

MINISTERIO DE ENERGIA Y MINAS

Dirección General Administrativa

Director(a): Lic. Luis Alfonso Rodas

Responsable de actualización de información: Departamento Administrativo Financiero

Fecha de emisión: Mes febrero de 2015

Programación del Subgrupo 18 "Servicios Técnicos y Profesionales"

Renglón de gasto 185 Servicios de Capacitación

Fuente de Financiamiento: 31 Ingresos Propios

Quién	Qué	Para qué se ejecuta el gasto	Cómo		Cuándo		
Nombre de la Entidad	Servicios	Nombre del Servicio	Renglón Presupuestario	Contrato No. /Compra directa	Vigencia del Contrato	Monto en Q.	Producto
Hotel Princess de Guatemala, Sociedad Anónima	Servicios de Logística en evento de capacitación	Servicios de Logística en evento de Curso Regional de Capacitación, requerido por Laboratorios Técnicos del Ministerio de Energía y Minas	185 Servicios de Capacitación	Compra Directa	Mes febrero 2015	Q 7,144.60	Logística en evento " Curso Regional de capacitación sobre gestión y organización para órganos Reguladores" realizado del 9 al 13 de febrero 2015


JEFATURA
DEPARTAMENTO
FINANCIERO
DIRECCION
SUPERIOR MEM
MINAS
ARAGON Castillo
DEPARTAMENTO FINANCIERO
GUATEMALA, C. A.

MINISTERIO DE ENERGIA Y MINAS

Dirección General de Energía

Responsable de actualización de información: Departamento Administrativo Financiero

Fecha de emisión: 01/02/15

Información Subgrupo 18 "Servicios Técnicos y Profesionales"

Fuentes de Financiamiento:

11 Ingresos corrientes

No.	Quién	Qué	Para qué se ejecuta el gasto	Cómo		Cuándo	Monto Quetzales	Producto
	Nombres y Apellidos	Servicios profesionales/técnicos	Nombre de la Consultoría	Renglón Presupuestario	Contrato No.	Vigencia del Contrato	Honorarios	
1	AXEL OSWALDO MORALES GAITAN	Profesionales	Estudio para la elaboración de planos de las instalaciones existentes en la DGE	188 Servicios de Ingeniería Arquitectura y Supervisión de Obras	—	feb-15	20,000.00	Levantamiento topográfico, Medición, Elaboración de planos; según terminos de referencia
Total							Q 20,000.00	

Nota: no se efectuó ninguna erogación con fuentes de financiamiento 11 Ingresos corrientes y 31 Ingresos Propios


Jefe Depto. Administrativo Financiero
Dirección General de Energía



DIRECCION GENERAL DE ENERGIA
Despacho del Subdirector

SDGE-067-2014
29 de octubre de 2014

Ingeniero
Julio César Solares Peñate
Director General de Energía
SU DESPACHO

Estimado Ingeniero Solares:

De manera atenta me dirijo a usted, con el propósito de informarle que se recibe satisfactoriamente lo requerido en los términos de referencia para la realización del Estudio para la elaboración de planos de las instalaciones existentes en la Dirección General de Energía del Ministerio de Energía y Minas, como se detallan a continuación:

- Levantamiento topográfico de las instalaciones existente en las instalaciones de la Dirección General de Energía del Ministerio de Energía y Minas.
- Medición de cada módulo existente en las instalaciones de la Dirección General de Energía del Ministerio de Energía y Minas.
- Elaboración de 21 planos, fueron presentados en formatos A-1, firmados sellados y timbrados por ingeniero civil activo.
- Dos copias físicas en original y dos copias electrónicas (una en PDF y una en AUTOCAD).

Sin otro particular, me suscribo de usted.

Atentamente,

Arq. Emilio Rolando Lickez Obando
SUBDIRECTOR GENERAL DE ENERGIA



C.c.p.: Departamento Financiero
Archivo



**DIRECCIÓN GENERAL DE ENERGÍA
MINISTERIO DE ENERGÍA Y MINAS,**

**“ESTUDIO PARA LA ELABORACIÓN DE PLANOS
DE LAS INSTALACIONES EXISTENTES EN LA
DIRECCIÓN GENERAL DE ENERGÍA DEL
MINISTERIO DE ENERGÍA Y MINAS”**

REALIZADO POR:

“M. G. CONSTRUCTORES”



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Ing. Julio César Solares Peña
Director General de Energía

Guatemala, octubre de 2,014



1. INTRODUCCIÓN

1.1 Justificación:

Actualmente el Departamento de Normas de la Dirección de Mitigación de SE-CONRED dá seguimiento al Plan Institucional de Respuesta, el cual requiere la aplicación de la Norma de Reducción de Desastres número 2.

Derivado que en el edificio donde funciona la Dirección General de Energía del Ministerio de Energía y Minas se realizaron modificaciones, la Coordinadora Nacional para la Reducción de Desastres –CONRED- requirió la elaboración de planos de sus instalaciones.

1.2 Objetivo del estudio:

La realización de los planos actualizados de las instalaciones que componen la Dirección General de Energía, tienen como objetivo que por medio de éstos la Coordinadora Nacional para la Reducción de Desastres –CONRED- pueda verificar lo siguiente:

Cargas de ocupación máxima en los ambientes.

Salidas de emergencia.

Porcentaje de pendiente en rampas.

Abatimiento de puertas.

Gradas y pasamanos.

Señalizaciones.


M.G. CONSTRUCTORES
Celular: 5865-3822
Correo: amoralesg@yahoo.com



1.3 Equipo que realizó el estudio:

Ing. Axel O. Morales Gaitán colegiado 5,069, coordinador del estudio y revisor de los planos.

Ing. Julio René Aguilar Alvarez colegiado 10,582, levantamiento topográfico.

Jorge López Gonzáles, cadenero en el levantamiento topográfico y medición.

Bessi Andrea Ortega Brenes, medición, tabulación de datos y dibujo.

3. METODOLOGÍA

2.1 Determinar nombre de los edificios:

Conjuntamente con personal de la Dirección General de Energía, se determinó el nombre y función de todos los módulos que componen y se localizan dentro de las instalaciones de la Dirección General de Energía.

