

## **Rapports au NPCC**



1 Hydro-Québec TransÉnergie a l'obligation de transmettre annuellement à la Régie de  
2 l'énergie, en vertu de la décision D-2002-175 et tel que réitéré dans la décision D-2009-015,  
3 une copie des rapports publics qu'elle aura fournis au *Northeast Power Coordinating*  
4 *Council* («*NPCC*») concernant les événements rapportables et la liste de ces événements  
5 pour chacune des occasions où une indisponibilité rencontre les critères « d'événement  
6 rapportable », soit une perte de charge de 300 MW et plus ou une perte de production de  
7 500 MW et plus.

8 À cet égard, le Transporteur présente ci-après la liste des événements rapportables au  
9 NPCC et des rapports afférents qu'il lui a transmis en 2012.



## LISTE DES RAPPORTS ATR (AREA TROUBLE REPORT) FOURNIS PAR TRANSÉNERGIE AU NPCC EN 2012

Temps			MW perdus		Perturbations	T récupération		Fréquence	C-11	% Récup.		Cause	Caté- gories
Mois	Jour	Heure	Produc- tion	Charge/ Livraison	installation et équipement	ACE (T-4)	ACE=0	extrême	%charge/0 ,1 Hz	%APC <1000 (code 1)	%APC >=1000 (code 2)		
Janvier	13	08:34:09	615		Décl. du groupe A2 à la centrale Gentilly-2.	s/o	01:34	59,70 Hz	2,66%	100%		Erreur d'exploitation de l'opérateur en isolant la L2386, ouverture du D230-31 au lieu du D230-32.	2
Février		aucun											
Mars	3	13:57:11	2060		Décl. L7066, 7067, 7068, 7057, 7059 et 7060 avec rejet de production de tous les groupes à la centrale La Grande-3 (A1 à A12).	s/o	11:50	58,80 Hz	1,13%		100%	Incident d'exploitation à la centrale LG3 et fonctionnement intempesitif des protections de lignes 735kV.	2, 3
Avril		aucun											
Mai	24	18:35:24	1293		Décl. L7080 avec rejet de production A2, A4, A13, A16 à la centrale La Grande-2.	05:47	06:09	59,17 Hz	3,26%		100%	Feu de forêt sous la ligne L7080	1
Juin	11	17:31:06	1479		Décl. L7082 Abitib / Nemiscau avec rejet de production A3, A4, A13, A14, A15 à la centrale La Grande-2.	05:16	05:18	59,10 Hz	3,20%		100%	Feu de forêt sous la ligne L7082	1
	29	10:19:35	560 import		Décl. L3095 Laurentides / Maligne avec perte de 560 MW d'import de la compagnie Rio Tinto Alcan.	s/o	01:30	59,66 Hz	5,07%	100%		Orage	1
Juillet	15	14:08:57	3184		Décl. progressif de la centrale Churchill Falls (A1, A2, A3, A4, A5, A6, A10).	13:51	14:36	59,02 Hz	2,62%		100%	Foudre tombée sur un transformateur de S.A.	1
	24	02:06:51	872		Décl. L7027 avec rejet de production A10, A11 à la centrale Churchill Falls.	01:57	02:05	59,36 Hz	3,22%	100%		Orage	1
Août	12	20:32:36	665		Décl. de la Centrale Chutes-des-Passes.	04:45	04:46	59,50 Hz	3,52%	100%		Foudre	1
	26	00:06:56	934		Décl. L3031, L3033, L3034 au poste Micoua et perte de 5 groupes aux centrales Manic-5 (A41, A42, A43) et Manic-5 PA (A52, A54).	s/o	02:41	59,28 Hz	2,82%	100%		Orage (cause probable)	1
	26	14:25:15	607		Décl. L3177 Nemiscau / Eastmain-1A avec rejet de production de 3 groupes aux centrales Eastmain-1 (A1) et Eastmain-1A (A12, A13).	01:52	03:10	59,54 Hz	3,37%	100%		Foudre	1
	26	19:54:32	515		Décl. L7073 Tilly / La Grande-4 avec rejet de production A7, A8 à la centrale La Grande-4.	01:17	01:41	59,66 Hz	3,53%	100%		Orage	1

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Temps			MW perdus		Perturbations	T récupération		Fréquence	C-11	% Récup.		Cause	Caté- gories
Mois	Jour	Heure	Produc- tion	Charge/ Livraison	installation et équipement	ACE (T-4)	ACE=0	extrême	%charge/0 ,1 Hz	%APC <1000 (code 1)	%APC >=1000 (code 2)		
	30	19:14:38	1413		Décl. L7082 Nemiscau / Abitibi avec rejet de production A3, A4, A2, A15, A16 à la centrale La Grande-2.	s/o	03:12	59,08 Hz	3,08%		100%	Orage	1
	30	19:35:32	1444		Décl. L7080 avec rejet de production A3, A4, A7, A15, A16 à la centrale La Grande-2. <i>Note: L7078 a déclenché à 19:35:57.</i>	s/o	20:43	59,05 Hz	1,66%		100%	Orage. Deux pylônes effondrés sur la L7080. Quatre pylônes effondrés sur la L7078.	1, 3
	30	19:35:57	1347		Décl. L7078 Albanel / Chibougamau avec rejet de production A2, A3, A4, A9, A6 à la centrale La Grande-4. <i>Note: L7080 avait déclenché à 19:35:32.</i>	17:34	20:18	58,91 Hz	3,52%		100%	Orage. Quatre pylônes effondrés sur la L7078. Deux pylônes effondrés sur la L7080.	1, 3
	30	21:42:59	1300		Décl. L7084 et L7085 avec rejet de production A1, A2, A6, A8, A7 à la centrale La Grande-4.	03:22	03:27	59,06 Hz	2,82%		100%	Orage	1
Sept.	28	23:18:09	733		Décl. L7025 Jacques-Cartier / Chamouchouane avec rejet de production A4, A9, A5 à la centrale La Grande-4.	02:12	03:26	59,41 Hz	3,13%	100%		Lors du retrait de la compensation CXC55, il y a eu verrouillage du D700-55. Protection A du CXC55 défectueuse.	3
Oct.	26	14:58:59	833		Mise hors charge de L7088 et T6, T8 avec perte de production des groupes A11, A12 et A16 à la centrale La Grande-2.	04:19	04:19	59,43 Hz	2,86%	100%		Incident d'exploitation lors de travaux sur la protection de secours du D700-14.	2
	28	10:41:56	570		Décl. T8 avec rejet de production des groupes A15 et A16 à la centrale La Grande-2.	s/o	02:43	59,58 Hz	2,68%	100%		Défectuosité de la résistance utilisée pour l'image thermique de l'enroulement basse tension phase "B" du T8	3
Nov.		aucun											
Déc.	12	10:45:10	664		Décl. L3115 Arnaud/Ste-Marguerite-3 avec perte de production A1, A2 à la centrale Ste Marguerite-3	s/o	01:49	59,66 Hz	3,18%	100%		Incident d'exploitation occasionné par des travaux sur la protection de la ligne 3115 au Poste Ste Marguerite-3. La protection a été accidentellement activé par le technicien.	2
	18	14:31:54	1405		Rejet de production A2, A9, A10, A13 et A14 à la centrale La Grande-2 initié par une détection de bas courant DLO A L7047 EV.4 au poste Grand-Brulé.	04:56	05:14	59,29 Hz	2,84%		100%	Incident d'exploitation. Les techniciens ont oublié d'inhiber les sorties de l'UCE (Unité de commande d'événements) lors de la remise en service DLO au poste Grand-Brulé	2

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Temps			MW perdus		Perturbations	T récupération		Fréquence	C-11	% Récup.		Cause	Caté- gories
Mois	Jour	Heure	Produc- tion	Charge/ Livraison	installation et équipement	ACE (T-4)	ACE=0	extrême	%charge/0 ,1 Hz	%APC <1000 (code 1)	%APC >=1000 (code 2)		
	19	00:37:42	861	700	Décl. L7097 Levis/ Appalaches entraînant le décl. Intempestif des L7005 et L7010 avec rejet de production A2 et A4 à la centrale Churchill Falls	01:32	01:31	60,06 Hz	10,33%	100%		L7097: Court-circuit phase A-Terre sur L7097. L7005: Absence de la signalisation des contacts 52A des disjoncteurs au relais P442. L7010: Mauvais réglage du relais LZ96 au poste Laurentides.	3
	27	03:57:15	1200	700	Décl. Du Pôle 1 à Radisson et Pôle 2 à Nicolet avec rejet de production A12, A22, A23 et A25 à la centrale La Grande-2-A	00:48	00:51	59,79 Hz	13,10%		100%	Mauvaise lecture dû au problème avec le bloc alimentation.	3

s/o : sans objet car ACE à T-4 est positif

\* 1: causes naturelles (météo) 2: incident, intervention humaine 3: bris d'appareillage/défaut logiciel





Report No. ATR\_HQT\_2012\_01\_13\_09\_GENTILLY-2\_615 MW Date: 01-13-12 Time: 08:34:09  
**QUÉBEC**

Origin: Generation loss at Gentilly-2 GS (unit 2).

Cause: Human error. While he was isolating the 230-kV Line 2386, the operator opened the CB 230-31 instead of the CB 230-32.

Generation Loss: 615 MW Percent of Loss to First Contingency: 60 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 68 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes

Time to return ACE to zero: 01:34 minutes

Runback? (Y/N) N

Included in DCS? (Y/N) N

Freq. (@T-4) 59,9943 Freq. (after) 60,0138 Freq. Dev. 0,0194

Reviewed by Area? (Y/N) N

Reviewed by CO-1? (Y/N) N

Comments: The unit was restarted at 10:17 and the production was gradually increased up to 450 MW at 16:00.

