

**CAMECO RESOURCES
CROW BUTTE OPERATION**



**86 Crow Butte Road
P.O. Box 169
Crawford, Nebraska 69339-0169**

**(308) 665-2215
(308) 665-2341 – FAX**

March 14, 2016

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Marty Link, Water Quality Division Administrator
Nebraska Department of Environmental Quality
P.O. Box 98922
Lincoln, NE 68509-8922

Class III UIC Permit NE0122611
February 2016 Monthly Restoration Report

Dear Ms. Link:

Please find enclosed the February 2016 Monthly Restoration Reports for Mine Units 2, 3, 4, 5 and 6. The reverse osmosis (RO) units continue to inject permeate and reductant into Mine Units 4, 5, and 6 with groundwater sweep continuing in portions of the three mine units.

Mine Units 2 and 3 remain in stability monitoring.

If you have any questions regarding this submittal, please feel free to contact me at (308) 665-2215, ext. 114.

Sincerely,
Cameco Resources
Crow Butte Operation

Larry Teahon
SHEQ Manager

Enclosures: As Stated

cc: Ron Burrows - NRC
CBO - File
ec: CR - Casper
Nancy Harris - NDEQ Program Coordinator

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
FEBRUARY 2016
MINE UNIT 2

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment		X	
d. Wellfield Recirculation		X	
e. Other (explain):	X		The Mine Unit is in Stability Monitoring.

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

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3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

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4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

No samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
FEBRUARY 2016
MINE UNIT 3

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment		X	
d. Wellfield Recirculation		X	
e. Other (explain):	X		The Mine Unit is in Stability Monitoring.

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

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3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

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4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

No samples were collected during the month.

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
FEBRUARY 2016
MINE UNIT 4

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep	X		(if yes, complete part 3)
c. Groundwater Treatment	X		RO and Reductant CM2-2, I539P, I546P, and I547P.
d. Wellfield Recirculation		X	
e. Other (explain):			

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

P372, P392, I535P, I543P, I544P, I545P, P6023, P6024, and P6029.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

BL9, BL17, BL-19, BL-20, CM1-7, CM2-2, PM-3, P372, P392, I533P, I534P, I535P, I537, I538P, I539P, I540P, I541P, I542P, I543P, I544P, I545P, I546P, I547P, I550P, I552P, P6023, P6024 and P6029.

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
BL-17	2/9/2016		74.64	380.0	20.18	971.6	820.4	4704	7.35	3260	0.003	5.096	1.603
	2/23/2016		78.55	376.0	20.93	1019.0	918.6	4686	7.02	3255	0.001	5.555	1.664
BL-19	2/9/2016	360.0	5.74	92.0	1.29	240.8	116.5	1266	8.21	799	0.024	5.038	0.585
BL-20	2/9/2016	294.0	4.91	87.0	0.89	205.7	103.9	1087	8.05	653	0.049	1.050	0.043
BL-9	2/23/2016	494.0	29.96	240.0	7.36	512.8	392.5	2403	7.46	1521	0.451	1.815	0.058
CM1-7	2/9/2016	336.0	13.87	165.0	3.62	298.6	211.5	1638	7.99	1034	0.006	1.168	0.051
CM2-2	2/2/2016		45.10		11.17	527.7	407.3					2.830	0.287
	2/9/2016	559.0	45.34	287.0	11.01	503.9	383.7	2659	7.51	1710	0.005	2.656	0.275
	2/23/2016	566.0	46.14	264.0	11.23	519.3	441.9	2712	7.23	1748	0.003	2.840	0.317
	2/29/2016		45.62		10.90	507.3	422.0					2.756	0.252
I533P	2/9/2016	403.0	14.44	179.0	3.34	352.2	227.4	1852	8.20	1145	0.017	2.371	0.105
I534P	2/9/2016	285.0	9.71	100.0	1.18	200.7	99.0	1084	7.90	651	0.015	0.389	0.045
I535P	2/2/2016		29.10		7.85	497.3	398.5					2.570	0.097
	2/9/2016	504.0	29.62	250.0	8.06	513.3	408.5	2517	7.74	1610	0.004	2.635	0.097
	2/23/2016	501.0	29.73	242.0	8.08	504.6	439.2	2550	7.56	1629	0.001	2.676	0.106
	2/29/2016		30.01		7.86	491.0	424.2					2.597	0.056
I537P	2/9/2016	179.0	30.72	160.0	0.89	162.5	80.8	1041	8.17	627	0.007	0.085	-0.002
I538P	2/9/2016	258.0	6.69	90.0	1.28	192.0	105.5	1031	8.39	619	0.006	0.879	0.087
I539P	2/2/2016		19.38		5.27	398.5	277.1					2.261	0.179

