

# Masters Consulting, LLC

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March 23, 2012

Bureau of Land Management  
Attn: Don Peterson  
620 E. Greene Street  
Carlsbad, NM 88220

New Mexico Oil Conservation Division  
Attn: Richard Ezeanyim  
1220 S. St. Francis Drive  
Santa Fe, NM 87505

New Mexico Oil Conservation Division  
Attn: Paul Kautz  
1625 N. French Drive  
Hobbs, NM 88240

Re: Plan of Development and Operations  
Resaca Operating Co.  
Cooper Jal Unit  
Lea County, NM

Gentlemen:

As operator of the Cooper Jal Unit ("the Unit"), Resaca Operating Co. ("Resaca") hereby submits for approval a Plan of Development and Operations ("POD") for 2012.

## **BACKGROUND**

The Cooper Jal Unit became effective October 1, 1970. The Unitized interval includes the Jalmat and Langlie Mattix pools. Injection commenced in December 1970. Although separate secondary recovery projects are officially recognized on a pool basis, the Unit is effectively operated as a single waterflood project. Many of the producing wells have been granted authority to downhole commingle production, and are completed in both the Jalmat and Langlie Mattix intervals. Likewise, many of the injection wells inject into both intervals.

Texaco Exploration and Production, Inc. ("Texaco") was the original Unit Operator. SDG Resources, L.P. became operator of the Unit effective January 1, 2002. Torch Energy Services, Inc. ("Torch") succeeded as operator effective May 1, 2006. Resaca became operator of record effective January 1, 2009.

The attached map delineates the Unit boundaries, and depicts well location, current status, and completion interval for each well within the Unit. The attached table provides the API number, location, lease type (federal vs. private), completion date, completion interval, and current status for each well within the Unit.

### **2011 OPERATIONS SUMMARY**

The major focus of Unit operations during 2011 was to increase water injection rates for the purpose of increasing reservoir pressure. In addition, certain development operations and numerous workover operations were conducted, and miscellaneous modifications were made to production facilities.

#### *Upgrade of Injection Facilities*

One of the two existing injection pumps was replaced. Filtration upgrades were completed as planned.

#### *Development Activities*

A total of 6 wells which were plugged by previous operators were successfully re-entered, resulting in 5 additional injection wells and 1 additional producer.

#### *Production Facility Modifications*

Compression was added at the central battery, and a gas gathering line was laid from the central battery to the existing gas pipeline operated by Targa. A new electrical power line feed was laid for the purpose of achieving a more consistent power supply. Existing vapor recovery units were rebuilt, and new units were installed at the central battery. Additional test facilities were added and control system upgrades were made at satellite batteries.

#### *Workovers*

A total of 17 injection well clean-outs were completed. The injection interval was materially modified in 4 wells: the Langlie-Mattix pool interval was abandoned in 1 well, and added in 3 others. A total of 11 producing well stimulations were completed, with the Langlie-Mattix pool interval being added in 1 well. Numerous artificial lift upgrades were completed to increase lift capacity.

### *Regulatory*

Applications for Permits to Drill or Re-Enter were obtained for 11 wells, of which 7 were located on BLM surface acreage. Injection authority was obtained for 7 previously plugged wells, and commingle authority was obtained for 1 previously plugged wells and 1 previously existing producer.

### *Performance*

A plot of commercial production data for the Unit is attached. Cumulative production from the wells within the Unit (Jalmat and Langlie Mattix pools, as of November 30, 2011) is 16.81 MMBO and 72.51 BCFG. Cumulative injection into wells within the Unit is 178.13 MMBW.

A performance plot constructed from internal data for the Unit from July 2004 to date is also attached. Included thereon are oil production, water production, water injection, gas-oil ratio, and water-oil ratio. Oil production increased steadily in 2011, whereas gas-oil ratio continued to decline, indicating that reservoir pressure continued to increase. Water-oil ratio has risen in line with its established trend, and there have been no dramatic instances of water breakthrough in any producing well. In February, 2012, the Unit produced approximately 576 BOPD, 378 MCFD, and 15,590 BWPD, whereas approximately 22,352 BWPD were injected.

