YUKON
ENERGY

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Our File: 2/ 2703-05-04

March 5, 2012

Yukon Utilities Board
P.O. Box 31728
Whitehorse, YT
Y1A 6L3

Attention: Mr. Bruce McLennan, Chair

Re: YEC Outage Report – 2010

Please find attached the YEC outage reports for the 1st through 4th quarter of 2010. This information is provided pursuant to the filing requirements of the 1996/7 settlement agreement and corresponding Board Order.

If you have any questions regarding the content within this report please do not hesitate to contact the undersigned.

Yours truly,

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Enclosure

CC via email : Dwight Redden, YECL
Wayne Tonsi, YECL

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Outage / Disturbance Report
January 2010

Date	Location	Number of Customers Affected	Cause	Duration (Outage to Restoration)	Comments
January 21/10	Dawson	1237	Unknown	F1 – 13 min F2 – 12 min F3 – 60 min L174 – 35 min	There was no definitive cause indentified for this outage. S249 D60 -27 km ABC Fault.

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Outage / Disturbance Report
February 2010

Feb 1/10	Dawson	1237	Line Icing	F1 – 7 min F2 – 6 min F3 – 33 min L174 – 52 min	Report of frost build up on the L174 lines are the suspected cause of this event.
Feb 2/10	L250 (Elsa)	21	Failed Insulators	5 min	Failed insulators identified and repaired on Feb 16/10.
Feb 5/10	L250 (Elsa)	21	Failed Insulators	2 min	Failed insulators identified and repaired on Feb 16/10.
Feb 6/10	Dawson	1237	Line Icing	F1 – 8 min F2 – 8 min F3 – 12 min L174 – 21 min	Frost build up on the L174 lines are the suspected cause of this event. Protective devices are still being reviewed.
Feb 16/10	L250 (Elsa)	23	Scheduled Outage	2 hrs 12 min	Planned outage to replaced failed insulators on the L250 transmission line.
Feb 25/10	L355	5	Scheduled Outage	2 hrs 38 min	Planned outage required to isolate the Aishihik bus for investigation and repairs to the plant station service breaker.

Outage / Disturbance Report
March 2010

Date	Location	Number of Customers Affected	Cause	Duration (Outage to Restoration)	Comments
March 1/10	L173 (Carmacks to Minto)	2	Human Error	Minto Mine – 56 min Pelly Crossing - 1 hr 31 min	S255 52-2 was being tested for SCADA control due to a previous control failure. The circuit switcher S255 52-2 was decoupled to eliminate an actual operation of the switch. An open command was issued by SCC, however the switch was not properly decoupled and the switch operated de-energizing L173 causing a mine and Pelly outage. All necessary steps were not performed to ensure the circuit switcher was bypassed.
March 14/10	Dawson F3	401	Tree Contact	17 minutes	Customer from Rock Creek reported a tree on the line. Dawson servicemen isolated the affected area between S7990 and S7935 and closed the Hunker Creek alternate feed at S7969 & S7971. Serviceman confirms there is a tree on the primary and mast damage to pole.
March 28/10	L170 & L173	337	Tree Contact	L170 – 6 min L173 – 9 min Minto Mine – 12 min Faro - 19 min	The suspected cause of this event is a tree contact and/or insulator failure (ground fault); the weather at the time of this disturbance was reported as heavy rain and snow in the Faro district. The line was re-energized and customer supply was quickly restored.

Outage / Disturbance Report
April 2010

April 8/10	L174	7	Scheduled	5 minutes	Planned power outage on the Mayo-Dawson transmission line.
April 21/10	Dawson F3	401	Loss of Generation	7 minutes	MH1 Tripped due to a Field Failure caused by worn slip rings. Loss of generation caused Hunker Creek Feeder protection to trip on under frequency.
April 30/10	Dawson	1	Scheduled	N/A	Failed switch on a three-phase transformer bank of a vacant building replaced. Switch was found during regular work in the area, unknown when switch had failed.

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Outage / Disturbance Report
May 2010

Date	Location	Number of Customers Affected	Cause	Duration (Outage to Restoration)	Comments
May 6/10	Dawson F3	2	Foreign Interference – Birds/Animal	1 hr 30 minutes	A blown fuse feeding the navigation beacon at Farley's camp after a report of a system bump.
May 15/10	Faro - 505	12	Unknown	1 minute	No adverse weather reported. Cause unknown
May 19/10	WAF – Johnson Crossing	13	Tree Contact		A tree contacted the YECL owned 9L line causing an outage from Marsh Lake south including the YEC Johnson Crossing customers. Further investigation indicated incorrect protection settings on the YECL breaker that operated. Settings have since been corrected.
May 22/10	Faro - 505	12	Unknown	1 minute	Cause unknown, no personnel on site to patrol the line or provide protective relay information.
May 22/10	Faro - 505	12	Foreign Interference – Construction	2 minute	Due to a fault condition at Minto Mine, line voltage sagged and Faro 505 protection tripped on U/V.
May 30/10	Minto Mine	1	Tree Contact	50 minutes	Trees came in contact with the 25 kV transmission line from Minto Landing to Minto Mine site. Local staff reported line contact at the 25km marker on the mine access road. The mine was restored using the onsite diesel generators. The line was not re-energized until 5 days later due to the fire fighting being carried out in the area.

