IDAHO OIL AND GAS CONSERVATION COMMISSION
May 29, 2019
Information Agenda

SUBJECT

Update on the ongoing Allocation Investigation for hydrocarbons from wells in Payette County operated by Alta Mesa Services. A glossary of capitalized terms follows this memo.

BACKGROUND

The wells produce two hydrocarbon streams generically referred to as gas and condensate. The two streams are processed into three marketable products: Residue Gas, Natural Gas Plant Liquids, and Plant Condensate. The volumes of these three products are then allocated back to each well completion.

In 2018, the Idaho Oil and Gas Conservation Commission (Commission) noted discrepancies in reported volumes for Residue Gas and Plant Condensate. Residue Gas is derived from Rich Gas. Rich Gas is transported from wellheads through the Little Willow Gathering Facility (Little Willow Facility), through the 11-mile long gas pipeline, and through the Northwest Gas Processing Highway 30 Plant (Highway 30 Plant). The Highway 30 Plant extracts Natural Gas Plant Liquids from Rich Gas. The remaining processed gas at the outlet of the Highway 30 Plant is Residue Gas. Plant Condensate is derived from Well Condensate. Well Condensate is transported from wellheads through the Little Willow Facility, through the 11-mile long condensate pipeline, and through the Highway 30 Plant. The remaining processed condensate at the outlet of the Highway 30 Plant is Plant Condensate.

Alta Mesa was informed of the discrepancies. They discovered a systematic error in an equation used in some steps of the allocation process. The error affected the volumes of Plant Condensate allocated to the gas and liquid streams leaving the Little Willow Facility and entering the Highway 30 Plant. Allocations of Natural Gas Plant Liquids were not affected by the error.

The error was a mismatched stream analysis reference within an equation.

- The incorrect reference applied the equivalent <u>liquid volume percentage</u> of each individual hydrocarbon component derived from each individual laboratory analysis.

- The correct reference applied the <u>molecular percentage</u> of each individual hydrocarbon component derived from each individual laboratory analysis.

Table 1 is a textbook example laboratory hydrocarbon analysis data table of chromatographic results using test method GPA 2186M. It lists the “Mole %” (molecular %) and the “Liq. Vol. %” (liquid volume percent) for 21 components. Highlighted in yellow are the Mole % and the Liq. Vol. % for methane. Note the difference in percentages for methane. Differences also occur for the other individual components.

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide............	0.0853	0.1450	0.0687
Nitrogen.....................	0.0281	0.0304	0.0146
Methane.....................	64.2964	39.8359	51.4398
Ethane.......................	14.4191	16.7445	18.1980
Propane......................	11.9911	20.4207	15.5901
iso-Butane..................	2.5568	5.7392	3.9483
n-Butane.....................	3.8382	8.6156	5.7104
iso-Pentane.................	0.9367	2.6100	1.6166
n-Pentane...................	0.9036	2.5178	1.5457
Cyclopentane..............	0.0519	0.1405	0.0725
n-Hexane....................	0.2551	0.8490	0.4950
Cyclohexane...............	0.0463	0.1505	0.0743
Other Hexanes	0.2743	0.9130	0.5324
Heptanes....................	0.0865	0.3347	0.1883
Methylcyclohexane........	0.0301	0.1141	0.0571
2,2,4-Trimethylpentane...	0.0951	0.4195	0.2332
Benzene.....................	0.0247	0.0745	0.0326
Toluene......................	0.0104	0.0370	0.0164
Ethylbenzene..............	0.0007	0.0029	0.0013
Xylenes......................	0.0062	0.0254	0.0113
C8+ Heavies...............	0.0634	0.2797	0.1533
Totals	100.0000	100.0000	100.0000

GENERAL ALLOCATION METHOD

The individual well completions are allocated their shares of hydrocarbon products (Plant Condensate, Residue Gas, and Natural Gas Plant Liquids) produced by the Highway 30 Plant by a one-, two-, or three-step allocation method. The allocation methods differ in the number of steps because of various technical, operational, or financial constraints associated primarily with the location of each well in relation to the production process. Each individual step uses the component volumes derived from the laboratory analyses that are used to scale the contribution of each well completion to the total of each product.

- One Step Allocation. Only well completion DJS 1-15 uses a one-step allocation process. The fluid stream from DJS 1-15 undergo three-phase gravity separation and metering at the well pad. The two liquid hydrocarbon streams from DJS 1-15 go into the two separate pipelines that transport Well Condensate and Rich Gas from the Little Willow Facility to the Highway 30 Plant. Therefore, the Highway 30 Plant totals are allocated ***to*** DJS 1-15 in one step.

- Two Step Allocation. Seven well completions (Kauffman 1-9 LT ("lower tube"), Kauffman 1-9 UT ("upper tube"), ML 1-10, ML 1-11 UT, ML 1-11 LT, ML 2-10, and ML 3-10) use a two-step allocation process.

  - Step 1: Highway 30 Plant totals ***to*** Little Willow Facility totals;

- Step 2: Little Willow Facility totals (minus totals from the "multi wells" discussed below) ***to*** these individual well completions.

- Three Step Allocation. The three wells with partial federal mineral ownership (ML 1-3, ML 2-3, and Kauffman 1-34) use a three step allocation process.

  - Step 1: Highway 30 Plant totals ***to*** Little Willow Facility totals;

  - Step 2: Little Willow Facility totals ***to*** the "multi well" totals. For well completions K 1-34, ML 1-3, and ML 2-3, each well fluid stream undergoes three-phase gravity separation and metering for each well at each well pad, and not at the Little Willow Facility. Then, the three fluid streams (water, hydrocarbon liquids, and hydrocarbon gases) from the three wells (nine total fluid streams) are combined into one gathering line, which runs to the multi-well three-phase separator located at the Little Willow Facility. The multi-well separator creates three fluid streams (water, hydrocarbon liquids, and hydrocarbon gases), each individually metered.

  - Step 3: The multi-well hydrocarbon stream totals are allocated ***to*** individual well completions.

DISCUSSION

Attachment 1 (McFarland datasets) comprises several allocation datasets produced for Alta Mesa by contract petroleum engineer S. McFarland. The Oil and Gas Division received these datasets on April 1, 2019. The McFarland datasets contain the monthly results and yearly summations of the original ("old") allocation method (2015-2018), the results of the corrected ("new") allocation method (2016-2018), and the differences between the two methods (2016-2018).

Attachment 2 (IDL Review datasets) is a year-by-year summary of the McFarland datasets. It is color-coded for ease of review. The IDL Review datasets also include a summary of Plant Condensate volumes and Residue Gas volumes using both allocation methods (new and old), as well as the difference and percent difference between these methods.

The bottom of the IDL Review dataset includes the 2016-2018 grand totals of volumes for all well completions for Plant Condensate (new, old, difference) and for Residue Gas (new, old, difference). The grand totals of volumes for new versus old are equal. In addition, the IDL Review datasets suggest that the new corrected allocation has reasonable variances of plus or minus five percent by well completion as shown by the percent differences to the old allocation results. The exception is the Kauffman 1-9 LT, which shows a negative 28 percent difference in Plant Condensate. At this point in our investigation, the variances in percent differences, including Kauffman 1-9 LT, are presumed to be related to the allocation error summarized above.

GLOSSARY

Allocation is a term used to describe the system by which ownership of oil, gas, and produced water is determined and tracked from the point of production to a point of sale or discharge. Allocation is also known as hydrocarbon accounting, hydrocarbon value realization, product measurement and allocation, and production management and reporting. Although the principles of allocation are straightforward, the details are highly complex.

Natural Gas Plant Liquids means hydrocarbon compounds in Rich Gas that are extracted as liquids at processing plants, gas processing plants, gas plants, gasoline processing plants, fractionating plants, cryogenic plants, and cycling plants. Natural Gas Plant Liquids may include ethane, propane, the butanes, the pentanes, and hydrocarbon compounds of higher molecular weight. Hydrocarbon components may be fractionated and sold as an individual hydrocarbon (such as propane), or mixed together (referred to as Y-grade or raw mix) and sold, depending on the purchaser's sales agreement.

Plant Condensate is also referred to as stabilized condensate and means the processed liquid hydrocarbon product from a processing plant. The processing decreases the quantity of methane and ethane, which reduces the vapor pressure of the liquid, thereby preventing the production of vapor phase upon flashing the liquid, which ensures safe storage in atmospheric transportation and storage tanks.

Residue Gas is also referred to as tailgate gas, burner gas, or pipeline-quality natural gas and means 87.0 - 97.0 molecular percentage of methane that is merchantable and marketable, and meets an interstate or intrastate transmission company's minimum specifications per American Gas Association Bulletin No. 36.

Rich Gas means all hydrocarbon compounds and gaseous substances in a raw, unprocessed liquids-rich gas (minus formation water) that is gaseous at the conditions under which its volume is measured or estimated. Rich Gas is typically recovered from the wellhead or at the surface by use of a gravity separator or similar equipment. Rich Gas typically consists mostly of methane, ethane, propane, the butanes, and minor amounts of the pentanes plus hydrocarbon compounds of higher molecular weight.

Well Condensate means undifferentiated crude oil or condensate as a mixture of raw liquid hydrocarbon components, the majority of which range from pentanes and hydrocarbon compounds of higher molecular weight recovered after the wellhead by gravity separation or a similar process, and is liquid at the conditions under which its volume is measured or estimated. Well Condensate (also called lease condensate) can be derived directly after the wellhead with no separation (historically called casinghead gasoline). Well Condensate is typically unstable for truck transport and must be processed at a specialized facility to remove specific hydrocarbon compounds or various impurities; it is then referred to as Plant Condensate.

