

DATE IN 6/9/09	SUSPENSE	ENGINEER T. Warnell	LOGGED IN 6/9/09	TYPE IPI	APP NO. PKAA 0916052475
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ABOVE THIS LINE FOR DIVISION USE ONLY

RECEIVED NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

2009 JUN 9 PM 1:31 1220 South St. Francis Drive, Santa Fe, NM 87505



30-045-32086
Mesa 4
Dugan Prod. Corp.
16515

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☒ IPI ☐ EOR ☐ PPR

[D] Other: Specify _____

IPI-344

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners
[B] ☐ Offset Operators, Leaseholders or Surface Owner
[C] ☐ Application is One Which Requires Published Legal Notice
[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
[E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,
[F] ☐ Waivers are Attached

[3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

John Alexander
Print or Type Name

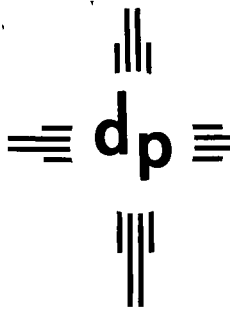
Signature

Vice-President
Title

Date

johnalexander@duganproduction.com
e-mail Address

6/5/2009



dugan production corp.

6/5/09

Engineering Bureau
New Mexico Oil Conservation Division
1220 South St. Frances Drive
Santa Fe, NM 87505

Re: Pressure Increase Request Mesa 4 SWD API 30-045-32086

Gentlemen:

Dugan Production Corp. requests a maximum surface injection pressure of 1429 psi at the subject well.

A step-rate-test was conducted at the Mesa 4 SWD well on 5/4/2009. The well is located in Sec. 16, Twn. 24N, Rng 8W, 1450' FSL & 1245' FEL. Injection is authorized by ADMINISTRATIVE ORDER SWD-918. Pumping services were provided by BJ Services. Bottom hole pressure was recorded by Tefteller Inc.

Attached are copies of the following:

Administrative check list form

Bottom hole pressure versus injection rate in both tabular and graphical format.

Surface pressure versus injection rate in both tabular and graphical format.

A well bore schematic

A CD with the above information (the files are either Excel or JPEG formats)

4364'
- .433

1890

Using the bottom hole pressure data, the parting pressure is shown at 3369 psi. The pressure bomb is set at 4364, so the hydrostatic pressure is 1890 psi using a gradient of 0.433 psi/ft. Subtracting the hydrostatic pressure from the bottom hole pressure, the surface parting pressure is 1479 psi. I can accurately maintain the maximum surface pressure at 50 psi below the parting pressure. I request that you allow me to inject at a maximum surface pressure of 1429 psi (1479 - 50).

Please contact me at the letterhead address if you have questions or need additional information.