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

#### INTERCHANGE TABLE

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,9057	4023	4059	-496
T-56 sec					T+36 sec	59,9060	4023	4064	-568
T-52 sec	59,9687	4023	4092	-183	T+40 sec	59,9180	4023	4065	-579
T-48 sec	59,9690	4023	4092	-191	T+44 sec	59,9367	4023	4069	-481
T-44 sec	59,9677	4023	4093	-195	T+48 sec	59,9320	4023	4062	-395
T-40 sec	59,9697	4023	4095	-202	T+52 sec	59,9267	4023	4058	-419
T-36 sec	59,9740	4023	4096	-178	T+56 sec	59,9247	4023	4069	-454
T-32 sec	59,9763	4023	4097	-159	T+60 sec	59,9280	4023	4066	-452
T-28 sec	59,9877	4023	4104	-129	T+2 min	60,0630	4023	4098	352
T-24 sec	59,9970	4023	4104	-57	T+3 min	60,0080	4023	4121	67
T-20 sec	60,0037	4023	4104	-12	T+4 min	59,9790	4023	4104	-134
T-16 sec	60,0183	4023	4111	40	T+5 min	60,0030	4023	4103	55
T-12 sec	60,0250	4023	4115	143	T+6 min	60,0120	4023	4114	55
T-08 sec	60,0157	4023	4112	137	T+7 min	60,0000	4023	4112	20
T-04 sec	59,9943	4023	4106	86	T+8 min	60,0050	4023	4108	2
T=0 sec	59,8190	4023	4076	-90	T+9 min	60,0220	4023	4113	85
T+04 sec	59,6723	4023	4038	-1448	T+10 min	60,0400	4023	4152	159
T+08 sec	59,8070	4023	4064	-2223	T+11 min	60,0100	4023	4154	73
T+12 sec	59,8540	4023	4064	-1181	T+12 min	59,9930	4023	4138	-24
T+16 sec	59,9007	4023	4067	-793	T+13 min	59,9990	4023	4120	16
T+20 sec	59,9340	4023	4070	-537	T+14 min	60,0000	4023	4107	-2
T+24 sec	59,9310	4023	4073	-424	T+15 min	60,0010	4023	4118	2
T+28 sec	59,9217	4023	4066	-421					

Report No. ATR\_HQT\_2012\_03\_03\_14\_La Grande-3\_2060 MW Date: 03-03-12 Time: 13:57:11  
**QUÉBEC**

Origin: Generation loss at La Grande-3 GS (all the units, 1 to 12).

Cause: While a technician was putting back a battery on its charger at La Grande-3 GS, an error in the operation sequence caused the loss of part of the auxiliary services. Then the misoperation of the 735-kV line protection systems lead to the remote tripping of Lines 7067, 7066 and 7068 at Chissibi TS and the tripping of units 1 to 12 by their back-up protection systems.

Generation Loss: 2060 MW Percent of Loss to First Contingency: 201 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 1 457 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
 Time to return ACE to zero: 11:50 minutes  
 Runback? (Y/N) N  
 Included in DCS? (Y/N) N  
 Reviewed by Area? (Y/N) N  
 Reviewed by CO-1? (Y/N) N

Freq. (@T-4) 60,0240 Freq. (after) 60,0138 Freq. Dev. -0,0102

Comments: Four units are associated to each of 735-kV Lines 7067, 7066 and 7068. Lines 7057, 7059 and 7060 became off-load at Chissibi substation.

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,4570	3399	3179	-2591
T-56 sec					T+36 sec	59,5050	3399	3191	-2372
T-52 sec	60,0140	3399	3435	53	T+40 sec	59,5623	3399	3168	-2166
T-48 sec	60,0130	3399	3435	74	T+44 sec	59,6380	3399	3188	-1894
T-44 sec	60,0073	3399	3434	55	T+48 sec	59,6340	3399	3192	-1632
T-40 sec	60,0087	3399	3429	33	T+52 sec	59,6180	3399	3192	-1642
T-36 sec	60,0130	3399	3421	48	T+56 sec	59,6120	3399	3196	-1727
T-32 sec	60,0127	3399	3425	62	T+60 sec	59,6110	3399	3193	-1719
T-28 sec	60,0193	3399	3426	65	T+2 min	59,7300	3399	3188	-1222
T-24 sec	60,0220	3399	3416	109	T+3 min	59,6780	3129	3141	-1439
T-20 sec	60,0137	3399	3416	98	T+4 min	59,6950	3129	3124	-1360
T-16 sec	60,0103	3399	3416	61	T+5 min	59,7310	3129	3101	-1216
T-12 sec	60,0080	3399	3406	48	T+6 min	59,7050	3129	3109	-1318
T-08 sec	60,0107	3399	3413	36	T+7 min	59,7120	3129	3109	-1469
T-04 sec	60,0240	3399	3411	70	T+8 min	59,8440	3129	3148	-776
T=0 sec	60,0320	3399	3363	132	T+9 min	59,8710	3129	3159	-624
T+04 sec	59,5747	3399	3044	163	T+10 min	59,8920	3129	3173	-579
T+08 sec	58,8110	3399	2994	-2501	T+11 min	59,9700	3129	3212	-223
T+12 sec	58,9570	3399	1954	-5321	T+12 min	60,0170	3129	3241	45
T+16 sec	59,1557	3399	1960	-4449	T+13 min	60,0480	3129	3265	269
T+20 sec	59,2543	3399	3780	-3556	T+14 min	60,0030	3129	3248	54
T+24 sec	59,3350	3399	3126	-3274	T+15 min	59,9970	3129	3226	12
T+28 sec	59,4043	3399	3182	-2878					

Report No. ATR\_HQT\_2012\_05\_24\_19\_Nemiscau\_1293 MW Date: 05-24-12 Time: 18:35:24  
**QUÉBEC**

Origin: Generation rejection at La Grande-2 Generating station (unit 2, 4, 13 and 16).

Cause: Tripping of a 735-kV line (L7080) at Abitibi and Nemiscau Substations  
caused by forest's fire under the line 7080

Generation Loss: 1293 MW Percent of Loss to First Contingency: 148 %  
Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 298 MW

Time to return ACE to initial (T-4) value: 05:47 minutes  
Time to return ACE to zero: 06:09 minutes

			Runback? (Y/N)	<u>N</u>
			Included in DCS? (Y/N)	<u>N</u>
Freq. (@T-4)	Freq. (after)	Freq. Dev.	Reviewed by Area? (Y/N)	<u>N</u>
<u>59,9853</u>	<u>60,0138</u>	<u>0,0284</u>	Reviewed by CO-1? (Y/N)	<u>N</u>

Comments: \_\_\_\_\_

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,7153	4697	4717	-1398
T-56 sec					T+36 sec	59,7470	4697	4718	-1157
T-52 sec	59,9790	4697	4807	-71	T+40 sec	59,7830	4697	4727	-992
T-48 sec	59,9780	4697	4805	-99	T+44 sec	59,7957	4697	4720	-850
T-44 sec	59,9970	4697	4797	-75	T+48 sec	59,7930	4697	4713	-847
T-40 sec	60,0143	4697	4806	7	T+52 sec	59,7917	4697	4713	-845
T-36 sec	60,0200	4697	4803	77	T+56 sec	59,7903	4697	4705	-851
T-32 sec	60,0117	4697	4806	80	T+60 sec	59,7870	4697	4716	-855
T-28 sec	60,0043	4697	4806	41	T+2 min	59,8700	4697	4750	-508
T-24 sec	60,0030	4697	4808	12	T+3 min	59,9200	4697	4765	-344
T-20 sec	60,0087	4697	4804	19	T+4 min	59,9560	4697	4787	-158
T-16 sec	60,0147	4697	4804	45	T+5 min	59,9690	4697	4768	-106
T-12 sec	60,0080	4697	4806	70	T+6 min	59,9990	4697	4759	-16
T-08 sec	59,9953	4697	4804	23	T+7 min	60,0230	4697	4680	99
T-04 sec	59,9853	4697	4803	-36	T+8 min	59,9990	4697	4638	3
T=0 sec	59,9850	4697	4809	-68	T+9 min	60,0290	4697	4649	167
T+04 sec	59,9797	4697	4789	-66	T+10 min	60,0590	4697	4652	271
T+08 sec	59,3010	4697	4658	-87	T+11 min	60,1170	4697	4596	442
T+12 sec	59,1350	4697	4504	-2852	T+12 min	60,0680	4697	4615	268
T+16 sec	59,3377	4697	4619	-3753	T+13 min	60,0340	4697	4609	227
T+20 sec	59,5320	4697	4612	-2496	T+14 min	60,0250	4697	4592	99
T+24 sec	59,5570	4697	4667	-2002	T+15 min	59,9820	4697	4586	-81
T+28 sec	59,6370	4697	4697	-1741					

Report No. ATR\_HQT\_2012\_06\_11\_18\_NEMISCAU\_1479 MW Date: 06-11-12 Time: 17:31:03  
**QUÉBEC**

Origin: Generation rejection at La Grande-2 Generating station (unit 3, 4, 13, 14 and 15).

