Appendices

Appendix A	**MSU1 & 7040 O/S**
Appendix B	**L33 & L34 O/S**
Appendix C	**MAP1 & MAP2 O/S**
Appendix D	**MMS1 & MMS2 O/S**

Appendix A - MSU1 & 7040 O/S

A.1 MSU1 &7040 O/S

Test Level Interface Power Flow Summary and Key Voltages

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	2394.4	-117.5	DYSE-CLOSE	3846.4	44.6
WEST-CENTRAL	1061.0	-103.3	WESTC-CLOSE	2513.0	58.9
VOLNEY-EAST	3976.9	49.8	VOLNEY-CLOSE	5199.7	241.5
MOSES-SOUTH	1137.5	293.4	MOSES-CLOSE	1345.0	296.2
CENTRAL-EAST	2297.6	-630.2	TOTAL-EAST	5501.9	-681.8
UPNY-SENY	5200.9	22.3	UPNY-SENY-CL	6500.7	168.1
UPNY-CONED	4474.6	-29.0	UPNY-CON-CL	6602.2	-47.0
MILLWOOD-SO	7128.0	65.0	LIPA-IMPORT	2006.8	-167.4
DNWDIE-SO-PL	4453.5	-413.2	DNWDIE-SO-PC	6581.1	-431.2
DNWDIE-SO-OP	3538.7	-349.3	PJM-NY	1407.5	251.1
NE-NY-WCSC	241.4	118.6	ON-NY	1818.4	184.1
ONT-MICH-PAR	182.2	-11.3	Northern Export	1345.0	289.4

CASE :8.01A NORTH EX 1350 MSU1 O/S
MSC:1350 MS:1137,L34:OS,PV:100,MSU:OS,CED:125,CE:2298

STATION VOLTAGES

126260 BOWLINE1 345.00 = 359.4	126261 BOWLINE2 345.00 = 359.3	126263 BUCHANAN S 345.00 = 355.5
136150 CLAY 345.00 = 354.9	130750 COOPC345 345.00 = 356.4	126266 DUNWOODIE 345.00 = 352.7
137200 EDIC 345.00 = 351.3	126277 FARRAGUT 345.00 = 349.7	130753 FRASR345 345.00 = 359.2
135413 GRDNVL2 230.00 = 228.2	147831 GILB 345 345.00 = 361.4	126283 GOTHLS 345.00 = 347.9
126286 GOW R16 345.00 = 347.0	126290 LADENTWN 345.00 = 358.3	137451 LEEDS 3 345.00 = 360.9
147833 MARCY T1 345.00 = 352.1	126291 MILLWOOD 345.00 = 353.1	137452 N.SCOT77 345.00 = 358.9
137453 N.SCOT99 345.00 = 358.9	147841 NIAGAR2E 230.00 = 230.3	147842 NIAGAR2W 230.00 = 230.3
147834 NIAG 345 345.00 = 357.4	129341 NRTHPRT1 138.00 = 142.3	130755 OAKDL345 345.00 = 361.0
149001 PANNELL3 345.00 = 350.6	126294 PLTVLLEY 345.00 = 353.5	126295 RAINEY 345.00 = 350.1
126600 REAC71 345.00 = 352.2	126601 REAC72 345.00 = 352.2	126297 RAMAPO 345.00 = 357.5
126250 RAMAPO 5 500.00 = 520.6	125001 ROCK TAV 345.00 = 356.3	125002 ROSETON 345.00 = 356.1
130754 SOMERSET345 345.00 = 358.9	126298 SPRAINBROOK 345.00 = 352.8	149000 ROCH 345 345.00 = 349.9
147840 MOSES W 230.00 = 230.2	130768 WATRC230 230.00 = 237.8	180819 CHA-NY 765.00 = 788.5
147827 MARCY765 765.00 = 774.3	147828 MASS 765 765.00 = 740.1	126281 E FISHKILL 345.00 = 355.1
125000 HURLEY 3 345.00 = 358.3	128835 SHORE RD 345.00 = 353.3	136156 VOLNEY 345.00 = 361.4
130757 WATRC345 345.00 = 364.1*	135250 DUNKIRK 230.00 = 227.9	130764 MEYER230 230.00 = 228.5
130765 OAKDL230 230.00 = 238.4	137730 ROTRDM.2 230.00 = 227.6	181219 CHANY2 120.00 = 133.2*
181119 CHANY1 120.00 = 133.2*	137716 ALB1 115.00 = 118.4	130774 BATH 115 115.00 = 115.3
137488 BETHLEHE 115.00 = 118.6	130776 BORDR115 115.00 = 113.1	136181 CLAY 115.00 = 118.5
130794 DELHI115 115.00 = 115.4	130796 E.NOR115 115.00 = 111.5	135277 FALCONER 115.00 = 116.4
130807 WESTOVER115 115.00 = 119.8	130826 MEYER115 115.00 = 115.8	147849 MOS 115 115.00 = 117.6

147850	NIAG115E	115.00 = 117.0	147851	NIAG115W	115.00 = 117.4	130836	N.WAV115	115.00 = 114.8
130838	OAKDL115	115.00 = 119.7	147852	PLAT T#3	115.00 = 116.6	125043	PL.VAL 1	115.00 = 117.1
137235	PORTER 1	115.00 = 113.2	125046	ROCK TV1	115.00 = 117.9	137532	RTRDM1	115.00 = 114.1
125048	SHENANDO	115.00 = 117.6	149011	S82-1115	115.00 = 115.9	149008	RUS 115	115.00 = 114.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0315				3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0216				5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0288				16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0153				10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0198				13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0217				6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0311				3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9971				4.0	163	4	
131831	NOEND1G$	13.800	1	0	2	81.6	0.2	23.5	-2.2	1.0133	1.0133				105.8	163	4	
131832	NOEND2G$	13.800	1	0	2	81.6	-0.9	21.6	-3.4	1.0120	1.0120				105.8	163	4	
131833	NOEND3S$	13.800	1	0	2	81.6	0.7	20.2	-1.8	1.0139	1.0139				105.8	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0059				5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-3.9	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0073				5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207				3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.1	3.2	-1.7	0.9700	0.9700				3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000				4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	-0.1	9.4	-4.7	1.0293	1.0293				39.6	175	4	
146743	MASSENA_GT	13.800	1	0	2	51.4	19.5	24.6	-12.3	1.0310	1.0310				78.3	175	4	
147763	MOS17-18	13.800	2	0	2	102.0	29.8	38.6	-30.8	1.0100	1.0100				120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	30.8	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	31.8	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	35.7	38.6	-30.8	1.0127	1.0127				120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	20.9	38.6	-30.8	1.0000	1.0000				120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	35.9	38.6	-30.8	1.0127	1.0127				120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	35.0	38.6	-30.8	1.0127	1.0127				120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	35.0	38.6	-30.8	1.0127	1.0127				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	86.8	2.1	22.9	-13.3	1.0300	1.0300				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	80.6	2.9	16.1	-17.6	1.0300	1.0300				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	72.2	4.7	18.0	-18.8	1.0300	1.0300				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	72.3	3.2	22.2	-21.6	1.0300	1.0300				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	20.9	1.1	4.8	-5.0	1.0300	1.0300				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	168.0	14.6	123.2	-82.6	0.9855	0.9855				215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750				51.4	1145	4	

180278	BHOA23	13.800	1	0	2	46.0	9.2	32.1	-32.1	1.0000	1.0000	50.0	1145	4
180280	BHOA25	13.800	1	0	2	33.0	11.4	30.0	-13.1	1.0000	1.0000	57.0	1145	4
180281	BHOA26	13.800	1	0	2	45.0	11.1	30.8	-13.5	1.0000	1.0000	57.0	1145	4
180283	BHOA28	13.800	1	0	2	53.7	4.0	50.3	-50.3	1.0000	1.0000	90.0	1145	4
SUBSYSTEM TOTALS						2223.1	278.2	1065.7	-765.9			2817.3		

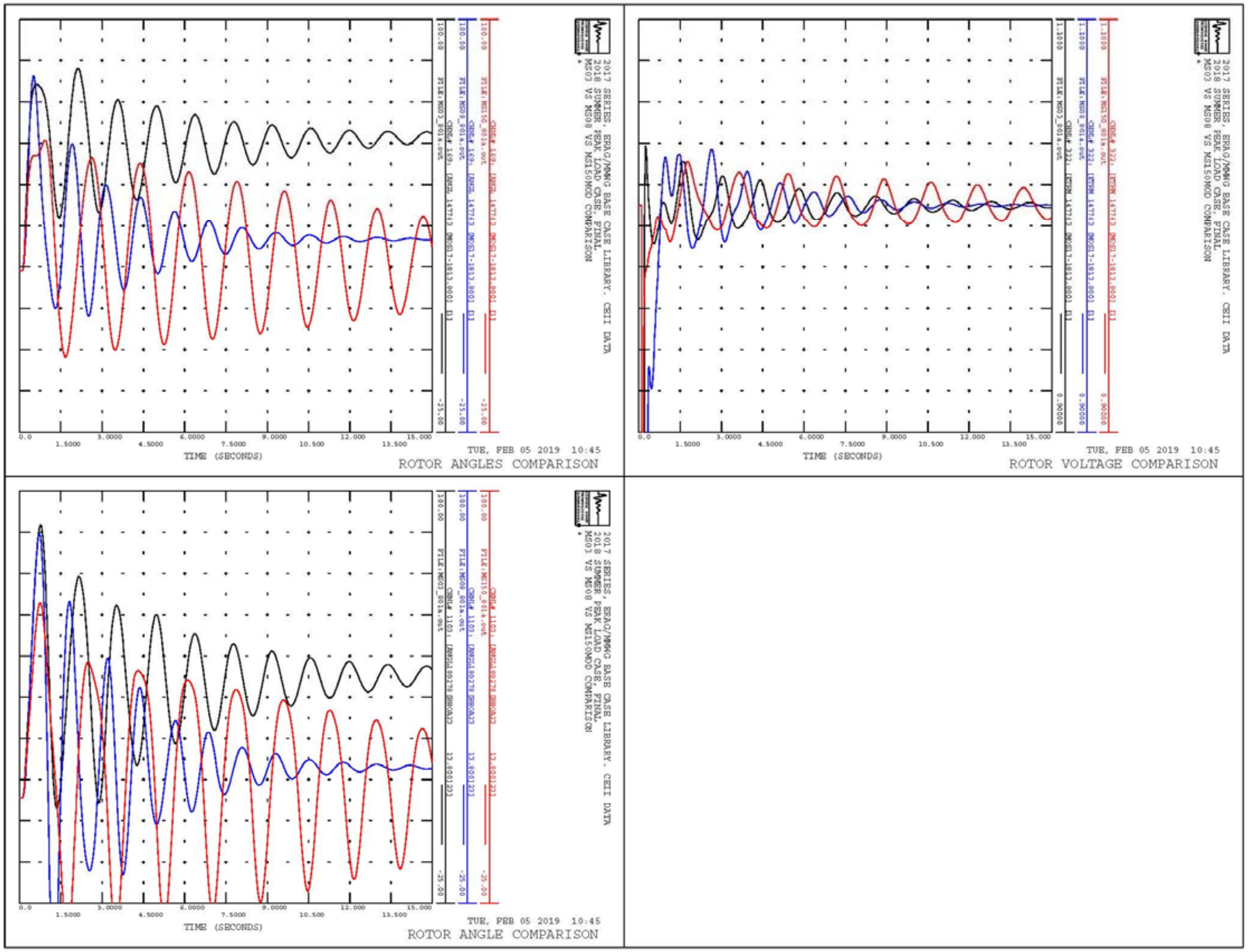

Fig A1: Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

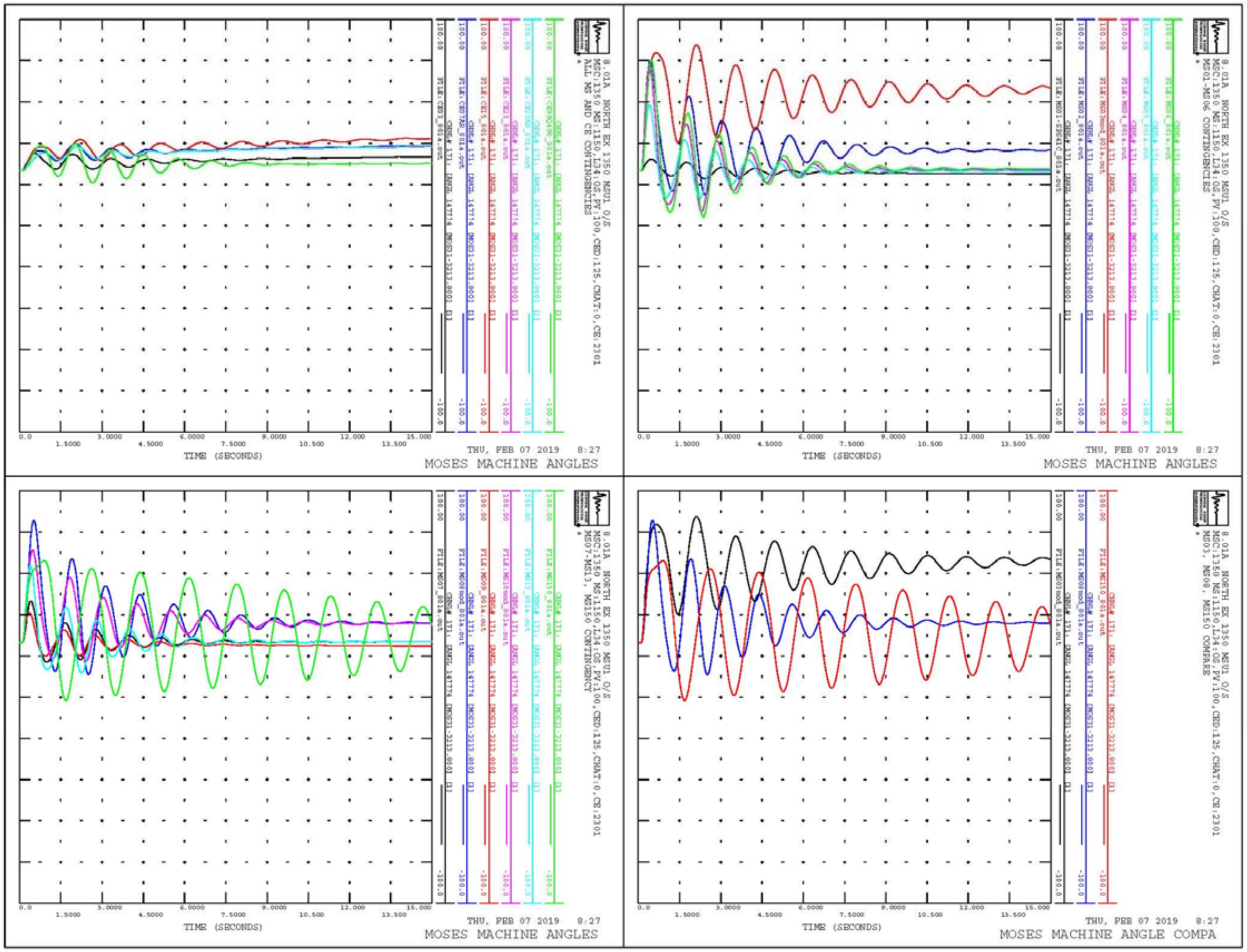

Fig A2: Comparative plots for Moses machine angle for all simulated contingencies

A.2 MSU1 &7040 &R8105 O/S

Test Level Interface Power Flow Summary and Key Voltages

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CASE :8.02A  NORTH EX 1150 MSU1 & R8105 O/S
       MSC:1150 MS:1007,L34:OS,PV:100,CED:125,CHAT:0,CE:2255
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INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	2387.9	-138.0	DYSE-CLOSE	3837.1	-11.6
WEST-CENTRAL	1054.6	-125.3	WESTC-CLOSE	2503.8	1.0
VOLNEY-EAST	4008.4	-100.5	VOLNEY-CLOSE	5235.2	70.3
MOSES-SOUTH	1005.7	194.3	MOSES-CLOSE	1148.4	205.9
CENTRAL-EAST	2244.0	-552.0	TOTAL-EAST	5421.8	-545.1
UPNY-SENY	5127.5	64.3	UPNY-SENY-CL	6421.0	206.6
UPNY-CONED	4478.9	-17.7	UPNY-CON-CL	6602.5	-34.9
MILLWOOD-SO	7125.9	71.0	LIPA-IMPORT	2006.8	-165.1
DNWDIE-SO-PL	4457.7	-405.0	DNWDIE-SO-PC	6581.3	-422.2
DNWDIE-SO-OP	3542.6	-343.5	PJM-NY	1393.3	228.8
NE-NY-WCSC	241.7	111.2	ON-NY	1823.4	164.6
ONT-MICH-PAR	178.4	-11.3	Northern Export	1148.4	199.0

STATION VOLTAGES

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126260 BOWLINE1     345.00 = 359.5       126261 BOWLINE2     345.00 = 359.4       126263 BUCHANAN S   345.00 = 355.6
136150 CLAY         345.00 = 355.3       130750 COOPC345     345.00 = 356.9       126266 DUNWOODIE    345.00 = 352.7
137200 EDIC         345.00 = 351.6       126277 FARRAGUT     345.00 = 349.8       130753 FRASR345     345.00 = 359.8
135413 GRDNVL2      230.00 = 228.3       147831 GILB 345     345.00 = 361.6       126283 GOTHLS       345.00 = 347.9
126286 GOW R16      345.00 = 347.0       126290 LADENTWN     345.00 = 358.3       137451 LEEDS 3      345.00 = 360.9
147833 MARCY T1     345.00 = 352.1       126291 MILLWOOD     345.00 = 353.2       137452 N.SCOT77     345.00 = 359.1
137453 N.SCOT99     345.00 = 359.1       147841 NIAGAR2E     230.00 = 230.3       147842 NIAGAR2W     230.00 = 230.3
147834 NIAG 345     345.00 = 357.5       129341 NRTHPRT1     138.00 = 142.3       130755 OAKDL345     345.00 = 361.9
149001 PANNELL3     345.00 = 351.0       126294 PLTVLLEY     345.00 = 353.7       126295 RAINEY       345.00 = 350.1
126600 REAC71       345.00 = 352.2       126601 REAC72       345.00 = 352.3       126297 RAMAPO       345.00 = 357.6
126250 RAMAPO 5     500.00 = 520.6       125001 ROCK TAV     345.00 = 356.6       125002 ROSETON      345.00 = 356.2
130754 SOMERSET345 345.00 = 359.0        126298 SPRAINBROOK 345.00 = 352.9        149000 ROCH 345     345.00 = 350.3
147840 MOSES W      230.00 = 231.7       130768 WATRC230     230.00 = 238.3       180819 CHA-NY       765.00 = 789.8
147827 MARCY765     765.00 = 774.3       147828 MASS 765     765.00 = 744.8       126281 E FISHKILL   345.00 = 355.2
125000 HURLEY 3     345.00 = 358.4       128835 SHORE RD     345.00 = 353.4       136156 VOLNEY       345.00 = 361.7
130757 WATRC345     345.00 = 364.9*      135250 DUNKIRK      230.00 = 228.0       130764 MEYER230     230.00 = 228.9
130765 OAKDL230     230.00 = 239.0       137730 ROTRDM.2     230.00 = 229.0       181219 CHANY2       120.00 = 133.4*
181119 CHANY1       120.00 = 133.4*      137716 ALB1         115.00 = 118.5       130774 BATH 115     115.00 = 115.6
137488 BETHLEHE     115.00 = 118.7       130776 BORDR115     115.00 = 113.3       136181 CLAY         115.00 = 119.0
130794 DELHI115     115.00 = 116.0       130796 E.NOR115     115.00 = 113.6       135277 FALCONER     115.00 = 116.4
130807 WESTOVER115 115.00 = 120.1        130826 MEYER115     115.00 = 116.1       147849 MOS 115      115.00 = 117.7
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147850 NIAG115E	115.00 = 117.0	147851 NIAG115W	115.00 = 117.4	130836 N.WAV115	115.00 = 115.1
130838 OAKDL115	115.00 = 120.1	147852 PLAT T#3	115.00 = 117.8	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 114.5	125046 ROCK TV1	115.00 = 118.0	137532 RTRDM1	115.00 = 114.6
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 116.1	149008 RUS 115	115.00 = 114.5

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0349		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0311		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0382		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0248		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0292		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0312		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0346		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0039		4.0	163	4	
131831	NOEND1G$	13.800	1	0	2	81.6	3.8	23.5	-2.2	1.0300	1.0300		105.8	163	4	
131832	NOEND2G$	13.800	1	0	2	81.6	3.8	21.6	-3.4	1.0300	1.0300		105.8	163	4	
131833	NOEND3S$	13.800	1	0	2	81.6	3.8	20.2	-1.8	1.0300	1.0300		105.8	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0257		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-0.1	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0251		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0236		3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.5	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	0.2	1.1	-0.6	1.0100	1.0100		4.0	175	4	
147763	MOS17-18	13.800	2	0	2	105.4	24.6	38.6	-30.8	1.0100	1.0100		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	25.3	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	25.9	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	35.0	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	15.1	38.6	-30.8	1.0000	1.0000		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	35.1	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	34.3	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	34.3	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	96.8	-0.2	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	105.6	3.8	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	77.2	3.5	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	77.3	1.4	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	20.9	0.9	4.8	-5.0	1.0300	1.0300		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.1	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.7	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.1	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-11.0	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-11.1	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-11.2	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-11.2	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	15.8	34.2	-15.0	1.0500	1.0500		50.0	1145	4	
180279	BHOA24	13.800	1	0	2	35.0	12.5	30.4	-13.3	1.0500	1.0500		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	38.0	12.1	30.8	-13.5	1.0500	1.0500		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	58.0	4.4	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	48.0	50.3	-50.3	1.0500	1.0500		90.0	1145	4	

SUBSYSTEM TOTALS 2082.9 283.4 961.0 -674.4 2574.2

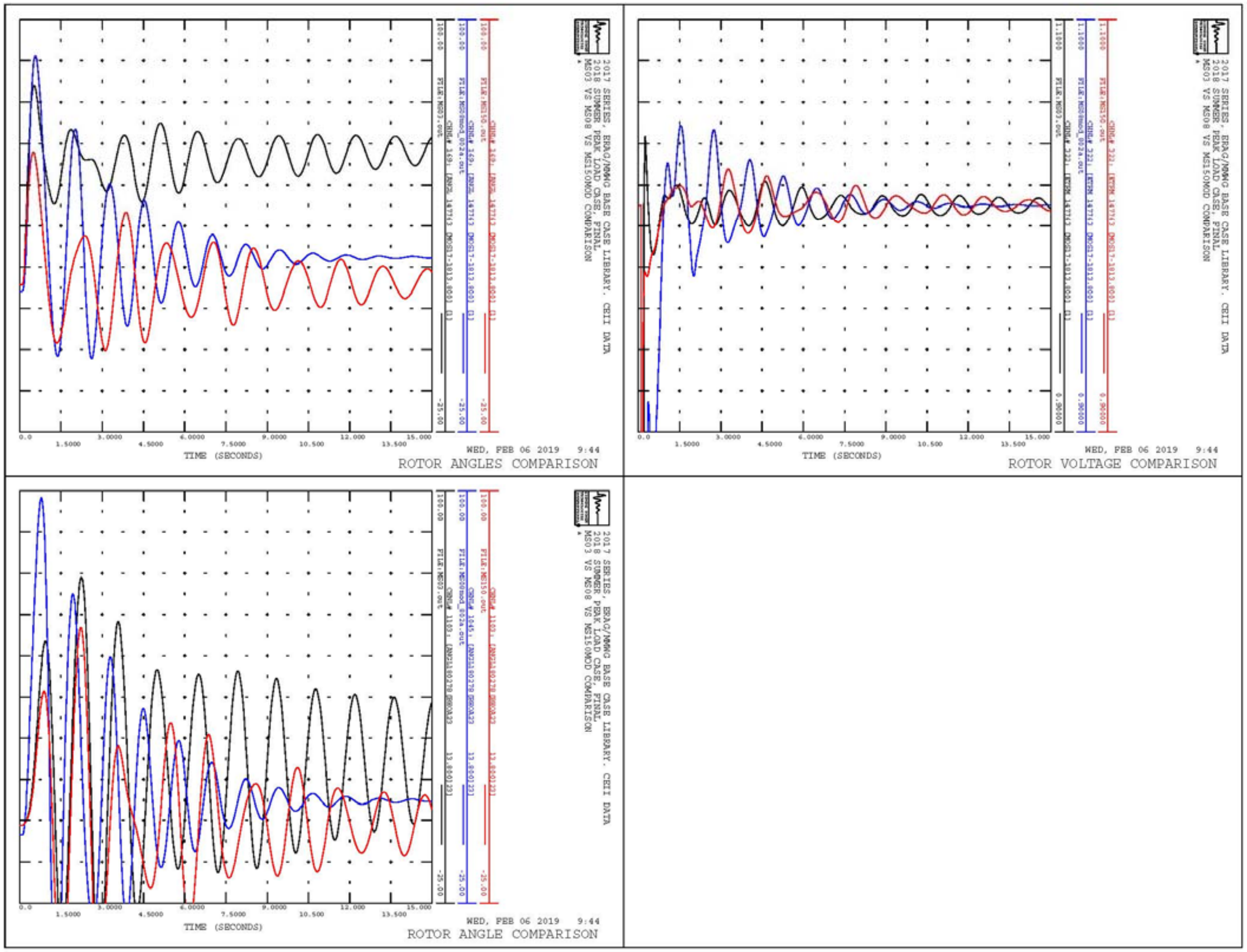

Fig A3: Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

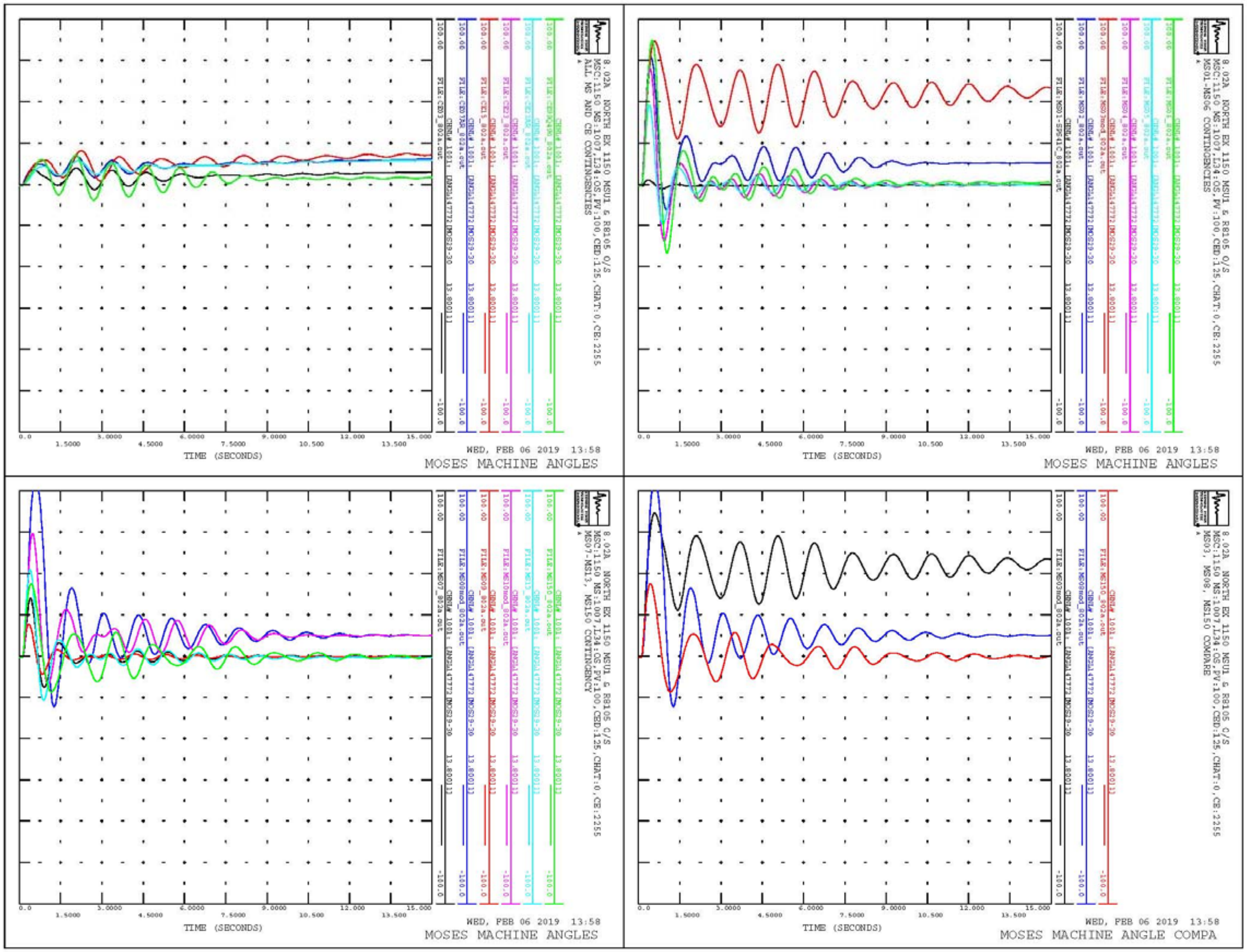

Fig A4: Comparative plots for Moses machine angle for all simulated contingencies