Sincerely,

John Alexander
Vice President
john.alexander@duganproduction.com

3369 BHP
- 1890 hydrostatic

1479 Surface
- 50

1429

Enclosures

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009									
step	BHP	temp	Rate (bpm)						
0	0.01	64.46		F216505.RAW G216430.CAL	865				
2.5	0.01	64.46		14.0000	PRESSURED UP LUBRICATOR				
3	0.01	64.435		18.0000	R.I.H. W/TANDEM ELEC. MEMORY INST.				
3.5	0.01	64.404		34.0000	TANDEM ELEC. MEMORY INST. @ 4363'				
4	0.01	64.372		107.0000	BEGAN STEP RATE TEST				
4.5	0.01	64.34		125.0000	END RATE #1 - .5 BPM				
5	0.01	64.291		125.5000	RATE #2				
5.5	0.01	64.26		140.5000	END RATE #2 - 1.0 BPM				
6	0.01	64.229		141.0000	RATE #3				
6.5	0.01	64.198		156.0000	END RATE #3 - 1.5 BPM				
7	0.01	64.162		157.0000	RATE #4				
7.5	0.01	64.13		170.5000	END RATE #4 - 2.0 BPM				
8	0.01	64.103		171.5000	RATE #5				
8.5	0.01	64.071		185.5000	END RATE #5 - 2.5 BPM				
9	0.01	64.063		186.0000	RATE #6				
9.5	0.01	64.055		201.0000	END RATE #6 - 3.0 BPM				
10	0.01	64.041		202.5000	RATE #7				
10.5	0.01	64.033		215.5000	END RATE #7 - 3.5 BPM				
11	0.01	64.025		216.0000	RATE #8				
11.5	0.01	64.011		230.5000	END RATE #8				
12	0.01	64.004		231.0000	RATE #9				
12.5	0.01	63.997		245.5000	END RATE #9 - 4.5 BPM				
13	0.01	63.983		246.0000	RATE #10				
13.5	0.01	63.961		261.0000	END RATE #10 - 5.0 BPM				
14	182.702	63.954		262.0000	RATE #11				
14.5	197.015	63.604		276.0000	END RATE #11 - 5.5 BPM				
15	202.708	63.211		276.0000	RATE #12				
15.5	204.74	62.819		290.5000	END RATE #12 - 6.0 BPM				
16	206.25	62.426		291.0000	RATE #13				
16.5	206.436	62.034		305.5000	END RATE #13 - 6.5 BPM				
17	206.712	61.642		306.0000	RATE #14				
17.5	206.964	61.291		320.5000	END RATE #14 - 7.0 BPM				
18	216.216	60.852		321.0000	RATE #15				
18.5	236.695	60.461		332.5000	END RATE #15 - 7.5 BPM				
19	242.655	60.07		333.0000	STOPPED PUMP				
19.5	256.204	59.679		333.5000	BEGAN FALL-OFF				
20	280.748	59.288		403.0000	TANDEM ELEC. MEMORY INST. OFF BOTTOM				
20.5	305.675	58.974		416.0000	TANDEM ELEC. MEMORY INST. @ SURFACE				
21	337.016	59.302		420.5000	BLED OFF LUBRICATOR				
21.5	368.746	59.623		422.0000	RIGGED DOWN EQUIPMENT				
22	401.909	59.951							
22.5	440.955	60.272							
23	484.311	60.601							
23.5	551.338	60.922							
24	637.974	61.251							
24.5	728.525	61.573							
25	813.699	61.901							
25.5	896.119	62.223							
26	979.835	62.552							
26.5	1067.754	63.786							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
27	1152.381	65.878							
27.5	1235.601	67.976							
28	1322.781	70.071							
28.5	1407.638	72.177							
29	1492.665	74.288							
29.5	1581.906	76.396							
30	1671.052	78.516							
30.5	1760.891	80.639							
31	1843.739	82.76							
31.5	1927.933	84.891							
32	2009.827	87.027							
32.5	2094.338	89.41							
33	2136.038	89.87							
33.5	2137.272	90.33							
34	2139.156	90.79							
34.5	2141.039	91.251							
35	2142.531	91.712							
35.5	2143.762	92.165							
36	2143.838	92.626							
36.5	2145.054	93.087							
37	2145.15	93.548							
37.5	2145.263	94.01							
38	2145.409	94.471							
38.5	2145.598	94.637							
39	2145.804	94.767							
39.5	2146.048	94.897							
40	2146.278	95.034							
40.5	2146.498	95.164							
41	2146.708	95.294							
41.5	2146.911	95.431							
42	2147.107	95.561							
42.5	2147.298	95.691							
43	2147.484	95.828							
43.5	2147.639	95.943							
44	2147.78	96.088							
44.5	2147.919	96.165							
45	2148.057	96.222							
45.5	2148.182	96.284							
46	2148.309	96.363							
46.5	2148.414	96.414							
47	2148.529	96.486							
47.5	2148.625	96.537							
48	2148.706	96.594							
48.5	2148.787	96.653							
49	2148.874	96.712							
49.5	2148.944	96.765							
50	2149.021	96.825							
50.5	2149.084	96.86							
51	2149.155	96.881							
51.5	2149.212	96.903							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009									
step	BHP	temp	Rate (bpm)						
52	2149.277	96.932							
52.5	2149.329	96.954							
53	2149.369	96.975							
53.5	2149.421	97.004							
54	2149.44	97.026							
54.5	2149.465	97.078							
55	2149.486	97.104							
55.5	2149.481	97.123							
56	2149.5	97.142							
56.5	2149.515	97.161							
57	2149.527	97.167							
57.5	2149.538	97.174							
58	2149.562	97.192							
58.5	2149.546	97.2							
59	2149.568	97.207							
59.5	2149.585	97.221							
60	2149.598	97.228							
60.5	2149.608	97.235							
61	2149.616	97.249							
61.5	2149.621	97.256							
62	2149.625	97.263							
62.5	2149.64	97.27							
63	2149.633	97.271							
63.5	2149.626	97.278							
64	2149.646	97.279							
64.5	2149.663	97.286							
65	2149.656	97.286							
65.5	2149.671	97.293							
66	2149.662	97.293							
66.5	2149.655	97.299							
67	2149.671	97.299							
67.5	2149.705	97.306							
68	2149.756	97.306							
68.5	2149.798	97.312							
69	2149.833	97.318							
69.5	2149.841	97.318							
70	2149.847	97.318							
70.5	2149.796	97.331							
71	2149.774	97.331							
71.5	2149.757	97.331							
72	2149.742	97.331							
72.5	2149.73	97.331							
73	2149.763	97.331							
73.5	2149.942	97.331							
74	2153.558	97.338							
74.5	2152.274	97.324							
75	2152.166	97.324							
75.5	2152.01	97.324							
76	2151.838	97.324							
76.5	2151.672	97.324							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009									
step	BHP	temp	Rate (bpm)						
77	2151.513	97.324							
77.5	2151.358	97.317							
78	2151.229	97.317							
78.5	2151.1	97.317							
79	2150.993	97.317							
79.5	2150.882	97.317							
80	2150.789	97.317							
80.5	2150.712	97.311							
81	2150.647	97.311							
81.5	2150.594	97.311							
82	2150.527	97.311							
82.5	2150.472	97.311							
83	2150.426	97.311							
83.5	2150.388	97.305							
84	2150.356	97.305							
84.5	2150.329	97.305							
85	2150.307	97.305							
85.5	2150.267	97.305							
86	2150.255	97.305							
86.5	2150.245	97.311							
87	2150.215	97.305							
87.5	2150.19	97.305							
88	2150.17	97.305							
88.5	2150.152	97.298							
89	2150.138	97.298							
89.5	2150.126	97.298							