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
	2/9/2016	456.0	19.74	162.0	5.37	391.7	256.6	1895	7.89	1170	0.022	2.199	0.179
	2/23/2016	455.0	20.36	170.0	5.44	378.3	284.6	1937	7.65	1195	0.019	2.180	0.174
	2/29/2016		21.09		5.52	377.5	268.4					2.037	0.170
I540P	2/9/2016	270.0	7.05	82.0	1.36	186.5	90.7	980	8.06	597	0.022	2.167	0.145
I541P	2/9/2016	407.0	15.89	112.0	3.62	271.9	151.4	1446	8.11	909	0.073	3.277	0.279
I542P	2/23/2016	1015.0	168.80	451.0	42.02	946.8	961.9	4626	6.96	3200	0.165	12.920	0.270
I543P	2/2/2016		99.39		26.73	881.1	791.4					12.640	0.197
	2/9/2016	1063.0	109.10	384.0	27.81	898.0	787.4	4458	7.21	2949	0.001	11.680	0.199
	2/23/2016	1035.0	102.70	371.0	27.06	876.3	822.6	4391	6.83	2916	-0.001	12.160	0.209
	2/29/2016		96.75		25.51	840.0	782.6					11.940	0.223
I544P	2/2/2016		94.03		24.02	702.7	635.0					9.413	0.392
	2/9/2016	873.0	96.10	362.0	24.52	746.7	658.4	3847	7.24	2589	0.003	9.495	0.406
	2/23/2016	877.0	107.40	356.0	27.59	791.9	744.7	3935	6.86	2628	0.001	10.220	0.422
	2/29/2016		102.90		25.39	744.3	699.2					9.587	0.412
I545P	2/2/2016		69.21		17.79	591.7	498.4					4.503	0.428
	2/9/2016	708.0	70.83	303.0	18.34	606.7	497.6	3174	7.27	2085	0.002	4.367	0.435
	2/23/2016	715.0	73.24	288.0	18.70	626.3	552.6	3252	7.01	2149	0.001	4.762	0.450
	2/29/2016		73.18		17.97	615.6	534.3					4.572	0.460
I546P	2/2/2016		106.90		26.55	861.0	761.6					3.639	0.078
	2/9/2016	897.0	108.40	484.0	27.03	882.2	764.6	4413	7.26	2927	0.071	3.553	0.072
	2/23/2016	915.0	74.45	483.0	26.49	891.7	828.8	4526	6.79	2983	0.028	3.709	0.084
	2/29/2016		109.00		26.62	858.0	824.5					3.630	0.096

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
I547P	2/2/2016		54.63		14.19	630.4	549.2					4.306	0.173
	2/9/2016	747.0	56.72	264.0	14.82	654.8	564.1	3336	7.19	2214	0.077	4.500	0.180
	2/23/2016	755.0	58.14	278.0	15.78	695.9	645.2	3420	6.89	2272	0.068	4.912	0.201
	2/29/2016		59.72		15.61	680.7	608.3					4.611	0.196
I550P	2/23/2016	349.0	18.82	121.0	3.89	331.1	237.3	1494	7.18	937	0.251	0.625	0.054
I552P	2/9/2016		17.02		1.34	162.9	76.9				0.006	0.277	0.256
P372	2/2/2016		33.52		8.05	478.2	364.3					13.280	0.154
	2/9/2016	537.0	33.99	245.0	8.29	499.7	371.8	2449	7.34	1550	0.051	12.600	0.148
	2/23/2016	544.0	33.84	243.0	8.41	499.1	405.2	2526	7.08	1613	0.041	12.430	0.153
	2/29/2016		33.65		8.13	491.5	407.0					12.210	0.153
P392	2/2/2016		86.76		20.28	702.2	623.0					5.325	0.316
	2/9/2016	851.0	87.54	325.0	21.32	727.1	632.1	3732	7.33	2500	0.003	5.169	0.304
	2/23/2016	851.0	93.63	317.0	22.89	768.1	707.7	3765	7.04	2328	0.000	5.726	0.337
	2/29/2016		91.77		21.73	732.1	669.8					5.722	0.334
P6023	2/2/2016		45.90		11.46	599.9	534.0					2.249	0.020
	2/9/2016	687.0	46.49	226.0	11.87	614.0	536.5	3029	7.09	1975	0.010	2.294	0.014
	2/23/2016	694.0	47.95	222.0	12.23	621.3	603.2	3129	6.71	2054	0.008	2.491	-0.021
	2/29/2016		49.32		12.27	620.1	580.7					2.409	-0.022
P6024	2/2/2016		74.68		17.80	711.1	628.6					1.747	0.041
	2/9/2016	802.0	76.40	295.0	18.03	705.1	613.6	3508	7.21	2326	0.049	1.649	0.031
	2/23/2016	808.0	75.17	294.0	18.04	694.6	661.8	3575	6.76	2377	0.032	1.734	-0.003
	2/29/2016		73.89		17.24	680.1	665.8					1.710	0.051