A.3 MSU1 &7040 &PV20 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.03A  NORTH EX 950 MSU1 & PV20 O/S
       MSC:950 MS:950,L34:OS,PV:OS,CED:125,CHAT:0,CE:2263
```

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	2389.4	-122.5	DYSE-CLOSE	3845.3	44.2
WEST-CENTRAL	1056.2	-106.1	WESTC-CLOSE	2512.1	60.5
VOLNEY-EAST	4384.9	-179.3	VOLNEY-CLOSE	5600.4	19.0
MOSES-SOUTH	948.6	104.4	MOSES-CLOSE	949.5	93.5
CENTRAL-EAST	2262.9	-602.5	TOTAL-EAST	5601.7	-656.8
UPNY-SENY	5210.7	46.3	UPNY-SENY-CL	6500.6	190.9
UPNY-CONED	4480.3	-30.1	UPNY-CON-CL	6602.1	-50.7
MILLWOOD-SO	7129.4	64.9	LIPA-IMPORT	2006.8	-167.2
DNWDIE-SO-PL	4459.5	-411.1	DNWDIE-SO-PC	6581.3	-431.7
DNWDIE-SO-OP	3545.0	-347.1	PJM-NY	1403.5	249.1
NE-NY-WCSC	241.4	133.1	ON-NY	1821.5	190.1
ONT-MICH-PAR	179.9	-10.9	Northern Export	949.5	86.6

STATION VOLTAGES

126260 BOWLINE1	345.00 =	359.2	126261 BOWLINE2	345.00 =	359.2	126263 BUCHANAN S	345.00 =	355.4
136150 CLAY	345.00 =	353.8	130750 COOPC345	345.00 =	354.9	126266 DUNWOODIE	345.00 =	352.5
137200 EDIC	345.00 =	350.9	126277 FARRAGUT	345.00 =	349.6	130753 FRASR345	345.00 =	357.8
135413 GRDNVL2	230.00 =	228.1	147831 GILB 345	345.00 =	360.8	126283 GOTHLS	345.00 =	347.9
126286 GOW R16	345.00 =	347.0	126290 LADENTWN	345.00 =	358.1	137451 LEEDS 3	345.00 =	360.9
147833 MARCY T1	345.00 =	351.6	126291 MILLWOOD	345.00 =	352.9	137452 N.SCOT77	345.00 =	358.4
137453 N.SCOT99	345.00 =	358.4	147841 NIAGAR2E	230.00 =	230.3	147842 NIAGAR2W	230.00 =	230.3
147834 NIAG 345	345.00 =	357.3	129341 NRTHPRT1	138.00 =	142.3	130755 OAKDL345	345.00 =	359.4
149001 PANNELL3	345.00 =	350.2	126294 PLTVLLEY	345.00 =	353.4	126295 RAINEY	345.00 =	350.0
126600 REAC71	345.00 =	352.1	126601 REAC72	345.00 =	352.1	126297 RAMAPO	345.00 =	357.2
126250 RAMAPO 5	500.00 =	520.4	125001 ROCK TAV	345.00 =	355.7	125002 ROSETON	345.00 =	355.9
130754 SOMERSET345	345.00 =	358.9	126298 SPRAINBROOK	345.00 =	352.6	149000 ROCH 345	345.00 =	349.6
147840 MOSES W	230.00 =	230.9	130768 WATRC230	230.00 =	237.2	180819 CHA-NY	765.00 =	788.7
147827 MARCY765	765.00 =	773.1	147828 MASS 765	765.00 =	742.4	126281 E FISHKILL	345.00 =	354.9
125000 HURLEY 3	345.00 =	358.2	128835 SHORE RD	345.00 =	353.2	136156 VOLNEY	345.00 =	360.6
130757 WATRC345	345.00 =	363.0*	135250 DUNKIRK	230.00 =	227.7	130764 MEYER230	230.00 =	227.9
130765 OAKDL230	230.00 =	237.6	137730 ROTRDM.2	230.00 =	228.6	181219 CHANY2	120.00 =	133.3*
181119 CHANY1	120.00 =	133.3*	137716 ALB1	115.00 =	118.4	130774 BATH 115	115.00 =	115.1
137488 BETHLEHE	115.00 =	118.6	130776 BORDR115	115.00 =	113.0	136181 CLAY	115.00 =	118.4
130794 DELHI115	115.00 =	115.3	130796 E.NOR115	115.00 =	112.3	135277 FALCONER	115.00 =	116.3

130807	WESTOVER115	115.00 =	119.4	130826	MEYER115	115.00 =	115.6	147849	MOS 115	115.00 =	116.0
147850	NIAG115E	115.00 =	117.0	147851	NIAG115W	115.00 =	117.4	130836	N.WAV115	115.00 =	114.6
130838	OAKDL115	115.00 =	119.3	147852	PLAT T#3	115.00 =	118.5	125043	PL.VAL 1	115.00 =	117.1
137235	PORTER 1	115.00 =	114.5	125046	ROCK TV1	115.00 =	117.7	137532	RTRDM1	115.00 =	114.5
125048	SHENANDO	115.00 =	117.6	149011	S82-1115	115.00 =	115.8	149008	RUS 115	115.00 =	114.3

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0328				3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0353				5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0424				16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0292				10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0334				13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0354				6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0324				3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9989				4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0156				5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-3.9	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0165				5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207				3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700				3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000				4.0	175	4	
147763	MOS17-18	13.800	2	0	2	101.7	27.0	38.6	-30.8	1.0100	1.0100				120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	28.0	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	28.9	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147768	MOS25-26	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0025				120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	18.0	38.6	-30.8	1.0000	1.0000				120.0	158	4	
147771	MOS27-28	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0023				120.0	158	4	
147772	MOS29-30	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0034				120.0	158	4	
147774	MOS31-32	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0034				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	97.0	-2.7	22.9	-13.3	1.0300	1.0300				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	30.0	-2.6	16.1	-17.6	1.0300	1.0300				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	79.0	1.3	18.0	-18.8	1.0300	1.0300				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	81.0	-1.2	22.2	-21.6	1.0300	1.0300				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	20.9	0.3	4.8	-5.0	1.0300	1.0300				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	108.0	0.5	123.2	-82.6	0.9855	0.9855				215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.1	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.7	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.7	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	10.0	32.1	-32.1	1.0000	1.0000				50.0	1145	4	
180280	BHOA25	13.800	1	0	2	33.0	12.3	30.0	-13.1	1.0000	1.0000				57.0	1145	4	
180281	BHOA26	13.800	1	0	2	45.0	12.0	30.8	-13.5	1.0000	1.0000				57.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	5.2	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS						1819.7	230.4	966.3	-741.6						2382.1			

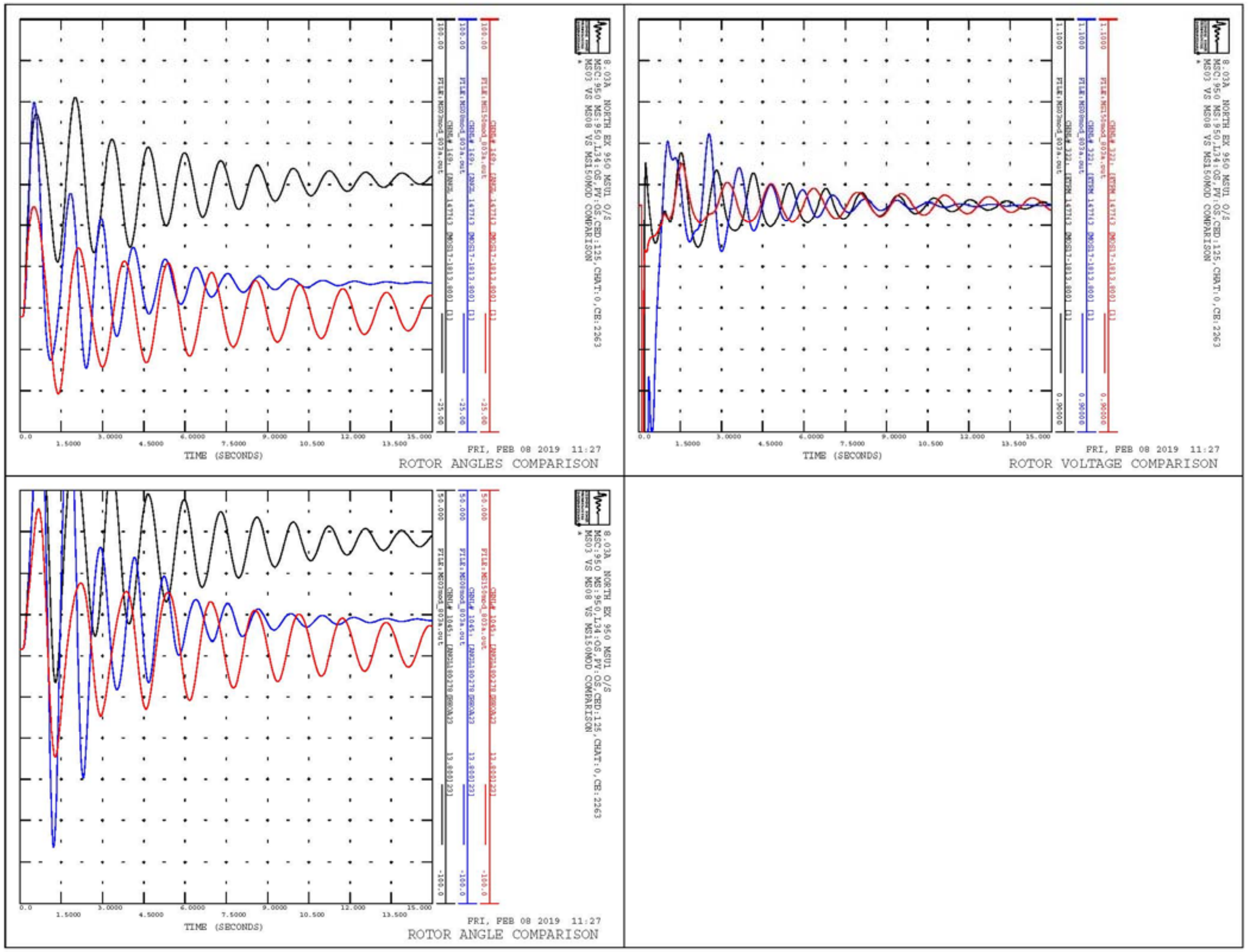

Fig A5: Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

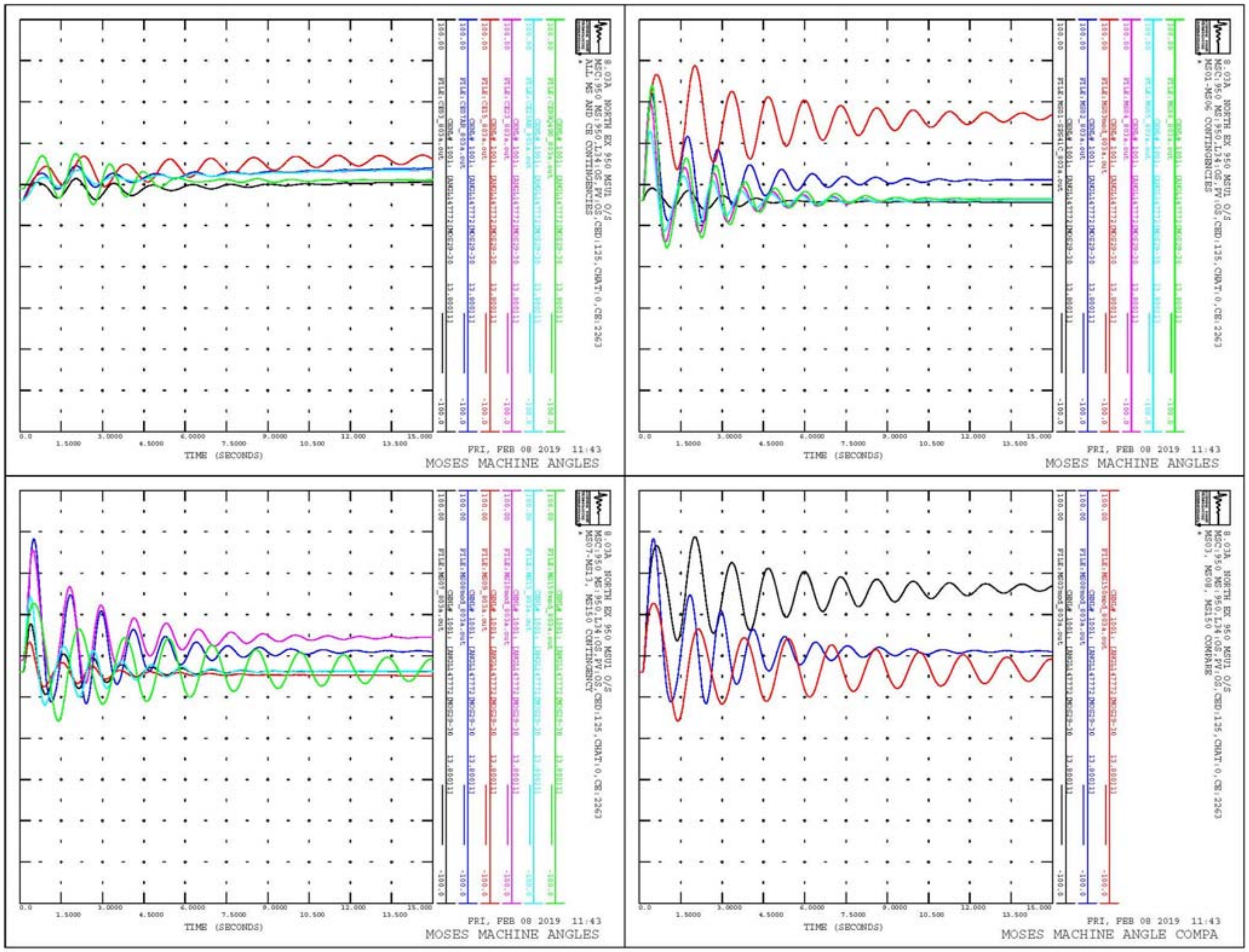

Fig A6: Comparative plots for Moses machine angle for all simulated contingencies

A.4 MSU1 & 7040 & L33 O/S

Test Level Interface Power Flow Summary and Key Voltages

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CASE :8.04B  NORTH EX 1300 MSU1 & L33 O/S
       MSC:1300 MS:1061,L34:OS,PV:100,CED:125,CHAT:0,CE:2290
                                                   INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr    DESCRIPTION         MW       MVAr
 DYSINGER-EAS        2394.6   -118.3  DYSE-CLOSE          3846.3     52.2
 WEST-CENTRAL        1061.1   -104.7  WESTC-CLOSE         2512.9     65.9
 VOLNEY-EAST         4017.5     29.6  VOLNEY-CLOSE        5239.9    231.3
 MOSES-SOUTH         1103.0    248.3  MOSES-CLOSE         1295.0    240.9
 CENTRAL-EAST        2288.9   -621.3  TOTAL-EAST          5501.8   -671.4
 UPNY-SENY           5201.3     24.6  UPNY-SENY-CL        6500.7    170.3
 UPNY-CONED          4474.2    -29.4  UPNY-CON-CL         6602.2    -47.6
 MILLWOOD-SO         7128.4     64.7  LIPA-IMPORT         2006.7   -167.4
 DNWDIE-SO-PL        4453.1   -412.9  DNWDIE-SO-PC        6581.1   -431.0
 DNWDIE-SO-OP        3538.2   -349.0  PJM-NY              1408.2    249.2
 NE-NY-WCSC           241.6    118.1  ON-NY               1817.7    194.4
 ONT-MICH-PAR         183.1    -11.2  Northern Export     1295.0    234.2


                                                     STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.3       126261 BOWLINE2    345.00 = 359.2      126263 BUCHANAN S  345.00 = 355.4
 136150 CLAY        345.00 = 353.3       130750 COOPC345    345.00 = 354.9      126266 DUNWOODIE   345.00 = 352.5
 137200 EDIC        345.00 = 347.7       126277 FARRAGUT    345.00 = 349.7      130753 FRASR345    345.00 = 357.4
 135413 GRDNVL2     230.00 = 228.1       147831 GILB 345    345.00 = 360.5      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0       126290 LADENTWN    345.00 = 358.1      137451 LEEDS 3     345.00 = 360.4
 147833 MARCY T1    345.00 = 348.2       126291 MILLWOOD    345.00 = 352.9      137452 N.SCOT77    345.00 = 357.8
 137453 N.SCOT99    345.00 = 357.8       147841 NIAGAR2E    230.00 = 230.2      147842 NIAGAR2W    230.00 = 230.2
 147834 NIAG 345    345.00 = 357.3       129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 359.7
 149001 PANNELL3    345.00 = 349.8       126294 PLTVLLEY    345.00 = 353.3      126295 RAINEY      345.00 = 350.1
 126600 REAC71      345.00 = 352.1       126601 REAC72      345.00 = 352.2      126297 RAMAPO      345.00 = 357.3
 126250 RAMAPO 5    500.00 = 520.4       125001 ROCK TAV    345.00 = 355.9      125002 ROSETON     345.00 = 355.9
 130754 SOMERSET345 345.00 = 358.9       126298 SPRAINBROOK 345.00 = 352.7      149000 ROCH 345    345.00 = 349.2
 147840 MOSES W     230.00 = 229.0       130768 WATRC230    230.00 = 237.4      180819 CHA-NY      765.00 = 788.5
 147827 MARCY765    765.00 = 765.6       147828 MASS 765    765.00 = 736.1      126281 E FISHKILL  345.00 = 354.9
 125000 HURLEY 3    345.00 = 357.9       128835 SHORE RD    345.00 = 353.2      136156 VOLNEY      345.00 = 360.4
 130757 WATRC345    345.00 = 363.3*      135250 DUNKIRK     230.00 = 227.7      130764 MEYER230    230.00 = 228.0
 130765 OAKDL230    230.00 = 237.7       137730 ROTRDM.2    230.00 = 226.7      181219 CHANY2      120.00 = 133.2*
 181119 CHANY1      120.00 = 133.2*      137716 ALB1        115.00 = 118.3      130774 BATH 115    115.00 = 115.2
 137488 BETHLEHE    115.00 = 118.4       130776 BORDR115    115.00 = 112.9      136181 CLAY        115.00 = 118.1
 130794 DELHI115    115.00 = 114.8       130796 E.NOR115    115.00 = 111.1      135277 FALCONER    115.00 = 116.3
 130807 WESTOVER115 115.00 = 119.4       130826 MEYER115    115.00 = 115.6      147849 MOS 115     115.00 = 116.1
```

147850 NIAG115E	115.00 = 117.0	147851 NIAG115W	115.00 = 117.4	130836 N.WAV115	115.00 = 114.7
130838 OAKDL115	115.00 = 119.4	147852 PLAT T#3	115.00 = 116.7	125043 PL.VAL 1	115.00 = 117.0
137235 PORTER 1	115.00 = 112.5	125046 ROCK TV1	115.00 = 117.8	137532 RTRDM1	115.00 = 113.8
125048 SHENANDO	115.00 = 117.6	149011 S82-1115	115.00 = 115.7	149008 RUS 115	115.00 = 114.2

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131831	NOEND1G$	13.800	1 0	2	81.6	-0.5	23.5	-2.2	1.0133	1.0133				105.8	163	4	
131832	NOEND2G$	13.800	1 0	2	81.6	-1.7	21.6	-3.4	1.0120	1.0120				105.8	163	4	
131833	NOEND3S$	13.800	1 0	2	81.6	0.0	20.2	-1.8	1.0139	1.0139				105.8	163	4	
136777	LK COLBY	115.00	1 0	2	-0.0	-2.0	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0267	1.0046				5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.3	3.2	-1.7	0.9700	0.9700				3.6	175	4	
146742	MASSENA_ST	13.800	1 0	2	22.2	1.0	9.4	-4.7	1.0293	1.0293				39.6	175	4	
146743	MASSENA_GT	13.800	1 0	2	51.4	24.6	24.6	-12.3	1.0310	1.0305				78.3	175	4	
147763	MOS17-18	13.800	2 0	2	99.4	34.2	38.6	-30.8	1.0100	1.0100				120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	35.4	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	36.8	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0127	1.0037				120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	25.8	38.6	-30.8	1.0000	1.0000				120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0127	1.0035				120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0127	1.0046				120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0127	1.0046				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	71.8	-0.7	22.9	-13.3	1.0300	1.0300				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	75.6	1.8	16.1	-17.6	1.0300	1.0300				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	62.2	3.5	18.0	-18.8	1.0300	1.0300				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	62.3	1.9	22.2	-21.6	1.0300	1.0300				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	20.9	0.5	4.8	-5.0	1.0300	1.0300				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	158.0	33.0	33.0	33.0	0.9855	1.0080				215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180271	BHEA16	13.800	1 0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180273	BHEA18	13.800	1 0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180278	BHOA23	13.800	1 0	2	46.0	10.2	32.1	-32.1	1.0000	1.0000				50.0	1145	4	
180280	BHOA25	13.800	1 0	2	33.0	12.5	30.0	-13.1	1.0000	1.0000				57.0	1145	4	
180281	BHOA26	13.800	1 0	2	45.0	12.2	30.8	-13.5	1.0000	1.0000				57.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	5.5	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS					2135.4	326.6	957.9	-650.8						2745.3			

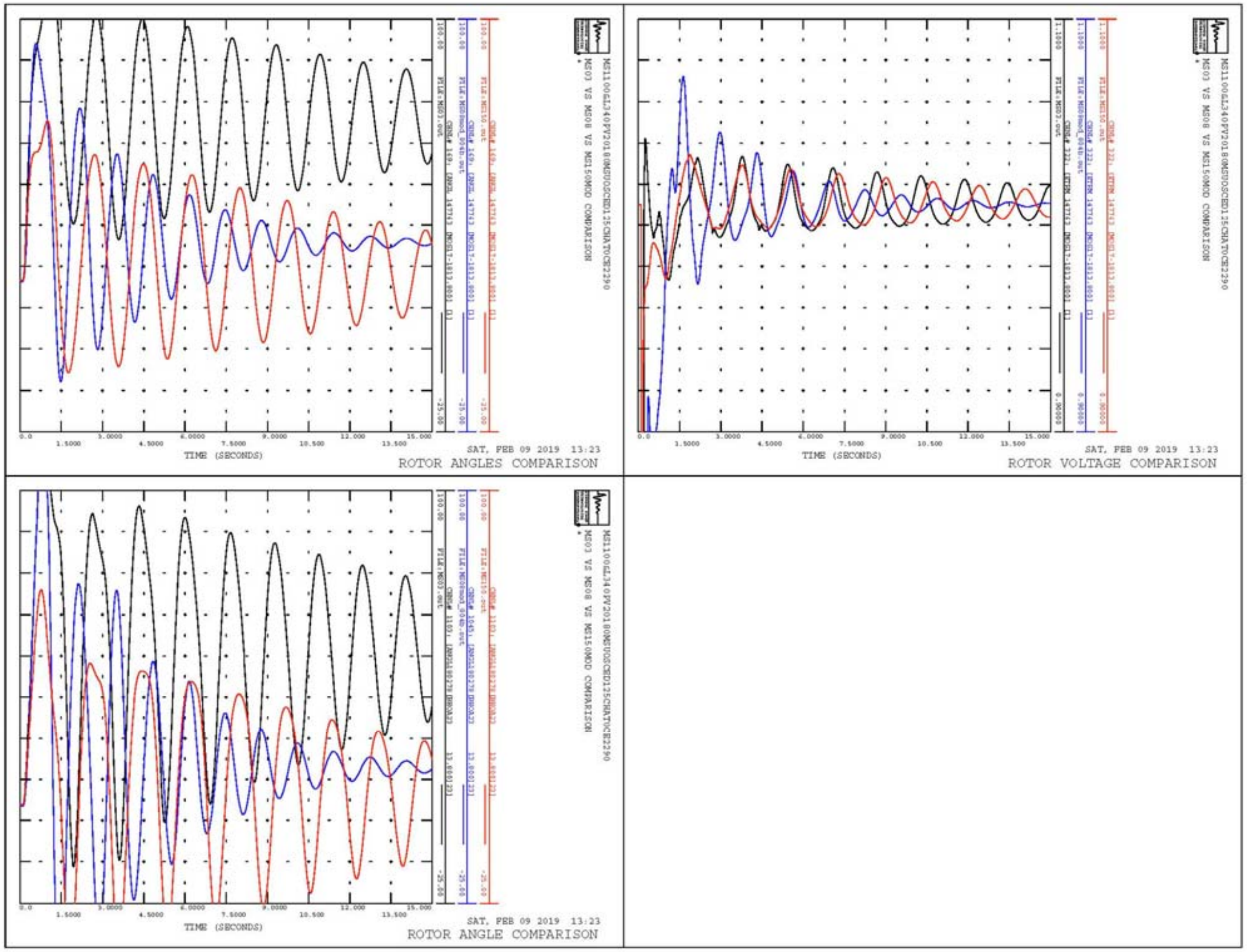

Fig A7: Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

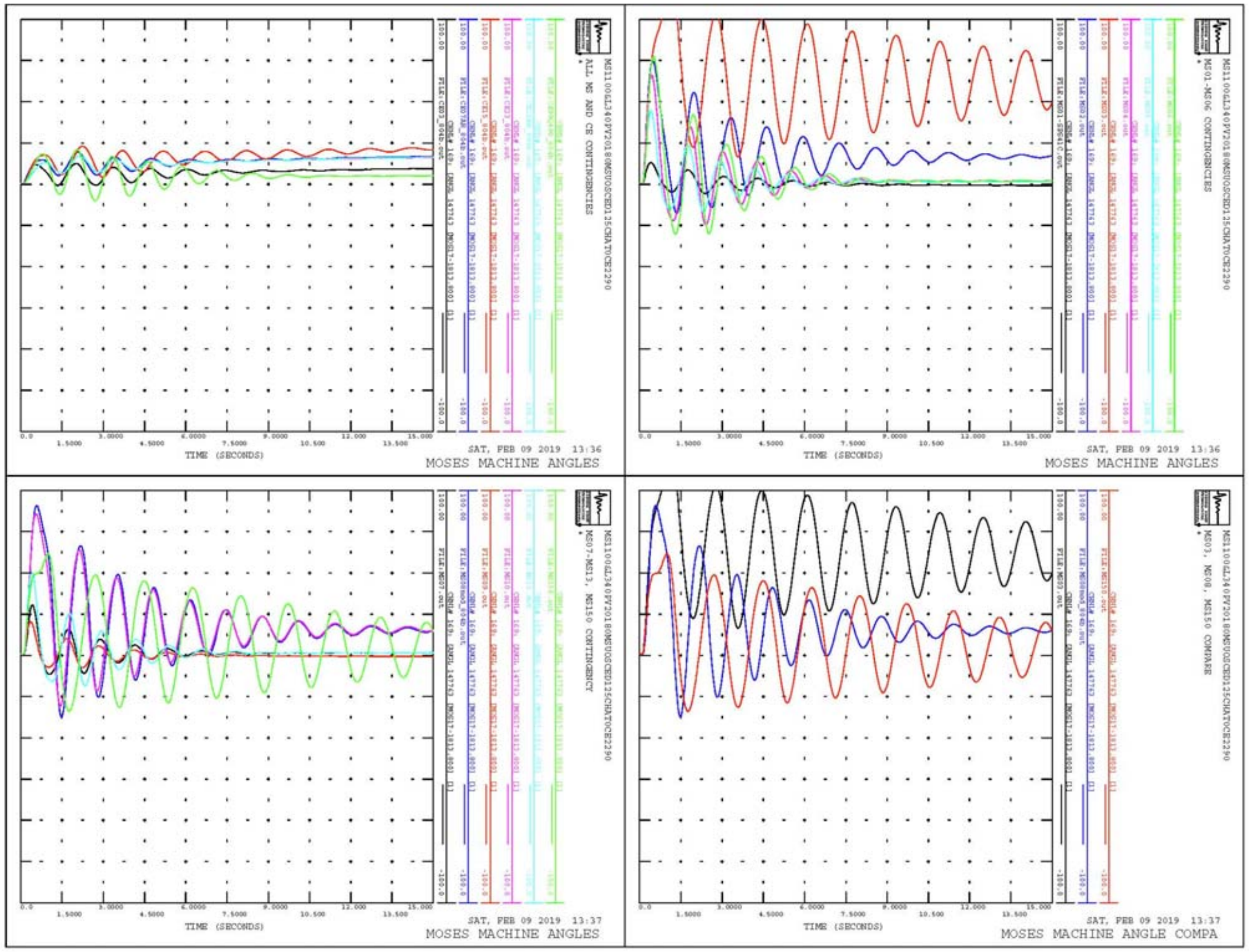

Fig A8: Comparative plots for Moses machine angle for all simulated contingencies

A.5 MSU1 & 7040 & L33 & R8105 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.05A  NORTH EX 1200 MSU1, L33, R8105 O/S
       MSC:1200 MS:1050,L34:OS,PV:100,CED:125,CHAT:0,CE:2280
                                                    INTERFACE FLOW REPORT
   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS         2385.5    -131.7  DYSE-CLOSE          3829.8      22.9
 WEST-CENTRAL         1052.7    -115.6  WESTC-CLOSE         2497.0      39.0
 VOLNEY-EAST          4074.2    -103.0  VOLNEY-CLOSE        5294.3      88.9
 MOSES-SOUTH          1044.0     194.0  MOSES-CLOSE         1194.9     185.5
 CENTRAL-EAST         2283.2    -569.0  TOTAL-EAST          5501.4    -582.6
 UPNY-SENY            5208.9      59.9  UPNY-SENY-CL        6500.8     203.7
 UPNY-CONED           4479.5     -20.7  UPNY-CON-CL         6602.4     -38.5
 MILLWOOD-SO          7127.5      68.9  LIPA-IMPORT         2006.7    -166.0
 DNWDIE-SO-PL         4458.2    -407.7  DNWDIE-SO-PC        6581.0    -425.5
 DNWDIE-SO-OP         3543.2    -345.2  PJM-NY              1391.4     239.4
 NE-NY-WCSC            241.7     116.2  ON-NY               1817.7     184.8
 ONT-MICH-PAR          181.9     -10.8  Northern Export     1194.9     178.7