Cause: Tripping of a 735-kV line (L7082) at Abitibi and Nemiscau Substations  
caused by forest's fire under the line 7082

Generation Loss: 1479 MW Percent of Loss to First Contingency: 150 %  
Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 376 MW

Time to return ACE to initial (T-4) value: 05:16 minutes  
Time to return ACE to zero: 05:18 minutes

Freq. (@T-4)	Freq. (after)	Freq. Dev.	Runback? (Y/N)	<u>N</u>
<u>59,9993</u>	<u>60,0138</u>	<u>0,0144</u>	Included in DCS? (Y/N)	<u>N</u>
			Reviewed by Area? (Y/N)	<u>N</u>
			Reviewed by CO-1? (Y/N)	<u>N</u>

Comments: \_\_\_\_\_

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,7727	4515	4710	-1113
T-56 sec					T+36 sec	59,7860	4515	4722	-982
T-52 sec	59,9737	4515	4802	-151	T+40 sec	59,7727	4515	4714	-931
T-48 sec	59,9830	4515	4801	-111	T+44 sec	59,7627	4515	4728	-1018
T-44 sec	59,9813	4515	4800	-81	T+48 sec	59,7780	4515	4723	-1016
T-40 sec	59,9833	4515	4798	-92	T+52 sec	59,7847	4515	4724	-969
T-36 sec	59,9880	4515	4798	-70	T+56 sec	59,7863	4515	4731	-947
T-32 sec	59,9843	4515	4801	-63	T+60 sec	59,7800	4515	4724	-951
T-28 sec	59,9863	4515	4796	-77	T+2 min	59,7750	4515	4712	-972
T-24 sec	59,9930	4515	4798	-59	T+3 min	59,8910	4515	4715	-569
T-20 sec	59,9943	4515	4794	-31	T+4 min	59,9380	4515	4695	-225
T-16 sec	59,9943	4515	4797	-27	T+5 min	59,9720	4515	4739	-101
T-12 sec	59,9960	4515	4795	-27	T+6 min	60,0730	4515	4776	234
T-08 sec	59,9980	4515	4802	-16	T+7 min	60,0790	4515	4768	307
T-04 sec	59,9993	4515	4800	-11	T+8 min	59,9970	4515	4734	-8
T=0 sec	59,9610	4515	4787	2	T+9 min	60,0200	4515	4734	99
T+04 sec	59,2237	4515	4508	-228	T+10 min	60,0370	4515	4736	178
T+08 sec	59,2170	4515	4425	-4246	T+11 min	60,0380	4515	4734	159
T+12 sec	59,3730	4515	4445	-3458	T+12 min	60,0340	4515	4746	180
T+16 sec	59,5210	4515	4569	-2541	T+13 min	60,0140	4515	4719	53
T+20 sec	59,6173	4515	4601	-1953	T+14 min	60,0390	4515	4727	188
T+24 sec	59,6800	4515	4707	-1642	T+15 min	60,0440	4515	4723	158
T+28 sec	59,7347	4515	4723	-1340					

Report No. ATR\_HQT\_2012\_06\_29\_11\_LAURENTIDES\_560 MW Date: 06-29-12 Time: 10:19:35  
**QUÉBEC**

Origin: Reception loss from Alcan system (560 MW ile Maligne) at Laurentides substation.

Cause: Tripping of a 315-kV line (L3095) at Laurentides and Maligne Substations  
caused by lightning storm.

Generation Loss: 560 MW Percent of Loss to First Contingency: 58 %  
Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 892 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
Time to return ACE to zero: 01:30 minutes Runback? (Y/N) N

Freq. (@T-4) 60,0090 Freq. (after) 59,9930 Freq. Dev. -0,0160  
Included in DCS? (Y/N) N  
Reviewed by Area? (Y/N) N  
Reviewed by CO-1? (Y/N) N

Comments: \_\_\_\_\_

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,9003	4639	5401	-402
T-56 sec					T+36 sec	59,9210	4639	5397	-420
T-52 sec	59,9930	4639	4872	-56	T+40 sec	59,9343	4639	5378	-363
T-48 sec	59,9890	4639	4872	-30	T+44 sec	59,9460	4639	5384	-295
T-44 sec	59,9893	4639	4870	-51	T+48 sec	59,9540	4639	5390	-256
T-40 sec	59,9893	4639	4869	-50	T+52 sec	59,9647	4639	5392	-205
T-36 sec	59,9960	4639	4862	-54	T+56 sec	59,9737	4639	5392	-160
T-32 sec	59,9943	4639	4871	-18	T+60 sec	59,9730	4639	5397	-148
T-28 sec	59,9850	4639	4872	-39	T+2 min	60,0280	4639	5531	151
T-24 sec	59,9910	4639	4870	-80	T+3 min	60,0390	4639	5533	161
T-20 sec	59,9983	4639	4868	-32	T+4 min	59,9990	4639	5523	-25
T-16 sec	59,9990	4639	4870	-6	T+5 min	59,9870	4639	5531	-87
T-12 sec	60,0010	4639	4867	-5	T+6 min	59,9970	4639	5540	-54
T-08 sec	60,0083	4639	4867	16	T+7 min	59,9740	4639	5545	-95
T-04 sec	60,0090	4639	4872	42	T+8 min	59,9800	4639	5551	-33
T=0 sec	60,0100	4639	4886	45	T+9 min	59,9860	4639	5555	-65
T+04 sec	59,8393	4639	4849	51	T+10 min	60,0030	4639	5550	37
T+08 sec	59,6790	4639	5764	-968	T+11 min	60,0310	4639	5541	158
T+12 sec	59,7790	4639	5475	-1531	T+12 min	60,0120	4639	5542	38
T+16 sec	59,9430	4639	5486	-895	T+13 min	60,0120	4639	5533	38
T+20 sec	60,0337	4639	5409	-74	T+14 min	60,0090	4639	5549	8
T+24 sec	59,9680	4639	5381	-25	T+15 min	60,0120	4639	5547	-2
T+28 sec	59,9267	4639	5382	-195					

Report No. ATR\_HQT\_2012\_07\_15\_15\_CHURCHILL FALLS\_3184 MW Date: 07-15-12 Time: 14:08:57  
**QUÉBEC**

Origin: Generation loss at Churchill Falls on 7 units (1, 2, 3, 4, 5, 6 and 10).

Cause: An electric storm with lightening caused the closure of several intake gates causing the loss of generation capability on 7 units of the Churchill Falls generation plan.

Generation Loss: 3184 MW Percent of Loss to First Contingency: 310 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 234 MW

Time to return ACE to initial (T-4) value: 13:51 minutes  
 Time to return ACE to zero: 14:36 minutes

			Runback? (Y/N)	<u>N</u>
			Included in DCS? (Y/N)	<u>N</u>
Freq. (@T-4)	Freq. (after)	Freq. Dev.	Reviewed by Area? (Y/N)	<u>N</u>
<u>59,9553</u>	<u>60,0138</u>	<u>0,0584</u>	Reviewed by CO-1? (Y/N)	<u>N</u>

Comments: The Churchill Falls GS is located in the Newfoundland and Labrador province and is owned and operated by Churchill Falls Labrador (Corporation) (CFL(Co)).

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,8253	4900	5157	-691
T-56 sec					T+36 sec	59,7650	4900	5135	-878
T-52 sec					T+40 sec	59,6823	4900	5109	-1138
T-48 sec					T+44 sec	59,5980	4900	5079	-1545
T-44 sec					T+48 sec	59,5210	4900	5059	-1909
T-40 sec					T+52 sec	59,4343	4900	5023	-2281
T-36 sec					T+56 sec	59,3860	4900	4982	-2683
T-32 sec					T+60 sec	59,3610	4900	4946	-2680
T-28 sec					T+2 min	59,1750	4900	4686	-3879
T-24 sec					T+3 min	59,3230	4900	4837	-3142
T-20 sec	59,9867	4900	5231	-56	T+4 min	59,4270	4900	4933	-2401
T-16 sec	59,9740	4900	5226	-70	T+5 min	59,4760	4900	4977	-2138
T-12 sec	59,9640	4900	5219	-138	T+6 min	59,5130	4900	5025	-2011
T-08 sec	59,9547	4900	5212	-176	T+7 min	59,6350	4900	5068	-1457
T-04 sec	59,9553	4900	5215	-217	T+8 min	59,6710	4400	5075	-1372
T=0 sec	59,9710	4900	5217	-192	T+9 min	59,7360	4400	5077	-1203
T+04 sec	59,9750	4900	5206	-113	T+10 min	59,7880	4400	5090	-967
T+08 sec	59,9460	4900	5205	-107	T+11 min	59,8610	4400	5067	-575
T+12 sec	59,9310	4900	5205	-248	T+12 min	59,8770	4400	5023	-501
T+16 sec	59,9203	4900	5195	-338	T+13 min	59,8990	4400	4993	-418
T+20 sec	59,8930	4900	5180	-374	T+14 min	59,9620	4400	4974	-184
T+24 sec	59,8570	4900	5181	-549	T+15 min	60,0270	4400	4958	124
T+28 sec	59,8503	4900	5166	-691					

Report No. ATR\_HQT\_2012\_07\_24\_03\_ARNAUD MICOUA\_872 MW Date: 07-24-12 Time: 02:06:51  
**QUÉBEC**

Origin: Generation rejection at Churchill Falls on units 10 and 11.

Cause: Tripping of a 735 kV line (L7027) at Arnaud substations.  
caused by lightning storm.

Generation Loss: 872 MW      Percent of Loss to First Contingency: 90 %  
Load Loss: 0 MW      Maximum Interchange Deviation: 222 MW

Time to return ACE to initial (T-4) value: 01:57 minutes      Runback? (Y/N) N  
Time to return ACE to zero: 02:05 minutes      Included in DCS? (Y/N) Y

Freq. (@T-4) 59,9917      Freq. (after) 59,9930      Freq. Dev. 0,0013      Reviewed by Area? (Y/N) N  
Reviewed by CO-1? (Y/N) N

Comments: The Line was back at 02:07:00.

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,8377	2848	3150	-695
T-56 sec					T+36 sec	59,8610	2848	3151	-469
T-52 sec	60,0070	2848	3225	33	T+40 sec	59,8223	2848	3149	-413
T-48 sec	59,9990	2848	3227	18	T+44 sec	59,7653	2848	3153	-577
T-44 sec	59,9897	2848	3222	-12	T+48 sec	59,7890	2848	3151	-703
T-40 sec	59,9850	2848	3221	-38	T+52 sec	59,8597	2848	3167	-633
T-36 sec	59,9870	2848	3218	-52	T+56 sec	59,9120	2848	3161	-379
T-32 sec	59,9977	2848	3221	-33	T+60 sec	59,9010	2848	3165	-356
T-28 sec	60,0070	2848	3225	1	T+2 min	60,0060	2848	3192	-11
T-24 sec	60,0070	2848	3221	29	T+3 min	60,0660	2848	3215	121
T-20 sec	60,0023	2848	3222	20	T+4 min	60,0250	2848	3223	52
T-16 sec	60,0023	2848	3223	3	T+5 min	60,0160	2848	3214	34
T-12 sec	59,9960	2848	3226	13	T+6 min	59,9820	2848	3200	-79
T-08 sec	59,9910	2848	3226	-21	T+7 min	59,9720	2848	3206	-62
T-04 sec	59,9917	2848	3229	-26	T+8 min	59,9920	2848	3209	-44
T=0 sec	59,9930	2848	3225	-28	T+9 min	60,0050	2848	3209	44
T+04 sec	59,5797	2848	3115	-19	T+10 min	60,0120	2848	3213	57
T+08 sec	59,3710	2848	3008	-1612	T+11 min	60,0140	2848	3214	57
T+12 sec	59,4520	2848	3138	-1936	T+12 min	60,0230	2848	3218	88
T+16 sec	59,5507	2848	3066	-1605	T+13 min	60,0100	2848	3218	34
T+20 sec	59,5977	2848	3164	-1307	T+14 min	60,0370	2848	3226	139
T+24 sec	59,6650	2848	3136	-1207	T+15 min	60,0080	2848	3248	54
T+28 sec	59,7530	2848	3145	-971					

Report No. ATR\_HQT\_2012\_08\_12\_21\_CHUTES DES PASSES\_665 MW Date: 08-12-12 Time: 20:32:36  
**QUÉBEC**

Origin: Alcan system generation loss of 665 MW (Chûtes des Passes) due to lightning storm.