ATTACHMENTS

1. McFarland Allocation Datasets
2. IDL Review Datasets
3. PowerPoint – "Allocation Investigation"

Meter No.	Meter Name	Prod	Allo approach	8/1/15	9/1/15	10/1/15	11/1/15	12/1/15	2015 Total	1/1/16	2/1/16	3/1/16	4/1/16	5/1/16	6/1/16	7/1/16	8/1/16	9/1/16	10/1/16	11/1/16	12/1/16	2016 Total	##
FE-103C	ML 1-3 Condensate	Cond	New							-	58.82	1.743.97	1.097.64	1.284.73	1.351.83	1.663.22	1.126.17	2.574.83	2.421.69	3.330.20	2.125.08	18.778.18	
FE-103C	ML 1-3 Condensate	Cond	Old							-	57.42	1.677.22	1.276.79	2.904.07	1.437.10	1.747.82	1.131.92	2.824.32	2.364.26	3.148.31	2.136.85	20.706.08	
FE-103C	ML 1-3 Condensate	Cond	diff							-	1.40	66.75	(179.15)	(1.619.34)	(85.28)	(84.60)	(5.74)	(249.49)	57.43	181.88	(11.77)	(1.927.90)	
FE-103C	ML 1-3 Condensate	Gas	New							-	19.04	977.37	803.58	1.052.04	854.55	765.67	810.01	1.207.65	972.03	1.137.79	1.373.81	9.973.54	
FE-103C	ML 1-3 Condensate	Gas	Old							-	19.87	1.052.04	817.71	1.088.61	876.66	774.99	819.15	1.184.16	966.89	1.125.71	1.359.37	10.085.16	
FE-103C	ML 1-3 Condensate	Gas	diff							-	(0.83)	(74.67)	(14.12)	(36.58)	(22.11)	(9.32)	(9.15)	23.49	5.15	12.07	14.44	(111.62)	
FE-103G	ML 1-3 Gas	Cond	New							-	186.19	1.123.74	1.163.33	913.83	1.929.99	1.245.01	1.924.08	2.632.53	1.609.12	2.911.08	3.891.68	19.530.59	
FE-103G	ML 1-3 Gas	Cond	Old							-	209.23	1.169.32	1.287.97	983.25	2.153.42	1.323.21	1.897.80	2.613.28	1.615.86	2.861.63	4.208.56	20.323.54	
FE-103G	ML 1-3 Gas	Cond	diff							-	(23.04)	(45.57)	(124.64)	(69.42)	(223.43)	(78.20)	26.28	19.25	(6.74)	49.44	(316.88)	(792.94)	
FE-103G	ML 1-3 Gas	Gas	New							-	5.917.18	93.976.86	87.027.61	130.399.27	128.019.59	125.607.85	133.224.27	235.896.48	149.682.59	256.127.98	263.733.87	1.609.613.55	
FE-103G	ML 1-3 Gas	Gas	Old							-	5.925.68	93.898.27	90.048.60	134.653.01	131.282.67	126.601.84	134.365.46	231.776.89	148.754.03	253.596.11	261.570.90	1.612.473.48	
FE-103G	ML 1-3 Gas	Gas	diff							-	(8.50)	78.59	(3.020.99)	(4.253.74)	(3.263.09)	(994.00)	(1.141.19)	4.119.58	928.56	2.531.87	2.162.97	(2.859.92)	
FE-109AC	Kauffman 1-9 LT Oil	Cond	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Kauffman 1-9 LT Oil	Cond	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Kauffman 1-9 LT Oil	Cond	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Kauffman 1-9 LT Oil	Gas	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Kauffman 1-9 LT Oil	Gas	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Kauffman 1-9 LT Oil	Gas	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AG	Kauffman 1-9 LT Gas	Cond	New							-	28.88	97.11	95.01	164.73	508.29	479.78	26.18	32.97	193.20	-	0.37	1.626.52	
FE-109AG	Kauffman 1-9 LT Gas	Cond	Old							-	30.27	99.83	89.32	148.73	443.58	449.89	26.41	30.77	192.04	-	0.32	1.511.17	
FE-109AG	Kauffman 1-9 LT Gas	Cond	diff							-	(1.39)	(2.72)	5.68	16.00	64.72	29.89	(0.22)	2.19	1.15	-	0.05	115.34	
FE-109AG	Kauffman 1-9 LT Gas	Gas	New							-	3.161.60	6.335.61	6.589.67	8.853.71	25.759.47	54.201.66	2.062.47	3.033.75	15.260.30	-	30.49	125.288.73	
FE-109AG	Kauffman 1-9 LT Gas	Gas	Old							-	3.166.48	6.328.47	6.458.42	8.617.08	25.080.14	53.806.11	2.039.79	3.108.70	15.376.54	-	30.92	124.012.66	
FE-109AG	Kauffman 1-9 LT Gas	Gas	diff							-	(4.88)	7.14	131.25	236.63	679.33	395.55	22.68	(74.95)	(116.24)	-	(0.44)	1.276.07	
FE-109BC	Kauffman 1-9 UT Condensate	Cond	New							-	75.54	40.56	23.96	101.61	-	56.85	58.09	246.45	78.12	-	58.51	739.68	
FE-109BC	Kauffman 1-9 UT Condensate	Cond	Old	335	349	-	-	-	684	-	74.65	38.67	21.03	57.13	-	52.36	57.07	204.82	84.28	-	58.99	648.99	
FE-109BC	Kauffman 1-9 UT Condensate	Cond	diff							-	0.89	1.89	2.93	44.48	-	4.48	1.03	41.63	(6.16)	-	(0.48)	90.69	
FE-109BC	Kauffman 1-9 UT Condensate	Gas	New							-	4.74	10.19	5.03	8.45	-	15.60	16.86	34.62	25.47	-	23.89	144.85	
FE-109BC	Kauffman 1-9 UT Condensate	Gas	Old	602	203	-	-	-	804	-	4.81	11.25	4.98	8.12	-	15.34	16.59	35.55	25.63	-	24.36	146.63	
FE-109BC	Kauffman 1-9 UT Condensate	Gas	diff							-	(0.08)	(1.07)	0.04	0.33	-	0.27	0.27	(0.93)	(0.16)	-	(0.47)	(1.78)	
FE-109BG	Kauffman 1-9 UT Gas	Cond	New							-	138.22	173.37	119.46	63.37	-	38.42	59.00	73.90	33.04	-	42.56	741.34	
FE-109BG	Kauffman 1-9 UT Gas	Cond	Old	126	197	-	-	-	323	-	144.34	185.60	112.30	58.06	-	36.18	58.93	72.47	32.89	-	39.46	740.24	
FE-109BG	Kauffman 1-9 UT Gas	Cond	diff							-	(6.12)	(12.23)	7.16	5.31	-	2.24	0.07	1.43	0.15	-	3.09	1.10	
FE-109BG	Kauffman 1-9 UT Gas	Gas	New							-	8.133.54	13.609.02	12.436.57	8.044.25	-	4.729.09	5.025.30	8.537.61	3.338.01	-	4.122.53	67.975.92	
FE-109BG	Kauffman 1-9 UT Gas	Gas	Old	35.044	15.896	-	-	-	50.940	-	8.140.06	13.597.38	12.170.36	7.827.99	-	4.694.91	4.969.80	8.748.22	3.363.52	-	4.182.32	67.694.56	
FE-109BG	Kauffman 1-9 UT Gas	Gas	diff							-	(6.52)	11.64	266.21	216.26	-	34.18	55.49	(210.61)	(25.51)	-	(59.78)	281.36	
FE-110C	ML 1-10 Condensate	Cond	New							517.97	-	-	-	-	-	-	-	-	-	-	-	517.97	
FE-110C	ML 1-10 Condensate	Cond	Old	608	1.057	647	209	739	3.260	507.84	-	-	-	-	-	-	-	-	-	-	-	507.84	
FE-110C	ML 1-10 Condensate	Cond	diff							10.13	-	-	-	-	-	-	-	-	-	-	-	10.13	
FE-110C	ML 1-10 Condensate	Gas	New							313.72	-	-	-	-	-	-	-	-	-	-	-	313.72	
FE-110C	ML 1-10 Condensate	Gas	Old	964	556	540	200	451	2.711	268.17	-	-	-	-	-	-	-	-	-	-	-	268.17	
FE-110C	ML 1-10 Condensate	Gas	diff							45.55	-	-	-	-	-	-	-	-	-	-	-	45.55	
FE-110G	ML 1-10 Gas	Cond	New							334.24	-	-	-	-	-	-	-	-	-	-	-	334.24	
FE-110G	ML 1-10 Gas	Cond	Old	260	658	444	131	438	1.930	349.11	-	-	-	-	-	-	-	-	-	-	-	349.11	
FE-110G	ML 1-10 Gas	Cond	diff							(14.87)	-	-	-	-	-	-	-	-	-	-	-	(14.87)	
FE-110G	ML 1-10 Gas	Gas	New							39.997.71	-	-	-	-	-	-	-	-	-	-	-	39.997.71	
FE-110G	ML 1-10 Gas	Gas	Old	60.323	52.436	62.993	22.466	55.554	253.771	40.070.77	-	-	-	-	-	-	-	-	-	-	-	40.070.77	
FE-110G	ML 1-10 Gas	Gas	diff							(73.06)	-	-	-	-	-	-	-	-	-	-	-	(73.06)	
FE-111AC	ML 1-11 UT Condensate	Cond	New							1.706.31	1.208.74	1.062.42	1.538.01	1.433.12	1.068.94	586.67	593.65	1.235.55	238.50	1.179.00	953.41	12.804.31	
FE-111AC	ML 1-11 UT Condensate	Cond	Old	615	766	667	685	1.174	3.907	1.663.68	1.170.93	1.020.70	1.355.26	1.143.86	942.31	535.49	595.96	1.110.50	260.57	1.295.60	884.49	11.979.34	
FE-111AC	ML 1-11 UT Condensate	Cond	diff							42.63	37.81	41.71	182.75	289.26	126.62	51.17	(2.31)	125.05	(22.07)	(116.60)	68.93	824.97	
FE-111AC	ML 1-11 UT Condensate	Gas	New							1.544.93	609.19	869.84	783.95	947.94	424.35	588.16	444.93	727.44	81.03	508.78	422.79	7.953.32	
FE-111AC	ML 1-11 UT Condensate	Gas	Old	1.174	1.361	833	990	1.064	5.423	1.322.41	535.50	927.62	776.05	916.12	411.56	579.66	437.70	748.09	81.57	517.56	431.34	7.685.18	
FE-111AC	ML 1-11 UT Condensate	Gas	diff							222.52	73.69	(57.78)	7.89	31.82	12.79	8.50	7.23	(20.65)	(0.54)	(8.79)	(8.55)	268.14	
FE-111AG	ML 1-11 UT Gas	Cond	New							767.46	754.12	813.89	784.86	760.73	777.80	545.81	489.80	680.17	832.41	789.35	999.09	8.995.50	
FE-111AG	ML 1-11 UT Gas	Cond	Old	177	450	228	367	517	1.739	788.95	802.36	856.63	728.59	692.05	684.81	514.64	495.79	661.86	828.86	810.86	876.37	8.741.77	
FE-111AG	ML 1-11 UT Gas	Cond	diff							(21.49)	(48.24)	(42.74)	56.27	68.67	93.00	31.17	(5.99)	18.31	3.56	(21.51)	122.72	253.73	
FE-111AG	ML 1-11 UT Gas	Gas	New							80.767.11	65.463.00	68.259.41	68.433.30	83.923.53	66.196.31	64.120.26	41.720.49	72.519.08	70.733.84	75.559.82	70.754.86	828.451.01	
FE-111AG	ML 1-11 UT Gas	Gas	Old	52.928	53.509	40.095	51.310	58.796	256.638	80.924.96	65.562.29	68.206.60	66.990.49	81.674.91	64.455.18	63.646.30	41.257.40	74.316.21	71.279.19	76.665.57	71.783.10	826.762.20	
FE-111AG	ML 1-11 UT Gas	Gas	diff							(157.85)	(99.30)	52.81	1.442.80	2.248.62	1.741.13	473.95	463.09	(1.797.13)	(545.34)	(1.105.75)	(1.028.23)	1.688.81	
FE-111BC	ML 1-11 LT Condensate	Cond	New							1.469.31	1.307.82	1.452.97	1.143.26	2.355.66	1.073.72	783.17	433.27	799.01	409.20	244.93	86.61	11.558.95	
FE-111BC	ML 1-11 LT Condensate	Cond	Old	521	1.439	629	637	1.206	4.431	1.441.62	1.268.39	1.400.52	1.006.81	1.506.16	859.01	712.43	420.05	609.35	434.18	268.02	89.21	10.015.75	
FE-111BC	ML 1-11 LT Condensate	Cond	diff							27.69	39.43	52.45	136.46	849.50	214.72	70.74	13.22	189.66	(24.98)	(23.09)	(2.60)	1.543.19	
FE-111BC	ML 1-11 LT Condensate	Gas	New							1.067.82	1.279.94	867.99	684.75	674.04	435.33	512.15	293.21	199.96	94.15	67.73	25.90	6.202.97	