                                                      STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.4      126261 BOWLINE2    345.00 = 359.3      126263 BUCHANAN S  345.00 = 355.5
 136150 CLAY        345.00 = 354.9      130750 COOPC345    345.00 = 356.2      126266 DUNWOODIE   345.00 = 352.6
 137200 EDIC        345.00 = 351.5      126277 FARRAGUT    345.00 = 349.7      130753 FRASR345    345.00 = 359.1
 135413 GRDNVL2     230.00 = 228.2      147831 GILB 345    345.00 = 361.4      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 358.2      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 352.1      126291 MILLWOOD    345.00 = 353.1      137452 N.SCOT77    345.00 = 358.9
 137453 N.SCOT99    345.00 = 358.9      147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 357.4      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 360.9
 149001 PANNELL3    345.00 = 350.8      126294 PLTVLLEY    345.00 = 353.5      126295 RAINEY      345.00 = 350.1
 126600 REAC71      345.00 = 352.2      126601 REAC72      345.00 = 352.2      126297 RAMAPO      345.00 = 357.4
 126250 RAMAPO 5    500.00 = 520.5      125001 ROCK TAV    345.00 = 356.3      125002 ROSETON     345.00 = 356.1
 130754 SOMERSET345 345.00 = 359.0      126298 SPRAINBROOK 345.00 = 352.8      149000 ROCH 345    345.00 = 350.1
 147840 MOSES W     230.00 = 230.1      130768 WATRC230    230.00 = 237.8      180819 CHA-NY      765.00 = 788.5
 147827 MARCY765    765.00 = 774.3      147828 MASS 765    765.00 = 739.8      126281 E FISHKILL  345.00 = 355.1
 125000 HURLEY 3    345.00 = 358.3      128835 SHORE RD    345.00 = 353.3      136156 VOLNEY      345.00 = 361.4
 130757 WATRC345    345.00 = 364.1*     135250 DUNKIRK     230.00 = 227.9      130764 MEYER230    230.00 = 228.5
 130765 OAKDL230    230.00 = 238.3      137730 ROTRDM.2    230.00 = 228.7      181219 CHANY2      120.00 = 133.2*
 181119 CHANY1      120.00 = 133.2*     137716 ALB1        115.00 = 118.4      130774 BATH 115    115.00 = 115.3
 137488 BETHLEHE    115.00 = 118.6      130776 BORDR115    115.00 = 113.2      136181 CLAY        115.00 = 118.7
 130794 DELHI115    115.00 = 115.5      130796 E.NOR115    115.00 = 111.6      135277 FALCONER    115.00 = 116.4
 130807 WESTOVER115 115.00 = 119.7      130826 MEYER115    115.00 = 115.8      147849 MOS 115     115.00 = 116.3
 147850 NIAG115E    115.00 = 117.0      147851 NIAG115W    115.00 = 117.4      130836 N.WAV115    115.00 = 114.8
```

130838	OAKDL115	115.00 = 119.7	147852	PLAT T#3	115.00 = 117.3	125043	PL.VAL 1	115.00 = 117.1
137235	PORTER 1	115.00 = 114.2	125046	ROCK TV1	115.00 = 117.9	137532	RTRDM1	115.00 = 114.5
125048	SHENANDO	115.00 = 117.6	149011	S82-1115	115.00 = 116.0	149008	RUS 115	115.00 = 114.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0369		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0267		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0338		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0204		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0248		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0268		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0365		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0024		4.0	163	4	
131831	NOEND1G$	13.800	1	0	-2	81.6	-2.2	23.5	-2.2	1.0133	1.0157		105.8	163	4	
131832	NOEND2G$	13.800	1	0	-2	81.6	-3.4	21.6	-3.4	1.0120	1.0144		105.8	163	4	
131833	NOEND3S$	13.800	1	0	-2	81.6	-1.8	20.2	-1.8	1.0139	1.0162		105.8	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0250		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-5.2	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0255		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207		3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000		4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	-1.3	9.4	-4.7	1.0293	1.0293		39.6	175	4	
146743	MASSENA_GT	13.800	1	0	2	51.4	6.2	24.6	-12.3	1.0310	1.0310		78.3	175	4	
147763	MOS17-18	13.800	2	0	2	95.5	29.5	38.6	-30.8	1.0100	1.0100		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	31.0	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	32.1	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147768	MOS25-26	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0048		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	21.2	38.6	-30.8	1.0000	1.0000		120.0	158	4	
147771	MOS27-28	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0046		120.0	158	4	
147772	MOS29-30	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0057		120.0	158	4	
147774	MOS31-32	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0057		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	61.8	-2.6	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	55.6	-0.8	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	52.2	1.8	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	52.3	-0.0	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	20.9	-0.2	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	108.0	4.7	123.2	-82.6	0.9855	0.9855		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	6.6	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180280	BHOA25	13.800	1	0	2	33.0	8.4	30.0	-13.1	1.0000	1.0000		57.0	1145	4	

180281	BHOA26	13.800	1	0	2	45.0	8.2	30.8	-13.5	1.0000	1.0000	57.0	1145	4
180283	BHOA28	13.800	1	0	2	53.7	0.1	50.3	-50.3	1.0000	1.0000	90.0	1145	4
SUBSYSTEM TOTALS						2066.6	229.8	1065.7	-765.9			2817.3		

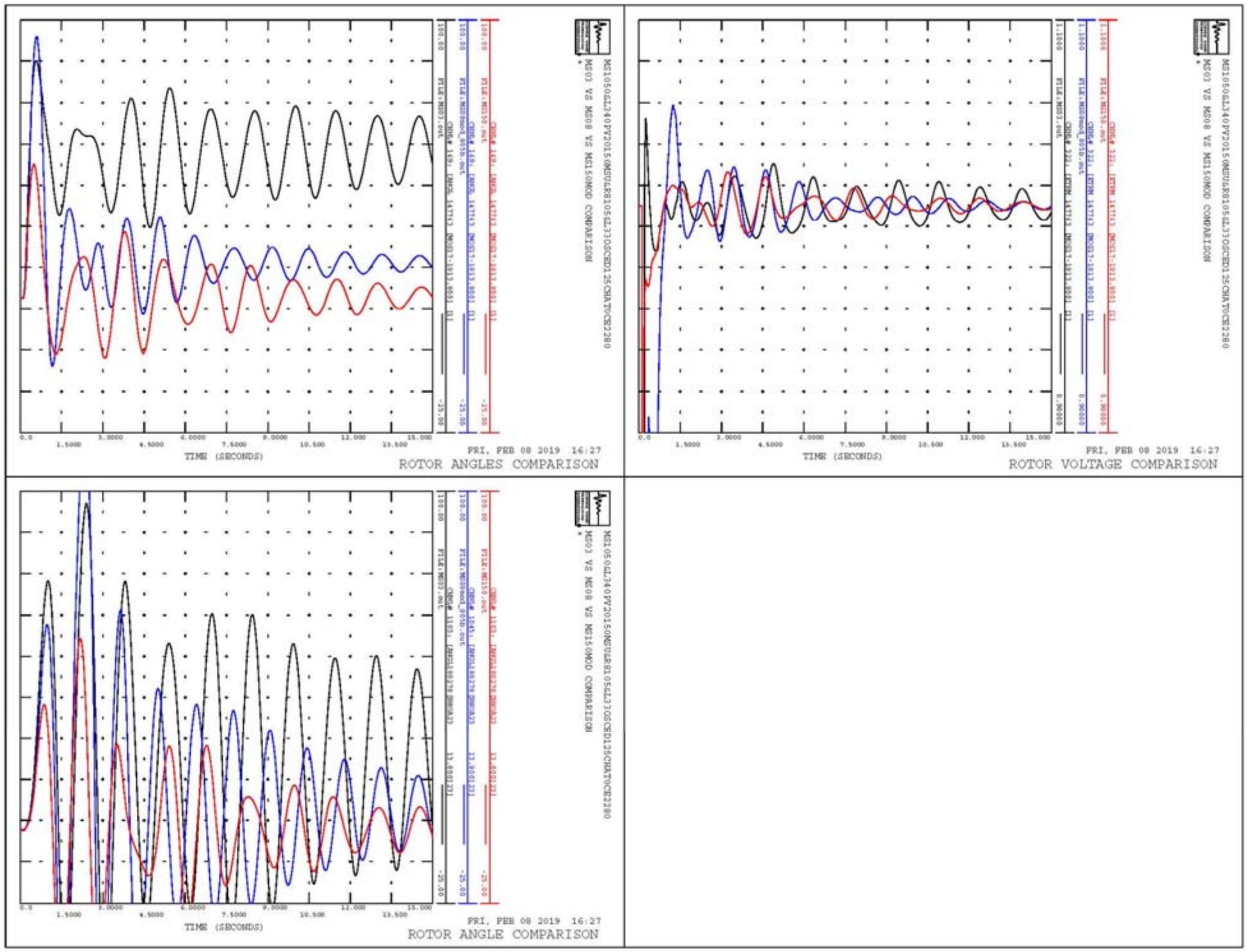

Fig A9: Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

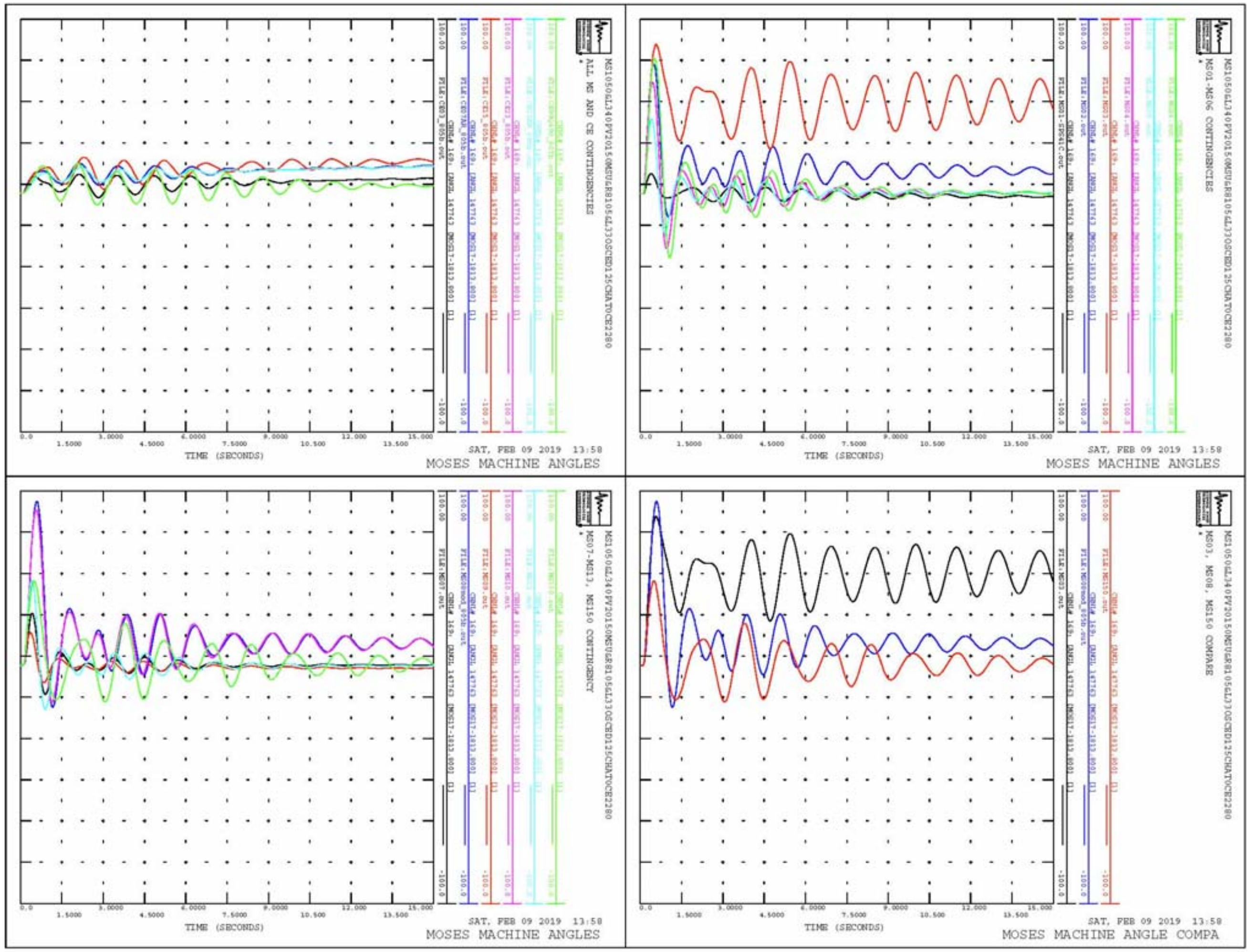

Fig A10: Comparative plots for Moses machine angle for all simulated contingencies

A.6 MSU1 & 7040 & L33 & PV20 O/S

Test Level Interface Power Flow Summary and Key Voltages

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CASE :8.06B  NORTH EX 950 MSU1, L33, PV20 O/S
       MSC:950 MS:950,L34:OS,PV:OS,CED:125,CHAT:0,CE:2213

INTERFACE FLOW REPORT
   DESCRIPTION           MW      MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS         2389.5   -127.8  DYSE-CLOSE          3845.9      22.0
 WEST-CENTRAL         1056.2   -112.6  WESTC-CLOSE         2512.6      37.2
 VOLNEY-EAST          4293.9   -176.4  VOLNEY-CLOSE        5515.6       7.8
 MOSES-SOUTH           948.2     93.4  MOSES-CLOSE          949.8      90.7
 CENTRAL-EAST         2213.2   -579.6  TOTAL-EAST          5501.5    -615.4
 UPNY-SENY            5208.0     57.8  UPNY-SENY-CL        6500.7     201.9
 UPNY-CONED           4478.6    -28.4  UPNY-CON-CL         6602.1     -48.0
 MILLWOOD-SO          7129.5     65.9  LIPA-IMPORT         2006.7    -166.7
 DNWDIE-SO-PL         4457.6   -409.5  DNWDIE-SO-PC        6581.2    -429.1
 DNWDIE-SO-OP         3542.5   -346.1  PJM-NY              1404.4     244.3
 NE-NY-WCSC            241.7    133.9  ON-NY               1821.1     176.3
 ONT-MICH-PAR          180.6    -10.9  Northern Export      949.8      83.8


STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.3      126261 BOWLINE2    345.00 = 359.2      126263 BUCHANAN S  345.00 = 355.4
 136150 CLAY        345.00 = 354.4      130750 COOPC345    345.00 = 355.5      126266 DUNWOODIE   345.00 = 352.6
 137200 EDIC        345.00 = 351.5      126277 FARRAGUT    345.00 = 349.7      130753 FRASR345    345.00 = 358.5
 135413 GRDNVL2     230.00 = 228.1      147831 GILB 345    345.00 = 361.1      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 358.1      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 352.1      126291 MILLWOOD    345.00 = 353.0      137452 N.SCOT77    345.00 = 358.7
 137453 N.SCOT99    345.00 = 358.7      147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 357.4      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 360.1
 149001 PANNELL3    345.00 = 350.5      126294 PLTVLLEY    345.00 = 353.4      126295 RAINEY      345.00 = 350.0
 126600 REAC71      345.00 = 352.1      126601 REAC72      345.00 = 352.2      126297 RAMAPO      345.00 = 357.3
 126250 RAMAPO 5    500.00 = 520.4      125001 ROCK TAV    345.00 = 355.9      125002 ROSETON     345.00 = 356.0
 130754 SOMERSET345 345.00 = 359.0      126298 SPRAINBROOK 345.00 = 352.7      149000 ROCH 345    345.00 = 349.8
 147840 MOSES W     230.00 = 231.7      130768 WATRC230    230.00 = 237.5      180819 CHA-NY      765.00 = 788.5
 147827 MARCY765    765.00 = 774.3      147828 MASS 765    765.00 = 744.8      126281 E FISHKILL  345.00 = 355.0
 125000 HURLEY 3    345.00 = 358.2      128835 SHORE RD    345.00 = 353.2      136156 VOLNEY      345.00 = 361.0
 130757 WATRC345    345.00 = 363.5*     135250 DUNKIRK     230.00 = 227.8      130764 MEYER230    230.00 = 228.1
 130765 OAKDL230    230.00 = 237.9      137730 ROTRDM.2    230.00 = 229.0      181219 CHANY2      120.00 = 133.2*
 181119 CHANY1      120.00 = 133.2*     137716 ALB1        115.00 = 118.5      130774 BATH 115    115.00 = 115.3
 137488 BETHLEHE    115.00 = 118.7      130776 BORDR115    115.00 = 113.1      136181 CLAY        115.00 = 118.7
 130794 DELHI115    115.00 = 115.4      130796 E.NOR115    115.00 = 111.4      135277 FALCONER    115.00 = 116.3
 130807 WESTOVER115 115.00 = 119.6      130826 MEYER115    115.00 = 115.7      147849 MOS 115     115.00 = 116.5
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147850	NIAG115E	115.00 = 117.0	147851	NIAG115W	115.00 = 117.4	130836	N.WAV115	115.00 = 114.7
130838	OAKDL115	115.00 = 119.5	147852	PLAT T#3	115.00 = 118.8	125043	PL.VAL 1	115.00 = 117.1
137235	PORTER 1	115.00 = 114.9	125046	ROCK TV1	115.00 = 117.8	137532	RTRDM1	115.00 = 114.6
125048	SHENANDO	115.00 = 117.6	149011	S82-1115	115.00 = 115.9	149008	RUS 115	115.00 = 114.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0292				3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0382				5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0453				16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0321				10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0364				13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0383				6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0289				3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9962				4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0194				5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-0.7	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0197				5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207				3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.4	3.2	-1.7	0.9700	0.9700				3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000				4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	0.2	9.4	-4.7	1.0293	1.0293				39.6	175	4	
146743	MASSENA_GT	13.800	1	0	2	51.4	22.2	24.6	-12.3	1.0310	1.0310				78.3	175	4	
147763	MOS17-18	13.800	2	0	2	70.7	22.0	38.6	-30.8	1.0100	1.0100				120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	24.9	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	26.0	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147768	MOS25-26	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0067				120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	15.1	38.6	-30.8	1.0000	1.0000				120.0	158	4	
147771	MOS27-28	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0066				120.0	158	4	
147772	MOS29-30	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0077				120.0	158	4	
147774	MOS31-32	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	1.0077				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	41.8	-6.4	22.9	-13.3	1.0300	1.0300				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	45.6	-3.2	16.1	-17.6	1.0300	1.0300				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	42.2	2.5	18.0	-18.8	1.0300	1.0300				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	42.3	-2.5	22.2	-21.6	1.0300	1.0300				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	40.9	-1.6	4.8	-5.0	1.0300	1.0300				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	158.0	3.4	123.2	-82.6	0.9855	0.9855				215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	9.2	32.1	-32.1	1.0000	1.0000				50.0	1145	4	
180280	BHOA25	13.800	1	0	2	33.0	11.4	30.0	-13.1	1.0000	1.0000				57.0	1145	4	
180281	BHOA26	13.800	1	0	2	45.0	11.1	30.8	-13.5	1.0000	1.0000				57.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	4.0	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS						1817.0	235.5	1000.3	-758.6						2500.0			

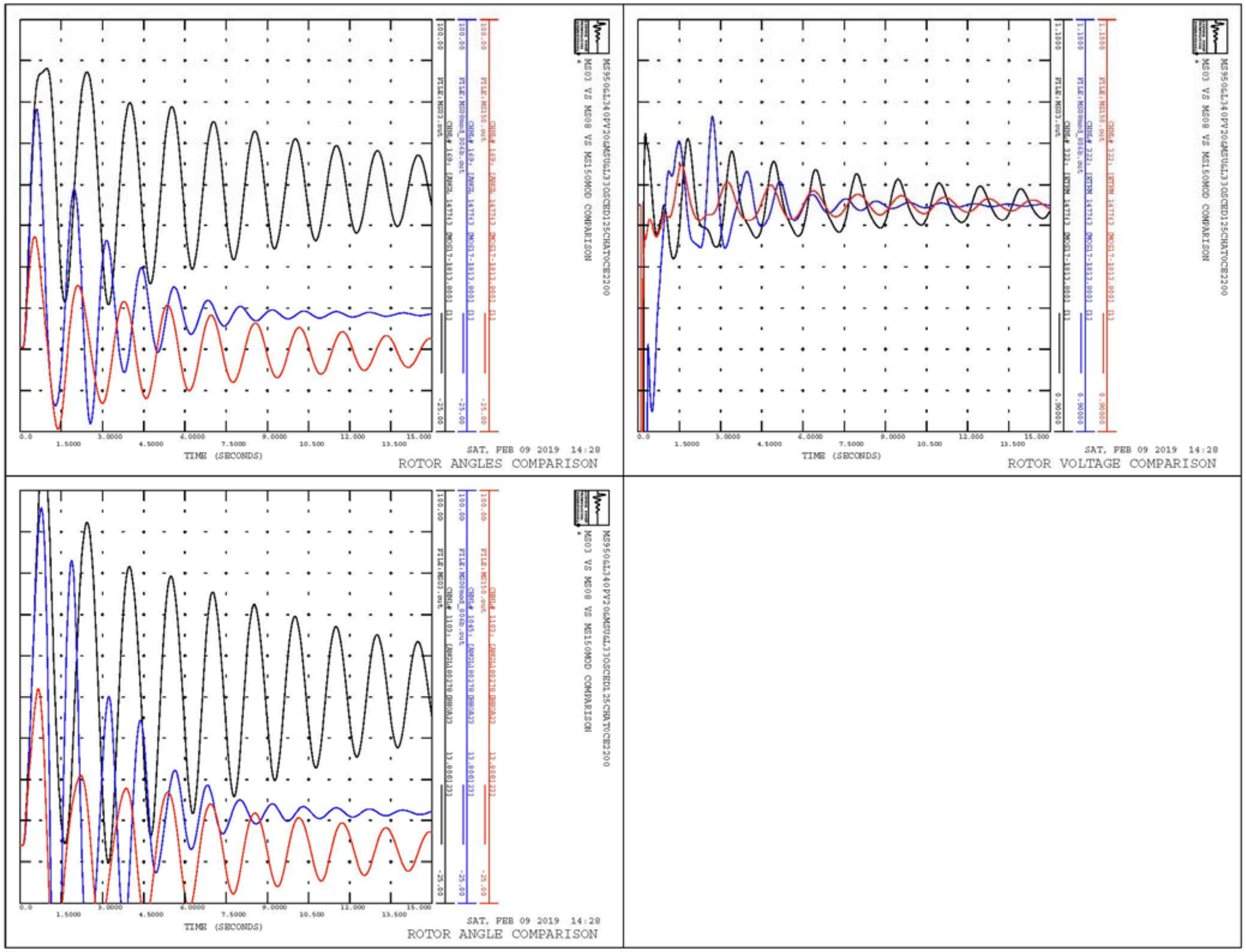

Fig A11 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

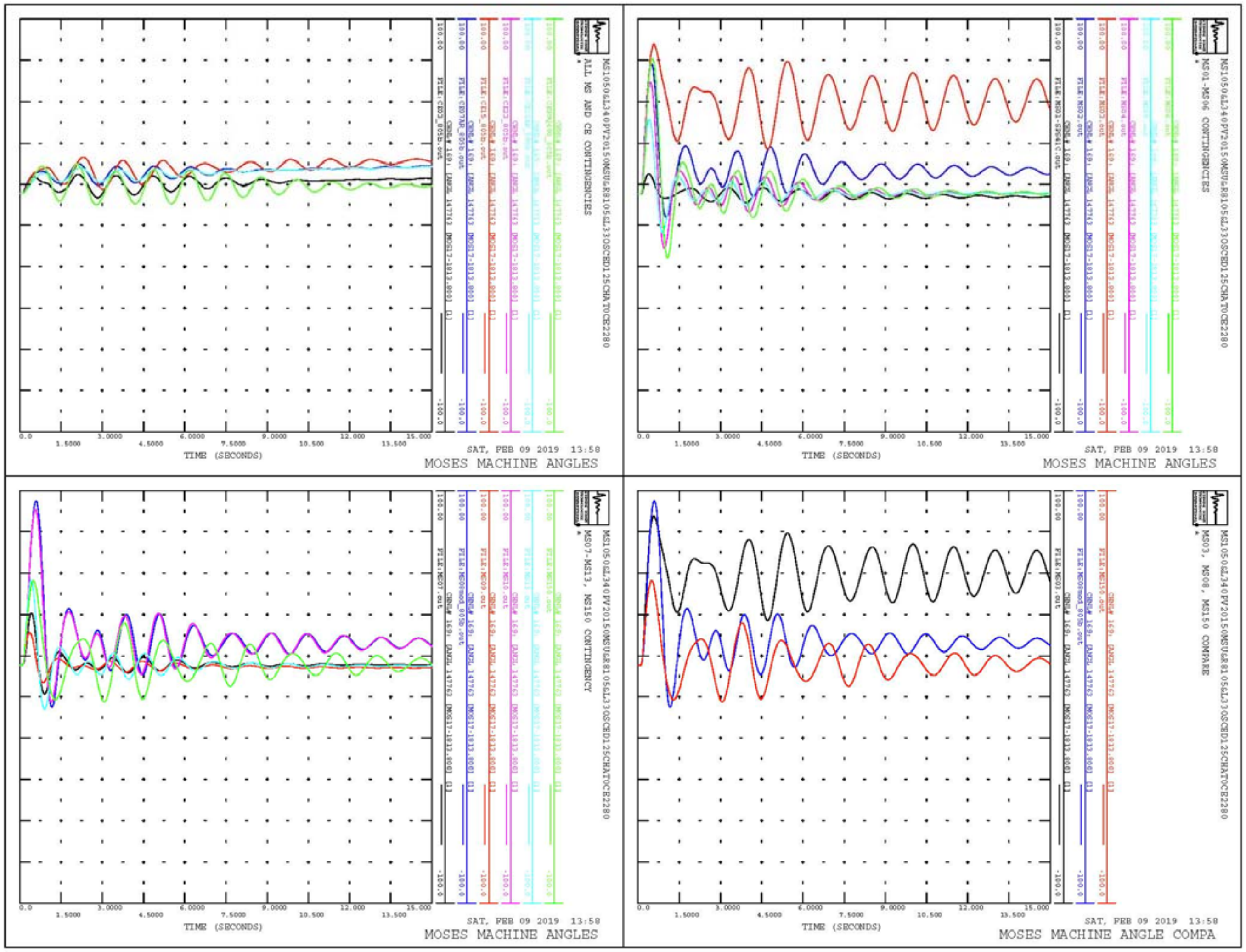

Fig A12: Comparative plots for Moses machine angle for all simulated contingencies

A.7 MSU1 & 7040 & MAP2 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.07B  NORTH EX 950 MSU1,MAP1 O/S
       MSC:950 MS:775,L34:OS,PV:100,CED:125,CHAT:0,CE:2225

 INTERFACE FLOW REPORT
   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS         2375.3   -127.6  DYSE-CLOSE          3816.0     50.0
 WEST-CENTRAL         1042.6   -107.2  WESTC-CLOSE         2483.2     70.4
 VOLNEY-EAST          4203.5   -122.4  VOLNEY-CLOSE        5426.7     91.0
 MOSES-SOUTH           779.6    166.2  MOSES-CLOSE          950.4    129.6
 CENTRAL-EAST         2225.0   -536.0  TOTAL-EAST          5402.6   -534.4
 UPNY-SENY            5108.3     60.9  UPNY-SENY-CL        6401.0    202.9
 UPNY-CONED           4478.5    -17.5  UPNY-CON-CL         6602.5    -34.9
 MILLWOOD-SO          7125.6     71.1  LIPA-IMPORT         2006.7   -164.9
 DNWDIE-SO-PL         4457.2   -404.3  DNWDIE-SO-PC        6581.3   -421.6
 DNWDIE-SO-OP         3542.1   -342.9  PJM-NY              1385.8    237.5
 NE-NY-WCSC            241.4    110.1  ON-NY               1809.2    209.9
 ONT-MICH-PAR          186.2    -11.0  Northern Export      950.4    122.9

STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.5      126261 BOWLINE2    345.00 = 359.4      126263 BUCHANAN S  345.00 = 355.6
 136150 CLAY        345.00 = 354.4      130750 COOPC345    345.00 = 356.9      126266 DUNWOODIE   345.00 = 352.7
 137200 EDIC        345.00 = 351.5      126277 FARRAGUT    345.00 = 349.8      130753 FRASR345    345.00 = 359.5
 135413 GRDNVL2     230.00 = 228.3      147831 GILB 345    345.00 = 361.5      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 358.3      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 352.1      126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 359.2
 137453 N.SCOT99    345.00 = 359.2      147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 357.5      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 360.8
 149001 PANNELL3    345.00 = 350.6      126294 PLTVLLEY    345.00 = 353.7      126295 RAINEY      345.00 = 350.2
 126600 REAC71      345.00 = 352.2      126601 REAC72      345.00 = 352.3      126297 RAMAPO      345.00 = 357.6
 126250 RAMAPO 5    500.00 = 520.6      125001 ROCK TAV    345.00 = 356.6      125002 ROSETON     345.00 = 356.3
 130754 SOMERSET345 345.00 = 359.0      126298 SPRAINBROOK 345.00 = 352.9      149000 ROCH 345    345.00 = 350.0
 147840 MOSES W     230.00 = 229.4      130768 WATRC230    230.00 = 237.8      180819 CHA-NY      765.00 = 788.5
 147827 MARCY765    765.00 = 774.3      147828 MASS 765    765.00 = 737.7      126281 E FISHKILL  345.00 = 355.2
 125000 HURLEY 3    345.00 = 358.4      128835 SHORE RD    345.00 = 353.4      136156 VOLNEY      345.00 = 361.0
 130757 WATRC345    345.00 = 364.1*     135250 DUNKIRK     230.00 = 227.9      130764 MEYER230    230.00 = 228.4
 130765 OAKDL230    230.00 = 238.3      137730 ROTRDM.2    230.00 = 230.2      181219 CHANY2      120.00 = 133.2*
 181119 CHANY1      120.00 = 133.2*     137716 ALB1        115.00 = 118.5      130774 BATH 115    115.00 = 115.4
 137488 BETHLEHE    115.00 = 118.8      130776 BORDR115    115.00 = 113.1      136181 CLAY        115.00 = 118.4
 130794 DELHI115    115.00 = 115.6      130796 E.NOR115    115.00 = 111.6      135277 FALCONER    115.00 = 116.4
 130807 WESTOVER115 115.00 = 119.7      130826 MEYER115    115.00 = 115.8      147849 MOS 115     115.00 = 115.2
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147850 NIAG115E	115.00 = 117.0	147851 NIAG115W	115.00 = 117.4	130836 N.WAV115	115.00 = 114.9
130838 OAKDL115	115.00 = 119.7	147852 PLAT T#3	115.00 = 115.7	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 114.2	125046 ROCK TV1	115.00 = 118.0	137532 RTRDM1	115.00 = 114.9
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 115.9	149008 RUS 115	115.00 = 114.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP		MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0349				3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0176				5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0253				16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0111				10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0156				13.0	163	4	
131789	MILL C46	46.000	3	0	2	3.5	2.2	3.0	0.0	1.0187	1.0187				6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0346				3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9969				4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	0.9852				5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	5.8	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	0.9865				5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207				3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	2.3	3.2	-1.7	0.9700	0.9700				3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000				4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	5.3	9.4	-4.7	1.0293	1.0293				39.6	175	4	
146743	MASSENA_GT	13.800	1	0	-2	51.4	24.6	24.6	-12.3	1.0310	1.0274				78.3	175	4	
147763	MOS17-18	13.800	2	0	2	103.8	32.8	38.6	-30.8	1.0100	1.0100				120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	33.6	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	34.8	38.6	-30.8	1.0100	1.0100				120.0	158	4	
147768	MOS25-26	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9960				120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	23.8	38.6	-30.8	1.0000	1.0000				120.0	158	4	
147771	MOS27-28	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9958				120.0	158	4	
147772	MOS29-30	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9969				120.0	158	4	
147774	MOS31-32	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9969				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	46.8	9.3	22.9	-13.3	1.0300	1.0300				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	40.6	6.1	16.1	-17.6	1.0300	1.0300				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	42.2	8.1	18.0	-18.8	1.0300	1.0300				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	42.3	8.0	22.2	-21.6	1.0300	1.0300				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	20.9	1.2	4.8	-5.0	1.0300	1.0300				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	148.0	23.3	123.2	-82.6	0.9855	0.9855				215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	11.5	32.1	-32.1	1.0000	1.0000				50.0	1145	4	
180280	BHOA25	13.800	1	0	2	33.0	14.1	30.0	-13.1	1.0000	1.0000				57.0	1145	4	
180281	BHOA26	13.800	1	0	2	45.0	13.7	30.8	-13.5	1.0000	1.0000				57.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	7.6	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS						1820.2	364.7	1000.3	-758.6						2500.0			

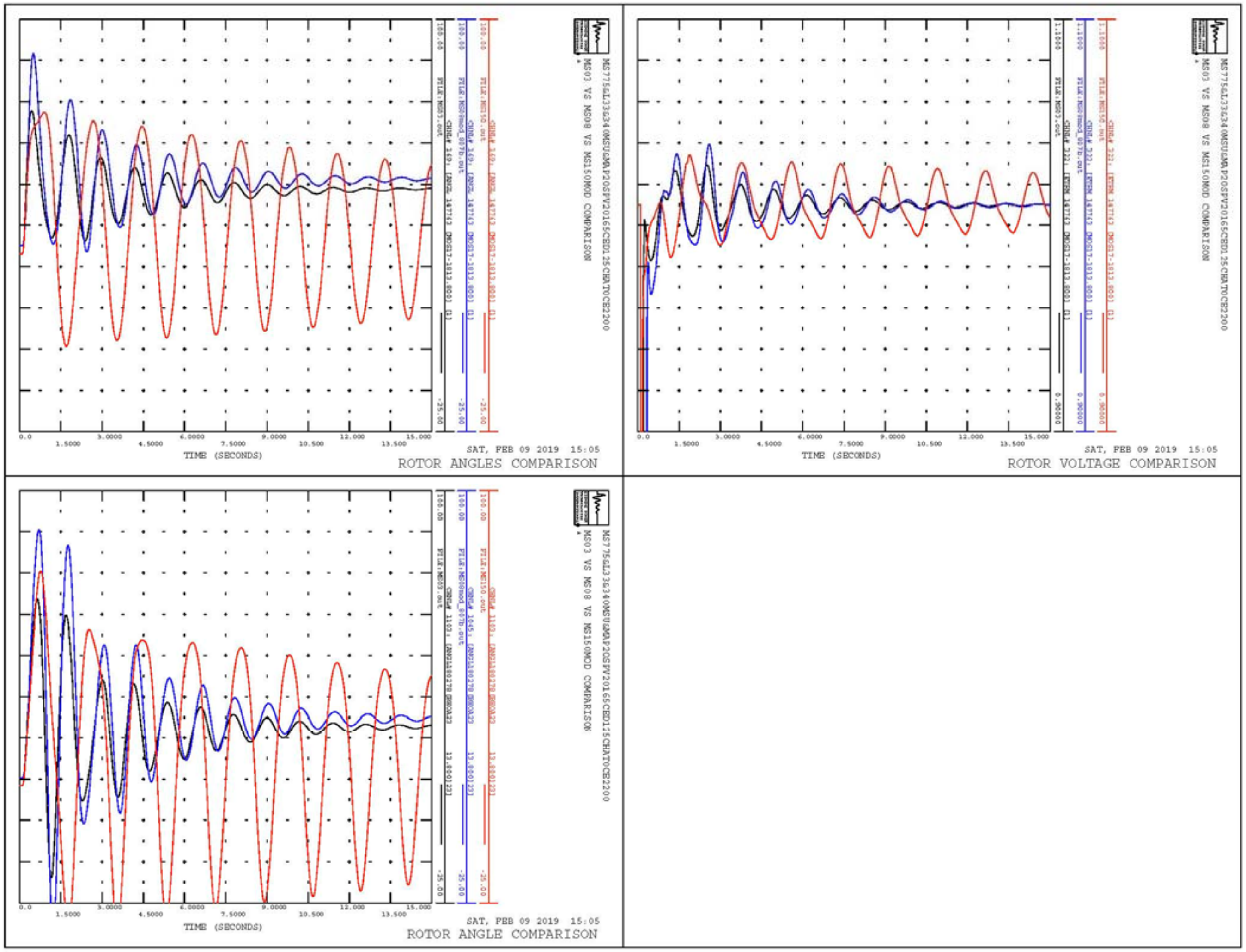

Fig A13: Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

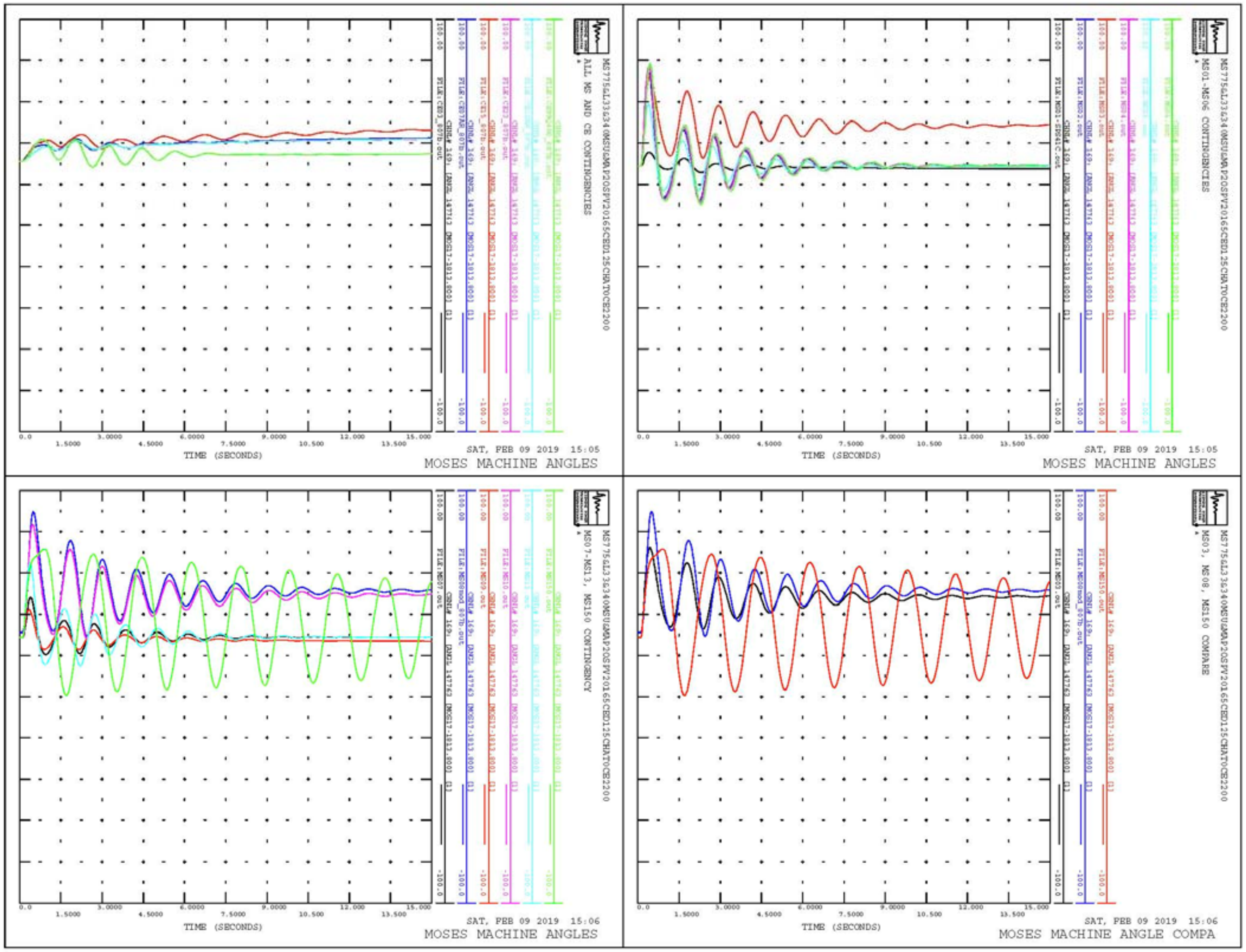

Fig A14: Comparative plots for Moses machine angle for all simulated contingencies

A.8 MSU1 & 7040 & MAP2 &R8105 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.08B  NORTH EX 850 MSU1,MAP2,R8105 O/S
       MSC:850 MS:711,L34:OS,PV:100,CED:125,CHAT:0,CE:2212
 INTERFACE FLOW REPORT
   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS        2390.7   -127.6  DYSE-CLOSE          3833.3     45.8
 WEST-CENTRAL        1057.6   -112.9  WESTC-CLOSE         2500.2     60.5
 VOLNEY-EAST         4312.6   -176.8  VOLNEY-CLOSE        5523.6     32.9
 MOSES-SOUTH          711.3    115.5  MOSES-CLOSE          850.2     77.1
 CENTRAL-EAST        2212.1   -539.4  TOTAL-EAST          5402.5   -544.5
 UPNY-SENY           5111.5     62.1  UPNY-SENY-CL        6401.0    203.6
 UPNY-CONED          4481.1    -18.2  UPNY-CON-CL         6602.3    -37.0
 MILLWOOD-SO         7125.0     70.0  LIPA-IMPORT         2006.8   -165.5
 DNWDIE-SO-PL        4460.1   -405.8  DNWDIE-SO-PC        6581.3   -424.7
 DNWDIE-SO-OP        3545.6   -343.9  PJM-NY              1393.4    237.6
 NE-NY-WCSC           241.5    118.8  ON-NY               1819.5    205.4
 ONT-MICH-PAR         181.4    -11.1  Northern Export      850.2     70.3

STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.5      126261 BOWLINE2    345.00 = 359.4      126263 BUCHANAN S  345.00 = 355.6
 136150 CLAY        345.00 = 354.4      130750 COOPC345    345.00 = 356.6      126266 DUNWOODIE   345.00 = 352.7
 137200 EDIC        345.00 = 351.6      126277 FARRAGUT    345.00 = 349.7      130753 FRASR345    345.00 = 359.3
 135413 GRDNVL2     230.00 = 228.2      147831 GILB 345    345.00 = 361.5      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 358.3      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 352.1      126291 MILLWOOD    345.00 = 353.1      137452 N.SCOT77    345.00 = 359.1
 137453 N.SCOT99    345.00 = 359.1      147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 357.4      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 360.6
 149001 PANNELL3    345.00 = 350.5      126294 PLTVLLEY    345.00 = 353.6      126295 RAINEY      345.00 = 350.1
 126600 REAC71      345.00 = 352.2      126601 REAC72      345.00 = 352.3      126297 RAMAPO      345.00 = 357.5
 126250 RAMAPO 5    500.00 = 520.6      125001 ROCK TAV    345.00 = 356.4      125002 ROSETON     345.00 = 356.2
 130754 SOMERSET345 345.00 = 358.9      126298 SPRAINBROOK 345.00 = 352.8      149000 ROCH 345    345.00 = 349.8
 147840 MOSES W     230.00 = 229.8      130768 WATRC230    230.00 = 237.7      180819 CHA-NY      765.00 = 788.5
 147827 MARCY765    765.00 = 774.3      147828 MASS 765    765.00 = 738.7      126281 E FISHKILL  345.00 = 355.2
 125000 HURLEY 3    345.00 = 358.4      128835 SHORE RD    345.00 = 353.4      136156 VOLNEY      345.00 = 360.9
 130757 WATRC345    345.00 = 363.8*     135250 DUNKIRK     230.00 = 227.8      130764 MEYER230    230.00 = 228.2
 130765 OAKDL230    230.00 = 238.1      137730 ROTRDM.2    230.00 = 230.7      181219 CHANY2      120.00 = 133.2*
 181119 CHANY1      120.00 = 133.2*     137716 ALB1        115.00 = 118.6      130774 BATH 115    115.00 = 115.4
 137488 BETHLEHE    115.00 = 118.8      130776 BORDR115    115.00 = 113.1      136181 CLAY        115.00 = 118.6
 130794 DELHI115    115.00 = 115.5      130796 E.NOR115    115.00 = 111.6      135277 FALCONER    115.00 = 116.4
 130807 WESTOVER115 115.00 = 119.6      130826 MEYER115    115.00 = 115.7      147849 MOS 115     115.00 = 114.9
 147850 NIAG115E    115.00 = 117.0      147851 NIAG115W    115.00 = 117.4      130836 N.WAV115    115.00 = 114.8
```