2.2 Levantamiento topográfico de las instalaciones existentes:

La medición se realizó con estación total, prisma y cinta métrica, con lo cual se determinó la localización de las instalaciones, dimensiones horizontales y verticales y ángulos.

El levantamiento topográfico lo realizaron tres personas, el Ing. Julio Aguilar, el cadenero y la dibujante.

M.G. CONSTRUCTORES
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2.3 Medición de cada módulo existente en las instalaciones:

Esta medición se realizó para determinar las dimensiones horizontales y verticales de los ambientes interiores que componen cada módulo, incluyó mediciones de puertas, ventanas, muebles fijos, etc., se realizó con medidor de rayo láser y cinta métrica metálica.

La medición la realizaron tres personas, el Ing. Julio Aguilar, el cadenero y la dibujante.

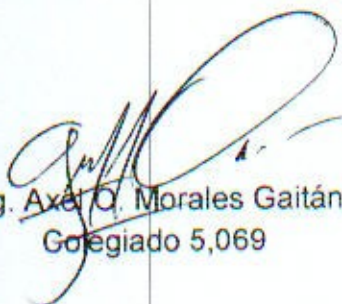
2.4 Elaboración de planos:

Todos los datos obtenidos en campo, se procesaron en gabinete por medio de programas de computación como se describe a continuación:

- Las mediciones realizadas a las instalaciones existentes y efectuadas con estación total, se procesaron con el programa CIVIL 3D AUTOCAD.
- Las mediciones realizadas en cada módulo por medio de medidor con rayo láser se procesaron por medio del programa AUTOCAD.

2.5 Presentación del estudio:

De acuerdo a los términos de referencia, se presentaron 21 planos en formato A-1 y dos copias electrónicas, una en formato AUTOCAD y otra en formato PDF.


Ing. Axel O. Morales Gaitán
Colegiado 5,069

M.G. CONSTRUCTORES
Celular: 5865-3822
Correo: amoralessg@yahoo.com

ANEXOS



LIBRETA DE CAMPO

Levantamiento topográfico instalaciones Dirección General de Energía
Ministerio de Energía y Minas