90	2150.116	97.298							
90.5	2150.108	97.292							
91	2150.101	97.292							
91.5	2150.095	97.292							
92	2150.09	97.286							
92.5	2150.086	97.279							
93	2150.083	97.279							
93.5	2150.066	97.279							
94	2150.044	97.279							
94.5	2150.048	97.279							
95	2150.051	97.279							
95.5	2150.066	97.273							
96	2150.044	97.273							
96.5	2150.048	97.273							
97	2150.029	97.273							
97.5	2150.014	97.273							
98	2150.001	97.273							
98.5	2149.99	97.26							
99	2149.981	97.26							
99.5	2149.973	97.254							
100	2149.967	97.254							
100.5	2149.962	97.247							
101	2149.958	97.247							
101.5	2149.954	97.241							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
102	2149.951	97.241							
102.5	2149.936	97.235							
103	2149.936	97.235							
103.5	2149.936	97.228							
104	2149.914	97.228							
104.5	2149.918	97.235							
105	2149.921	97.228							
105.5	2149.902	97.228							
106	2145.722	97.215							
106.5	2145.787	97.215							
107	2147.541	97.215							
107.5	2086.89	97.215							
108	2037.802	97.215							
108.5	2116.889	97.215							
109	2130.007	97.215							
109.5	2259.25	97.215							
110	2373.33	97.208							
110.5	2431.112	97.1							
111	2499.354	97.411							
111.5	2537.961	97.721							
112	2562.92	98.032							
112.5	2582.808	98.343							
113	2599.054	98.655							
113.5	2613.35	98.958							
114	2625.565	99.27							
114.5	2635.959	99.581							
115	2644.662	99.892							
115.5	2653.235	100.204							
116	2661.277	100.515							
116.5	2668.576	101.559							
117	2676.91	101.994							
117.5	2685.754	102.429							
118	2695.253	102.864							
118.5	2704.352	103.3							
119	2713.059	103.735							
119.5	2721.644	104.171							
120	2729.439	104.607							
120.5	2736.073	105.043							
121	2742.307	105.479							
121.5	2747.892	105.915							
122	2753.223	106.351							
122.5	2758.576	106.46							
123	2764.043	106.439							
123.5	2769.121	106.417							
124	2773.429	106.395							
124.5	2777.858	106.373							
125	2781.898	106.351	0.5						
125.5	2785.549	106.329							
126	2802.824	106.308							
126.5	2811.536	106.286							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
127	2819.349	106.264							
127.5	2826.504	106.242							
128	2832.362	106.22							
128.5	2837.79	106.104							
129	2842.235	105.915							
129.5	2846.04	105.733							
130	2848.806	105.544							
130.5	2850.267	105.363							
131	2851.995	105.174							
131.5	2853.975	104.992							
132	2855.315	104.803							
132.5	2853.789	104.621							
133	2853.948	104.433							
133.5	2856.07	104.251							
134	2857.67	104.062							
134.5	2859.444	103.822							
135	2860.959	103.583							
135.5	2862.344	103.336							
136	2862.512	103.089							
136.5	2862.817	102.85							
137	2863.282	102.603							
137.5	2863.771	102.357							
138	2864.324	102.11							
138.5	2864.93	101.871							
139	2865.602	101.624							
139.5	2866.328	101.378							
140	2867.099	101.138							
140.5	2867.845	100.885	1						
141	2880.752	100.646							
141.5	2886.177	100.399							
142	2889.003	100.153							
142.5	2890.78	99.907							
143	2892.826	99.661							
143.5	2894.223	99.414							
144	2895.61	99.168							
144.5	2897.137	98.922							
145	2897.325	98.676							
145.5	2897.671	98.43							
146	2898.169	98.192							
146.5	2898.73	97.938							
147	2899.411	97.678							
147.5	2900.19	97.418							
148	2905.495	97.158							
148.5	2907.422	96.897							
149	2909.088	96.637							
149.5	2910.495	96.377							
150	2910.686	96.117							
150.5	2913.049	95.857							
151	2913.261	95.597							
151.5	2913.652	95.337							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
152	2914.19	95.078							
152.5	2914.763	94.832							
153	2915.424	94.616							
153.5	2916.161	94.392							
154	2916.981	94.176							
154.5	2917.808	93.952							
155	2918.518	93.761							
155.5	2919.242	93.512							
156	2919.985	93.296	1.5						
156.5	2920.791	93.073							
157	2932.957	92.857							
157.5	2954.264	92.633							
158	2967.351	92.417							
158.5	2974.577	92.208							
159	2980.036	91.942							
159.5	2983.923	91.676							
160	2987.55	91.416							
160.5	2989.623	91.15							
161	2992.348	90.884							
161.5	2995.064	90.625							
162	2997.65	90.359							
162.5	3001.027	90.093							
163	3004.526	89.834							
163.5	3009.068	89.568							
164	3012.707	89.302							
164.5	3016.514	88.993							
165	3021.319	88.728							
165.5	3026.264	88.462							
166	3030.548	88.196							
166.5	3034.581	87.931							
167	3039.387	87.665							
167.5	3044.717	87.407							
168	3048.882	87.141							
168.5	3052.907	86.876							
169	3056.291	86.611							
169.5	3059.144	86.345							
170	3061.614	86.08	2						
170.5	3063.517	85.858							
171	3069.968	85.658							
171.5	3078.507	85.457							
172	3084.046	85.256							
172.5	3082.407	85.056							
173	3085.859	84.855							
173.5	3087.884	84.648							
174	3090.161	84.447							
174.5	3091.916	84.247							
175	3094.323	84.047							
175.5	3095.687	83.846							
176	3097.704	83.646							
176.5	3100.402	83.425							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
177	3103.314	83.239							
177.5	3106.497	83.046							
178	3110.594	82.86							
178.5	3112.864	82.667							
179	3117.092	82.481							
179.5	3121.322	82.288							
180	3124.245	82.102							
180.5	3127.952	81.91							
181	3128.113	81.724							
181.5	3128.451	81.531							
182	3128.892	81.346							
182.5	3129.373	81.181							
183	3133.705	81.082							
183.5	3134.976	80.982							
184	3135.058	80.882							
184.5	3135.25	80.782							
185	3135.6	80.682							
185.5	3136.017	80.575	2.5						
186	3007.007	80.475							
186.5	2945.436	80.375							
187	3026.658	80.275							
187.5	3091.695	80.176							
188	3113.483	80.076							
188.5	3126.338	80.033							
189	3133.491	79.933							
189.5	3138.814	79.826							
190	3142.97	79.719							
190.5	3146.735	79.613							
191	3148.53	79.506							
191.5	3151.903	79.399							
192	3154.884	79.292							
192.5	3157.855	79.185							
193	3160.967	79.078							
193.5	3163.033	78.971							
194	3164.829	78.872							
