



Waterflood Progress Report

2013

East Manson Unit #1

Section 29 TWP 13 RNG 28 W1M

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Figure 1: Rate vs Time of EMU #1

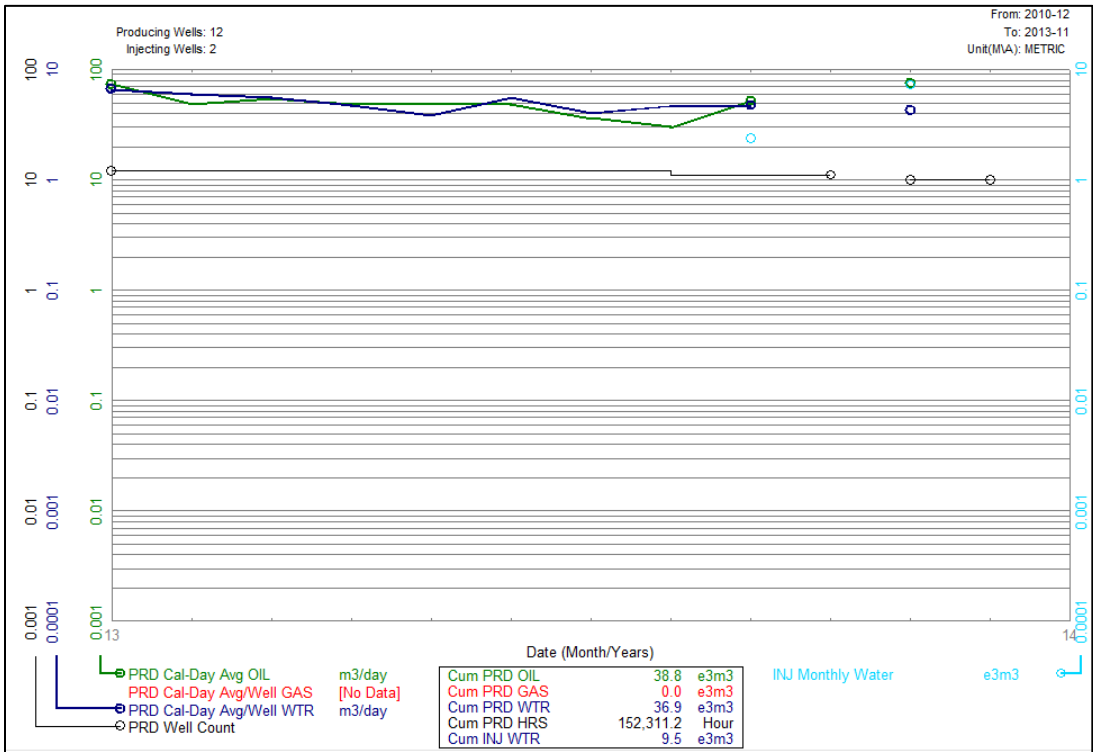


Figure 2: Cum Production of EMU #1

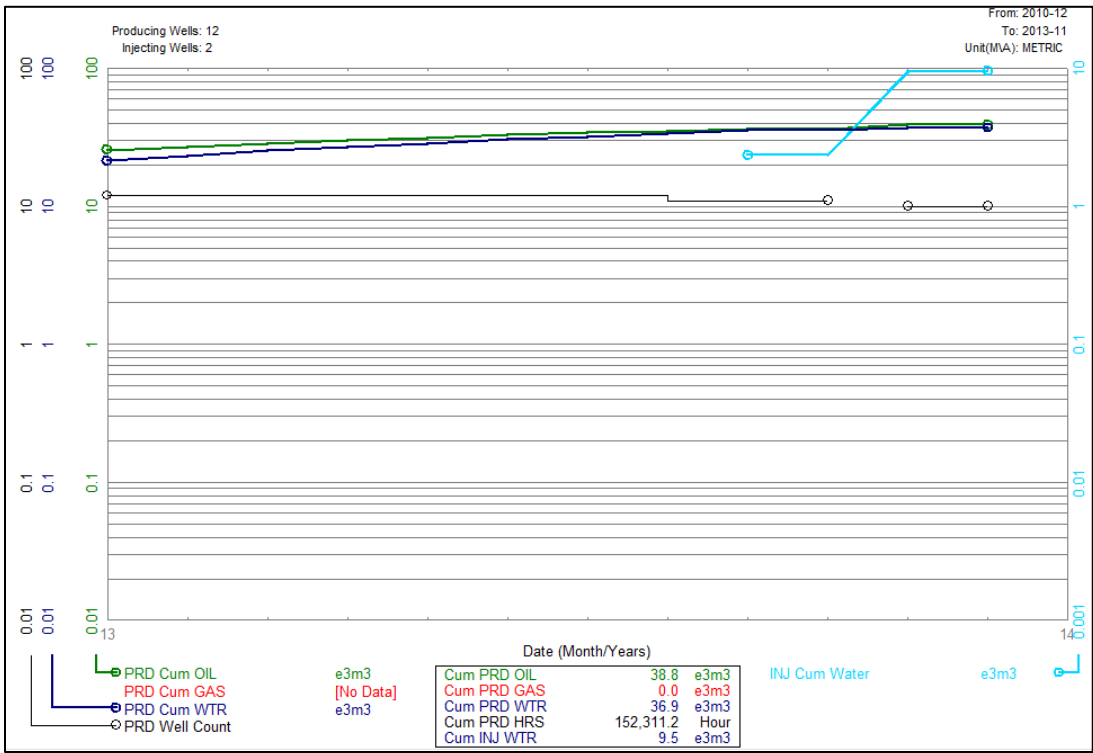