FE-111BC	ML 1-11 LT Condensate	Gas	Old	940	1.040	618	721	894	4.213	913.85	1.126.26	933.73	677.44	651.72	422.38	505.05	288.63	205.74	94.71	68.95	26.38	5.914.83	
FE-111BC	ML 1-11 LT Condensate	Gas	diff							153.98	153.68	(65.74)	7.31	22.32	12.95	7.09	4.58	(5.78)	(0.56)	(1.22)	(0.48)	288.14	
FE-111BG	ML 1-11 LT Gas	Cond	New							672.71	781.45	1.128.07	804.30	647.24	579.12	340.33	308.96	259.48	248.48	159.58	97.58	6.027.29	
FE-111BG	ML 1-11 LT Gas	Cond	Old	128	463	199	242	599	1.631	701.49	825.15	1.203.01	749.24	588.24	511.83	320.38	312.50	250.16	247.04	163.94	87.32	5.960.29	
FE-111BG	ML 1-11 LT Gas	Cond	diff							(28.77)	(43.71)	(74.94)	55.07	59.00	67.29	19.94	(3.54)	9.32	1.44	(4.36)	10.26	67.00	
FE-111BG	ML 1-11 LT Gas	Gas	New							69.317.84	81.471.05	82.458.03	69.020.56	71.602.75	49.586.50	40.022.83	24.320.99	26.328.49	19.964.96	13.198.77	7.597.99	554.890.77	
FE-111BG	ML 1-11 LT Gas	Gas	Old	46.906	56.828	40.507	51.060	65.691	260.992	69.450.97	81.595.71	82.389.35	67.560.06	69.704.02	48.284.08	39.729.08	24.051.30	26.980.29	20.117.21	13.392.12	7.707.73	550.961.92	
FE-111BG	ML 1-11 LT Gas	Gas	diff							(133.13)	(124.66)	68.68	1.460.50	1.898.73	1.302.42	293.75	269.69	(651.80)	(152.25)	(193.35)	(109.74)	3.928.84	
FE-115C	DJS 1-15 Condensate	Cond	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115C	DJS 1-15 Condensate	Cond	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115C	DJS 1-15 Condensate	Cond	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115C	DJS 1-15 Condensate	Gas	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115C	DJS 1-15 Condensate	Gas	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115C	DJS 1-15 Condensate	Gas	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115G	DJS 1-15 Gas	Cond	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115G	DJS 1-15 Gas	Cond	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115G	DJS 1-15 Gas	Cond	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115G	DJS 1-15 Gas	Gas	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115G	DJS 1-15 Gas	Gas	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-115G	DJS 1-15 Gas	Gas	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-134C	Kauffman 1-34 Condensate	Cond	New							-	802.59	688.19	1.556.48	1.265.22	1.793.30	2.055.15	794.87	703.60	1.136.68	3.056.59	3.208.55	17.061.22	
FE-134C	Kauffman 1-34 Condensate	Cond	Old	-	-	2.192	1.856	98	4.147	-	775.17	671.83	1.796.06	1.432.14	2.055.80	2.184.51	856.40	712.44	1.100.70	2.908.60	3.077.62	17.571.26	
FE-134C	Kauffman 1-34 Condensate	Cond	diff							-	27.42	16.36	(239.58)	(166.92)	(262.50)	(129.36)	(61.53)	(8.84)	35.98	147.99	130.93	(510.04)	
FE-134C	Kauffman 1-34 Condensate	Gas	New							-	535.99	527.42	1.219.91	2.887.12	1.697.42	1.335.51	532.94	762.25	937.99	2.226.08	2.763.41	15.426.05	
FE-134C	Kauffman 1-34 Condensate	Gas	Old							-	496.59	569.62	1.235.34	3.007.25	1.740.73	1.351.88	539.25	747.38	932.82	2.202.01	2.727.41	15.550.27	
FE-134C	Kauffman 1-34 Condensate	Gas	diff							-	39.41	(42.20)	(15.43)	(120.12)	(43.31)	(16.37)	(6.30)	14.87	5.17	24.07	36.00	(124.23)	
FE-134G	Kauffman 1-34 Gas	Cond	New							-	106.35	252.18	365.16	729.88	1.201.16	762.44	422.38	248.64	388.34	638.71	1.409.59	6.524.82	
FE-134G	Kauffman 1-34 Gas	Cond	Old	-	-	78	121	5	204	-	106.90	246.98	387.71	791.38	1.314.84	805.57	420.04	252.91	391.05	627.59	1.486.84	6.831.82	
FE-134G	Kauffman 1-34 Gas	Cond	diff							-	(0.56)	5.20	(22.55)	(61.50)	(113.68)	(43.13)	2.34	(4.28)	(2.71)	11.12	(77.25)	(307.00)	
FE-134G	Kauffman 1-34 Gas	Gas	New							-	18.751.27	22.012.92	38.138.23	48.883.04	55.113.63	47.743.86	15.346.27	18.867.15	22.248.47	53.437.90	66.956.99	407.499.72	
FE-134G	Kauffman 1-34 Gas	Gas	Old							-	18.772.79	21.984.12	39.386.84	50.416.86	56.486.35	48.136.75	15.513.19	18.530.25	22.098.64	52.921.15	66.289.95	410.536.89	
FE-134G	Kauffman 1-34 Gas	Gas	diff							-	(21.53)	28.80	(1.248.61)	(1.533.83)	(1.372.72)	(392.89)	(166.92)	336.90	149.84	516.75	667.03	(3.037.17)	
FE-203C	ML 2-3 Condensate	Cond	New							-	-	840.91	698.12	674.37	532.73	906.38	477.33	964.12	903.53	2.22	53.98	6.053.69	
FE-203C	ML 2-3 Condensate	Cond	Old							-	-	809.61	830.99	791.49	604.54	945.90	486.73	1.046.36	870.35	2.10	53.73	6.441.81	
FE-203C	ML 2-3 Condensate	Cond	diff							-	-	31.29	(132.87)	(117.12)	(71.81)	(39.52)	(9.39)	(82.25)	33.18	0.12	0.25	(388.11)	
FE-203C	ML 2-3 Condensate	Gas	New							-	-	598.72	499.15	1.139.72	410.68	378.99	411.14	520.45	443.70	1.28	38.59	4.442.44	
FE-203C	ML 2-3 Condensate	Gas	Old							-	-	637.38	508.92	1.181.87	421.32	383.62	415.93	510.56	441.25	1.27	38.22	4.540.34	
FE-203C	ML 2-3 Condensate	Gas	diff							-	-	(38.66)	(9.77)	(42.15)	(10.64)	(4.63)	(4.79)	9.89	2.46	0.01	0.37	(97.90)	
FE-203G	ML 2-3 Gas	Cond	New							-	-	546.07	377.45	1.464.13	673.84	445.27	521.39	769.83	468.65	0.87	41.39	5.308.88	
FE-203G	ML 2-3 Gas	Cond	Old							-	-	572.53	411.54	1.603.56	748.06	474.21	516.58	778.80	470.94	0.86	43.19	5.620.28	
FE-203G	ML 2-3 Gas	Cond	diff							-	-	(26.46)	(34.09)	(139.43)	(74.21)	(28.94)	4.80	(8.98)	(2.30)	0.01	(1.80)	(311.40)	
FE-203G	ML 2-3 Gas	Gas	New							-	-	36.854.80	33.402.68	47.737.75	48.094.61	44.305.79	38.563.37	59.276.32	45.347.45	82.93	4.515.37	358.181.07	
FE-203G	ML 2-3 Gas	Gas	Old							-	-	36.821.28	34.565.37	49.325.83	49.323.18	44.656.30	38.895.17	58.240.59	45.061.23	82.11	4.478.50	361.449.57	
FE-203G	ML 2-3 Gas	Gas	diff							-	-	33.52	(1.162.69)	(1.588.08)	(1.228.57)	(350.51)	(331.80)	1.035.73	286.22	0.82	36.87	(3.268.50)	
FE-210C	ML 2-10 Condensate	Cond	New							2.251.67	1.660.56	1.710.07	1.788.72	2.655.42	1.341.59	1.432.46	1.209.83	1.924.44	1.622.66	1.828.13	1.717.93	21.143.49	
FE-210C	ML 2-10 Condensate	Cond	Old	25	1.472	1.728	1.149	1.523	5.897	2.226.43	1.602.84	1.673.36	1.577.08	1.905.44	1.220.11	1.278.25	1.158.48	1.998.13	1.694.44	2.016.03	1.782.33	20.132.92	
FE-210C	ML 2-10 Condensate	Cond	diff							25.24	57.72	36.71	211.64	749.99	121.48	154.21	51.35	(73.69)	(71.78)	(187.90)	(64.39)	1.010.57	
FE-210C	ML 2-10 Condensate	Gas	New							1.052.55	1.188.11	1.036.56	1.072.08	1.214.32	894.98	937.51	832.64	891.40	899.62	816.13	994.42	11.830.34	
FE-210C	ML 2-10 Condensate	Gas	Old	36	955	1.158	883	706	3.738	902.63	1.048.76	1.117.39	1.060.44	1.173.58	868.69	924.41	819.85	917.13	905.42	830.33	1.015.15	11.583.78	
FE-210C	ML 2-10 Condensate	Gas	diff							149.92	139.36	(80.82)	11.64	40.75	26.29	13.10	12.78	(25.72)	(5.80)	(14.20)	(20.73)	246.56	
FE-210G	ML 2-10 Gas	Cond	New							849.94	791.73	1.158.49	1.113.24	1.015.06	1.134.31	664.04	905.01	1.203.82	514.49	1.323.01	1.407.11	12.080.24	
FE-210G	ML 2-10 Gas	Cond	Old	13	513	492	376	519	1.912	890.50	833.33	1.206.20	1.038.31	923.53	991.22	624.14	915.35	1.183.16	510.65	1.360.13	1.268.18	11.744.71	
FE-210G	ML 2-10 Gas	Cond	diff							(40.56)	(41.61)	(47.71)	74.92	91.54	143.09	39.89	(10.35)	20.67	3.84	(37.12)	138.92	335.53	
FE-210G	ML 2-10 Gas	Gas	New							111.936.18	90.965.35	94.604.25	101.382.93	108.632.06	82.424.59	73.598.07	74.344.11	111.197.36	69.462.38	120.334.80	116.644.08	1.155.526.17	
FE-210G	ML 2-10 Gas	Gas	Old	3.334	60.216	76.569	60.906	72.178	273.202	112.146.24	91.105.21	94.524.50	99.238.96	105.753.02	80.259.06	73.056.75	73.519.78	113.950.24	69.993.36	122.097.11	118.333.36	1.153.977.59	
FE-210G	ML 2-10 Gas	Gas	diff							(210.06)	(139.85)	79.75	2.143.97	2.879.04	2.165.53	541.32	824.33	(2.752.88)	(530.99)	(1.762.31)	(1.689.27)	1.548.58	
FE-310C	ML 3-10 Condensate	Cond	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	ML 3-10 Condensate	Cond	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	ML 3-10 Condensate	Cond	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	ML 3-10 Condensate	Gas	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	ML 3-10 Condensate	Gas	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	ML 3-10 Condensate	Gas	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	ML 3-10 Gas	Cond	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	ML 3-10 Gas	Cond	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	ML 3-10 Gas	Cond	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	ML 3-10 Gas	Gas	New							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	ML 3-10 Gas	Gas	Old							-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	ML 3-10 Gas	Gas	diff							-	-	-	-	-	-	-	-	-	-	-	-	-	

