

## **RAPPORTS AU NPCC**



L'obligation pour Hydro-Québec TransÉnergie de transmettre annuellement à la Régie de l'énergie, en vertu de la décision D-2002-175, une copie des rapports publics qu'elle aura fournis au *Northeast Power Coordinating Council* («*NPCC*») s'applique aux rapports qu'elle sait au départ être de ceux qui seront assurément rendus publics ou mis d'une quelconque façon à la disposition du public, par exemple en les déposant dans un centre de documentation accessible à tous. Aucun tel rapport n'a été déposé par Hydro-Québec TransÉnergie ni requis par le NPCC en 2008.

Tout autre rapport ou donnée déposé par Hydro-Québec TransÉnergie au NPCC n'est accessible qu'aux instances du NPCC (conseil, comités, groupes de travail, etc.) ou aux membres ayant signé le «*Membership Agreement*» du NPCC, qui exige qu'ils respectent la confidentialité des informations requise par ces instances.

D'ailleurs, la Régie de l'énergie est elle-même membre du NPCC, à titre de «membre d'intérêt public» («*Public-Interest Membership*»), soit, entre autres, les organismes de réglementation ayant juridiction sur les «membres réguliers» («*Full Membership*»), soit les entités participant au marché d'électricité interconnecté du nord-est de l'Amérique du Nord, dont Hydro-Québec TransÉnergie fait partie. À ce titre, la Régie de l'énergie, tout en ayant l'obligation de respecter toute confidentialité requise, a le droit d'assister à toutes les réunions des membres réguliers et a accès aux procès-verbaux, rapports et données qui sont déposés par les membres réguliers, par exemple les déclarations de conformité en vertu du *NPCC Compliance Monitoring and Enforcement Program*.

Par ailleurs, le Transporteur présente ci-après la liste des événements rapportables au NPCC et les rapports qu'il lui a transmis en 2008.



## LISTE DES RAPPORTS ATR (AREA TROUBLE REPORT) QUE TRANSÉNERGIE A FOURNIS AU NPCC EN 2008

Temps			MW perdus		Perturbations	T récupération		Fréquence	C-11	% Récup.			Cause	Caté- gories
Mois	Jour	Heure	Produc- tion	Charge	installation et équipements	ACE (T-4)	ACE=0	extrême	%charge/0 ,1 Hz	%APC <1000 (code 1)	%APC >=1000 (code 2)			
Oct.	20	13:35:30	638		Décl. T2 et L2385 à la centrale Gentilly-2; perte de production du A2.	s/o	01:27	59,61 Hz	5,14%	100%	-	Défaut phase-terre sur la L2385; mauvais fonctionnement de la protection de surintensité du T2, réglages à revoir (calculs et application).	3	
	25	02:05:48	512	510	Décl. du RMCC P1; perte d'import de 512 MW de NEPEX.Téledélestage Nicolet (TLDN) de 510 MW de charge.	s/o	s/o	60,10 Hz	5,85%	100%	-	Décl. du RMCC par syst. de refroidissement en problème. Opération intempesive de l'automatisme de Téledéclenchement - Nicolet (TLDN)	3, 3	
	27	13:45:57	529		Arrêt et redémarrage du A5 à la centrale Churchill Falls, sans aviser le CCR.	s/o	00:38	59,60 Hz	14,26%	100%	-	L'opérateur a dépassé 500 MW (restriction sur le groupe A5 à cause d'un problème de commande des directrices).	2, 3	
	29	08:18:48	538		Décl. du A7 à la centrale Churchill Falls.	s/o	01:10	59,67 Hz	4,03%	100%	-	Problème de régulation de vitesse sur le A7.	3	
Nov.	3	10:10:25	890		Décl. A4 et A11 à la centrale Churchill Falls.	03:11	03:48	59,30 Hz	3,13%	100%	-	Feu dans les câbles entre la sortie du groupe et le transformateur de puissance.	3	
Déc.		aucun												

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\_HQTE\_2008\_02\_14\_15\_GENTILLY2\_600MW Date: 02-14-08 Time: 14:44:21  
**QUÉBEC**

Origin: Generation loss of 600 MW at Gentilly-2 GS.

Cause: Tripping of unit 2 due to a faulty relay.

Generation Loss: 600 MW Percent of Loss to First Contingency: 60 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 50 MW

Time to return ACE to initial (T-4) value: 00:55 minutes  
 Time to return ACE to zero: 00:58 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) 60,0073 Freq. (after) 60,0138 Freq. Dev. 0,0065

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	59,8530	3649	3602	-717
T-56 sec	59,9943	3649	3639	-86	T+36 sec	59,8790	3649	3605	-756
T-52 sec	60,0030	3649	3639	-11	T+40 sec	59,9057	3649	3613	-663
T-48 sec	60,0010	3649	3640	25	T+44 sec	59,9407	3649	3609	-497
T-44 sec	59,9960	3649	3636	-5	T+48 sec	59,9680	3649	3612	-306
T-40 sec	60,0020	3649	3635	-18	T+52 sec	59,9933	3649	3611	-140
T-36 sec	60,0040	3649	3635	21	T+56 sec	60,0087	3649	3621	-2
T-32 sec	60,0017	3649	3635	19	T+60 sec	60,0060	3649	3614	2
T-28 sec	60,0010	3649	3636	6	T+2 min	60,0260	3649	3594	159
T-24 sec	59,9970	3649	3635	6	T+3 min	60,0050	3649	3599	25
T-20 sec	59,9877	3649	3637	-30	T+4 min	60,0090	3649	3602	55
T-16 sec	59,9777	3649	3637	-77	T+5 min	59,9990	3649	3602	-9
T-12 sec	59,9670	3649	3640	-146	T+6 min	59,9780	3649	3599	-136
T-08 sec	59,9867	3649	3640	-162	T+7 min	59,9980	3649	3598	-47
T-04 sec	60,0073	3649	3634	-36	T+8 min	60,0070	3649	3602	43
T=0 sec	59,9840	3649	3597	61	T+9 min	60,0090	3649	3599	30
T+04 sec	59,7507	3649	3584	-139	T+10 min	59,9990	3649	3583	-43
T+08 sec	59,6257	3649	3611	-1746	T+11 min	59,9950	3649	3571	-13
T+12 sec	59,8600	3649	3609	-1412	T+12 min	59,9960	3649	3582	8
T+16 sec	59,9773	3649	3612	-585	T+13 min	59,9900	3649	3573	-11
T+20 sec	60,0247	3649	3613	40	T+14 min	59,9920	3649	3581	-21
T+24 sec	59,9480	3649	3609	-62	T+15 min	60,0000	3649	3582	32
T+28 sec	59,8880	3649	3606	-372					