130838 OAKDL115	115.00 = 119.6	147852 PLAT T#3	115.00 = 115.6	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 114.9	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.0
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 115.9	149008 RUS 115	115.00 = 114.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0286		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0177		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0253		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0111		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0157		13.0	163	4	
131789	MILL C46	46.000	3	0	2	3.5	2.1	3.0	0.0	1.0187	1.0187		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0283		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9959		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0178		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	2.2	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0176		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207		3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.9	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000		4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	-1.2	9.4	-4.7	1.0293	1.0293		39.6	175	4	
146743	MASSENA_GT	13.800	1	0	2	51.4	7.4	24.6	-12.3	1.0310	1.0310		78.3	175	4	
147763	MOS17-18	13.800	2	0	2	104.2	31.6	38.6	-30.8	1.0100	1.0100		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	32.5	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	33.6	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147768	MOS25-26	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9940		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	22.6	38.6	-30.8	1.0000	1.0000		120.0	158	4	
147771	MOS27-28	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9938		120.0	158	4	
147772	MOS29-30	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9949		120.0	158	4	
147774	MOS31-32	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9949		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	36.8	6.2	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	30.6	4.6	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	32.2	5.6	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	32.3	6.3	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	10.9	1.2	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	98.0	16.1	123.2	-82.6	0.9855	0.9855		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	6.9	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180280	BHOA25	13.800	1	0	2	33.0	8.7	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	45.0	8.5	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	0.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1720.6	293.6	1000.3	-758.6				2500.0			

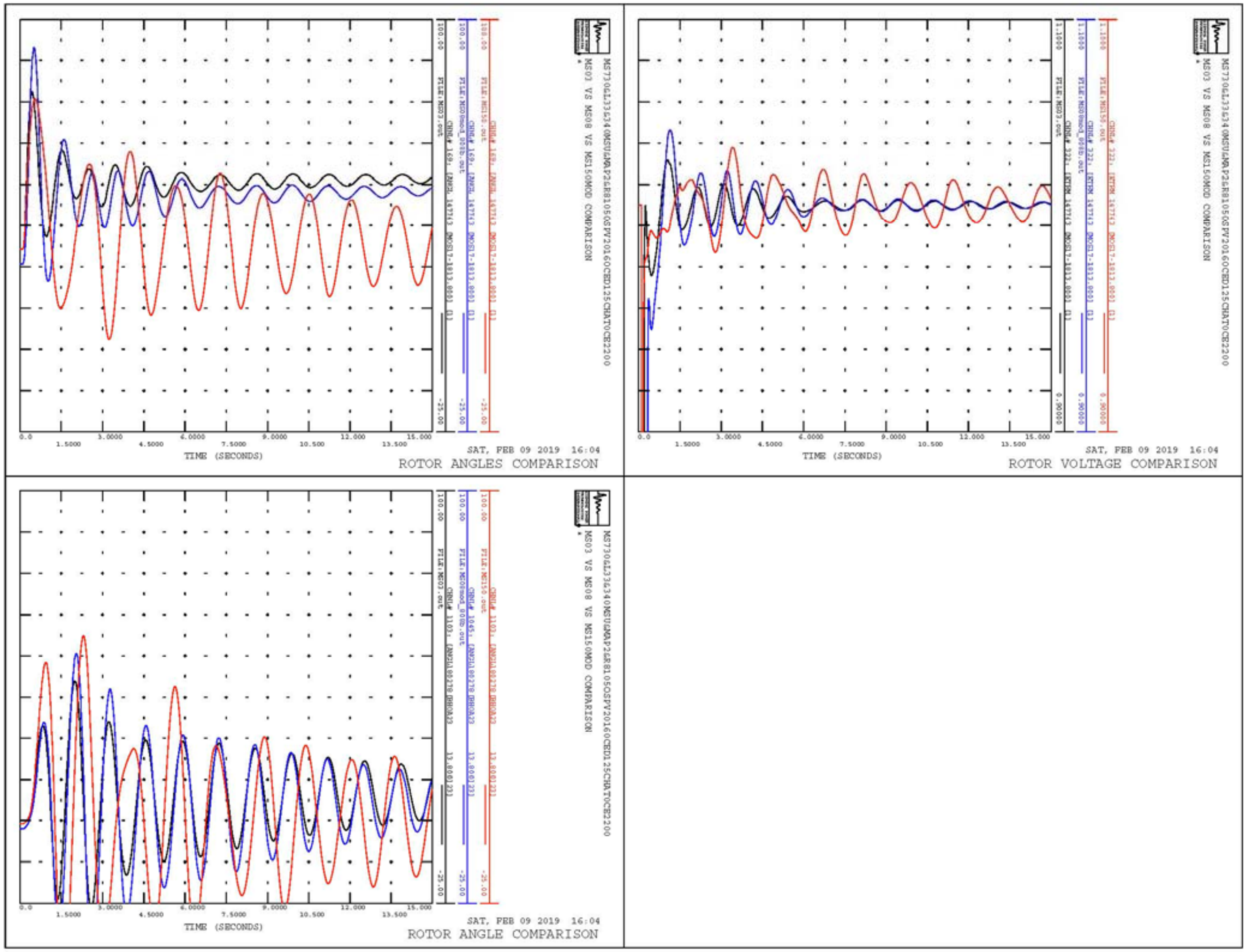

Fig A15: Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

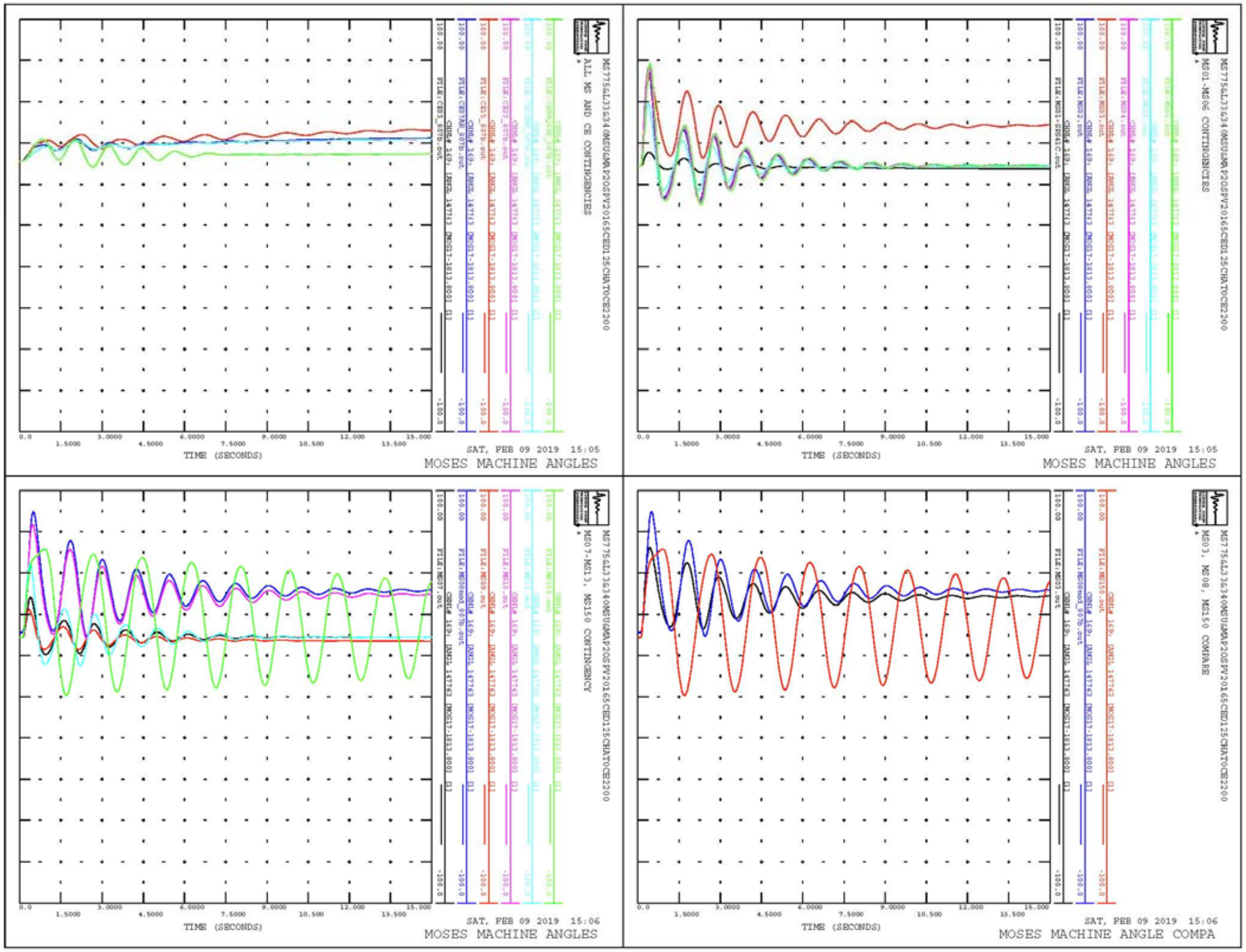

Fig A16: Comparative plots for Moses machine angle for all simulated contingencies

A.9 MSU1 & 7040 & MAP2 & PV20 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.09B  NORTH EX 700 MSU1,MAP2,PV20 O/S
       MSC:700 MS:700,L34:OS,PV:OS,CED:125,CHAT:0,CE:2153
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INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	2381.1	-123.0	DYSE-CLOSE	3833.3	41.9
WEST-CENTRAL	1047.9	-103.0	WESTC-CLOSE	2500.0	61.9
VOLNEY-EAST	4474.4	-224.6	VOLNEY-CLOSE	5694.3	-27.2
MOSES-SOUTH	702.5	88.9	MOSES-CLOSE	699.9	71.3
CENTRAL-EAST	2152.9	-547.1	TOTAL-EAST	5402.0	-572.1
UPNY-SENY	5110.9	59.9	UPNY-SENY-CL	6400.7	202.6
UPNY-CONED	4480.2	-25.3	UPNY-CON-CL	6602.0	-45.0
MILLWOOD-SO	7126.5	67.9	LIPA-IMPORT	2006.8	-166.1
DNWDIE-SO-PL	4459.3	-407.7	DNWDIE-SO-PC	6581.2	-427.3
DNWDIE-SO-OP	3544.7	-345.0	PJM-NY	1394.7	244.0
NE-NY-WCSC	241.6	127.0	ON-NY	1818.0	192.3
ONT-MICH-PAR	182.7	-10.9	Northern Export	699.9	64.2

STATION VOLTAGES

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126260 BOWLINE1    345.00 = 359.4     126261 BOWLINE2    345.00 = 359.3     126263 BUCHANAN S  345.00 = 355.5
136150 CLAY        345.00 = 353.8     130750 COOPC345    345.00 = 355.9     126266 DUNWOODIE   345.00 = 352.6
137200 EDIC        345.00 = 351.5     126277 FARRAGUT    345.00 = 349.7     130753 FRASR345    345.00 = 358.6
135413 GRDNVL2     230.00 = 228.2     147831 GILB 345    345.00 = 361.2     126283 GOTHLS      345.00 = 347.9
126286 GOW R16     345.00 = 347.0     126290 LADENTWN    345.00 = 358.2     137451 LEEDS 3     345.00 = 360.9
147833 MARCY T1    345.00 = 352.1     126291 MILLWOOD    345.00 = 353.1     137452 N.SCOT77    345.00 = 358.9
137453 N.SCOT99    345.00 = 358.9     147841 NIAGAR2E    230.00 = 230.3     147842 NIAGAR2W    230.00 = 230.3
147834 NIAG 345    345.00 = 357.4     129341 NRTHPRT1    138.00 = 142.3     130755 OAKDL345    345.00 = 359.9
149001 PANNELL3    345.00 = 350.3     126294 PLTVLLEY    345.00 = 353.6     126295 RAINEY      345.00 = 350.1
126600 REAC71      345.00 = 352.1     126601 REAC72      345.00 = 352.2     126297 RAMAPO      345.00 = 357.4
126250 RAMAPO 5    500.00 = 520.5     125001 ROCK TAV    345.00 = 356.1     125002 ROSETON     345.00 = 356.1
130754 SOMERSET345 345.00 = 358.9     126298 SPRAINBROOK 345.00 = 352.8     149000 ROCH 345    345.00 = 349.7
147840 MOSES W     230.00 = 233.8     130768 WATRC230    230.00 = 237.3     180819 CHA-NY      765.00 = 788.5
147827 MARCY765    765.00 = 774.3     147828 MASS 765    765.00 = 751.6     126281 E FISHKILL  345.00 = 355.1
125000 HURLEY 3    345.00 = 358.3     128835 SHORE RD    345.00 = 353.3     136156 VOLNEY      345.00 = 360.4
130757 WATRC345    345.00 = 363.3*    135250 DUNKIRK     230.00 = 227.8     130764 MEYER230    230.00 = 228.1
130765 OAKDL230    230.00 = 237.8     137730 ROTRDM.2    230.00 = 230.6     181219 CHANY2      120.00 = 133.2*
181119 CHANY1      120.00 = 133.2*    137716 ALB1        115.00 = 118.6     130774 BATH 115    115.00 = 115.4
137488 BETHLEHE    115.00 = 118.8     130776 BORDR115    115.00 = 113.1     136181 CLAY        115.00 = 118.4
130794 DELHI115    115.00 = 115.8     130796 E.NOR115    115.00 = 112.0     135277 FALCONER    115.00 = 116.4
130807 WESTOVER115 115.00 = 119.5     130826 MEYER115    115.00 = 115.7     147849 MOS 115     115.00 = 117.4
```

147850 NIAG115E	115.00 = 117.0	147851 NIAG115W	115.00 = 117.4	130836 N.WAV115	115.00 = 114.9
130838 OAKDL115	115.00 = 119.5	147852 PLAT T#3	115.00 = 116.7	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 115.0	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.0
125048 SHENANDO	115.00 = 117.6	149011 S82-1115	115.00 = 115.9	149008 RUS 115	115.00 = 114.3

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0321		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0222		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0294		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0158		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0203		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0223		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0317		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0062		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0154		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-6.1	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0166		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207		3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000		4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	-0.0	9.4	-4.7	1.0293	1.0293		39.6	175	4	
146743	MASSENA_GT	13.800	1	0	2	51.4	19.8	24.6	-12.3	1.0310	1.0310		78.3	175	4	
147763	MOS17-18	13.800	2	0	2	96.9	15.9	38.6	-30.8	1.0100	1.0100		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	17.2	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	17.5	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	37.7	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	6.7	38.6	-30.8	1.0000	1.0000		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	37.8	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	36.9	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	36.9	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	16.8	-2.7	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	10.6	-1.7	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	12.2	-0.1	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	12.3	-0.8	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	10.9	-0.9	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	28.0	0.6	123.2	-82.6	0.9855	0.9855		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	9.1	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180280	BHOA25	13.800	1	0	2	33.0	11.3	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	45.0	11.0	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	3.8	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1563.2	193.3	1000.3	-758.6				2500.0			

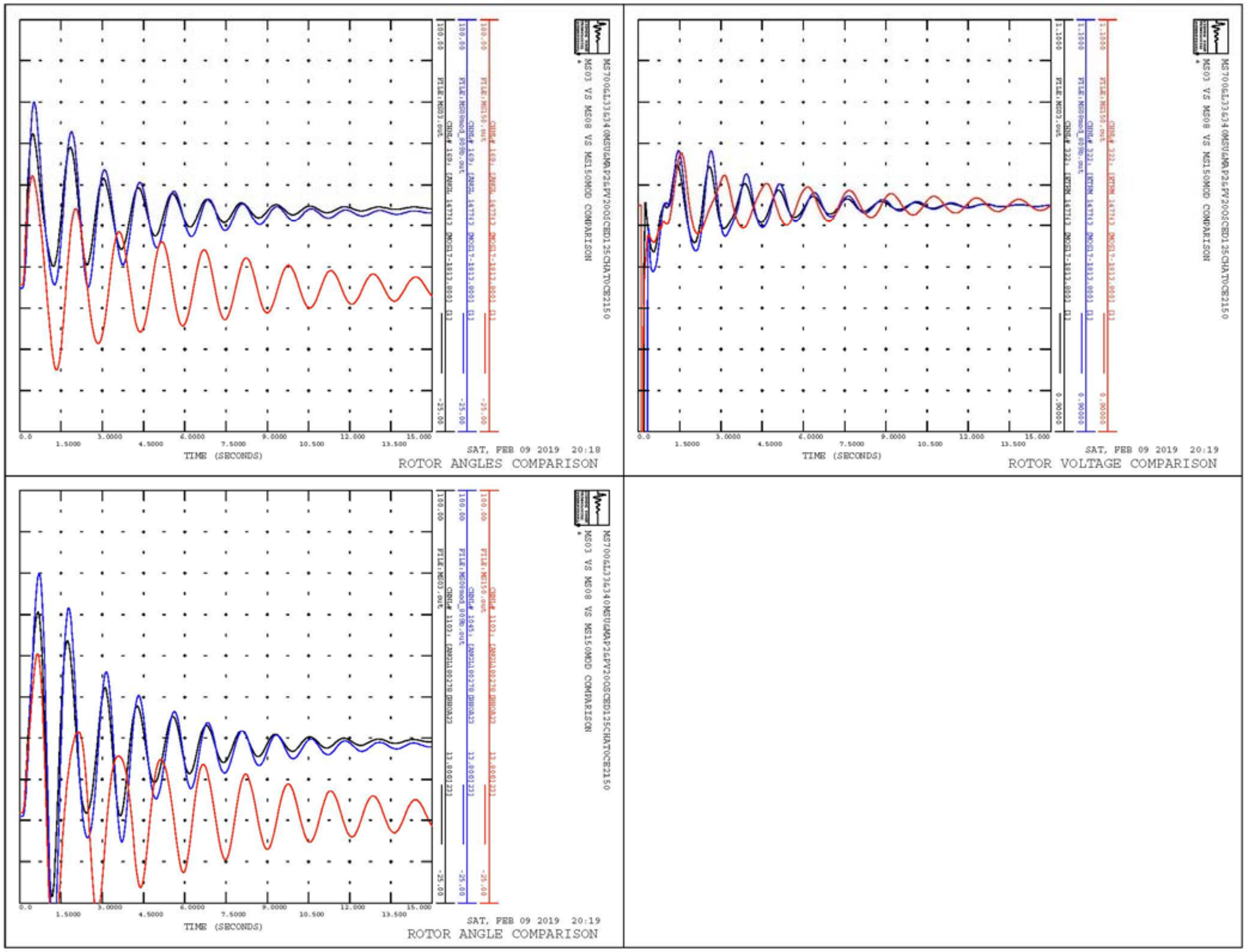

Fig A17: Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

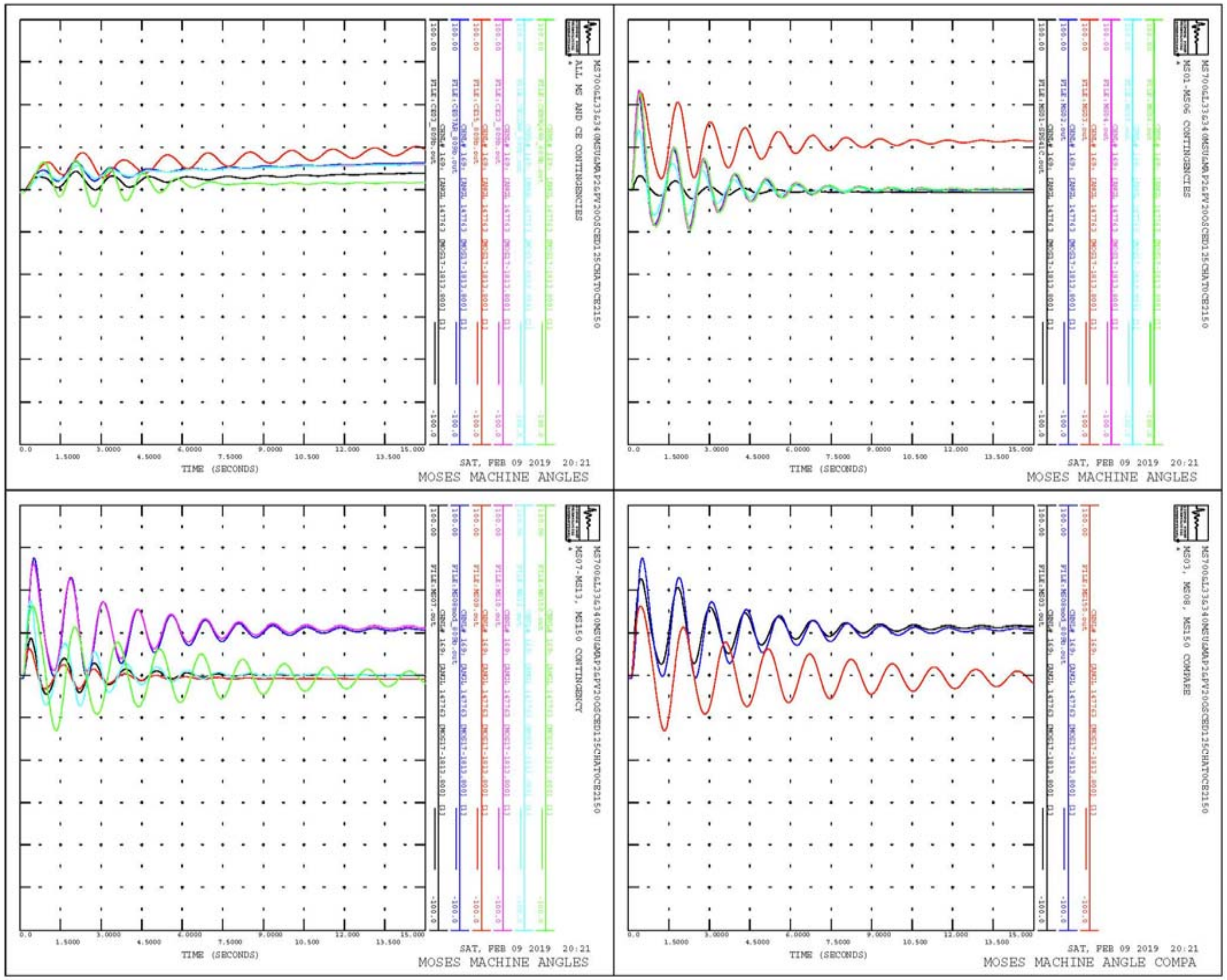

Fig A18: Comparative plots for Moses machine angle for all simulated contingencies

A.9 MSU1 & 7040 & MAP2 & PV20 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.10B  NORTH EX 950 MSU1,MAP2,L33 O/S
       MSC:950 MS:775,L34:OS,PV:100,CED:125,CHAT:0,CE:2226
 INTERFACE FLOW REPORT
   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS        2390.2   -127.7  DYSE-CLOSE         3833.5     21.5
 WEST-CENTRAL        1057.0   -112.7  WESTC-CLOSE        2500.3     36.5
 VOLNEY-EAST         4229.3   -132.2  VOLNEY-CLOSE       5443.3     56.1
 MOSES-SOUTH          777.6    164.0  MOSES-CLOSE         949.5    153.0
 CENTRAL-EAST        2226.0   -536.8  TOTAL-EAST         5402.4   -536.7
 UPNY-SENY           5112.3     62.0  UPNY-SENY-CL       6401.1    203.4
 UPNY-CONED          4480.6    -16.7  UPNY-CON-CL        6602.4    -35.1
 MILLWOOD-SO         7124.8     70.6  LIPA-IMPORT        2006.8   -165.2
 DNWDIE-SO-PL        4459.4   -405.1  DNWDIE-SO-PC       6581.2   -423.5
 DNWDIE-SO-OP        3544.7   -343.5  PJM-NY             1392.7    233.8
 NE-NY-WCSC           241.7    110.3  ON-NY              1820.3    183.8
 ONT-MICH-PAR         180.6    -10.3  Northern Export     949.5    146.2

                                                      STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.5      126261 BOWLINE2    345.00 = 359.4      126263 BUCHANAN S  345.00 = 355.6
 136150 CLAY        345.00 = 354.4      130750 COOPC345    345.00 = 356.8      126266 DUNWOODIE   345.00 = 352.7
 137200 EDIC        345.00 = 351.5      126277 FARRAGUT    345.00 = 349.8      130753 FRASR345    345.00 = 359.4
 135413 GRDNVL2     230.00 = 228.3      147831 GILB 345    345.00 = 361.5      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 358.3      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 352.1      126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 359.2
 137453 N.SCOT99    345.00 = 359.2      147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 357.4      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 361.0
 149001 PANNELL3    345.00 = 350.5      126294 PLTVLLEY    345.00 = 353.7      126295 RAINEY      345.00 = 350.1
 126600 REAC71      345.00 = 352.2      126601 REAC72      345.00 = 352.3      126297 RAMAPO      345.00 = 357.5
 126250 RAMAPO 5    500.00 = 520.6      125001 ROCK TAV    345.00 = 356.5      125002 ROSETON     345.00 = 356.2
 130754 SOMERSET345 345.00 = 358.9      126298 SPRAINBROOK 345.00 = 352.8      149000 ROCH 345    345.00 = 349.8
 147840 MOSES W     230.00 = 228.6      130768 WATRC230    230.00 = 237.8      180819 CHA-NY      765.00 = 788.5
 147827 MARCY765    765.00 = 774.3      147828 MASS 765    765.00 = 734.8      126281 E FISHKILL  345.00 = 355.2
 125000 HURLEY 3    345.00 = 358.4      128835 SHORE RD    345.00 = 353.4      136156 VOLNEY      345.00 = 360.9
 130757 WATRC345    345.00 = 364.1*     135250 DUNKIRK     230.00 = 227.9      130764 MEYER230    230.00 = 228.4
 130765 OAKDL230    230.00 = 238.5      137730 ROTRDM.2    230.00 = 230.2      181219 CHANY2      120.00 = 133.2*
 181119 CHANY1      120.00 = 133.2*     137716 ALB1        115.00 = 118.5      130774 BATH 115    115.00 = 115.6
 137488 BETHLEHE    115.00 = 118.8      130776 BORDR115    115.00 = 113.2      136181 CLAY        115.00 = 118.4
 130794 DELHI115    115.00 = 116.1      130796 E.NOR115    115.00 = 112.4      135277 FALCONER    115.00 = 116.4
 130807 WESTOVER115 115.00 = 119.9      130826 MEYER115    115.00 = 115.8      147849 MOS 115     115.00 = 114.7
 147850 NIAG115E    115.00 = 117.0      147851 NIAG115W    115.00 = 117.4      130836 N.WAV115    115.00 = 115.1
```

130838 OAKDL115	115.00 = 119.9	147852 PLAT T#3	115.00 = 115.8	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 114.2	125046 ROCK TV1	115.00 = 118.0	137532 RTRDM1	115.00 = 114.9
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 115.9	149008 RUS 115	115.00 = 114.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0321		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0222		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0294		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0158		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0203		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0223		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0317		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0062		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0154		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-6.1	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0166		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207		3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000		4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	-0.0	9.4	-4.7	1.0293	1.0293		39.6	175	4	
146743	MASSENA_GT	13.800	1	0	2	51.4	19.8	24.6	-12.3	1.0310	1.0310		78.3	175	4	
147763	MOS17-18	13.800	2	0	2	96.9	15.9	38.6	-30.8	1.0100	1.0100		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	17.2	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	17.5	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	37.7	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	6.7	38.6	-30.8	1.0000	1.0000		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	37.8	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	36.9	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	36.9	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	16.8	-2.7	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	10.6	-1.7	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	12.2	-0.1	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	12.3	-0.8	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	10.9	-0.9	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	28.0	0.6	123.2	-82.6	0.9855	0.9855		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	9.1	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180280	BHOA25	13.800	1	0	2	33.0	11.3	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	45.0	11.0	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	3.8	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1563.2	193.3	1000.3	-758.6				2500.0			

