Q. For calendar year 2006, identify the ten worst performing circuits on Newfoundland Power's system. This information should include in tabular format (similar to reporting required by FortisAlberta Inc.): substation feeder identification, driver of outage, MW load, number of customers affected, number of outages, overall SAIDI, previous times on list of ten worst performing feeders in past five years, and any general comments. Please comment on the factors underlying the performance of these circuits, and explain any measures implemented to improve the reliability of these circuits.

A. As described in the response to CA-NP-65, Newfoundland Power identifies the worst performing feeders based on SAIFI and SAIDI indices and customer minutes.

Table 1 shows the data requested for the 10 worst performing feeders based on SAIFI for 2006. The data reflects all unplanned outages caused by failure of, or interference with, the distribution system. Table 1A indicates the principal causes of the outages and the corrective measures implemented.

Table 1
10 Worst Performing Feeders
Sorted by SAIFI
2006

Feeder	SAIFI	MVA Load	# of Outages[1]	# of Customers Affected[2]	SAIDI	# of Times on SAIFI List (past 5 years)
SPO-02	7.61	3.3	26	4,599	13.43	1
NWB-02	5.33	3.3	41	5,531	8.98	1
BOT-01	5.02	4.6	40	8,144	6.39	2
KEL-01	4.68	6.6	25	7,795	10.20	1
SPF-01	4.41	3.7	16	4,150	11.20	1
GBS-02	4.38	0.9	18	1,932	2.33	3
BVS-04	4.34	6.9	32	5,095	3.04	1
KEL-02	4.30	5.3	25	4,365	4.23	2
HBS-01	4.25	0.3	5	17	0.23	1
HBS-02	4.14	2.6	14	3,284	3.76	1

Table 1A
Corrective Measures

Feeder	Causes of Outages	Corrective Measures Implemented[3]
SPO-02	Cutouts & conductor	See Endnote 3
NWB-02	Cutouts, conductor & insulators	See Endnote 3
BOT-01	Insulators & conductor	Distribution Reliability Initiative Capital Program 2006, 2008 and 2009.
KEL-01	Cutouts & conductor	See Endnote 3
SPF-01	Insulators	See Endnote 3
GBS-02	Insulators & lightning arrestor	See Endnote 3
BVS-04	Trees	See Endnote 3
KEL-02	Cutouts and birds	See Endnote 3
HBS-01	Trees, cutouts & equipment	See Endnote 3
HBS-02	Cutouts, equipment & ice	See Endnote 3

Table 2 shows the data requested for the 10 worst performing feeders based on SAIDI for 2006. The data reflects all unplanned outages caused by failure of, or interference with, the distribution system. Table 2A indicates the principal causes of the outages and the corrective measures implemented.

Table 2
10 Worst Performing Feeders
Sorted by SAIDI
2006

Feeder	SAIDI	MVA Load	# of Outages[1]	# of Customers Affected[2]	SAIDI	# of Times on SAIDI List (past 5 years)
SPO-02	13.43	3.3	26	4,599	13.43	1
PJN-01	12.92	0.5	4	215	12.92	2
SPF-01	11.20	3.7	16	4,150	11.20	1
GLV-02	10.44	3.6	30	4,439	10.44	3
KEL-01	10.20	6.6	25	7,795	10.20	1
DUN-01	9.13	2.9	42	3,097	9.13	1
ROB-01	9.04	3.0	29	3,299	9.04	2
NWB-02	8.98	3.3	41	5,531	8.98	2
SPO-03	8.95	3.6	19	1,907	8.95	1
SCT-01	6.71	1.9	20	852	6.71	1

Table 2A
Correction Measures

Feeder	Causes of Outages	Corrective Measures Implemented
SPO-02	Cutouts & conductor	See Endnote 3
PJN-01	Equipment	See Endnote 3
SPF-01	Insulators	See Endnote 3
GLV-02	Cutouts, conductor & insulators	Distribution Reliability Initiative Capital Program 2006, 2008 and 2009.
KEL-01	Cutouts & conductor	See Endnote 3
DUN-01	Cutouts, conductor & insulators	See Endnote 3
ROB-01	Cutouts & conductor	See Endnote 3
NWB-02	Cutouts, conductor & insulators	See Endnote 3
SPO-03	Conductor	See Endnote 3
SCT-01	Conductor	See Endnote 3

Table 3 shows the data requested for the 10 worst performing feeders based on Customer Minutes for 2006. The data reflects all unplanned outages caused by failure of, or interference with, the distribution system. Table 3A indicates the principal causes of the outages and the corrective measures implemented.