Report No. ATR\_HQTE\_2008\_04\_01\_15\_CHATEAUGUAY\_937MW Date: 04-01-08 Time: 14:26:12  
**QUÉBEC**

Origin: Generation loss of 937 MW at Beauharnois GS and loss of export of 1260 MW to NYISO.

Cause: Tripping of a 735kV line (7040) due to a human error. While he was checking the mimic diagram of the future Montreal Telecontrol Centre, a technician opened the disconnecting switch L1B1 on-load.

Generation Loss: 937 MW Percent of Loss to First Contingency: 93,7 %  
 Load Loss: 1260 MW Maximum Interchange Deviation: 1 938 MW

Time to return ACE to initial (T-4) value:            minutes  
 Time to return ACE to zero: 01:09 minutes

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

Freq. (@T-4) 60,0933 Freq. (after) 59,9850 Freq. Dev. -0,1083

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	60,0000	3964	3931	16	T+32 sec	60,0300	3964	2727	217
T-56 sec	60,0000	3964	3927	5	T+36 sec	60,0100	3964	2724	79
T-52 sec	60,0000	3964	3922	19	T+40 sec	60,0100	3964	2700	79
T-48 sec	60,0000	3964	3923	25	T+44 sec	60,0100	3964	2706	37
T-44 sec	60,0000	3964	3921	50	T+48 sec	60,0300	3964	2723	120
T-40 sec	60,0067	3964	3916	55	T+52 sec	60,0300	3964	2719	120
T-36 sec	60,0100	3964	3922	57	T+56 sec	60,0300	3964	2720	204
T-32 sec	60,0100	3964	3922	65	T+60 sec	60,0300	3964	2723	171
T-28 sec	60,0100	3964	3922	71	T+2 min	60,0100	3964	2700	25
T-24 sec	60,0100	3964	3927	74	T+3 min	60,0300	3964	2691	111
T-20 sec	60,0100	3964	3927	63	T+4 min	59,9900	3964	2687	-11
T-16 sec	60,0100	3964	3927	63	T+5 min	60,0100	3964	2689	-79
T-12 sec	60,0100	3964	3921	75	T+6 min	60,0100	3964	2687	75
T-08 sec	60,0000	3964	3921	18	T+7 min	60,0100	3964	2725	63
T-04 sec	60,0000	3964	3922	18	T+8 min	59,9900	2700	2823	-58
T=0 sec	60,0000	3964	3856	18	T+9 min	59,9900	2700	2805	-65
T+04 sec	60,1867	3964	3856	164	T+10 min	59,9900	2700	2796	-68
T+08 sec	60,1400	3964	1984	127	T+11 min	59,9700	2700	2753	-175
T+12 sec	60,2000	3964	2715	1233	T+12 min	59,9900	2700	2654	-68
T+16 sec	59,9867	3964	2715	378	T+13 min	59,9800	2700	2750	-109
T+20 sec	60,0400	3964	2713	592	T+14 min	59,9900	2700	2752	-29
T+24 sec	60,0300	3964	2719	74	T+15 min	59,9800	2700	2752	-120
T+28 sec	60,0300	3964	2719	74					

Report No. ATR\_HQTE\_2008\_04\_17\_10\_MANIC-3\_522MW Date: 04-17-08 Time: 09:49:30  
**QUÉBEC**

Origin: Generation loss of 522 MW at Manic-3 GS (units 34, 35 and 36).

Cause: Tripping of one the 315-kV line ( 3028) connecting Manic-3 GS to Micoua substation caused by a human error (technicians working on the protection systems of circuit breaker 700-96 at Micoua substation).

Generation Loss: 522 MW Percent of Loss to First Contingency: 52,2 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 37 MW

Time to return ACE to initial (T-4) value: 01:48 minutes  
 Time to return ACE to zero: 01:49 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) 59,9993 Freq. (after) 59,9930 Freq. Dev. -0,0063

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	59,9193	3540	3556	-162
T-56 sec					T+36 sec	59,9010	3540	3564	-381
T-52 sec	59,9977	3540	3595	20	T+40 sec	59,8890	3540	3558	-464
T-48 sec	59,9940	3540	3591	-17	T+44 sec	59,9003	3540	3563	-513
T-44 sec	59,9950	3540	3593	-25	T+48 sec	59,9180	3540	3554	-415
T-40 sec	59,9970	3540	3594	-22	T+52 sec	59,9300	3540	3563	-353
T-36 sec	60,0000	3540	3589	-11	T+56 sec	59,9470	3540	3564	-299
T-32 sec	59,9963	3540	3589	-4	T+60 sec	59,9530	3540	3564	-275
T-28 sec	59,9943	3540	3594	-20	T+2 min	60,0250	3540	3587	85
T-24 sec	59,9890	3540	3587	-29	T+3 min	60,0340	3540	3598	155
T-20 sec	59,9850	3540	3592	-56	T+4 min	60,0010	3540	3606	-6
T-16 sec	59,9857	3540	3590	-75	T+5 min	60,0040	3540	3600	0
T-12 sec	59,9920	3540	3580	-60	T+6 min	60,0320	3540	3617	131
T-08 sec	59,9987	3540	3581	-27	T+7 min	60,0010	3540	3603	30
T-04 sec	59,9993	3540	3583	-4	T+8 min	60,0070	3540	3620	90
T=0 sec	59,9980	3540	3581	-6	T+9 min	59,9830	3540	3639	-102
T+04 sec	59,9713	3540	3546	-8	T+10 min	60,0280	3540	3657	122
T+08 sec	59,6097	3540	3548	-162	T+11 min	60,0420	3631	3682	116
T+12 sec	59,6600	3540	3563	-1732	T+12 min	59,9950	3631	3653	28
T+16 sec	59,8107	3540	3562	-1454	T+13 min	60,0220	3631	3659	158
T+20 sec	59,9397	3540	3557	-682	T+14 min	59,9990	3631	3671	2
T+24 sec	59,9700	3540	3563	-275	T+15 min	59,9860	3631	3686	-66
T+28 sec	59,9647	3540	3552	-88					