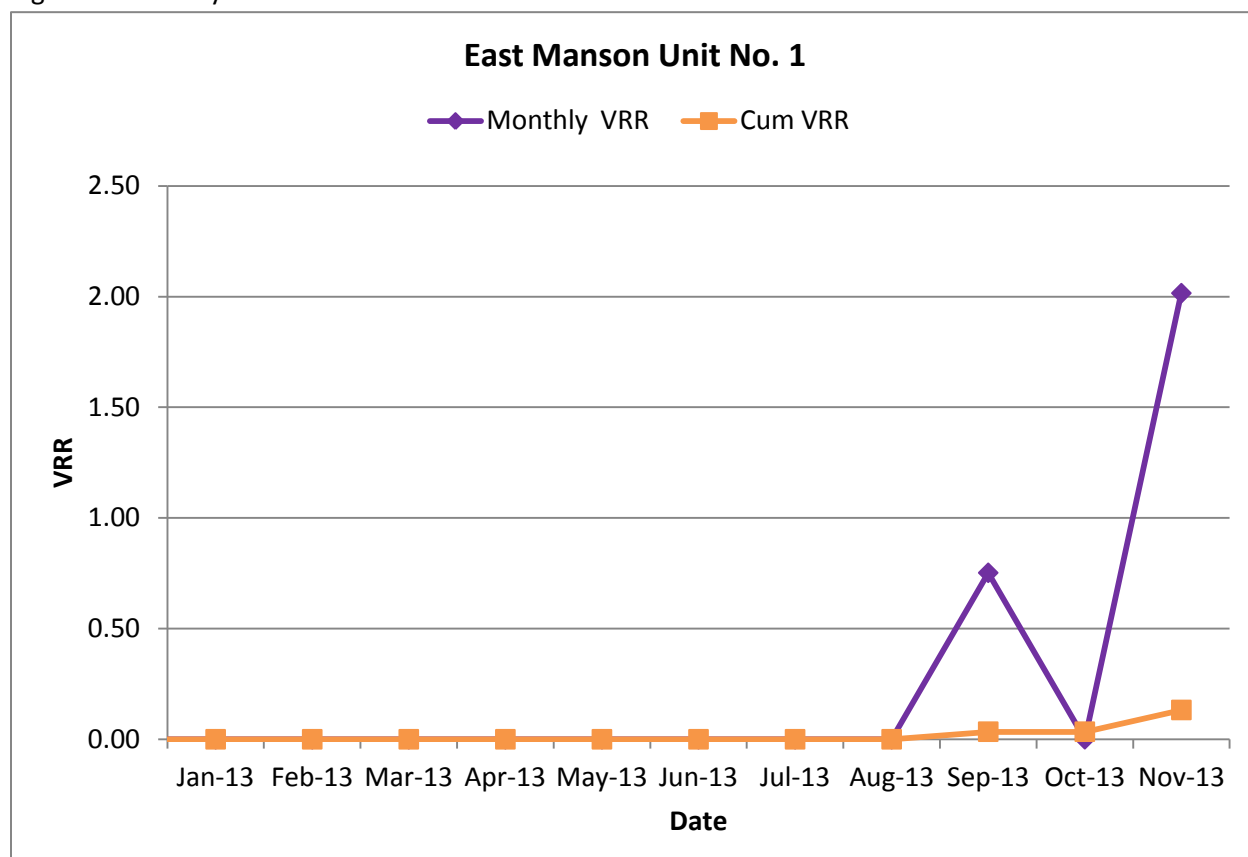


Figure 3: Injection Parameters

Water Inj. Rate		Water Inj. Press	Cum Oil	Cum Ga
(m ³ /d)	(psi)	(m ³)	(e ³ m ³)	
0		25466.7		
0		26817.7		
0		28487.2		
0		29933.9		
0		31462.3		
0		32919.6		
0		34036.7		
0		34967		
78	350-500	36525.8		
0	350-500	36525.8		
240	350-500	38773.3		