1	1000.000	1000.000	100.000	EO	1	EO	1000.000	1000.000	100.000	EO,1000,1000,100
2	1029.367	1007.964	100.870	GARITA	2	1029.367	1007.964	100.870	GARITA,1029.367,1007.964,100.87	
3	1026.876	1006.176	100.797	GARITA	3	1026.876	1006.176	100.797	GARITA,1026.876,1006.176,100.797	
4	1025.635	1001.898	100.708	GARITA	4	1025.635	1001.898	100.708	GARITA,1025.635,1001.898,100.708	
5	1029.724	1001.799	100.828	GARITA	5	1029.724	1001.799	100.828	GARITA,1029.724,1001.799,100.828	
6	1029.652	1000.167	100.816	PUERTA	6	1029.652	1000.167	100.816	PUERTA,1029.652,1000.167,100.816	
7	1029.684	999.757	100.658	PORTON	7	1029.684	999.757	100.658	PORTON,1029.684,999.757,100.658	
8	1029.514	991.813	100.655	PORTON	8	1029.514	991.813	100.655	PORTON,1029.514,991.813,100.655	
9	1029.479	991.182	100.597	MURO	9	1029.479	991.182	100.597	MURO,1029.479,991.182,100.597	
10	1018.882	999.979	100.415	BORDILLO	10	1018.882	999.979	100.415	BORDILLO,1018.882,999.979,100.415	
11	1017.492	1000.539	100.380	BORDILLO	11	1017.492	1000.539	100.380	BORDILLO,1017.492,1000.539,100.38	
12	1016.844	1002.038	100.371	BORDILLO	12	1016.844	1002.038	100.371	BORDILLO,1016.844,1002.038,100.371	
13	1016.976	1007.703	100.429	BORDILLO	13	1016.976	1007.703	100.429	BORDILLO,1016.976,1007.703,100.429	
14	1004.377	1007.382	100.155	BORDILLO	14	1004.377	1007.382	100.155	BORDILLO,1004.377,1007.382,100.155	
15	1004.238	1002.444	100.091	BORDILLO	15	1004.238	1002.444	100.091	BORDILLO,1004.238,1002.444,100.091	
16	1004.000	1001.508	100.093	BORDILLO	16	1004.000	1001.508	100.093	BORDILLO,1004.000,1001.508,100.093	
17	1002.566	1000.478	100.035	BORDILLO	17	1002.566	1000.478	100.035	BORDILLO,1002.566,1000.478,100.035	
18	1000.300	1000.511	99.964	BORDILLO	18	1000.300	1000.511	99.964	BORDILLO,1000.300,1000.511,99.964	
19	998.792	1001.347	100.009	BORDILLO	19	998.792	1001.347	100.009	BORDILLO,998.792,1001.347,100.009	
20	998.367	1002.715	100.134	BORDILLO	20	998.367	1002.715	100.134	BORDILLO,998.367,1002.715,100.134	
21	993.395	1002.807	100.016	BORDILLO	21	993.395	1002.807	100.016	BORDILLO,993.395,1002.807,100.016	
22	992.996	1001.585	99.894	BORDILLO	22	992.996	1001.585	99.894	BORDILLO,992.996,1001.585,99.894	
23	991.817	1000.769	99.802	BORDILLO	23	991.817	1000.769	99.802	BORDILLO,991.817,1000.769,99.802	
24	999.414	992.697	100.018	BORDILLO	24	999.414	992.697	100.018	BORDILLO,999.414,992.697,100.018	
25	998.998	992.200	100.073	BORDILLO	25	998.998	992.200	100.073	BORDILLO,998.998,992.200,100.073	
26	998.885	989.940	100.334	BORDILLO	26	998.885	989.940	100.334	BORDILLO,998.885,989.940,100.334	
27	998.839	989.993	99.750	GARITA	27	998.839	989.993	99.750	GARITA,998.839,989.993,99.75	
28	1000.640	989.918	99.482	GARITA	28	1000.640	989.918	99.482	GARITA,1000.640,989.918,99.482	
29	1000.715	991.721	99.324	GARITA	29	1000.715	991.721	99.324	GARITA,1000.715,991.721,99.324	
30	998.881	991.865	99.300	GARITA	30	998.881	991.865	99.300	GARITA,998.881,991.865,99.3	
31	997.729	890.181	102.408	ESQ-INT	31	997.729	890.181	102.408	ESQ-INT,997.729,890.181,102.408	
32	989.040	908.248	101.908	AUX1	32	989.040	908.248	101.908	AUX1,989.040,908.248,101.908	
33	992.748	984.143	100.803	GARITA	33	992.748	984.143	100.803	GARITA,992.748,984.143,100.803	
34	992.833	987.264	100.644	GARITA	34	992.833	987.264	100.644	GARITA,992.833,987.264,100.644	
35	990.821	987.363	100.665	GARITA	35	990.821	987.363	100.665	GARITA,990.821,987.363,100.665	
36	1000.723	992.044	100.309	ESQ-LIND	36	1000.723	992.044	100.309	ESQ-LIND,1000.723,992.044,100.309	
37	990.944	992.343	100.112	ESQ-INT	37	990.944	992.343	100.112	ESQ-INT,990.944,992.343,100.112	
38	992.147	992.899	99.787	BORDILLO	38	992.147	992.899	99.787	BORDILLO,992.147,992.899,99.787	
39	992.432	989.817	100.252	BORDILLO	39	992.432	989.817	100.252	BORDILLO,992.432,989.817,100.252	
40	992.022	1007.320	100.066	BORDILLO	40	992.022	1007.320	100.066	BORDILLO,992.022,1007.320,100.066	
41	980.631	1007.444	99.857	BORDILLO	41	980.631	1007.444	99.857	BORDILLO,980.631,1007.444,99.857	
42	980.526	1003.560	99.797	BORDILLO	42	980.526	1003.560	99.797	BORDILLO,980.526,1003.560,99.797	
43	980.297	1003.256	99.790	BORDILLO	43	980.297	1003.256	99.790	BORDILLO,980.297,1003.256,99.790	
44	978.679	1003.335	99.731	BORDILLO	44	978.679	1003.335	99.731	BORDILLO,978.679,1003.335,99.731	
45	978.265	1003.785	99.707	BORDILLO	45	978.265	1003.785	99.707	BORDILLO,978.265,1003.785,99.707	
46	978.356	1007.489	99.673	BORDILLO	46	978.356	1007.489	99.673	BORDILLO,978.356,1007.489,99.673	
47	948.498	1001.992	98.797	BORDILLO	47	948.498	1001.992	98.797	BORDILLO,948.498,1001.992,98.797	
48	948.641	1007.993	98.744	BORDILLO	48	948.641	1007.993	98.744	BORDILLO,948.641,1007.993,98.744	
49	889.864	1009.350	97.679	BORDILLO	49	889.864	1009.350	97.679	BORDILLO,889.864,1009.350,97.679	
50	889.720	1004.664	97.798	BORDILLO	50	889.720	1004.664	97.798	BORDILLO,889.720,1004.664,97.798	
51	889.385	1003.993	97.809	BORDILLO	51	889.385	1003.993	97.809	BORDILLO,889.385,1003.993,97.809	
52	888.296	1003.543	97.785	BORDILLO	52	888.296	1003.543	97.785	BORDILLO,888.296,1003.543,97.785	
53	880.479	1004.027	97.829	BORDILLO	53	880.479	1004.027	97.829	BORDILLO,880.479,1004.027,97.829	
54	880.013	995.908	97.837	BORDILLO	54	880.013	995.908	97.837	BORDILLO,880.013,995.908,97.837	
55	851.630	996.054	97.623	COMEDOR	55	851.630	996.054	97.623	COMEDOR,851.630,996.054,97.623	
56	851.981	1005.375	97.563	COMEDOR	56	851.981	1005.375	97.563	COMEDOR,851.981,1005.375,97.563	
57	886.573	1006.442	97.936	POSTE	57	886.573	1006.442	97.936	POSTE,886.573,1006.442,97.936	
58	908.972	994.873	98.363	POSTE	58	908.972	994.873	98.363	POSTE,908.972,994.873,98.363	
59	932.794	994.360	98.736	POSTE	59	932.794	994.360	98.736	POSTE,932.794,994.360,98.736	
60	954.506	1004.657	99.110	POSTE	60	954.506	1004.657	99.110	POSTE,954.506,1004.657,99.110	
61	992.383	1003.409	100.076	POSTE	61	992.383	1003.409	100.076	POSTE,992.383,1003.409,100.076	
62	987.658	1018.316	99.825	PARQUEO	62	987.658	1018.316	99.825	PARQUEO,987.658,1018.316,99.825	
63	975.781	1018.605	99.805	PARQUEO	63	975.781	1018.605	99.805	PARQUEO,975.781,1018.605,99.805	
64	976.428	1042.487	99.762	PARQUEO	64	976.428	1042.487	99.762	PARQUEO,976.428,1042.487,99.762	
65	988.244	1042.201	99.743	PARQUEO	65	988.244	1042.201	99.743	PARQUEO,988.244,1042.201,99.743	
66	988.281	1041.487	99.840	PARQUEO	66	988.281	1041.487	99.840	PARQUEO,988.281,1041.487,99.840	
67	988.223	1037.439	99.759	PARQUEO	67	988.223	1037.439	99.759	PARQUEO,988.223,1037.439,99.759	
68	992.185	1047.279	99.336	CANCHA	68	992.185	1047.279	99.336	CANCHA,992.185,1047.279,99.336	
69	973.175	1047.910	99.392	CANCHA	69	973.175	1047.910	99.392	CANCHA,973.175,1047.910,99.392	
70	974.252	1079.057	99.196	CANCHA	70	974.252	1079.057	99.196	CANCHA,974.252,1079.057,99.196	
71	999.979	1060.046	99.601	POSTE	71	999.979	1060.046	99.601	POSTE,999.979,1060.046,99.601	
72	999.348	1033.530	99.999	POSTE	72	999.348	1033.530	99.999	POSTE,999.348,1033.530,99.999	
73	918.444	1020.211	97.372	ESQ-EDIF	73	918.444	1020.211	97.372	ESQ-EDIF,918.444,1020.211,97.372	
74	878.614	1010.846	98.011	E1	74	878.614	1010.846	98.011	E1,878.614,1010.846,98.011	
75	918.536	1023.203	98.473	ESQ-EDIF	75	918.536	1023.203	98.473	ESQ-EDIF,918.536,1023.203,98.473	
76	915.480	1022.444	98.833	ESQ-EDIF	76	915.480	1022.444	98.833	ESQ-EDIF,915.480,1022.444,98.833	
77	909.235	1022.592	97.525	ESQ-EDIF	77	909.235	1022.592	97.525	ESQ-EDIF,909.235,1022.592,97.525	
78	909.247	1023.069	97.499	ESQ-EDIF	78	909.247	1023.069	97.499	ESQ-EDIF,909.247,1023.069,97.499	