Report No. ATR\_HQTE\_2008\_06\_15\_17\_LG2\_576MW Date: 06-15-08 Time: 16:57:21  
**QUÉBEC**

Origin: Generation loss of 576 MW at La Grande\_2 GS (units 5 and 6).

Cause: Tripping of a 735kV Transformer (T3) at La Grande\_2 substation by differential protection.

Generation Loss: 576 MW Percent of Loss to First Contingency: 57.6 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 93 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
 Time to return ACE to zero: 06:46 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) 60,0173 Freq. (after) 60,0070 Freq. Dev. -0,0103

Comments: At 16:58:34 (T +1), a second frequency drop to 59,63 Hz occurred when line 3176 tripped at Eastmain\_1 substation with two units at Eastmain\_1 GS ( 337 MW), due to a lightning storm.

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	59,8703	3276	3247	-554
T-56 sec					T+36 sec	59,8830	3276	3237	-496
T-52 sec	59,9990	3276	3276	-37	T+40 sec	59,9070	3276	3244	-466
T-48 sec	60,0140	3276	3275	14	T+44 sec	59,9327	3276	3246	-348
T-44 sec	60,0207	3276	3268	69	T+48 sec	59,9490	3276	3264	-235
T-40 sec	60,0133	3276	3272	84	T+52 sec	59,9303	3276	3254	-198
T-36 sec	60,0020	3276	3274	42	T+56 sec	59,9200	3276	3251	-297
T-32 sec	59,9943	3276	3277	-4	T+60 sec	59,9260	3276	3253	-300
T-28 sec	60,0077	3276	3277	-19	T+2 min	59,8670	3276	3230	-572
T-24 sec	60,0250	3276	3281	56	T+3 min	59,8710	3426	3230	-512
T-20 sec	60,0333	3276	3286	112	T+4 min	59,9140	3426	3241	-419
T-16 sec	60,0347	3276	3286	150	T+5 min	59,9500	3426	3257	-236
T-12 sec	60,0260	3276	3280	139	T+6 min	59,9490	3426	3289	-250
T-08 sec	60,0167	3276	3281	98	T+7 min	60,0490	3426	3352	75
T-04 sec	60,0173	3276	3276	65	T+8 min	60,0310	3426	3376	109
T=0 sec	59,8540	3276	3231	77	T+9 min	60,0290	3426	3395	94
T+04 sec	59,8540	3276	3198	77	T+10 min	60,0470	3426	3416	182
T+08 sec	59,3540	3276	3183	-2729	T+11 min	60,0250	3426	3434	70
T+12 sec	59,7910	3276	3242	-1366	T+12 min	60,0080	3426	3417	15
T+16 sec	59,9043	3276	3225	-669	T+13 min	60,0290	3426	3423	81
T+20 sec	59,9710	3276	3238	-269	T+14 min	60,0050	3426	3419	4
T+24 sec	59,9370	3276	3227	-176	T+15 min	59,9860	3426	3420	-51
T+28 sec	59,8770	3276	3218	-280					

Report No. ATR\_HQTE\_2008\_06\_24\_12\_CHURCHILL\_1715WW Date: 06-24-08 Time: 11:42:21  
**QUÉBEC**

Origin: Generation loss of 1715 MW at Churchill Falls GS (units 2, 3, 6 and 7).

Cause: Tripping of one 735-kV line (7051) between Churchill Falls and Montagnais substations due to a lightning stroke near Churchill Falls substation.

Generation Loss: 1715 MW Percent of Loss to First Contingency: 171,5 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 711 MW

Time to return ACE to initial (T-4) value: 14:06 minutes  
 Time to return ACE to zero: 14:07 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) 60,0033 Freq. (after) 59,9930 Freq. Dev. -0,0103

Comments: Unit 2 tripped by the operation of the RPTC SPF. Units 6 an 7 tripped when Busbar 74 and line 7052 became off-load. Unit 3 tripped when Busbar 72 became off-load.

At 11:49:37 (T +7), a second frequency drop to 59,32 Hz occurred when unit 1 tripped at SM3 GS (375MW). The analysis is ongoing.