Cause: Tripping of Chûtes des Passes caused by lightning

Generation Loss: 665 MW Percent of Loss to First Contingency: 65 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 606 MW

Time to return ACE to initial (T-4) value: 04:45 minutes  
 Time to return ACE to zero: 04:46 minutes

			Runback? (Y/N)	<u>N</u>
			Included in DCS? (Y/N)	<u>N</u>
Freq. (@T-4)	Freq. (after)	Freq. Dev.	Reviewed by Area? (Y/N)	<u>N</u>
<u>59,9930</u>	<u>60,0243</u>	<u>0,0312</u>	Reviewed by CO-1? (Y/N)	<u>N</u>

Comments: \_\_\_\_\_

See Comment File: \_\_\_\_\_

See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,8677	3208	4244	-486
T-56 sec					T+36 sec	59,8590	3208	4241	-592
T-52 sec	59,9953	3208	3636	-45	T+40 sec	59,8697	3208	4244	-613
T-48 sec	60,0090	3208	3637	-10	T+44 sec	59,8737	3208	4242	-552
T-44 sec	60,0143	3208	3634	51	T+48 sec	59,8910	3208	4245	-500
T-40 sec	60,0003	3208	3633	52	T+52 sec	59,8843	3208	4247	-458
T-36 sec	59,9900	3208	3633	-19	T+56 sec	59,8927	3208	4244	-504
T-32 sec	59,9867	3208	3632	-49	T+60 sec	59,9010	3208	4249	-474
T-28 sec	59,9920	3208	3635	-55	T+2 min	59,8950	3208	4222	-491
T-24 sec	60,0100	3208	3637	-26	T+3 min	59,8960	3208	4215	-490
T-20 sec	60,0273	3208	3637	65	T+4 min	59,9280	3208	4227	-299
T-16 sec	60,0320	3208	3633	128	T+5 min	60,0190	3208	4242	88
T-12 sec	60,0210	3208	3640	136	T+6 min	60,0420	3208	4250	121
T-08 sec	60,0017	3208	3637	69	T+7 min	59,9770	3208	4252	-129
T-04 sec	59,9930	3208	3640	-8	T+8 min	60,0030	3298	4241	45
T=0 sec	59,8490	3208	3606	-33	T+9 min	59,9850	3688	4244	0
T+04 sec	59,4997	3208	3633	-856	T+10 min	59,9950	3688	4236	-40
T+08 sec	59,6990	3208	3660	-2532	T+11 min	60,0040	3688	4234	-4
T+12 sec	59,8090	3208	4217	-1298	T+12 min	59,9790	3688	4227	-70
T+16 sec	59,9023	3208	4224	-666	T+13 min	60,0330	3688	4250	87
T+20 sec	59,9507	3208	4243	-323	T+14 min	60,0700	3688	4264	303
T+24 sec	59,9230	3208	4239	-279	T+15 min	60,0150	3688	4251	-10
T+28 sec	59,8937	3208	4242	-351					



Report No. ATR\_HQT\_2012\_08\_26\_01\_MANIC5/5PA\_934 MW Date: 08-26-12 Time: 00:06:56

**QUÉBEC**

Origin: Generation loss of 934 MW at Manic-5 and Manic-5PA GS  
(units 41, 42 and 43 Manic-5PA and units 52 and 54 Manic-5).

Cause: Tripping of (3) 300 kV line (L3031, L3033 and L3034) at Micoua substations.  
due to thunderstorm.

Generation Loss: 934 MW Percent of Loss to First Contingency: 99 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 292 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
 Time to return ACE to zero: 02:41 minutes Runback? (Y/N) N

Freq. (@T-4) 60,0237 Freq. (after) 60,0403 Freq. Dev. 0,0166  
 Included in DCS? (Y/N) Y  
 Reviewed by Area? (Y/N) N  
 Reviewed by CO-1? (Y/N) N

Comments: The Line L3031 was back at 00:24:47, L3133 at 00:32:34 and L3034 at 00:37:35.

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec	60,0440	216	60	2484	T+32 sec	59,8040	2346	2400	-731
T-56 sec					T+36 sec	59,8210	2346	2392	-627
T-52 sec	60,0133	2346	2645	-16	T+40 sec	59,8210	2346	2403	-581
T-48 sec	60,0260	2346	2618	69	T+44 sec	59,8227	2346	2401	-591
T-44 sec	60,0337	2346	2617	100	T+48 sec	59,8320	2346	2419	-595
T-40 sec	60,0463	2346	2608	136	T+52 sec	59,8480	2346	2428	-541
T-36 sec	60,0460	2346	2593	176	T+56 sec	59,8507	2346	2399	-492
T-32 sec	60,0317	2346	2589	149	T+60 sec	59,8480	2346	2398	-503
T-28 sec	60,0403	2346	2571	116	T+2 min	59,9560	2346	2442	-122
T-24 sec	60,0290	2346	2566	159	T+3 min	60,0200	2346	2467	55
T-20 sec	60,0210	2346	2560	94	T+4 min	60,0140	2346	2489	59
T-16 sec	60,0243	2346	2548	80	T+5 min	60,0510	2346	2481	144
T-12 sec	60,0220	2346	2529	89	T+6 min	60,0380	2346	2481	110
T-08 sec	60,0190	2346	2533	76	T+7 min	60,0140	2346	2470	69
T-04 sec	60,0237	2346	2535	69	T+8 min	59,9870	2346	2461	-97
T=0 sec	60,0370	2346	2511	95	T+9 min	59,9710	2346	2478	-84
T+04 sec	59,7570	2346	2243	133	T+10 min	59,9900	2346	2478	-31
T+08 sec	59,3200	2346	2285	-1035	T+11 min	60,0080	2346	2478	80
T+12 sec	59,5140	2346	2291	-2247	T+12 min	59,9950	2346	2468	-28
T+16 sec	59,6913	2346	2313	-1394	T+13 min	60,0440	2346	2497	127
T+20 sec	59,7670	2346	2418	-875	T+14 min	60,0580	2346	2505	215
T+24 sec	59,7680	2346	2386	-800	T+15 min	60,0640	2346	2489	87
T+28 sec	59,7760	2346	2405	-757					

Report No. ATR\_HQT\_2012\_08\_26\_15\_EASTMAIN1/1A\_607MW Date: 08-26-12 Time: 14:25:15  
**QUÉBEC**

Origin: Generation loss of 607 MW at Eastmain -1 and Eastmain-1A GS  
(unit 1 Eastmain-1 and units 12 and 13 Eastmain-1A).  
Cause: Tripping of a 315 kV line (L3177) at Nemiscau substations.  
caused by lightning storm.

Generation Loss: 607 MW Percent of Loss to First Contingency: 64 %  
Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 135 MW

Time to return ACE to initial (T-4) value: 01:52 minutes  
Time to return ACE to zero: 03:10 minutes Runback? (Y/N) N

Freq. (@T-4) 59,9940 Freq. (after) 59,9978 Freq. Dev. 0,0037  
Included in DCS? (Y/N) N  
Reviewed by Area? (Y/N) N  
Reviewed by CO-1? (Y/N) N

Comments: The Line was back at 14:39:28.  
\_\_\_\_\_  
\_\_\_\_\_

See Comment File: \_\_\_\_\_

See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec	60,0150		3912	57	T+32 sec	59,90	3738	3849	-367
T-56 sec					T+36 sec	59,88	3738	3865	-468
T-52 sec	60,02	3738	3911	77	T+40 sec	59,89	3738	3864	-527
T-48 sec	60,00	3738	3912	65	T+44 sec	59,91	3738	3864	-467
T-44 sec	59,98	3738	3905	-15	T+48 sec	59,92	3738	3859	-370
T-40 sec	59,97	3738	3908	-93	T+52 sec	59,92	3738	3870	-353
T-36 sec	59,97	3738	3912	-129	T+56 sec	59,92	3738	3863	-338
T-32 sec	59,98	3738	3910	-136	T+60 sec	59,92	3738	3872	-344
T-28 sec	59,99	3738	3904	-83	T+2 min	60,01	3738	3894	-9
T-24 sec	60,01	3738	3907	-3	T+3 min	59,99	3738	3900	-17
T-20 sec	60,00	3738	3905	26	T+4 min	60,01	3738	3905	82
T-16 sec	60,00	3738	3906	4	T+5 min	59,98	3738	3905	-105
T-12 sec	59,99	3738	3903	-27	T+6 min	59,98	3738	3900	-35
T-08 sec	59,99	3738	3910	-50	T+7 min	60,02	3738	3903	111
T-04 sec	59,99	3738	3908	-54	T+8 min	60,00	3738	3900	29
T=0 sec	59,93	3738	3866	-13	T+9 min	60,00	3738	3862	20
T+04 sec	59,54	3738	3822	-416	T+10 min	60,00	3738	3850	7
T+08 sec	59,65	3738	3772	-2386	T+11 min	59,97	3738	3840	-144
T+12 sec	59,78	3738	3856	-1496	T+12 min	59,99	3738	3839	-69
T+16 sec	59,89	3738	3849	-747	T+13 min	59,99	3738	3845	-68
T+20 sec	59,94	3738	3847	-337	T+14 min	59,98	3738	3845	-83
T+24 sec	59,93	3738	3857	-314	T+15 min	60,03	3738	3865	144
T+28 sec	59,92	3738	3862	-314					

Report No. ATR\_HQT\_2012\_08\_26\_20\_LG4\_515MW

Date: 08-26-12 Time: 19:54:32

**QUÉBEC**

Origin: Generation loss of 515 MW at La Grande-4 GS (units 7 and 8).