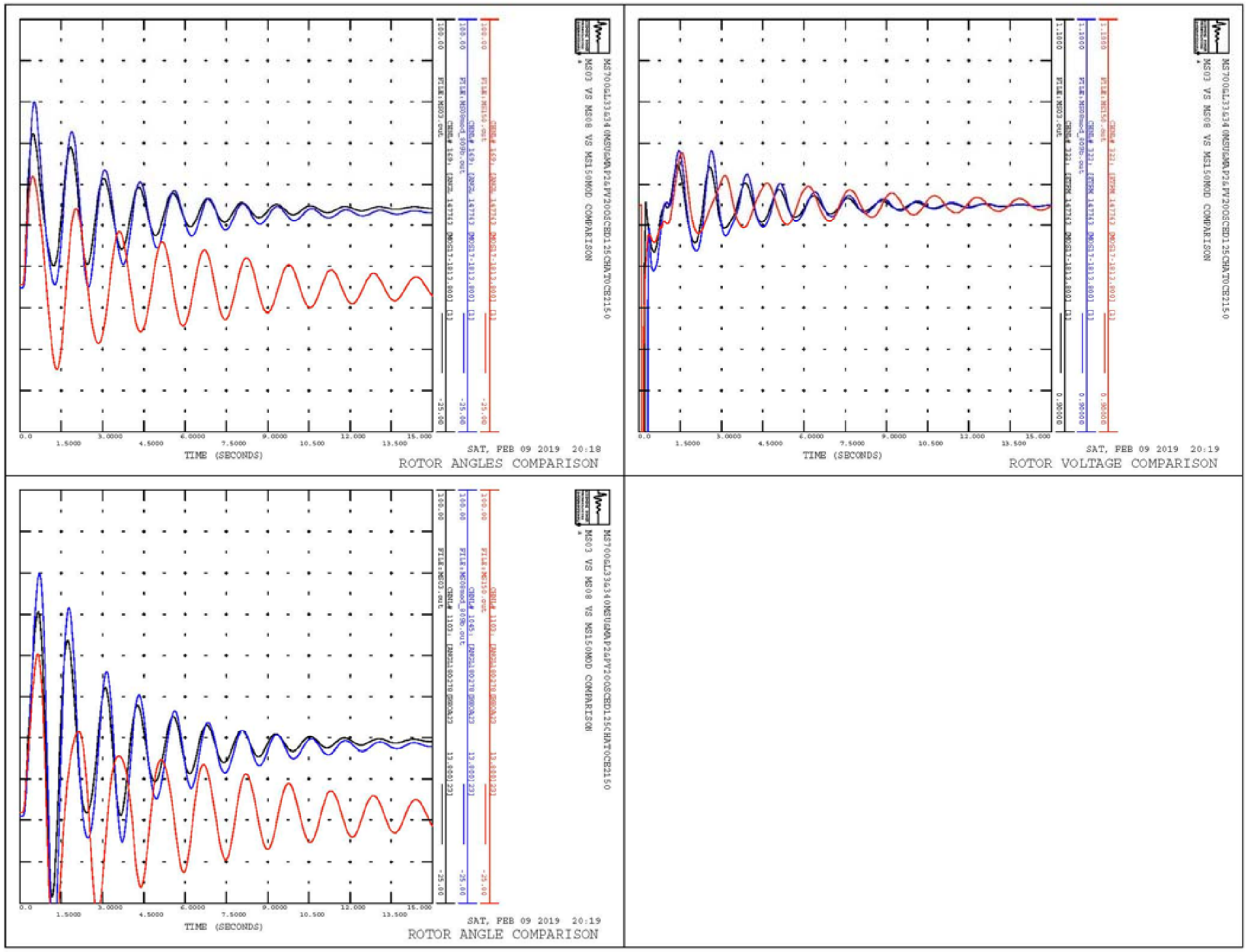

Fig A19 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

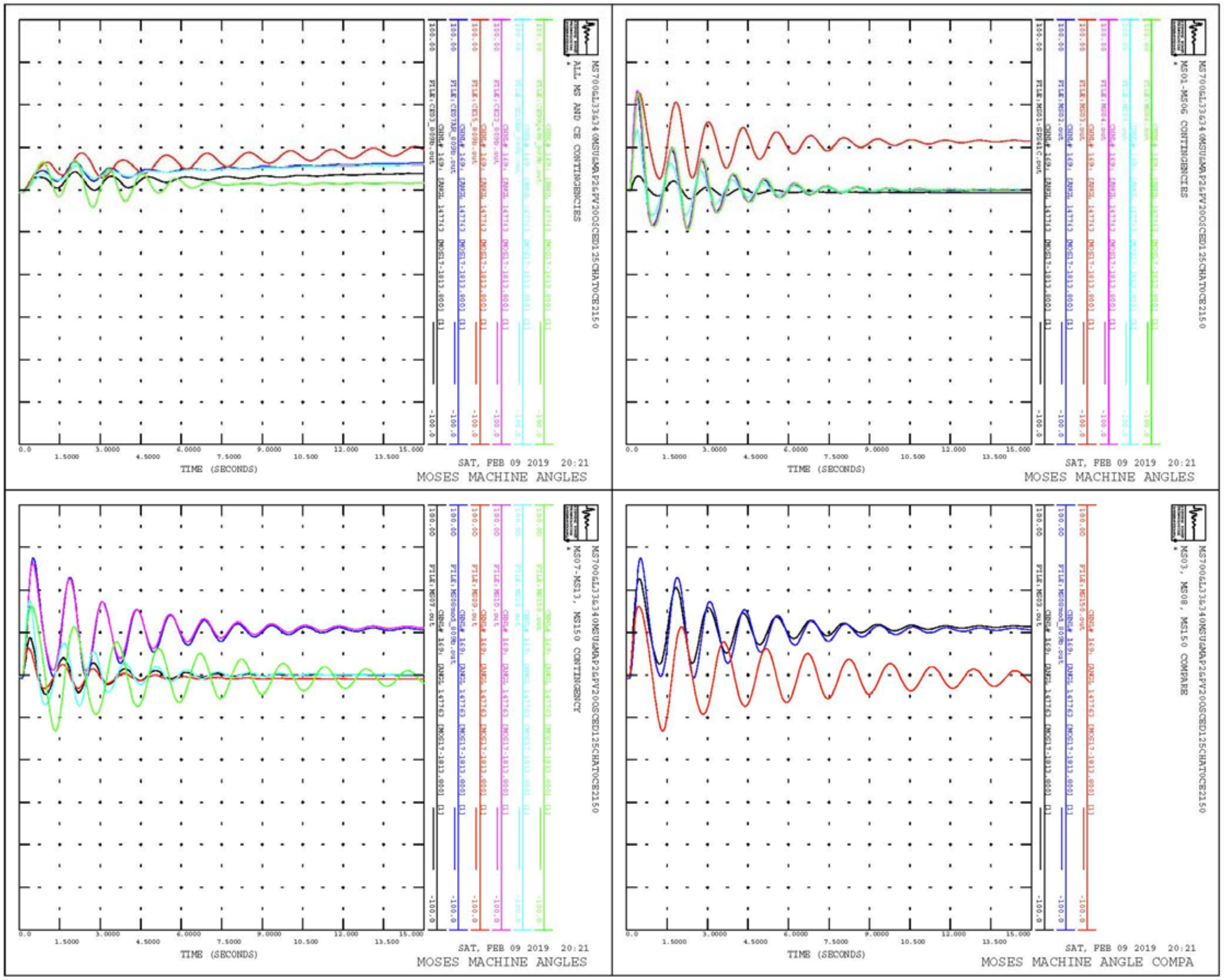

Fig A20: Comparative plots for Moses machine angle for all simulated contingencies

A.10 MSU1 & 7040 & L33 & MAP2 O/S

Test Level Interface Power Flow Summary and Key Voltages

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CASE :8.10B  NORTH EX 950 MSU1,MAP2,L33 O/S
       MSC:950 MS:775,L34:OS,PV:100,CED:125,CHAT:0,CE:2226
                                                   INTERFACE FLOW REPORT
   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS         2390.2   -127.7  DYSE-CLOSE          3833.5     21.5
 WEST-CENTRAL         1057.0   -112.7  WESTC-CLOSE         2500.3     36.5
 VOLNEY-EAST          4229.3   -132.2  VOLNEY-CLOSE        5443.3     56.1
 MOSES-SOUTH           777.6    164.0  MOSES-CLOSE          949.5    153.0
 CENTRAL-EAST         2226.0   -536.8  TOTAL-EAST          5402.4   -536.7
 UPNY-SENY            5112.3     62.0  UPNY-SENY-CL        6401.1    203.4
 UPNY-CONED           4480.6    -16.7  UPNY-CON-CL         6602.4    -35.1
 MILLWOOD-SO          7124.8     70.6  LIPA-IMPORT         2006.8   -165.2
 DNWDIE-SO-PL         4459.4   -405.1  DNWDIE-SO-PC        6581.2   -423.5
 DNWDIE-SO-OP         3544.7   -343.5  PJM-NY              1392.7    233.8
 NE-NY-WCSC            241.7    110.3  ON-NY               1820.3    183.8
 ONT-MICH-PAR          180.6    -10.3  Northern Export      949.5    146.2

                                                     STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.5      126261 BOWLINE2    345.00 = 359.4       126263 BUCHANAN S  345.00 = 355.6
 136150 CLAY        345.00 = 354.4      130750 COOPC345    345.00 = 356.8       126266 DUNWOODIE   345.00 = 352.7
 137200 EDIC        345.00 = 351.5      126277 FARRAGUT    345.00 = 349.8       130753 FRASR345    345.00 = 359.4
 135413 GRDNVL2     230.00 = 228.3      147831 GILB 345    345.00 = 361.5       126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 358.3       137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 352.1      126291 MILLWOOD    345.00 = 353.2       137452 N.SCOT77    345.00 = 359.2
 137453 N.SCOT99    345.00 = 359.2      147841 NIAGAR2E    230.00 = 230.3       147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 357.4      129341 NRTHPRT1    138.00 = 142.3       130755 OAKDL345    345.00 = 361.0
 149001 PANNELL3    345.00 = 350.5      126294 PLTVLLEY    345.00 = 353.7       126295 RAINEY      345.00 = 350.1
 126600 REAC71      345.00 = 352.2      126601 REAC72      345.00 = 352.3       126297 RAMAPO      345.00 = 357.5
 126250 RAMAPO 5    500.00 = 520.6      125001 ROCK TAV    345.00 = 356.5       125002 ROSETON     345.00 = 356.2
 130754 SOMERSET345 345.00 = 358.9      126298 SPRAINBROOK 345.00 = 352.8       149000 ROCH 345    345.00 = 349.8
 147840 MOSES W     230.00 = 228.6      130768 WATRC230    230.00 = 237.8       180819 CHA-NY      765.00 = 788.5
 147827 MARCY765    765.00 = 774.3      147828 MASS 765    765.00 = 734.8       126281 E FISHKILL  345.00 = 355.2
 125000 HURLEY 3    345.00 = 358.4      128835 SHORE RD    345.00 = 353.4       136156 VOLNEY      345.00 = 360.9
 130757 WATRC345    345.00 = 364.1*     135250 DUNKIRK     230.00 = 227.9       130764 MEYER230    230.00 = 228.4
 130765 OAKDL230    230.00 = 238.5      137730 ROTRDM.2    230.00 = 230.2       181219 CHANY2      120.00 = 133.2*
 181119 CHANY1      120.00 = 133.2*     137716 ALB1        115.00 = 118.5       130774 BATH 115    115.00 = 115.6
 137488 BETHLEHE    115.00 = 118.8      130776 BORDR115    115.00 = 113.2       136181 CLAY        115.00 = 118.4
 130794 DELHI115    115.00 = 116.1      130796 E.NOR115    115.00 = 112.4       135277 FALCONER    115.00 = 116.4
 130807 WESTOVER115 115.00 = 119.9      130826 MEYER115    115.00 = 115.8       147849 MOS 115     115.00 = 114.7
 147850 NIAG115E    115.00 = 117.0      147851 NIAG115W    115.00 = 117.4       130836 N.WAV115    115.00 = 115.1
```

130838	OAKDL115	115.00 = 119.9		147852	PLAT T#3	115.00 = 115.8		125043	PL.VAL 1	115.00 = 117.2	
137235	PORTER 1	115.00 = 114.2		125046	ROCK TV1	115.00 = 118.0		137532	RTRDM1	115.00 = 114.9	
125048	SHENANDO	115.00 = 117.7		149011	S82-1115	115.00 = 115.9		149008	RUS 115	115.00 = 114.4	

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0298		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0178		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0254		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0113		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0159		13.0	163	4	
131789	MILL C46	46.000	3	0	2	3.5	1.7	3.0	0.0	1.0187	1.0187		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0295		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0023		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	0.9886		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-0.5	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	0.9905		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207		3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.7	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000		4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	6.7	9.4	-4.7	1.0293	1.0293		39.6	175	4	
146743	MASSENA_GT	13.800	1	0	-2	51.4	24.6	24.6	-12.3	1.0310	1.0264		78.3	175	4	
147763	MOS17-18	13.800	2	0	2	103.0	36.1	38.6	-30.8	1.0100	1.0100		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	37.0	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	38.4	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147768	MOS25-26	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9920		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	27.3	38.6	-30.8	1.0000	1.0000		120.0	158	4	
147771	MOS27-28	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9919		120.0	158	4	
147772	MOS29-30	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9929		120.0	158	4	
147774	MOS31-32	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0127	0.9929		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	56.8	9.3	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	40.6	6.1	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	52.2	8.2	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	52.3	7.8	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	20.9	1.5	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	118.0	20.8	123.2	-82.6	0.9855	0.9855		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	11.8	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180280	BHOA25	13.800	1	0	2	33.0	14.5	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	45.0	14.0	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	8.0	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1819.4	371.3	1000.3	-758.6				2500.0			

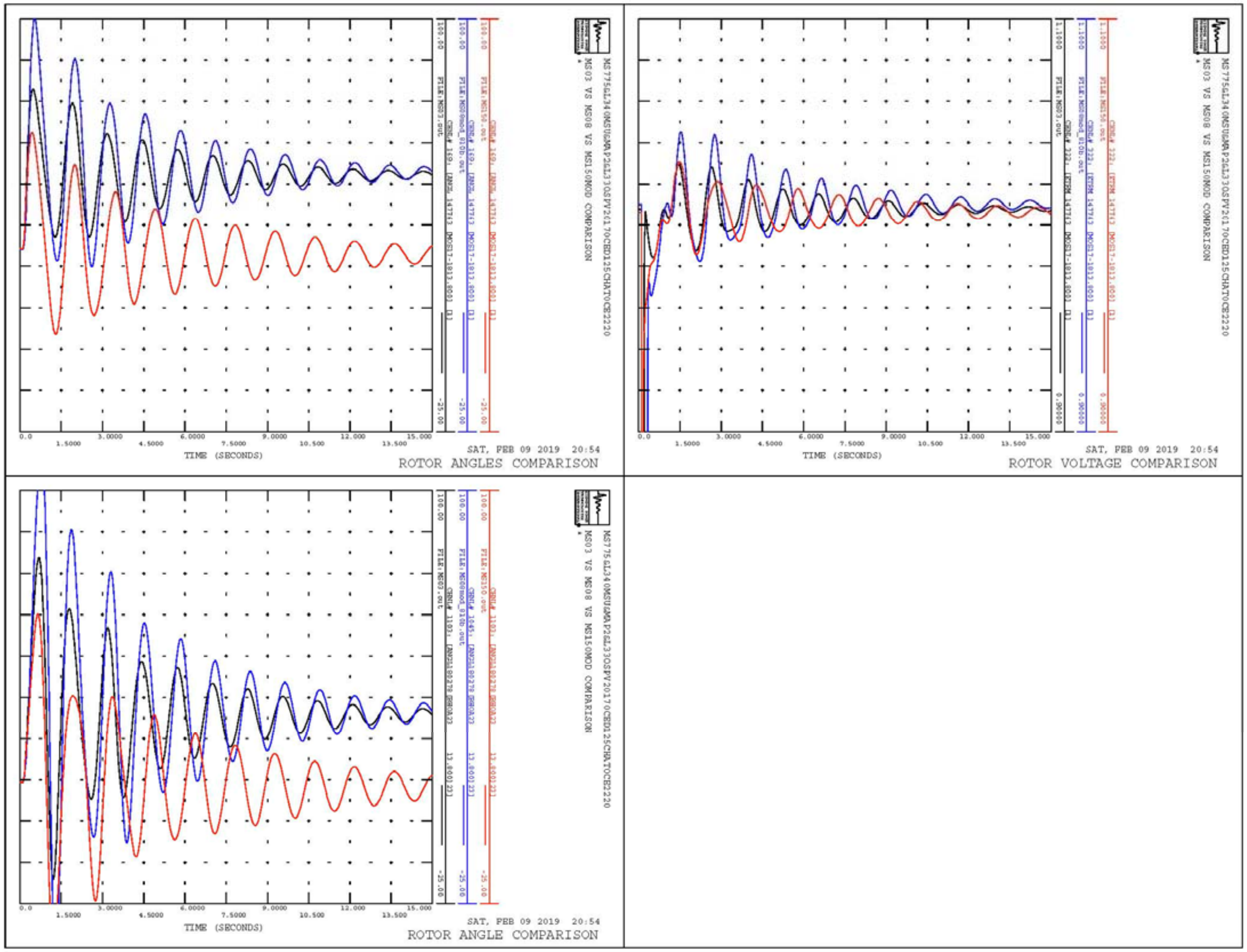

Fig A21 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

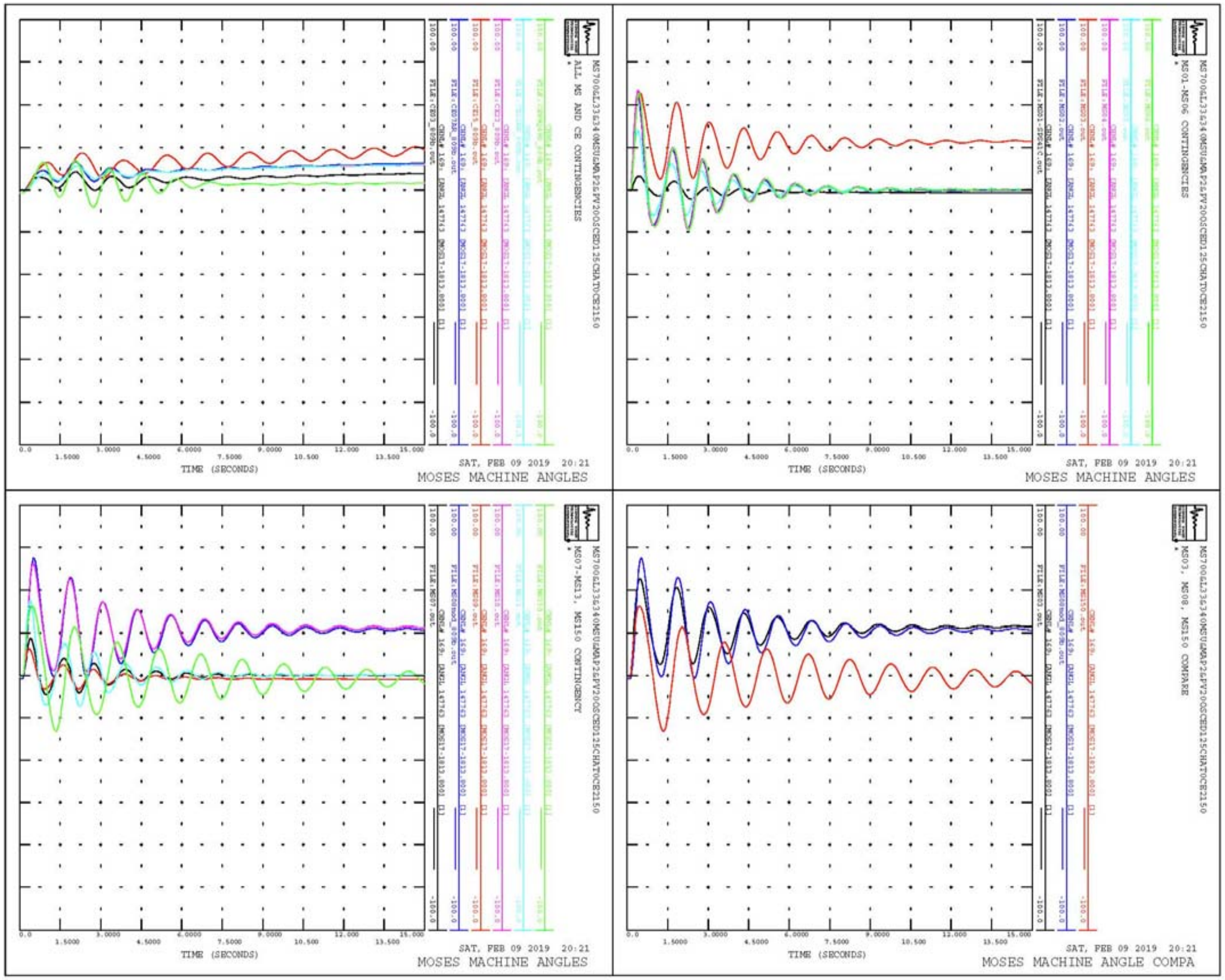

Fig A22: Comparative plots for Moses machine angle for all simulated contingencies

A.11 MSU1 & 7040 & L33 & MAP2 & R8105 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.11B  NORTH EX 900 MSU1,MAP2,L33,R8105 O/S
       MSC:900 MS:740,L34:OS,PV:100,CED:125,CHAT:0,CE:2212
                                                   INTERFACE FLOW REPORT
   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS        2387.2   -127.7  DYSE-CLOSE          3833.5      -4.0
 WEST-CENTRAL        1054.0   -111.3  WESTC-CLOSE         2500.2      12.3
 VOLNEY-EAST         4327.0   -181.5  VOLNEY-CLOSE        5543.6     -19.7
 MOSES-SOUTH          714.8    121.6  MOSES-CLOSE          850.1     134.5
 CENTRAL-EAST        2211.7   -534.0  TOTAL-EAST          5402.3    -537.9
 UPNY-SENY           5111.7     62.2  UPNY-SENY-CL        6400.9     203.8
 UPNY-CONED          4480.5    -18.3  UPNY-CON-CL         6602.3     -36.9
 MILLWOOD-SO         7125.1     70.1  LIPA-IMPORT         2006.8    -165.4
 DNWDIE-SO-PL        4459.4   -405.5  DNWDIE-SO-PC        6581.2    -424.1
 DNWDIE-SO-OP        3544.7   -343.7  PJM-NY              1393.0     235.2
 NE-NY-WCSC           241.6    114.9  ON-NY               1819.9     157.2
 ONT-MICH-PAR         181.1    -10.3  Northern Export      850.1     127.5


                                                     STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.5      126261 BOWLINE2    345.00 = 359.4      126263 BUCHANAN S  345.00 = 355.6
 136150 CLAY        345.00 = 354.3      130750 COOPC345    345.00 = 356.7      126266 DUNWOODIE   345.00 = 352.7
 137200 EDIC        345.00 = 351.6      126277 FARRAGUT    345.00 = 349.8      130753 FRASR345    345.00 = 359.3
 135413 GRDNVL2     230.00 = 228.3      147831 GILB 345    345.00 = 361.5      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 358.3      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 352.1      126291 MILLWOOD    345.00 = 353.1      137452 N.SCOT77    345.00 = 359.2
 137453 N.SCOT99    345.00 = 359.2      147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 357.4      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 360.8
 149001 PANNELL3    345.00 = 350.5      126294 PLTVLLEY    345.00 = 353.6      126295 RAINEY      345.00 = 350.1
 126600 REAC71      345.00 = 352.2      126601 REAC72      345.00 = 352.3      126297 RAMAPO      345.00 = 357.5
 126250 RAMAPO 5    500.00 = 520.6      125001 ROCK TAV    345.00 = 356.5      125002 ROSETON     345.00 = 356.2
 130754 SOMERSET345 345.00 = 359.0      126298 SPRAINBROOK 345.00 = 352.8      149000 ROCH 345    345.00 = 349.8
 147840 MOSES W     230.00 = 232.7      130768 WATRC230    230.00 = 237.7      180819 CHA-NY      765.00 = 788.5
 147827 MARCY765    765.00 = 774.3      147828 MASS 765    765.00 = 748.3      126281 E FISHKILL  345.00 = 355.2
 125000 HURLEY 3    345.00 = 358.4      128835 SHORE RD    345.00 = 353.4      136156 VOLNEY      345.00 = 360.9
 130757 WATRC345    345.00 = 364.0*     135250 DUNKIRK     230.00 = 227.9      130764 MEYER230    230.00 = 228.4
 130765 OAKDL230    230.00 = 238.4      137730 ROTRDM.2    230.00 = 230.9      181219 CHANY2      120.00 = 133.2*
 181119 CHANY1      120.00 = 133.2*     137716 ALB1        115.00 = 118.6      130774 BATH 115    115.00 = 115.5
 137488 BETHLEHE    115.00 = 118.8      130776 BORDR115    115.00 = 113.2      136181 CLAY        115.00 = 118.6
 130794 DELHI115    115.00 = 116.1      130796 E.NOR115    115.00 = 112.4      135277 FALCONER    115.00 = 116.4
 130807 WESTOVER115 115.00 = 119.9      130826 MEYER115    115.00 = 115.8      147849 MOS 115     115.00 = 117.4
```

147850 NIAG115E	115.00 = 117.0	147851 NIAG115W	115.00 = 117.4	130836 N.WAV115	115.00 = 115.1
130838 OAKDL115	115.00 = 119.8	147852 PLAT T#3	115.00 = 116.4	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 115.0	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.1
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 115.9	149008 RUS 115	115.00 = 114.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2 0	-2	1.3	0.0	0.0	0.0	1.0000	1.0299		3.0	163	4	
131769	CADYVILE	46.000	3 0	-2	2.1	0.0	3.1	0.0	1.0000	1.0202		5.0	163	4	
131778	HIGHFL46	46.000	3 0	-2	8.7	1.6	1.6	1.6	1.0000	1.0273		16.0	163	4	
131782	INDIAN T	46.000	1 0	-2	3.7	0.0	0.0	0.0	1.0000	1.0137		10.0	163	4	
131786	KENTSF46	46.000	3 0	-2	7.9	1.0	5.7	1.0	1.0000	1.0183		13.0	163	4	
131789	MILL C46	46.000	3 0	-2	3.5	0.0	3.0	0.0	1.0187	1.0203		6.0	163	4	
131795	RAINBOW	46.000	2 0	-2	1.5	0.0	0.0	0.0	1.0000	1.0296		3.0	163	4	
131813	CHATGY34	34.500	2 1	-2	1.5	0.0	0.0	0.0	1.0000	1.0026		4.0	163	4	
136751	ALLENS F	115.00	1 0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0237		5.0	175	4	
136777	LK COLBY	115.00	1 0	2	0.0	-6.7	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0244		5.0	175	4	
136865	UNION	46.000	1 0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207		3.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	2 1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000		4.0	175	4	
146742	MASSENA_ST	13.800	1 0	2	22.2	-1.3	9.4	-4.7	1.0293	1.0293		39.6	175	4	
146743	MASSENA_GT	13.800	1 0	2	51.4	6.7	24.6	-12.3	1.0310	1.0310		78.3	175	4	
147763	MOS17-18	13.800	2 0	2	53.6	17.2	38.6	-30.8	1.0100	1.0100		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	20.7	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	21.7	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	37.1	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	10.8	38.6	-30.8	1.0000	1.0000		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	37.2	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	36.3	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	36.3	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	46.8	2.4	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	40.6	0.7	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	32.2	3.3	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	32.3	2.1	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	20.9	-0.4	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	118.0	9.4	123.2	-82.6	0.9855	0.9855		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1 0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1 0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1 0	2	46.0	6.8	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180280	BHOA25	13.800	1 0	2	33.0	8.5	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	45.0	8.4	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	0.3	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					1720.0	200.9	1000.3	-758.6				2500.0			

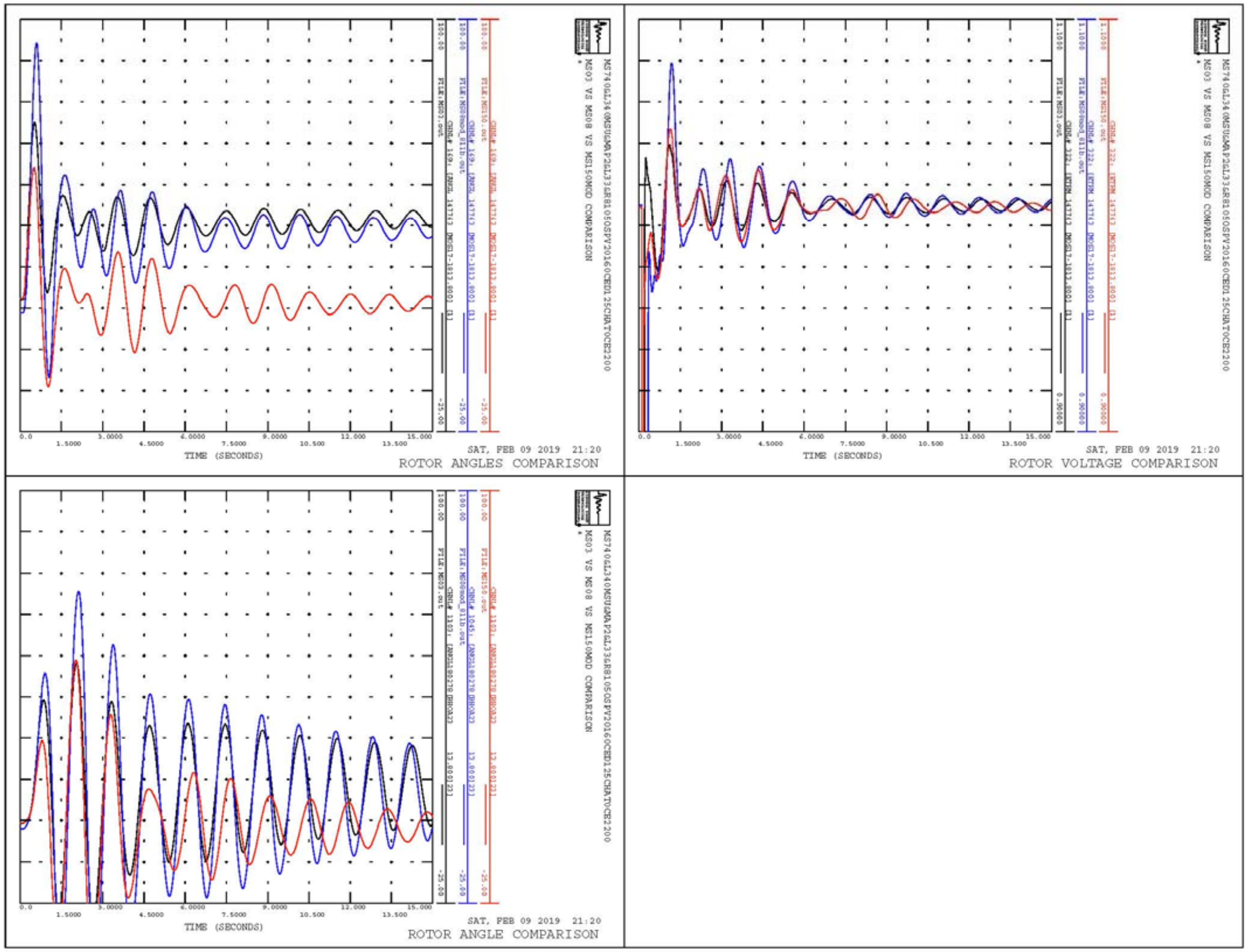

Fig A23 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

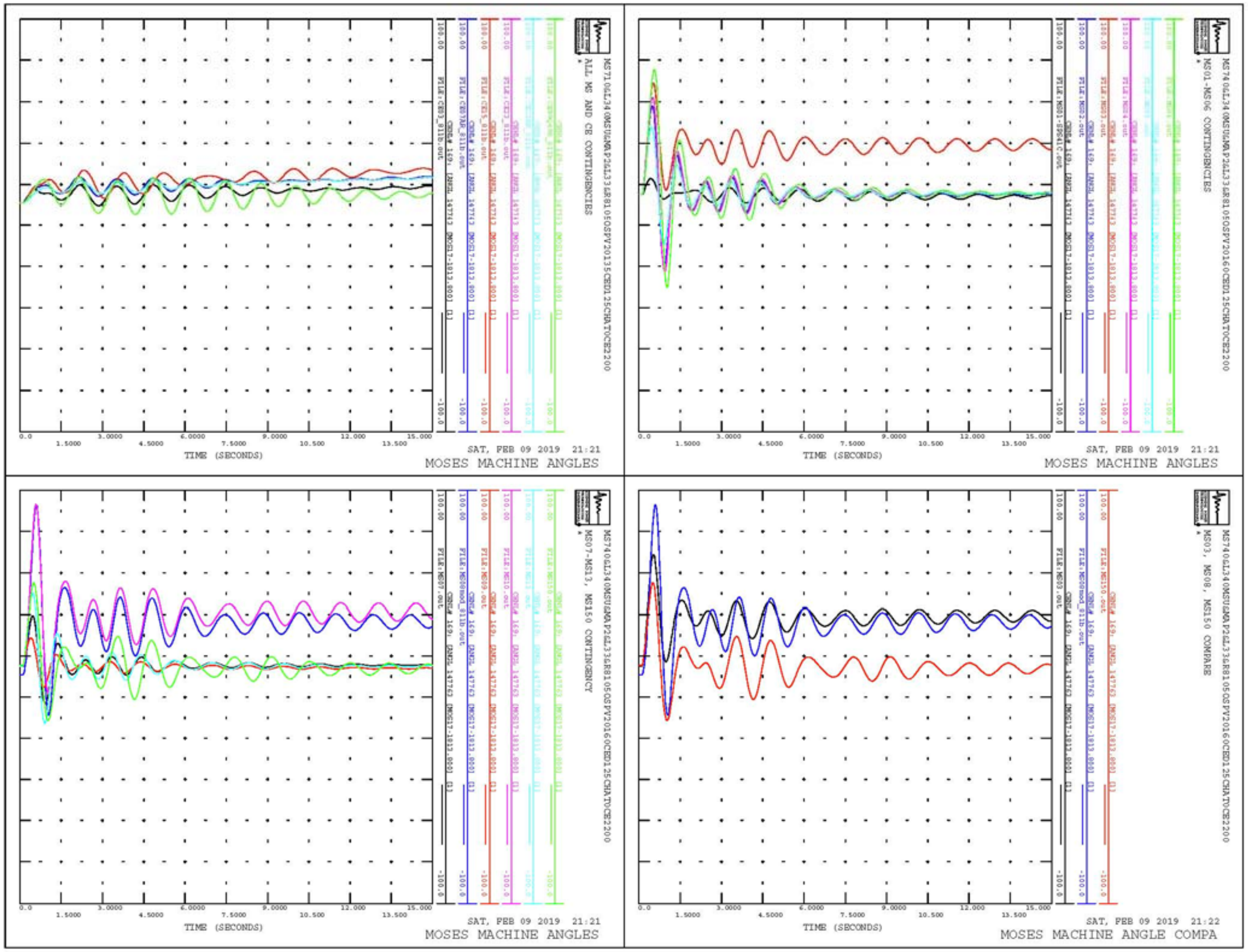

Fig A24: Comparative plots for Moses machine angle for all simulated contingencies

A.12 MSU1 & 7040 & L33 & MAP2 & PV20 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.12B  NORTH EX 700 MSU1,MAP2,L33,PV20 O/S
       MSC:700 MS:700,L34:OS,PV:OS,CED:125,CHAT:0,CE:2154