### **2012 DEVELOPMENT PLAN**

Resaca continues to formulate plans to perform tertiary recovery operations within the Cooper Jal Unit. Ongoing development and workover activity during 2012 are expected to result in a continued increase in reservoir pressure and production rates. Artificial lift upgrades and production facility modifications will be made on an as-needed basis in response to increased production.

### *Upgrade of Injection Facilities*

Resaca plans to modify the header which connects the injection pumps to the main distribution lines during 2012 to remove existing bottlenecks. Together with the upgrades performed in 2011, this work should facilitate the target injection rate of 25,000 BWIPD.

### *Development Activities*

Resaca plans to re-enter 3 wells which were plugged by previous operators (the Cooper Jal Unit #123, #129 and #147), for the purpose of returning them to production. A number of opportunities to add pay within existing producing intervals and/or commingle Jalmat and Langlie-Mattix pools in additional existing producing wells have been identified, and

development activity for this purpose will likely be conducted in 2012. Specific wells which may be involved have not yet been selected. Likewise, a number of infill well locations have been identified, and several wells may be drilled within the currently recognized productive limits of the Unit in 2012. Specific well locations have not yet been determined.

*Production Facility Modifications*

There are no specific plans to upgrade or modify production facilities in 2012. Any such work dictated by changing production performance will be performed as necessary.

*Workovers*

Resaca plans to conduct casing repair workovers in 2 wells which recently failed mechanical integrity tests (the Cooper Jal Unit #133 and #234). Additional injection well clean-outs and producing well stimulations may be performed in 2012 as opportunities are recognized. Artificial lift upgrades will be performed on an as-needed basis.

*Regulatory*

Applications for Permits to Drill or Re-Enter and commingling authority will be sought and obtained as necessary as wells are drilled or re-entered, or existing wells are commingled.

Please feel free to call the undersigned, or Mr. Bob Porter, Vice-President of Engineering at Resaca at (713) 756-1685, should you have any questions or concerns regarding this Plan of Development and Operations for 2012.

Sincerely,



Keith B. Masters, P.E.  
for Resaca Operating Co.