79	903.065	1020.647	97.781	ESQ-EDIF	903.109	1020.648	97.806	ESQ-EDIF,903.109074677212,1020.64763583517,97.8058569183567
80	893.447	1027.037	97.274	ESQ-EDIF	893.491	1027.038	97.299	ESQ-EDIF,893.491074677212,1027.03763583517,97.2988569183567
81	892.945	1027.059	97.835	ESQ-EDIF	892.969	1027.060	97.860	ESQ-EDIF,892.969074677212,1027.05963583517,97.8598569183567
82	893.090	1032.982	98.870	ESQ-EDIF	893.134	1032.983	98.895	ESQ-EDIF,893.134074677212,1032.98263583517,98.8948569183567
83	892.607	1033.004	98.876	ESQ-EDIF	892.651	1033.005	98.901	ESQ-EDIF,892.651074677212,1033.00463583517,98.9008569183567
84	892.815	1039.300	97.926	ESQ-EDIF	892.859	1039.301	97.951	ESQ-EDIF,892.859074677212,1039.30063583517,97.9508569183567
85	894.353	1044.931	97.920	ESQ-EDIF	894.397	1044.932	97.945	ESQ-EDIF,894.397074677212,1044.93163583517,97.9448569183567
86	893.965	1045.018	97.920	ESQ-EDIF	894.009	1045.019	97.945	ESQ-EDIF,894.009074677212,1045.01863583517,97.9448569183567
87	894.136	1051.032	97.643	ESQ-EDIF	894.180	1051.033	97.668	ESQ-EDIF,894.180074677212,1051.03263583517,97.6678569183567
88	893.565	1051.030	97.743	ESQ-EDIF	893.609	1051.031	97.768	ESQ-EDIF,893.609074677212,1051.03063583517,97.7678569183567
89	894.311	1057.019	97.636	ESQ-EDIF	894.355	1057.020	97.661	ESQ-EDIF,894.355074677212,1057.01963583517,97.6608569183567
90	893.294	1057.028	97.716	ESQ-EDIF	893.338	1057.029	97.741	ESQ-EDIF,893.338074677212,1057.02863583517,97.7408569183567
91	893.500	1063.317	97.714	ESQ-EDIF	893.544	1063.318	97.739	ESQ-EDIF,893.544074677212,1063.31763583517,97.7388569183567
92	895.052	1068.915	97.722	ESQ-EDIF	895.096	1068.916	97.747	ESQ-EDIF,895.096074677212,1068.91563583517,97.7468569183567
93	894.086	1069.037	97.723	ESQ-EDIF	894.130	1069.038	97.748	ESQ-EDIF,894.130074677212,1069.03763583517,97.7478569183567
94	894.338	1075.041	97.665	ESQ-EDIF	894.382	1075.042	97.690	ESQ-EDIF,894.382074677212,1075.04163583517,97.6898569183567
95	893.839	1075.050	97.679	ESQ-EDIF	893.883	1075.051	97.704	ESQ-EDIF,893.883074677212,1075.05063583517,97.7038569183567
96	894.036	1081.381	97.694	ESQ-EDIF	894.080	1081.382	97.719	ESQ-EDIF,894.080074677212,1081.38163583517,97.7188569183567
97	894.939	1086.260	97.437	BDGA2	894.983	1086.261	97.462	BDGA2,894.983074677212,1086.26063583517,97.4618569183567
98	888.606	1086.407	97.407	BDGA2	888.650	1086.408	97.432	BDGA2,888.650074677212,1086.40763583517,97.4318569183567
99	888.964	1098.683	97.403	BDGA2	889.008	1098.684	97.428	BDGA2,889.008074677212,1098.68363583517,97.4278569183567
100	895.336	1098.698	98.412	BDGA2	895.380	1098.699	98.437	BDGA2,895.380074677212,1098.68863583517,98.4368569183567
101	883.645	1086.584	97.406	CASA-GRIS	883.689	1086.585	97.431	CASA-GRIS,883.689074677212,1086.58463583517,97.4308569183567
102	878.378	1086.701	97.353	CASA-GRIS	878.422	1086.702	97.378	CASA-GRIS,878.422074677212,1086.70163583517,97.3778569183567
103	887.632	1081.797	97.634	POSTE	887.676	1081.798	97.659	POSTE,887.676074677212,1081.79763583517,97.6588569183567
104	887.108	1044.144	97.770	POSTE	887.152	1044.145	97.795	POSTE,887.152074677212,1044.14463583517,97.7948569183567
105	891.917	1027.317	97.772	CAMIN	891.961	1027.318	97.797	CAMIN,891.961074677212,1027.31763583517,97.7968569183567
106	886.654	1029.566	97.804	CAMIN	886.698	1029.567	97.829	CAMIN,886.698074677212,1029.56663583517,97.8288569183567
107	891.829	1029.517	97.796	CAMIN	891.873	1029.518	97.821	CAMIN,891.873074677212,1029.51763583517,97.8208569183567
108	889.945	1011.260	97.872	CAMIN	889.989	1011.261	97.897	CAMIN,889.989074677212,1011.26063583517,97.8968569183567
109	887.965	1011.577	97.899	CAMIN	888.009	1011.578	97.924	CAMIN,888.009074677212,1011.57763583517,97.9238569183567
110	887.817	1009.551	97.913	CAMIN	887.861	1009.552	97.938	CAMIN,887.861074677212,1009.55163583517,97.9378569183567
111	822.861	1011.761	96.945	E2	822.925	1011.762	96.983	E2,822.925318325397,1011.76168947607,96.9831789268877
112	838.824	1005.844	97.482	COMEDOR	838.888	1005.845	97.520	COMEDOR,838.888318325397,1005.84468947607,97.5201789268877
113	838.518	996.444	97.447	COMEDOR	838.582	996.445	97.485	COMEDOR,838.582318325397,996.44468947606,97.4851789268877
114	836.877	995.846	97.392	CAMINA	836.941	995.847	97.430	CAMINA,836.941318325397,995.8468947606,97.4301789268877
115	844.594	1012.470	97.220	CAMINA	844.658	1012.471	97.258	CAMINA,844.658318325397,1012.47068947607,97.2581789268877
116	846.757	1010.404	97.379	CAMINA	846.821	1010.405	97.417	CAMINA,846.821318325397,1010.40468947607,97.4171789268877
117	844.281	1006.734	97.280	CAMINA	844.345	1006.735	97.318	CAMINA,844.345318325397,1006.73468947607,97.3181789268877
118	846.599	1006.667	97.460	CAMINA	846.653	1006.668	97.498	CAMINA,846.653318325397,1006.66768947607,97.4981789268877