INTERFACE FLOW REPORT
   DESCRIPTION           MW       MVAr    DESCRIPTION          MW       MVAr
 DYSINGER-EAS          2385.3   -124.4  DYSE-CLOSE          3833.2     28.7
 WEST-CENTRAL          1052.1   -106.3  WESTC-CLOSE         2500.0     46.8
 VOLNEY-EAST           4439.4   -217.8  VOLNEY-CLOSE        5654.0    -31.1
 MOSES-SOUTH            697.9     83.5  MOSES-CLOSE          699.9     76.5
 CENTRAL-EAST          2153.6   -548.5  TOTAL-EAST          5402.3   -572.4
 UPNY-SENY             5112.0     60.4  UPNY-SENY-CL        6400.8    203.1
 UPNY-CONED            4480.2    -25.2  UPNY-CON-CL         6602.1    -44.9
 MILLWOOD-SO           7126.5     67.9  LIPA-IMPORT         2006.8   -166.1
 DNWDIE-SO-PL          4459.3   -407.7  DNWDIE-SO-PC        6581.2   -427.4
 DNWDIE-SO-OP          3544.7   -344.9  PJM-NY              1395.2    242.8
 NE-NY-WCSC             241.6    124.9  ON-NY               1817.5    181.1
 ONT-MICH-PAR           183.5    -11.0  Northern Export      699.9     69.4

                                                                STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.4      126261 BOWLINE2    345.00 = 359.3      126263 BUCHANAN S  345.00 = 355.5
 136150 CLAY        345.00 = 354.0      130750 COOPC345    345.00 = 356.0      126266 DUNWOODIE   345.00 = 352.6
 137200 EDIC        345.00 = 351.6      126277 FARRAGUT    345.00 = 349.7      130753 FRASR345    345.00 = 358.7
 135413 GRDNVL2     230.00 = 228.2      147831 GILB 345    345.00 = 361.2      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 358.2      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 352.1      126291 MILLWOOD    345.00 = 353.1      137452 N.SCOT77    345.00 = 358.9
 137453 N.SCOT99    345.00 = 358.9      147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 357.4      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 360.0
 149001 PANNELL3    345.00 = 350.3      126294 PLTVLLEY    345.00 = 353.6      126295 RAINEY      345.00 = 350.1
 126600 REAC71      345.00 = 352.1      126601 REAC72      345.00 = 352.2      126297 RAMAPO      345.00 = 357.4
 126250 RAMAPO 5    500.00 = 520.5      125001 ROCK TAV    345.00 = 356.2      125002 ROSETON     345.00 = 356.1
 130754 SOMERSET345 345.00 = 358.9      126298 SPRAINBROOK 345.00 = 352.8      149000 ROCH 345    345.00 = 349.7
 147840 MOSES W     230.00 = 233.6      130768 WATRC230    230.00 = 237.4      180819 CHA-NY      765.00 = 788.5
 147827 MARCY765    765.00 = 774.3      147828 MASS 765    765.00 = 751.0      126281 E FISHKILL  345.00 = 355.1
 125000 HURLEY 3    345.00 = 358.3      128835 SHORE RD    345.00 = 353.3      136156 VOLNEY      345.00 = 360.5
 130757 WATRC345    345.00 = 363.4*     135250 DUNKIRK     230.00 = 227.8      130764 MEYER230    230.00 = 228.1
 130765 OAKDL230    230.00 = 237.9      137730 ROTRDM.2    230.00 = 230.9      181219 CHANY2      120.00 = 133.2*
 181119 CHANY1      120.00 = 133.2*     137716 ALB1        115.00 = 118.6      130774 BATH 115    115.00 = 115.4
 137488 BETHLEHE    115.00 = 118.8      130776 BORDR115    115.00 = 113.1      136181 CLAY        115.00 = 118.5
 130794 DELHI115    115.00 = 115.8      130796 E.NOR115    115.00 = 112.1      135277 FALCONER    115.00 = 116.4
 130807 WESTOVER115 115.00 = 119.6      130826 MEYER115    115.00 = 115.7      147849 MOS 115     115.00 = 117.3
```

147850 NIAG115E	115.00 = 117.0	147851 NIAG115W	115.00 = 117.4	130836 N.WAV115	115.00 = 114.9
130838 OAKDL115	115.00 = 119.5	147852 PLAT T#3	115.00 = 116.7	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 115.2	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.1
125048 SHENANDO	115.00 = 117.6	149011 S82-1115	115.00 = 115.9	149008 RUS 115	115.00 = 114.3

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0316		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0217		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0288		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0153		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0198		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0218		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0312		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9991		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0266	1.0162		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-6.0	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0173		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207		3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000		4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	-0.0	9.4	-4.7	1.0293	1.0293		39.6	175	4	
146743	MASSENA_GT	13.800	1	0	2	51.4	20.0	24.6	-12.3	1.0310	1.0310		78.3	175	4	
147763	MOS17-18	13.800	2	0	2	98.2	16.7	38.6	-30.8	1.0100	1.0100		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	18.0	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	18.3	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	38.1	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	7.5	38.6	-30.8	1.0000	1.0000		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	38.3	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	37.4	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	37.4	38.6	-30.8	1.0127	1.0127		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	20.8	-2.6	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	20.6	-2.0	16.1	-17.6	1.0300	1.0300		118.6	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	48.0	0.6	123.2	-82.6	0.9855	0.9855		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-27.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	2.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	-10.5	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	-10.5	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	-10.6	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	-10.6	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	9.1	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180280	BHOA25	13.800	1	0	2	33.0	11.3	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	45.0	11.0	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	3.8	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1563.2	200.0	955.3	-713.2				2297.9			

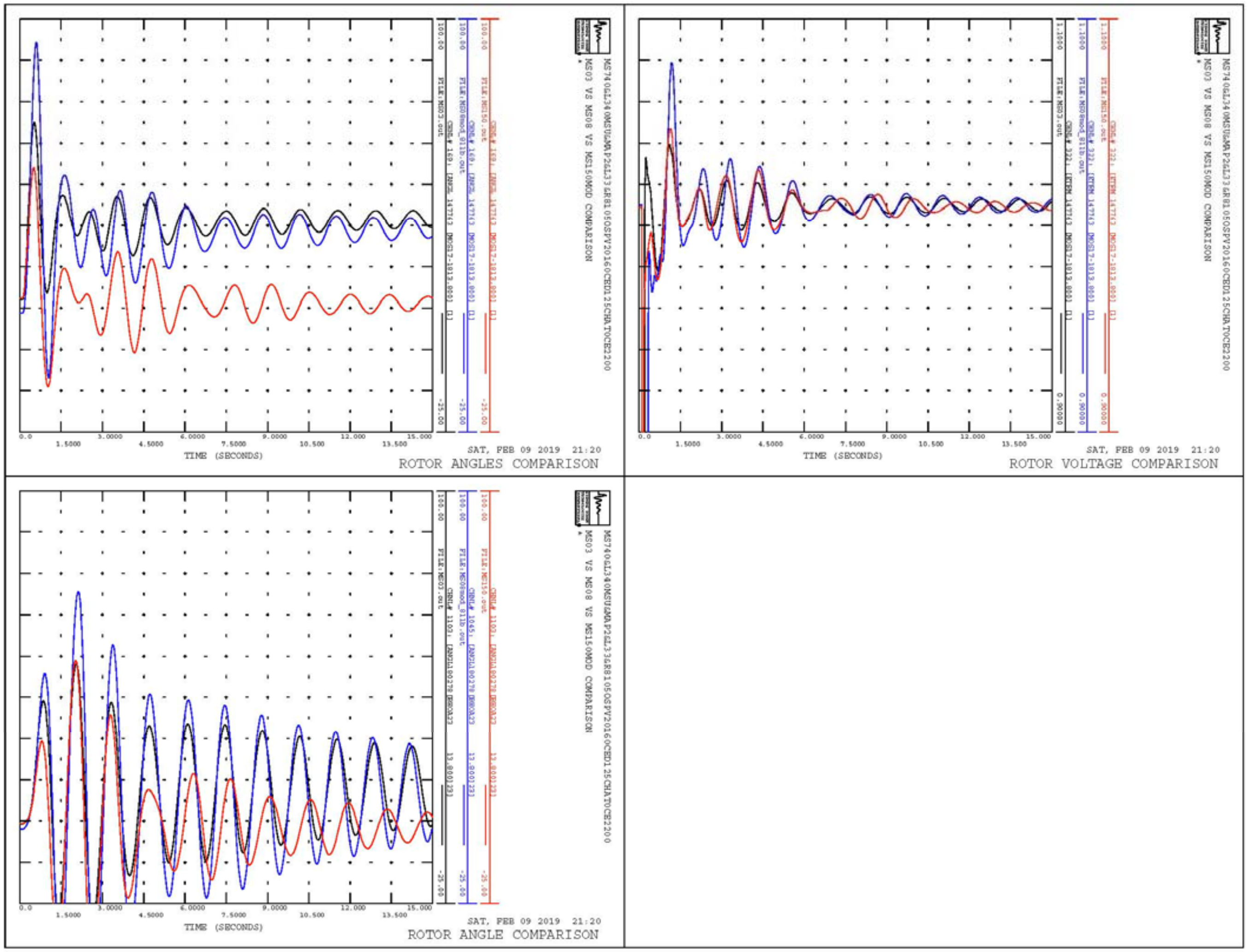

Fig A25 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

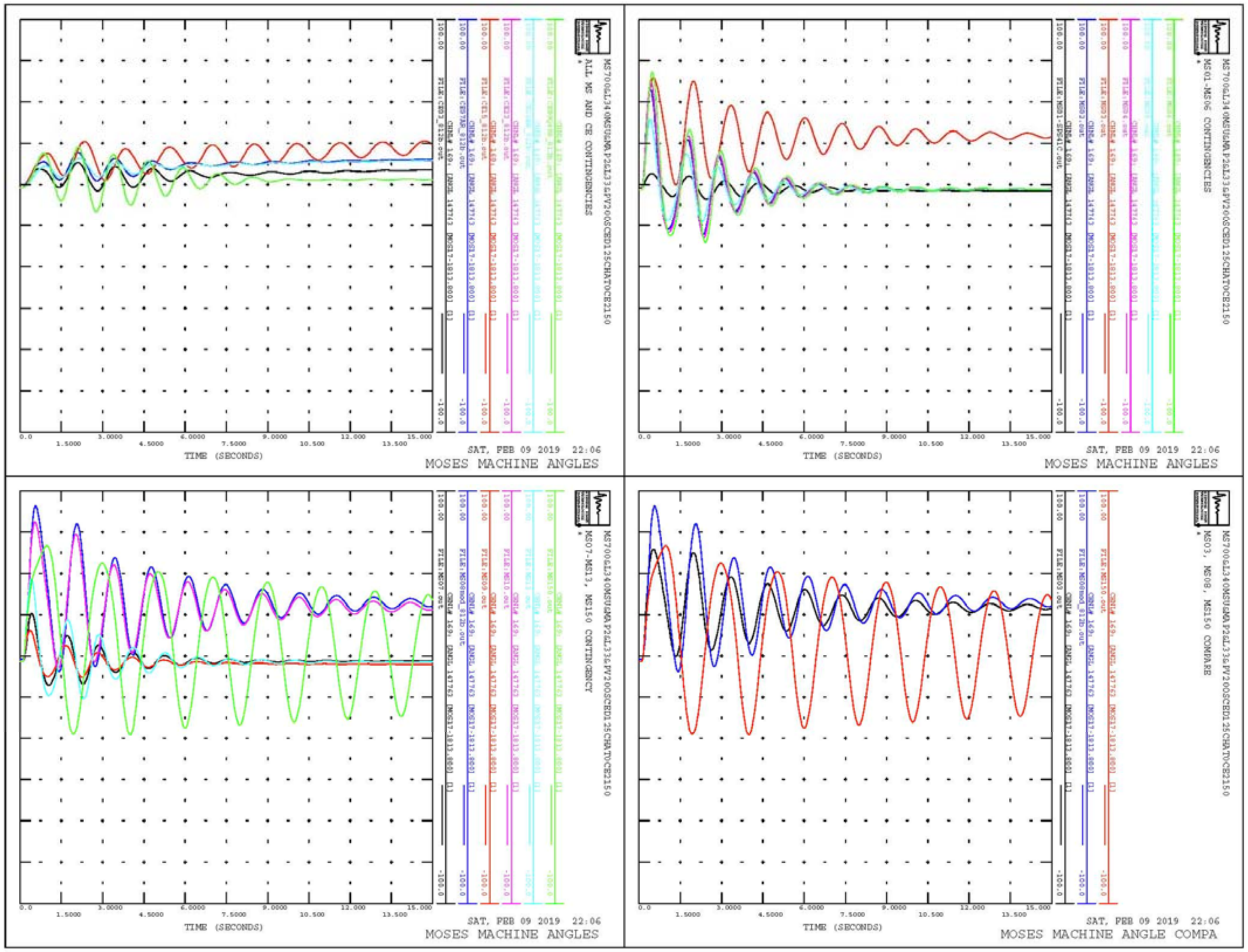

Fig A26: Comparative plots for Moses machine angle for all simulated contingencies

A.13 MSU1 & 7040 & L33 & L34 O/S with 6 Moses unit rejection

Test Level Interface Power Flow Summary and Key Voltages

CASE :8.13A NORTH EX 700 MSU1 & L33&L34 O/S W/ 6 REJ
MS:593,L34:OS,PV:100,MSU:OS,CED:25,CHAT: 0,CE:2311

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1885.6	3.5	DYSE-CLOSE	3194.4	228.4
WEST-CENTRAL	582.3	-141.7	WESTC-CLOSE	1891.1	83.2
VOLNEY-EAST	4154.6	-347.7	VOLNEY-CLOSE	5380.3	-151.6
MOSES-SOUTH	591.7	16.1	MOSES-CLOSE	699.6	8.4
CENTRAL-EAST	2310.8	-453.6	TOTAL-EAST	5321.0	-345.2
UPNY-SENY	4364.4	115.3	UPNY-SENY-CL	5658.8	272.4
UPNY-CONED	4475.8	-92.0	UPNY-CON-CL	6599.8	-99.0
MILLWOOD-SO	7184.9	64.2	LIPA-IMPORT	2006.8	-163.5
DNWDIE-SO-PL	4457.3	-406.6	DNWDIE-SO-PC	6581.3	-413.6
DNWDIE-SO-OP	3542.2	-346.7	PJM-NY	1209.9	320.5
NE-NY-WCSC	-758.2	128.6	ON-NY	1003.7	135.2
ONT-MICH-PAR	-2.7	7.5	Northern Export	699.6	1.2

STATION VOLTAGES

126260 BOWLINE1 345.00 = 359.0	126261 BOWLINE2 345.00 = 358.9	126263 BUCHANAN S 345.00 = 355.4
136150 CLAY 345.00 = 357.8	130750 COOPC345 345.00 = 358.3	126266 DUNWOODIE 345.00 = 352.9
137200 EDIC 345.00 = 357.6	126277 FARRAGUT 345.00 = 350.0	130753 FRASR345 345.00 = 360.2
135413 GRDNVL2 230.00 = 231.6	147831 GILB 345 345.00 = 360.9	126283 GOTHLS 345.00 = 348.0
126286 GOW R16 345.00 = 347.1	126290 LADENTWN 345.00 = 357.9	137451 LEEDS 3 345.00 = 360.8
147833 MARCY T1 345.00 = 358.3	126291 MILLWOOD 345.00 = 353.2	137452 N.SCOT77 345.00 = 358.9
137453 N.SCOT99 345.00 = 358.9	147841 NIAGAR2E 230.00 = 231.8	147842 NIAGAR2W 230.00 = 231.8
147834 NIAG 345 345.00 = 357.8	129341 NRTHPRT1 138.00 = 142.4	130755 OAKDL345 345.00 = 354.2
149001 PANNELL3 345.00 = 347.0	126294 PLTVLLEY 345.00 = 354.3	126295 RAINEY 345.00 = 350.3
126600 REAC71 345.00 = 352.4	126601 REAC72 345.00 = 352.5	126297 RAMAPO 345.00 = 357.3
126250 RAMAPO 5 500.00 = 520.4	125001 ROCK TAV 345.00 = 355.9	125002 ROSETON 345.00 = 356.3
130754 SOMERSET345 345.00 = 358.8	126298 SPRAINBROOK 345.00 = 353.0	149000 ROCH 345 345.00 = 345.4
147840 MOSES W 230.00 = 237.4	130768 WATRC230 230.00 = 235.1	180819 CHA-NY 765.00 = 785.4
147827 MARCY765 765.00 = 768.6	147828 MASS 765 765.00 = 763.2	126281 E FISHKILL 345.00 = 355.6
125000 HURLEY 3 345.00 = 358.7	128835 SHORE RD 345.00 = 353.6	136156 VOLNEY 345.00 = 365.7*
130757 WATRC345 345.00 = 360.0	135250 DUNKIRK 230.00 = 230.4	130764 MEYER230 230.00 = 227.9
130765 OAKDL230 230.00 = 235.4	137730 ROTRDM.2 230.00 = 234.7	181219 CHANY2 120.00 = 131.4*
181119 CHANY1 120.00 = 131.4*	137716 ALB1 115.00 = 118.0	130774 BATH 115 115.00 = 115.7
137488 BETHLEHE 115.00 = 118.4	130776 BORDR115 115.00 = 114.4	136181 CLAY 115.00 = 119.5
130794 DELHI115 115.00 = 116.0	130796 E.NOR115 115.00 = 113.6	135277 FALCONER 115.00 = 116.4
130807 WESTOVER115 115.00 = 118.2	130826 MEYER115 115.00 = 116.1	147849 MOS 115 115.00 = 120.2

147850 NIAG115E	115.00 = 117.0	147851 NIAG115W	115.00 = 117.7	130836 N.WAV115	115.00 = 113.8
130838 OAKDL115	115.00 = 118.2	147852 PLAT T#3	115.00 = 117.2	125043 PL.VAL 1	115.00 = 117.4
137235 PORTER 1	115.00 = 117.2	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 114.7
125048 SHENANDO	115.00 = 117.8	149011 S82-1115	115.00 = 117.8	149008 RUS 115	115.00 = 114.9

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0356		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0255		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0326		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0192		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0236		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0256		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0352		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0038		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0363		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-3.0	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	-0.2	1.0	-0.2	1.0300	1.0357		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0138		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.1	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	109.1	21.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	21.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	21.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	32.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	21.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	32.4	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	22.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	22.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	70.0	3.2	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	2.6	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	180.0	12.4	123.2	-82.6	1.0000	1.0000		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.1	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.1	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	20.4	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.6	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1442.5	250.3	746.8	-507.1				1794.9			

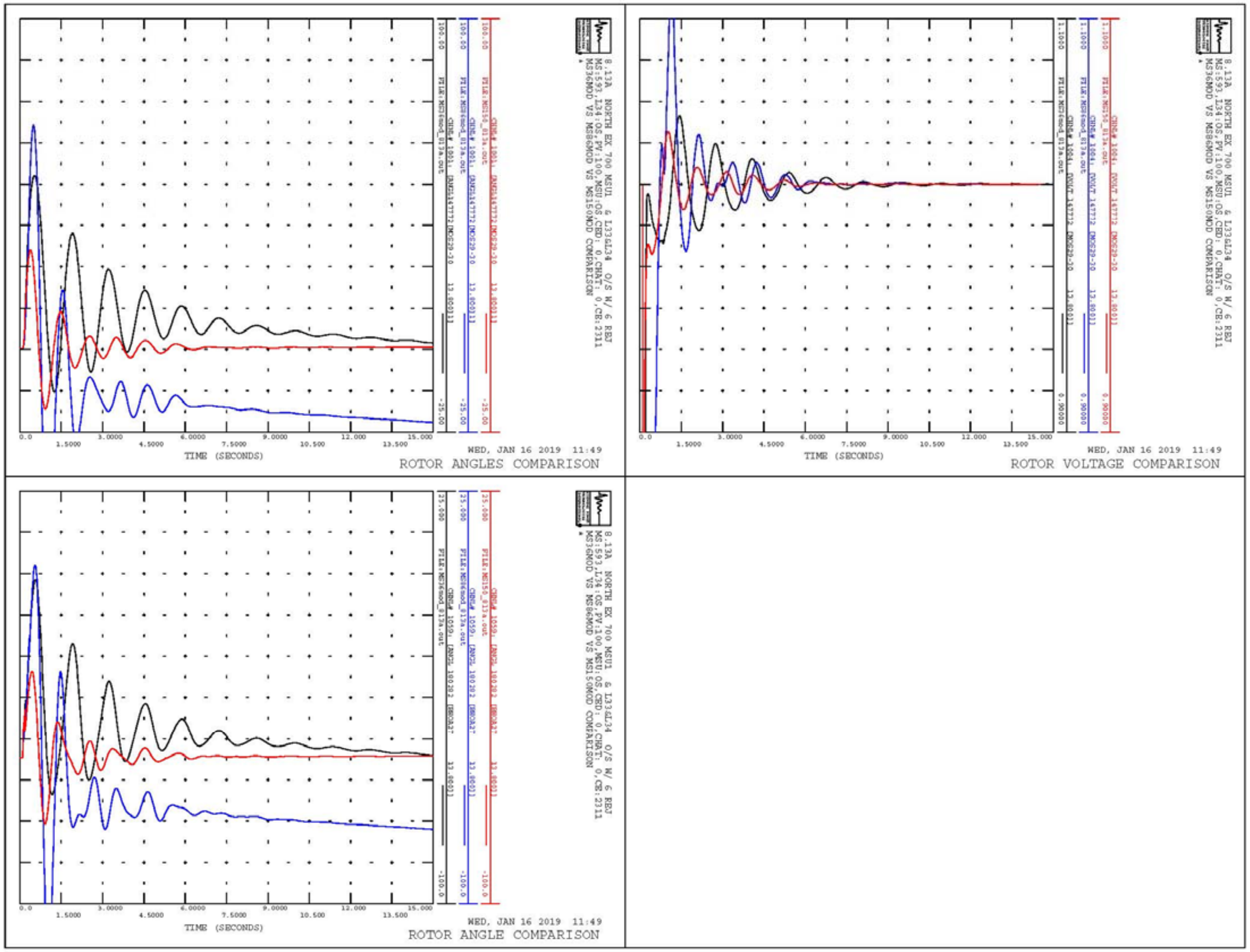

Fig A27 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

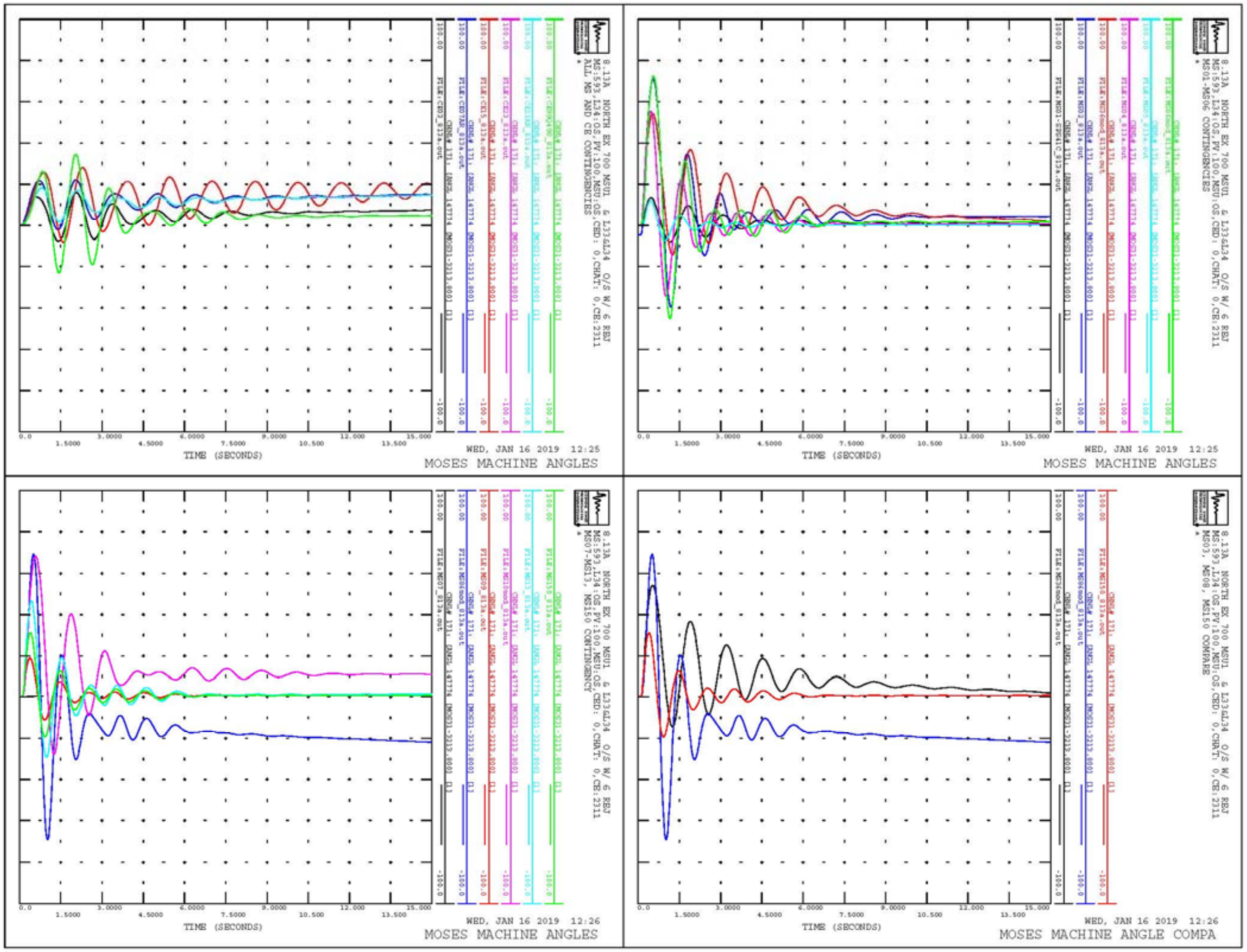

Fig A28: Comparative plots for Moses machine angle for all simulated contingencies

A.14 MSU1 & 7040 & L33 & L34 & R8105 O/S with 6 Moses unit rejection

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.14A  NORTH EX 600 MSU1  & R8105&L33&L34  O/S W/ 6 REJ
       MS:491,L34:OS,PV:100,MSU:OS,CED: 25,CHAT: 0,CE:2312
                            INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr     DESCRIPTION          MW      MVAr
 DYSINGER-EAS        1884.8       4.9  DYSE-CLOSE          3194.4    230.7
 WEST-CENTRAL         581.6    -139.6  WESTC-CLOSE         1891.2     86.3
 VOLNEY-EAST         4255.9    -383.9  VOLNEY-CLOSE        5480.9   -187.9
 MOSES-SOUTH          497.3      11.3  MOSES-CLOSE          604.7      4.2
 CENTRAL-EAST        2308.0    -444.8  TOTAL-EAST          5321.2   -337.8
 UPNY-SENY           4364.6     115.5  UPNY-SENY-CL        5658.8    272.4
 UPNY-CONED          4475.9     -91.9  UPNY-CON-CL         6599.8    -99.3
 MILLWOOD-SO         7184.9      64.0  LIPA-IMPORT         2006.8   -163.5
 DNWDIE-SO-PL        4457.4    -406.5  DNWDIE-SO-PC        6581.3   -413.9
 DNWDIE-SO-OP        3542.4    -346.6  PJM-NY              1210.6    321.6
 NE-NY-WCSC          -758.2     126.5  ON-NY               1003.1    135.6
 ONT-MICH-PAR          -2.1       7.5  Northern Export      604.7     -3.1

                             STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.0      126261 BOWLINE2    345.00 = 358.9      126263 BUCHANAN S  345.00 = 355.4
 136150 CLAY        345.00 = 357.7      130750 COOPC345    345.00 = 358.3      126266 DUNWOODIE   345.00 = 352.9
 137200 EDIC        345.00 = 357.7      126277 FARRAGUT    345.00 = 350.0      130753 FRASR345    345.00 = 360.2
 135413 GRDNVL2     230.00 = 231.6      147831 GILB 345    345.00 = 360.9      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 357.9      137451 LEEDS 3     345.00 = 360.8
 147833 MARCY T1    345.00 = 358.4      126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 358.9
 137453 N.SCOT99    345.00 = 358.9      147841 NIAGAR2E    230.00 = 231.8      147842 NIAGAR2W    230.00 = 231.8
 147834 NIAG 345    345.00 = 357.7      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 354.0
 149001 PANNELL3    345.00 = 346.9      126294 PLTVLLEY    345.00 = 354.3      126295 RAINEY      345.00 = 350.3
 126600 REAC71      345.00 = 352.4      126601 REAC72      345.00 = 352.5      126297 RAMAPO      345.00 = 357.3
 126250 RAMAPO 5    500.00 = 520.4      125001 ROCK TAV    345.00 = 355.8      125002 ROSETON     345.00 = 356.3
 130754 SOMERSET345 345.00 = 358.8      126298 SPRAINBROOK 345.00 = 353.0      149000 ROCH 345    345.00 = 345.4
 147840 MOSES W     230.00 = 237.8      130768 WATRC230    230.00 = 235.0      180819 CHA-NY      765.00 = 785.4
 147827 MARCY765    765.00 = 768.7      147828 MASS 765    765.00 = 764.6      126281 E FISHKILL  345.00 = 355.6
 125000 HURLEY 3    345.00 = 358.7      128835 SHORE RD    345.00 = 353.6      136156 VOLNEY      345.00 = 365.5*
 130757 WATRC345    345.00 = 359.9      135250 DUNKIRK     230.00 = 230.4      130764 MEYER230    230.00 = 227.9
 130765 OAKDL230    230.00 = 235.3      137730 ROTRDM.2    230.00 = 235.2      181219 CHANY2      120.00 = 131.4*
 181119 CHANY1      120.00 = 131.4*     137716 ALB1        115.00 = 118.1      130774 BATH 115    115.00 = 115.7
 137488 BETHLEHE    115.00 = 118.4      130776 BORDR115    115.00 = 114.4      136181 CLAY        115.00 = 119.5
 130794 DELHI115    115.00 = 115.9      130796 E.NOR115    115.00 = 113.6      135277 FALCONER    115.00 = 116.4
 130807 WESTOVER115 115.00 = 118.2      130826 MEYER115    115.00 = 116.1      147849 MOS 115     115.00 = 120.2
 147850 NIAG115E    115.00 = 117.0      147851 NIAG115W    115.00 = 117.7      130836 N.WAV115    115.00 = 113.7
 130838 OAKDL115    115.00 = 118.1      147852 PLAT T#3    115.00 = 117.4      125043 PL.VAL 1    115.00 = 117.4
 137235 PORTER 1    115.00 = 117.5      125046 ROCK TV1    115.00 = 117.9      137532 RTRDM1      115.00 = 114.9
```

125048 SHENANDO 115.00 = 117.8 149011 S82-1115 115.00 = 117.8 149008 RUS 115 115.00 = 114.8

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0308		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0271		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0343		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0208		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0253		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0272		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0304		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9994		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	-1.5	3.1	-1.5	1.0400	1.0406		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-3.9	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	-0.2	1.0	-0.2	1.0300	1.0400		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0150		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	108.2	19.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	19.8	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	19.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	32.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	19.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	32.7	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	23.0	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	23.0	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	70.0	2.5	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	2.3	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	85.0	4.2	123.2	-82.6	1.0000	1.0000		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.1	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.1	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	15.3	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.6	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1346.6	224.2	746.8	-507.1				1794.9			

