



Planta Fotovoltaica El Pelicano

Informe Partida y Detención

Rev. 2 – 14 de marzo de 2018

Contenido

1- Antecedentes técnicos	3
2- Antecedentes de Operación	3
3- Tabla #1 - Parámetros para los Procesos de Partida y Detención	4

1- Antecedentes técnicos

El Pelicano es una planta generadora de energía eléctrica en base a fuente fotovoltaica con una capacidad nominal de 100.3MWac, ubicada en sector La Higüera en la Región de Atacama. Dicha planta cuenta con 59 unidades conversoras con una capacidad nominal de salida de 1.7 MW y un voltaje nominal de salida de 385Vac. Cada unidad conversora cuenta con 2 inversores fotovoltaicos, de 850KW cada uno.

Debido a que las unidades generadoras utilizan tecnología de electrónica de potencia (IGBT) la planta foto voltaica es capaz de responder con rapidez a los comandos de partida y detención. A continuación, proveemos unos antecedentes relacionados a la capacidad de operación de la planta:

- 1- Inicio de proceso de partida y sincronización: El tiempo requerido para la sincronización de la Planta El Pelicano, está definido por el tiempo que requieren los equipos de comunicación digital en encender más el tiempo que requieren los inversores en muestrear la calidad del producto eléctrico (voltaje y frecuencia) para asegurar que se encuentran dentro de los márgenes definidos por la NTSyCS.
- 2- Tiempo mínimo de operación: Debido a que no existen procesos térmicos ni torques giratorios, las unidades generadoras de El Pelicano son capaces de responder de forma instantánea a los comandos de detención aun en medio del proceso de partida.

2-Antecedentes de Operación

SunPower realizó una prueba de campo en la cual se enviaron comandos de operación de detención, arranque y mínimo técnico, mientras se documentaba la respuesta de la planta y los tiempos asociados. La Tabla #1 resume todos los parámetros de Partida y Detención, según solicitados en el Anexo Técnico. Estos parámetros se muestran también en forma gráfica en las ilustraciones #1 y #2. El detalle de la totalidad los valores obtenidos durante la prueba se incluyen en el Anexo A de este reporte.

3- Tabla #1 - Parámetros para los Procesos de Partida y Detención

Proceso	Período	Unidad	Tipo de Combustible	Cantidad de combustible	Energía eléctrica consumida (kWh)	Tiempo requerido (Minutos: Segundos)	Tiempo Mínimo de operación
1. Partida en estado frío	Partida @ Sincronización	Pelicano PV – 100MW	Radiación solar	N/A	68.5	30:00	N/A
2. Partida en estado frío	Sincronización @ Mínimo Técnico	Pelicano PV – 100MW	Radiación solar	N/A	3.97	01: 46	N/A
3. Partida en estado frío	Mínimo Técnico @ Potencia Nominal	Pelicano PV – 100MW	Radiación solar	N/A	13.43	05:53	N/A
4. Detención	Potencia Nominal @ Desconexión	Pelicano PV – 100MW	Radiación solar	N/A	10.11	04:26	N/A
4a. Detención	Potencia Nominal @ Minimo Tecnico	Pelicano PV – 100MW	Radiación solar	N/A	9.45	04:09	N/A
4b. Detención	Minimo Tecnico @ Desconexión	Pelicano PV – 100MW	Radiación solar	N/A	0.64	00:17	N/A
5. Detención	Desconexión @ fin de proceso de detención	Pelicano PV – 100MW	Radiación solar	N/A	N/A	N/A	N/A