Cause: Tripping of one 735-kV lines ( 7073) between Tilly and La Grande-4 Substations due to thunderstorm.

Generation Loss: 515 MW      Percent of Loss to First Contingency: 54,24479 %  
 Load Loss: \_\_\_\_\_ MW      Maximum Interchange Deviation: 111 MW

Time to return ACE to initial (T-4) value: 01:17 minutes  
 Time to return ACE to zero: 01:41 minutes

Runback? (Y/N) N  
 Included in DCS? (Y/N) N  
 Reviewed by Area? (Y/N) N  
 Reviewed by CO-1? (Y/N) N

Freq. (@T-4)      Freq. (after)      Freq. Dev.  
59,9803      59,9978      0,0174

Comments: The Line was back at 20:22:21.

See Comment File: \_\_\_\_\_

See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

Time of Disturbance

Time	F	Sched	Actual	ACE
T-60 sec				
T-56 sec				
T-52 sec	60,0017	3120	3365	3
T-48 sec	59,9880	3120	3363	3
T-44 sec	59,9830	3120	3360	-62
T-40 sec	59,9783	3120	3366	-74
T-36 sec	59,9700	3120	3360	-109
T-32 sec	59,9730	3120	3360	-132
T-28 sec	59,9863	3120	3359	-113
T-24 sec	60,0040	3120	3365	-40
T-20 sec	60,0223	3120	3367	41
T-16 sec	60,0290	3120	3373	115
T-12 sec	60,0048	3120	3368	130
T-08 sec	59,9923	3120	3364	48
T-04 sec	59,9803	3120	3365	-55
T=0 sec	59,9800	3120	3368	-94
T+04 sec	59,8267	3120	3330	-82
T+08 sec	59,6560	3120	3255	-924
T+12 sec	59,7630	3120	3306	-1497
T+16 sec	59,8910	3120	3311	-878
T+20 sec	59,9490	3120	3308	-333
T+24 sec	59,9080	3120	3314	-340
T+28 sec	59,8893	3120	3319	-419

Time	F	Sched	Actual	ACE
T+32 sec	59,8840	3120	3323	-501
T+36 sec	59,9160	3120	3324	-449
T+40 sec	59,9387	3120	3323	-336
T+44 sec	59,9447	3120	3339	-246
T+48 sec	59,9450	3120	3336	-251
T+52 sec	59,9477	3120	3344	-234
T+56 sec	59,9637	3120	3344	-224
T+60 sec	59,9630	3120	3345	-189
T+2 min	59,9930	3120	3364	-49
T+3 min	59,9940	3120	3360	-1
T+4 min	59,9920	3120	3347	-10
T+5 min	59,9830	3120	3342	-81
T+6 min	59,9910	3078	3345	-20
T+7 min	59,9790	3078	3343	-46
T+8 min	59,9870	3078	3354	-68
T+9 min	59,9890	3078	3351	-50
T+10 min	60,0010	3078	3348	-25
T+11 min	59,9980	3078	3351	1
T+12 min	59,9820	3078	3358	-110
T+13 min	60,0040	3078	3358	-22
T+14 min	60,0090	3078	3359	21
T+15 min	59,9960	3078	3308	-78

Report No. ATR\_HQT\_2012\_08\_30\_20\_NEMISCAU\_1413MW  
**QUÉBEC**

Date: 08-30-12 Time: 19:14:38

Origin: Generation rejection of 1413 MW at LG-2C on five units(3, 4, 2, 15 and 16).

Cause: Tripping of a 735-kV line (7082) between Nemiscau and Abitibi substations due to thunderstorm.

Generation Loss: 1413 MW  
 Load Loss: \_\_\_\_\_ MW

Percent of Loss to First Contingency: 123,622 %  
 Maximum Interchange Deviation: 334 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
 Time to return ACE to zero: 03:12 minutes

Runback? (Y/N) N  
 Included in DCS? (Y/N) N  
 Reviewed by Area? (Y/N) N  
 Reviewed by CO-1? (Y/N) N

Freq. (@T-4) 60,0390 Freq. (after) 60,0320 Freq. Dev. -0,0070

Comments: The Line 7082 was back at 19:18:43.

See Comment File: \_\_\_\_\_

See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE
T-60 sec	60,0000	3	60	4767
T-56 sec				
T-52 sec	60,0177	4569	4744	45
T-48 sec	60,0230	4569	4743	99
T-44 sec	60,0197	4569	4741	113
T-40 sec	60,0043	4569	4739	81
T-36 sec	59,9950	4569	4735	2
T-32 sec	59,9933	4569	4738	-26
T-28 sec	59,9900	4569	4736	-37
T-24 sec	59,9870	4569	4738	-56
T-20 sec	59,9990	4569	4736	-48
T-16 sec	60,0097	4569	4737	10
T-12 sec	60,0180	4569	4739	59
T-08 sec	60,0277	4569	4738	97
T-04 sec	60,0390	4569	4742	154
T=0 sec	60,0080	4569	4690	204
T+04 sec	59,2880	4569	4506	-14
T+08 sec	59,2620	4569	4424	-4274
T+12 sec	59,4920	4569	4571	-3375
T+16 sec	59,6720	4569	4407	-1969
T+20 sec	59,7220	4569	4744	-1297
T+24 sec	59,7560	4569	4651	-1278
T+28 sec	59,9177	4569	4656,784	-1063,02

Time	F	Sched	Actual	ACE
T+32 sec	59,8313	4569	4651	-873
T+36 sec	59,8220	4569	4657	-786
T+40 sec	59,8087	4569	4654	-825
T+44 sec	59,8053	4569	4654	-886
T+48 sec	59,8170	4569	4644	-865
T+52 sec	59,8303	4569	4661	-827
T+56 sec	59,8403	4569	4659	-760
T+60 sec	59,8350	4569	4651	-754
T+2 min	59,9220	4569	4677	-343
T+3 min	59,9790	4569	4704	-26
T+4 min	60,0200	4569	4724	107
T+5 min	59,9670	4569	4723	-110
T+6 min	59,9820	4569	4709	-105
T+7 min	60,0010	4569	4716	70
T+8 min	59,9970	4569	4712	-55
T+9 min	60,0310	4569	4725	192
T+10 min	60,0180	4569	4713	113
T+11 min	60,0110	4569	4740	52
T+12 min	60,0550	4569	4764	219
T+13 min	60,0360	4569	4770	146
T+14 min	60,0360	4569	4776	123
T+15 min	60,0010	4569	4766	55

Report No. ATR\_HQT\_2012\_08\_30\_20\_NEMISCAU\_1444MW Date: 08-30-12 Time: 19:35:32  
**QUÉBEC**

Origin: Generation rejection of 1444 MW at LG-2C on five units(3, 4, 7, 15 and 16).

Cause: Tripping of a 735-kV line (7080) between Nemiscau and Abitibi substations  
due to thunderstorm and two pylons collapsed on the line 7080

Generation Loss: 1444 MW Percent of Loss to First Contingency: 127,4492 %  
Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 552 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
Time to return ACE to zero: 20:43 minutes Runback? (Y/N) N

Freq. (@T-4) 59,9970 Freq. (after) 59,5265 Freq. Dev. -0,4705  
Included in DCS? (Y/N) N  
Reviewed by Area? (Y/N) N  
Reviewed by CO-1? (Y/N) N

Comments: During the event, the weather report indicated weather conditions favorable to the development  
of violent thunderstorms with possibility of production of big hail, violent winds, heavy rain and  
numerous flashes of lightning for the region east of Waskaganish in the direction of the  
Lake Mistassini. There were 3 fruitless tries to energizing the line 7080 or 2 in the installation  
Nemiscau and one in the installation Abitibi.

See Comment File: \_\_\_\_\_ See Graph File(s): Graph\_ACE and Graph\_Freq

### INTERCHANGE TABLE

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,5617	4569	4486	-836
T-56 sec					T+36 sec	58,9560	4569	4298	-3969
T-52 sec	60,0160	4569	4752	68	T+40 sec	59,1947	4569	4380	-4665
T-48 sec	60,0190	4569	4757	81	T+44 sec	59,3933	4569	4191	-3203
T-44 sec	60,0120	4569	4758	84	T+48 sec	59,4260	4569	4374	-2648
T-40 sec	60,0027	4569	4747	48	T+52 sec	59,4513	4569	4512	-2411
T-36 sec	59,9950	4569	4746	-2	T+56 sec	59,4700	4569	4525	-2330
T-32 sec	59,9953	4569	4751	-29	T+60 sec	59,4790	4569	4532	-2320
T-28 sec	60,0060	4569	4750	-12	T+2 min	59,6030	4569	4580	-1695
T-24 sec	60,0130	4569	4751	44	T+3 min	59,6220	4569	4591	-1581
T-20 sec	60,0103	4569	4748	60	T+4 min	59,6160	4569	4589	-1683
T-16 sec	60,0123	4569	4745	52	T+5 min	59,5780	4569	4577	-1791
T-12 sec	60,0140	4569	4748	66	T+6 min	59,5800	4569	4581	-1792
T-08 sec	60,0043	4569	4747	60	T+7 min	59,5560	4569	4582	-1868
T-04 sec	59,9970	4569	4744	5	T+8 min	59,5160	4569	4570	-2106
T=0 sec	60,0020	4569	4744	-13	T+9 min	59,4900	4569	4552	-2182
T+04 sec	59,7540	4569	4690	20	T+10 min	59,5780	4569	4598	-1815
T+08 sec	59,1150	4569	4393	-1523	T+11 min	59,4840	4569	4561	-2101
T+12 sec	59,3460	4569	4546	-4044	T+12 min	59,5180	4569	4568	-2118
T+16 sec	59,5980	4569	4471	-2639	T+13 min	59,5060	4569	4550	-2144
T+20 sec	59,7333	4569	4455	-1548	T+14 min	59,5160	4569	4483	-2092
T+24 sec	59,7680	4569	4639	-1254	T+15 min	59,5660	4569	4392	-2033
T+28 sec	59,7907	4569	4641,92	-997,664					