Oil Prod	Gas Prod	H2O Prod	H2O Inj	Cum Oil	Cum Gas	Cum H2O	Cum H2O Inj	Inj Well	Prod Well	GOR	H2Ocut	Void
(m ³ /d)	(E3m ³ /d)	(m ³ /d)	(m ³ /d)	(m ³)	(E3m ³)	(m ³)	(m ³)	Count	Count	(m ³ /m ³)	%	(m ³)
3	0	0	0	98	0	0	0	0	1	0	0.0%	
10	0	0	0	420	0	0	0	0	1	0	0.0%	
11	0	0	0	723	0	0	0	0	1	0	0.0%	
11	0	0	0	1051	0	0	0	0	1	0	0.0%	
8	0	0	0	1295	0	0	0	0	1	0	0.0%	
1	0	0	0	1330	0	0	0.0%	0	1	0	0.0%	
3	0	0	0	1417	0	0	0	0	1	0	0.0%	
1	0	0	0	1448	0	0	0	0	1	0	0.0%	
10	0	0	0	1752	0	0	0.0%	0	1	0	0.0%	
9	0	0	0	2036	0	0	0	0	1	0	0.0%	
25	0	0	0	2815	0	5	0	0	2	0	0.6%	
65	0	5	0	4775	0	169	0	0	5	0	7.7%	
39	0	10	0	5973	0	488	0	0	6	0	21.1%	
38	0	11	0	7138	0	841	0	0	6	0	23.3%	
56	0	43	0	8748	0	2075	0	0	6	0	43.4%	
35	0	22	0	9834	0	2747	0	0	7	0	38.2%	
41	0	38	0	11060	0	3889	0	0	7	0	48.2%	
32	0	21	0	12046	0	4556	0	0	7	0	40.3%	
31	0	49	0	12962	0	6026	0	0	7	0	61.6%	
36	0	31	0	14074	0	6994	0	0	8	0	46.5%	
47	0	47	0	15519	0	8436	0	0	9	0	49.9%	
51	0	76	0	17056	0	10702	0	0	11	0	59.6%	
77	0	114	0	19452	0	14240	0	0	12	0	59.6%	
66	0	81	0	21444	0	16676	0	0	12	0	55.0%	
57	0	70	0	23205	0	18844	0	0	12	0	55.2%	
73	0	79	0	25467	0	21303	0	0	12	0	52.1%	
48	0	71	0	26818	0	23291	0	0	12	0	59.5%	
54	0	67	0	28487	0	25371	0	0	12	0	55.5%	
48	0	56	0	29934	0	27058	0	0	12	0	53.8%	
49	0	46	0	31462	0	28490	0	0	12	0	48.4%	
49	0	66	0	32920	0	30479	0	0	12	0	57.7%	
36	0	48	0	34037	0	31973	0	0	12	0	57.2%	
30.0	0	56	0	34967	0	33706	0	0	11	0	65.1%	
52.0	0	57	78	36526	0	35405	2340	1	11	0	52.1%	
0.0	0	0	0	36526	0	35405	2340	0	0	0	#DIV/0!	#DIV/0!
74.9	0	51	240	38773	0	36940	9540	2	10	0	40.6%	#DIV/0!

Figure 4: Monthly and Cum VRR vs Time for EMU #1



Well Servicing

12-29-013-28W1: Dec 15-17 2013. BHP change and replace worn rods and tubing.

4-29-13-28W1: Dec 20-23 2013. Replace worn tubing.

Aug 19-20 2013. BHP change.

10-29-13-28W1: Dec 14-19 2013. Snapped rod. Repair rods and downsize BHP.

Discussion

Examining the production plots of the offsetting producers to 7-29 injector and 2-29 injector an uptick in production is clearly displayed as of mid-AUG 2013. This production performance is an excellent indicator of the performance of the EOR project. The injectors appear to be supporting the reservoir quickly adding near term production gains and providing long term additions to recoverable reserves. Surge is watching the performance of the EMU #1 waterflood closely and hopes to replicate these results in EMU #2 and EMU #3. In 2014 Surge has converted 2 additional producers in EMU #1 to injectors. 11-29 has been injecting as of Mid-February and 4-29 is slated to begin injecting at the end of February. Due to the downspacing of producers in EMU #1 Surge is expecting the newest injectors to provide much needed additional support to the unit.