119	802.398	996.476	97.171	ESQ-LIND	802.462	996.477	97.209	ESQ-LIND,802.462318325397,996.47668947606,97.2091789268877
120	859.740	1084.465	97.081	RADIOACTIV	859.804	1084.466	97.119	RADIOACTIV,859.804318325397,1084.46568947607,97.1191789268877
121	837.242	1129.583	95.945	E3	837.312	1129.591	95.966	E3,837.312311539997855,1129.59058665,95.966761206316
122	838.736	1084.906	96.568	RADIOACTIV	838.806	1084.914	96.619	RADIOACTIV,838.80639997855,1084.913596665,96.6186761206316
123	839.571	1116.289	96.678	RADIOACTIV	839.641	1116.297	96.729	RADIOACTIV,839.64139997855,1116.290596665,96.7286761206316
124	807.120	1143.716	94.733	ESQ-LIND	807.190	1143.724	94.784	ESQ-LIND,807.19039997855,1143.723596665,94.7836761206316
125	887.977	1123.279	97.623	E4	888.065	1123.287	97.695	E4,888.065961634192,1123.28696623027,97.6946464117339
126	862.805	1115.794	97.205	RADIOACTIV	862.893	1115.802	97.277	RADIOACTIV,862.893961634192,1115.80196623027,97.2766464117339
127	862.327	1101.572	97.313	RADIOACTIV	862.415	1101.580	97.385	RADIOACTIV,862.415961634192,1101.57996623027,97.3846464117339
128	859.995	1096.899	97.053	RADIOACTIV	860.083	1096.907	97.125	RADIOACTIV,860.083961634192,1096.90696623027,97.1246464117339
129	878.557	1094.583	97.331	CASA-GRIS	878.645	1094.591	97.403	CASA-GRIS,878.645961634192,1094.59066623027,97.4026464117339
130	883.824	1094.431	97.243	CASA-GRIS	883.912	1094.439	97.315	CASA-GRIS,883.912961634192,1094.43896623027,97.3146464117339
131	903.409	1095.663	98.184	UDAF	903.497	1095.671	98.256	UDAF,903.496961634192,1095.67096623027,98.2556464117339
132	903.616	1108.385	98.246	UDAF	903.704	1108.393	98.318	UDAF,903.703961634192,1108.39296623027,98.3176464117339
133	910.017	1108.206	98.274	UDAF	910.105	1108.214	98.346	UDAF,910.104961634192,1108.21396623027,98.3456464117339
134	914.403	1108.124	98.218	BOMBA	914.491	1108.132	98.290	BOMBA,914.490961634192,1108.13196623027,98.2896464117339
135	919.247	1108.002	98.290	BOMBA	919.335	1108.010	98.362	BOMBA,919.334961634192,1108.00996623027,98.3616464117339
136	936.951	1106.209	98.367	BLOK-VISTO	937.039	1106.217	98.439	BLOK-VISTO,937.038961634192,1106.21696623027,98.4386464117339
137	937.108	1113.061	98.534	BLOK-VISTO	937.196	1113.069	98.606	BLOK-VISTO,937.195961634192,1113.06896623027,98.6056464117339
138	945.023	1112.897	98.452	BLOK-VISTO	945.111	1112.905	98.524	BLOK-VISTO,945.110961634192,1112.90496623027,98.5236464117339
139	948.861	1124.862	98.296	BDEGA	948.949	1124.870	98.368	BDEGA,948.948961634192,1124.86996623027,98.3676464117339
140	914.780	1125.604	99.165	BDEGA	914.876	1125.612	99.237	BDEGA,914.877961634192,1125.61196623027,99.2366464117339
141	914.962	1133.619	99.946	BDEGA	915.070	1133.627	99.018	BDEGA,915.069961634192,1133.62696623027,99.0176464117339
142	914.709	1123.578	98.335	CAMIN	914.797	1123.586	98.407	CAMIN,914.796961634192,1123.58596623027,98.4066464117339
143	914.210	1123.083	98.272	POSTE	914.298	1123.091	98.344	POSTE,914.297961634192,1123.09096623027,98.3436464117339
144	882.365	1147.830	95.104	MURO	882.453	1147.838	95.176	MURO,882.452961634192,1147.83796623027,95.1756464117339
145	882.147	1141.269	96.409	ESQ-LIND	882.235	1141.277	96.481	ESQ-LIND,882.234961634192,1141.27696623027,96.4806464117339
146	906.598	1087.691	97.968	E5	906.693	1087.701	98.044	E5,906.69222830412,1087.70105253877,98.0439579435756
147	909.753	1095.598	98.252	UDAF	909.848	1095.608	98.328	UDAF,909.84722830412,1095.60805253877,98.3279579435756
148	914.328	1104.420	98.170	BOMBA	914.423	1104.430	98.246	BOMBA,914.422722830412,1104.43005253877,98.2459579435756
149	916.538	1103.295	98.308	TNQ	916.633	1103.305	98.384	TNQ,916.632722830412,1103.30505253877,98.3839579435756
150	916.310	1094.878	98.198	TNQ	916.406	1094.888	98.274	TNQ,916.404722830412,1094.88805253877,98.2739579435756
151	920.367	1094.761	98.187	TNQ	920.462	1094.771	98.263	TNQ,920.461722830412,1094.77105253877,98.2629579435756
152	944.847	1106.012	98.447	BLOK-VISTO	944.942	1106.022	98.523	BLOK-VISTO,944.941722830412,1106.02205253877,98.5229579435756
153	901.770	1081.111	97.780	ESQ-EDIF	901.865	1081.121	97.856	ESQ-EDIF,901.864722830412,1081.12105253877,97.8559579435756
154	901.509	1075.141	97.825	ESQ-EDIF	901.604	1075.151	97.901	ESQ-EDIF,901.603722830412,1075.15105253877,97.9009579435756
155	907.609	1074.981	97.809	ESQ-EDIF	907.704	1074.991	97.885	ESQ-EDIF,907.703722830412,1074.99105253877,97.8849579435756
156	907.870	1084.105	97.757	ESQ-EDIF	907.965	1084.115	97.833	ESQ-EDIF,907.964722830412,1084.11505253877,97.8329579435756
157	917.809	1083.792	97.893	ESQ-EDIF	917.904	1083.802	97.969	ESQ-EDIF,917.903722830412,1083.80205253877,97.9689579435756
158	932.670	1083.576	97.849	E6	932.774	1083.586	97.926	E6,932.774189449168,1083.58629377625,97.9264451096311
159	917.584	1077.337	97.639	ESQ-EDIF	917.688	1077.347	97.716	ESQ-EDIF,917