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	59,4907	2790	2720	-2006
T-56 sec					T+36 sec	59,5300	2790	2687	-1811
T-52 sec	59,9823	2790	2730	-84	T+40 sec	59,5593	2790	2700	-1656
T-48 sec	59,9960	2790	2738	-60	T+44 sec	59,5703	2790	2670	-1560
T-44 sec	60,0100	2790	2740	-3	T+48 sec	59,5860	2790	2683	-1538
T-40 sec	60,0187	2790	2741	55	T+52 sec	59,6073	2790	2689	-1479
T-36 sec	60,0100	2790	2743	75	T+56 sec	59,6320	2790	2674	-1401
T-32 sec	60,0057	2790	2745	35	T+60 sec	59,6340	2790	2677	-1372
T-28 sec	60,0043	2790	2743	20	T+2 min	59,6180	2790	2679	-1376
T-24 sec	60,0050	2790	2743	17	T+3 min	59,6270	2790	2676	-1371
T-20 sec	60,0093	2790	2746	24	T+4 min	59,6610	2790	2676	-1253
T-16 sec	60,0073	2790	2746	37	T+5 min	59,7010	2790	2697	-978
T-12 sec	60,0020	2790	2747	23	T+6 min	59,6400	2790	2698	-1318
T-08 sec	59,9993	2790	2748	5	T+7 min	59,6580	2790	2704	-1265
T-04 sec	60,0033	2790	2752	-5	T+8 min	59,6060	2790	2705	-1470
T=0 sec	60,0150	2790	2579	24	T+9 min	59,6100	2790	2697	-1444
T+04 sec	59,3230	2790	2041	62	T+10 min	59,7080	2790	2692	-1090
T+08 sec	58,8140	2790	2217	-3066	T+11 min	59,8320	2790	2718	-645
T+12 sec	58,8800	2790	2443	-4601	T+12 min	59,9140	2790	2742	-379
T+16 sec	59,1080	2790	2587	-3848	T+13 min	59,9890	2790	2750	-43
T+20 sec	59,2527	2790	2600	-3013	T+14 min	59,9860	2790	2759	-41
T+24 sec	59,3440	2790	2662	-2615	T+15 min	60,0970	2790	2789	311
T+28 sec	59,4240	2790	2675	-2282					
T+28 sec	59,4240	2790	2675	-2282					

Report No. ATR\_HQTE\_2008\_07\_10\_14\_ARNAUD\_881MW Date: 07-10-08 Time: 13:21:48  
**QUÉBEC**

Origin: Generation rejection of 881 MW at Churchills Falls GS (units 2 and 5).

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

Generation Loss: 881 MW      Percent of Loss to First Contingency: 88,1 %  
 Load Loss: \_\_\_\_\_ MW      Maximum Interchange Deviation: 239 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
 Time to return ACE to zero: 02:00 minutes

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

Freq. (@T-4)      Freq. (after)      Freq. Dev.  
60,0183      60,0015      -0,0168

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	59,8573	3012	2988	-630
T-56 sec					T+36 sec	59,8380	3012	2985	-635
T-52 sec	60,0137	3012	3027	52	T+40 sec	59,8300	3012	2981	-692
T-48 sec	60,0220	3012	3026	64	T+44 sec	59,8487	3012	2999	-720
T-44 sec	60,0300	3012	3030	106	T+48 sec	59,8720	3012	2992	-581
T-40 sec	60,0300	3012	3026	135	T+52 sec	59,8840	3012	3002	-519
T-36 sec	60,0230	3012	3023	127	T+56 sec	59,9027	3012	3005	-470
T-32 sec	60,0160	3012	3026	93	T+60 sec	59,9050	3012	2994	-443
T-28 sec	60,0040	3012	3024	57	T+2 min	59,9540	3012	3001	-142
T-24 sec	60,0010	3012	3023	6	T+3 min	59,9970	3012	3018	45
T-20 sec	60,0060	3012	3025	13	T+4 min	60,0520	3012	2989	185
T-16 sec	60,0027	3012	3027	22	T+5 min	60,0780	3012	2996	330
T-12 sec	60,0090	3012	3026	7	T+6 min	60,0530	3012	3004	233
T-08 sec	60,0150	3012	3021	47	T+7 min	60,0360	3012	2998	126
T-04 sec	60,0183	3012	3024	67	T+8 min	60,0080	3012	2999	114
T=0 sec	60,0240	3012	2963	85	T+9 min	59,9920	3012	2996	58
T+04 sec	59,6973	3012	2785	105	T+10 min	59,9710	3012	2987	-210
T+08 sec	59,2023	3012	2885	-1605	T+11 min	60,0210	3012	2973	123
T+12 sec	59,5550	3012	2981	-2489	T+12 min	59,9960	3012	2968	-32
T+16 sec	59,7430	3012	2990	-1648	T+13 min	60,0000	3012	2974	-42
T+20 sec	59,8310	3012	2994	-879	T+14 min	59,9940	3012	2963	-30
T+24 sec	59,8370	3012	2986	-761	T+15 min	60,0160	3012	2964	84
T+28 sec	59,8463	3012	2997	-654					

Report No. ATR\_HQTE\_2008\_07\_26\_17\_EASTMAIN-1\_929MW Date: 07-26-08 Time: 16:44:29  
**QUÉBEC**

Origin: Generation loss of 484 MW at Eastmain-1 GS and 445 MW at Churchill Falls GS (unit 3).

Cause: Tripping of two 315 kV lines (3176 & 3177) at Eastmain-1 substation due to lightning storm.  
At 16:44:33 unit A3 at Churchill Falls tripped on Excitation Transformer Temperature.

Generation Loss: 929 MW Percent of Loss to First Contingency: 92,9 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 159 MW

Time to return ACE to initial (T-4) value: 05:13 minutes  
 Time to return ACE to zero: 08:09 minutes

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

Freq. (@T-4) 59,9353 Freq. (after) 60,0093 Freq. Dev. 0,0739

Comments: The tripping at Churchill Falls GS is independant from the event at Eastmain-1 GS.  
A misoperation of the protection is suspected.

