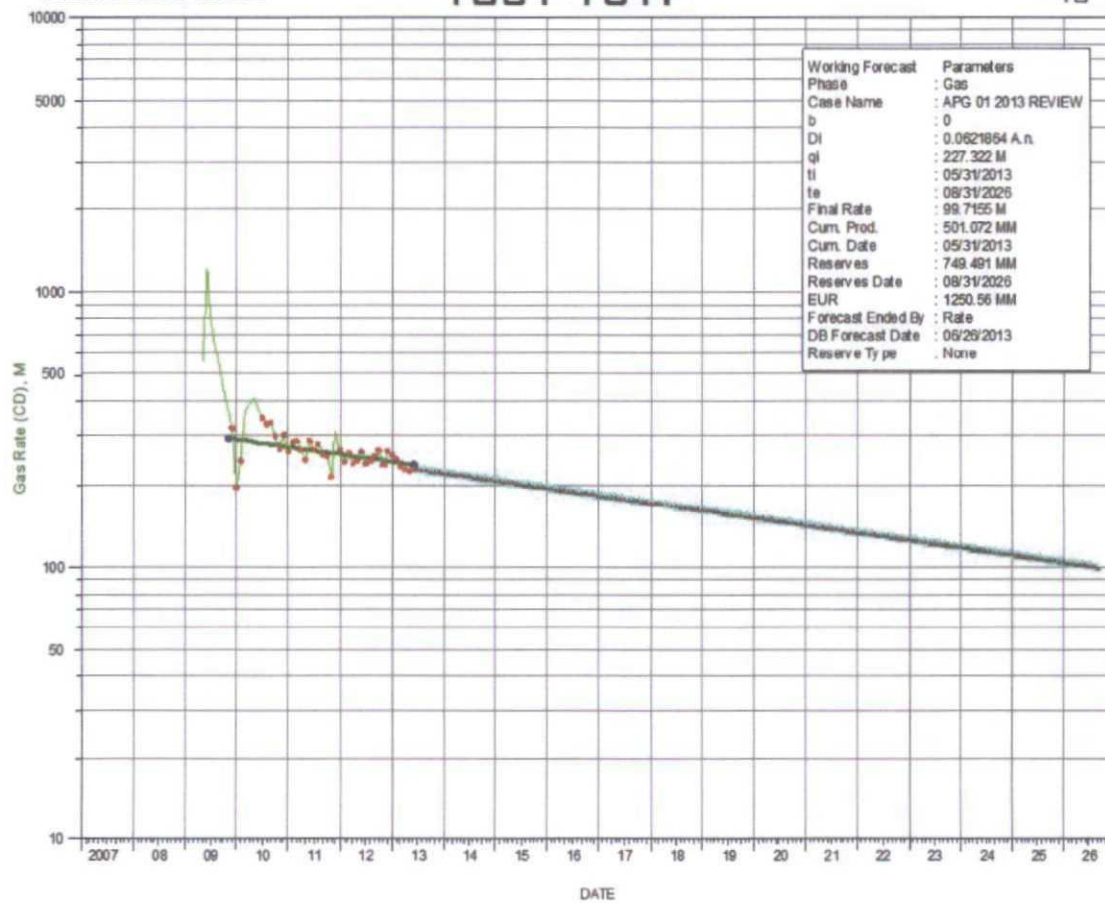
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1831-161F

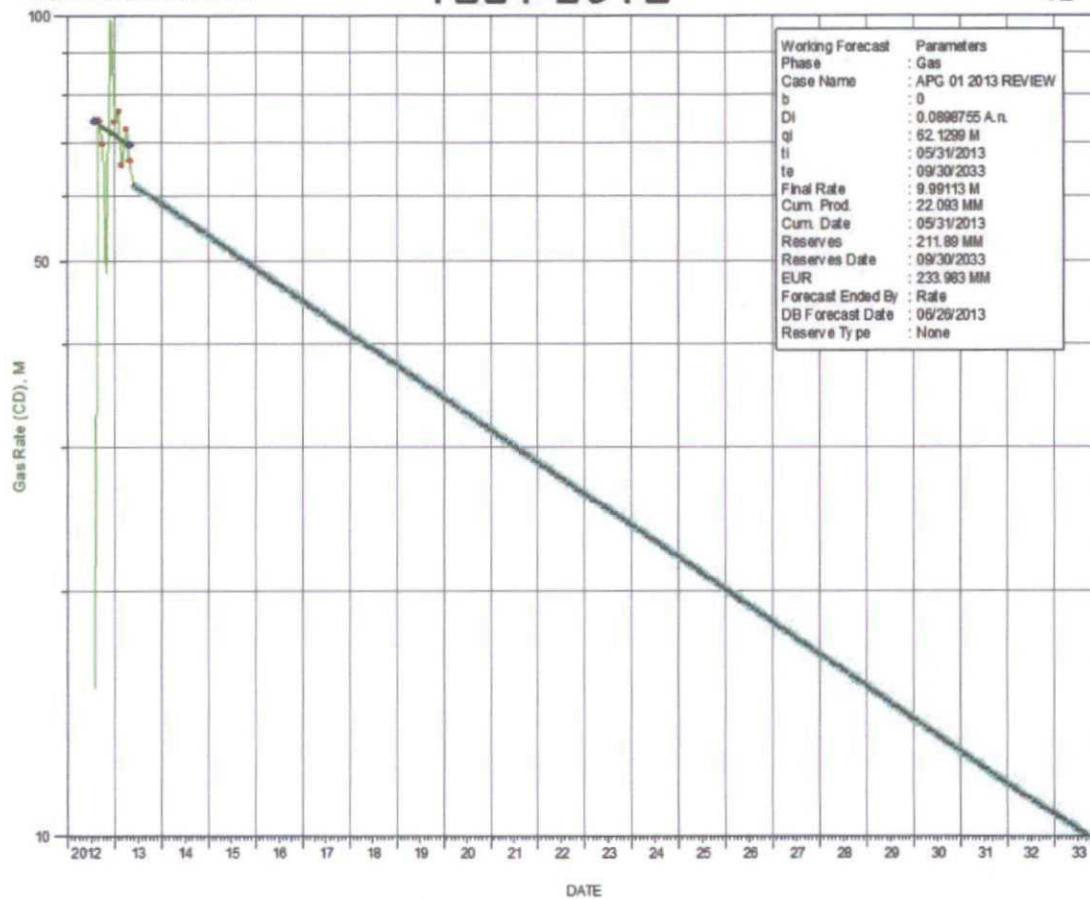
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1831-291G