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Outage / Disturbance Report
June 2010

Date	Location	Number of Customers Affected	Cause	Duration (Outage to Restoration)	Comments
June 6/10	Mayo	4	Defective Equipment – Normal Wear	1 hour, 15 minutes	A customer cut-out fell apart and was replaced. Normal wear and aging of existing equipment.
June 7/10	WAF – 19L & S6838	1-YECL	Loss of Supply - Generation	19L – 14 minutes S6838 – 18 minutes	FD1 online testing at 4.2Mw experienced a valve cage cooling hi temp and the unit tripped. WAF generation did not pick up extra load as anticipated. System frequency began to oscillate from 57Hz to 63Hz causing WH1 & WH2 HPU low pressure trips to lock out the units.
June 23/10	Dawson F3 Elsa Feeder	424	Human Error	Dawson F3 – 14 minutes Elsa Feeder – 21 minutes	Worker in Mayo plant working on MH2 unit protection inadvertently tripped the unit off line resulting in a generation deficit tripping Dawson F3 and the Elsa feeder off line.
June 24/10	Dawson F1-F3 L174	1269	Adverse Weather - Lightning	Dawson F1 – 15 min Dawson F2 – 15 min Dawson F3 – 30 min L174 – 14 min	Lighting activity in the Mayo/Dawson districts is the suspected cause of this event. Dawson load was restored with diesel.
June 26/10	Faro - 505	12	Unknown	2 hours, 48 minutes	Due to the fire danger rating the feeder was not immediately reclosed until the line was inspected by performing an aerial patrol. The patrol found no obvious cause and the breaker was reclosed by SCC.
June 27/10	Mayo	3	Foreign Interference – Birds/Animal	56 minutes	A blown customer fuse from an animal contact cause this outage.
June 30/10	Faro - 506	135	Unknown	> 1 minute	506 opened and SCC tried one reclose on the breaker and held closed. It is unknown at this time the cause of interruption.
June 30/10	Dawson F1-F3 L174	1269	Adverse Weather - Lightning	Dawson F1 – 13 min Dawson F2 – 8 min Dawson F3 – 24 min L174 – 1 hr, 19 min	Lighting activity in the Mayo/Dawson districts is the suspected cause of this event. Dawson load was restored with diesel.

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Outage / Disturbance Report
July 2010

Date	Location	Number of Customers Affected	Cause	Duration (Outage to Restoration)	Comments
July 1/10	Mayo	6	Lightning	57 minutes	Lightning storm caused blown customer fuse.
July 1/10	Mayo	3	Lightning	1 hour	Lightning storm caused blown customer fuse.
July 1/10	Dawson	6	Vehicle	8 hours, 50 minutes	Track hoe was moving under line on Bonanza Road and caught NWT phone line breaking the top of pole 10 feet down from top. This blew fuse feeding this single phase line.
July 3/10	Dawson	1269	Lightning	L174 – 36 min F1 – 6 min F2 –12 min F3 – 14 min	Lightning storm in the Dawson district resulted in a L174 transmission outage affecting all Dawson feeders.
July 3/10	Faro	135	Human Element – Incorrect Construction or Installation	20 seconds	Investigation of this outage and the July 10/10 outages was later identified as a wire tail on a 90 degree transition pole contacting the crossarm.
July 5/10	L171	15	Scheduled	2 minutes	Scheduled outage required for work on the Whse–Aish transmission line. Isolation
July 6/10	L171	15	Scheduled	2 minutes	Scheduled outage required for work on the Whse–Aish transmission line. Return to Normal
July 10/10	Faro	135	Human Element – Incorrect Construction	23 seconds	See July 3/10 comments

July 10/10	Faro	135	Human Element – Incorrect Construction or Installation	1 minute	See July 3/10 comments
July 18/10	Mayo	2	Defective Equipment - Normal Wear and Aging	3 hours, 45 minutes	Failed fuse barrel at the Halfway Lakes Lodge.
July 27/10	Mayo	3	Foreign Interference – Birds or Animlas	56 minutes	Animal contact, blown customer fuse.
July 29/10	WAF – 25%	337	Tree Contact	S150 52-17 – 6 min S6838 – 34 min 507 – 48 min 506 - 44 min 505 – 48 min L170 – 1 hr, 5 min Minto Mine - 1hr,17 min (off grid power)	Tree contacting L170 transmission line cause this outage. L170 was sectionalized at Carmacks S255 then re-energized to the Minto Mine. Faro was placed on diesel until the line was patrolled and the tree removed.
July 30/10	WAF - 16%	1 (YECL)	Generation Failure	S150 52-17 – 32 min S6838 – 38 min	Loss of system speed sensing on WH4 resulted in the unit tripping off. The two under-frequency protected breakers tripped due to insufficient generation.