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	59,7383	951	858	-1061
T-56 sec					T+36 sec	59,7980	951	860	-774
T-52 sec	60,0107	637	623	355	T+40 sec	59,8407	951	862	-582
T-48 sec	60,0100	951	908	52	T+44 sec	59,8400	951	862	-461
T-44 sec	59,9993	951	906	23	T+48 sec	59,8010	951	859	-564
T-40 sec	60,0013	951	903	-9	T+52 sec	59,7863	951	854	-637
T-36 sec	60,0110	951	909	14	T+56 sec	59,7933	951	857	-678
T-32 sec	60,0123	951	902	39	T+60 sec	59,7950	951	860	-647
T-28 sec	60,0190	951	904	42	T+2 min	59,8050	951	849	-592
T-24 sec	60,0270	951	907	74	T+3 min	59,7780	951	860	-708
T-20 sec	60,0060	951	903	73	T+4 min	59,9190	951	867	-281
T-16 sec	59,9933	951	901	1	T+5 min	59,9090	951	872	-253
T-12 sec	59,9960	951	902	-22	T+6 min	59,9750	951	881	-31
T-08 sec	59,9653	951	898	-37	T+7 min	59,8950	951	882	-302
T-04 sec	59,9353	951	900	-147	T+8 min	59,9800	951	887	-43
T=0 sec	59,9320	951	901	-232	T+9 min	60,0610	951	886	230
T+04 sec	59,9480	951	899	-222	T+10 min	60,0140	951	915	53
T+08 sec	59,9507	951	874	-161	T+11 min	59,9900	951	901	-39
T+12 sec	59,4690	951	760	-637	T+12 min	60,0130	951	893	52
T+16 sec	59,1077	951	741	-1992	T+13 min	60,0130	951	903	38
T+20 sec	59,2480	951	875	-3062	T+14 min	60,0030	951	923	3
T+24 sec	59,4980	951	869	-1965	T+15 min	60,0080	951	928	41
T+28 sec	59,6273	951	863	-1431					

Report No. ATR\_HQTE\_2008\_08\_01\_21\_NICOLET\_573MW Date: 08-01-08 Time: 20:56:30  
**QUÉBEC**

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

Cause: Tripping of two 230-kV lines (L2381 and 2382) between Nicolet and Becancour/Gentilly-2 substations caused by a lightning storm.

Generation Loss: 573 MW Percent of Loss to First Contingency: 57,3 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 84 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
 Time to return ACE to zero: 01:48 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) 60,0123 Freq. (after) 60,0063 Freq. Dev. -0,0061

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	59,9567	3003	3002	-160
T-56 sec					T+36 sec	59,9330	3003	3004	-196
T-52 sec	59,9803	3003	2999	-72	T+40 sec	59,9077	3003	3000	-283
T-48 sec	59,9850	3003	2998	-76	T+44 sec	59,8940	3003	3014	-385
T-44 sec	59,9773	3003	2998	-66	T+48 sec	59,9130	3003	3016	-398
T-40 sec	59,9713	3003	3001	-99	T+52 sec	59,9583	3003	3014	-320
T-36 sec	59,9740	3003	3005	-113	T+56 sec	59,9803	3003	3021	-118
T-32 sec	59,9853	3003	3007	-91	T+60 sec	59,9820	3003	3023	-131
T-28 sec	59,9973	3003	3011	-44	T+2 min	60,0080	3003	3057	33
T-24 sec	60,0080	3003	3011	0	T+3 min	60,0260	3003	3080	110
T-20 sec	60,0130	3003	3012	37	T+4 min	59,9690	3093	3068	-144
T-16 sec	60,0183	3003	3007	55	T+5 min	59,9720	3093	3006	33
T-12 sec	60,0230	3003	3005	77	T+6 min	60,0090	3093	3052	9
T-08 sec	60,0183	3003	3009	85	T+7 min	60,0530	3093	3062	144
T-04 sec	60,0123	3003	3024	64	T+8 min	60,0270	3093	3077	77
T=0 sec	60,0000	3003	3014	44	T+9 min	60,0340	3093	3077	157
T+04 sec	59,9280	3003	2939	-15	T+10 min	60,0260	3093	3086	120
T+08 sec	59,6460	3003	2963	-351	T+11 min	60,0030	3093	3082	21
T+12 sec	59,7070	3003	2983	-1241	T+12 min	60,0140	3093	3076	28
T+16 sec	59,7963	3003	2989	-1117	T+13 min	60,0070	3093	3081	27
T+20 sec	59,8890	3003	2980	-713	T+14 min	60,0200	3093	3076	28
T+24 sec	59,9230	3003	2997	-434	T+15 min	59,9840	3093	3068	-68
T+28 sec	59,9523	3003	2998	-258					

Report No. ATR\_HQTE\_2008\_08\_18\_19\_Arnaud\_875MW Date: 08-18-08 Time: 18:15:51  
**QUÉBEC**

Origin: Generation rejection of 875 MW at Churchill Falls GS (units 1 and 2).

Cause: Tripping of one 735-kV line (7028) between Arnaud and Manicouagan substations due to a lightning storm.

Generation Loss: 875 MW Percent of Loss to First Contingency: 87,5 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 189 MW

Time to return ACE to initial (T-4) value: 01:39 minutes  
 Time to return ACE to zero: 01:48 minutes

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

Freq. (@T-4) 59,9927 Freq. (after) 60,0008 Freq. Dev. 0,0081

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	59,8520	3879	3883	-627
T-56 sec					T+36 sec	59,8380	3879	3887	-714
T-52 sec	60,0083	3879	3917	49	T+40 sec	59,8420	3879	3903	-762
T-48 sec	60,0060	3879	3924	32	T+44 sec	59,8577	3879	3907	-731
T-44 sec	60,0090	3879	3931	33	T+48 sec	59,8960	3879	3908	-598
T-40 sec	60,0070	3879	3927	44	T+52 sec	59,9293	3879	3917	-441
T-36 sec	60,0050	3879	3925	30	T+56 sec	59,9443	3879	3905	-294
T-32 sec	60,0087	3879	3928	27	T+60 sec	59,9370	3879	3915	-301
T-28 sec	60,0127	3879	3928	48	T+2 min	60,0180	3879	3906	77
T-24 sec	60,0050	3879	3928	60	T+3 min	60,0570	3879	3904	244
T-20 sec	59,9980	3879	3928	11	T+4 min	60,0010	3879	3901	-12
T-16 sec	59,9953	3879	3925	-10	T+5 min	60,0210	3879	3893	87
T-12 sec	59,9870	3879	3924	-28	T+6 min	59,9940	3879	3873	-34
T-08 sec	59,9880	3879	3928	-63	T+7 min	59,9850	3879	3855	-50
T-04 sec	59,9927	3879	3927	-53	T+8 min	60,0050	3879	3853	2
T=0 sec	59,9960	3879	3867	-28	T+9 min	60,0120	3879	3862	8
T+04 sec	59,7013	3879	3738	-15	T+10 min	59,9980	3879	3859	-34
T+08 sec	59,3983	3879	3848	-1727	T+11 min	60,0120	3879	3854	70
T+12 sec	59,6070	3879	3877	-2479	T+12 min	60,0030	3879	3849	-60
T+16 sec	59,7710	3879	3887	-1604	T+13 min	59,9840	3879	3841	-74
T+20 sec	59,8783	3879	3890	-872	T+14 min	60,0080	3879	3850	49
T+24 sec	59,8840	3879	3884	-607	T+15 min	60,0080	3879	3838	49
T+28 sec	59,8680	3879	3884	-515					