Meter No.	Prod	Allo approach	1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17	8/1/17	9/1/17	10/1/17	11/1/17	12/1/17	2017 Total	##
FE-103C	Cond	New	2.212	792	1.053	1.551	2.017	1.429	1.071	1.291	254	786	868	111	13.435	
FE-103C	Cond	Old	952	330	478	582	736	516	287	391	92	230	302	40	4.936	
FE-103C	Cond	diff	1.260	462	575	969	1.281	913	784	900	162	555	567	72	8.498	
FE-103C	Gas	New	843	515	686	1.254	1.319	990	777	621	309	448	295	70	8.128	
FE-103C	Gas	Old	2.358	1.115	1.655	3.097	3.172	2.453	2.531	2.063	803	1.439	1.036	176	21.898	
FE-103C	Gas	diff	(1.515)	(600)	(969)	(1.844)	(1.853)	(1.464)	(1.754)	(1.441)	(494)	(991)	(741)	(105)	(13.771)	
FE-103G	Cond	New	3.210	1.724	2.274	1.669	1.648	2.010	2.177	1.766	310	1.107	798	91	18.784	
FE-103G	Cond	Old	4.840	2.076	3.638	2.873	3.019	3.092	2.914	2.870	553	1.596	1.290	215	28.978	
FE-103G	Cond	diff	(1.630)	(352)	(1.364)	(1.205)	(1.371)	(1.083)	(737)	(1.104)	(244)	(489)	(492)	(124)	(10.193)	
FE-103G	Gas	New	207.992	77.980	141.902	127.882	116.985	142.218	144.635	145.525	47.453	79.680	56.806	12.076	1.301.134	
FE-103G	Gas	Old	205.844	77.575	138.360	123.293	114.979	140.558	143.507	143.664	46.717	78.917	56.155	11.856	1.281.423	
FE-103G	Gas	diff	2.147	406	3.542	4.589	2.006	1.659	1.128	1.862	737	764	650	220	19.711	
FE-109AC	Cond	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Cond	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Cond	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Gas	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Gas	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AC	Gas	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AG	Cond	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AG	Cond	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AG	Cond	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AG	Gas	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AG	Gas	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109AG	Gas	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-109BC	Cond	New	491	78	-	18	-	-	1	-	1	-	-	540	1.128	
FE-109BC	Cond	Old	351	57	-	16	-	-	1	-	1	-	-	356	782	
FE-109BC	Cond	diff	140	21	-	2	-	-	0	-	0	-	-	184	346	
FE-109BC	Gas	New	193	33	-	11	-	-	1	-	1	-	-	348	588	
FE-109BC	Gas	Old	379	64	-	18	-	-	2	-	3	-	-	650	1.115	
FE-109BC	Gas	diff	(186)	(32)	-	(7)	-	-	(1)	-	(1)	-	-	(301)	(528)	
FE-109BG	Cond	New	171	59	-	63	-	-	11	-	38	-	-	384	725	
FE-109BG	Cond	Old	244	78	-	78	-	-	20	-	62	-	-	487	970	
FE-109BG	Cond	diff	(74)	(19)	-	(16)	-	-	(9)	-	(25)	-	-	(103)	(245)	
FE-109BG	Gas	New	15.158	4.543	-	7.688	-	-	1.559	-	6.775	-	-	29.240	64.964	
FE-109BG	Gas	Old	15.045	4.517	-	7.630	-	-	1.537	-	6.702	-	-	29.002	64.433	
FE-109BG	Gas	diff	113	26	-	59	-	-	22	-	73	-	-	238	531	
FE-110C	Cond	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110C	Cond	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110C	Cond	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110C	Gas	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110C	Gas	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110C	Gas	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110G	Cond	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110G	Cond	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110G	Cond	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110G	Gas	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110G	Gas	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-110G	Gas	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-111AC	Cond	New	1.238	810	637	511	941	658	658	774	447	581	864	689	8.807	
FE-111AC	Cond	Old	892	582	502	471	643	483	411	438	300	403	540	448	6.114	
FE-111AC	Cond	diff	346	227	134	40	298	175	247	336	147	177	324	241	2.693	
FE-111AC	Gas	New	340	470	358	401	499	430	193	213	215	179	168	195	3.661	
FE-111AC	Gas	Old	784	788	610	618	809	677	629	677	653	554	580	513	7.892	
FE-111AC	Gas	diff	(444)	(318)	(252)	(216)	(310)	(247)	(436)	(464)	(438)	(375)	(412)	(318)	(4.230)	
FE-111AG	Cond	New	738	583	956	574	922	353	619	811	443	455	579	637	7.672	
FE-111AG	Cond	Old	1.041	895	1.179	726	1.226	495	839	1.091	592	771	927	913	10.695	
FE-111AG	Cond	diff	(303)	(313)	(223)	(153)	(304)	(142)	(219)	(280)	(149)	(316)	(348)	(275)	(3.024)	
FE-111AG	Gas	New	63.304	64.808	68.868	71.297	63.471	36.732	55.498	62.666	56.220	61.413	59.064	58.278	721.620	
FE-111AG	Gas	Old	62.772	64.316	68.404	70.749	63.114	36.492	54.939	62.219	55.792	60.716	58.581	57.927	716.022	
FE-111AG	Gas	diff	532	492	464	548	358	240	558	447	428	697	483	351	5.598	
FE-111BC	Cond	New	1	264	94	25	-	532	898	806	347	406	442	326	4.140	
FE-111BC	Cond	Old	0	186	73	20	-	385	615	471	223	272	283	213	2.741	
FE-111BC	Cond	diff	0	78	21	6	-	147	283	335	124	134	158	114	1.399	
FE-111BC	Gas	New	0	45	22	7	-	106	612	620	163	123	88	84	1.870	
FE-111BC	Gas	Old	0	148	59	16	-	306	1.340	1.242	494	381	298	229	4.512	
FE-111BC	Gas	diff	(0)	(103)	(37)	(9)	-	(200)	(728)	(622)	(331)	(257)	(209)	(145)	(2.642)	
FE-111BG	Cond	New	17	317	163	21	-	238	592	537	302	446	318	247	3.198	
FE-111BG	Cond	Old	21	454	181	22	-	279	912	858	422	567	487	388	4.591	
FE-111BG	Cond	diff	(4)	(137)	(18)	(2)	-	(41)	(320)	(321)	(120)	(121)	(170)	(140)	(1.394)	
FE-111BG	Gas	New	1.108	30.155	9.018	1.729	-	16.095	65.754	55.277	41.531	37.274	30.186	26.523	314.652	
FE-111BG	Gas	Old	1.100	29.947	8.971	1.718	-	16.024	64.884	54.661	41.180	37.018	29.970	26.336	311.809	
FE-111BG	Gas	diff	8	207	47	11	-	72	870	616	352	257	216	187	2.843	
FE-115C	Cond	New	-	111	317	122	136	114	80	90	56	70	71	63	1.228	
FE-115C	Cond	Old	-	111	317	122	136	114	80	90	56	70	71	63	1.228	
FE-115C	Cond	diff	-	0	(0)	0	(0)	(0)	0	0	0	0	0	0	0	
FE-115C	Gas	New	-	80	181	85	72	63	69	72	75	66	54	54	871	
FE-115C	Gas	Old	-	6.306	7.090	7.651	6.300	6.307	6.181	6.127	5.819	5.633	5.346	5.258	68.018	
FE-115C	Gas	diff	-	(6.227)	(6.909)	(7.565)	(6.228)	(6.244)	(6.113)	(6.055)	(5.744)	(5.567)	(5.292)	(5.204)	(67.147)	
FE-115G	Cond	New	-	101	128	65	81	90	46	51	15	49	35	30	690	
FE-115G	Cond	Old	-	101	128	65	81	90	46	51	15	49	35	30	690	
FE-115G	Cond	diff	-	0	(0)	0	0	(0)	0	(0)	(0)	(0)	0	0	0	
FE-115G	Gas	New	-	6.306	7.090	7.651	6.300	6.307	6.181	6.127	5.819	5.633	5.346	5.258	68.018	
FE-115G	Gas	Old	-	80	181	85	72	63	69	72	75	66	54	54	871	
FE-115G	Gas	diff	-	6.227	6.909	7.565	6.228	6.244	6.113	6.055	5.744	5.567	5.292	5.204	67.147	
FE-134C	Cond	New	645	145	2.682	2.254	3	-	0	1	6	-	1	2	5.738	
FE-134C	Cond	Old	328	64	1.145	1.133	1	-	0	0	2	-	1	1	2.674	
FE-134C	Cond	diff	317	81	1.537	1.121	2	-	0	0	3	-	1	1	3.064	
FE-134C	Gas	New	564	141	1.319	1.904	2	-	0	1	9	-	1	1	3.942	
FE-134C	Gas	Old	1.205	269	4.192	5.650	6	-	1	2	25	-	2	3	11.356	
FE-134C	Gas	diff	(641)	(129)	(2.873)	(3.746)	(4)	-	(1)	(1)	(16)	-	(1)	(2)	(7.414)	
FE-134G	Cond	New	298	151	1.718	833	2	-	5	42	4	-	21	1	3.074	
FE-134G	Cond	Old	328	137	2.021	1.578	3	-	8	70	7	-	24	1	4.177	
FE-134G	Cond	diff	(30)	14	(303)	(745)	(1)	-	(3)	(27)	(3)	-	(4)	(0)	(1.102)	
FE-134G	Gas	New	10.782	3.872	61.624	61.341	82	-	379	3.347	542	-	890	47	142.906	
FE-134G	Gas	Old	11.092	3.975	62.651	61.037	83	-	384	3.368	543	-	906	47	144.085	
FE-134G	Gas	diff	(310)	(103)	(1.027)	303	(1)	-	(4)	(21)	(1)	-	(15)	(0)	(1.179)	
FE-203C	Cond	New	23	952	381	365	510	293	-	558	147	-	45	248	3.522	
FE-203C	Cond	Old	11	423	210	203	224	105	-	168	51	-	16	88	1.498	
FE-203C	Cond	diff	12	529	171	162	286	188	-	390	96	-	29	160	2.023	
FE-203C	Gas	New	14	525	263	278	360	242	-	314	199	-	17	171	2.382	
FE-203C	Gas	Old	32	1.195	653	797	874	540	-	989	506	-	57	421	6.063	
FE-203C	Gas	diff	(18)	(670)	(390)	(519)	(513)	(298)	-	(675)	(307)	-	(41)	(250)	(3.681)	
FE-203G	Cond	New	6	1.681	554	339	599	356	-	276	75	2	34	161	4.082	
FE-203G	Cond	Old	14	2.293	1.019	574	857	465	-	505	147	3	40	286	6.204	
FE-203G	Cond	diff	(8)	(612)	(466)	(235)	(258)	(109)	-	(229)	(72)	(1)	(7)	(125)	(2.123)	
FE-203G	Gas	New	672	91.151	41.507	24.449	29.992	20.132	-	26.270	12.813	144	1.626	15.202	263.960	
FE-203G	Gas	Old	660	90.365	40.326	23.785	29.767	20.004	-	25.869	12.595	143	1.623	15.016	260.154	
FE-203G	Gas	diff	12	787	1.181	664	225	128	-	401	218	2	3	187	3.807	
FE-210C	Cond	New	2.137	1.703	1.374	1.352	1.671	1.348	1.083	971	592	970	1.323	1.144	15.668	
FE-210C	Cond	Old	1.546	1.218	1.026	1.195	1.147	1.013	678	590	395	673	852	749	11.081	
FE-210C	Cond	diff	591	485	348	157	525	336	404	381	197	297	471	395	4.587	
FE-210C	Gas	New	1.014	839	762	522	729	675	500	575	492	517	585	560	7.773	
FE-210C	Gas	Old	1.873	1.506	1.277	1.077	1.285	1.196	1.257	1.248	1.096	1.169	1.287	1.127	15.397	
FE-210C	Gas	diff	(859)	(667)	(514)	(555)	(556)	(521)	(756)	(673)	(604)	(651)	(701)	(567)	(7.625)	
FE-210G	Cond	New	911	1.139	1.413	1.377	1.299	1.064	1.014	1.336	962	1.203	717	783	13.219	
FE-210G	Cond	Old	1.529	1.601	1.826	1.480	1.756	1.448	1.445	1.716	1.081	1.440	1.248	1.181	17.750	
FE-210G	Cond	diff	(618)	(462)	(413)	(103)	(457)	(384)	(431)	(380)	(119)	(237)	(531)	(398)	(4.531)	
FE-210G	Gas	New	109.515	104.537	113.867	114.001	100.021	102.510	99.340	95.370	88.382	89.021	83.873	78.393	1.178.830	
FE-210G	Gas	Old	108.356	103.833	113.039	113.278	99.372	101.879	98.239	94.799	87.997	88.465	83.105	77.888	1.170.250	
FE-210G	Gas	diff	1.160	703	828	723	648	631	1.101	571	385	556	768	505	8.580	
FE-310C	Cond	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	Cond	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	Cond	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	Gas	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	Gas	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310C	Gas	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	Cond	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	Cond	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	Cond	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	Gas	New	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	Gas	Old	-	-	-	-	-	-	-	-	-	-	-	-	-	
FE-310G	Gas	diff	-	-	-	-	-	-	-	-	-	-	-	-	-	