cc: Resaca Operating Co.  
All Working Interest Owners

# WELL STATUS

Cooper Jal Unit

as of 12/31/11

API Suffix	Current Well Name	Section	Unit	Location				Lease Type	Original Completion Date	Pool	Status
11145	Cooper Jal #101	18	C	660	FNL	1980	FWL	Private	11/20/41	Jalmat	Prod
11134	Cooper Jal #102	18	B	660	FNL	1980	FEL	Private	08/27/45	Jalmat/Langlie Mattix	Prod
11135	Cooper Jal #103	18	A	990	FNL	990	FEL	Private	08/09/46	-----	P&A
11138	Cooper Jal #104	18	E	1980	FNL	660	FWL	Private	07/02/50	-----	P&A
11147	Cooper Jal #105	18	F	1980	FNL	1980	FWL	Private	07/12/46	Langlie Mattix	Inj
11137	Cooper Jal #106	18	H	1980	FNL	660	FEL	Private	05/26/46	Jalmat	Prod
09558	Cooper Jal #107	13	K	1650	FSL	1980	FWL	Private	03/26/52	Jalmat	Prod
11142	Cooper Jal #108	18	L	1980	FSL	660	FWL	Federal	03/01/50	-----	P&A
11133	Cooper Jal #109	18	K	1980	FSL	1980	FWL	Federal	10/26/48	-----	P&A
11143	Cooper Jal #110	18	I	1980	FSL	660	FEL	Private	09/19/46	Jalmat/Langlie Mattix	Prod
09581	Cooper Jal #111	14	P	640	FSL	330	FEL	Private	02/22/50	-----	P&A
09557	Cooper Jal #112	13	M	330	FSL	990	FWL	Private	02/19/52	-----	P&A
09496	Cooper Jal #113	13	N	330	FSL	2310	FWL	Private	12/02/51	Jalmat/Langlie Mattix	Prod
09559	Cooper Jal #114	13	O	330	FSL	2310	FEL	Private	09/21/54	Jalmat/Langlie Mattix	Inj
09566	Cooper Jal #115	13	P	900	FSL	990	FEL	Private	05/12/47	Jalmat	Prod
11141	Cooper Jal #116	18	M	660	FSL	660	FWL	Federal	03/01/50	Jalmat/Langlie Mattix	Inj
11140	Cooper Jal #117	18	N	660	FSL	1980	FWL	Federal	11/23/48	Jalmat/Langlie Mattix	Prod
11139	Cooper Jal #118	18	O	660	FSL	1980	FEL	Private	09/28/46	Jalmat/Langlie Mattix	Inj
11144	Cooper Jal #119	18	P	660	FSL	660	FEL	Private	07/07/46	-----	P&A
09631	Cooper Jal #120	24	C	660	FNL	1980	FWL	Private	11/10/51	Jalmat/Langlie Mattix	Inj
09645	Cooper Jal #121	24	B	990	FNL	1650	FEL	Private	02/15/49	Jalmat/Langlie Mattix	Prod
09638	Cooper Jal #122	24	A	330	FNL	990	FEL	Private	06/17/54	Jalmat/Langlie Mattix	Inj
11150	Cooper Jal #123	19	D	330	FNL	990	FWL	Federal	05/03/52	-----	P&A
11153	Cooper Jal #124	19	C	660	FNL	1917	FWL	Federal	03/09/56	Jalmat/Langlie Mattix	Prod
09632	Cooper Jal #125	24	F	1650	FNL	2310	FWL	Private	08/22/54	Jalmat/Langlie Mattix	Prod
09636	Cooper Jal #126	24	G	1650	FNL	2310	FEL	Private	05/14/54	Jalmat/Langlie Mattix	Inj
09637	Cooper Jal #127	24	H	1650	FNL	990	FEL	Private	05/29/54	Jalmat/Langlie Mattix	Prod
11151	Cooper Jal #128	19	E	1650	FNL	330	FWL	Federal	08/22/54	Jalmat/Langlie Mattix	Prod
11152	Cooper Jal #129	19	F	1650	FNL	1587	FWL	Federal	09/11/54	-----	P&A
09643	Cooper Jal #130	24	K	1650	FSL	1650	FWL	Private	04/22/54	Jalmat	Prod
09639	Cooper Jal #132	24	I	2310	FSL	990	FEL	Federal	05/13/54	Jalmat/Langlie Mattix	Inj
11161	Cooper Jal #133	19	K	1980	FSL	1916	FWL	Federal	10/16/49	Jalmat/Langlie Mattix	Inj
09644	Cooper Jal #134	24	N	330	FSL	1650	FWL	Private	07/21/54	Jalmat/Langlie Mattix	Inj
09641	Cooper Jal #135	24	O	990	FSL	1980	FEL	Private	02/28/54	Jalmat/Langlie Mattix	Inj
09640	Cooper Jal #136	24	P	990	FSL	990	FEL	Federal	05/08/54	Jalmat	Prod
09660	Cooper Jal #137	25	D	990	FNL	330	FWL	Private	07/24/54	-----	P&A
09657	Cooper Jal #138	25	C	840	FNL	1650	FWL	Private	07/01/54	Jalmat/Langlie Mattix	Prod