Report No. ATR\_HQTE\_2008\_10\_20\_14\_GENTILLY2\_638MW Date: 10-20-08 Time: 13:35:30  
**QUÉBEC**

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

Cause: Tripping of a 230/24-kV transformer (T2) at Gentilly-2 GS and of one 230-kV line (L2385) between  
Trois-Rivières and Becancour/Gentilly-2 substations after a phase-to-ground fault on line 2385.

Generation Loss: 638 MW Percent of Loss to First Contingency: 63,8 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 42 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
 Time to return ACE to zero: 01:27 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) 60,0040 Freq. (after) 60,0013 Freq. Dev. -0,0027

Comments: Faulty operation of the overcurrent protection of T2 due to false settings, which will be corrected this week.  
Until then this protection was switched off.

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	59,8160	1581	1580	-606
T-56 sec					T+36 sec	59,8450	1581	1579	-714
T-52 sec	59,9987	1581	1613	44	T+40 sec	59,8917	1581	1574	-628
T-48 sec	59,9850	1581	1622	-24	T+44 sec	59,9417	1581	1579	-409
T-44 sec	59,9830	1581	1618	-65	T+48 sec	59,9400	1581	1584	-263
T-40 sec	59,9790	1581	1619	-76	T+52 sec	59,9413	1581	1597	-248
T-36 sec	59,9840	1581	1616	-91	T+56 sec	59,9577	1581	1589	-243
T-32 sec	59,9943	1581	1619	-56	T+60 sec	59,9690	1581	1581	-206
T-28 sec	60,0023	1581	1624	-14	T+2 min	60,0600	1581	1619	256
T-24 sec	60,0120	1581	1619	18	T+3 min	60,0180	1581	1630	109
T-20 sec	60,0147	1581	1622	55	T+4 min	59,9930	1581	1616	-32
T-16 sec	60,0087	1581	1620	56	T+5 min	60,0070	1581	1613	45
T-12 sec	60,0090	1581	1623	29	T+6 min	59,9910	1581	1614	-32
T-08 sec	60,0060	1581	1625	34	T+7 min	60,0470	1581	1621	184
T-04 sec	60,0040	1581	1615	21	T+8 min	60,0080	1581	1634	55
T=0 sec	59,9990	1581	1605	15	T+9 min	60,0250	1581	1643	61
T+04 sec	59,7723	1581	1584	-9	T+10 min	59,9900	1581	1636	-87
T+08 sec	59,5140	1581	1600	-1194	T+11 min	60,0350	1581	1646	152
T+12 sec	59,7500	1581	1580	-1503	T+12 min	59,9940	1581	1630	-10
T+16 sec	59,8900	1581	1574	-896	T+13 min	60,0220	1581	1633	45
T+20 sec	59,9900	1581	1579	-316	T+14 min	59,9880	1581	1622	-41
T+24 sec	59,9680	1581	1573	-83	T+15 min	60,0010	1581	1623	-3
T+28 sec	59,8787	1581	1575	-150					

Report No. ATR\_HQTE\_2008\_10\_25\_03\_NICOLET\_512MW Date: 10-25-08 Time: 02:05:48  
**QUÉBEC**

Origin: Reception loss from Sandy Pond on Pole 1 of the RMCC.

Cause: Tripping of Pole 1 Nicolet-Sandy Pond because of a high temperature caused by a problem on the thyristors cooling system, which is being analysed.

Generation Loss: 512 MW      Percent of Loss to First Contingency: 51,2 %  
 Load Loss: 510 MW      Maximum Interchange Deviation: 0 MW

Time to return ACE to initial (T-4) value: n/a minutes  
 Time to return ACE to zero: n/a 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) 60,0200      Freq. (after) 60,0238      Freq. Dev. 0,0037

Comments: The Nicolet Remote load shedding SPS shedded 510 MW of load, with 233 500 affected customers. This was a malfunction of the SPS caused by a false indication of voltage drop: line 7005 was withdrawn for voltage control and the voltage reference did not change to line 7035.

See Comment File: \_\_\_\_\_ See Graph: ATR\_HQTE\_2008\_10\_25\_03\_NI\_512MW\_CHART