Meter No.	Prod	Allo approach	1/1/18	2/1/18	3/1/18	4/1/18	5/1/18	6/1/18	7/1/18	8/1/18	9/1/18	10/1/18	11/1/18	12/1/18	2018 Total	##	Grand Total
FE-103C	Cond	New	51	15	-	72	78	17	33	27	0	-	258	120	671		32.884
FE-103C	Cond	Old	20	7	-	27	34	7	13	10	0	-	150	61	328		25.970
FE-103C	Cond	diff	(31)	(8)	-	(45)	(44)	(10)	(20)	(18)	(0)	-	(108)	(59)	(343)		6.228
FE-103C	Gas	New	37	3	-	242	41	10	14	5	0	-	32	2	387		18.488
FE-103C	Gas	Old	85	11	-	545	135	37	66	28	0	-	199	62	1.168		33.152
FE-103C	Gas	diff	(48)	(8)	-	(303)	(94)	(27)	(52)	(23)	(0)	-	(167)	(60)	(781)		(14.664)
FE-103G	Cond	New	50	12	1	77	82	31	109	63	-	-	91	76	592		38.907
FE-103G	Cond	Old	72	19	1	173	156	59	164	84	-	-	188	96	1.013		50.314
FE-103G	Cond	diff	23	7	0	95	74	29	55	21	-	-	96	20	421		(10.566)
FE-103G	Gas	New	3.683	585	29	19.104	7.584	3.878	8.594	3.782	-	-	10.727	2.669	60.634		2.971.382
FE-103G	Gas	Old	3.648	575	28	18.627	7.366	3.788	8.478	3.721	-	-	10.579	2.657	59.468		2.953.365
FE-103G	Gas	diff	35	9	1	476	218	90	116	61	-	-	148	12	1.167		18.017
FE-109AC	Cond	New	-	-	1.214	-	1.838	1.667	1.163	601	13	-	-	-	6.496		6.496
FE-109AC	Cond	Old	-	-	938	-	1.241	1.114	734	417	9	-	-	-	4.454		4.454
FE-109AC	Cond	diff	-	-	(276)	-	(597)	(553)	(429)	(184)	(3)	-	-	-	(2.042)		(2.042)
FE-109AC	Gas	New	-	-	656	-	1.302	1.370	817	321	2	-	-	-	4.468		4.468
FE-109AC	Gas	Old	-	-	1.184	-	2.497	2.429	1.725	717	8	-	-	-	8.561		8.561
FE-109AC	Gas	diff	-	-	(528)	-	(1.195)	(1.059)	(908)	(396)	(6)	-	-	-	(4.092)		(4.092)
FE-109AG	Cond	New	-	-	36	-	75	32	30	32	2	0	-	-	207		1.834
FE-109AG	Cond	Old	-	-	57	-	139	70	59	42	2	0	-	-	369		1.881
FE-109AG	Cond	diff	-	-	21	-	65	38	29	10	0	(0)	-	-	162		277
FE-109AG	Gas	New	-	-	2.415	-	8.595	5.569	3.796	2.023	75	13	-	-	22.485		147.774
FE-109AG	Gas	Old	-	-	2.381	-	8.470	5.483	3.737	2.050	76	13	-	-	22.210		146.222
FE-109AG	Gas	diff	-	-	34	-	125	86	60	(27)	(1)	(0)	-	-	275		1.552
FE-109BC	Cond	New	897	1.357	1.016	1.386	-	-	-	-	-	-	-	-	4.656		6.524
FE-109BC	Cond	Old	628	866	785	905	-	-	-	-	-	-	-	-	3.183		4.614
FE-109BC	Cond	diff	(269)	(492)	(231)	(482)	-	-	-	-	-	-	-	-	(1.473)		(1.036)
FE-109BC	Gas	New	623	549	549	3.288	-	-	-	-	-	-	-	-	5.009		5.741
FE-109BC	Gas	Old	1.147	1.094	991	5.153	-	-	-	-	-	-	-	-	8.386		9.648
FE-109BC	Gas	diff	(524)	(546)	(442)	(1.865)	-	-	-	-	-	-	-	-	(3.377)		(3.906)
FE-109BG	Cond	New	427	711	3	40	-	-	-	-	-	-	-	-	1.182		2.648
FE-109BG	Cond	Old	714	1.165	5	94	-	-	-	-	-	-	-	-	1.978		3.688
FE-109BG	Cond	diff	287	454	2	53	-	-	-	-	-	-	-	-	796		552
FE-109BG	Gas	New	53.357	46.978	202	12.971	-	-	-	-	-	-	-	-	113.509		246.449
FE-109BG	Gas	Old	52.702	46.459	200	12.736	-	-	-	-	-	-	-	-	112.097		244.225
FE-109BG	Gas	diff	655	519	3	235	-	-	-	-	-	-	-	-	1.411		2.224
FE-110C	Cond	New	-	-	-	-	-	-	-	-	-	-	-	-	-		518
FE-110C	Cond	Old	-	-	-	-	-	-	-	-	-	-	-	-	-		508
FE-110C	Cond	diff	-	-	-	-	-	-	-	-	-	-	-	-	-		10
FE-110C	Gas	New	-	-	-	-	-	-	-	-	-	-	-	-	-		314
FE-110C	Gas	Old	-	-	-	-	-	-	-	-	-	-	-	-	-		268
FE-110C	Gas	diff	-	-	-	-	-	-	-	-	-	-	-	-	-		46
FE-110G	Cond	New	-	-	-	-	-	-	-	-	-	-	-	-	-		334
FE-110G	Cond	Old	-	-	-	-	-	-	-	-	-	-	-	-	-		349
FE-110G	Cond	diff	-	-	-	-	-	-	-	-	-	-	-	-	-		(15)
FE-110G	Gas	New	-	-	-	-	-	-	-	-	-	-	-	-	-		39.998
FE-110G	Gas	Old	-	-	-	-	-	-	-	-	-	-	-	-	-		40.071
FE-110G	Gas	diff	-	-	-	-	-	-	-	-	-	-	-	-	-		(73)
FE-111AC	Cond	New	800	1.107	984	166	416	379	420	416	603	515	544	683	7.033		28.645
FE-111AC	Cond	Old	552	688	713	105	259	254	239	258	361	338	429	448	4.645		22.738
FE-111AC	Cond	diff	(248)	(418)	(272)	(61)	(157)	(125)	(181)	(157)	(243)	(176)	(115)	(235)	(2.389)		1.130
FE-111AC	Gas	New	220	183	212	174	190	250	220	388	223	156	82	291	2.590		14.204
FE-111AC	Gas	Old	613	555	587	358	418	503	544	722	607	443	246	625	6.222		21.798
FE-111AC	Gas	diff	(393)	(371)	(376)	(184)	(228)	(253)	(324)	(334)	(383)	(287)	(164)	(335)	(3.632)		(7.594)
FE-111AG	Cond	New	432	961	1.147	196	560	296	532	440	499	356	335	439	6.194		22.861
FE-111AG	Cond	Old	720	1.441	1.621	398	904	558	818	674	726	505	513	691	9.569		29.006
FE-111AG	Cond	diff	287	480	475	202	344	262	286	234	227	149	178	252	3.376		606
FE-111AG	Gas	New	51.119	52.980	63.103	50.216	50.656	40.555	46.880	43.846	43.177	37.188	41.151	38.911	559.782		2.109.853
FE-111AG	Gas	Old	50.651	52.609	62.389	49.536	50.091	40.054	46.341	43.397	42.820	36.973	40.926	38.573	554.359		2.097.143
FE-111AG	Gas	diff	468	371	714	680	565	501	539	449	357	215	225	338	5.423		12.710
FE-111BC	Cond	New	193	217	61	4	-	-	-	-	-	-	704	-	1.180		16.879
FE-111BC	Cond	Old	129	133	43	3	-	-	-	-	-	-	498	-	805		13.562
FE-111BC	Cond	diff	(65)	(84)	(18)	(2)	-	-	-	-	-	-	(206)	-	(374)		2.568
FE-111BC	Gas	New	43	26	12	4	-	-	-	-	-	-	239	-	324		8.397
FE-111BC	Gas	Old	132	91	34	8	-	-	-	-	-	-	510	-	774		11.201
FE-111BC	Gas	diff	(89)	(65)	(22)	(4)	-	-	-	-	-	-	(271)	-	(451)		(2.804)
FE-111BG	Cond	New	136	250	133	14	0	0	-	-	-	-	-	-	534		9.759
FE-111BG	Cond	Old	204	340	167	23	0	0	-	-	-	-	-	-	735		11.287
FE-111BG	Cond	diff	69	89	34	9	0	0	-	-	-	-	-	-	201		(1.125)
FE-111BG	Gas	New	13.571	11.577	5.888	2.644	7	14	-	-	-	-	-	-	33.701		903.244
FE-111BG	Gas	Old	13.469	11.508	5.831	2.613	7	14	-	-	-	-	-	-	33.442		896.213
FE-111BG	Gas	diff	102	70	57	31	0	0	-	-	-	-	-	-	259		7.031
FE-115C	Cond	New	75	121	87	39	80	66	62	62	70	62	86	92	903		2.130
FE-115C	Cond	Old	34	37	59	23	66	53	49	45	45	27	30	35	501		1.729
FE-115C	Cond	diff	(41)	(84)	(28)	(17)	(13)	(13)	(13)	(18)	(25)	(36)	(56)	(58)	(401)		(401)
FE-115C	Gas	New	45	49	43	46	48	36	41	42	41	31	18	44	483		1.354
FE-115C	Gas	Old	5.235	5.003	5.023	4.740	4.968	4.860	4.750	4.951	4.717	4.882	4.959	5.235	59.323		127.342
FE-115C	Gas	diff	(5.190)	(4.954)	(4.980)	(4.695)	(4.920)	(4.824)	(4.709)	(4.909)	(4.676)	(4.851)	(4.941)	(5.192)	(58.840)		(125.987)
FE-115G	Cond	New	34	37	59	23	66	53	49	45	45	27	30	35	501		1.192
FE-115G	Cond	Old	75	121	87	39	80	66	62	62	70	62	86	92	903		1.593
FE-115G	Cond	diff	41	84	28	17	13	13	13	18	25	36	56	58	401		401
FE-115G	Gas	New	5.235	5.003	5.023	4.740	4.968	4.860	4.750	4.951	4.717	4.882	4.959	5.235	59.323		127.342
FE-115G	Gas	Old	45	49	43	46	48	36	41	42	41	31	18	44	483		1.354
FE-115G	Gas	diff	5.190	4.954	4.980	4.695	4.920	4.824	4.709	4.909	4.676	4.851	4.941	5.192	58.840		125.987
FE-134C	Cond	New	-	234	76	-	114	11	-	58	-	-	0	-	493		23.292
FE-134C	Cond	Old	-	103	44	-	52	5	-	24	-	-	0	-	228		20.473
FE-134C	Cond	diff	-	(130)	(32)	-	(62)	(6)	-	(35)	-	-	(0)	-	(265)		2.289
FE-134C	Gas	New	-	67	16	-	68	8	-	20	-	-	0	-	179		19.547
FE-134C	Gas	Old	-	203	61	-	224	30	-	86	-	-	0	-	604		27.510
FE-134C	Gas	diff	-	(136)	(46)	-	(156)	(22)	-	(66)	-	-	(0)	-	(425)		(7.963)
FE-134G	Cond	New	-	57	28	-	91	16	-	39	-	-	0	-	231		9.830
FE-134G	Cond	Old	-	89	40	-	132	23	-	52	-	-	0	-	337		11.345
FE-134G	Cond	diff	-	32	13	-	41	7	-	13	-	-	0	-	106		(1.303)
FE-134G	Gas	New	-	2.661	873	-	5.712	1.372	-	2.190	-	-	14	-	12.823		563.228
FE-134G	Gas	Old	-	2.659	853	-	5.660	1.373	-	2.198	-	-	14	-	12.757		567.379
FE-134G	Gas	diff	-	2	20	-	52	(1)	-	(7)	-	-	(0)	-	65		(4.151)
FE-203C	Cond	New	233	305	-	-	12	0	1	2	6	-	28	-	587		10.163
FE-203C	Cond	Old	91	121	-	-	5	0	0	1	3	-	16	-	237		8.177
FE-203C	Cond	diff	(142)	(184)	-	-	(8)	(0)	(1)	(1)	(4)	-	(11)	-	(351)		1.285
FE-203C	Gas	New	65	132	-	-	8	0	1	1	0	-	5	-	213		7.037
FE-203C	Gas	Old	312	344	-	-	25	0	3	4	6	-	31	-	725		11.328
FE-203C	Gas	diff	(247)	(212)	-	-	(17)	(0)	(2)	(3)	(5)	-	(26)	-	(512)		(4.291)
FE-203G	Cond	New	222	371	-	0	9	5	-	6	52	-	15	-	681		10.071
FE-203G	Cond	Old	386	672	-	0	14	9	-	8	54	-	28	-	1.172		12.997
FE-203G	Cond	diff	164	300	-	0	6	4	-	3	2	-	13	-	491		(1.943)
FE-203G	Gas	New	20.692	21.551	-	1	661	568	-	388	2.203	-	1.519	-	47.583		669.724
FE-203G	Gas	Old	20.449	21.197	-	1	645	559	-	382	2.205	-	1.500	-	46.938		668.541
FE-203G	Gas	diff	244	353	-	0	16	10	-	6	(2)	-	19	-	645		1.183
FE-210C	Cond	New	868	745	199	104	443	330	339	403	485	498	599	833	5.845		42.657
FE-210C	Cond	Old	601	467	141	70	284	228	199	251	296	349	487	567	3.940		35.154
FE-210C	Cond	diff	(267)	(278)	(58)	(33)	(159)	(102)	(140)	(153)	(188)	(150)	(112)	(266)	(1.906)		3.692
FE-210C	Gas	New	483	256	88	342	541	507	401	377	431	331	218	473	4.449		24.052
FE-210C	Gas	Old	945	539	170	516	868	800	721	700	808	688	454	928	8.138		35.119
FE-210C	Gas	diff	(462)	(283)	(82)	(174)	(327)	(294)	(320)	(324)	(377)	(357)	(236)	(455)	(3.689)		(11.068)
FE-210G	Cond	New	1.073	674	258	61	272	128	237	223	250	168	133	219	3.697		28.995
FE-210G	Cond	Old	1.265	1.012	386	152	558	310	497	429	453	319	288	469	6.138		35.632
FE-210G	Cond	diff	192	338	128	91	286	182	260	205	203	151	155	249	2.441		(1.755)
FE-210G	Gas	New	67.367	37.282	15.458	21.336	35.478	25.439	32.452	31.645	30.888	28.551	29.907	31.538	387.340		2.721.696
FE-210G	Gas	Old	67.107	37.015	15.301	20.977	34.952	25.043	31.925	31.199	30.515	28.227	29.608	31.109	382.976		2.707.204
FE-210G	Gas	diff	260	267	157	360	526	396	528	446	373	324	299	429	4.364		14.492
FE-310C	Cond	New	-	2.318	2.259	297	741	615	610	625	863	657	901	1.027	10.914		10.914
FE-310C	Cond	Old	-	1.475	1.598	195	470	426	352	390	532	460	723	667	7.287		7.287
FE-310C	Cond	diff	-	(842)	(661)	(102)	(271)	(189)	(257)	(236)	(332)	(198)	(179)	(361)	(3.627)		(3.627)
FE-310C	Gas	New	-	1.084	1.124	774	706	969	706	589	626	347	204	397	7.525		7.525
FE-310C	Gas	Old	-	2.071	2.091	1.179	1.192	1.516	1.279	1.101	1.243	751	502	888	13.814		13.814
FE-310C	Gas	diff	-	(986)	(967)	(405)	(486)	(547)	(574)	(513)	(617)	(405)	(298)	(491)	(6.288)		(6.288)
FE-310G	Cond	New	-	740	1.264	235	535	377	443	316	491	439	392	591	5.824		5.824
FE-310G	Cond	Old	-	1.477	2.140	509	1.016	838	841	614	828	663	683	990	10.599		10.599
FE-310G	Cond	diff	-	736	876	274	481	462	398	298	337	224	290	399	4.775		4.775
FE-310G	Gas	New	-	67.533	96.790	68.113	63.936	68.231	53.827	46.434	55.116	52.503	61.925	58.440	692.847		692.847
FE-310G	Gas	Old	-	66.517	95.313	66.960	62.935	67.112	52.890	45.703	54.454	51.992	61.454	57.879	683.209		683.209
FE-310G	Gas	diff	-	1,016	1,477	1,153	1,001	1,119	937	731	663	510	470	561	9,638		9,638