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Outage / Disturbance Report
August 2010

Date	Location	Number of Customers Affected	Cause	Duration (Outage to Restoration)	Comments
Aug 2/10	Dawson	9	Foreign Interference – Foreign Objects	4 hours	Temp service pole broke off and landed on the meter, shorting out and tripping the internal breaker in the old CSP can. No customer call until 7:30 am.
Aug 5/10	Faro	135	Human Element – Incorrect Construction or Installation	2 minutes	Investigation of this outage and future outages on F2 was later identified as a jumper on a double dead-end structure contacting the cross-arm.
Aug 6/10	Mayo	2	Lightning	30 minutes	Two blown fuses at the Mayo airport
Aug 7/10	Faro	135	Human Element – Incorrect Construction or Installation	4 minutes	Investigation of this outage and future outages on F2 was later identified as a jumper on a double dead-end structure contacting the cross-arm.
Aug 8/10	Faro	135	Human Element – Incorrect Construction or Installation	4 minutes	Investigation of this outage and future outages on F2 was later identified as a jumper on a double dead-end structure contacting the cross-arm.
Aug 9/10	Dawson	2	Foreign Interference – Birds or Animals	1 hour, 30 min	Animal contact resulting in a blown customer fuse.
Aug 18/10	Faro	135	Human Element – Incorrect Construction or Installation	31 seconds	Investigation of this outage and future outages on F2 was later identified as a jumper on a double dead-end structure contacting the cross-arm.

Aug 18/10	Mayo – Elsa Line	23	Human Element - Operator Error	2 minutes	SCADA communications with the Mayo plant was down (previous night), the local operator mistakenly lowered the unit gate limit, rather than the unit output. As the system load increased the Elsa line tripped on under-frequency. Once the communication was re-established the problem was identified and resolved.
Aug 18/10	Mayo – Elsa Line	23	Human Element - Operator Error	15 minutes	See above
Aug 18/10	Mayo – Elsa Line	23	Human Element - Operator Error	16 minutes	See above
Aug 18/10	WAF – 100%	442	Human Element – Incorrect Use of Equipment	S150 52-17 – 48 min S150 52-18 – 1 hr, 9 min S150 52-21 – 49 Min S150 52-22 – 1 hr, 18 min S6837 – 57 min S6838 – 1 hr, 11 min S9815 – 1 hr, 16 min L170 – 1 hr, 21min L171 – 15 min Minto Mine – 1 hr, 49 min (off grid power) 505 – 15 min 506 – 16 min 507 – 11 min	A project in S171 Riverside to replace and test new protective relays caused a transfer trip, which resulted in breaker operations taking WH4 off the grid, cascading the system down due to lack of generation.
Aug 22/10	L174	7	Unknown	39 minutes	No definitive cause was found for this event. Dawson diesel was being run at the time of the disturbance to replace MH2 generation (PM work).
Aug 30/10	Dawson	1237	Lightning	F1 – 19 minutes F2 – 20 minutes F3 – 49 minutes	A lightning strike in the Hunker Creek (visually reported) was the cause of this disturbance.

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Outage / Disturbance Report
September 2010

Date	Location	Number of Customers Affected	Cause	Duration (Outage to Restoration)	Comments
Sept 8/10	Mayo	349	Human Element – Operator Error	L250 – 4 minutes Mayo - 2 hrs 57 min's	At the time of the outage the system was split Dawson and L174 were being energized by Dawson diesel Mayo and Keno were being energized by Mayo diesel. This setup was required to shutdown Mayo hydro for a dive inspection and work on the L174 line feeder breaker. Mayo diesel is operated locally. During the split from Dawson an incorrect operation of the Mayo diesels cause the diesels units to shutdown.
Sept 10/10	Dawson	39	Foreign Interference - Vehicles	1 hour, 25 minutes	A vehicle contacted the neutral in the Callison subdivision breaking the conductor entangling it into the phases.
Sept 15/10	Dawson	817	Defective Equipment - Normal Wear and Aging	F2 – 4 minutes F3 – 7 minutes	A hydraulic pump that maintains the MH2 TIV in an open state tripped, which partially closed the inlet valve reducing the output from the unit. Dawson F3 tripped on under-frequency, SCC initiated the trip of F2. Dawson diesel was used to restore the feeders.
Sept 26/10	Mayo	21	Adverse Weather - Snow	L250 - 2 minutes	Heavy wet snow was reported in the Elsa/Keno district and is the suspected cause of this event.