Report No. ATR\_HQT\_2012\_08\_30\_20\_NEMISCAU\_1347MW Date: 08-30-12 Time: 19:35:57  
**QUÉBEC**

Origin: Generation rejection of 1347 MW at LG-4 on five units(2, 3, 4, 9 and 6).  
Cause: Tripping of a 735-kV line (7078) between Albanel and Chibougamau substations  
due to thunderstorm and four pylons collapsed on the line 7078

Generation Loss: 1347 MW Percent of Loss to First Contingency: 118,8879 %  
Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 409 MW

Time to return ACE to initial (T-4) value: 17:34 minutes  
Time to return ACE to zero: 20:18 minutes Runback? (Y/N) N

Freq. (@T-4) 59,5223 Freq. (after) -0,2317 Freq. Dev. -59,7540  
Included in DCS? (Y/N) N  
Reviewed by Area? (Y/N) N  
Reviewed by CO-1? (Y/N) N

Comments: The tripping of a 735-kV line 7078 arose 25 seconds after that of the line 7080. It had as effect  
to extend the restoring time of the frequency.  
The loss of 410 MW of load arisen in 19h44min 58sec also contributed to extend the restoring time  
of the frequency. The RFP automatism has reacted to the loss of load.

See Comment File: \_\_\_\_\_ See Graph File(s): Graph\_ACE and Graph\_Freq

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec	59,9930	4569	4751	-26	T+32 sec	59,4917	4569	4550	-2276
T-56 sec					T+36 sec	59,4970	4569	4548	-2205
T-52 sec	60,0117	4569	4750	29	T+40 sec	59,5197	4569	4569	-2146
T-48 sec	60,0100	4569	4749	64	T+44 sec	59,5373	4569	4582	-2039
T-44 sec	60,0117	4569	4746	51	T+48 sec	59,5550	4569	4582	-1967
T-40 sec	60,0137	4569	4747	61	T+52 sec	59,5643	4569	4583	-1894
T-36 sec	60,0080	4569	4745	69	T+56 sec	59,5653	4569	4588	-1865
T-32 sec	59,9970	4569	4748	23	T+60 sec	59,5660	4569	4581	-1874
T-28 sec	60,0003	4569	4743	-13	T+2 min	59,6160	4569	4587	-1705
T-24 sec	59,8160	4569	4703	11	T+3 min	59,5980	4569	4583	-1859
T-20 sec	59,1683	4569	4484	-1851	T+4 min	59,5880	4569	4584	-1768
T-16 sec	59,2690	4569	4502	-3941	T+5 min	59,5710	4569	4576	-1842
T-12 sec	59,5350	4569	4490	-2990	T+6 min	59,5630	4569	4577	-1895
T-08 sec	59,6780	4569	4521	-1944	T+7 min	59,5130	4569	4570	-2119
T-04 sec	59,7540	4569	4634	-1363	T+8 min	59,4980	4569	4560	-2153
T=0 sec	59,7850	4569	4641	-1062	T+9 min	59,4850	4569	4539	-2225
T+04 sec	59,6063	4569	4517	-881	T+10 min	59,5770	4569	4580	-1736
T+08 sec	58,9560	4569	4225	-1884	T+11 min	59,5220	4569	4568	-2092
T+12 sec	59,1350	4569	4360	-4491	T+12 min	59,5440	4569	4574	-1999
T+16 sec	59,3417	4569	4225	-3461	T+13 min	59,5050	4569	4538	-2104
T+20 sec	59,4467	4569	4422	-2610	T+14 min	59,5230	4569	4450	-2061
T+24 sec	59,4450	4569	4477	-2470	T+15 min	59,5170			
T+28 sec	59,9177	4569	4515,668	-2357,67					

Report No. ATR\_HQT\_2012\_08\_30\_22\_CHIBOUG\_1300MW

Date: 08-30-12 Time: 21:42:59

**QUÉBEC**

Origin: Generation rejection of 1300 MW at LG 4 on five units (1, 2, 6, 8 and 7).

Cause: Tripping of a 735-kV line (7084 and 7085) between Chibougamau and Chamouchouane substations due to thunderstorm

Generation Loss: 1300 MW      Percent of Loss to First Contingency: 138,2979 %  
 Load Loss: \_\_\_\_\_ MW      Maximum Interchange Deviation: 261 MW

Time to return ACE to initial (T-4) value: 03:22 minutes  
 Time to return ACE to zero: 03:27 minutes

Runback? (Y/N) N  
 Included in DCS? (Y/N) N  
 Reviewed by Area? (Y/N) N  
 Reviewed by CO-1? (Y/N) N

Freq. (@T-4)      Freq. (after)      Freq. Dev.  
59,9927      60,0483      0,0556

Comments: The line 7084 was restored at 21:43:04 and line 7085 at 21:43:02.

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,7593	2329	2264	-981
T-56 sec					T+36 sec	59,7660	2329	2271	-913
T-52 sec	60,0110	2329	2370	56	T+40 sec	59,7620	2329	2274	-883
T-48 sec	60,0080	2329	2371	41	T+44 sec	59,7497	2329	2274	-905
T-44 sec	60,0060	2329	2371	31	T+48 sec	59,7500	2329	2276	-938
T-40 sec	60,0047	2329	2370	20	T+52 sec	59,7447	2329	2278	-954
T-36 sec	60,0110	2329	2374	22	T+56 sec	59,7543	2329	2267	-973
T-32 sec	60,0120	2329	2373	43	T+60 sec	59,7560	2329	2268	-948
T-28 sec	60,0213	2329	2369	58	T+2 min	59,8710	2329	2288	-460
T-24 sec	60,0290	2329	2371	96	T+3 min	59,9660	2329	2330	-92
T-20 sec	60,0290	2329	2369	120	T+4 min	60,0340	2329	2344	116
T-16 sec	60,0277	2329	2367	119	T+5 min	60,0760	2329	2366	405
T-12 sec	60,0160	2329	2377	109	T+6 min	60,0270	2329	2369	117
T-08 sec	59,9993	2329	2367	47	T+7 min	59,9900	2329	2360	42
T-04 sec	59,9927	2329	2364	-17	T+8 min	60,0300	2329	2366	199
T=0 sec	60,0010	2329	2324	-30	T+9 min	60,0360	2329	2325	155
T+04 sec	59,6743	2329	2342	13	T+10 min	60,0410	2329	2293	184
T+08 sec	59,1010	2329	2104	-1550	T+11 min	60,0510	2329	2280	248
T+12 sec	59,2830	2329	2194	-3416	T+12 min	60,0270	2329	2237	106
T+16 sec	59,5057	2329	2164	-2497	T+13 min	60,0530	2329	2182	230
T+20 sec	59,6383	2329	2179	-1669	T+14 min	60,0540	2329	2104	245
T+24 sec	59,6760	2329	2244	-1406	T+15 min	60,0590	2329	2034	215
T+28 sec	59,9177	2329	2258,516	-1171,51					

Report No. ATR\_HQT\_2012\_09\_28\_24\_JACQUES-CARTIER\_733MW Date: 09-28-12 Time: 23:18:09

**QUÉBEC**

Origin: Generation rejection of 733 MW at La Grande-4 GS on 3 units(4, 9 and 5).

Cause: Tripping of one 735 kV line (7025) between Jacques-Cartier and Chamouchouane substations caused by the locking of the circuit breaker during the withdrawal of the compensation.

Generation Loss: 733 MW      Percent of Loss to First Contingency: 71 %  
 Load Loss: \_\_\_\_\_ MW      Maximum Interchange Deviation: 166 MW

Time to return ACE to initial (T-4) value: 02:12 minutes      Runback? (Y/N) N  
 Time to return ACE to zero: 03:26 minutes      Included in DCS? (Y/N) N

Freq. (@T-4)      Freq. (after)      Freq. Dev.      Reviewed by Area? (Y/N) N  
59,9457      60,0195      0,0738      Reviewed by CO-1? (Y/N) N

Comments: The Line L7025 was back at 23:21:07.

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,8067	2865	2961	-538
T-56 sec					T+36 sec	59,7890	2865	2972	-607
T-52 sec	59,9977	2865	3028	-58	T+40 sec	59,7797	2865	2966	-665
T-48 sec	60,0060	2865	3025	5	T+44 sec	59,7937	2865	2984	-688
T-44 sec	59,9913	2865	3025	10	T+48 sec	59,8130	2865	2974	-611
T-40 sec	59,9713	2865	3024	-46	T+52 sec	59,8183	2865	2970	-565
T-36 sec	59,9550	2865	3024	-107	T+56 sec	59,8137	2865	2975	-558
T-32 sec	59,9563	2865	3027	-144	T+60 sec	59,8240	2865	2972	-571
T-28 sec	59,9610	2865	3030	-140	T+2 min	59,9260	2865	3004	-221
T-24 sec	59,9700	2865	3033	-121	T+3 min	59,9650	2865	3049	-81
T-20 sec	59,9643	2865	3029	-101	T+4 min	60,0300	2865	3038	106
T-16 sec	59,9577	2865	3027	-122	T+5 min	59,9950	2865	3036	-4
T-12 sec	59,9540	2865	3033	-142	T+6 min	59,9780	2865	3031	-97
T-08 sec	59,9423	2865	3028	-160	T+7 min	60,0350	2865	3037	129
T-04 sec	59,9457	2865	3026	-193	T+8 min	60,0250	2865	3043	90
T=0 sec	59,8590	2865	3006	-157	T+9 min	60,0160	2865	3046	52
T+04 sec	59,3977	2865	2860	-528	T+10 min	60,0220	2865	3053	36
T+08 sec	59,5490	2865	2958	-2214	T+11 min	59,9830	2865	3029	-55
T+12 sec	59,6660	2865	2952	-1394	T+12 min	60,0130	2865	3036	58
T+16 sec	59,7713	2865	2949	-911	T+13 min	60,0300	2865	3049	100
T+20 sec	59,8133	2865	2956	-626	T+14 min	60,0000	2865	3045	-10
T+24 sec	59,8360	2865	2963	-571	T+15 min	60,0350	2865	3042	86
T+28 sec	59,8280	2865	2961	-483					



Report No. ATR\_HQT\_2012\_10\_26\_15\_LG2\_833 MW Date: 10-26-12 Time: 14:58:59  
**QUÉBEC**

Origin: Generation loss of 833 MW at LG2 on 3 units (11, 12 and 16).