IDAHO OIL AND GAS CONSERVATION COMMISSION
April 23, 2019* Information Agenda Allocation Update
ATTACHMENT 1. McFarland Allocation Datasets
*Postponed until May 29, 2019 Meeting

NOTE: THIS SHEET USES A DIFFERENT ORDER OF WELLS, VERSUS ORIGINAL, AND ONLY SHOWS YEARLY SUMMARIES OF ORIGINAL (hidden monthly columns)

EXPLANATION TO COLORS OF FONTS AND HIGHLIGHTS		
Plant Condensate	New	Corrected Allocation Method
Residue Gas	Old	Original Allocation Method
NGPL were not affected by the allocation error	diff	Difference from Corrected to Original

Note: Variance in % Difference from Plant Condensate to Residue Gas is due to the allocation error (see Memo). Eg, Methane mole % = 10.3642 vs Liquid Volume % = 3.410.

Meter No.	Meter Name	Product Produced	Allocation Method	2015 Total	2016 Total	2017 Total	2018 Total	row	2016-2018 Total by Well	2016 - 2018 Totals by Well Completion: Plant Condensate (BBL) New (1+7)	Plant Condensate (BBL) Old (2+8)	Plant Condensate (BBL) Difference (3+9)	Plant Condensate (BBL) % Difference	Residue Gas (MMBtu) New (4+10)	Residue Gas (MMBtu) Old (5+11)	Residue Gas (MMBtu) Difference (6+12)	Residue Gas (MMBtu) % Difference	
FE-103C	ML 1-3 Condensate	Cond	New		18,778	13,435	671	1	32,884									Allocation (=>) by 3 Steps: Plant Total => Little Willow Total => Multi-Well Separator => Well
		Cond	Old		20,706	4,936	328	2	25,970									
		Cond	diff		(1,928)	8,498	(343)	3	6,228									
		Gas	New		9,974	8,128	387	4	18,488									
		Gas	Old		10,085	21,898	1,168	5	33,152									
		Gas	diff		(112)	(13,771)	(781)	6	(14,664)									
FE-103G	ML 1-3 Gas	Cond	New		19,531	18,784	592	7	38,907	71,791								
		Cond	Old		20,324	28,978	1,013	8	50,314		76,285							
		Cond	diff		(793)	(10,193)	421	9	(10,566)			(4,338)	-6%					
		Gas	New		1,609,614	1,301,134	60,634	10	2,971,382					2,989,870				
		Gas	Old		1,612,473	1,281,423	59,468	11	2,953,365						2,986,516			
		Gas	diff		(2,860)	19,711	1,167	12	18,017							3,354	0%	
FE-134C	Kauffman 1-34 Condensate	Cond	New		17,061	5,738	493	1	23,292									Allocation (=>) by 3 Steps: Plant Total => Little Willow Total => Multi-Well Separator => Well
		Cond	Old	4,147	17,571	2,674	228	2	20,473									
		Cond	diff		(510)	3,064	(265)	3	2,289									
		Gas	New		15,426	3,942	179	4	19,547									
		Gas	Old		15,550	11,356	604	5	27,510									
		Gas	diff		(124)	(7,414)	(425)	6	(7,963)									
FE-134G	Kauffman 1-34 Gas	Cond	New		6,525	3,074	231	7	9,830	33,122								
		Cond	Old	204	6,832	4,177	337	8	11,345		31,819							
		Cond	diff		(307)	(1,102)	106	9	(1,303)			986	3%					
		Gas	New		407,500	142,906	12,823	10	563,228					582,775				
		Gas	Old		410,537	144,085	12,757	11	567,379						594,889			
		Gas	diff		(3,037)	(1,179)	65	12	(4,151)							(12,114)	-2%	
FE-203C	ML 2-3 Condensate	Cond	New		6,054	3,522	587	1	10,163									Allocation (=>) by 3 Steps: Plant Total => Little Willow Total => Multi-Well Separator => Well
		Cond	Old		6,442	1,498	237	2	8,177									
		Cond	diff		(388)	2,023	(351)	3	1,285									
		Gas	New		4,442	2,382	213	4	7,037									
		Gas	Old		4,540	6,063	725	5	11,328									
		Gas	diff		(98)	(3,681)	(512)	6	(4,291)									
FE-203G	ML 2-3 Gas	Cond	New		5,309	4,082	681	7	10,071	20,234								
		Cond	Old		5,620	6,204	1,172	8	12,997		21,173							
		Cond	diff		(311)	(2,123)	491	9	(1,943)			(658)	-3%					
		Gas	New		358,181	263,960	47,583	10	669,724					676,762				
		Gas	Old		361,450	260,154	46,938	11	668,541						679,869			
		Gas	diff		(3,269)	3,807	645	12	1,183							(3,107)	0%	
FE-115C	DJS 1-15 Condensate	Cond	New		-	1,228	903	1	2,130									Allocation (=>) by One Step: Plant Total => DJS 1-15
		Cond	Old		-	1,228	501	2	1,729									
		Cond	diff		-	0	(401)	3	(401)									
		Gas	New		-	871	483	4	1,354									
		Gas	Old		-	68,018	59,323	5	127,342									
		Gas	diff		-	(67,147)	(58,840)	6	(125,987)									
FE-115G	DJS 1-15 Gas	Cond	New		-	690	501	7	1,192	3,322								
		Cond	Old		-	690	903	8	1,593		3,322							
		Cond	diff		-	0	401	9	401			0	0%					
		Gas	New		-	68,018	59,323	10	127,342					128,696				
		Gas	Old		-	871	483	11	1,354						128,696			
		Gas	diff		-	67,147	58,840	12	125,987							0	0%	
FE-109AC	Kauffman 1-9 LT Oil	Cond	New		-	-	6,496	1	6,496									Allocation (=>) by 2 Steps: Plant Total => Little Willow Total (excluding Multi-Well Total) => Well
		Cond	Old		-	-	4,454	2	4,454									
		Cond	diff		-	-	(2,042)	3	(2,042)									
		Gas	New		-	-	4,468	4	4,468									
		Gas	Old		-	-	8,561	5	8,561									
		Gas	diff		-	-	(4,092)	6	(4,092)									
FE-109AG	Kauffman 1-9 LT Gas	Cond	New		1,627	-	207	7	1,834	8,330								
		Cond	Old		1,511	-	369	8	1,881		6,335							
		Cond	diff		115	-	162	9	277			(1,765)	-28%					
		Gas	New		125,289	-	22,485	10	147,774					152,242				
		Gas	Old		124,013	-	22,210	11	146,222						154,783			
		Gas	diff		1,276	-	275	12	1,552							(2,541)	-2%	
FE-109BC	Kauffman 1-9 UT Condensate	Cond	New		740	1,128	4,656	1	6,524									
		Cond	Old	684	649	782	3,183	2	4,614									
		Cond	diff		91	346	(1,473)	3	(1,036)									
		Gas	New		145	588	5,009	4	5,741									
		Gas	Old	804	147	1,115	8,386	5	9,648									
		Gas	diff		(2)	(528)	(3,377)	6	(3,906)									
FE-109BG	Kauffman 1-9 UT Gas	Cond	New		741	725	1,182	7	2,648	9,172								
		Cond	Old	323	740	970	1,978	8	3,688		8,302							
		Cond	diff		1	(245)	796	9	552			(484)	-6%					
		Gas	New		67,976	64,964	113,509	10	246,449					252,190				