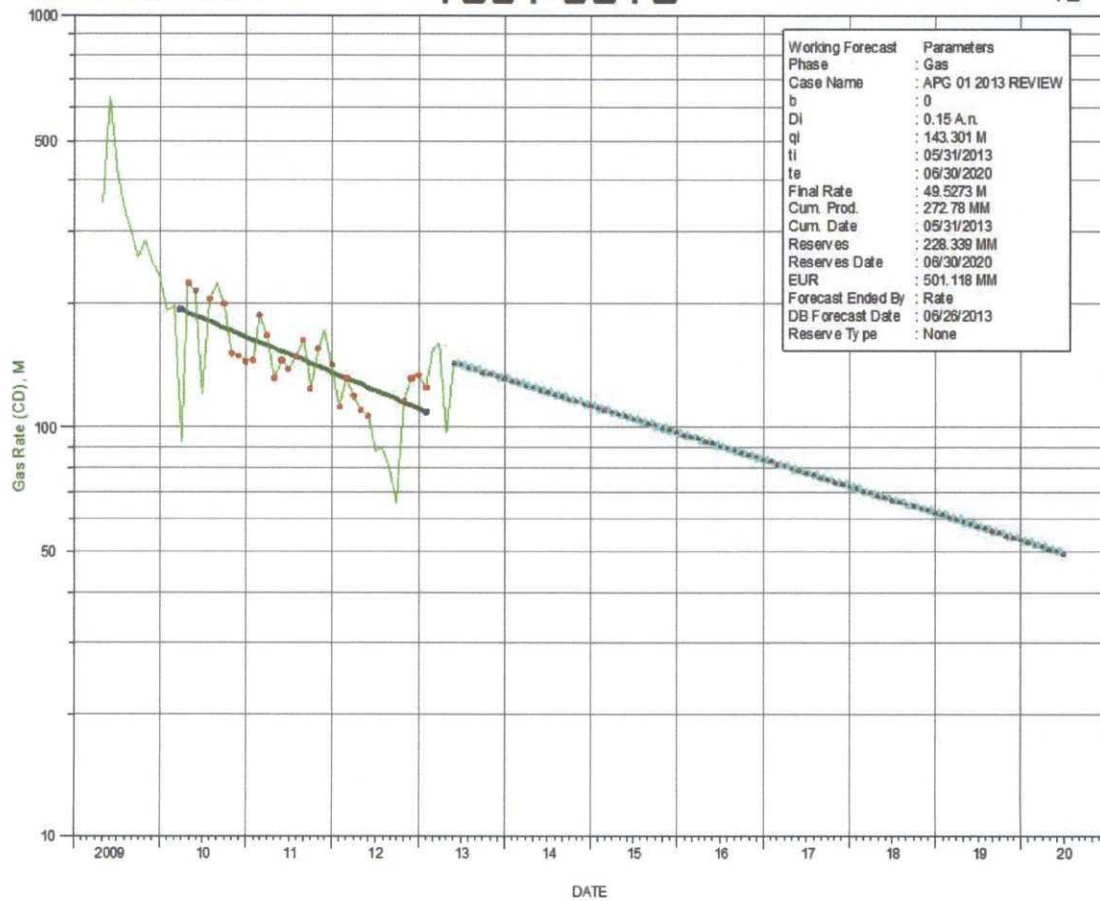
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30021204670000

1831-3016

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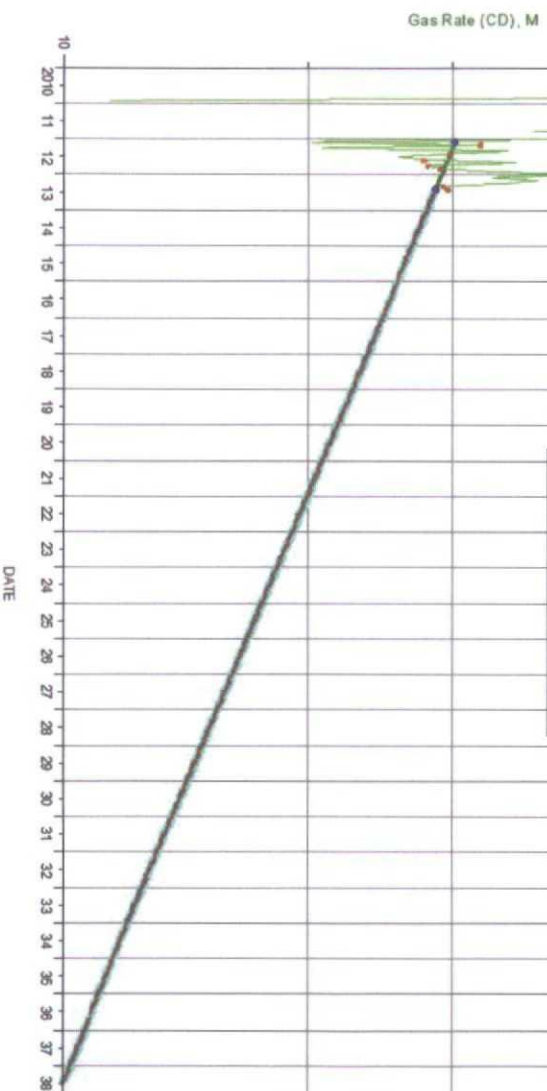