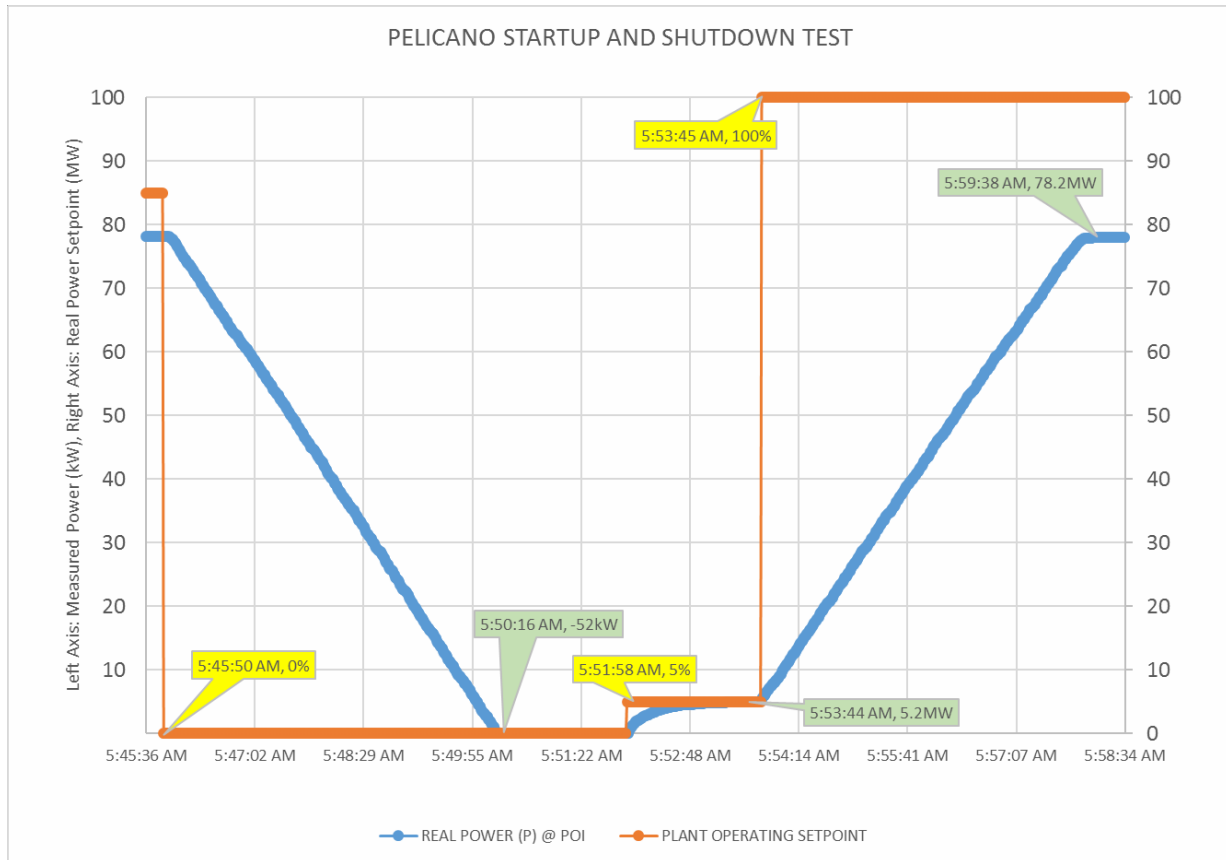


Ilustración 1 – Grafica de Resultados Prueba de Partida y Detención

La Ilustración 1, muestra en color naranja los cambios en consigna del controlador de la planta y en color azul los cambios en potencia real medida en el punto de interconexión. Utilizando estos datos es que se han determinados los distintos tiempos, según el Anexo Técnico, de Partida y Detención de la planta. Los recuadros color amarillo resumen el punto inicial del cambio en consigna y los recuadros color verde resumen el punto inicial en el que la salida de potencia de la planta alcanza el valor de la consigna. Estos mismos datos se presentan en forma tabular en la Ilustración #2.

CAMBIO EN CONSIGNA

Timestamp	REAL POWER (P) @ POI	PLANT OPERATING SETPOINT
5:45:48 AM	78175.49219	85
5:45:49 AM	78178.8125	85
5:45:50 AM	78182.125	0
5:45:51 AM	78185.44531	0
5:45:52 AM	78169.8125	0

CAMBIO EN ESTADO DE LA PLANTA

Timestamp	REAL POWER (P) @ POI	PLANT OPERATING SETPOINT
5:50:14 AM	362.3320923	0
5:50:15 AM	37.58457947	0
5:50:16 AM	-52.31084442	0
5:50:17 AM	-142.2062683	0
5:50:18 AM	-141.7933655	0

Timestamp	REAL POWER (P) @ POI	PLANT OPERATING SETPOINT
5:51:56 AM	-136.3560944	0
5:51:57 AM	-136.342865	0
5:51:58 AM	-27.1591568	5
5:51:59 AM	82.02455139	5
5:52:00 AM	487.5278625	5

Timestamp	REAL POWER (P) @ POI	PLANT OPERATING SETPOINT
5:53:42 AM	4973.786133	5
5:53:43 AM	4968.793457	5
5:53:44 AM	5178.455566	5

Timestamp	REAL POWER (P) @ POI	PLANT OPERATING SETPOINT
5:53:42 AM	4973.786133	5
5:53:43 AM	4968.793457	5
5:53:44 AM	5178.455566	5
5:53:45 AM	5388.117676	100
5:53:46 AM	5717.306641	100
5:53:47 AM	6046.495117	100

Timestamp	REAL POWER (P) @ POI	PLANT OPERATING SETPOINT
5:59:36 AM	78192.35156	100
5:59:37 AM	78196.38281	100
5:59:38 AM	78200.41406	100
5:59:39 AM	78197.4375	100
5:59:40 AM	78194.46094	100

Ilustración 2 - Resumen de Resultados Tabulados

1- Apendice A – Datos de Prueba en Campo

Horario	Potencia Real @ POI	Consigna %
5:45:02 AM	78080.92188	85
5:45:03 AM	78091.80469	85
5:45:04 AM	78088.0625	85
5:45:05 AM	78084.32031	85
5:45:06 AM	78095.375	85
5:45:07 AM	78106.42969	85
5:45:08 AM	78102.44531	85
5:45:09 AM	78098.46094	85
5:45:10 AM	78092.19531	85
5:45:11 AM	78085.92969	85
5:45:12 AM	78099.09375	85
5:45:13 AM	78112.25	85
5:45:14 AM	78119.32031	85
5:45:15 AM	78126.39063	85
5:45:16 AM	78113.89063	85
5:45:17 AM	78101.39844	85
5:45:18 AM	78112.76563	85
5:45:19 AM	78124.125	85
5:45:20 AM	78125.51563	85
5:45:21 AM	78126.90625	85
5:45:22 AM	78118.92188	85
5:45:23 AM	78110.94531	85
5:45:24 AM	78120.75	85
5:45:25 AM	78130.55469	85
5:45:26 AM	78133.375	85
5:45:27 AM	78136.20313	85
5:45:28 AM	78139.02344	85
5:45:29 AM	78134.39844	85
5:45:30 AM	78129.77344	85
5:45:31 AM	78139.39844	85
5:45:32 AM	78149.02344	85
5:45:33 AM	78140.875	85
5:45:34 AM	78132.71875	85
5:45:35 AM	78140.70313	85
5:45:36 AM	78148.6875	85

5:45:37 AM	78156.66406	85
5:45:38 AM	78164.64844	85
5:45:39 AM	78161.36719	85
5:45:40 AM	78158.08594	85
5:45:41 AM	78161.51563	85
5:45:42 AM	78164.94531	85
5:45:43 AM	78171.53906	85
5:45:44 AM	78178.13281	85
5:45:45 AM	78173.5	85
5:45:46 AM	78168.85938	85
5:45:47 AM	78172.17969	85
5:45:48 AM	78175.49219	85
5:45:49 AM	78178.8125	85
5:45:50 AM	78182.125	0
5:45:51 AM	78185.44531	0
5:45:52 AM	78169.8125	0
5:45:53 AM	78154.17969	0
5:45:54 AM	78090.34375	0
5:45:55 AM	78026.50781	0
5:45:56 AM	77876.67188	0
5:45:57 AM	77726.82813	0
5:45:58 AM	77443.90625	0
5:45:59 AM	77160.97656	0
5:46:00 AM	76856.09375	0
5:46:01 AM	76551.21094	0
5:46:02 AM	76186.76563	0
5:46:03 AM	75822.32813	0
5:46:04 AM	75487.20313	0
5:46:05 AM	75152.08594	0
5:46:06 AM	74813.38281	0
5:46:07 AM	74474.67969	0
5:46:08 AM	74216.42188	0
5:46:09 AM	73958.17188	0
5:46:10 AM	73742.5	0
5:46:11 AM	73526.82813	0
5:46:12 AM	73311.15625	0
5:46:13 AM	72985.23438	0