194.5	3167.205	78.708							
195	3169.3	78.565							
195.5	3170.741	78.43							
196	3172.445	78.295							
196.5	3172.574	78.16							
197	3172.64	78.024							
197.5	3174.267	77.889							
198	3174.463	77.754							
198.5	3174.627	77.635							
199	3174.938	77.484							
199.5	3175.261	77.349							
200	3175.552	77.223							
200.5	3175.942	77.107							
201	3176.348	77.014	3						
201.5	3176.743	76.929							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009									
step	BHP	temp	Rate (bpm)						
202	3177.094	76.854							
202.5	3177.423	76.768							
203	3177.768	76.673							
203.5	3177.893	76.588							
204	3178.077	76.503							
204.5	3178.331	76.417							
205	3192.246	76.332							
205.5	3200.042	76.247							
206	3203.279	76.155							
206.5	3205.44	76.084							
207	3206.714	75.984							
207.5	3203.801	75.885							
208	3203.968	75.785							
208.5	3204.211	75.686							
209	3204.538	75.586							
209.5	3204.979	75.487							
210	3208.592	75.388							
210.5	3210.39	75.288							
211	3210.559	75.189							
211.5	3210.759	75.09							
212	3211.051	74.99							
212.5	3214.291	74.905							
213	3215.808	74.834							
213.5	3217.184	74.763							
214	3218.954	74.692							
214.5	3219.096	74.621							
215	3219.236	74.559							
215.5	3219.549	74.487	3.5						
216	3233.353	74.416							
216.5	3237.358	74.345							
217	3240.83	74.274							
217.5	3243.385	74.203							
218	3245.025	74.132							
218.5	3247.047	74.068							
219	3248.555	73.997							
219.5	3249.933	73.926							
220	3250.119	73.863							
220.5	3252.688	73.792							
221	3252.786	73.721							
221.5	3252.988	73.657							
222	3253.341	73.586							
222.5	3256.356	73.515							
223	3257.733	73.452							
223.5	3257.832	73.381							
224	3258.1	73.31							
224.5	3261.072	73.253							
225	3260.924	73.218							
225.5	3260.763	73.175							
226	3261.31	73.14							
226.5	3262.79	73.097							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
227	3262.949	73.062							
227.5	3263.103	73.024							
228	3262.645	72.984							
228.5	3262.761	72.942							
229	3262.927	72.906							
229.5	3263.118	72.864							
230	3263.299	72.832							
230.5	3263.449	72.795	4						
231	3273.731	72.757							
231.5	3276.127	72.722							
232	3277.336	72.687							
232.5	3277.515	72.658							
233	3280.155	72.623							
233.5	3280.291	72.588							
234	3280.498	72.552							
234.5	3275.014	72.524							
235	3270.459	72.488							
235.5	3256.483	72.453							
236	3257.691	72.425							
236.5	3261.257	72.389							
237	3263.241	72.368							
237.5	3265.487	72.347							
238	3267.743	72.319							
238.5	3269.859	72.297							
239	3269.859	72.279							
239.5	3271.479	72.248							
240	3271.548	72.227							
240.5	3273.221	72.205							
241	3273.27	72.177							
241.5	3273.357	72.156							
242	3273.392	72.135							
242.5	3272.131	72.12							
243	3272.263	72.106							
243.5	3272.374	72.094							
244	3272.6	72.085							
244.5	3272.901	72.071							
245	3273.219	72.057							
245.5	3273.506	72.051	4.5						
246	3288.846	72.036							
246.5	3292.534	72.021							
247	3294.116	72.014							
247.5	3296.353	72							
248	3297.804	71.986							
248.5	3297.936	71.979							
249	3300.051	71.972							
249.5	3301.895	71.958							
250	3303.477	71.951							
250.5	3305.058	71.936							
251	3305.169	71.929							
251.5	3307.698	71.915							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
252	3309.149	71.908							
252.5	3309.284	71.894							
253	3307.597	71.887							
253.5	3307.688	71.873							
254	3307.938	71.866							
254.5	3307.972	71.866							
255	3307.978	71.872							
255.5	3308.136	71.873							
256	3308.224	71.873							
256.5	3308.385	71.873							
257	3304.865	71.873							
257.5	3304.931	71.873							
258	3305.029	71.873							
258.5	3305.155	71.873							
259	3305.303	71.873							
259.5	3305.492	71.873							
260	3305.672	71.879							
260.5	3305.865	71.873							
261	3306.026	71.86	5						
261.5	3306.16	71.842							
262	3312.121	71.816							
262.5	3318.439	71.795							
263	3318.399	71.774							
263.5	3320.444	71.753							
264	3320.622	71.731							
264.5	3320.861	71.71							
265	3324.303	71.689							
265.5	3325.764	71.668							
266	3325.921	71.654							
266.5	3326.177	71.547							
267	3328.724	71.456							
267.5	3328.746	71.374							
268	3328.927	71.272							
268.5	3329.136	71.18							
269	3328.174	71.088							
269.5	3328.174	71.001							
270	3328.38	70.897							
270.5	3331.073	70.805							
271	3331.199	70.713							
271.5	3331.384	70.621							
272	3331.488	70.53							
272.5	3331.542	70.459							
273	3331.525	70.445							
273.5	3331.666	70.431							
274	3331.697	70.417							
274.5	3333.315	70.402							
275	3333.273	70.388							
275.5	3333.238	70.382							
276	3336.097	70.367	5.5						
276.5	3336.145	70.353							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
277	3336.076	70.339							
277.5	3335.87	70.325							
278	3336.681	70.311							
278.5	3343.618	70.318							
279	3343.647	70.41							
279.5	3340.546	70.508							
280	3340.398	70.607							
280.5	3338.381	70.706							
281	3338.539	70.805							
281.5	3174.142	70.904							
282	3148.894	71.003							
282.5	3104.395	71.102							
283	3088.584	71.201							
283.5	3144.811	71.3							
284	3230.659	71.392							
284.5	3272.34	72.036							
285	3297.44	71.965							
285.5	3313.624	71.894							
286	3322.602	71.823							
286.5	3331.45	71.753							
287	3343.05	71.682							
287.5	3343.018	71.611							
288	3326.811	71.54							
288.5	3341.949	71.47							
289	3341.786	71.399							
289.5	3343.006	71.328							
290	3342.864	71.258							
290.5	3343.558	71.173	6						
291	3353.467	71.095							
291.5	3357.075	71.024							
292	3357.261	70.954							
292.5	3354.332	70.883							
293	3359.644	70.812							
293.5	3363.122	70.742							
294	3353.886	70.671							
294.5	3361.427	70.6							
295	3360.317	70.53							
295.5	3351.605	70.459							
296	3361.123	70.381							
296.5	3356.434	70.353							
297	3352.925	70.325							
297.5	3358.843	70.297							
298	3349.304	70.268							