09661	Cooper Jal #139	25	B	330	FNL	2310	FEL	Private	05/24/54	Jalmat/Langlie Mattix	Prod
09662	Cooper Jal #140	25	A	990	FNL	990	FEL	Private	06/13/54	Jalmat/Langlie Mattix	Prod
11292	Cooper Jal #141	30	D	330	FNL	330	FWL	Federal	09/13/55	Jalmat	Prod
09658	Cooper Jal #143	25	F	2310	FSL	1650	FWL	Private	07/06/54	-----	P&A
09663	Cooper Jal #144	25	H	2310	FNL	990	FEL	Private	06/24/54	-----	P&A
11136	Cooper Jal #145	18	G	1980	FNL	1980	FEL	Private	03/25/46	Jalmat/Langlie Mattix	Inj
09560	Cooper Jal #146	13	I	1650	FSL	990	FEL	Private	06/11/50	Jalmat/Langlie Mattix	Inj
11166	Cooper Jal #147	19	E	2310	FNL	330	FWL	Federal	04/15/50	-----	P&A
09642	Cooper Jal #148	24	J	2310	FSL	2310	FEL	Private	03/31/54	Jalmat/Langlie Mattix	Inj
11159	Cooper Jal #150	19	L	1650	FSL	990	FWL	Federal	12/22/48	Jalmat/Langlie Mattix	Prod
25682	Cooper Jal #151	24	A	771	FNL	170	FEL	Private	11/10/77	Langlie Mattix	Inj
09627	Cooper Jal #152	24	D	660	FNL	660	FWL	Private	01/10/36	-----	S/I
26128	Cooper Jal #153	19	L	1400	FSL	280	FWL	Federal	01/27/79	Jalmat/Langlie Mattix	Inj
26284	Cooper Jal #154	25	G	1550	FNL	2400	FEL	Private	05/11/79	Jalmat	Prod
11146	Cooper Jal #155	18	D	660	FNL	660	FWL	Private	01/31/42	-----	P&A
09628	Cooper Jal #201	24	A	660	FNL	330	FEL	Private	05/13/50	Jalmat	Inj
11148	Cooper Jal #202	19	D	990	FNL	330	FWL	Federal	05/23/50	Jalmat/Langlie Mattix	Prod
09630	Cooper Jal #203	24	E	1980	FNL	760	FWL	Private	10/21/51	Jalmat	Inj
09629	Cooper Jal #204	24	F	1980	FNL	1980	FWL	Private	10/03/51	-----	P&A
09620	Cooper Jal #205	24	G	1980	FNL	1650	FEL	Private	04/30/50	Jalmat/Langlie Mattix	Inj
09621	Cooper Jal #206	24	H	1980	FNL	330	FEL	Private	05/04/50	Jalmat/Langlie Mattix	Inj
11158	Cooper Jal #208	19	F	2310	FNL	1650	FWL	Federal	05/10/50	Jalmat/Langlie Mattix	Prod
09635	Cooper Jal #209	24	L	2080	FSL	660	FWL	Private	11/10/54	Jalmat/Langlie Mattix	Prod
09633	Cooper Jal #210	24	L	1980	FSL	660	FWL	Private	05/18/51	-----	P&A
09787	Cooper Jal #211	24	K	2310	FSL	2310	FWL	Private	04/02/50	Jalmat/Langlie Mattix	Inj
09623	Cooper Jal #213	24	I	1980	FSL	660	FEL	Federal	03/13/50	Jalmat/Langlie Mattix	Inj
09611	Cooper Jal #215	23	P	660	FSL	660	FEL	Private	06/23/51	Jalmat	Prod
09634	Cooper Jal #216	24	M	660	FSL	660	FWL	Private	06/08/51	Jalmat/Langlie Mattix	Inj
09626	Cooper Jal #217	24	N	990	FSL	2310	FWL	Private	03/02/50	Jalmat	Prod
09624	Cooper Jal #218	24	O	330	FSL	1650	FEL	Private	09/03/49	Jalmat	Inj
09622	Cooper Jal #219	24	P	330	FSL	660	FEL	Federal	12/24/49	Jalmat	Prod
11162	Cooper Jal #220	19	M	660	FSL	628	FWL	Federal	03/23/50	Jalmat/Langlie Mattix	Inj
11160	Cooper Jal #221	19	N	660	FSL	1917	FWL	Federal	10/04/50	Jalmat/Langlie Mattix	Prod
09671	Cooper Jal #222	26	A	330	FNL	330	FEL	Federal	03/06/51	-----	P&A
09648	Cooper Jal #223	25	D	330	FNL	990	FWL	Private	12/05/50	Jalmat	Prod
09646	Cooper Jal #224	25	C	330	FNL	2310	FWL	Private	06/06/50	Jalmat	Inj
09650	Cooper Jal #225	25	B	660	FNL	1650	FEL	Private	01/08/50	Jalmat	Prod
09651	Cooper Jal #226	25	A	330	FNL	330	FEL	Private	05/18/50	Jalmat/Langlie Mattix	Inj
11291	Cooper Jal #227	30	D	660	FNL	660	FWL	Federal	07/19/50	Jalmat/Langlie Mattix	Prod
11290	Cooper Jal #228	30	C	660	FNL	1917	FWL	Federal	12/08/49	Jalmat	Inj