5:46:14 AM	72659.30469	0
5:46:15 AM	72372.39063	0
5:46:16 AM	72085.46875	0
5:46:17 AM	71796.72656	0
5:46:18 AM	71507.98438	0
5:46:19 AM	71167.1875	0
5:46:20 AM	70826.38281	0
5:46:21 AM	70523.99219	0
5:46:22 AM	70221.60156	0
5:46:23 AM	69932	0
5:46:24 AM	69642.39063	0
5:46:25 AM	69372.64063	0
5:46:26 AM	69102.89063	0
5:46:27 AM	68742.07813	0
5:46:28 AM	68381.27344	0
5:46:29 AM	68051.57031	0
5:46:30 AM	67721.86719	0
5:46:31 AM	67498.35938	0
5:46:32 AM	67274.85938	0
5:46:33 AM	66935.73438	0
5:46:34 AM	66596.60938	0
5:46:35 AM	66266.60938	0
5:46:36 AM	65936.60156	0
5:46:37 AM	65660.85938	0
5:46:38 AM	65385.12109	0
5:46:39 AM	65118.82422	0
5:46:40 AM	64852.52734	0
5:46:41 AM	64445.74219	0
5:46:42 AM	64038.95313	0
5:46:43 AM	63777.32813	0
5:46:44 AM	63515.69922	0
5:46:45 AM	63259.625	0
5:46:46 AM	63003.55469	0
5:46:47 AM	62803.00781	0
5:46:48 AM	62602.46094	0
5:46:49 AM	62401.91406	0
5:46:50 AM	62026.78125	0

5:46:51 AM	61651.64844	0
5:46:52 AM	61388.77344	0
5:46:53 AM	61125.90234	0
5:46:54 AM	60886.46094	0
5:46:55 AM	60647.02344	0
5:46:56 AM	60402.4375	0
5:46:57 AM	60157.84766	0
5:46:58 AM	59913.26172	0
5:46:59 AM	59621.31641	0
5:47:00 AM	59329.37109	0
5:47:01 AM	59053.65625	0
5:47:02 AM	58777.94531	0
5:47:03 AM	58473.76953	0
5:47:04 AM	58169.59375	0
5:47:05 AM	57869.09375	0
5:47:06 AM	57568.59766	0
5:47:07 AM	57204.74219	0
5:47:08 AM	56840.88672	0
5:47:09 AM	56592.62891	0
5:47:10 AM	56344.37109	0
5:47:11 AM	55990.39844	0
5:47:12 AM	55636.42969	0
5:47:13 AM	55344.42969	0
5:47:14 AM	55052.42969	0
5:47:15 AM	54766.85938	0
5:47:16 AM	54481.28906	0
5:47:17 AM	54157.23438	0
5:47:18 AM	53833.17969	0
5:47:19 AM	53610.50391	0
5:47:20 AM	53387.82422	0
5:47:21 AM	53165.14844	0
5:47:22 AM	52814.36719	0
5:47:23 AM	52463.58984	0
5:47:24 AM	52202.92188	0
5:47:25 AM	51942.25781	0
5:47:26 AM	51677.94531	0
5:47:27 AM	51413.63672	0

5:47:28 AM	51019.70313	0
5:47:29 AM	50625.76563	0
5:47:30 AM	50310.19531	0
5:47:31 AM	49994.62891	0
5:47:32 AM	49712.875	0
5:47:33 AM	49431.11719	0
5:47:34 AM	49153.62109	0
5:47:35 AM	48876.125	0
5:47:36 AM	48508.91406	0
5:47:37 AM	48141.70313	0
5:47:38 AM	47845.04688	0
5:47:39 AM	47548.39063	0
5:47:40 AM	47236.92969	0
5:47:41 AM	46925.46484	0
5:47:42 AM	46620.95313	0
5:47:43 AM	46316.44141	0
5:47:44 AM	45993.25781	0
5:47:45 AM	45670.07422	0
5:47:46 AM	45336.77344	0
5:47:47 AM	45003.46875	0
5:47:48 AM	44852.15625	0
5:47:49 AM	44700.84766	0
5:47:50 AM	44549.53516	0
5:47:51 AM	44149.51172	0
5:47:52 AM	43749.48828	0
5:47:53 AM	43444.75781	0
5:47:54 AM	43140.02344	0
5:47:55 AM	42874.1875	0
5:47:56 AM	42608.35156	0
5:47:57 AM	42240.01563	0
5:47:58 AM	41871.68359	0
5:47:59 AM	41480.19141	0
5:48:00 AM	41088.69922	0
5:48:01 AM	40791.8125	0
5:48:02 AM	40494.92188	0
5:48:03 AM	40251.22656	0
5:48:04 AM	40007.53516	0