298.5	3357.723	70.24							
299	3356.442	70.212							
299.5	3349.918	70.184							
300	3355.182	70.155							
300.5	3344.856	70.127							
301	3354.455	70.099							
301.5	3354.613	70.071							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
302	3348.354	70.042							
302.5	3348.399	70.028							
303	3347.325	70.021							
303.5	3345.762	70.007							
304	3345.809	69.993							
304.5	3345.673	69.986							
305	3345.498	69.972							
305.5	3345.266	69.958	6.5						
306	3352.255	69.943							
306.5	3356.188	69.936							
307	3356.3	69.922							
307.5	3356.571	69.908							
308	3356.863	69.901							
308.5	3357.107	69.876							
309	3357.165	69.88							
309.5	3358.466	69.887							
310	3358.466	69.893							
310.5	3358.421	69.901							
311	3358.294	69.908							
311.5	3358.013	69.908							
312	3357.669	69.915							
312.5	3354.766	69.922							
313	3350.823	69.929							
313.5	3345.963	69.936							
314	3346.05	69.943							
314.5	3345.166	69.951							
315	3345.272	69.972							
315.5	3345.445	69.993							
316	3348.646	70.014							
316.5	3348.668	70.033							
317	3347.285	70.056							
317.5	3347.238	70.085							
318	3347.281	70.106							
318.5	3348.92	70.127							
319	3348.742	70.148							
319.5	3348.656	70.169							
320	3348.624	70.191							
320.5	3348.448	70.169	7						
321	3302.086	70.169							
321.5	3317.421	70.169							
322	3278.092	70.176							
322.5	3266.035	70.176							
323	3263.151	70.176							
323.5	3311.645	70.184							
324	3346.772	70.184							
324.5	3367.221	70.184							
325	3380.451	70.191							
325.5	3364.59	70.191							
326	3353.841	70.191							
326.5	3358.882	70.127							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
327	3358.846	70.085							
327.5	3263.681	70.042							
328	3180.887	70.007							
328.5	3158.659	69.965							
329	3302.857	69.922							
329.5	3324.908	69.887							
330	3325.091	69.845							
330.5	3333.911	69.802							
331	3338.267	69.767							
331.5	3340.283	69.725							
332	3343.862	69.682							
332.5	3343.917	69.612	7.5						
333	3203.205	70.24							
333.5	3160.929	70.876							
334	3145.136	71.512							
334.5	3133.802	72.142							
335	3126.912	72.779							
335.5	3123.298	73.416							
336	3120.086	74.054							
336.5	3117.52	74.685							
337	3114.179	75.324							
337.5	3110.044	75.963							
338	3106.041	76.595							
338.5	3101.12	77.797							
339	3096.203	78.722							
339.5	3091.399	79.655							
340	3086.223	80.582							
340.5	3081.03	81.517							
341	3075.979	82.445							
341.5	3071.06	83.382							
342	3065.881	84.311							
342.5	3060.694	85.249							
343	3055.519	86.181							
343.5	3050.205	87.12							
344	3045.163	88.053							
344.5	3039.806	88.763							
345	3034.711	89.331							
345.5	3029.757	89.892							
346	3024.404	90.46							
346.5	3019.323	91.021							
347	3014.102	91.589							
347.5	3008.762	92.151							
348	3003.544	92.72							
348.5	2997.815	93.282							
349	2992.209	93.851							
349.5	2986.353	94.414							
350	2980.619	94.984							
350.5	2975.156	95.402							
351	2969.515	95.734							
351.5	2963.866	96.067							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
352	2958.358	96.399							
352.5	2952.72	96.731							
353	2946.953	97.064							
353.5	2941.317	97.389							
354	2935.552	97.721							
354.5	2929.918	98.054							
355	2924.146	98.387							
355.5	2918.513	98.72							
356	2912.751	99.053							
356.5	2907.054	99.306							
357	2901.43	99.494							
357.5	2895.919	99.69							
358	2890.278	99.885							
358.5	2884.777	100.081							
359	2879.267	100.276							
359.5	2873.767	100.472							
360	2868.388	100.667							
360.5	2862.889	100.863							
361	2857.511	101.059							
361.5	2852.273	101.254							
362	2846.906	101.443							
362.5	2841.696	101.595							
363	2836.53	101.711							
363.5	2831.495	101.82							
364	2826.461	101.929							
364.5	2821.556	102.037							
365	2816.522	102.146							
365.5	2811.627	102.255							
366	2806.854	102.364							
366.5	2802.21	102.473							
367	2797.567	102.581							
367.5	2792.924	102.69							
368	2788.403	102.806							
368.5	2785.215	102.886							
369	2781.508	102.966							
369.5	2777.551	103.039							
370	2773.334	103.111							
370.5	2768.598	103.184							
371	2764.892	103.256							
371.5	2761.065	103.329							
372	2757.108	103.401							
372.5	2753.931	103.474							
373	2750.485	103.547							
373.5	2745.75	103.619							
374	2741.785	103.699							
374.5	2737.968	103.764							
375	2734.281	103.815							
375.5	2730.602	103.866							
376	2727.053	103.917							
376.5	2723.375	103.968							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
377	2719.827	104.019							
377.5	2716.538	104.069							
378	2712.99	104.12							
378.5	2709.702	104.171							
379	2706.413	104.222							
379.5	2702.995	104.273							
380	2699.837	104.324							
380.5	2696.696	104.353							
381	2693.417	104.389							
381.5	2690.406	104.418							
382	2687.395	104.447							
382.5	2683.994	104.476							
383	2681.243	104.505							
383.5	2678.5	104.534							
384	2675.619	104.563							
384.5	2672.868	104.592							
385	2670.117	104.621							
385.5	2667.496	104.65							
386	2664.866	104.687							
386.5	2662.115	104.723							
387	2659.503	104.745							
387.5	2657.011	104.767							
388	2654.529	104.788							
388.5	2652.046	104.81							
389	2649.693	104.832							
389.5	2647.202	104.861							
390	2644.849	104.883							
390.5	2642.367	104.905							
391	2640.135	104.927							
391.5	2637.783	104.948							
392	2635.689	104.97							
392.5	2633.337	104.992							
393	2631.244	105.006							
393.5	2629.029	105.021							
394	2626.936	105.036							
394.5	2624.852	105.05							
395	2622.767	105.065							
395.5	2620.796	105.086							
396	2618.711	105.101							
396.5	2616.748	105.115							
397	2614.923	105.13							
397.5	2612.968	105.145							
398	2610.875	105.159							
398.5	2609.034	105.188							
399	2607.276	105.115							
399.5	2605.648	105.05							
400	2603.891	104.977							
400.5	2602.133	104.912							
401	2600.375	104.839							
401.5	2598.747	104.774							