160	914.009	1074.769	97.404	ESQ-EDIF	914.113	1074.779	97.481	ESQ-EDIF,914.113189449168,1074.77929377625,97.4814451096311
161	929.375	1074.325	97.715	ESQ-EDIF	929.479	1074.335	97.792	ESQ-EDIF,929.479189449168,1074.33529377625,97.7924451096311
162	929.249	1073.184	97.692	ESQ-EDIF	929.353	1073.194	97.769	ESQ-EDIF,929.353189449168,1073.19429377625,97.7694451096311
163	934.959	1073.210	97.630	ESQ-EDIF	935.063	1073.220	97.707	ESQ-EDIF,935.063189449168,1073.22029377625,97.7074451096311
164	935.248	1062.209	97.720	ESQ-EDIF	935.352	1062.219	97.797	ESQ-EDIF,935.352189449168,1062.21929377625,97.7974451096311
165	941.677	1062.022	97.692	ESQ-EDIF	941.781	1062.032	97.769	ESQ-EDIF,941.781189449168,1062.03229377625,97.7694451096311
166	946.157	1063.127	97.811	E7	946.266	1063.137	97.889	E7,946.266086514493,1063.13732009839,97.889200029934
167	941.545	1077.989	97.696	ESP-EDIF	941.654	1077.999	97.774	ESP-EDIF,941.654086514493,1077.99932009839,97.774200029934
168	945.534	1077.931	97.667	ESP-EDIF	945.643	1077.941	97.745	ESP-EDIF,945.643086514493,1077.94132009839,97.745200029934
169	945.467	1073.859	97.547	ESP-EDIF	945.576	1073.869	97.625	ESP-EDIF,945.576086514493,1073.86932009839,97.625200029934
170	949.903	1075.953	97.599	BDGUITA	950.012	1075.963	97.676	BDGUITA,950.012086514493,1075.96332009839,97.676200029934
171	953.275	1075.910	97.764	BDGUITA	953.384	1075.920	97.842	BDGUITA,953.384086514493,1075.92032009839,97.842200029934
172	953.355	1079.264	97.446	BDGUITA	953.464	1079.274	97.524	BDGUITA,953.464086514493,1079.27432009839,97.524200029934
173	949.958	1079.334	97.726	BDGUITA	950.067	1079.344	97.804	BDGUITA,950.067086514493,1079.34432009839,97.804200029934
174	953.345	1081.576	97.746	ELECT	953.454	1081.586	97.824	ELECT,953.454086514493,1081.58632009839,97.824200029934
175	953.628	1089.139	98.184	ELECT	953.737	1089.149	98.262	ELECT,953.737086514493,1089.14932009839,98.262200029934
176	948.115	1089.170	98.220	ELECT	948.224	1089.180	98.298	ELECT,948.224086514493,1089.18032009839,98.298200029934
177	947.651	1081.666	97.689	ELECT	947.960	1081.673	97.767	ELECT,947.960086514493,1081.67332009839,97.767200029934
178	966.385	1085.857	99.012	E8	966.509	1085.867	99.105	E8,966.509093109281,1085.86748014173,99.105291326798
179	961.507	1088.751	98.736	POSTE	961.631	1088.761	98.829	POSTE,961.6310693109281,1088.76148014173,98.829291326798
180	948.995	1132.867	98.000	BDEGA	949.119	1132.877	98.093	BDEGA,949.119693109281,1132.87748014173,98.0929291326798
181	964.290	1122.426	98.259	POSTE	964.414	1122.436	98.352	POSTE,964.414693109281,1122.43648014173,98.3519291326798
182	969.247	1119.691	98.920	BODEGA3	969.371	1119.701	99.013	BODEGA3,969.3710693109281,1119.70148014173,99.0129291326798
183	969.166	1109.872	98.159	BODEGA3	969.290	1109.882	98.252	BODEGA3,969.290693109281,1109.88248014173,98.2519291326798
184	1003.803	1109.561	98.893	BODEGA3	1003.927	1109.571	98.986	BODEGA3,1003.927693109281,1109.57148014173,98.9859291326798
185	993.261	1078.332	99.159	CANCHA	993.385	1078.342	99.252	CANCHA,993.385693109281,1078.34248014173,99.2519291326798
186	953.263	1073.596	97.692	ESQ-EDIF	953.387	1073.606	97.785	ESQ-EDIF,953.387693109281,1073.60648014173,97.7849291326798
187	953.504	1067.665	97.687	ESQ-EDIF	953.628	1067.675	97.780	ESQ-EDIF,953.628693109281,1067.67548014173,97.7799291326798
188	1005.454	1106.613	98.885	E9	1005.589	1106.625	98.980	E9,1005.589693109281,1106.62548014173,98.9795162762853
189	1004.028	1119.314	98.895	BODEGA3	1004.159	1119.326	98.990	BODEGA3,1004.15915861697216,1119.326569694006,98.9895162762853
190	1004.259	1124.445	98.876	CASETA	1004.390	1124.457	98.971	CASETA,1004.3906961697216,1124.45769694006,98.9705162762853
191	1007.007	1124.414	98.855	CASETA	1007.138	1124.426	98.950	CASETA,1007.1386961697216,1124.42669694006,98.9495162762853
192	1016.789	1114.456	98.854	SALON	1016.920	1114.470	98.949	SALON,1016.9196961697216,1114.46969694006,98.9485162762853
193	1025.878	1114.146	98.664	SALON	1026.009	1114.158	98.759	SALON,1026.0086961697216,1114.15769694006,98.7585162762853
194	1012.583	1138.961	98.456	CASA	1012.714	1138.963	98.551	CASA,1012.7136961697216,1138.96269694006,98.5505162762853
195	1012.215	1129.658	98.653	CASA	1012.348	1129.670	98.748	CASA,1012.3456961697216,1129.66969694006,98.7475162762853
196	1017.381	1129.493	98.781	CASA	1017.512	1129.505	98.878	CASA,1017.5116961697216,1129.50469694006,98.8775162762853
197	1018.687	1133.286	98.649	E10	1018.822	1133.299	98.746	E10,1018.8224218113,1133.29926061621,98.7464656140088
198	995.944	1131.318	98.863	BODEGA4	996.079	1131.331	98.960	BODEGA4,996.0794218113,1131.33126061621,98.9604656140088