5:48:05 AM	39693.89453	0
5:48:06 AM	39380.25391	0
5:48:07 AM	39008.60938	0
5:48:08 AM	38636.96094	0
5:48:09 AM	38351.91797	0
5:48:10 AM	38066.875	0
5:48:11 AM	37781.82813	0
5:48:12 AM	37496.78516	0
5:48:13 AM	37151.84766	0
5:48:14 AM	36806.91016	0
5:48:15 AM	36521.57031	0
5:48:16 AM	36236.23438	0
5:48:17 AM	35930.97656	0
5:48:18 AM	35625.72266	0
5:48:19 AM	35433.37109	0
5:48:20 AM	35241.01953	0
5:48:21 AM	35048.66797	0
5:48:22 AM	34637.42188	0
5:48:23 AM	34226.17578	0
5:48:24 AM	33904.00391	0
5:48:25 AM	33581.83203	0
5:48:26 AM	33303.25781	0
5:48:27 AM	33024.67969	0
5:48:28 AM	32733.375	0
5:48:29 AM	32442.06836	0
5:48:30 AM	32063.16602	0
5:48:31 AM	31684.26367	0
5:48:32 AM	31358.35938	0
5:48:33 AM	31032.45313	0
5:48:34 AM	30802.4043	0
5:48:35 AM	30572.35547	0
5:48:36 AM	30202.02344	0
5:48:37 AM	29831.69336	0
5:48:38 AM	29479.10547	0
5:48:39 AM	29126.51953	0
5:48:40 AM	28923.7832	0
5:48:41 AM	28721.04688	0

5:48:42 AM	28518.31055	0
5:48:43 AM	28237.30273	0
5:48:44 AM	27956.29492	0
5:48:45 AM	27553.43945	0
5:48:46 AM	27150.58398	0
5:48:47 AM	26826.55078	0
5:48:48 AM	26502.51758	0
5:48:49 AM	26193.85547	0
5:48:50 AM	25885.19336	0
5:48:51 AM	25693.33984	0
5:48:52 AM	25501.48438	0
5:48:53 AM	25023.59766	0
5:48:54 AM	24545.71289	0
5:48:55 AM	24323.10547	0
5:48:56 AM	24100.49609	0
5:48:57 AM	23754.5	0
5:48:58 AM	23408.50586	0
5:48:59 AM	22992.01172	0
5:49:00 AM	22575.51758	0
5:49:01 AM	22433.49219	0
5:49:02 AM	22291.4668	0
5:49:03 AM	22149.44141	0
5:49:04 AM	21761.30664	0
5:49:05 AM	21373.17188	0
5:49:06 AM	20998.26758	0
5:49:07 AM	20623.36328	0
5:49:08 AM	20354.54297	0
5:49:09 AM	20085.7207	0
5:49:10 AM	19743.85156	0
5:49:11 AM	19401.98047	0
5:49:12 AM	19082.57422	0
5:49:13 AM	18763.16992	0
5:49:14 AM	18450.08789	0
5:49:15 AM	18137.00586	0
5:49:16 AM	17860.9707	0
5:49:17 AM	17584.93555	0
5:49:18 AM	17197.40234	0

5:49:19 AM	16809.86719	0
5:49:20 AM	16540.90234	0
5:49:21 AM	16271.93652	0
5:49:22 AM	16082.95508	0
5:49:23 AM	15893.97266	0
5:49:24 AM	15704.99121	0
5:49:25 AM	15331.41602	0
5:49:26 AM	14957.8418	0
5:49:27 AM	14595.91797	0
5:49:28 AM	14233.99316	0
5:49:29 AM	13926.48438	0
5:49:30 AM	13618.97461	0
5:49:31 AM	13303.38379	0
5:49:32 AM	12987.79297	0
5:49:33 AM	12683.53516	0
5:49:34 AM	12379.27734	0
5:49:35 AM	12035.81445	0
5:49:36 AM	11692.35254	0
5:49:37 AM	11405.19141	0
5:49:38 AM	11118.0293	0
5:49:39 AM	10835.28125	0
5:49:40 AM	10552.5332	0
5:49:41 AM	10135.50586	0
5:49:42 AM	9718.477539	0
5:49:43 AM	9429.791992	0
5:49:44 AM	9141.106445	0
5:49:45 AM	8948.652344	0
5:49:46 AM	8756.197266	0
5:49:47 AM	8563.743164	0
5:49:48 AM	8247.5	0
5:49:49 AM	7931.255859	0
5:49:50 AM	7685.078613	0
5:49:51 AM	7438.901855	0
5:49:52 AM	7192.724609	0
5:49:53 AM	6821.493164	0
5:49:54 AM	6450.26123	0
5:49:55 AM	6143.895508	0

5:49:56 AM	5837.529297	0
5:49:57 AM	5555.570801	0
5:49:58 AM	5273.612305	0
5:49:59 AM	4914.266113	0
5:50:00 AM	4554.919922	0
5:50:01 AM	4200.801758	0
5:50:02 AM	3846.684082	0
5:50:03 AM	3539.856445	0
5:50:04 AM	3233.029053	0
5:50:05 AM	3031.197266	0
5:50:06 AM	2829.365234	0
5:50:07 AM	2627.533447	0
5:50:08 AM	2243.20459	0
5:50:09 AM	1858.875977	0
5:50:10 AM	1577.9104	0
5:50:11 AM	1296.944946	0
5:50:12 AM	992.0122681	0
5:50:13 AM	687.0795898	0
5:50:14 AM	362.3320923	0
5:50:15 AM	37.58457947	0
5:50:16 AM	-52.31084442	0
5:50:17 AM	-142.2062683	0
5:50:18 AM	-141.7933655	0
5:50:19 AM	-141.3804474	0
5:50:20 AM	-140.9675293	0
5:50:21 AM	-140.5546265	0
5:50:22 AM	-140.1417236	0
5:50:23 AM	-139.7288055	0
5:50:24 AM	-139.6224518	0
5:50:25 AM	-139.516098	0
5:50:26 AM	-139.4097443	0
5:50:27 AM	-139.3033905	0
5:50:28 AM	-139.1970367	0
5:50:29 AM	-139.0906677	0
5:50:30 AM	-138.984314	0
5:50:31 AM	-138.8779602	0
5:50:32 AM	-138.7716064	0