Mine Unit 4 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
P6029	2/2/2016		176.90		42.23	1215.0	1264.0					12.540	0.084
	2/9/2016		183.50	455.0	42.42	1127.0	1121.0	5730	7.14	3608	0.145	10.940	0.066
	2/23/2016		184.80	465.0	44.02	1161.0	1222.0	5792	6.52	3636	0.135	11.590	0.077
	2/29/2016		187.50		43.33	1150.0	1188.0					11.080	0.080
PM-3	2/9/2016	222.0	7.20	78.0	1.68	170.0	96.0	910	8.04	580	0.015	0.251	0.030

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
FEBRUARY 2016
MINE UNIT 5

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep	X		(if yes, complete part 3)
c. Groundwater Treatment	X		RO and Reductant I685P, I854P, and P859.
d. Wellfield Recirculation		X	
e. Other (explain):		X	

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:
BL5-4, BL5-5, CPW-1, I693P, P796, P837, and P1117.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

BL5-3, BL5-4, BL5-5, BL14, CM5-11, CPW-1, I685P, I693P, P679, P680, P796, P837, I854P, P859, P908, P1117, P1209, P1216, and P1885.

Mine Unit 5 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
BL-14	2/9/2016	200	1.98	24	0.33	118.2	62.8	616	8.56	399	0.006	0.087	-0.009
BL5-3	2/23/2016	351	26.19	166	6.15	385.4	313.8	1751	7.88	1094	0.033	0.057	0.018
BL5-4	2/2/2016		16.98		3.97	331.8	253.3					0.219	0.010
	2/9/2016	371	17.35	145	4.08	339.7	251.5	1700	7.95	1065	0.036	0.211	-0.001
BL5-5	2/2/2016		16.93		3.84	314.7	271.0					0.149	-0.004
	2/9/2016	295	17.04	157	3.89	320.2	267.0	1633	8.04	1032	0.018	0.154	0.019
CM5-11	2/9/2016	310	13.03	177	3.15	348.3	302.6	1909		1178	0.010	0.018	-0.013
CPW-1	2/2/2016		25.64		6.45	430.7	342.4					1.475	0.099
	2/9/2016	440	26.95	206	6.69	443.0	348.7	2176	7.91	1340	0.079	1.498	0.106
	2/23/2016	432	26.60	187	6.20	410.0	369.7	2120	7.63	1302	0.063	1.530	0.102
	2/29/2016		26.50		6.13	407.1	343.4					1.437	0.108
1685P	2/2/2016		25.63		6.72	518.6	442.7					3.793	0.365
	2/9/2016	512	25.12	245	6.88	534.2	446.5	2654	7.90	1708	0.004	3.508	0.394
	2/23/2016	485	22.59	220	6.01	485.2	463.2	2478	7.64	1580	0.004	3.320	0.367
	2/29/2016		22.73		5.89	481.2	427.0					3.031	0.388
1693P	2/23/2016	360	13.55	162	2.95	385.7	337.3	1866	7.92	1154	0.004	6.432	1.052
	2/29/2016		15.43		3.28	389.0	345.5					6.740	0.848
1854P	2/2/2016		15.13		3.71	374.6	311.2					0.933	0.015
	2/9/2016		16.07		3.92	387.0	308.9				0.009	0.909	0.002
P1117	2/2/2016		13.45		3.57	360.0	308.6					1.746	0.129
	2/9/2016	329	14.22	180	3.66	370.0	312.0	1891	7.93	1168	0.042	1.713	0.121
	2/23/2016	333	14.19	168	3.80	404.9	385.9	1887	7.61	1166	0.047	1.901	0.128
	2/29/2016		14.46		3.82	376.6	343.5					1.740	0.127
P1209	2/23/2016	377	21.84	209	5.33	443.0	355.8	2013	7.77	1240	0.040	5.399	0.251
P1216													