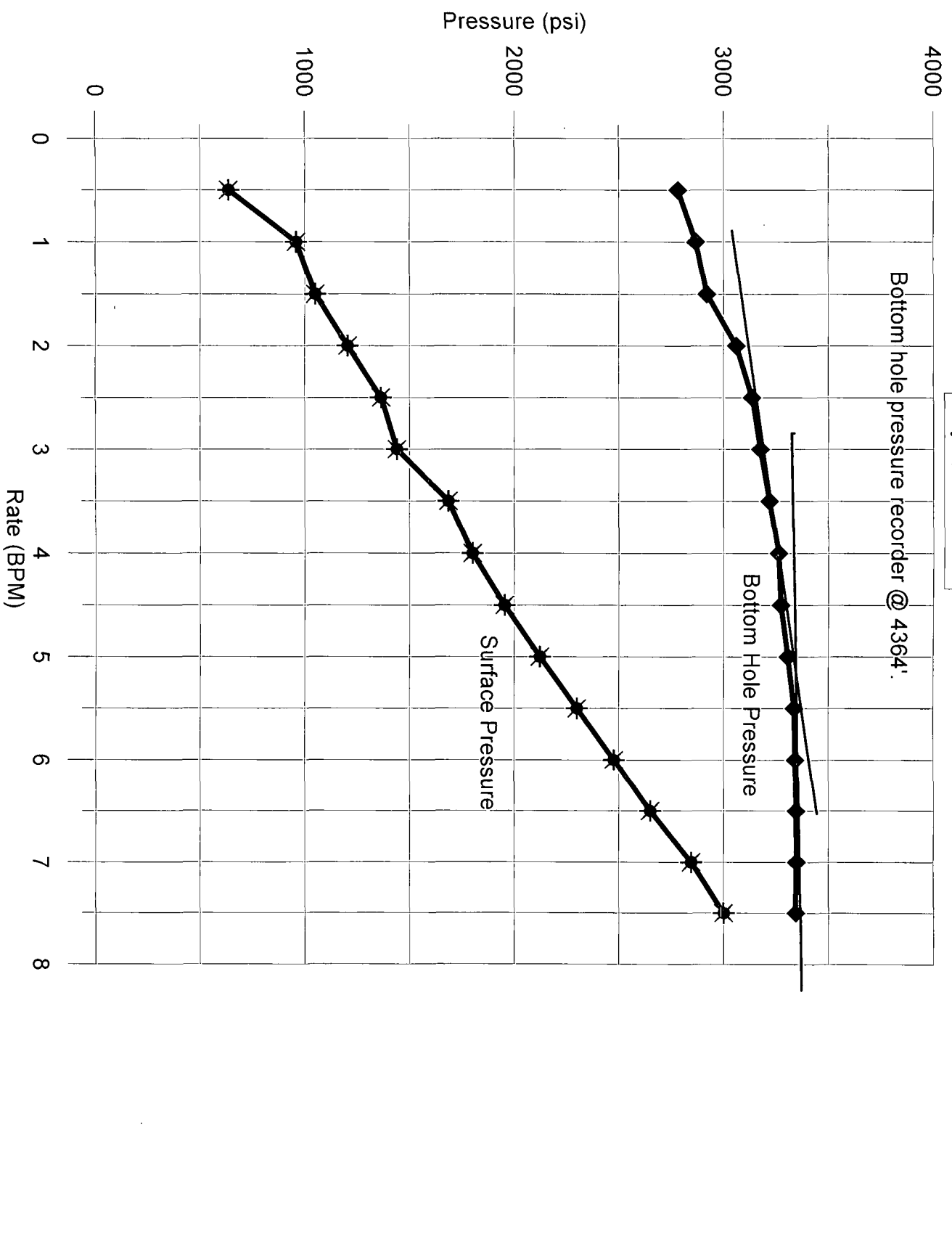
Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009