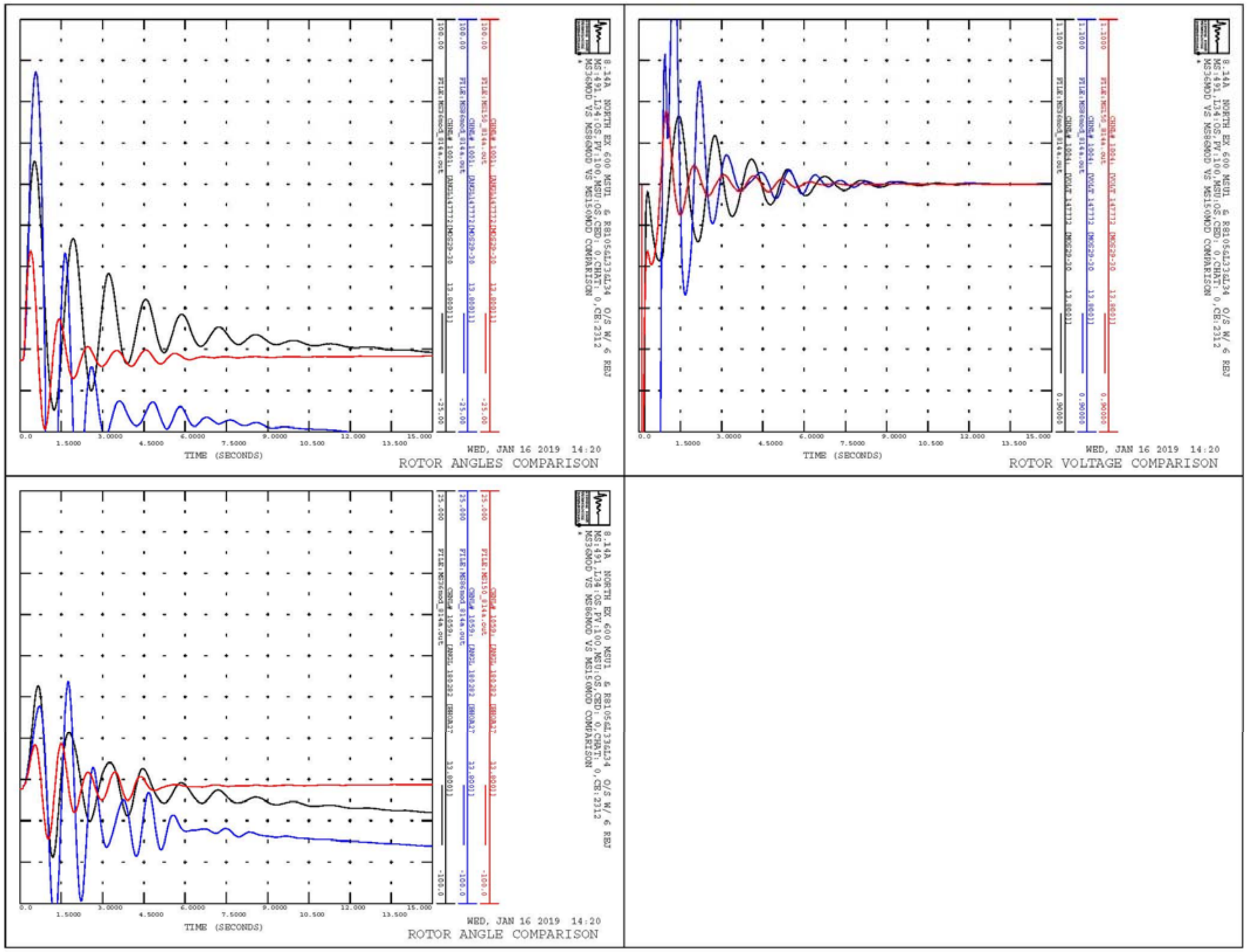

Fig A29 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

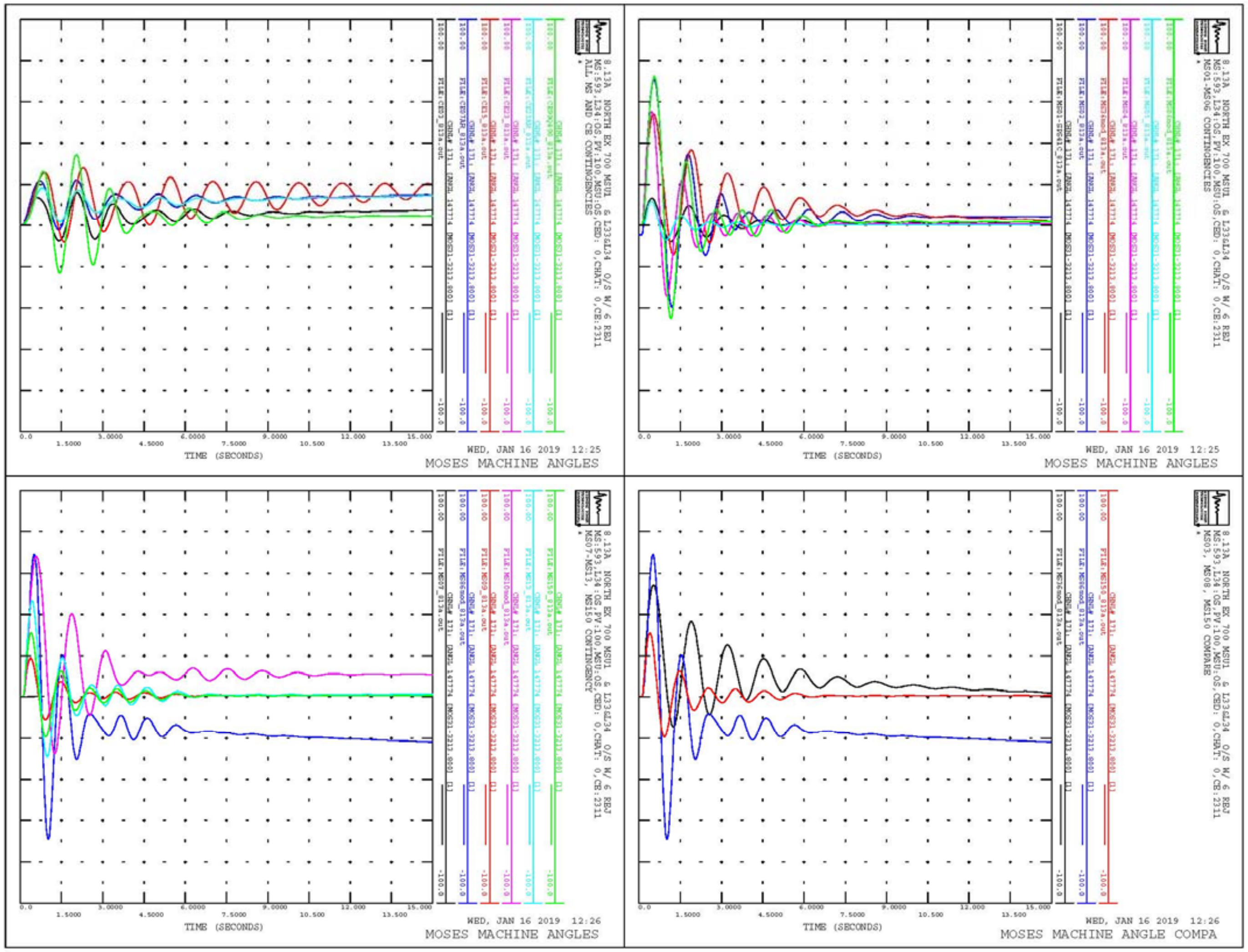

Fig A30: Comparative plots for Moses machine angle for all simulated contingencies

A.15 MSU1 & 7040 & L33 & L34 & PV20 O/S with 6 Moses unit rejection

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.15A  NORTH EX 505 MSU1  & PV20&L33&L34  O/S W/ 6 REJ
       MS:505,L34:OS,PV:OS,MSU:OS,CED: 25,CHAT: 0,CE:2257
                            INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr     DESCRIPTION         MW       MVAr
 DYSINGER-EAS         1874.8     23.0  DYSE-CLOSE          3195.9     264.0
 WEST-CENTRAL          571.5   -130.3  WESTC-CLOSE         1892.6     110.8
 VOLNEY-EAST          4358.6   -374.1  VOLNEY-CLOSE        5582.9    -173.8
 MOSES-SOUTH           504.6     -0.1  MOSES-CLOSE          504.6      -0.1
 CENTRAL-EAST         2257.3   -469.6  TOTAL-EAST          5321.3    -393.6
 UPNY-SENY            4363.6     95.1  UPNY-SENY-CL        5658.6     253.8
 UPNY-CONED           4475.0   -102.2  UPNY-CON-CL         6598.7    -111.2
 MILLWOOD-SO          7185.4     60.0  LIPA-IMPORT         2006.7    -165.5
 DNWDIE-SO-PL         4456.9   -412.4  DNWDIE-SO-PC        6580.6    -421.4
 DNWDIE-SO-OP         3542.0   -350.3  PJM-NY              1214.5     339.0
 NE-NY-WCSC           -758.3    125.6  ON-NY               1000.8     140.0
 ONT-MICH-PAR           -0.2      7.5  Northern Export      504.6      -7.4

                             STATION VOLTAGES
 126260 BOWLINE1     345.00 = 358.9      126261 BOWLINE2     345.00 = 358.7      126263 BUCHANAN S   345.00 = 355.3
 136150 CLAY         345.00 = 356.9      130750 COOPC345     345.00 = 357.2      126266 DUNWOODIE    345.00 = 352.7
 137200 EDIC         345.00 = 356.4      126277 FARRAGUT     345.00 = 349.9      130753 FRASR345     345.00 = 358.9
 135413 GRDNVL2      230.00 = 231.3      147831 GILB 345     345.00 = 360.2      126283 GOTHLS       345.00 = 347.9
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 357.7      137451 LEEDS 3      345.00 = 360.4
 147833 MARCY T1     345.00 = 357.0      126291 MILLWOOD     345.00 = 353.0      137452 N.SCOT77     345.00 = 358.1
 137453 N.SCOT99     345.00 = 358.1      147841 NIAGAR2E     230.00 = 231.7      147842 NIAGAR2W     230.00 = 231.7
 147834 NIAG 345     345.00 = 357.6      129341 NRTHPRT1     138.00 = 142.3      130755 OAKDL345     345.00 = 352.8
 149001 PANNELL3     345.00 = 346.3      126294 PLTVLLEY     345.00 = 353.9      126295 RAINEY       345.00 = 350.2
 126600 REAC71       345.00 = 352.3      126601 REAC72       345.00 = 352.4      126297 RAMAPO       345.00 = 357.1
 126250 RAMAPO 5     500.00 = 520.2      125001 ROCK TAV     345.00 = 355.4      125002 ROSETON      345.00 = 355.9
 130754 SOMERSET345  345.00 = 358.7      126298 SPRAINBROOK 345.00 = 352.8      149000 ROCH 345     345.00 = 344.7
 147840 MOSES W      230.00 = 238.8      130768 WATRC230     230.00 = 234.1      180819 CHA-NY       765.00 = 785.4
 147827 MARCY765     765.00 = 765.8      147828 MASS 765     765.00 = 767.9      126281 E FISHKILL   345.00 = 355.3
 125000 HURLEY 3     345.00 = 358.3      128835 SHORE RD     345.00 = 353.4      136156 VOLNEY       345.00 = 365.0*
 130757 WATRC345     345.00 = 358.7      135250 DUNKIRK      230.00 = 230.1      130764 MEYER230     230.00 = 226.5
 130765 OAKDL230     230.00 = 234.4      137730 ROTRDM.2     230.00 = 234.6      181219 CHANY2       120.00 = 131.4*
 181119 CHANY1       120.00 = 131.4*     137716 ALB1         115.00 = 118.0      130774 BATH 115     115.00 = 115.3
 137488 BETHLEHE     115.00 = 118.3      130776 BORDR115     115.00 = 114.2      136181 CLAY         115.00 = 119.2
 130794 DELHI115     115.00 = 115.4      130796 E.NOR115     115.00 = 113.1      135277 FALCONER     115.00 = 116.3
 130807 WESTOVER115  115.00 = 117.7      130826 MEYER115     115.00 = 115.6      147849 MOS 115      115.00 = 120.7
 147850 NIAG115E     115.00 = 117.0      147851 NIAG115W     115.00 = 117.7      130836 N.WAV115     115.00 = 113.4
```

130838	OAKDL115	115.00 = 117.7	147852	PLAT T#3	115.00 = 118.4	125043	PL.VAL 1	115.00 = 117.3
137235	PORTER 1	115.00 = 117.2	125046	ROCK TV1	115.00 = 117.7	137532	RTRDM1	115.00 = 114.6
125048	SHENANDO	115.00 = 117.7	149011	S82-1115	115.00 = 117.6	149008	RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0305		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0332		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0402		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0270		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0313		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0332		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0302		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0020		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0360		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-0.6	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	-0.2	1.0	-0.2	1.0300	1.0351		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0085		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.4	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	106.0	15.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	15.8	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	15.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	28.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	15.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	28.3	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	18.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	18.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	55.0	-1.9	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	0.1	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.1	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.1	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	19.2	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.6	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1244.4	191.9	623.6	-424.5				1579.6			

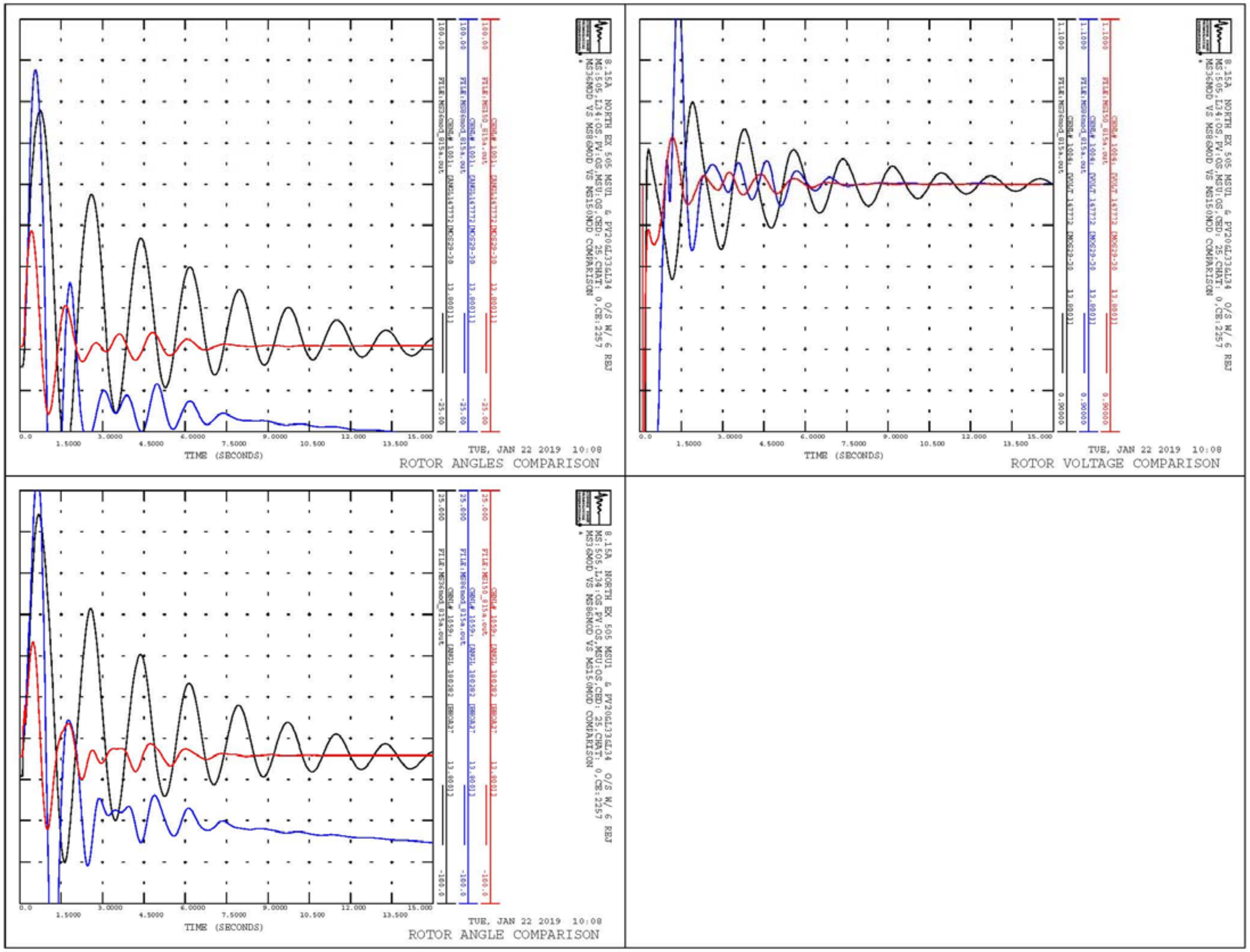

Fig A31 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

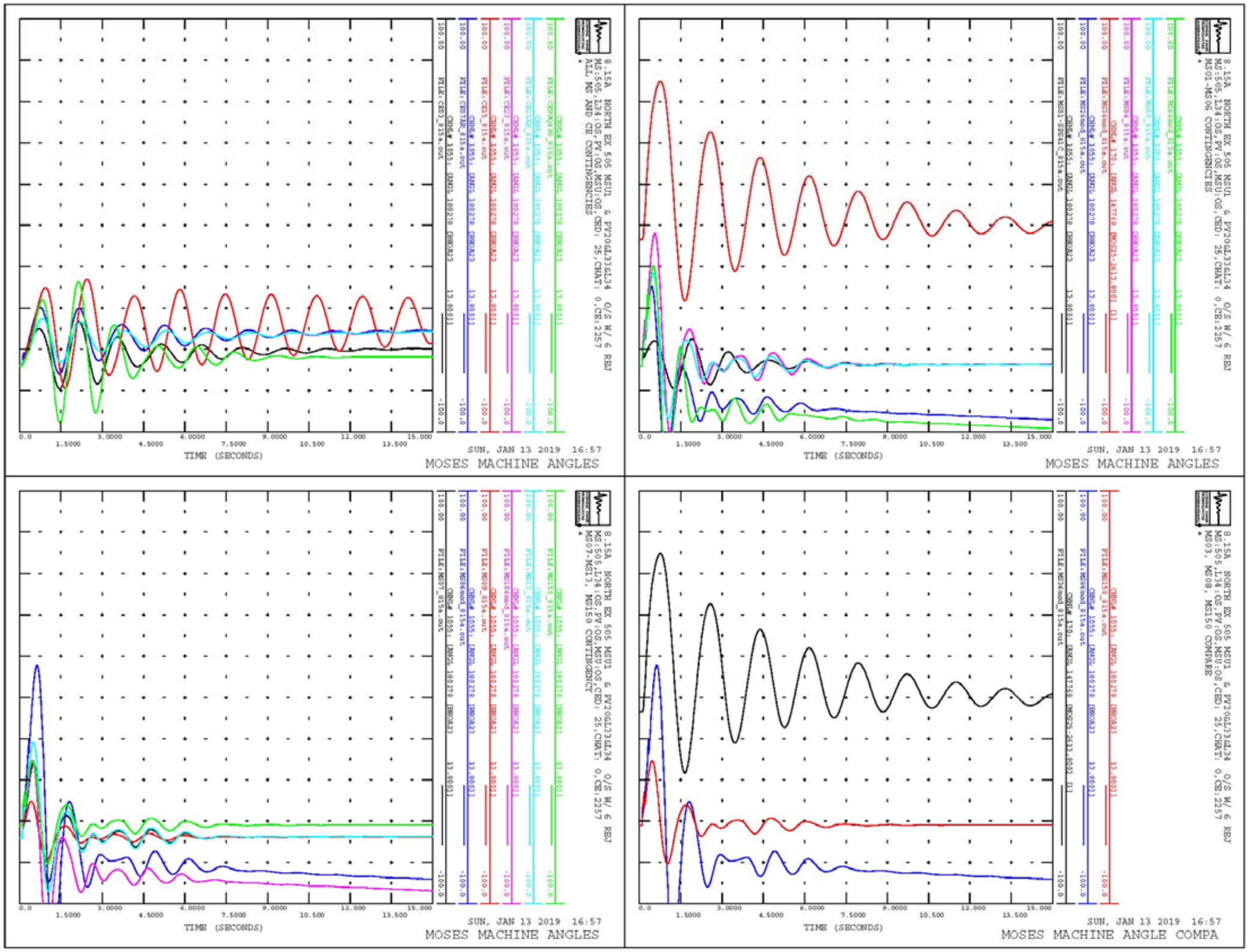

Fig A32: Comparative plots for Moses machine angle for all simulated contingencies

A.16 MSU1 & 7040 & MAP1 & MAP2 O/S with 6 Moses unit rejection

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.16A  NORTH EX 604 MSU1  &MAP1&MAP2  O/S W/ 6 REJ
       MS:313,L34:OS,PV:270,MSU:OS,CED: 25,CHAT: 0,CE:2353
                     INTERFACE FLOW REPORT
   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS         1887.3      29.5  DYSE-CLOSE          3194.7     273.1
 WEST-CENTRAL          584.0    -127.6  WESTC-CLOSE         1891.4     116.0
 VOLNEY-EAST          4282.5    -319.0  VOLNEY-CLOSE        5481.3    -109.2
 MOSES-SOUTH           312.9       8.1  MOSES-CLOSE          604.3      20.4
 CENTRAL-EAST         2353.1    -367.3  TOTAL-EAST          5321.4    -260.3
 UPNY-SENY            4369.6     120.0  UPNY-SENY-CL        5658.8     271.8
 UPNY-CONED           4479.1     -82.1  UPNY-CON-CL         6600.3     -92.8
 MILLWOOD-SO          7182.6      64.0  LIPA-IMPORT         2006.8    -162.7
 DNWDIE-SO-PL         4460.2    -402.6  DNWDIE-SO-PC        6581.4    -413.3
 DNWDIE-SO-OP         3546.2    -343.6  PJM-NY              1223.6     320.0
 NE-NY-WCSC           -758.4      76.0  ON-NY                990.4     188.1
 ONT-MICH-PAR            9.4       7.2  Northern Export      604.3      13.2

                      STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.1      126261 BOWLINE2    345.00 = 359.0      126263 BUCHANAN S  345.00 = 355.5
 136150 CLAY        345.00 = 356.8      130750 COOPC345    345.00 = 358.6      126266 DUNWOODIE   345.00 = 353.0
 137200 EDIC        345.00 = 357.3      126277 FARRAGUT    345.00 = 350.0      130753 FRASR345    345.00 = 360.2
 135413 GRDNVL2     230.00 = 231.6      147831 GILB 345    345.00 = 361.1      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 358.0      137451 LEEDS 3     345.00 = 361.1
 147833 MARCY T1    345.00 = 358.0      126291 MILLWOOD    345.00 = 353.3      137452 N.SCOT77    345.00 = 359.4
 137453 N.SCOT99    345.00 = 359.4      147841 NIAGAR2E    230.00 = 231.9      147842 NIAGAR2W    230.00 = 231.9
 147834 NIAG 345    345.00 = 358.4      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 353.5
 149001 PANNELL3    345.00 = 346.2      126294 PLTVLLEY    345.00 = 354.5      126295 RAINEY      345.00 = 350.3
 126600 REAC71      345.00 = 352.4      126601 REAC72      345.00 = 352.5      126297 RAMAPO      345.00 = 357.4
 126250 RAMAPO 5    500.00 = 520.5      125001 ROCK TAV    345.00 = 356.1      125002 ROSETON     345.00 = 356.4
 130754 SOMERSET345 345.00 = 358.8      126298 SPRAINBROOK 345.00 = 353.1      149000 ROCH 345    345.00 = 344.7
 147840 MOSES W     230.00 = 236.6      130768 WATRC230    230.00 = 234.4      180819 CHA-NY      765.00 = 785.5
 147827 MARCY765    765.00 = 767.9      147828 MASS 765    765.00 = 760.8      126281 E FISHKILL  345.00 = 355.8
 125000 HURLEY 3    345.00 = 359.0      128835 SHORE RD    345.00 = 353.6      136156 VOLNEY      345.00 = 365.0*
 130757 WATRC345    345.00 = 359.2      135250 DUNKIRK     230.00 = 230.4      130764 MEYER230    230.00 = 226.9
 130765 OAKDL230    230.00 = 234.8      137730 ROTRDM.2    230.00 = 237.2      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1      120.00 = 131.5*     137716 ALB1        115.00 = 118.2      130774 BATH 115    115.00 = 115.3
 137488 BETHLEHE    115.00 = 118.6      130776 BORDR115    115.00 = 114.1      136181 CLAY        115.00 = 118.5
 130794 DELHI115    115.00 = 115.9      130796 E.NOR115    115.00 = 114.2      135277 FALCONER    115.00 = 116.4
 130807 WESTOVER115 115.00 = 118.0      130826 MEYER115    115.00 = 115.8      147849 MOS 115     115.00 = 119.5
```

147850 NIAG115E	115.00 = 117.0	147851 NIAG115W	115.00 = 117.8	130836 N.WAV115	115.00 = 113.5
130838 OAKDL115	115.00 = 117.9	147852 PLAT T#3	115.00 = 115.7	125043 PL.VAL 1	115.00 = 117.5
137235 PORTER 1	115.00 = 116.4	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.3
125048 SHENANDO	115.00 = 117.9	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0361				3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0178				5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0254				16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0113				10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0159				13.0	163	4	
131789	MILL C46	46.000	3	0	2	3.5	1.8	3.0	0.0	1.0187	1.0187				6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0358				3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9971				4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	0.9826				5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	5.7	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0300	0.9841				5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217				3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	0.9930				2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	2.2	3.2	-1.7	0.9700	0.9700				3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000				7.0	175	4	
147763	MOS17-18	13.800	2	0	2	115.2	24.6	38.6	-30.8	1.0300	1.0300				120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	24.5	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	24.2	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	37.7	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	24.2	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	37.8	38.6	0.0	1.0300	1.0300				120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	27.9	38.6	-30.8	1.0200	1.0200				120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	27.9	38.6	-30.8	1.0200	1.0200				120.0	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	100.0	15.2	16.1	-17.6	1.0500	1.0500				118.6	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	65.0	14.8	22.2	-21.6	1.0500	1.0500				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	-2	2.1	4.8	4.8	-5.0	1.0500	1.0355				23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	28.6	50.0	-25.0	1.0500	1.0500				90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS						1363.6	321.1	639.7	-442.1						1698.2			

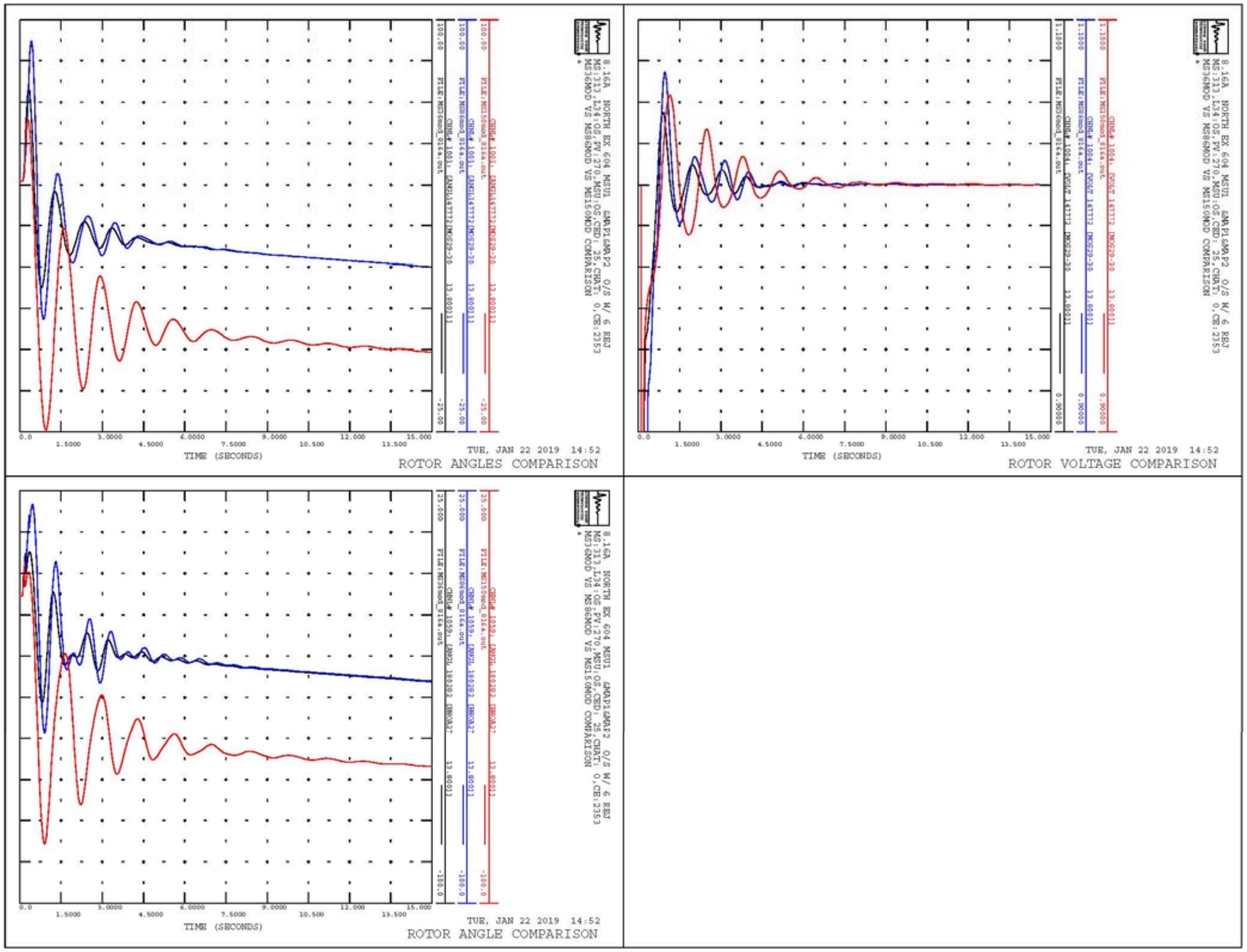

Fig A33 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

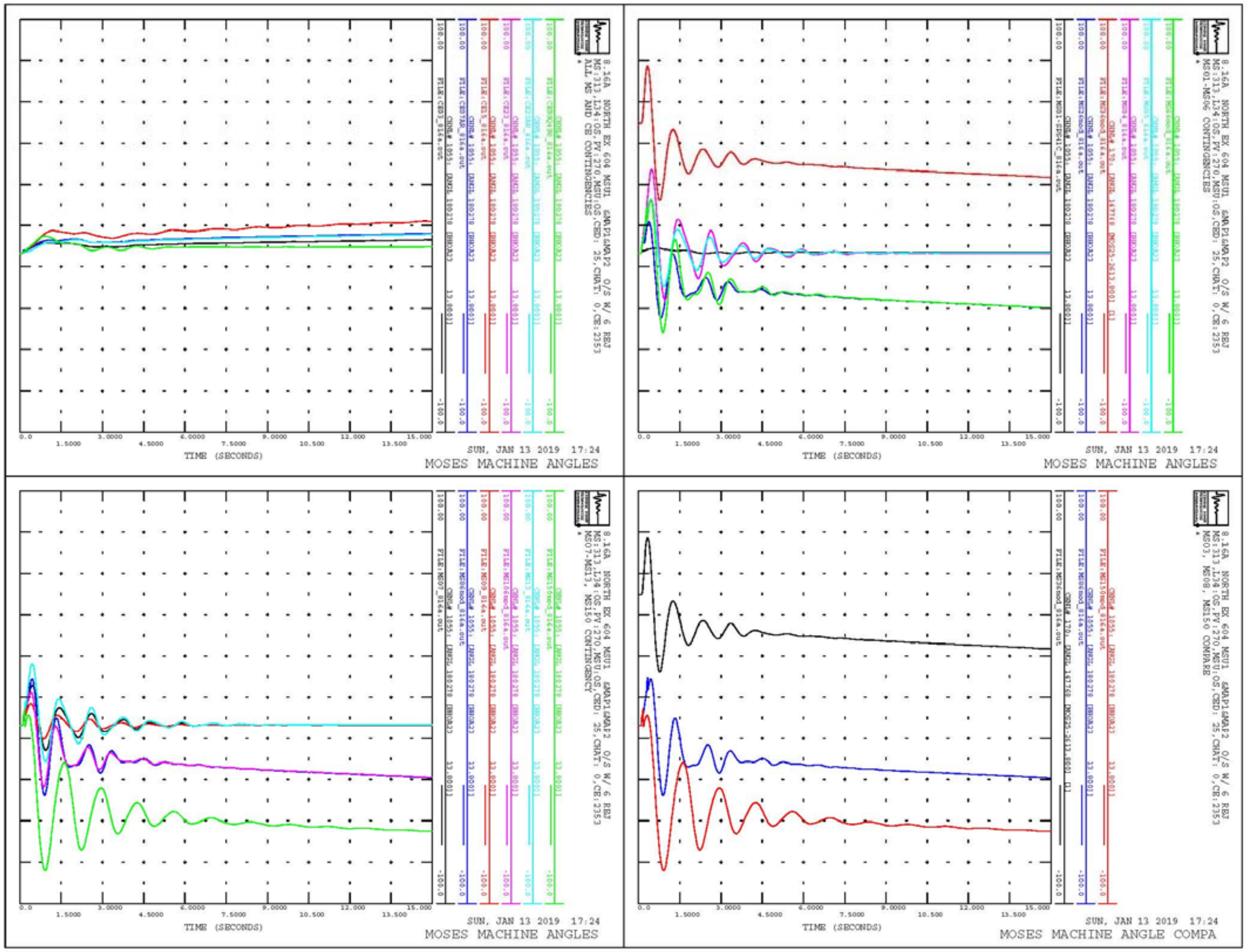

Fig A34: Comparative plots for Moses machine angle for all simulated contingencies

A.17 MSU1 & 7040 & MAP1 & MAP2 & R8105 O/S with 6 Moses unit rejection

Test Level Interface Power Flow Summary and Key Voltages

CASE :8.17A NORTH EX 405 MSU1 &MAP1&MAP2 O/S W/ 6 REJ
MS:172,L34:OS,PV:231,MSU:OS,CED: 25,CHAT: 0,CE:2324

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1905.8	23.3	DYSE-CLOSE	3246.1	276.6
WEST-CENTRAL	602.1	-141.1	WESTC-CLOSE	1942.4	112.2
VOLNEY-EAST	4441.8	-437.7	VOLNEY-CLOSE	5684.7	-219.5
MOSES-SOUTH	172.5	-75.4	MOSES-CLOSE	404.8	-93.2
CENTRAL-EAST	2323.6	-367.1	TOTAL-EAST	5323.9	-252.0
UPNY-SENY	4356.6	128.1	UPNY-SENY-CL	5659.9	278.4
UPNY-CONED	4472.6	-82.8	UPNY-CON-CL	6600.8	-93.6
MILLWOOD-SO	7186.3	63.3	LIPA-IMPORT	2007.0	-161.5
DNWDIE-SO-PL	4453.8	-398.0	DNWDIE-SO-PC	6581.9	-408.8
DNWDIE-SO-OP	3537.6	-340.3	PJM-NY	1224.9	321.7
NE-NY-WCSC	-758.9	88.6	ON-NY	990.8	206.0
ONT-MICH-PAR	8.9	7.1	Northern Export	404.8	-100.3