		Gas	Old	50,940	67,695	64,433	112,097	11	244,225						253,873			
		Gas	diff		281	531	1,411	12	2,224							(1,682)	-1%	
FE-110C	ML 1-10 Condensate	Cond	New		518	-	-	1	518									
		Cond	Old	3,260	508	-	-	2	508									
		Cond	diff		10	-	-	3	10									
		Gas	New		314	-	-	4	314									
		Gas	Old	2,711	268	-	-	5	268									
		Gas	diff		46	-	-	6	46									
FE-110G	ML 1-10 Gas	Cond	New		334	-	-	7	334	852								
		Cond	Old	1,930	349	-	-	8	349		857							
		Cond	diff		(15)	-	-	9	(15)			(5)	-1%					
		Gas	New		39,998	-	-	10	39,998					40,311				
		Gas	Old	253,771	40,071	-	-	11	40,071						40,339			
		Gas	diff		(73)	-	-	12	(73)							(28)	0%	
FE-111AC	ML 1-11 UT Condensate	Cond	New		12,804	8,807	7,033	1	28,645									
		Cond	Old	3,907	11,979	6,114	4,645	2	22,738									
		Cond	diff		825	2,693	(2,389)	3	1,130									
		Gas	New		7,953	3,661	2,590	4	14,204									
		Gas	Old	5,423	7,685	7,892	6,222	5	21,798									
		Gas	diff		268	(4,230)	(3,632)	6	(7,594)									
FE-111AG	ML 1-11 UT Gas	Cond	New		8,996	7,672	6,194	7	22,861	51,506								
		Cond	Old	1,739	8,742	10,695	9,569	8	29,006		51,744							
		Cond	diff		254	(3,024)	3,376	9	606			1,735	3%					
		Gas	New		828,451	721,620	559,782	10	2,109,853					2,124,058				
		Gas	Old	256,638	826,762	716,022	554,359	11	2,097,143						2,118,941			
		Gas	diff		1,689	5,598	5,423	12	12,710							5,116	0%	
FE-111BC	ML 1-11 LT Condensate	Cond	New		11,559	4,140	1,180	1	16,879									
		Cond	Old	4,431	10,016	2,741	805	2	13,562									
		Cond	diff		1,543	1,399	(374)	3	2,568									
		Gas	New		6,203	1,870	324	4	8,397									
		Gas	Old	4,213	5,915	4,512	774	5	11,201									
		Gas	diff		288	(2,642)	(451)	6	(2,804)									
FE-111BG	ML 1-11 LT Gas	Cond	New		6,027	3,198	534	7	9,759	26,637								
		Cond	Old	1,631	5,960	4,591	735	8	11,287		24,849							
		Cond	diff		67	(1,394)	201	9	(1,125)			1,443	6%					
		Gas	New		554,891	314,652	33,701	10	903,244					911,640				
		Gas	Old	260,992	550,962	311,809	33,442	11	896,213						907,414			
		Gas	diff		3,929	2,843	259	12	7,031							4,226	0%	
FE-210C	ML 2-10 Condensate	Cond	New		21,143	15,668	5,845	1	42,657									
		Cond	Old	5,897	20,133	11,081	3,940	2	35,154									
		Cond	diff		1,011	4,587	(1,906)	3	3,692									
		Gas	New		11,830	7,773	4,449	4	24,052									
		Gas	Old	3,738	11,584	15,397	8,138	5	35,119									
		Gas	diff		247	(7,625)	(3,689)	6	(11,068)									
FE-210G	ML 2-10 Gas	Cond	New		12,080	13,219	3,697	7	28,995	71,652								
		Cond	Old	1,912	11,745	17,750	6,138	8	35,632		70,786							
		Cond	diff		336	(4,531)	2,441	9	(1,755)			1,937	3%					
		Gas	New		1,155,526	1,178,830	387,340	10	2,721,696					2,745,748				
		Gas	Old	273,202	1,153,978	1,170,250	382,976	11	2,707,204						2,742,323			
		Gas	diff		1,549	8,580	4,364	12	14,492							3,425	0%	
FE-310C	ML 3-10 Condensate	Cond	New		-	-	10,914	1	10,914									
		Cond	Old		-	-	7,287	2	7,287									
		Cond	diff		-	-	(3,627)	3	(3,627)									
		Gas	New		-	-	7,525	4	7,525									
		Gas	Old		-	-	13,814	5	13,814									
		Gas	diff		-	-	(6,288)	6	(6,288)									
FE-310G	ML 3-10 Gas	Cond	New		-	-	5,824	7	5,824	16,738								
		Cond	Old		-	-	10,599	8	10,599		17,886							
		Cond	diff		-	-	4,775	9	4,775			1,148	6%					
		Gas	New		-	-	692,847	10	692,847					700,372				
		Gas	Old		-	-	683,209	11	683,209						697,023			
		Gas	diff		-	-	9,638	12	9,638							3,349	0%	

	2015 Total	2016 Total	2017 Total	2018 Total
Total By Year All Wells Plant Condensate (BBL)				
New		149,827	105,109	58,421
Old	30,067	149,827	105,109	58,421
diff		0	(0)	0
Total All Wells Residue Gas (MMBtu)				
New		5,203,712	4,085,300	2,015,653
Old	1,112,433	5,203,714	4,085,300	2,015,653
diff		(2)	(0)	0

2016-2018 Totals All Wells of Plant Condensate (BBL)			2016-2018 Totals All Wells of Residue Gas (MMBtu)		
New	Old	Difference	New	Old	Difference
313,357	313,357	0	11,304,665	11,304,667	(2)

IDAHO OIL AND GAS CONSERVATION COMMISSION
April 23, 2019* Information Agenda Allocation Update
ATTACHMENT 2. IDL Review Datasets
*Postponed until May 29, 2019 Meeting

ALLOCATION INVESTIGATION

IDAHO OIL & GAS
CONSERVATION COMMISSION

May 29, 2019

DAVE SCHWARZ

OIL & GAS FIELD INSPECTOR

IDAHO DEPARTMENT OF LANDS

ATTACHMENT 3

GENERAL BACKGROUND

Wells produce

2 hydrocarbon streams generically referred to as

gas & condensate

2 streams are processed into **3 marketable products**:

Residue Gas

Natural Gas Plant Liquids

Plant Condensate

Volumes of these 3 products are then **ALLOCATED**

back to each well completion

ALLOCATION : The system by which ownership of oil, gas, & produced water is determined & tracked from point of production to a point of sale or discharge

Although the principles of allocation are straightforward, the **details are highly complex**

equivalent volume of source x *attributable to the inlet of tier* K *delivered to sink* y *on the outlet of tier* K:

$$V_{x_{K-1} \to y_K} = \sum_{i=1}^{I} \frac{V_{x_{K-1},i}}{\sum_{x_{K-1}=1}^{X_{K-1}} V_{x_{K-1},i}} \cdot V_{y_K,i}$$

In 2018, OGCC noted discrepancies in reported volumes of Residue Gas & Plant Condensate

Residue Gas*: derived from *Rich Gas

Rich Gas: transported from wellheads thru Little Willow Gathering Facility, thru the 11 mile long gas pipeline, to Hwy 30 Plant

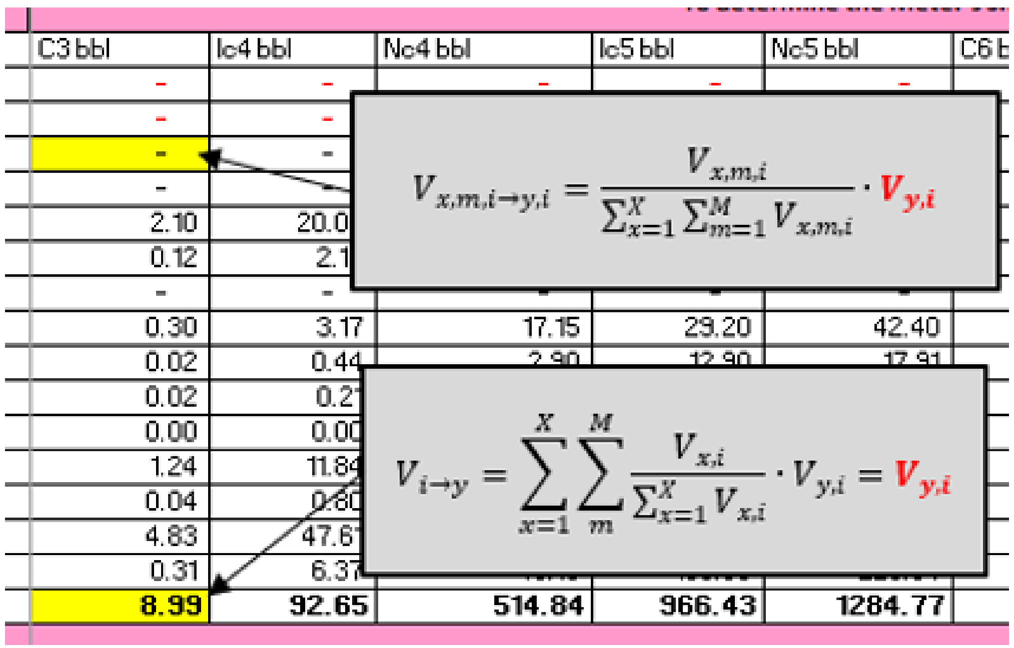
Hwy 30 Plant extracts *Natural Gas Plant Liquids* from *Rich Gas*, & delivers Residue Gas at outlet