Figure 5: Rate vs Time for 7-29 Producer

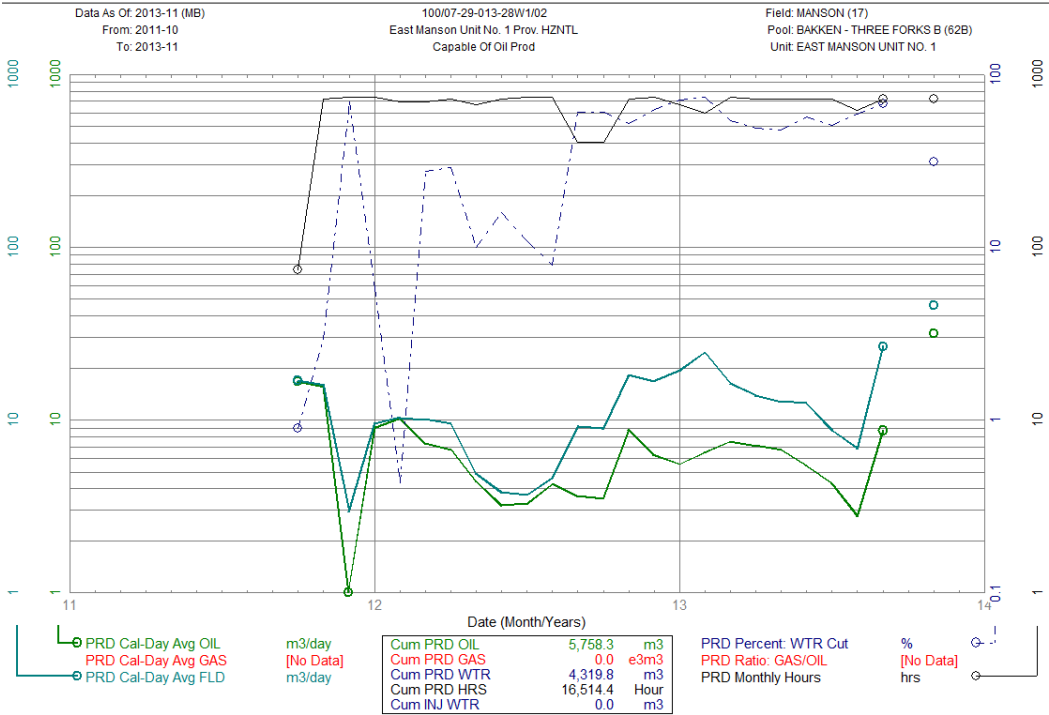


Figure 6: Rate vs Time for 2-29 Producer

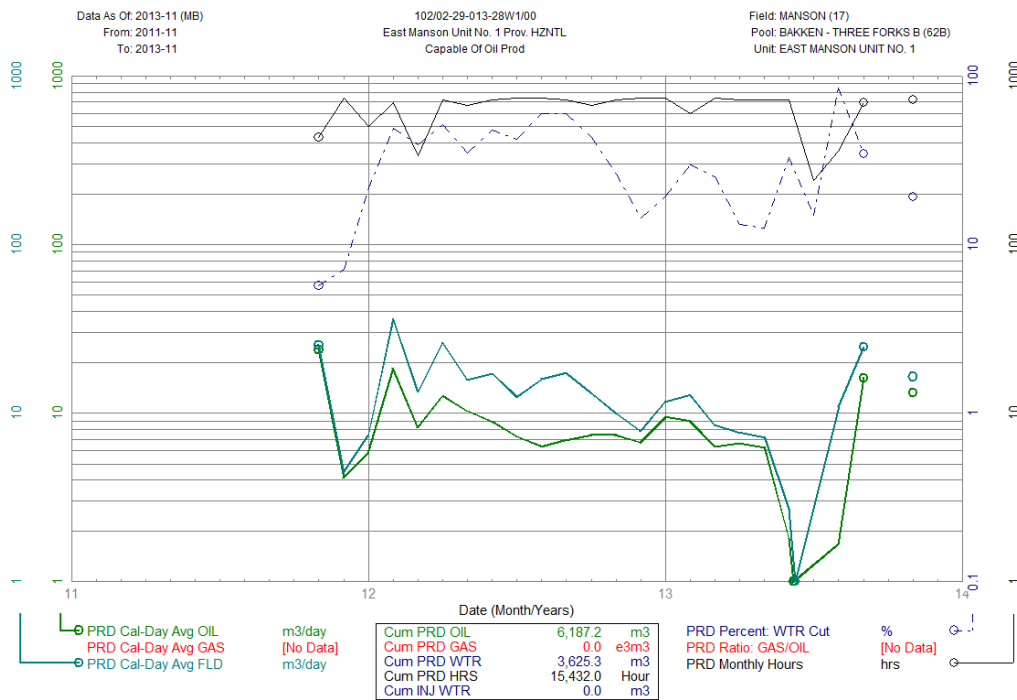


Figure 7: Rate vs Time for 4-29 Producer