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Outage / Disturbance Report
October 2010

Date	Location	Number of Customers Affected	Cause	Duration (Outage to Restoration)	Comments
					No outages to report.

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Outage / Disturbance Report
November 2010

[illegible].0	Keno Sub	1 (YECL)	Wind (6d)	9 hours, 5 min	Heavy winds reported in the area resulting in a blown fuse on the high side in S257 Keno Sub transformer. L250 remained energized (700Kw) during the interruption. Long duration due to the location and requirement to test the transformer before re-energizing.
Nov 9/10	Dawson	6	Lightning (4)	3 hours	A transformer failure stemming from a late August thunder storm is the suspected cause of this event. This is the second transformer replaced in the area affected by the storm.
Nov 11/10	Dawson F1 & F2	861	Foreign Interference – Construction by Others (9c)	F1 – 11 min F2 – 12 min	Alexco called SCC stating they were taking their mill down for the night. SCC asked if the mill would be coming back up, they confirmed that it would be down until the morning SCC took DD1 off-line, the system load was 4.45 Mw. A few minutes later the load went up to approximately 4.6 Mw. The system load then picked up another +300 kW, with all the diesel units off the grid the hydro was unable to respond fast enough to the load increase. SCC was not contacted prior to this extra load increase, therefore was unable to add the additional generation (diesel) required. The result was a frequency drop down to 59.0 Hz, tripping Dawson feeders 1 and 2.
Nov 24/10	L250 Elsa Line	23	Snow (6c)	14 min	Snow load on the transmission lines combined with high winds (phase slap) is the suspected cause of this outage.
Nov 26/10	L250 Elsa Line	23	Snow (6c)	47 min	Snow load on the transmission lines combined with high winds (phase slap) is the suspected cause of this outage. Extended duration due to the operational requirement of contacting the Alexco mine and ensuring their breakers are open prior to re-energizing the line.
Nov 27/10	L250 Elsa Line	23	Snow (6c)	4 min	Snow load on the transmission lines combined with high winds (phase slap) is the suspected cause of this outage. This is the third event on this transmission line, it continues to snow and remains windy in the area. Further outages will initiate an aerial patrol of the line.

Nov 28/10	Bell Keno	1 (Alexco Mine)	Snow (6c)	2 hours, 30 min	Heavy snow on the lines feeding the Alexco water treatment plant in Keno. This customer is fed from the 14.4 KV single phase distribution. The 3 amp fuse feeding that part of the system blew. L250 remained energized.
Nov 29/10	WAF - 28%	350	Snow (6c)	S150 52-17 – 5 min S150 52-22 – 4 min 507 – 16 min 506 - 19 min 505 – 19 min L170 (to Faro)– 19 hr, 51 min Minto Mine - 18 min	An aerial patrol was initiated on Nov 30/10, L170 flown from Carmacks to the Faro mine. Nothing obvious was found and the line was re-energized at 15:08. Suspected cause was heavy snow on the lines SCC attempted one reclose on S164 52-3, 42 seconds later the feeder tripped again. L170 left partially de-energized from S255 52-1 to Faro 701 for the night. Faro on diesel generation for the night.

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Outage / Disturbance Report
December 2010

Date	Location	Number of Customers Affected	Cause	Duration (Outage to Restoration)	Comments
Dec 9/10	Dawson - F1,F3 & L174	744	Snow (6c)	F1 – 4 min F3 – 4 min L174 – 37 min	Snow load on the transmission lines combined with windy conditions (phase slap) is the suspected cause of this outage. Dawson was restored using local diesel and L174 from Mayo hydro.
Dec 22/10	L174	16	Snow (6c)	17 min	Snow load on the transmission lines combined with windy conditions (phase slap) is the suspected cause of this outage. Sufficient Dawson diesel was running at the time of this event which minimized the customer impact.
Dec 24/10	Faro - 505	11	Snow (6c)	505 - 25 seconds Faro Airport – 5 hours, 15 min	Snow load on the primary phase contacted the neutral phase which caused the fuse to blow at the Faro airport. The imbalance caused the 505 breaker to trip. The Faro airport remained de-energized until a serviceman was dispatched from Whitehorse.
Dec 25/10	L250 –Elsa Line	23	Snow (6c)	12 min	Snow load on the transmission lines combined with windy conditions (phase slap) is the suspected cause of this outage.