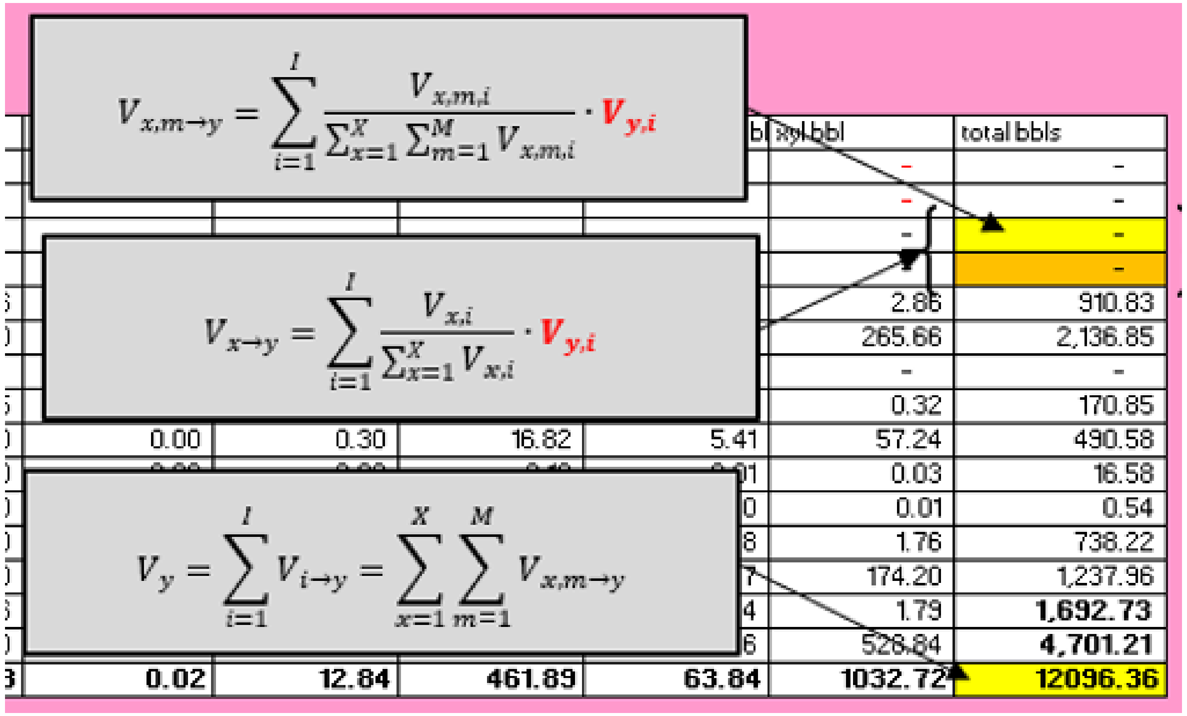
Plant Condensate*: derived from *Well Condensate

Well Condensate: transported from wellheads thru Little Willow Facility, thru 11 mile long condensate pipeline, thru Hwy 30 Plant

Alta Mesa discovered a systematic error in an equation used in some steps of allocation process

- Eq. scales vols of Plant Condensate allocated to gas & liquid streams leaving Little Willow Facility & entering Hwy 30 Plant
- Allocations of Natural Gas Plant Liquids not affected by error





Error = Mismatched Stream Analysis Reference of Components From Lab Analyses

Example Hydrocarbon Analysis

closeup next slide

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide............	0.0853	0.1450	0.0687
Nitrogen.....................	0.0281	0.0304	0.0146
Methane.....................	64.2964	39.8359	51.4398
Ethane.......................	14.4191	16.7445	18.1980
Propane......................	11.9911	20.4207	15.5901
iso-Butane..................	2.5568	5.7392	3.9483
n-Butane.....................	3.8382	8.6156	5.7104
iso-Pentane.................	0.9367	2.6100	1.6166
n-Pentane....................	0.9036	2.5178	1.5457
Cyclopentane...............	0.0519	0.1405	0.0725
n-Hexane.....................	0.2551	0.8490	0.4950
Cyclohexane................	0.0463	0.1505	0.0743
Other Hexanes	0.2743	0.9130	0.5324
Heptanes....................	0.0865	0.3347	0.1883
Methylcyclohexane........	0.0301	0.1141	0.0571
2,2,4-Trimethylpentane...	0.0951	0.4195	0.2332
Benzene.....................	0.0247	0.0745	0.0326
Toluene......................	0.0104	0.0370	0.0164
Ethylbenzene..............	0.0007	0.0029	0.0013
Xylenes......................	0.0062	0.0254	0.0113
C8+ Heavies...............	0.0634	0.2797	0.1533
Totals	100.0000	100.0000	100.0000

Error = Mismatched Stream Analysis Reference of Components From Lab Analyses

Incorrect Allocation: applied equiv. Liq. Vol. %

Components	Mole %	Weight %	Liq. Vol. %
Carbon Dioxide...........	0.0853	0.1450	0.0687
Nitrogen....................	0.0281	0.0304	0.0146
Methane.....................	64.2964	39.8359	51.4398

Correct Allocation: applied Mole %

GENERAL ALLOCATION METHOD

Individual well completions are allocated their shares of products (Plant Cond, Residue Gas, & NGPL) produced by Hwy 30 Plant by a **1-, 2-, or 3-step allocation method**

Methods differ in # of steps because of technical, operational, or financial constraints assoc. with location of each well in relation to production process

Each step uses component volumes derived from lab analyses that are used to scale the contribution of each well completion to total of each product

<u>One Step Allocation = DJS 1-15</u>

Hwy 30 Plant totals are allocated ***to*** DJS 1-15 in a one-step process

Fluid stream from DJS 1-15 undergo 3-phase gravity separation & metering at the well pad

The 2 liquid hydrocarbon streams **do not** go to Little Willow

But directly into the 2 separate pipelines that transport Well Condensate & Rich Gas from Little Willow to Hwy 30 Plant

Two Step Allocation: Kauffman **1-9 LT, Kauffman 1-9 UT, ML 1-10, ML 1-11 UT, ML 1-11 LT, ML 2-10 & ML 3-10**

Step 1: Hwy 30 Plant totals ***to*** Little Willow Facility totals

Step 2: Little Willow Facility totals (minus totals from the "multi wells" discussed next) ***to*** these individual well completions

<u>3 Step Allocation</u>. 3 wells with partial federal mineral ownership: ML 1-3, ML 2-3, & Kauffman 1-34

Step 1: Hwy 30 Plant totals ***to*** Little Willow Facility totals

Step 2: Little Willow totals ***to*** "multi well" totals. Each well fluid stream undergoes 3-phase grav. sep. & metering for each well at each well pad -- *not* at Little Willow Facility. Then, the 3 streams (water, HC liquids, & HC gases) from the 3 wells (9 total fluid streams) are combined into 1 gathering line, which runs to the Multi-Well (MW) 3-phase sep. located at Little Willow Facility. MW separator creates 3 fluid streams (water, HC liquids, & HC gases), each individually metered.

Step 3: The MW HC stream totals are allocated ***to*** individual well completions

Attachment 1 (“McFarland datasets”)

Allocation datasets produced for Alta Mesa by petroleum engineer S. McFarland. Received on Apr 1, 2019 by O & G Div

McFarland datasets contain:

<u>Monthly results & yearly summations of:</u>

- original (“old”) allocation method (2015-18)
- corrected (“new”) allocation method (2016-18)
- differences between the two methods (2016-18)

Attachment 2 (“IDL Review datasets”)

- Only the yearly summations of the McFarland datasets
- color-coding of datasets for ease of review,

Meter No.	Meter Name	Product Produc	Allocation Metho	2016 Total	2017 Total	2018 Total	row	2016-2018 Total by We
FE-111AC	ML 1-11 UT Condensate	Cond	New	12,804	8,807	7,033	1	28,645
FE-111AC	ML 1-11 UT Condensate	Cond	Old	11,979	6,114	4,645	2	22,738
FE-111AC	ML 1-11 UT Condensate	Cond	diff	825	2,693	(2,389)	3	1,130
FE-111AC	ML 1-11 UT Condensate	Gas	New	7,953	3,661	2,590	4	14,204
FE-111AC	ML 1-11 UT Condensate	Gas	Old	7,685	7,892	6,222	5	21,798
FE-111AC	ML 1-11 UT Condensate	Gas	diff	268	(4,230)	(3,632)	6	(7,594)
FE-111AG	ML 1-11 UT Gas	Cond	New	8,996	7,672	6,194	7	22,861
FE-111AG	ML 1-11 UT Gas	Cond	Old	8,742	10,695	9,569	8	29,006
FE-111AG	ML 1-11 UT Gas	Cond	diff	254	(3,024)	3,376	9	606
FE-111AG	ML 1-11 UT Gas	Gas	New	828,451	721,620	559,782	10	2,109,853
FE-111AG	ML 1-11 UT Gas	Gas	Old	826,762	716,022	554,359	11	2,097,143
FE-111AG	ML 1-11 UT Gas	Gas	diff	1,689	5,598	5,423	12	12,710

Attach. 2 ("IDL Review datasets")

additional summations by Plant Condensate & Residue Gas

new, old, difference, % difference

2016 - 2018 Totals by Well Completion							
Plant Condensate (BBL)				Residue Gas (MMBtu)			
New (1+7)	Old (2+8)	Difference (3+9)	% Difference	New (4+10)	Old (5+11)	Difference (6+12)	% Difference
51,506							
	51,744						
		1,735	3%				
				2,124,058			
					2,118,941		
						5,116	0%

Bottom of Attach. 2 shows 2016-18 grand totals of all wells for:

2016-2018 Totals All Wells of Plant Condensate (BBL)		
New	Old	Difference
313,357	313,357	0

2016-2018 Totals All Wells of Residue Gas (MMBtu)		
New	Old	Difference
11,304,665	11,304,667	(2)

Attach. 2 : new corrected allocation shows reasonable variances by well completion in % differences to old allocation results

Except for Kauffman 1-9 LT: -28 % difference in Plant Condensate

Plant Condensate (BBL)			
New (1+7)	Old (2+8)	Difference (3+9)	% Difference
8,330			
	6,335		
		(1,765)	-28%

At this point in our investigation, the variances in % differences, including Kauffman 1-9 LT, are <u>presumed to be related to the allocation error</u>

QUESTIONS?

THANK YOU

$$V_x = \sum_{m=1}^{M} \sum_{i=1}^{I} V_{x,m,i} = \sum_{i=1}^{I} V_{x,i} = \sum_{i=1}^{I} V_{x,i} \cdot \frac{V_i}{V_i} = \sum_{i=1}^{I} V_{x,i} \cdot \frac{\sum_{y=1}^{Y} V_{y,i}}{\sum_{x=1}^{X} V_{x,i}}$$

$$V_x = \sum_{i=1}^{I} \frac{V_{x,i}}{\sum_{x=1}^{X} V_{x,i}} \cdot \sum_{y=1}^{Y} V_{y,i}$$

The equivalent volume contributed by source x is equal to the contribution of component i from source x relative to the contributions of component i from all sources, multiplied by the receipts of component i by all sinks, summed over all stream components.