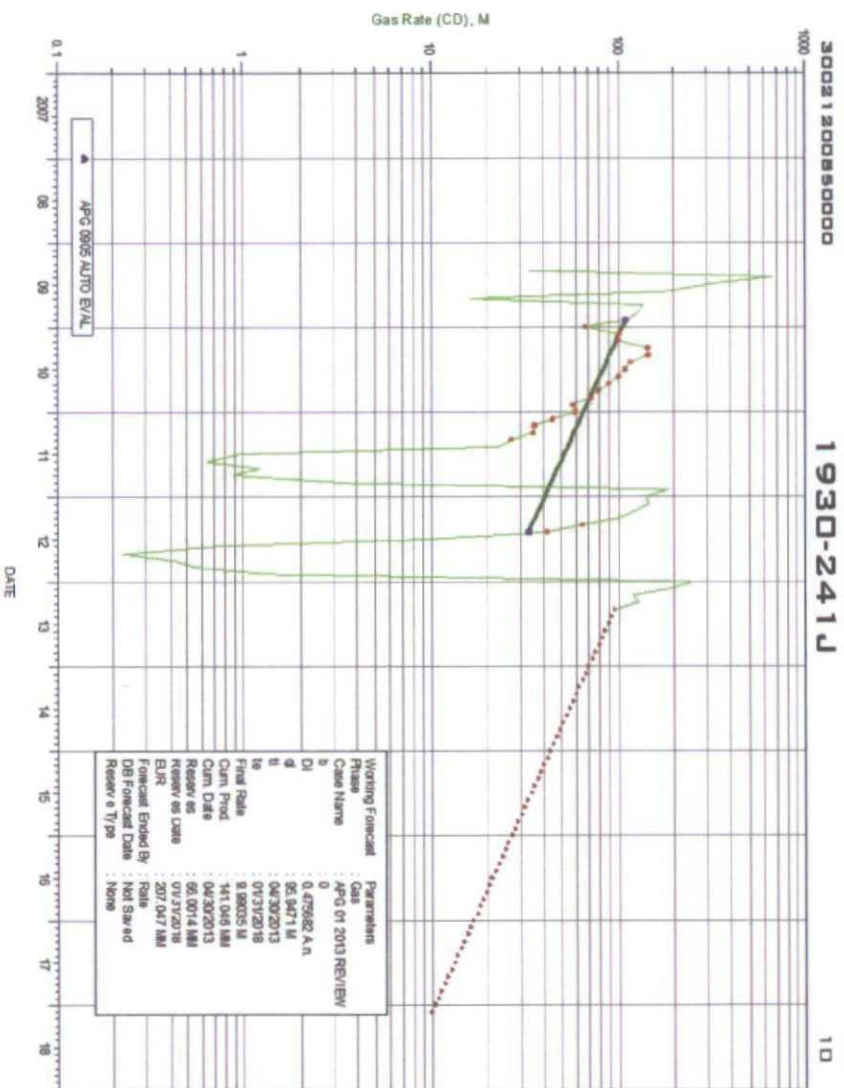
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1930-211G

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Working Forecast	
Phase	Gas
Case Name	APG 01 2013 REVIEW
DI	0
q	0.0417374 A.n.
ti	28.5079 M
te	05/31/2013
First Rate	07/31/2008
Cum Prod	8.97222 MM
Cum Date	31.276 MM
Reserv as	05/31/2013
Reserv as Date	182.208 MM
EUR	07/31/2008
Forecast Ended By	183.484 MM
DB Forecast Date	Rate
Reserv e Type	06/27/2013
	None