**INTERCHANGE TABLE**

T = Time of Disturbance

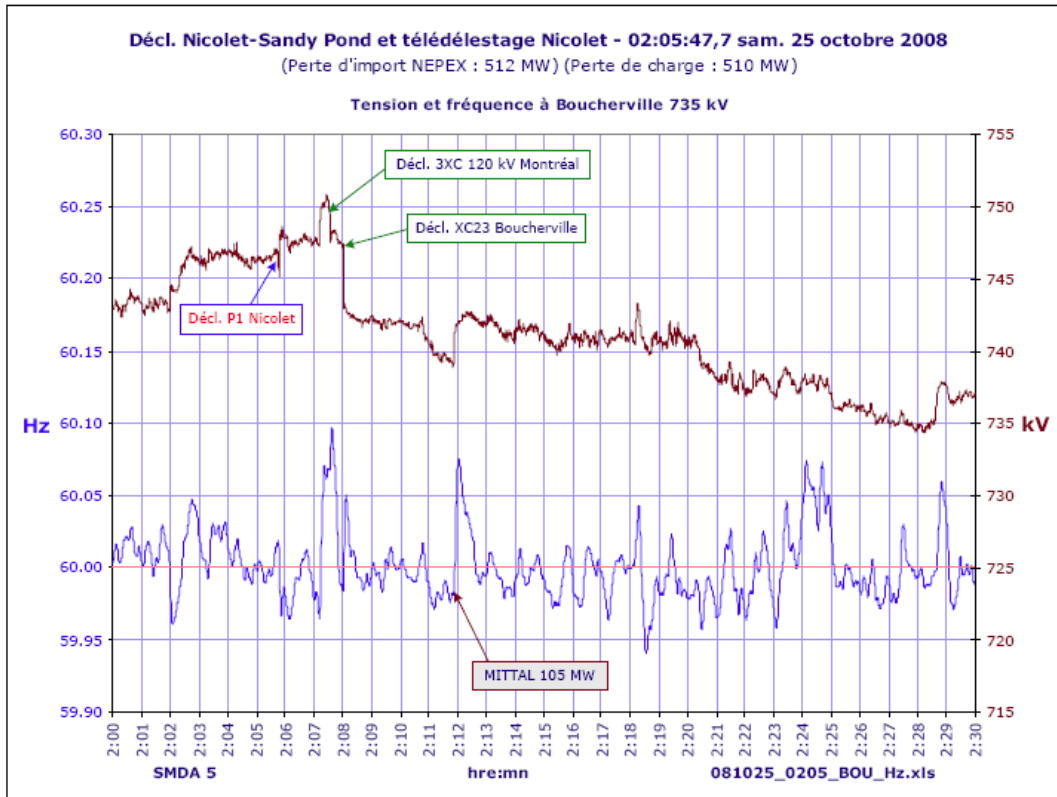
Time	F	Sched	Actual	ACE	Time	F	Sched	Actual	ACE
T-60 sec					T+32 sec				
T-56 sec					T+36 sec				
T-52 sec					T+40 sec				
T-48 sec					T+44 sec				
T-44 sec					T+48 sec				
T-40 sec					T+52 sec				
T-36 sec					T+56 sec				
T-32 sec					T+60 sec				
T-28 sec					T+2 min				
T-24 sec					T+3 min				
T-20 sec					T+4 min				
T-16 sec					T+5 min				
T-12 sec					T+6 min				
T-08 sec					T+7 min				
T-04 sec					T+8 min				
T=0 sec					T+9 min				
T+04 sec					T+10 min				
T+08 sec					T+11 min				
T+12 sec					T+12 min				
T+16 sec					T+13 min				
T+20 sec					T+14 min				
T+24 sec					T+15 min				
T+28 sec									

(suite du rapport à la page suivante)



Since the load loss was equal to the generation loss, no frequency data was collected.

The chart below shows a maximum frequency deviation of 60,10 Hz.



Report No. ATR\_HQTE\_2008\_10\_27\_14\_CHURCHILL\_529MW Date: 10-27-08 Time: 13:45:57  
**QUÉBEC**

Origin: Generation loss of 529 MW at Churchill Falls GS (unit 5).

Cause: There is a load restriction of 500 MW on unit 5 due to a problem with the governor pilot control assembly. The unit tripped when the operator exceeded 500 MW.

Generation Loss: 529 MW Percent of Loss to First Contingency: 52,9 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 61 MW

Time to return ACE to initial (T-4) value: \_\_\_\_\_ minutes  
 Time to return ACE to zero: 00:38 minutes Runback? (Y/N) N  
 Included in DCS? (Y/N) N  
 Freq. (@T-4) Freq. (after) Freq. Dev. Reviewed by Area? (Y/N) N  
60,0110 59,9970 -0,0140 Reviewed by CO-1? (Y/N) N

Comments: The operator did not advise CCR of the incident.

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	59,9757	1377	1311	-187
T-56 sec					T+36 sec	60,0050	1377	1307	-70
T-52 sec	59,9933	1377	1336	-7	T+40 sec	60,0290	1377	1311	48
T-48 sec	59,9890	1377	1336	-33	T+44 sec	60,0280	1377	1313	140
T-44 sec	59,9850	1377	1332	-46	T+48 sec	60,0260	1377	1318	85
T-40 sec	59,9817	1377	1332	-62	T+52 sec	60,0300	1377	1317	107
T-36 sec	59,9840	1377	1330	-76	T+56 sec	60,0273	1377	1329	121
T-32 sec	59,9910	1377	1332	-55	T+60 sec	60,0310	1377	1328	108
T-28 sec	59,9963	1377	1332	-32	T+2 min	60,0480	1377	1352	192
T-24 sec	60,0000	1377	1330	-9	T+3 min	60,0060	1377	1336	16
T-20 sec	59,9970	1377	1330	-3	T+4 min	60,0180	1377	1342	56
T-16 sec	59,9990	1377	1330	-13	T+5 min	59,9740	1377	1324	-74
T-12 sec	60,0030	1377	1332	-1	T+6 min	60,0020	1377	1328	26
T-08 sec	60,0050	1377	1334	13	T+7 min	60,0120	1377	1337	57
T-04 sec	60,0110	1377	1335	23	T+8 min	59,9820	1377	1326	-187
T=0 sec	60,0160	1377	1331	52	T+9 min	59,9530	1377	1321	-134
T+04 sec	59,9907	1377	1306	64	T+10 min	60,0010	1377	1332	19
T+08 sec	59,7453	1377	1273	-58	T+11 min	60,0140	1377	1325	49
T+12 sec	59,6160	1377	1295	-1358	T+12 min	59,9730	1377	1331	-96
T+16 sec	59,7107	1377	1288	-1554	T+13 min	59,9930	1377	1337	-5
T+20 sec	59,8420	1377	1275	-1037	T+14 min	60,0070	1377	1335	22
T+24 sec	59,9060	1377	1292	-565	T+15 min	60,0150	1289	1325	59
T+28 sec	59,9433	1377	1298	-304					

**QUÉBEC**

Origin: Generation loss of 538 MW at Churchill Falls GS (unit 7).