5:50:33 AM	-138.6652527	0
5:50:34 AM	-138.5588989	0
5:50:35 AM	-138.4525452	0
5:50:36 AM	-138.3461914	0
5:50:37 AM	-138.2398376	0
5:50:38 AM	-138.1334839	0
5:50:39 AM	-138.0271301	0
5:50:40 AM	-137.9207764	0
5:50:41 AM	-137.8144073	0
5:50:42 AM	-137.7080536	0
5:50:43 AM	-137.6016998	0
5:50:44 AM	-137.4953461	0
5:50:45 AM	-137.3889923	0
5:50:46 AM	-137.2826385	0
5:50:47 AM	-137.2694092	0
5:50:48 AM	-137.2561646	0
5:50:49 AM	-137.2429352	0
5:50:50 AM	-137.2296906	0
5:50:51 AM	-137.2164612	0
5:50:52 AM	-137.2032166	0
5:50:53 AM	-137.1899872	0
5:50:54 AM	-137.1767426	0
5:50:55 AM	-137.1635132	0
5:50:56 AM	-137.1502686	0
5:50:57 AM	-137.1370392	0
5:50:58 AM	-137.1238098	0
5:50:59 AM	-137.1105652	0
5:51:00 AM	-137.0973358	0
5:51:01 AM	-137.0840912	0
5:51:02 AM	-137.0708618	0
5:51:03 AM	-137.0576172	0
5:51:04 AM	-137.0443878	0
5:51:05 AM	-137.0311432	0
5:51:06 AM	-137.0179138	0
5:51:07 AM	-137.0046844	0
5:51:08 AM	-136.9914398	0
5:51:09 AM	-136.9782104	0

5:51:10 AM	-136.9649658	0
5:51:11 AM	-136.9517365	0
5:51:12 AM	-136.9384918	0
5:51:13 AM	-136.9252625	0
5:51:14 AM	-136.9120178	0
5:51:15 AM	-136.8987885	0
5:51:16 AM	-136.8855438	0
5:51:17 AM	-136.8723145	0
5:51:18 AM	-136.8590851	0
5:51:19 AM	-136.8458405	0
5:51:20 AM	-136.8326111	0
5:51:21 AM	-136.8193665	0
5:51:22 AM	-136.8061371	0
5:51:23 AM	-136.7928925	0
5:51:24 AM	-136.7796631	0
5:51:25 AM	-136.7664185	0
5:51:26 AM	-136.7531891	0
5:51:27 AM	-136.7399597	0
5:51:28 AM	-136.7267151	0
5:51:29 AM	-136.7134857	0
5:51:30 AM	-136.7002411	0
5:51:31 AM	-136.6870117	0
5:51:32 AM	-136.6737671	0
5:51:33 AM	-136.6605377	0
5:51:34 AM	-136.6472931	0
5:51:35 AM	-136.6340637	0
5:51:36 AM	-136.6208191	0
5:51:37 AM	-136.6075897	0
5:51:38 AM	-136.5943604	0
5:51:39 AM	-136.5811157	0
5:51:40 AM	-136.5678864	0
5:51:41 AM	-136.5546417	0
5:51:42 AM	-136.5414124	0
5:51:43 AM	-136.5281677	0
5:51:44 AM	-136.5149384	0
5:51:45 AM	-136.5016937	0
5:51:46 AM	-136.4884644	0

5:51:47 AM	-136.475235	0
5:51:48 AM	-136.4619904	0
5:51:49 AM	-136.448761	0
5:51:50 AM	-136.4355164	0
5:51:51 AM	-136.422287	0
5:51:52 AM	-136.4090424	0
5:51:53 AM	-136.395813	0
5:51:54 AM	-136.3825684	0
5:51:55 AM	-136.369339	0
5:51:56 AM	-136.3560944	0
5:51:57 AM	-136.342865	0
5:51:58 AM	-27.1591568	5
5:51:59 AM	82.02455139	5
5:52:00 AM	487.5278625	5
5:52:01 AM	893.031189	5
5:52:02 AM	1137.837646	5
5:52:03 AM	1382.644165	5
5:52:04 AM	1644.948853	5
5:52:05 AM	1907.25354	5
5:52:06 AM	2001.312012	5
5:52:07 AM	2095.370361	5
5:52:08 AM	2246.485596	5
5:52:09 AM	2397.60083	5
5:52:10 AM	2544.197266	5
5:52:11 AM	2690.793701	5
5:52:12 AM	2773.221191	5
5:52:13 AM	2855.648926	5
5:52:14 AM	2922.7146	5
5:52:15 AM	2989.780029	5
5:52:16 AM	3056.845703	5
5:52:17 AM	3171.855225	5
5:52:18 AM	3286.864746	5
5:52:19 AM	3359.041992	5
5:52:20 AM	3431.218994	5
5:52:21 AM	3520.697021	5
5:52:22 AM	3610.175049	5
5:52:23 AM	3643.159668	5

5:52:24 AM	3676.144287	5
5:52:25 AM	3750.844238	5
5:52:26 AM	3825.544189	5
5:52:27 AM	3881.353271	5
5:52:28 AM	3937.162354	5
5:52:29 AM	3980.410156	5
5:52:30 AM	4023.657959	5
5:52:31 AM	4093.461426	5
5:52:32 AM	4163.264648	5
5:52:33 AM	4207.445801	5
5:52:34 AM	4251.626953	5
5:52:35 AM	4275.679688	5
5:52:36 AM	4299.731934	5
5:52:37 AM	4354.418457	5
5:52:38 AM	4409.10498	5
5:52:39 AM	4427.25293	5
5:52:40 AM	4445.401367	5
5:52:41 AM	4464.910156	5
5:52:42 AM	4484.419434	5
5:52:43 AM	4486.24707	5
5:52:44 AM	4488.074707	5
5:52:45 AM	4491.460938	5
5:52:46 AM	4494.847656	5
5:52:47 AM	4498.233887	5
5:52:48 AM	4534.213379	5
5:52:49 AM	4570.192871	5
5:52:50 AM	4591.089844	5
5:52:51 AM	4611.987305	5
5:52:52 AM	4640.736328	5
5:52:53 AM	4669.485352	5
5:52:54 AM	4667.991211	5
5:52:55 AM	4666.49707	5
5:52:56 AM	4671.277344	5
5:52:57 AM	4676.057617	5
5:52:58 AM	4713.08252	5
5:52:59 AM	4750.107422	5
5:53:00 AM	4758.533691	5