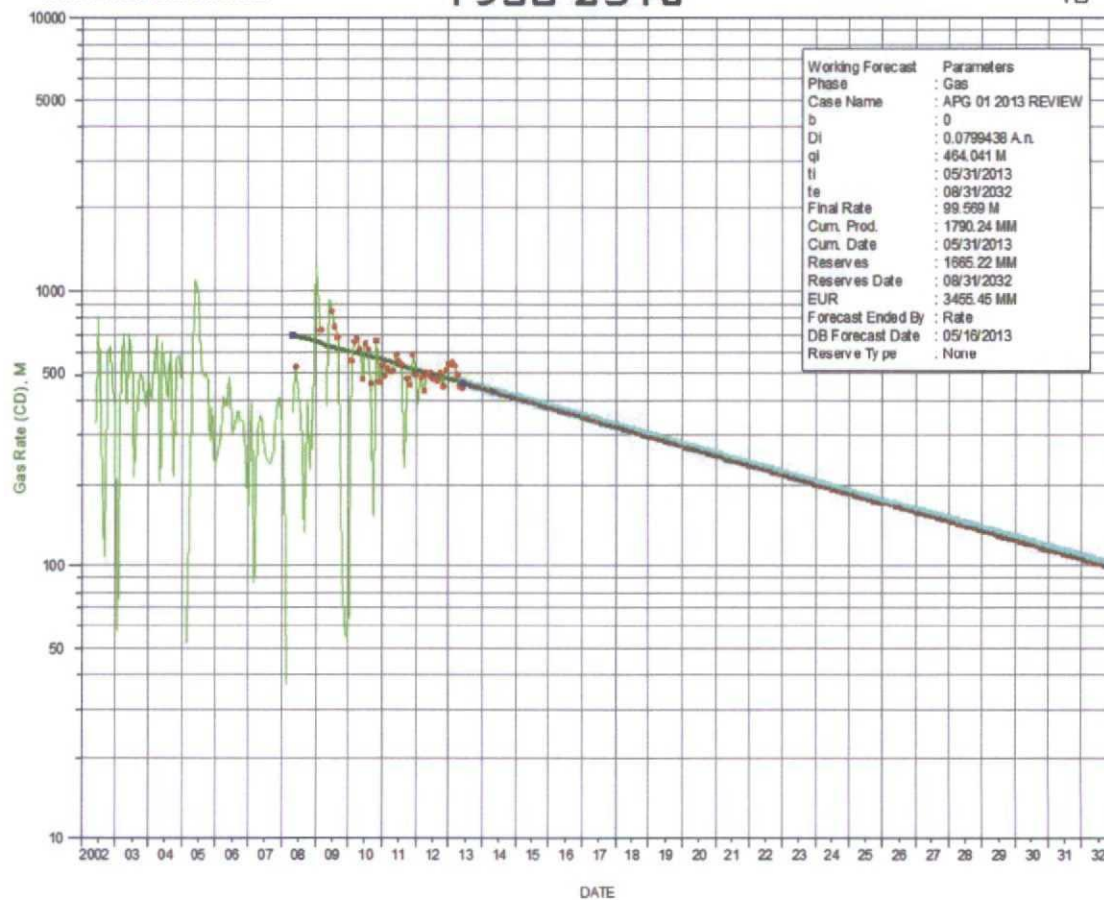




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1930-251J

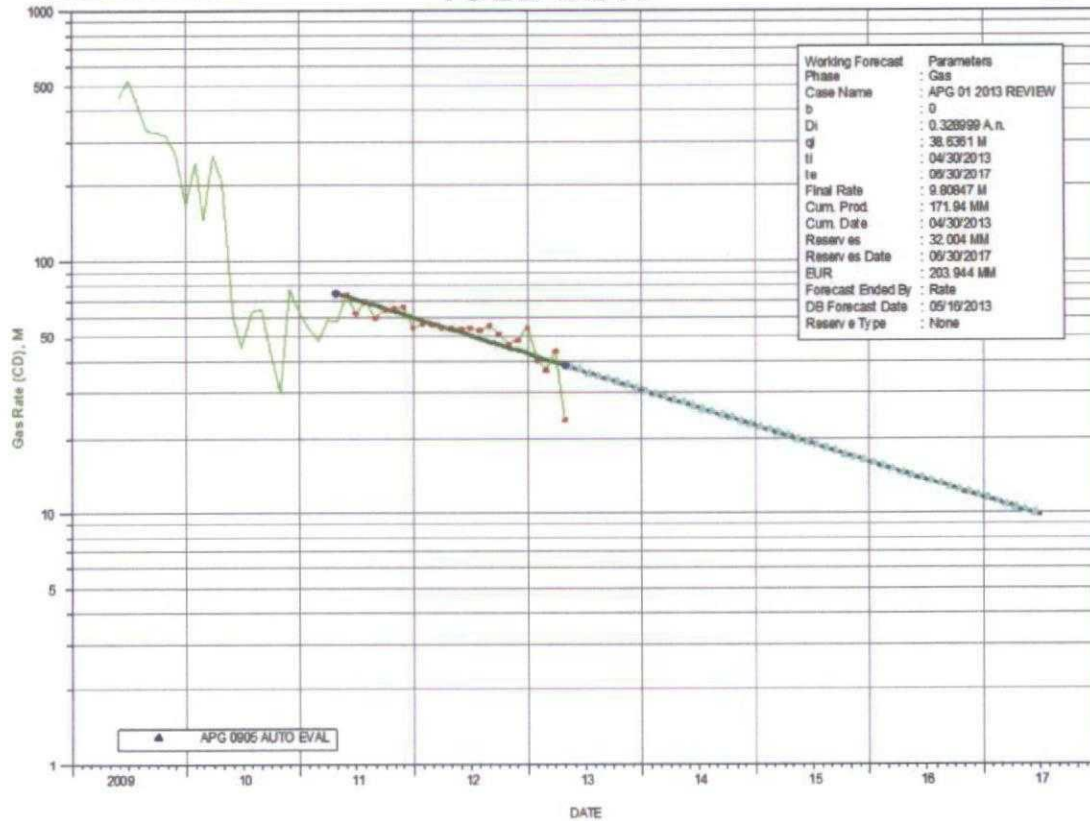
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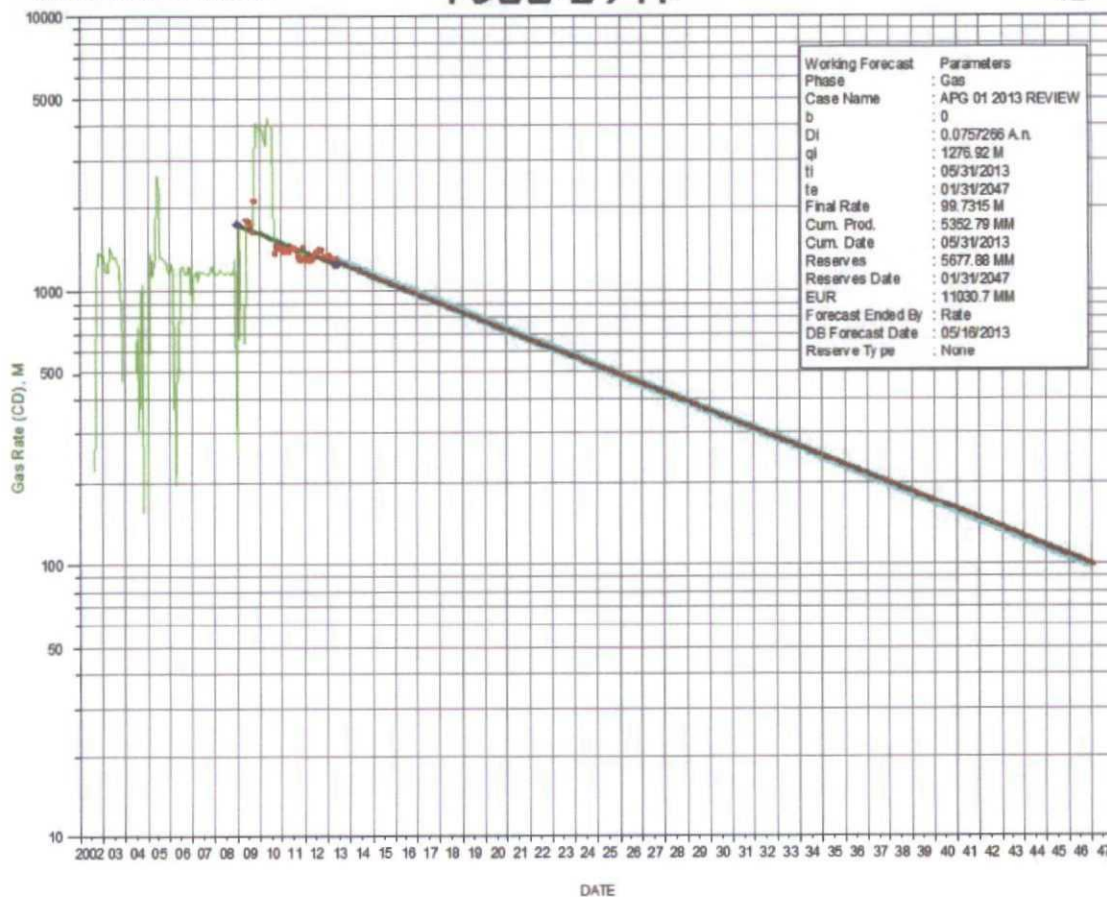