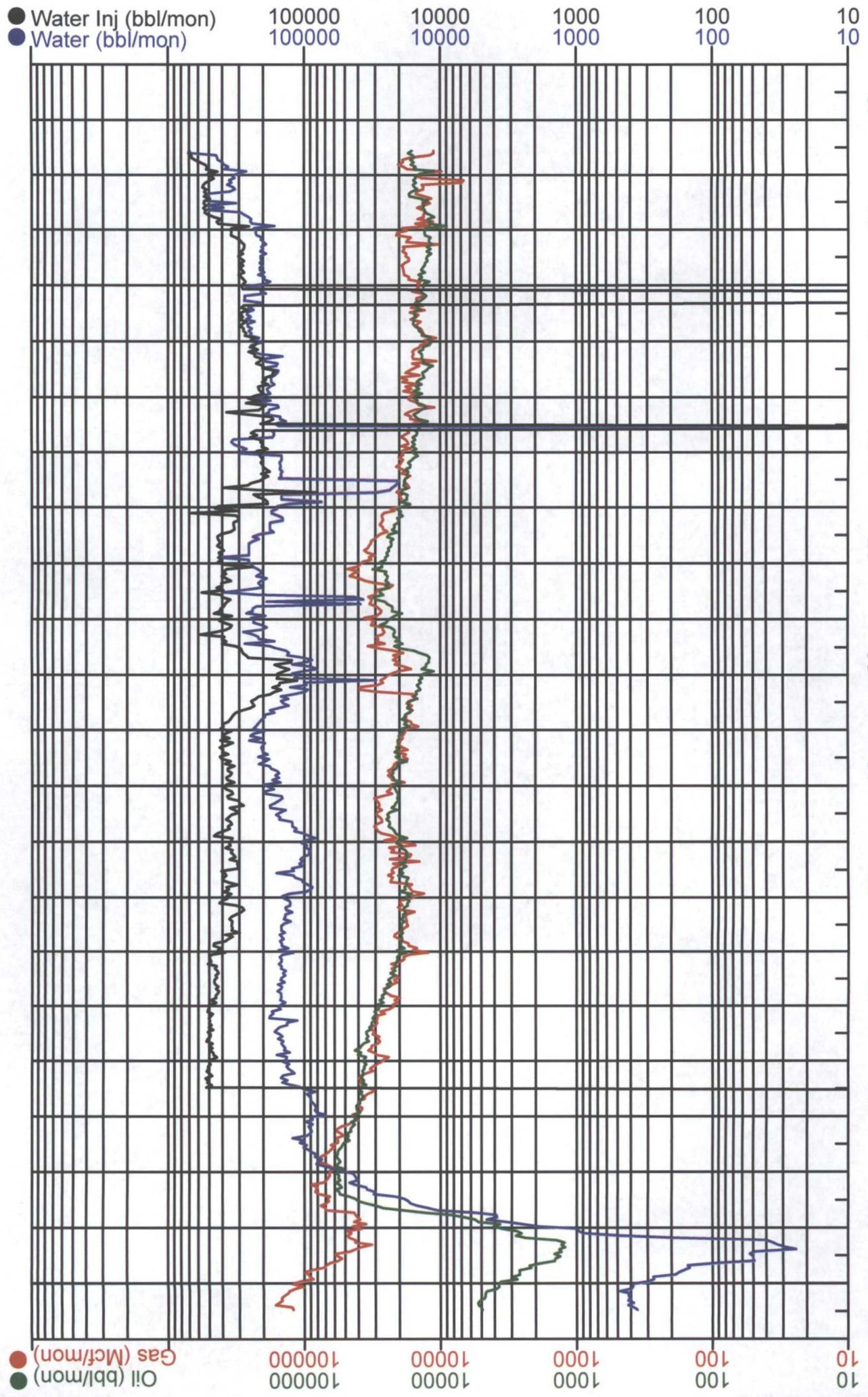
# WELL STATUS

Cooper Jal Unit

as of 12/31/11

API Suffix	Current Well Name	Section	Unit	Location			Lease Type	Original Completion Date	Pool	Status	
09647	Cooper Jal #229	25	E	1650	FNL	990	FWL	Private	08/30/50	Jalmat	Prod
09649	Cooper Jal #230	25	F	1650	FNL	2310	FEL	Private	02/06/51	Jalmat	Inj
09652	Cooper Jal #231	25	H	1650	FNL	330	FEL	Private	04/05/51	Jalmat	Prod
11289	Cooper Jal #232	30	F	1980	FNL	1920	FWL	Federal	11/09/49	Jalmat	Prod
09561	Cooper Jal #234	13	O	330	FSL	1650	FEL	Private	05/24/50	Jalmat	Inj
09610	Cooper Jal #237	23	O	660	FSL	1980	FEL	Private	11/10/34	Jalmat/Langlie Mattix	Prod
09659	Cooper Jal #238	25	E	1980	FNL	330	FWL	Private	09/27/54	Jalmat	Inj
11288	Cooper Jal #239	30	E	1980	FNL	660	FWL	Federal	06/13/49	Jalmat	Inj
09653	Cooper Jal #241	25	G	1650	FNL	1650	FEL	Private	08/02/51	Jalmat	Inj
11149	Cooper Jal #242	19	C	990	FNL	1587	FWL	Federal	07/03/50	Jalmat	Inj
11052	Cooper Jal #244	18	J	1980	FSL	1980	FEL	Private	08/16/46	Jalmat/Langlie Mattix	Inj
09625	Cooper Jal #245	24	J	1980	FSL	1980	FEL	Private	12/17/49	Jalmat/Langlie Mattix	Prod
09556	Cooper Jal #303	13	K	2310	FSL	2310	FWL	Private	04/04/48	Jalmat	Prod
09562	Cooper Jal #304	13	J	1650	FSL	1650	FEL	Private	09/08/50	-----	P&A
32268	Cooper Jal #401	19	L	2400	FSL	1130	FWL	Federal	01/13/94	Jalmat/Langlie Mattix	Prod
32292	Cooper Jal #402	19	L	2150	FSL	50	FWL	Federal	01/22/94	Jalmat	Prod