5:53:01 AM	4766.959961	5
5:53:02 AM	4784.875977	5
5:53:03 AM	4802.791504	5
5:53:04 AM	4813.02832	5
5:53:05 AM	4823.265137	5
5:53:06 AM	4822.162109	5
5:53:07 AM	4821.058594	5
5:53:08 AM	4830.513672	5
5:53:09 AM	4839.968262	5
5:53:10 AM	4849.42334	5
5:53:11 AM	4850.651855	5
5:53:12 AM	4851.880371	5
5:53:13 AM	4862.15918	5
5:53:14 AM	4872.437988	5
5:53:15 AM	4875.251953	5
5:53:16 AM	4878.06543	5
5:53:17 AM	4912.237305	5
5:53:18 AM	4946.408691	5
5:53:19 AM	4937.933105	5
5:53:20 AM	4929.45752	5
5:53:21 AM	4922.517578	5
5:53:22 AM	4915.577148	5
5:53:23 AM	4939.716309	5
5:53:24 AM	4963.855469	5
5:53:25 AM	4956.859375	5
5:53:26 AM	4949.863281	5
5:53:27 AM	4960.773438	5
5:53:28 AM	4971.684082	5
5:53:29 AM	4965.038574	5
5:53:30 AM	4958.393066	5
5:53:31 AM	4966.388672	5
5:53:32 AM	4974.383789	5
5:53:33 AM	4982.379395	5
5:53:34 AM	4960.470703	5
5:53:35 AM	4938.562012	5
5:53:36 AM	4962.262695	5
5:53:37 AM	4985.963379	5

5:53:38 AM	4967.745117	5
5:53:39 AM	4949.526855	5
5:53:40 AM	4964.15332	5
5:53:41 AM	4978.779297	5
5:53:42 AM	4973.786133	5
5:53:43 AM	4968.793457	5
5:53:44 AM	5178.455566	5
5:53:45 AM	5388.117676	100
5:53:46 AM	5717.306641	100
5:53:47 AM	6046.495117	100
5:53:48 AM	6318.571289	100
5:53:49 AM	6590.647461	100
5:53:50 AM	6859.132813	100
5:53:51 AM	7127.618164	100
5:53:52 AM	7374.749512	100
5:53:53 AM	7621.880859	100
5:53:54 AM	7869.012207	100
5:53:55 AM	8077.116699	100
5:53:56 AM	8285.22168	100
5:53:57 AM	8493.326172	100
5:53:58 AM	8748.382813	100
5:53:59 AM	9003.438477	100
5:54:00 AM	9340.197266	100
5:54:01 AM	9676.955078	100
5:54:02 AM	10045.96387	100
5:54:03 AM	10414.97266	100
5:54:04 AM	10624.70801	100
5:54:05 AM	10834.44336	100
5:54:06 AM	11171.58789	100
5:54:07 AM	11508.7334	100
5:54:08 AM	11824.13574	100
5:54:09 AM	12139.53809	100
5:54:10 AM	12428.07422	100
5:54:11 AM	12716.61133	100
5:54:12 AM	12995.03906	100
5:54:13 AM	13273.46582	100
5:54:14 AM	13625.50684	100

5:54:15 AM	13977.54785	100
5:54:16 AM	14250.5957	100
5:54:17 AM	14523.64355	100
5:54:18 AM	14791.18066	100
5:54:19 AM	15058.71777	100
5:54:20 AM	15345.5752	100
5:54:21 AM	15632.43262	100
5:54:22 AM	15919.29004	100
5:54:23 AM	16197.89844	100
5:54:24 AM	16476.50586	100
5:54:25 AM	16775.75	100
5:54:26 AM	17074.99414	100
5:54:27 AM	17373.2168	100
5:54:28 AM	17671.43945	100
5:54:29 AM	18005.98633	100
5:54:30 AM	18340.5332	100
5:54:31 AM	18667.01563	100
5:54:32 AM	18993.5	100
5:54:33 AM	19271.78125	100
5:54:34 AM	19550.06445	100
5:54:35 AM	19882.19531	100
5:54:36 AM	20214.32422	100
5:54:37 AM	20413.15039	100
5:54:38 AM	20611.97852	100
5:54:39 AM	20810.80469	100
5:54:40 AM	21100.34766	100
5:54:41 AM	21389.89258	100
5:54:42 AM	21703.38672	100
5:54:43 AM	22016.88086	100
5:54:44 AM	22307.08984	100
5:54:45 AM	22597.30078	100
5:54:46 AM	22951.98047	100
5:54:47 AM	23306.66016	100
5:54:48 AM	23558.85938	100
5:54:49 AM	23811.05664	100
5:54:50 AM	24142.88477	100
5:54:51 AM	24474.71289	100

5:54:52 AM	24718.16211	100
5:54:53 AM	24961.61133	100
5:54:54 AM	25274.5625	100
5:54:55 AM	25587.51172	100
5:54:56 AM	25926.88477	100
5:54:57 AM	26266.25781	100
5:54:58 AM	26544.45117	100
5:54:59 AM	26822.64453	100
5:55:00 AM	27132.97266	100
5:55:01 AM	27443.29883	100
5:55:02 AM	27789.375	100
5:55:03 AM	28135.45117	100
5:55:04 AM	28436.41211	100
5:55:05 AM	28737.37305	100
5:55:06 AM	28927.18555	100
5:55:07 AM	29116.99805	100
5:55:08 AM	29306.81055	100
5:55:09 AM	29594.64258	100
5:55:10 AM	29882.47461	100
5:55:11 AM	30234.01172	100
5:55:12 AM	30585.55078	100
5:55:13 AM	30832.70313	100
5:55:14 AM	31079.85547	100
5:55:15 AM	31411.73438	100
5:55:16 AM	31743.61328	100
5:55:17 AM	32085.45703	100
5:55:18 AM	32427.29883	100
5:55:19 AM	32739.08984	100
5:55:20 AM	33050.88281	100
5:55:21 AM	33300.47656	100
5:55:22 AM	33550.07422	100
5:55:23 AM	33916.54688	100
5:55:24 AM	34283.01563	100
5:55:25 AM	34473.63672	100
5:55:26 AM	34664.26172	100
5:55:27 AM	34854.88281	100
5:55:28 AM	35119.52344	100