Mine Unit 5 Restoration Data

Well Name	Date	Alk	Ca	Cl	Mg	Na	SO4	Cond	pH	TDS	Fe	U	V
	2/9/2016	691	26.38	185	5.81	469.5	282.3	2426	7.86	1537	0.009	6.395	1.399
	2/23/2016	703	32.05	205	7.13	564.7	364.4	2520	7.57	1611	0.003	7.018	1.909
P1885													
	2/9/2016	236	5.62	61	0.66	172.1	103.1	899	8.06	566	0.122	0.723	0.050
P679													
	2/9/2016	226	5.18	60	0.75	158.1	88.5	838	8.18	535	0.199	0.677	0.215
P680													
	2/9/2016	309	4.42	67	0.92	210.1	115.9	1088	8.34	654	0.059	2.714	0.312
P796													
	2/2/2016		18.36		4.10	367.1	295.2					0.749	0.014
	2/9/2016	357	17.20	149	3.83	343.6	263.3	1740	7.83	1087	0.015	0.736	0.019
	2/23/2016	370	19.20	169	4.25	357.8	332.8	1865	7.63	1153	0.010	0.792	0.022
	2/29/2016		20.13		4.42	368.5	316.4					0.776	0.026
P837													
	2/2/2016		18.14		4.41	319.8	245.6					1.158	0.147
	2/9/2016	308	14.24	116	3.41	272.6	192.2	1384	7.97	869	0.067	0.965	0.136
	2/23/2016	362	19.30	148	4.66	340.6	292.0	1713	7.76	1074	0.021	1.290	0.202
	2/29/2016		19.10		4.56	333.3	267.9					1.147	0.184
P859													
	2/2/2016		13.09		3.38	337.1	269.0					1.701	0.424
	2/9/2016	331	13.18	167	3.43	347.1	268.9	1731	8.17	1083	0.018	1.658	0.421
P908													
	2/23/2016	310	16.43	193	3.56	381.6	342.3	1830	7.82	1134	0.013	2.037	0.071

CROW BUTTE MINE
MONTHLY RESTORATION REPORT
FEBRUARY 2016
MINE UNIT 6

1. RESTORATION ACTIVITY DURING MONTH:

	YES	NO	
a. Groundwater Transfer		X	(if yes, complete part 2)
b. Groundwater Sweep		X	(if yes, complete part 3)
c. Groundwater Treatment	X		RO and Reductant P1314, P1318, P1336, P1337, P1344, P1374, P1377, P1396, P1399, P1428, and P1439.
d. Wellfield Recirculation		X	
e. Other (explain):		X	

2. LIST WELLS USED IN GROUNDWATER TRANSFER DURING THE MONTH:

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3. LIST WELLS USED IN GROUNDWATER SWEEP DURING THE MONTH:

P1265, P1268, P1312, P1402, P1404, P1421, P1461, P1476, P1469, and P1568.

4. LIST WELLS SAMPLED DURING MONTH AND ASSAY RESULTS:

P1265, P1268, P1312, P1314, P1318, P1336, P1337, P1344, P1374, P1377, P1396, P1399, P1402, P1404, P1421, P1428, P1439, P1461, and P1469.

MU6 Restoration Data

Well Name	Date	Alk	Cl	Ca	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P1265	2/2/2016			43.52	11.44	589.9	496.7						0.407	0.080
	2/9/2016			47.05	12.56	619.0	515.3					0.03	0.377	0.085
	2/23/2016			50.50	13.22	652.5	594.4					0.02	0.400	0.115
	2/29/2016			50.76	13.11	646.6	550.3						0.413	0.093
P1268	2/2/2016			61.51	17.33	891.4	678.3						8.705	1.668
	2/9/2016			63.68	17.60	903.8	676.3					0.00	7.896	1.713
	2/23/2016			65.46	17.64	911.5	768.9					0.00	8.263	1.669
	2/29/2016			65.05	18.01	918.0	710.2						7.419	1.694
P1312	2/23/2016			67.47	18.05	1004.0	818.0					0.01	16.970	0.958
	2/29/2016			66.28	18.06	1003.0	760.5						16.210	0.941
P1314	2/2/2016			39.42	12.13	811.6	576.2						7.282	1.351
	2/9/2016			39.82	11.85	777.8	540.2					0.04	6.277	1.271
	2/23/2016			36.90	11.23	753.3	589.9					0.03	6.228	1.318
	2/29/2016			37.91	11.00	729.7	537.3						5.843	1.288
P1318	2/23/2016			33.03	10.35	786.5	570.1					0.01	3.562	1.473
	2/29/2016			31.14	9.28	727.6	499.7						3.438	1.554
P1336	2/2/2016			44.40	11.96	807.4	575.8						11.740	0.881
	2/23/2016			37.77	9.88	723.9	543.3					0.00	10.550	0.885
	2/29/2016			35.23	9.27	685.9	485.8						9.943	1.011
P1337	2/2/2016			23.62	6.98	605.9	400.6						5.481	1.031
	2/9/2016			21.60	6.37	573.7	366.8					0.00	5.066	1.114
	2/23/2016			19.19	5.73	548.6	368.9					0.01	4.926	1.146
	2/29/2016			14.34	4.43	516.2	341.8						4.890	1.247
P1344	2/2/2016			33.12	9.29	637.3	461.3						4.874	0.941
	2/9/2016			30.03	8.53	599.7	413.5					0.00	4.330	1.009
	2/23/2016			34.01	9.73	650.1	505.5					0.00	4.722	1.131
	2/29/2016			30.22	8.60	589.0	418.2						3.935	1.272