Cause: Unit 7 tripped on accumulation tank low oil pressure. Load on unit was increased to 500 MW for thermovision on transformer T74. We experienced a 30 to 40 MW load swing before unit tripped.  
 Faulty governor card connections. Card was changed and no load swings were experienced at 500MW

Generation Loss: 538 MW                      Percent of Loss to First Contingency: 53,8 %  
 Load Loss: \_\_\_\_\_ MW                      Maximum Interchange Deviation: 45 MW

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

Freq. (@T-4)	Freq. (after)	Freq. Dev.	Included in DCS? (Y/N)	<u>N</u>
<u>59,9960</u>	<u>59,9880</u>	<u>-0,0080</u>	Reviewed by Area? (Y/N)	<u>N</u>
			Reviewed by CO-1? (Y/N)	<u>N</u>

Comments: As received from Churchill Falls (Lab) Corporation.

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	59,9503	1479	1450	-227
T-56 sec					T+36 sec	59,9410	1479	1450	-254
T-52 sec	60,0003	1479	1479	-5	T+40 sec	59,9437	1479	1456	-283
T-48 sec	59,9970	1479	1479	3	T+44 sec	59,9663	1479	1459	-260
T-44 sec	59,9857	1479	1484	-29	T+48 sec	59,9880	1479	1449	-116
T-40 sec	59,9797	1479	1485	-82	T+52 sec	59,9920	1479	1457	-37
T-36 sec	59,9850	1479	1485	-102	T+56 sec	59,9910	1479	1454	-33
T-32 sec	59,9957	1479	1486	-56	T+60 sec	59,9960	1479	1455	-42
T-28 sec	60,0037	1479	1484	-12	T+2 min	60,0500	1479	1487	212
T-24 sec	60,0130	1479	1483	27	T+3 min	59,9940	1479	1475	-24
T-20 sec	60,0243	1479	1490	77	T+4 min	60,0400	1479	1467	157
T-16 sec	60,0290	1479	1487	126	T+5 min	60,0040	1479	1466	49
T-12 sec	60,0220	1479	1480	137	T+6 min	59,9980	1479	1457	9
T-08 sec	60,0053	1479	1488	83	T+7 min	60,0030	1479	1463	17
T-04 sec	59,9960	1479	1488	7	T+8 min	60,0210	1479	1472	61
T=0 sec	59,9890	1479	1480	-24	T+9 min	60,0020	1479	1468	-24
T+04 sec	59,8490	1479	1443	-60	T+10 min	60,0280	1479	1467	122
T+08 sec	59,6023	1479	1453	-875	T+11 min	60,0230	1479	1469	61
T+12 sec	59,7680	1479	1460	-1492	T+12 min	60,0250	1479	1478	85
T+16 sec	59,8880	1479	1445	-955	T+13 min	60,0050	1479	1473	21
T+20 sec	59,9480	1479	1447	-389	T+14 min	60,0040	1479	1467	0
T+24 sec	59,9410	1479	1448	-310	T+15 min	60,0160	1479	1473	62
T+28 sec	59,9490	-2423	-2632	-268					

Report No. ATR\_HQTE\_2008\_11\_03\_11\_CHURCHILL\_890MW Date: 11-03-08 Time: 10:10:25  
**QUÉBEC**

Origin: Generation loss at Churchill Falls GS (units 4 and 10).

Cause: Fire in the power cables between the generating terminal and the generator transformer.

Generation Loss: 890 MW Percent of Loss to First Contingency: 89 %  
 Load Loss: \_\_\_\_\_ MW Maximum Interchange Deviation: 178 MW

Time to return ACE to initial (T-4) value: 03:11 minutes  
 Time to return ACE to zero: 03:48 minutes

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

Freq. (@T-4) 59,9557 Freq. (after) 60,0010 Freq. Dev. 0,0453

Comments: The frequency was 59,9557 Hz when the tripping occurred because unit 11 had tripped at 10:09:50.  
Units are expected to be back in service in three months.

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	59,8687	902	899	-466
T-56 sec					T+36 sec	59,8370	902	894	-634
T-52 sec	59,9930	902	1029	-88	T+40 sec	59,8183	902	903	-729
T-48 sec	60,0040	902	1027	-15	T+44 sec	59,7980	902	896	-809
T-44 sec	60,0100	902	1026	24	T+48 sec	59,7970	902	893	-861
T-40 sec	60,0133	902	1015	54	T+52 sec	59,7930	902	894	-886
T-36 sec	59,8610	902	976	57	T+56 sec	59,8007	902	900	-902
T-32 sec	59,6997	902	987	-866	T+60 sec	59,8010	902	902	-874
T-28 sec	59,7543	902	986	-1358	T+2 min	59,8970	902	901	-498
T-24 sec	59,8600	902	971	-975	T+3 min	59,9220	902	934	-328
T-20 sec	59,9130	902	970	-562	T+4 min	60,0300	902	969	84
T-16 sec	59,9337	902	975	-361	T+5 min	60,0880	902	1013	427
T-12 sec	59,9390	902	975	-282	T+6 min	59,9970	902	1004	11
T-08 sec	59,9417	902	974	-274	T+7 min	59,9900	902	991	-41
T-04 sec	59,9557	902	969	-250	T+8 min	59,9890	902	993	-82
T=0 sec	59,8610	902	938	-175	T+9 min	60,0240	902	999	98
T+04 sec	59,3237	902	791	-745	T+10 min	60,0140	902	1011	82
T+08 sec	59,2097	902	860	-3517	T+11 min	60,0140	902	1012	70
T+12 sec	59,5430	902	902	-2593	T+12 min	60,0180	902	1014	57
T+16 sec	59,6923	902	874	-1779	T+13 min	59,9940	902	1014	-18
T+20 sec	59,7983	902	877	-1170	T+14 min	59,9900	902	1013	-46
T+24 sec	59,8550	902	889	-846	T+15 min	60,0020	902	1014	41
T+28 sec	59,8843	902	891	-558					