32286	Cooper Jal #403	19	D	150	FNL	100	FWL	Federal	01/27/94	Jalmat/Langlie Mattix	Prod
32218	Cooper Jal #404	24	B	510	FNL	2310	FEL	Private	01/13/94	Jalmat/Langlie Mattix	Prod
32269	Cooper Jal #405	19	N	1055	FSL	1385	FWL	Federal	12/28/93	Jalmat/Langlie Mattix	Prod
32568	Cooper Jal #406	24	H	2522	FNL	400	FEL	Private	10/01/94	Jalmat/Langlie Mattix	Prod
32569	Cooper Jal #407	24	J	2540	FSL	1640	FEL	Private	10/01/94	Jalmat/Langlie Mattix	Prod
32856	Cooper Jal #408	13	P	1250	FSL	200	FEL	Private	05/29/95	Jalmat	Prod
32570	Cooper Jal #409	24	K	2500	FSL	1450	FWL	Private	10/16/94	Jalmat/Langlie Mattix	Prod
32857	Cooper Jal #410	24	F	1425	FNL	1450	FWL	Private	06/21/95	Langlie Mattix	Prod
32858	Cooper Jal #411	24	J	1600	FSL	1425	FEL	Private	08/24/95	Jalmat/Langlie Mattix	Prod
32892	Cooper Jal #412	24	P	980	FSL	225	FEL	Federal	07/30/95	Jalmat/Langlie Mattix	Prod
32969	Cooper Jal #413	30	D	1250	FNL	1300	FWL	Federal	07/31/95	Jalmat/Langlie Mattix	Prod
32571	Cooper Jal #414	24	O	330	FSL	2550	FEL	Private	10/01/94	Jalmat/Langlie Mattix	Prod
32855	Cooper Jal #415	25	D	825	FNL	330	FWL	Private	07/30/95	Jalmat/Langlie Mattix	Prod
32551	Cooper Jal #419	13	P	330	FSL	500	FEL	Private	10/06/94	Jalmat/Langlie Mattix	Prod
33458	Cooper Jal #420	24	G	2310	FNL	2310	FEL	Private	08/09/96	Jalmat/Langlie Mattix	Prod
33459	Cooper Jal #421	24	J	1575	FSL	2525	FEL	Private	08/11/96	Jalmat/Langlie Mattix	Prod
33490	Cooper Jal #422	19	N	125	FSL	1275	FWL	Federal	09/03/95	Jalmat/Langlie Mattix	Prod