Cause: Tripping of 735 kV line (L7088), transformers T6, T8 at LG2 substation  
caused by human error on the protection of the breaker 700-14.

Generation Loss: 833 MW      Percent of Loss to First Contingency: 92 %  
Load Loss: 0 MW      Maximum Interchange Deviation: 208 MW

Time to return ACE to initial (T-4) value: 04:19 minutes  
Time to return ACE to zero: 04:19 minutes

Freq. (@T-4)	Freq. (after)	Freq. Dev.	Runback? (Y/N)	<u>N</u>
<u>60,0057</u>	<u>59,9953</u>	<u>-0,0104</u>	Included in DCS? (Y/N)	<u>Y</u>
			Reviewed by Area? (Y/N)	<u>N</u>
			Reviewed by CO-1? (Y/N)	<u>N</u>

Comments: The Line L7088 was back at 15:14:02.

See Comment File: \_\_\_\_\_ See Graph File(s): Graph\_Freq and Graph\_MW

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,8637	3281	3244	-434
T-56 sec					T+36 sec	59,8220	3281	3244	-618
T-52 sec	60,0290	3281	3312	125	T+40 sec	59,8127	3281	3248	-739
T-48 sec	60,0280	3281	3316	120	T+44 sec	59,8400	3281	3248	-755
T-44 sec	60,0323	3281	3314	123	T+48 sec	59,8600	3281	3251	-598
T-40 sec	60,0297	3281	3314	137	T+52 sec	59,8653	3281	3256	-542
T-36 sec	60,0150	3281	3311	116	T+56 sec	59,8623	3281	3252	-529
T-32 sec	60,0053	3281	3311	53	T+60 sec	59,8560	3281	3254	-545
T-28 sec	59,9900	3281	3307	12	T+2 min	59,9060	3417	3204	-356
T-24 sec	59,9820	3281	3305	-62	T+3 min	59,9420	3417	3360	-288
T-20 sec	59,9887	3281	3307	-69	T+4 min	60,0050	3417	3409	-28
T-16 sec	59,9973	3281	3306	-36	T+5 min	60,0160	3417	3432	60
T-12 sec	60,0000	3281	3306	-4	T+6 min	59,9750	3417	3431	-126
T-08 sec	59,9990	3281	3308	-4	T+7 min	59,9750	3417	3418	-63
T-04 sec	60,0057	3281	3311	0	T+8 min	60,0150	3417	3441	49
T=0 sec	60,0080	3281	3307	32	T+9 min	60,0560	3417	3473	162
T+04 sec	59,7853	3281	3257	34	T+10 min	60,0150	3417	3473	56
T+08 sec	59,4290	3281	3103	-1096	T+11 min	60,0400	3417	3466	215
T+12 sec	59,5820	3281	3224	-2273	T+12 min	60,0300	3417	3450	145
T+16 sec	59,7620	3281	3252	-1459	T+13 min	59,9820	3417	3446	-137
T+20 sec	59,8487	3281	3268	-767	T+14 min	59,9810	3417	3431	-125
T+24 sec	59,8690	3281	3245	-636	T+15 min	59,9880	3417	3424	-42
T+28 sec	59,8863	3281	3246	-485					

Report No. ATR\_HQT\_2012\_10\_28\_11\_LG2\_570MW Date: 10-28-12 Time: 10:41:56

**QUÉBEC**

Origin: Generation loss at La Grande-2 GS on 2 units (15 and 16).

Cause: Tripping of a 735 / 13,8-kV transformer (8) at La Grande 2 substation caused by the misoperation of a transformer protection against winding high temperature.

Generation Loss: 570 MW Percent of Loss to First Contingency: 53 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 156 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes

Time to return ACE to zero: 02:43 minutes

Runback? (Y/N) N

Included in DCS? (Y/N) N

Freq. (@T-4) 60,0193 Freq. (after) 59,9825 Freq. Dev. -0,0368

Reviewed by Area? (Y/N) N

Reviewed by CO-1? (Y/N) N

Comments: The misoperation of the protection was caused by faulty resistor which gives a thermal image of the transformer.

See Comment File: \_\_\_\_\_

See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,9243	2537	2757	-271
T-56 sec					T+36 sec	59,8990	2537	2752	-350
T-52 sec	60,0200	2537	2813	47	T+40 sec	59,8857	2537	2768	-433
T-48 sec	60,0200	2537	2812	96	T+44 sec	59,8857	2537	2760	-483
T-44 sec	60,0077	2537	2810	72	T+48 sec	59,9100	2537	2764	-430
T-40 sec	60,0010	2537	2807	19	T+52 sec	59,9193	2537	2761	-346
T-36 sec	59,9970	2537	2810	6	T+56 sec	59,9103	2537	2765	-324
T-32 sec	59,9983	2537	2810	-17	T+60 sec	59,9080	2537	2765	-358
T-28 sec	60,0150	2537	2812	7	T+2 min	59,9490	2537	2769	-234
T-24 sec	60,0260	2537	2811	85	T+3 min	60,0460	2537	2802	94
T-20 sec	60,0200	2537	2808	103	T+4 min	60,0220	2537	2815	102
T-16 sec	60,0120	2537	2808	75	T+5 min	60,0060	2537	2805	-4
T-12 sec	60,0110	2537	2806	41	T+6 min	59,9890	2537	2790	-36
T-08 sec	60,0160	2537	2809	53	T+7 min	60,0500	2537	2814	187
T-04 sec	60,0193	2537	2810	67	T+8 min	60,0590	2537	2820	215
T=0 sec	60,0290	2537	2814	89	T+9 min	60,0550	2537	2821	265
T+04 sec	59,8943	2537	2774	131	T+10 min	60,0360	2537	2827	139
T+08 sec	59,5740	2537	2654	-569	T+11 min	60,0310	2537	2809	156
T+12 sec	59,6900	2537	2741	-1745	T+12 min	59,9940	2537	2805	-50
T+16 sec	59,8233	2537	2766	-1112	T+13 min	59,9410	2537	2848	-237
T+20 sec	59,9000	2537	2732	-589	T+14 min	60,0090	2537	2866	-31
T+24 sec	59,9130	2537	2754	-425	T+15 min	59,9860	2537	2871	-13
T+28 sec	59,9303	2537	2759	-332					

Report No. ATR\_HQT\_2012\_12\_11\_ARNAUD\_664 MW Date: 12-12-12 Time: 10:45:10  
**QUÉBEC**

Origin: Generation loss at Sainte-Marguerite-3 GS on 2 units (1 and 2).

Cause: Tripping of a 315-kV line (3115) between Arnaud substation and Sainte-Marguerite-3 GS caused by a human error while working on the protection of the line 3115.

Generation Loss: 664 MW      Percent of Loss to First Contingency: 57 %  
 Load Loss: 0 MW      Maximum Interchange Deviation: 98 MW

Time to return ACE to initial (T-4) value:          minutes  
 Time to return ACE to zero: 01:49 minutes      Runback? (Y/N) N  
 Included in DCS? (Y/N) N  
 Freq. (@T-4) 60,0173      Freq. (after) 60,0043      Freq. Dev. -0,0131      Reviewed by Area? (Y/N) N  
 Reviewed by CO-1? (Y/N) N

Comments: The Line L3115 was back at 11:05:27.

See Comment File:               See Graph File(s): Graph\_Freq and Graph\_MW

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,9130	4176	4143	-546
T-56 sec					T+36 sec	59,9140	4176	4147	-527
T-52 sec	60,0090	4176	4186	60	T+40 sec	59,9220	4176	4160	-524
T-48 sec	60,0110	4176	4188	57	T+44 sec	59,9417	4176	4158	-467
T-44 sec	60,0127	4176	4189	74	T+48 sec	59,9480	4176	4160	-355
T-40 sec	60,0167	4176	4191	76	T+52 sec	59,9453	4176	4157	-304
T-36 sec	60,0370	4176	4191	120	T+56 sec	59,9493	4176	4155	-337
T-32 sec	60,0377	4176	4190	237	T+60 sec	59,9530	4176	4155	-321
T-28 sec	60,0283	4176	4190	222	T+2 min	60,0170	4176	4198	74
T-24 sec	60,0240	4176	4192	164	T+3 min	59,9900	4176	4210	-22
T-20 sec	60,0273	4176	4191	155	T+4 min	60,0090	4176	4202	57
T-16 sec	60,0307	4176	4193	179	T+5 min	59,9840	4176	4203	-73
T-12 sec	60,0260	4176	4193	197	T+6 min	59,9870	4176	4209	-33
T-08 sec	60,0200	4176	4194	152	T+7 min	60,0030	4176	4213	16
T-04 sec	60,0173	4176	4194	120	T+8 min	59,9880	4176	4205	-80
T=0 sec	60,0130	4176	4173	109	T+9 min	60,0060	4176	4205	49
T+04 sec	59,8050	4176	4109	74	T+10 min	60,0140	4176	4210	67
T+08 sec	59,6790	4176	4096	-1515	T+11 min	59,9950	4176	4206	6
T+12 sec	59,7680	4176	4156	-1966	T+12 min	60,0060	4176	4191	16
T+16 sec	59,8587	4176	4126	-1239	T+13 min	60,0090	4176	4196	49
T+20 sec	59,8977	4176	4126	-723	T+14 min	60,0020	4176	4195	-12
T+24 sec	59,9050	4176	4141	-653	T+15 min	60,0000	4151	4187	-35
T+28 sec	59,9090	4176	4144	-561					

Report No. ATR\_HQT\_2012\_12\_18\_15\_LA GRANDE-2\_1405 MW Date: 12-18-12 Time: 14:31:54  
**QUÉBEC**

Origin: Generation rejection at La Grande-2 on five units(2, 9, 10, 13 and 14).