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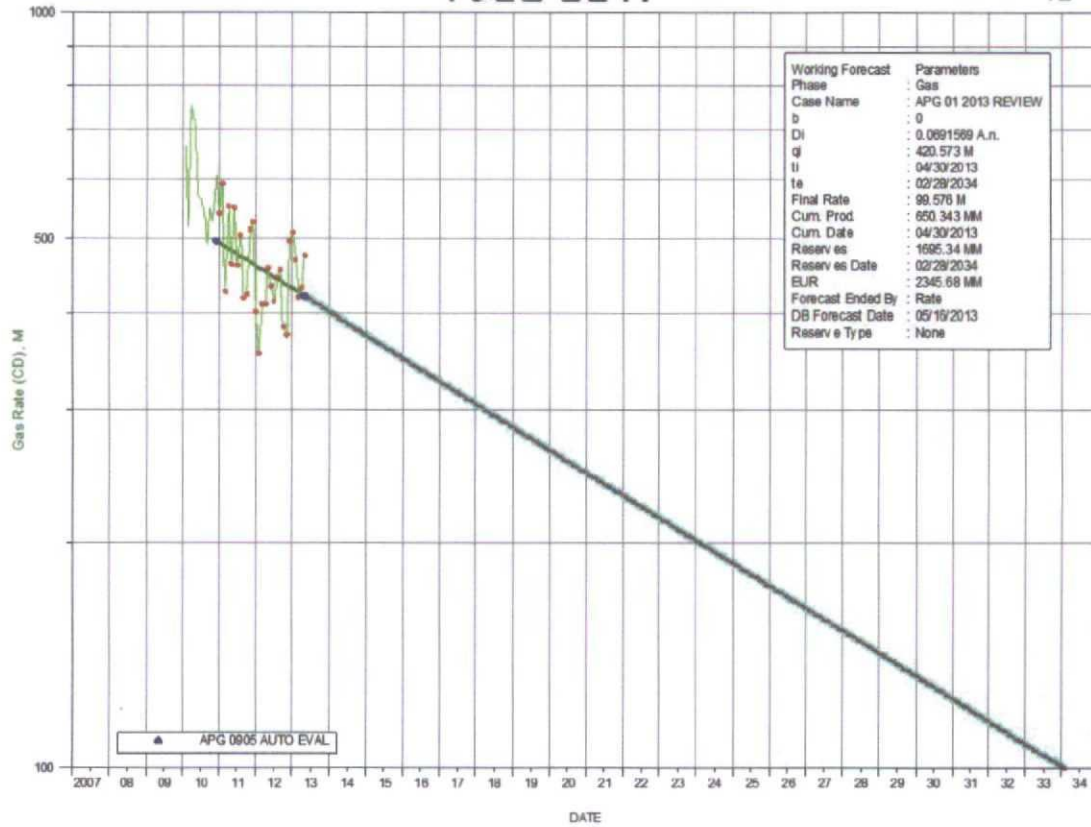
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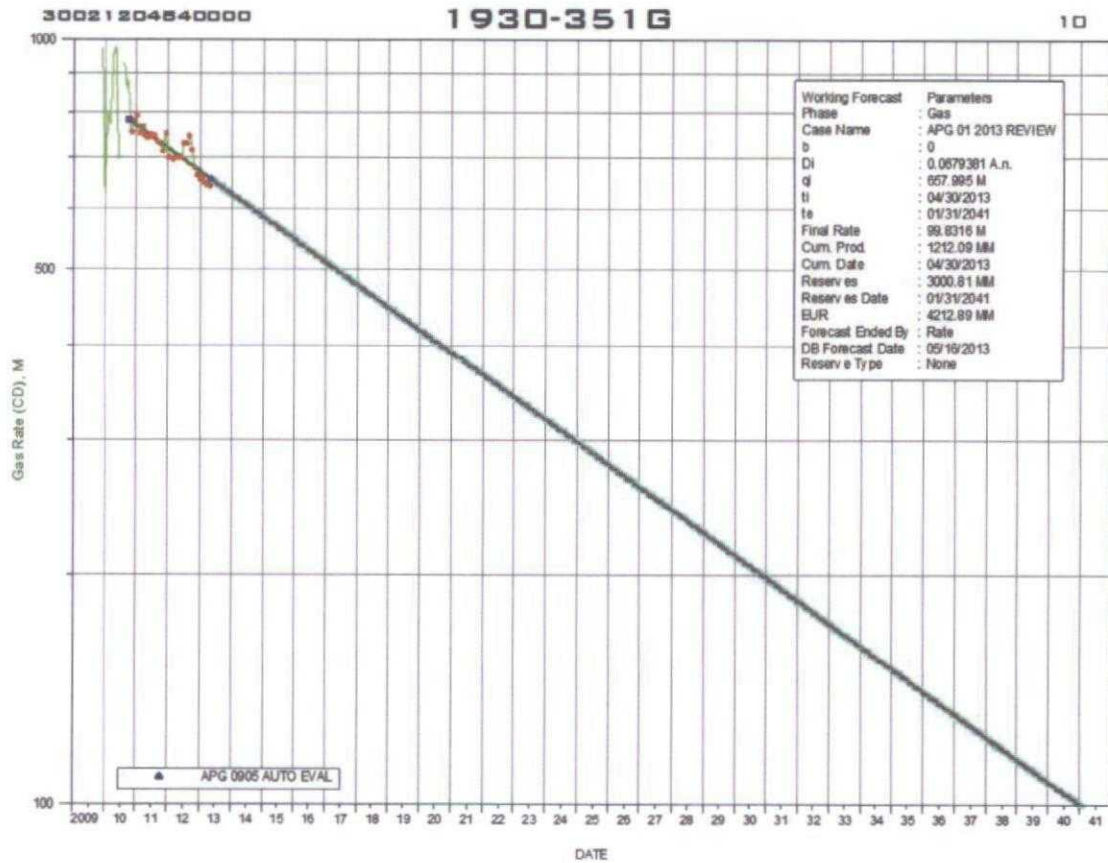