Table 3
10 Worst Performing Feeders
Sorted by Customer Minutes
2006

Feeder	Customer Minutes	MVA Load	# of Outages[1]	# of Customers Affected[2]	SAIDI	# of Times on Customer Minutes List (past 5 years)
KEL-01	1,018,056	6.6	25	7,795	10.20	1
GLV-02	783,873	3.6	30	4,439	10.44	3
CHA-03	729,367	12.1	43	6,676	6.08	1
SPF-01	628,924	3.7	16	4,150	11.20	1
BOT-01	621,372	4.6	40	8,144	6.39	2
ROB-01	580,673	3.0	29	3,299	9.04	2
NWB-02	559,515	3.3	41	5,531	8.98	2
DUN-01	517,398	2.9	42	3,097	9.13	1
SPO-02	486,868	3.3	26	4,599	13.43	1
MIL-02	435,901	3.8	25	5,520	5.43	2

Table 3A
Corrective Measures

Feeder	Causes of Outages	Corrective Measures Implemented
KEL-01	Cutouts & conductor	See Endnote 3
GLV-02	Cutouts, conductor & insulators	Distribution Reliability Initiative Capital Program 2006, 2008 and 2009.
CHA-03	Trees, conductor & insulators	See Endnote 3
SPF-01	Insulators	See Endnote 3
BOT-01	Insulators & conductor	Distribution Reliability Initiative Capital Program 2006, 2008 and 2009.
ROB-01	Cutouts & conductor	See Endnote 3
NWB-02	Cutouts, conductor & insulators	See Endnote 3
DUN-01	Cutouts, conductor & insulators	See Endnote 3
SPO-02	Cutouts & conductor	See Endnote 3
MIL-02	Cutouts & conductor	See Endnote 3

[1] Total number of outages recorded for the feeder irrespective of the number of customers affected.

[2] Total number of customers affected by the total number of outages.

[3] Due to nature of the outages and the feeder's performance over a number of years, the Company has not targeted the feeder for specific reliability improvement. The causes of these outages are addressed though the Company's maintenance practices such as tree trimming and ongoing inspection and maintenance programs. Annually, the Company reviews those feeders exhibiting the poorest performance over the *previous five years.* Attachment A contains distribution reliability five-year average data of the 15 worst performing feeders. From this review, feeders are selected for upgrading under the Distribution Reliability Initiative. The Distribution Reliability Initiative is reviewed in response to CA-NP-438.

Attachment A
Distribution Reliability Data

Unscheduled Distribution Related Outages

Five-Year Average
2002 to 2006
Sorted By Customer Minutes of Interruption

Feeder	Customer Interruptions per Year	Customer Minutes of Interruption per Year	Distribution SAIFI per Year	Distribution SAIDI Per Year
LEW-02	5,282	808,239	3.82	9.74
BOT-01	5,052	688,459	3.11	7.07
GLV-02	3,988	552,441	3.19	7.36
BCV-02	5,469	550,965	3.58	6.02
GFS-06	4,025	481,417	2.46	4.91
PUL-01	3,963	439,255	2.43	4.50
NWB-02	3,261	430,312	3.14	6.92
ROB-01	3,526	387,282	3.29	6.03
PUL-02	4,210	373,000	3.12	4.61
MIL-02	3,570	349,285	2.65	4.32
GBY-03	1,572	337,500	2.06	7.36
HWD-02	3,518	330,771	2.59	4.07
DUN-01	2,535	329,221	2.69	5.81
WES-02	2,887	322,876	3.82	7.13
SMV-01	1,892	319,628	1.84	5.18
Company Average	**1,028**	**86,539**	**1.45**	**2.03**

Unscheduled Distribution Related Outages

Five-Year Average
2002 to 2006
Sorted By Distribution SAIFI

Feeder	Customer Interruptions per Year	Customer Minutes of Interruption per Year	Distribution SAIFI per Year	Distribution SAIDI per Year
GBS-02	2,240	139,396	5.08	5.27
GRH-02	3,033	243,362	3.83	5.12
WES-02	2,887	322,876	3.82	7.13
LEW-02	5,282	808,239	3.82	9.74
BCV-02	5,469	550,965	3.58	6.02
LOK-01	3,631	226,198	3.55	3.69
WES-01	1,292	143,223	3.32	6.14
ROB-01	3,526	387,282	3.29	6.03
GLV-02	3,988	552,441	3.19	7.36
NWB-02	3,261	430,312	3.14	6.92
PUL-02	4,210	373,000	3.12	4.61
BOT-01	5,052	688,459	3.11	7.07
GLN-01	2,067	139,156	3.06	3.44
KEL-02	3,087	154,795	3.04	2.54
BHD-01	2,505	196,837	2.90	3.82
Company Average	**1,028**	**86,539**	**1.45**	**2.03**

Unscheduled Distribution Related Outages

Five-Year Average
2002 to 2006
Sorted By Distribution SAIDI

Feeder	Customer Interruptions per Year	Customer Minutes of Interruption per Year	Distribution SAIFI per Year	Distribution SAIDI per Year
GPD-01	367	165,992	1.56	11.72
LEW-02	5,282	808,239	3.82	9.74
WES-03	1,415	267,222	2.73	8.60
GBY-03	1,572	337,500	2.06	7.36
GLV-02	3,988	552,441	3.19	7.36
WES-02	2,887	322,876	3.82	7.13
BOT-01	5,052	688,459	3.11	7.07
NWB-02	3,261	430,312	3.14	6.92
WES-01	1,292	143,223	3.32	6.14
ROB-01	3,526	387,282	3.29	6.03
BCV-02	5,469	550,965	3.58	6.02
DUN-01	2,535	329,221	2.69	5.81
GBY-02	1,638	302,500	1.86	5.74
GBS-02	2,240	139,396	5.08	5.27
SUM-02	974	182,938	1.67	5.21
Company Average	**1,028**	**86,539**	**1.45**	**2.03**