38180	Cooper Jal #501	18	D	1310	FNL	1248	FWL	Private	02/22/07	Jalmat/Langlie Mattix	Prod
38188	Cooper Jal #502	18	E	2630	FNL	1249	FWL	Private	03/30/07	Langlie Mattix	Prod
38330	Cooper Jal #503	18	L	1332	FSL	1207	FWL	Federal	05/10/07	Jalmat/Langlie Mattix	Prod
38189	Cooper Jal #504	18	F	1330	FNL	2468	FWL	Private	03/12/07	Jalmat/Langlie Mattix	Prod
38263	Cooper Jal #505	18	F	2581	FNL	2369	FWL	Private	03/22/07	Jalmat/Langlie Mattix	Prod
38201	Cooper Jal #506	18	O	1310	FSL	2477	FEL	Private	02/14/07	Jalmat/Langlie Mattix	Prod
38269	Cooper Jal #507	18	B	1307	FNL	1534	FEL	Private	04/25/07	Jalmat/Langlie Mattix	Prod
38270	Cooper Jal #508	18	H	2546	FNL	1238	FEL	Private	04/11/07	Jalmat/Langlie Mattix	Prod
38202	Cooper Jal #509	18	J	1370	FSL	1368	FEL	Private	03/06/07	Jalmat/Langlie Mattix	Prod
39104	Cooper Jal #511	24	C	980	FNL	2280	FWL	Private	11/04/08	Jalmat/Langlie Mattix	Prod
39103	Cooper Jal #512	24	H	1600	FNL	300	FEL	Private	10/21/08	Jalmat/Langlie Mattix	Prod
39102	Cooper Jal #514	24	F	2200	FNL	2280	FWL	Private	10/28/08	Jalmat/Langlie Mattix	Prod
39101	Cooper Jal #515	25	B	1100	FNL	1650	FEL	Private	11/12/08	Jalmat/Langlie Mattix	Prod
39100	Cooper Jal #516	25	A	1050	FNL	223	FEL	Private	-----	-----	Cancelled APD
39099	Cooper Jal #517	25	A	110	FNL	160	FEL	Private	10/15/08	Jalmat/Langlie Mattix	Prod

RESACA OPERATING CO.  
 COOPER JAL UNIT  
 LEA, NM



Proj Oil Cum: 16,814.94 Mbbl  
 Proj Gas Cum: 72,511.06 MMcf

# RESACA OPERATING CO. COOPER JAL UNIT