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1930-331F

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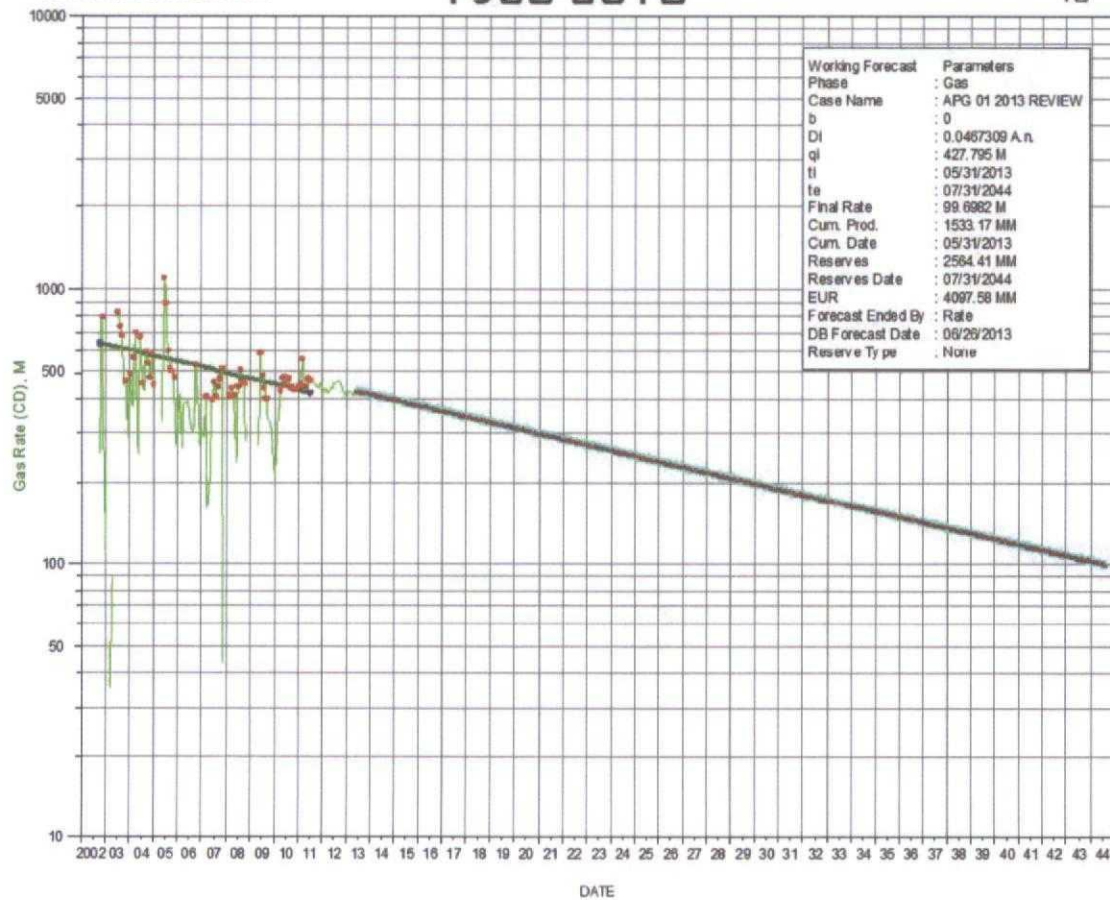