Cause: Generation rejection initiated by low current detection during recommissioning of the protection DLO at Grand-Brulé Substation caused by incident of exploitation.

Generation Loss: 1405 MW Percent of Loss to First Contingency: 139 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 183 MW

Time to return ACE to initial (T-4) value: 04:56 minutes Runback? (Y/N) N  
 Time to return ACE to zero: 05:14 minutes Included in DCS? (Y/N) N

Freq. (@T-4) 59,9853 Freq. (after) 60,0213 Freq. Dev. 0,0359 Reviewed by Area? (Y/N) N  
 Reviewed by CO-1? (Y/N) N

Comments: DLO is a Detection of Open Line.  
Description of incident: Technicians forgot to inhibit all events commands outputs.

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec	59,8190	3953	4258	-1124
T-56 sec					T+36 sec	59,8280	3953	4253	-975
T-52 sec	59,9810	3953	4269	-114	T+40 sec	59,8053	3953	4260	-913
T-48 sec	59,9790	3953	4263	-111	T+44 sec	59,7677	3953	4255	-1081
T-44 sec	59,9850	3953	4268	-115	T+48 sec	59,7700	3953	4256	-1228
T-40 sec	59,9870	3953	4270	-77	T+52 sec	59,7727	3953	4250	-1245
T-36 sec	59,9820	3953	4266	-80	T+56 sec	59,7770	3953	4254	-1223
T-32 sec	59,9803	3953	4267	-105	T+60 sec	59,7810	3953	4254	-1214
T-28 sec	59,9783	3953	4269	-117	T+2 min	59,7990	3953	4270	-1081
T-24 sec	59,9800	3953	4271	-126	T+3 min	59,8750	3953	4282	-709
T-20 sec	59,9787	3953	4273	-116	T+4 min	59,9360	3953	4282	-337
T-16 sec	59,9780	3953	4275	-123	T+5 min	59,9890	3953	4293	-68
T-12 sec	59,9810	3953	4269	-126	T+6 min	60,0380	3953	4286	233
T-08 sec	59,9847	3953	4271	-105	T+7 min	60,0200	3953	4287	93
T-04 sec	59,9853	3953	4272	-86	T+8 min	60,0300	3953	4288	123
T=0 sec	59,9860	3953	4270	-84	T+9 min	60,0280	3953	4283	195
T+04 sec	59,8767	3953	4212	-82	T+10 min	60,0570	3953	4283	287
T+08 sec	59,3020	3953	4090	-827	T+11 min	60,0300	3953	4276	177
T+12 sec	59,4130	3953	4134	-3761	T+12 min	60,0360	3953	4274	179
T+16 sec	59,5357	3953	4177	-2959	T+13 min	60,0090	3953	4271	74
T+20 sec	59,6100	3953	4291	-2340	T+14 min	60,0370	3953	4276	225
T+24 sec	59,6990	3953	4252	-1971	T+15 min	60,0030	3953	4268	25
T+28 sec	59,7723	3953	4253	-1504					

Report No. ATR\_HQT\_2012\_12\_19\_01\_LEVIS\_861 MW Date: 12-19-12 Time: 00:37:42  
**QUÉBEC**

Origin: Generation rejection of 861 MW at Churchill Falls GS on 2 units (2 and 4).

Cause: Tripping of a 735-kV line (7097) between Levis and Appalaches substation caused by a short circuit phase A-Ground on the line (7097) entailing the false trip of line (7005) and (7010) .

Generation Loss: 861 MW Percent of Loss to First Contingency: 93 %  
 Load Loss: 700 MW Maximum Interchange Deviation: 50 MW

Time to return ACE to initial (T-4) value: 01:32 minutes  
 Time to return ACE to zero: 01:31 minutes Runback? (Y/N) N  
 Included in DCS? (Y/N) Y  
 Freq. (@T-4) Freq. (after) Freq. Dev. Reviewed by Area? (Y/N) N  
59,9933 59,9925 -0,0008 Reviewed by CO-1? (Y/N) N

Comments: The load loss of 700 MW was an industrial customer ABI Bécancour.  
Absence of signalisation contact 52A of breaker in the relay P442 caused the trip of line (7005).  
A less sensitive adjustment of the relay LZ96 caused the trip of line (7010)

See Comment File: \_\_\_\_\_ See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

T = Time of Disturbance

Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec	60,0100		2865	36	T+32 sec	60,02	2823	2900	32
T-56 sec					T+36 sec	60,06	2823	2869	137
T-52 sec	60,01	2823	2867	60	T+40 sec	60,06	2823	2869	137
T-48 sec	60,00	2823	2865	57	T+44 sec	60,06	2823	2869	432
T-44 sec	60,00	2823	2870	6	T+48 sec	60,05	2823	2869	252
T-40 sec	60,00	2823	2863	-1	T+52 sec	60,05	2823	2870	252
T-36 sec	60,00	2823	2860	-5	T+56 sec	60,07	2823	2870	237
T-32 sec	59,99	2823	2882	-19	T+60 sec	60,06	2823	2863	243
T-28 sec	60,00	2823	2869	-16	T+2 min	59,99	2823	2890	-8
T-24 sec	60,01	2823	2863	-14	T+3 min	59,97	2823	2944	-125
T-20 sec	60,00	2823	2856	46	T+4 min	60,01	2823	2907	100
T-16 sec	60,00	2823	2856	13	T+5 min	60,00	2823	2901	-23
T-12 sec	60,00	2823	2866	-9	T+6 min	60,01	2823	2883	82
T-08 sec	60,00	2823	2867	-9	T+7 min	59,99	2823	2904	-105
T-04 sec	59,99	2823	2870	-19	T+8 min	60,05	2823	2905	213
T=0 sec	59,99	2823	2820	-24	T+9 min	60,04	2823	2928	237
T+04 sec	60,08	2823	2820	56	T+10 min	60,00	2823	2931	-3
T+08 sec	60,06	2823	2900	36	T+11 min	60,00	2823	2917	-22
T+12 sec	60,04	2823	2879	243	T+12 min	59,99	2823	2916	-8
T+16 sec	60,04	2823	2879	243	T+13 min	60,00	2823	2905	-9
T+20 sec	60,02	2823	2881	28	T+14 min	60,01	2823	2913	101
T+24 sec	60,03	2823	2860	149	T+15 min	59,97	4669	409	-150
T+28 sec	60,02	2823	2860	149					

Report No. ATR\_HQT\_2012\_12\_27\_04\_RADISSON CC\_1200 MW Date: 12-27-12 Time: 03:57:15  
**QUÉBEC**

Origin: Generation rejection of 1200 MW at La Grande-2-A GS on 4 units(21, 22, 23 and 25).

Cause: Tripping of the converter DC Pole 1 at Radisson Substation due to functioning of the rejection  
«Loss bipolar» caused by a default in the power supply.

Generation Loss: 1200 MW Percent of Loss to First Contingency: 126,3956 %  
 Load Loss: 700 MW Maximum Interchange Deviation: 978 MW

Time to return ACE to initial (T-4) value: 00:48 minutes  
 Time to return ACE to zero: 00:51 minutes

Runback? (Y/N) N  
 Included in DCS? (Y/N) N  
 Reviewed by Area? (Y/N) N  
 Reviewed by CO-1? (Y/N) N

Freq. (@T-4) 59,9900 Freq. (after) 59,9950 Freq. Dev. 0,0050

Comments: The load loss of 700 MW was a loss of export toward ISONE.  
The problem in the power supply caused wrong reading of mesure

See Comment File: \_\_\_\_\_

See Graph File(s): \_\_\_\_\_

**INTERCHANGE TABLE**

Time of Disturbance

Time	F	Sched	Actual	ACE
T-60 sec	59,9900		3151	-78
T-56 sec				
T-52 sec	59,9967	3153	3147	-20
T-48 sec	60,0000	3153	3153	4
T-44 sec	60,0000	3153	3153	0
T-40 sec	60,0000	3153	3154	-9
T-36 sec	60,0000	3153	3151	-10
T-32 sec	59,9900	3153	3153	-29
T-28 sec	59,9900	3153	3158	-46
T-24 sec	59,9900	3153	3166	-55
T-20 sec	59,9900	3153	3166	-61
T-16 sec	59,9900	3153	3167	-73
T-12 sec	60,0048	3153	3167	-92
T-08 sec	59,9833	3153	3169	-88
T-04 sec	59,9900	3153	3171	-80
T=0 sec	59,8500	3153	3172	2
T+04 sec	59,8500	3153	2193	2
T+08 sec	59,8333	3153	2438	-1920
T+12 sec	59,9400	3153	2439	-541
T+16 sec	59,9400	3153	2438	-541
T+20 sec	59,9733	3153	2438	-69
T+24 sec	59,9500	3153	2445	-231
T+28 sec	59,9500	3153	2469	-231

Time	F	Sched	Actual	ACE
T+32 sec	59,9667	3153	2463	-297
T+36 sec	59,9600	3153	2479	-271
T+40 sec	59,9733	3153	2479	-147
T+44 sec	59,9700	3153	2484	-178
T+48 sec	59,9900	3153	2490	-80
T+52 sec	60,0167	3153	2490	41
T+56 sec	60,0100	3153	2492	11
T+60 sec	60,0100	3153	2491	11
T+2 min	60,0600	3153	2525	338
T+3 min	59,9800	3248	2519	-80
T+4 min	59,9500	3248	2508	-226
T+5 min	60,0000	3248	2509	-9
T+6 min	60,0100	3248	2484	88
T+7 min	60,0000	3248	2520	4
T+8 min	60,0100	3248	2540	-4
T+9 min	60,0100	3248	2541	38
T+10 min	59,9900	3248	2530	-55
T+11 min	60,0100	3248	2538	71
T+12 min	60,0000	3248	2531	-27
T+13 min	60,0100	3248	2534	57
T+14 min	60,0000	3248	2537	11
T+15 min	59,9700	4669	409	-150