5:55:29 AM	35384.16406	100
5:55:30 AM	35691.87891	100
5:55:31 AM	35999.59375	100
5:55:32 AM	36365.45313	100
5:55:33 AM	36731.3125	100
5:55:34 AM	37015.80859	100
5:55:35 AM	37300.30469	100
5:55:36 AM	37610.89844	100
5:55:37 AM	37921.49219	100
5:55:38 AM	38242.25	100
5:55:39 AM	38563.01172	100
5:55:40 AM	38833.21094	100
5:55:41 AM	39103.41406	100
5:55:42 AM	39379.14844	100
5:55:43 AM	39654.87891	100
5:55:44 AM	39873.06641	100
5:55:45 AM	40091.25781	100
5:55:46 AM	40309.44531	100
5:55:47 AM	40634.08594	100
5:55:48 AM	40958.72266	100
5:55:49 AM	41216.66016	100
5:55:50 AM	41474.59766	100
5:55:51 AM	41765.00391	100
5:55:52 AM	42055.41016	100
5:55:53 AM	42419.5	100
5:55:54 AM	42783.58984	100
5:55:55 AM	43050.14063	100
5:55:56 AM	43316.69141	100
5:55:57 AM	43572.02734	100
5:55:58 AM	43827.36328	100
5:55:59 AM	44206.10156	100
5:56:00 AM	44584.83984	100
5:56:01 AM	44916.67188	100
5:56:02 AM	45248.5	100
5:56:03 AM	45512.13281	100
5:56:04 AM	45775.76953	100
5:56:05 AM	46082.96094	100

5:56:06 AM	46390.15625	100
5:56:07 AM	46614.66016	100
5:56:08 AM	46839.16016	100
5:56:09 AM	47063.66406	100
5:56:10 AM	47325.13672	100
5:56:11 AM	47586.60938	100
5:56:12 AM	47892.59766	100
5:56:13 AM	48198.58594	100
5:56:14 AM	48548.89063	100
5:56:15 AM	48899.19922	100
5:56:16 AM	49124.01172	100
5:56:17 AM	49348.82422	100
5:56:18 AM	49661.44531	100
5:56:19 AM	49974.0625	100
5:56:20 AM	50349.375	100
5:56:21 AM	50724.6875	100
5:56:22 AM	50966.17969	100
5:56:23 AM	51207.67188	100
5:56:24 AM	51504.60156	100
5:56:25 AM	51801.53516	100
5:56:26 AM	52130.21484	100
5:56:27 AM	52458.89453	100
5:56:28 AM	52796.67578	100
5:56:29 AM	53134.45703	100
5:56:30 AM	53311.35938	100
5:56:31 AM	53488.26172	100
5:56:32 AM	53665.16406	100
5:56:33 AM	53914.54297	100
5:56:34 AM	54163.92188	100
5:56:35 AM	54532.96094	100
5:56:36 AM	54902	100
5:56:37 AM	55160.77344	100
5:56:38 AM	55419.55078	100
5:56:39 AM	55701.66406	100
5:56:40 AM	55983.77734	100
5:56:41 AM	56319.59375	100
5:56:42 AM	56655.40625	100

5:56:43 AM	56924.89844	100
5:56:44 AM	57194.39063	100
5:56:45 AM	57478.40625	100
5:56:46 AM	57762.42578	100
5:56:47 AM	58055.86719	100
5:56:48 AM	58349.3125	100
5:56:49 AM	58686.75391	100
5:56:50 AM	59024.19531	100
5:56:51 AM	59249.73047	100
5:56:52 AM	59475.26563	100
5:56:53 AM	59662.42578	100
5:56:54 AM	59849.58203	100
5:56:55 AM	60036.74219	100
5:56:56 AM	60431.64844	100
5:56:57 AM	60826.55469	100
5:56:58 AM	61070.11719	100
5:56:59 AM	61313.68359	100
5:57:00 AM	61601.82813	100
5:57:01 AM	61889.97266	100
5:57:02 AM	62102.5625	100
5:57:03 AM	62315.14844	100
5:57:04 AM	62527.73828	100
5:57:05 AM	62784.17188	100
5:57:06 AM	63040.60547	100
5:57:07 AM	63278.6875	100
5:57:08 AM	63516.76953	100
5:57:09 AM	63863.27734	100
5:57:10 AM	64209.78516	100
5:57:11 AM	64556.29297	100
5:57:12 AM	64902.80078	100
5:57:13 AM	65158.71094	100
5:57:14 AM	65414.62109	100
5:57:15 AM	65680.11719	100
5:57:16 AM	65945.60938	100
5:57:17 AM	66306.57813	100
5:57:18 AM	66667.55469	100
5:57:19 AM	66824.91406	100

5:57:20 AM	66982.27344	100
5:57:21 AM	67139.63281	100
5:57:22 AM	67466.78125	100
5:57:23 AM	67793.92188	100
5:57:24 AM	68104	100
5:57:25 AM	68414.08594	100
5:57:26 AM	68661.9375	100
5:57:27 AM	68909.78125	100
5:57:28 AM	69231.07031	100
5:57:29 AM	69552.35938	100
5:57:30 AM	69859.74219	100
5:57:31 AM	70167.125	100
5:57:32 AM	70469.78125	100
5:57:33 AM	70772.4375	100
5:57:34 AM	71086.125	100
5:57:35 AM	71399.8125	100
5:57:36 AM	71664.82813	100
5:57:37 AM	71929.84375	100
5:57:38 AM	72296.84375	100
5:57:39 AM	72663.84375	100
5:57:40 AM	72908.92188	100
5:57:41 AM	73153.99219	100
5:57:42 AM	73370.01563	100
5:57:43 AM	73586.03125	100
5:57:44 AM	73924.78125	100
5:57:45 AM	74263.53125	100
5:57:46 AM	74539.60938	100
5:57:47 AM	74815.67969	100
5:57:48 AM	75038.07813	100
5:57:49 AM	75260.46875	100
5:57:50 AM	75493.14063	100
5:57:51 AM	75725.8125	100
5:57:52 AM	75958.48438	100
5:57:53 AM	76243.32031	100
5:57:54 AM	76528.15625	100
5:57:55 AM	76786.35938	100
5:57:56 AM	77044.5625	100