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1930-361 G

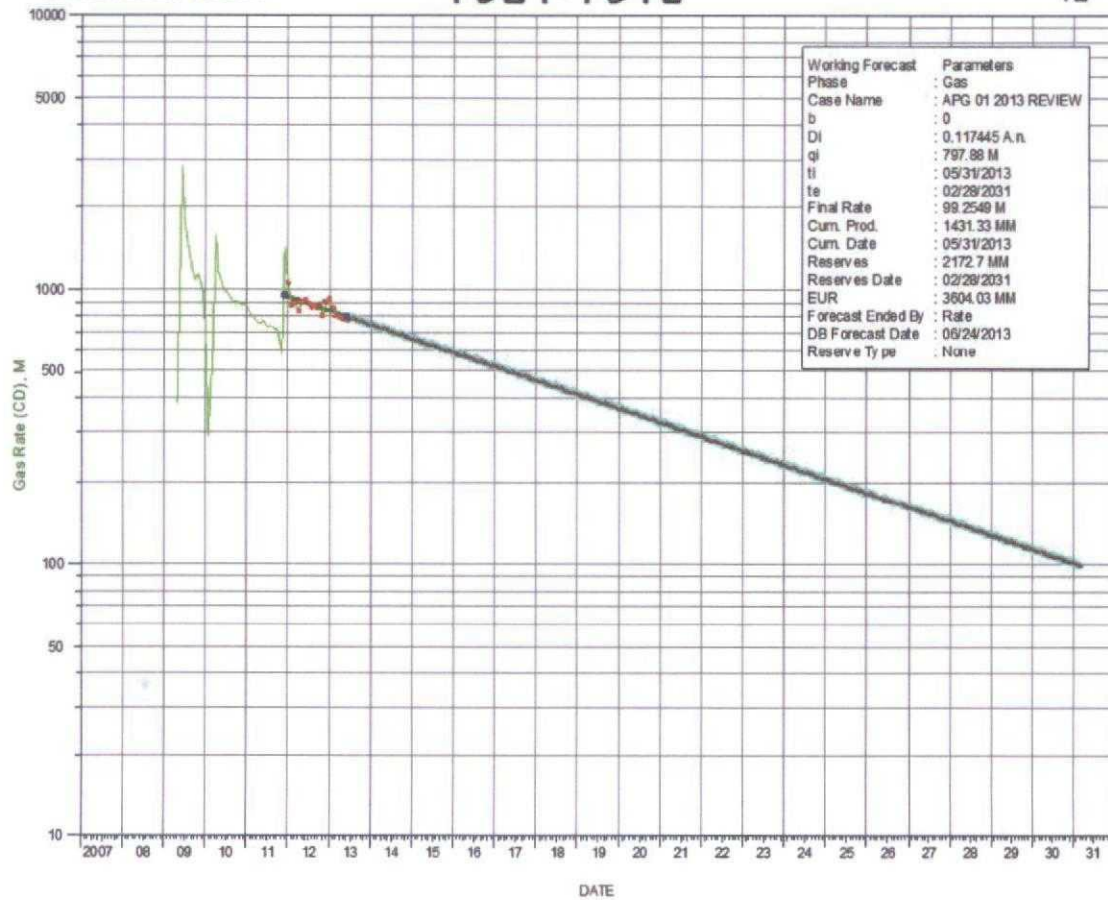
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1931-191J

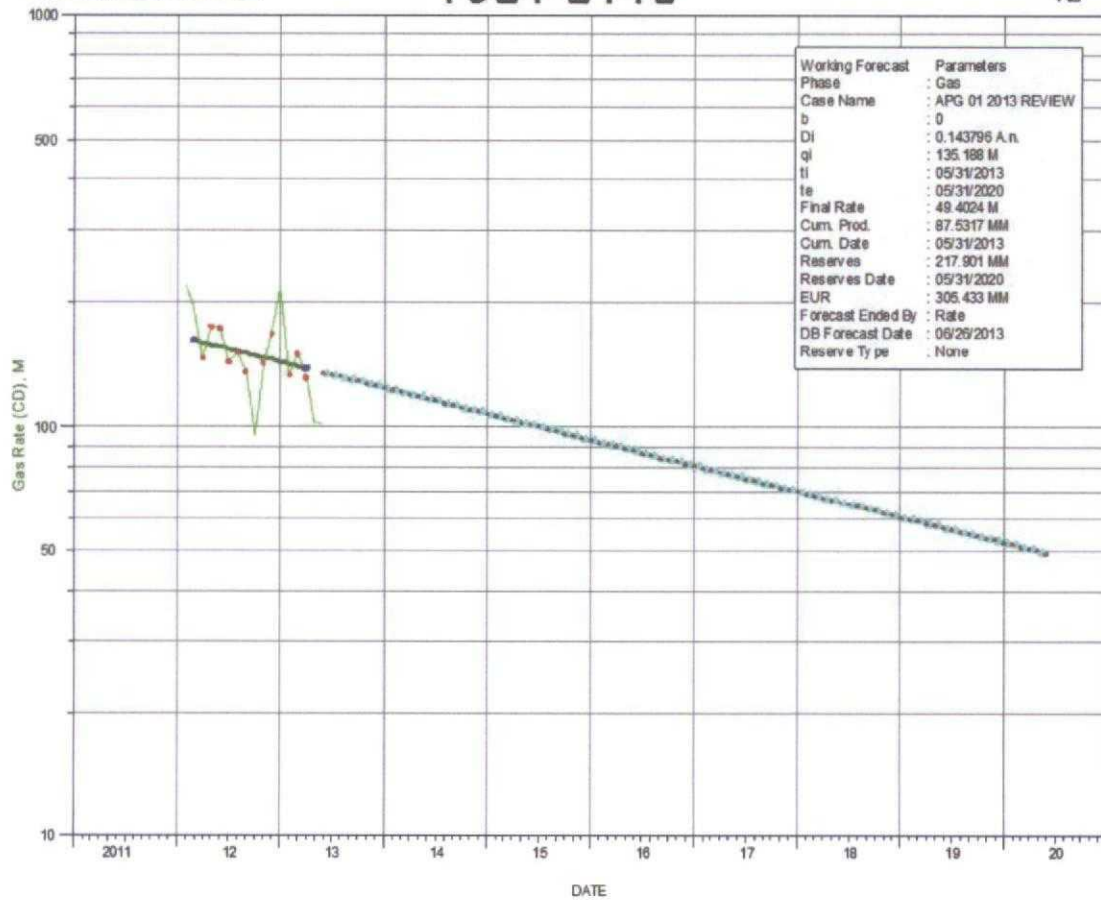
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30021200910000