step	BHP	temp	Rate (bpm)						
402	2597.119	104.701							
402.5	2595.352	104.636							
403	2592.954	104.563							
403.5	2548.237	104.498							
404	2499.509	104.425							
404.5	2456.434	103.3							
405	2410.814	102.081							
405.5	2359.327	100.856							
406	2298.602	99.632							
406.5	2219.521	98.416							
407	2129.119	97.194							
407.5	2037.372	95.973							
408	1944.287	94.753							
408.5	1849.596	93.541							
409	1753.571	92.324							
409.5	1656.069	91.107							
410	1557.093	89.899							
410.5	1456.648	88.677							
411	1354.383	87.371							
411.5	1249.982	86.059							
412	1144.219	84.755							
412.5	1036.448	83.446							
413	925.617	82.145							
413.5	814.332	80.839							
414	704.794	79.541							
414.5	654.573	78.238							
415	612.654	76.943							
415.5	607.977	75.643							
416	606.289	74.352							
416.5	604.103	74.245							
417	602.005	74.288							
417.5	599.904	74.338							
418	597.933	74.387							
418.5	596.223	74.437							
419	594.513	74.487							
419.5	593.194	74.536							
420	591.745	74.586							
420.5	590.035	74.635							
421	47.806	74.685							
421.5	0.01	74.735							
422	0.01	74.777							
422.5	0.01	74.792							
423	0.01	74.834							
423.5	0.01	74.87							
424	0.01	74.905							
424.5	0.01	74.943							
425	0.01	74.974							
425.5	0.01	75.019							
426	0.01	75.05							
426.5	0.01	75.087							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009									
step	BHP	temp	Rate (bpm)						
427	0.01	75.124							
427.5	0.01	75.156							
428	0.01	75.195							
428.5	0.01	75.216							
429	0.01	75.115							
429.5	0.01	75.021							
430	0.01	74.925							
430.5	0.01	74.822							
431	0.01	74.724							
431.5	0.01	74.625							
432	0.01	74.472							
432.5	0.01	74.372							
433	0.01	74.264							
433.5	0.01	74.169							
434	0.01	74.065							