199	1004.408	1131.169	98.577	BODEGA4	1004.543	1131.182	98.674	BODEGA4,1004.5434218113,1131.18226061621,98.6744656140088
200	1007.352	1131.132	98.645	CASETA	1007.487	1131.145	98.742	CASETA,1007.4874218113,1131.14526061621,98.7424656140088
201	1017.766	1138.719	98.474	CASA	1017.901	1138.732	98.571	CASA,1017.9014218113,1138.73226061621,98.5714656140088
202	1017.440	1129.711	98.637	SALON	1017.575	1129.724	98.734	SALON,1017.5754218113,1129.72426061621,98.7344656140088
203	1026.393	1129.310	98.219	SALON	1026.528	1129.323	98.316	SALON,1026.5284218113,1129.32326061621,98.3164656140088
204	1026.772	1138.343	98.478	SALON	1026.907	1138.356	98.575	SALON,1026.9074218113,1138.35626061621,98.5754656140088
205	1039.301	1160.000	97.744	E11	1039.444	1160.015	97.853	E11,1039.44390666631,1160.01482696953,97.852755743471
206	1031.957	1138.074	98.434	SALON	1032.100	1138.089	98.543	SALON,1032.09990666631,1138.0882696953,98.542755743471
207	1031.578	1128.823	98.437	SALON	1031.721	1128.838	98.756	SALON,1031.72090666631,1128.83732696953,98.755755743471
208	1040.227	1166.332	97.753	MURO	1040.370	1166.347	97.862	MURO,1040.36990666631,1166.34682696953,97.861755743471
209	1040.122	1161.625	97.695	MURO	1040.265	1161.640	97.804	MURO,1040.26490666631,1161.63982696953,97.803755743471
210	1044.312	1161.537	97.978	MURO	1044.455	1161.552	98.087	MURO,1044.45490666631,1161.55182696953,98.086755743471
211	1032.672	1042.803	100.225	E12	1032.817	1042.825	100.365	E12,1032.8171361457,1042.82469724491,100.364761112026
212	1025.263	1059.666	99.854	POSTE	1025.408	1059.689	99.994	POSTE,1025.40831361457,1059.68769724491,99.9939671112026
213	1032.541	1007.668	100.769	GARITA	1032.686	1007.690	100.909	GARITA,1032.68631361457,1007.68969724491,100.908761112026
214	1032.385	1001.602	100.772	GARITA	1032.530	1001.624	100.912	GARITA,1032.53031361457,1001.62369724491,100.911761112026
215	1038.323	1001.529	100.376	ESQ-MURO	1038.468	1001.551	100.516	ESQ-MURO,1038.46831361457,1001.55069724491,100.515761112026
216	1039.747	990.870	100.886	ESQ-MURO	1039.892	990.892	101.026	ESQ-MURO,1039.89231361457,990.89169724491,101.025761112026
217	950.573	1046.300	98.940	E13	950.748	1046.322	99.096	E13,950.748123369599,1046.3219022528,99.095400059867
218	953.240	1061.115	97.751	ESQ-EDIF	953.415	1061.137	97.907	ESQ-EDIF,953.415123369599,1061.1369022528,97.906400059867
219	938.771	1061.684	97.666	ESQ-EDIF	938.946	1061.706	97.822	ESQ-EDIF,938.946123369599,1061.7059022528,97.8218400059867
220	941.664	1056.012	97.621	ESQ-EDIF	941.839	1056.034	97.777	ESQ-EDIF,941.839123369599,1056.0339022528,97.776400059867
221	941.503	1049.610	97.652	ESQ-EDIF	941.678	1049.632	97.808	ESQ-EDIF,941.678123369599,1049.6319022528,97.807400059867
222	938.455	1049.698	97.712	ESQ-EDIF	938.630	1049.720	97.868	ESQ-EDIF,938.630123369599,1049.7199022528,97.867400059867
223	938.239	1044.101	97.712	ESQ-EDIF	938.414	1044.123	97.868	ESQ-EDIF,938.414123369599,1044.1229022528,97.867400059867
224	940.427	1044.005	97.689	ESQ-EDIF	940.602	1044.027	97.825	ESQ-EDIF,940.602123369599,1044.0269022528,97.8244400059867
225	940.191	1037.656	97.614	ESQ-EDIF	940.366	1037.678	97.770	ESQ-EDIF,940.366123369599,1037.6779022528,97.769400059867
226	937.980	1032.114	97.822	ESQ-EDIF	938.155	1032.136	97.978	ESQ-EDIF,938.155123369599,1032.1359022528,97.977400059867
227	943.026	1031.941	97.705	ESQ-EDIF	943.201	1031.963	97.861	ESQ-EDIF,943.201123369599,1031.9629022528,97.860400059867
228	942.656	1019.539	97.644	ESQ-EDIF	942.831	1019.561	97.800	ESQ-EDIF,942.831123369599,1019.5609022528,97.799400059867
229	981.073	996.717	99.469	E14	981.259	996.742	99.631	E14,981.259197774019,996.741809003229,99.631451021477
230	1041.184	1000.181	100.876	BORDILLO	1041.370	1000.206	101.038	BORDILLO,1041.37019777402,1000.205809003229,101.038451021477
231	1040.904	999.692	100.851	BORDILLO	1041.090	999.717	101.013	BORDILLO,1041.09019777402,999.716809003229,101.013451021477
232	1040.039	999.299	100.751	BORDILLO	1040.225	999.324	100.913	BORDILLO,1040.22519777402,999.323809003229,100.913451021477
233	1044.703	1000.363	100.744	OC	1044.889	1000.388	100.906	OC,1044.88919777402,1000.387809003229,100.906451021477
234	1044.320	990.739	100.910	OC	1044.506	990.764	101.072	OC,1044.50619777402,990.763809003229,101.072451021477
235	999.807	999.975	99.833	E0-CIERRE	1000.000	1000.000	100.000	E0-CIERRE,1000,1000,100
236	997.166	890.222	101.689	PORTON	997.166	890.222	101.669	PORTON,997.166,890.222,101.669
237	988.150	890.572	102.050	PORTON	988.150	890.572	102.050	PORTON,988.150,890.572,102.050
238	987.800	890.572	102.055	ESQ-INT	987.800	890.572	102.055	ESQ-INT,987.800,890.572,102.055