1931-311J

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SUMMARY OF RECOVERY EFFICIENCY CALCULATIONS

RECOVERY EFFICIENCIES						
ASSUMED DRAINAGE AREA = 640 ACRES						
	WELL		EUR MMSCF	AREA ACRES	OGIP BCF	RECOVERY EFFICIENCY
1	18 30 01 1 G	ACTIVE	2,411.8	640	14,466	0.167
2	18 30 02 1 F	ACTIVE - ANOMALOUS PERFORMER	14,944.6	640	11,270	1.326
3	18 30 12 1 G	ACTIVE	4,536.6	640	17,454	0.260
4	18 30 13 1 K	PA, NEVER PRODUCED				
5	18 30 24 1 J	ACTIVE	269.0	640	10,469	0.026
6	18 31 02 1 G	TA ON 2008, ONLY TESTED				
7	18 31 05 1 G	PA, NEVER PRODUCED				
8	18 31 11 1 G	TA ON 2008, ONLY TESTED				
9	18 31 12 1 F	PA, NEVER PRODUCED				
10	18 31 12 2 F	TA ON 2012	37.9	640	2,394	0.016
11	18 31 13 1 G	ACTIVE	252.4	640	2,933	0.086
12	18 31 16 1 F	ACTIVE	1,250.6	640	5,180	0.241
13	18 31 18 1 F	PA, NEVER PRODUCED				
14	18 31 22 1 G	PA, NEVER PRODUCED				
15	18 31 23 1 G	PA, NEVER PRODUCED				
16	18 32 1 24 1 G	TA ON 2009	35.1	640	1,428	0.025
17	18 31 29 1 G	ACTIVE	234.0	640	5,023	0.047
18	18 31 30 1 G	ACTIVE	501.1	640	5,225	0.096
19	18 31 34 1 A	PA, NEVER PRODUCED				
20	19 30 21 1 G	ACTIVE	193.5	640	5,481	0.035
21	19 30 22 1 G	TA ON 2009	10.6	640	5,393	0.002
22	19 30 24 1 J	ACTIVE	207.0	640	14,519	0.014
23	19 30 25 1 J	ACTIVE	4,195.5	640	12,760	0.329
24	19 30 26 1 F	ACTIVE	278.3	640	9,687	0.029
25	19 30 27 1 P	ACTIVE - ANOMALOUS PERFORMER	15,239.7	640	6,235	2.444
26	19 30 28 1 G	TA, NEVER PRODUCED				
27	19 30 33 1 F	ACTIVE	2,345.7	640	9,235	0.254
28	19 30 35 1 G	ACTIVE	4,212.9	640	10,731	0.393
29	19 30 36 1 G	ACTIVE	4,869.1	640	11,156	0.436
30	19 31 19 1 J	ACTIVE	3,604.0	640	6,573	0.548
31	19 31 23 1 G	PA, NEVER PRODUCED				
32	19 31 31 1 J	ACTIVE	418.3	640	10,937	0.038
33	19 31 35 1 F	PA, NEVER PRODUCED				
		TOTAL	29,780		161.04	

SPACING = 640 ACRES/WELL

TOTAL EUR = 29,780 BCF

TOTAL OGIP = 161.04 BCF

OVERALL RECOVERY EFFICIENCY = 29.78/161.04 = 18.5 %

EXCLUDES ANOMALOUS WELLS

RECOVERY EFFICIENCIES						
ASSUMED DRAINAGE AREA = 160 ACRES						
	WELL		EUR MMSCF	AREA ACRES	OGIP BCF	RECOVERY EFFICIENCY
1	18 30 01 1 G	ACTIVE	2,411.8	160	3.616	0.667
2	18 30 02 1 F	ACTIVE - ANOMALOUS PERFORMER	14,944.6	160	2.818	5.304
3	18 30 12 1 G	ACTIVE	4,536.6	160	4.364	1.040
4	18 30 13 1 K	PA, NEVER PRODUCED				
5	18 30 24 1 J	ACTIVE	269.0	160	2.617	0.103
6	18 31 02 1 G	TA ON 2008, ONLY TESTED				
7	18 31 05 1 G	PA, NEVER PRODUCED				
8	18 31 11 1 G	TA ON 2008, ONLY TESTED				
9	18 31 12 1 F	PA, NEVER PRODUCED				
10	18 31 12 2 F	TA ON 2012	37.9	160	0.598	0.063
11	18 31 13 1 G	ACTIVE	252.4	160	0.733	0.344
12	18 31 16 1 F	ACTIVE	1,250.6	160	1.295	0.966
13	18 31 18 1 F	PA, NEVER PRODUCED				
14	18 31 22 1 G	PA, NEVER PRODUCED				
15	18 31 23 1 G	PA, NEVER PRODUCED				
16	18 32 1 24 1 G	TA ON 2009	35.1	160	0.357	0.098
17	18 31 29 1 G	ACTIVE	234.0	160	1.256	0.186
18	18 31 30 1 G	ACTIVE	501.1	160	1.306	0.384
19	18 31 34 1 A	PA, NEVER PRODUCED				
20	19 30 21 1 G	ACTIVE	193.5	160	1.370	0.141
21	19 30 22 1 G	TA ON 2009	10.6	160	1.348	0.008
22	19 30 24 1 J	ACTIVE	207.0	160	3.630	0.057
23	19 30 25 1 J	ACTIVE	4,195.5	160	3.190	1.315
24	19 30 26 1 F	ACTIVE	278.3	160	2.422	0.115
25	19 30 27 1 P	ACTIVE - ANOMALOUS PERFORMER	15,239.7	160	1.559	9.778
26	19 30 28 1 G	TA, NEVER PRODUCED				
27	19 30 33 1 F	ACTIVE	2,345.7	160	2.309	1.016
28	19 30 35 1 G	ACTIVE	4,212.9	160	2.683	1.570
29	19 30 36 1 G	ACTIVE	4,869.1	160	2.789	1.746
30	19 31 19 1 J	ACTIVE	3,604.0	160	1.643	2.193
31	19 31 23 1 G	PA, NEVER PRODUCED				
32	19 31 31 1 J	ACTIVE	418.3	160	2.734	0.153
33	19 31 35 1 F	PA, NEVER PRODUCED				
		TOTAL	29,780		40.26	