Dugan Production Mesa 4 SWD Step-Rate-Test 5/4/2009				
Surface Pressure vs Rate				
rate (bpm)	surface pressure			
0.6	635			
1.1	961			
1.5	1051			
2	1205			
2.5	1364			
3	1440			
3.5	1685			
4	1800			
4.5	1953			
5	2130			
5.5	2300			
6	2487			
6.5	2620			
7	2845			
7.5	3009			
Injection test 5/4/2009				
Mesa 4 SWD				

Dugan Production
Mesa 4 SWD
Step-Rate-Test
May 4, 2009



Dugan Production Corp.

Wellbore Schematic

Mesa 4 SWD API 30-045-32086

G-16-T.24N-R.8W

San Juan Co., NM

8-5/8" 24 lb/ft. casing @ 224'.
Cement to surface.

Stage Tool @ 2,063'.

Tubing 2-7/8" EUE 6.5 lb/ft. plastic lined.

Packer @ 4,222'. Baker AD-1 tension.

Perforations 4288' – 4438' (115 holes)

5-1/2" 15.5 lb/ft. casing @ 4651'. Stage tool @ 2063'.
Cement w/280 sx BJ Premium Lite High Strength w/1/4# celloflake 5#/sx LCM-1.
Cement 2nd stage w/214 sx Premium Lite FM w/3% CaCl₂, 1/4# celloflake/sx,
5#/sx LCM-1, 8% Bentonite & .4% Sodium Metasilicate.
Tail w/50 sx Type III cement w/1% CaCl₂ & 1/4# celloflake/sx. Circ 25 bbls