MU6 Restoration Data

Well Name	Date	Alk	Cl	Ca	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P1374	2/2/2016			36.29	10.66	811.8	576.4						12.420	1.158
	2/23/2016			35.86	10.55	821.2	591.3					0.00	10.960	1.170
	2/29/2016			32.30	9.56	757.3	537.0						10.130	1.134
P1377	2/2/2016			58.90	13.82	743.2	643.5						6.062	0.175
	2/9/2016			57.75	13.87	748.3	635.1					0.01	5.653	0.155
	2/23/2016			57.42	13.69	740.0	681.7					0.01	5.315	0.171
	2/29/2016			54.58	12.65	695.8	640.7						4.890	0.186
P1396	2/2/2016			19.70	4.89	417.3	373.7						0.197	0.068
	2/9/2016			18.88	4.61	401.1	348.3					0.03	0.190	0.047
	2/23/2016			19.94	4.88	408.9	389.5					0.03	0.235	0.066
	2/29/2016			18.96	4.63	395.0	357.8						0.209	0.076
P1399	2/2/2016			69.08	16.17	788.3	653.9						5.494	0.325
	2/9/2016			74.05	18.17	867.2	717.3					0.05	5.311	0.327
	2/23/2016			68.51	16.77	874.7	774.1					0.05	5.719	0.338
	2/29/2016			71.25	16.88	834.2	719.2						5.046	0.355
P1402	2/2/2016			84.15	19.98	1073.0	836.5						18.720	0.125
	2/9/2016			84.43	20.28	1109.0	843.9					0.19	17.720	0.111
	2/23/2016			76.97	19.61	1067.0	894.2					0.14	17.550	0.130
	2/29/2016			79.75	18.75	1031.0	818.3						16.580	0.131
P1404	2/2/2016			72.40	18.05	1013.0	787.2						9.746	0.122
	2/9/2016			67.93	18.76	1118.0	838.0					0.07	8.587	0.143
P1421	2/29/2016			21.80	5.05	433.7	339.3						3.525	0.662
P1428	2/2/2016			24.50	5.55	471.0	384.4						7.438	0.156
	2/9/2016			24.34	5.56	469.7	374.2					0.03	6.804	0.151
	2/23/2016			24.20	5.37	464.1	407.2					0.02	6.396	0.170
	2/29/2016			24.82	5.44	462.7	392.7						5.258	0.165
P1439														

MU6 Restoration Data

Well Name	Date	Alk	Cl	Ca	Mg	Na	SO4	Cond	pH	TDS	As	Fe	U	V
P1461	2/2/2016			52.68	15.15	1002.0	707.3						9.677	1.037
	2/9/2016			51.09	14.88	1013.0	693.0					0.00	9.506	1.095
	2/23/2016			52.02	14.88	1005.0	762.9					0.00	9.866	1.075
	2/29/2016			48.70	13.76	929.8	686.7						9.384	1.040
P1469	2/9/2016			25.96	6.72	528.8	458.4					0.01	4.049	0.807
	2/23/2016			27.52	7.32	556.8	533.4					0.01	4.110	0.818
	2/29/2016			27.03	6.79	517.3	495.1						3.800	0.740
P1469	2/23/2016			66.84	18.95	927.5	733.2					0.01	2.993	0.697
	2/29/2016			64.99	17.90	902.3	679.4						2.689	0.687