5:57:57 AM	77251.97656	100
5:57:58 AM	77459.39063	100
5:57:59 AM	77612.45313	100
5:58:00 AM	77765.52344	100
5:58:01 AM	77796.11719	100
5:58:02 AM	77826.71094	100
5:58:03 AM	77873.375	100
5:58:04 AM	77920.04688	100
5:58:05 AM	77916.70313	100
5:58:06 AM	77913.35156	100
5:58:07 AM	77927.67188	100
5:58:08 AM	77941.98438	100
5:58:09 AM	77952.45313	100
5:58:10 AM	77962.92188	100
5:58:11 AM	77973.39844	100
5:58:12 AM	77983.86719	100
5:58:13 AM	77983.28906	100
5:58:14 AM	77982.71094	100
5:58:15 AM	77985.65625	100
5:58:16 AM	77988.60938	100
5:58:17 AM	77995.35938	100
5:58:18 AM	78002.10938	100
5:58:19 AM	78005.27344	100
5:58:20 AM	78008.42969	100
5:58:21 AM	78011.59375	100
5:58:22 AM	78011.84375	100
5:58:23 AM	78012.10156	100
5:58:24 AM	78021.91406	100
5:58:25 AM	78031.72656	100
5:58:26 AM	78030.32813	100
5:58:27 AM	78028.92969	100
5:58:28 AM	78029.71875	100
5:58:29 AM	78030.50781	100
5:58:30 AM	78033.79688	100
5:58:31 AM	78037.08594	100
5:58:32 AM	78040.375	100
5:58:33 AM	78043.65625	100

5:58:34 AM	78046.94531	100
5:58:35 AM	78050.23438	100
5:58:36 AM	78052.73438	100
5:58:37 AM	78055.22656	100
5:58:38 AM	78061.875	100
5:58:39 AM	78068.51563	100
5:58:40 AM	78070.5625	100
5:58:41 AM	78072.60938	100
5:58:42 AM	78075.82031	100
5:58:43 AM	78079.02344	100
5:58:44 AM	78082.23438	100
5:58:45 AM	78079.73438	100
5:58:46 AM	78077.24219	100
5:58:47 AM	78085.53125	100
5:58:48 AM	78093.82813	100
5:58:49 AM	78098.78125	100
5:58:50 AM	78103.73438	100
5:58:51 AM	78086.19531	100
5:58:52 AM	78068.65625	100
5:58:53 AM	78074.80469	100
5:58:54 AM	78080.95313	100
5:58:55 AM	78087.09375	100
5:58:56 AM	78093.24219	100
5:58:57 AM	78094.125	100
5:58:58 AM	78095	100
5:58:59 AM	78100.17188	100
5:59:00 AM	78105.34375	100
5:59:01 AM	78104.625	100
5:59:02 AM	78103.90625	100
5:59:03 AM	78105.33594	100
5:59:04 AM	78106.77344	100
5:59:05 AM	78108.20313	100
5:59:06 AM	78112.13281	100
5:59:07 AM	78116.0625	100
5:59:08 AM	78119.99219	100
5:59:09 AM	78123.92188	100
5:59:10 AM	78124.71875	100

5:59:11 AM	78125.52344	100
5:59:12 AM	78132.09375	100
5:59:13 AM	78138.67188	100
5:59:14 AM	78138.45313	100
5:59:15 AM	78138.24219	100
5:59:16 AM	78136.67969	100
5:59:17 AM	78135.11719	100
5:59:18 AM	78142.53125	100
5:59:19 AM	78149.9375	100
5:59:20 AM	78155.1875	100
5:59:21 AM	78160.44531	100
5:59:22 AM	78162.65625	100
5:59:23 AM	78164.85938	100
5:59:24 AM	78167.07031	100
5:59:25 AM	78169.28125	100
5:59:26 AM	78168.6875	100
5:59:27 AM	78168.08594	100
5:59:28 AM	78170.78906	100
5:59:29 AM	78173.49219	100
5:59:30 AM	78176.19531	100
5:59:31 AM	78178.89844	100
5:59:32 AM	78181.60156	100
5:59:33 AM	78180.50781	100
5:59:34 AM	78179.41406	100
5:59:35 AM	78185.88281	100
5:59:36 AM	78192.35156	100
5:59:37 AM	78196.38281	100
5:59:38 AM	78200.41406	100
5:59:39 AM	78197.4375	100
5:59:40 AM	78194.46094	100
5:59:41 AM	78201.80469	100
5:59:42 AM	78209.14844	100
5:59:43 AM	78213.29688	100
5:59:44 AM	78217.4375	100
5:59:45 AM	78221.58594	100
5:59:46 AM	78217.19531	100
5:59:47 AM	78212.80469	100

5:59:48 AM	78221.03906	100
5:59:49 AM	78229.27344	100
5:59:50 AM	78230.13281	100
5:59:51 AM	78231	100
5:59:52 AM	78231.85938	100
5:59:53 AM	78232.71875	100
5:59:54 AM	78238.6875	100
5:59:55 AM	78244.66406	100
5:59:56 AM	78250.64063	100
5:59:57 AM	78256.60938	100
5:59:58 AM	78255.73438	100
5:59:59 AM	78254.86719	100
6:00:00 AM	78257.42188	100
6:00:01 AM	78259.97656	100