PENNSYLVANIA

Levantamiento topográfico instalaciones Dirección General de Energía

Ministerio de Energía y Minas

PO	TOTALES			DH	PARCIALES			ABSOLUTOS			CORRECCIONES			COMPENSADAS			TOTALES		
	Y	X	Z		Y	X	Z	yAbs	xAbs	zAbs	fcY	fcX	fcZ	yCom	xCom	zCom	Y	X	Z
	1000.000	1000.000	100.000														1000.000	1000.000	100.000
	878.614	1010.846	98.011	121.870	-121.386	10.846	-1.989	121.386	10.846	1.989	-0.044	-0.001	-0.025	-121.342	10.847	-1.964	878.658	1010.847	98.036
	822.861	1011.761	96.945	55.761	-55.753	0.915	-1.066	55.753	0.915	1.066	-0.020	0.000	-0.013	-55.733	0.915	-1.053	822.925	1011.762	96.983
	837.242	1129.583	95.945	118.696	14.381	117.822	-1.000	14.381	117.822	1.000	-0.005	-0.007	-0.012	14.386	117.829	-0.988	837.312	1129.591	95.996
	887.977	1123.279	97.623	51.125	50.735	-6.304	1.678	50.735	6.304	1.678	-0.018	0.000	-0.021	50.753	-6.304	1.699	888.065	1123.287	97.695
	906.598	1087.691	97.968	40.165	18.621	-35.588	0.345	18.621	35.588	0.345	-0.007	-0.002	-0.004	18.628	-35.586	0.349	906.693	1087.701	98.044
	932.670	1083.576	97.849	26.395	26.072	-4.115	-0.119	26.072	4.115	0.119	-0.009	0.000	-0.001	26.081	-4.115	-0.118	932.774	1083.586	97.926
	946.157	1083.127	97.811	13.494	13.487	-0.449	-0.038	13.487	0.449	0.038	-0.005	0.000	0.000	13.492	-0.449	-0.038	946.266	1083.137	97.889
	986.385	1085.857	99.012	40.321	40.228	2.730	1.201	40.228	2.730	1.201	-0.015	0.000	-0.015	40.243	2.730	1.216	986.509	1085.867	99.105
	1005.454	1106.613	98.885	28.186	19.069	20.756	-0.127	19.069	20.756	0.127	-0.007	-0.001	-0.002	19.076	20.757	-0.125	1005.585	1106.625	98.980
2	1018.687	1133.286	98.649	29.775	13.233	26.673	-0.236	13.233	26.673	0.236	-0.005	-0.002	-0.003	13.238	26.675	-0.233	1018.822	1133.299	98.746
1	1039.301	1160.000	97.744	33.743	20.614	26.714	-0.905	20.614	26.714	0.905	-0.007	-0.002	-0.011	20.621	26.716	-0.894	1039.444	1160.015	97.853
2	1032.672	1042.803	100.225	117.384	-6.629	-117.197	2.481	6.629	117.197	2.481	-0.002	-0.007	-0.031	-6.627	-117.190	2.512	1032.817	1042.825	100.365
3	950.573	1046.300	98.940	82.173	-82.099	3.497	-1.285	82.099	3.497	1.285	-0.030	0.000	-0.016	-82.069	3.497	-1.269	950.748	1046.322	99.096
4	981.073	996.717	99.469	58.213	30.500	-49.583	0.529	30.500	49.583	0.529	-0.011	-0.003	-0.007	30.511	-49.580	0.536	981.259	996.742	99.631
-CIERRE	999.807	999.975	99.833	19.015	18.734	3.258	0.364	18.734	3.258	0.364	-0.007	0.000	-0.005	18.741	3.258	0.369	1000.000	1000.000	100.000
	-0.193	-0.025	-0.167	836.316	-0.193	-0.025	-0.167	531.541	426.447	13.363				0.000	0.000	0.000			

EU=	0.195
EUC=	2.3E-04

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