STATION VOLTAGES

126260	BOWLINE1	345.00 = 359.2	126261	BOWLINE2	345.00 = 359.1	126263	BUCHANAN S	345.00 = 355.6
136150	CLAY	345.00 = 357.3	130750	COOPC345	345.00 = 359.1	126266	DUNWOODIE	345.00 = 353.1
137200	EDIC	345.00 = 358.3	126277	FARRAGUT	345.00 = 350.0	130753	FRASR345	345.00 = 360.8
135413	GRDNVL2	230.00 = 231.2	147831	GILB 345	345.00 = 361.4	126283	GOTHLS	345.00 = 348.0
126286	GOW R16	345.00 = 347.1	126290	LADENTWN	345.00 = 358.1	137451	LEEDS 3	345.00 = 361.4
147833	MARCY T1	345.00 = 359.0	126291	MILLWOOD	345.00 = 353.4	137452	N.SCOT77	345.00 = 360.0
137453	N.SCOT99	345.00 = 360.0	147841	NIAGAR2E	230.00 = 231.9	147842	NIAGAR2W	230.00 = 231.9
147834	NIAG 345	345.00 = 358.3	129341	NRTHPRT1	138.00 = 142.4	130755	OAKDL345	345.00 = 353.9
149001	PANNELL3	345.00 = 346.3	126294	PLTVLLEY	345.00 = 354.7	126295	RAINEY	345.00 = 350.4
126600	REAC71	345.00 = 352.5	126601	REAC72	345.00 = 352.5	126297	RAMAPO	345.00 = 357.5
126250	RAMAPO 5	500.00 = 520.4	125001	ROCK TAV	345.00 = 356.2	125002	ROSETON	345.00 = 356.6
130754	SOMERSET345	345.00 = 358.8	126298	SPRAINBROOK	345.00 = 353.2	149000	ROCH 345	345.00 = 344.7
147840	MOSES W	230.00 = 235.4	130768	WATRC230	230.00 = 234.4	180819	CHA-NY	765.00 = 785.5
147827	MARCY765	765.00 = 770.1	147828	MASS 765	765.00 = 756.8	126281	E FISHKILL	345.00 = 356.0
125000	HURLEY 3	345.00 = 359.2	128835	SHORE RD	345.00 = 353.7	136156	VOLNEY	345.00 = 365.3*
130757	WATRC345	345.00 = 359.3	135250	DUNKIRK	230.00 = 230.0	130764	MEYER230	230.00 = 226.4
130765	OAKDL230	230.00 = 234.9	137730	ROTRDM.2	230.00 = 237.5	181219	CHANY2	120.00 = 131.5*
181119	CHANY1	120.00 = 131.5*	137716	ALB1	115.00 = 118.1	130774	BATH 115	115.00 = 115.2
137488	BETHLEHE	115.00 = 118.5	130776	BORDR115	115.00 = 114.3	136181	CLAY	115.00 = 119.2
130794	DELHI115	115.00 = 116.1	130796	E.NOR115	115.00 = 114.4	135277	FALCONER	115.00 = 116.2
130807	WESTOVER115	115.00 = 118.1	130826	MEYER115	115.00 = 115.6	147849	MOS 115	115.00 = 119.1
147850	NIAG115E	115.00 = 117.0	147851	NIAG115W	115.00 = 117.7	130836	N.WAV115	115.00 = 113.5

130838 OAKDL115	115.00 = 118.1	147852 PLAT T#3	115.00 = 115.6	125043 PL.VAL 1	115.00 = 117.6
137235 PORTER 1	115.00 = 117.9	125046 ROCK TV1	115.00 = 118.0	137532 RTRDM1	115.00 = 115.4
125048 SHENANDO	115.00 = 117.9	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP		MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0292		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0177		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0253		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0112		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0158		13.0	163	4	
131789	MILL C46	46.000	3	0	2	3.5	1.9	3.0	0.0	1.0187	1.0187		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0289		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0004		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0122		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	7.6	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0300	1.0102		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	0.9862		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	2.6	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	106.6	28.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	29.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	29.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0300	1.0279		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	29.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	-2	114.0	38.6	38.6	0.0	1.0300	1.0278		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	30.7	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	30.7	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	-2	2.1	4.8	4.8	-5.0	1.0500	1.0125		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	19.2	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1190.0	310.0	601.4	-402.9				1489.4			

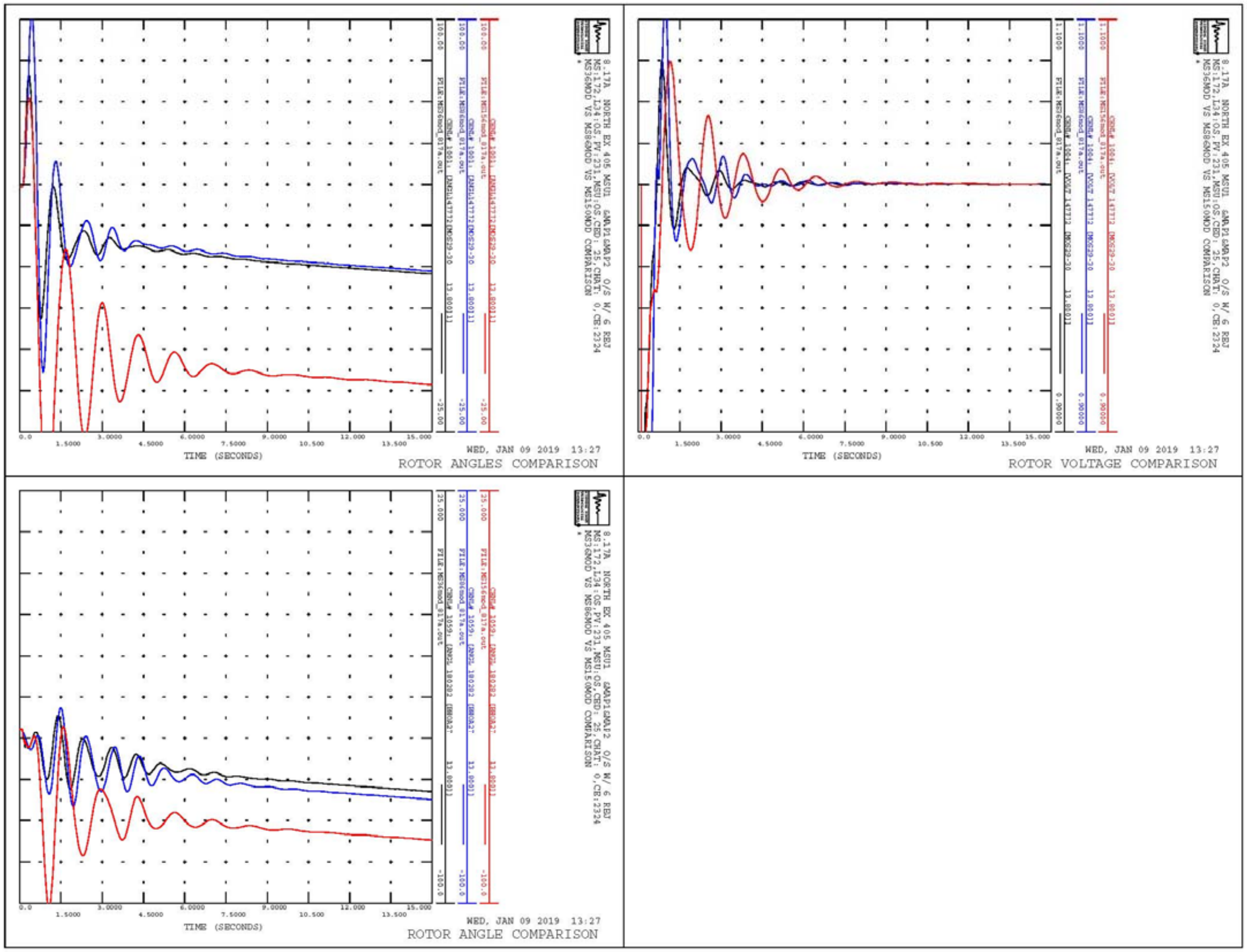

Fig A35 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

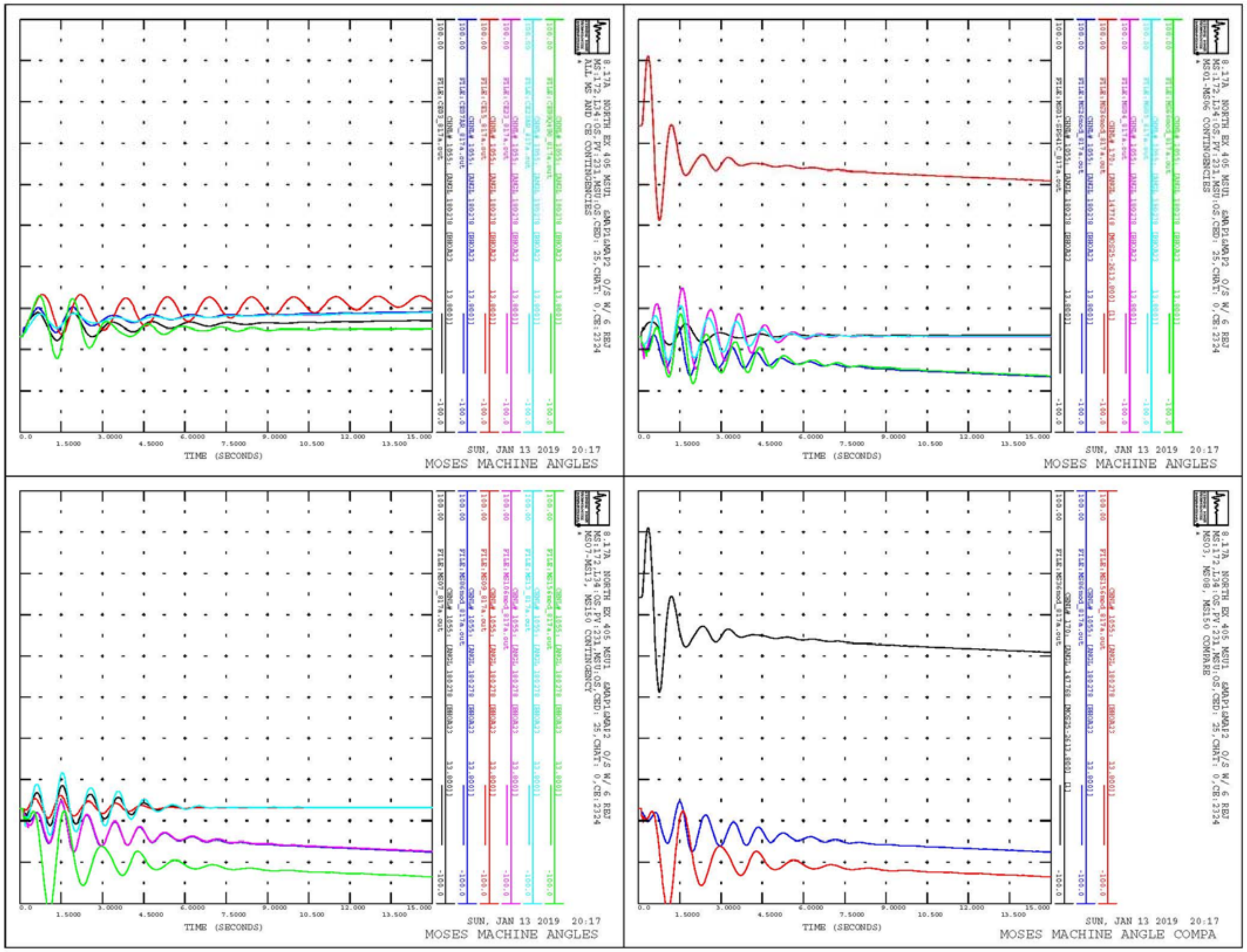

Fig A36: Comparative plots for Moses machine angle for all simulated contingencies

A.18 MSU1 & 7040 & MAP1 & MAP2 O/S with 6 Moses unit rejection

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.18A  NORTH EX 305 MSU1  &MAP1&MAP2&PV20  O/S W/ 6 REJ
       MS:312,L34:OS,PV:OS,MSU:OS,CED: 25,CHAT: 0,CE:2281
                            INTERFACE FLOW REPORT
   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS        2364.7      74.5  DYSE-CLOSE          3826.2     332.9
 WEST-CENTRAL        1061.5    -233.1  WESTC-CLOSE         2522.9      25.3
 VOLNEY-EAST         4927.7    -356.9  VOLNEY-CLOSE        6157.2    -180.4
 MOSES-SOUTH          312.4      15.2  MOSES-CLOSE          305.2      45.9
 CENTRAL-EAST        2281.3    -582.8  TOTAL-EAST          5519.0    -581.3
 UPNY-SENY           4364.8      34.7  UPNY-SENY-CL        5657.1     191.4
 UPNY-CONED          4475.0    -105.1  UPNY-CON-CL         6598.1    -126.4
 MILLWOOD-SO         7187.1      62.0  LIPA-IMPORT         2006.8    -152.6
 DNWDIE-SO-PL        4458.2    -406.4  DNWDIE-SO-PC        6581.3    -427.7
 DNWDIE-SO-OP        3543.1    -358.5  PJM-NY              1301.1     418.5
 NE-NY-WCSC          -758.4     149.9  ON-NY               1455.6     149.7
 ONT-MICH-PAR          97.0      -3.2  Northern Export      305.2      38.7

                             STATION VOLTAGES
 126260 BOWLINE1    345.00 = 358.4      126261 BOWLINE2    345.00 = 358.3      126263 BUCHANAN S  345.00 = 354.7
 136150 CLAY        345.00 = 350.8      130750 COOPC345    345.00 = 354.3      126266 DUNWOODIE   345.00 = 352.0
 137200 EDIC        345.00 = 349.1      126277 FARRAGUT    345.00 = 349.4      130753 FRASR345    345.00 = 357.0
 135413 GRDNVL2     230.00 = 227.8      147831 GILB 345    345.00 = 358.9      126283 GOTHLS      345.00 = 347.8
 126286 GOW R16     345.00 = 346.9      126290 LADENTWN    345.00 = 357.2      137451 LEEDS 3     345.00 = 359.5
 147833 MARCY T1    345.00 = 349.8      126291 MILLWOOD    345.00 = 352.4      137452 N.SCOT77    345.00 = 356.0
 137453 N.SCOT99    345.00 = 356.0      147841 NIAGAR2E    230.00 = 229.5      147842 NIAGAR2W    230.00 = 229.5
 147834 NIAG 345    345.00 = 357.4      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 347.8
 149001 PANNELL3    345.00 = 339.9*     126294 PLTVLLEY    345.00 = 353.3      126295 RAINEY      345.00 = 349.8
 126600 REAC71      345.00 = 351.8      126601 REAC72      345.00 = 351.9      126297 RAMAPO      345.00 = 356.5
 126250 RAMAPO 5    500.00 = 519.9      125001 ROCK TAV    345.00 = 354.3      125002 ROSETON     345.00 = 355.3
 130754 SOMERSET345 345.00 = 357.3      126298 SPRAINBROOK 345.00 = 352.1      149000 ROCH 345    345.00 = 338.3*
 147840 MOSES W     230.00 = 236.6      130768 WATRC230    230.00 = 232.2      180819 CHA-NY      765.00 = 785.5
 147827 MARCY765    765.00 = 750.4      147828 MASS 765    765.00 = 760.7      126281 E FISHKILL  345.00 = 354.6
 125000 HURLEY 3    345.00 = 357.6      128835 SHORE RD    345.00 = 352.4      136156 VOLNEY      345.00 = 361.3
 130757 WATRC345    345.00 = 351.6      135250 DUNKIRK     230.00 = 226.9      130764 MEYER230    230.00 = 220.5
 130765 OAKDL230    230.00 = 232.7      137730 ROTRDM.2    230.00 = 232.2      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1      120.00 = 131.5*     137716 ALB1        115.00 = 117.8      130774 BATH 115    115.00 = 115.4
 137488 BETHLEHE    115.00 = 118.1      130776 BORDR115    115.00 = 114.7      136181 CLAY        115.00 = 119.4
 130794 DELHI115    115.00 = 116.3      130796 E.NOR115    115.00 = 114.4      135277 FALCONER    115.00 = 115.6
 130807 WESTOVER115 115.00 = 117.3      130826 MEYER115    115.00 = 115.8      147849 MOS 115     115.00 = 119.4
 147850 NIAG115E    115.00 = 116.7      147851 NIAG115W    115.00 = 117.2      130836 N.WAV115    115.00 = 113.5
 130838 OAKDL115    115.00 = 117.2      147852 PLAT T#3    115.00 = 117.2      125043 PL.VAL 1    115.00 = 117.2
```

137235 PORTER 1 115.00 = 113.9	125046 ROCK TV1 115.00 = 117.4	137532 RTRDM1 115.00 = 114.5
125048 SHENANDO 115.00 = 117.5	149011 S82-1115 115.00 = 117.9	149008 RUS 115 115.00 = 114.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2 0	-2	1.3	0.0	0.0	0.0	1.0000	1.0300		3.0	163	4	
131769	CADYVILE	46.000	3 0	-2	2.1	0.0	3.1	0.0	1.0000	1.0264		5.0	163	4	
131778	HIGHFL46	46.000	3 0	-2	8.7	1.6	1.6	1.6	1.0000	1.0336		16.0	163	4	
131782	INDIAN T	46.000	1 0	-2	3.7	0.0	0.0	0.0	1.0000	1.0201		10.0	163	4	
131786	KENTSF46	46.000	3 0	-2	7.9	1.0	5.7	1.0	1.0000	1.0245		13.0	163	4	
131789	MILL C46	46.000	3 0	-2	3.5	0.0	3.0	0.0	1.0187	1.0265		6.0	163	4	
131795	RAINBOW	46.000	2 0	-2	1.5	0.0	0.0	0.0	1.0000	1.0297		3.0	163	4	
131813	CHATGY34	34.500	2 1	-2	1.5	0.0	0.0	0.0	1.0000	1.0025		4.0	163	4	
136751	ALLENS F	115.00	1 0	-2	2.6	3.1	3.1	-1.5	1.0400	0.9864		5.0	175	4	
136777	LK COLBY	115.00	1 0	2	0.0	-4.2	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	-2	1.4	1.0	1.0	-0.2	1.0300	0.9890		5.0	175	4	
136865	UNION	46.000	1 0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1 0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0126		2.2	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3 0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2 0	2	85.0	22.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	24.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	24.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	38.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	24.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	38.5	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	30.0	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	3.7	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1 0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	28.6	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					1054.4	250.3	562.8	-372.1				1369.4			

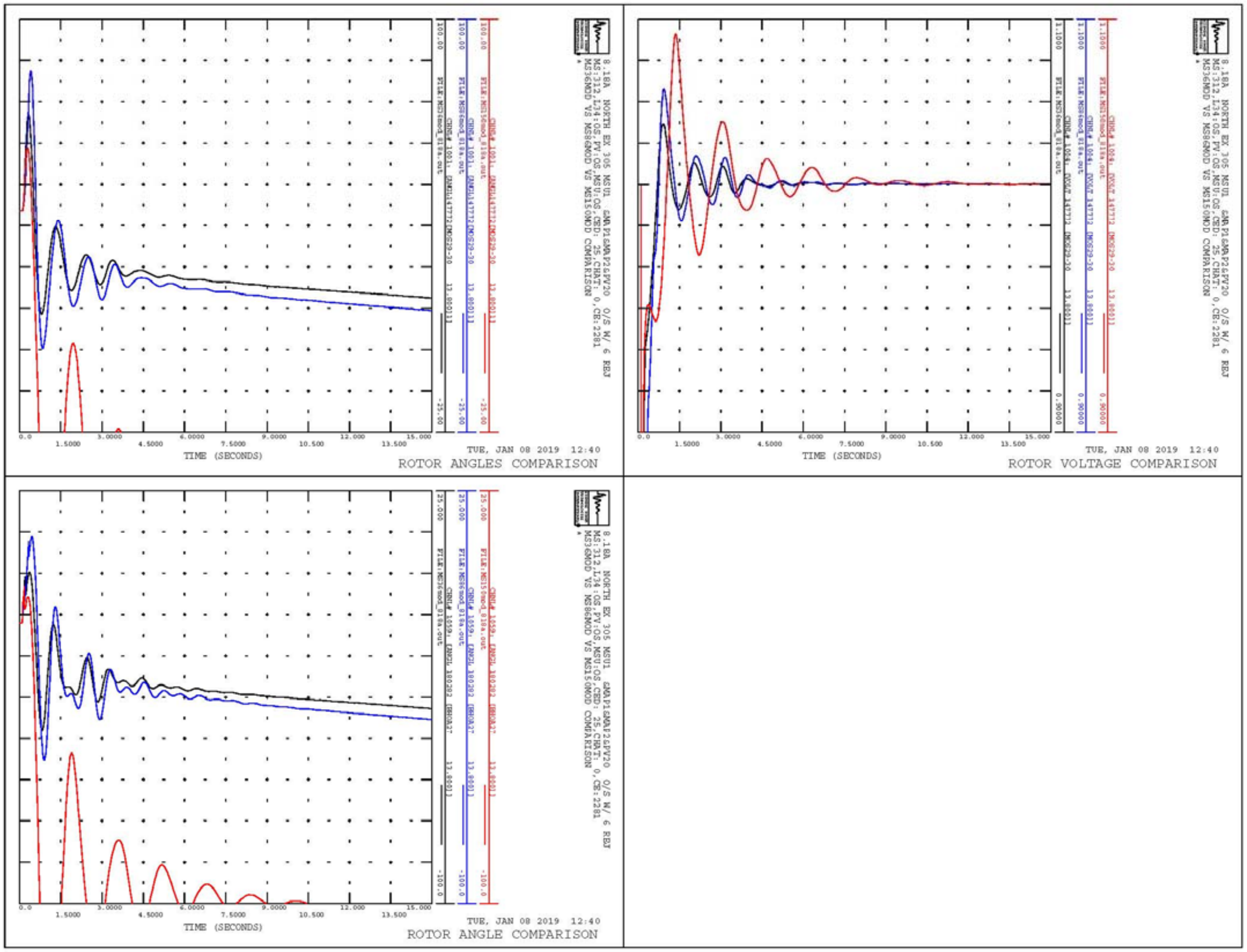

Fig A37 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

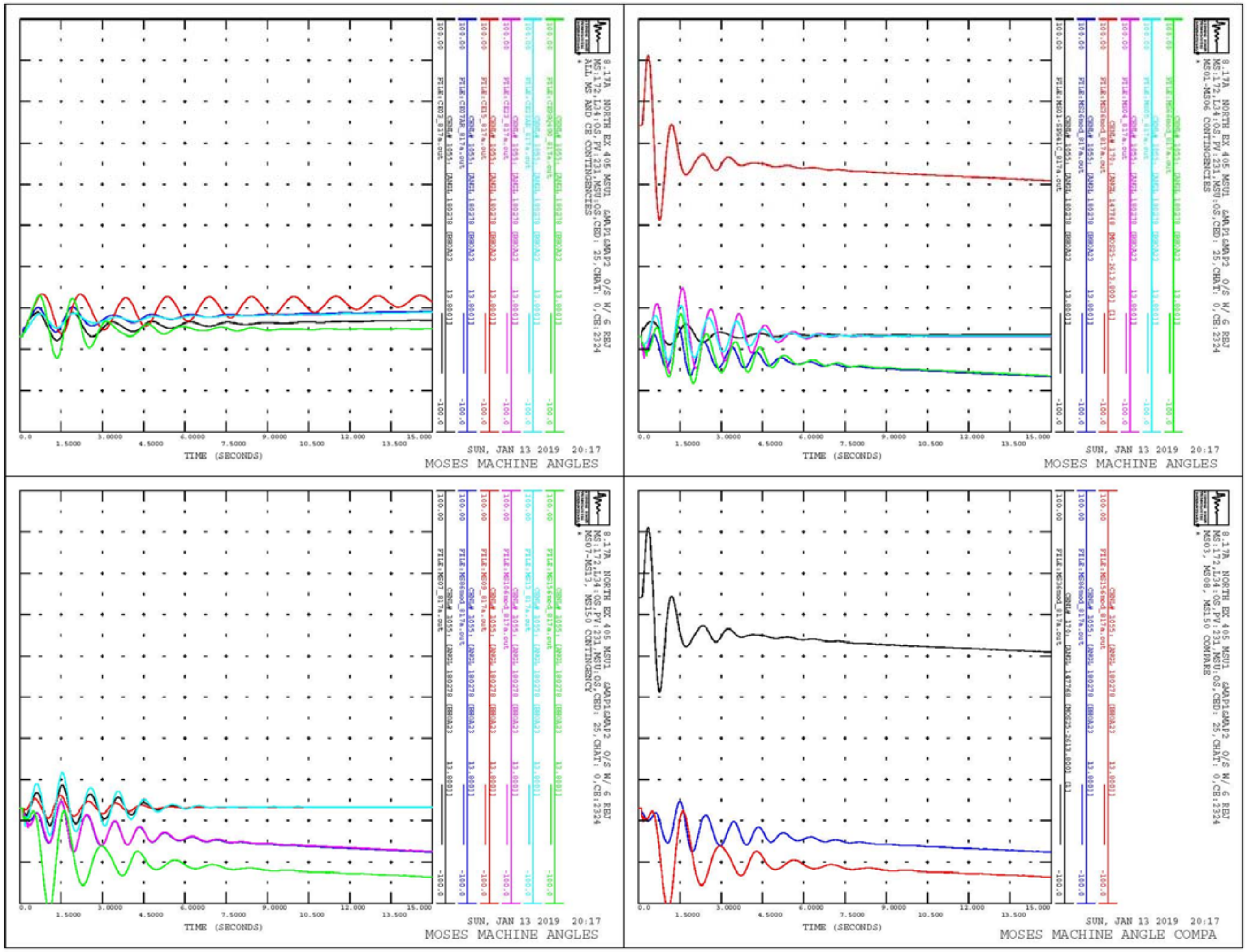

Fig A38: Comparative plots for Moses machine angle for all simulated contingencies

A.19 MSU1 & 7040 & L33 & L34 & MAP1 O/S with 6 Moses unit rejection

Test Level Interface Power Flow Summary and Key Voltages

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CASE :8.19A  NORTH EX 459 MSU1 &L33&L34& MAP1 O/SW/6 REJ
       MS:352,L34:OS,PV:100,MSU:OS,CED:25,CHAT: 0,CE:2276
                           INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr      DESCRIPTION          MW       MVAr
 DYSINGER-EAS        2166.2      29.8  DYSE-CLOSE          3514.5      257.3
 WEST-CENTRAL         862.2    -180.9  WESTC-CLOSE         2210.5       46.6
 VOLNEY-EAST         4371.8    -423.7  VOLNEY-CLOSE        5596.2     -230.1
 MOSES-SOUTH          348.9      13.1  MOSES-CLOSE          458.7        5.8
 CENTRAL-EAST        2275.8    -431.8  TOTAL-EAST          5290.9     -335.2
 UPNY-SENY           4364.0     116.0  UPNY-SENY-CL        5658.4      269.6
 UPNY-CONED          4475.5     -91.5  UPNY-CON-CL         6600.0     -102.5
 MILLWOOD-SO         7185.2      61.2  LIPA-IMPORT         2006.8     -163.8
 DNWDIE-SO-PL        4457.1    -405.7  DNWDIE-SO-PC        6581.5     -416.7
 DNWDIE-SO-OP        3542.4    -345.5  PJM-NY              1240.2      340.9
 NE-NY-WCSC          -758.4     123.1  ON-NY               1223.9      165.0
 ONT-MICH-PAR          26.8       4.4  Northern Export      458.7       -1.6

                            STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.0      126261 BOWLINE2    345.00 = 358.9      126263 BUCHANAN S  345.00 = 355.4
 136150 CLAY        345.00 = 357.0      130750 COOPC345    345.00 = 358.1      126266 DUNWOODIE   345.00 = 352.9
 137200 EDIC        345.00 = 357.4      126277 FARRAGUT    345.00 = 349.9      130753 FRASR345    345.00 = 359.9
 135413 GRDNVL2     230.00 = 228.8      147831 GILB 345    345.00 = 360.9      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 357.9      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 358.1      126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 359.2
 137453 N.SCOT99    345.00 = 359.2      147841 NIAGAR2E    230.00 = 230.5      147842 NIAGAR2W    230.00 = 230.5
 147834 NIAG 345    345.00 = 358.1      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 353.4
 149001 PANNELL3    345.00 = 344.9      126294 PLTVLLEY    345.00 = 354.3      126295 RAINEY      345.00 = 350.3
 126600 REAC71      345.00 = 352.3      126601 REAC72      345.00 = 352.4      126297 RAMAPO      345.00 = 357.3
 126250 RAMAPO 5    500.00 = 520.4      125001 ROCK TAV    345.00 = 355.8      125002 ROSETON     345.00 = 356.3
 130754 SOMERSET345 345.00 = 358.4      126298 SPRAINBROOK 345.00 = 353.0      149000 ROCH 345    345.00 = 343.0
 147840 MOSES W     230.00 = 239.3      130768 WATRC230    230.00 = 234.2      180819 CHA-NY      765.00 = 785.5
 147827 MARCY765    765.00 = 768.1      147828 MASS 765    765.00 = 769.3      126281 E FISHKILL  345.00 = 355.6
 125000 HURLEY 3    345.00 = 358.8      128835 SHORE RD    345.00 = 353.5      136156 VOLNEY      345.00 = 365.3*
 130757 WATRC345    345.00 = 358.9      135250 DUNKIRK     230.00 = 227.8      130764 MEYER230    230.00 = 224.7
 130765 OAKDL230    230.00 = 234.7      137730 ROTRDM.2    230.00 = 236.0      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1      120.00 = 131.5*     137716 ALB1        115.00 = 118.0      130774 BATH 115    115.00 = 115.3
 137488 BETHLEHE    115.00 = 118.3      130776 BORDR115    115.00 = 114.0      136181 CLAY        115.00 = 119.3
 130794 DELHI115    115.00 = 115.8      130796 E.NOR115    115.00 = 113.6      135277 FALCONER    115.00 = 115.7
 130807 WESTOVER115 115.00 = 117.9      130826 MEYER115    115.00 = 115.6      147849 MOS 115     115.00 = 120.6
 147850 NIAG115E    115.00 = 116.7      147851 NIAG115W    115.00 = 117.4      130836 N.WAV115    115.00 = 113.5
```

```
130838 OAKDL115    115.00 = 117.9      147852 PLAT T#3    115.00 = 117.3      125043 PL.VAL 1    115.00 = 117.4
137235 PORTER 1    115.00 = 117.6      125046 ROCK TV1    115.00 = 117.9      137532 RTRDM1      115.00 = 115.0
125048 SHENANDO    115.00 = 117.8      149011 S82-1115    115.00 = 117.5      149008 RUS 115     115.00 = 114.5
```

Zone D Generation Profile:

```
BUS# X-- NAME --X BASKV ON/OFF TYP    MW     MVAR    QMAX    QMIN  VSCHED VACTUAL   BUS# X-- NAME --X BASKV  MVABASE ZONE AREA SWING
 131761 ALICE F$    46.000  2  0  -2     1.3      0.0     0.0     0.0 1.0000 1.0302                                 3.0  163    4
 131769 CADYVILE    46.000  3  0  -2     2.1      0.0     3.1     0.0 1.0000 1.0266                                 5.0  163    4
 131778 HIGHFL46    46.000  3  0  -2     8.7      1.6     1.6     1.6 1.0000 1.0337                                16.0  163    4
 131782 INDIAN T    46.000  1  0  -2     3.7      0.0     0.0     0.0 1.0000 1.0203                                10.0  163    4
 131786 KENTSF46    46.000  3  0  -2     7.9      1.0     5.7     1.0 1.0000 1.0247                                13.0  163    4
 131789 MILL C46    46.000  3  0  -2     3.5      0.0     3.0     0.0 1.0187 1.0267                                 6.0  163    4
 131795 RAINBOW     46.000  2  0  -2     1.5      0.0     0.0     0.0 1.0000 1.0299                                 3.0  163    4
 131813 CHATGY34    34.500  2  1  -2     1.5      0.0     0.0     0.0 1.0000 0.9983                                 4.0  163    4
 136751 ALLENS F    115.00  1  0  -2     2.6      3.1     3.1    -1.5 1.0400 1.0353                                 5.0  175    4
 136777 LK COLBY    115.00  1  0   2     0.0     -3.1    75.0   -15.0 1.0303 1.0303                                90.0  175    4
 136795 PARISHVL    115.00  1  0  -2     1.4     -0.2     1.0    -0.2 1.0300 1.0347                                 5.0  175    4
 136865 UNION       46.000  1  0  -2     1.4      0.0     0.0     0.0 1.0000 1.0217                                 3.0  175    4
 136914 MACOMB      34.500  1  0  -2     0.6      0.6     0.6    -0.4 1.0200 1.0132                                 2.2  175    4
 137166 CHASM HY    2.2000  3  0   2     2.0      1.1     3.2    -1.7 0.9700 0.9700                                 3.6  175    4
 137179 FRANK HY    2.3000  3  0   2     1.5     -0.3     2.0    -1.0 1.0000 1.0000                                 7.0  175    4
 147763 MOS17-18    13.800  2  0   2   110.6     32.2    38.6   -30.8 1.0500 1.0500                               120.0  158    4   AREA
 147765 MOS19-20    13.800  2  0   2   114.0     32.5    38.6   -30.8 1.0500 1.0500                               120.0  158    4
 147766 MOS21-22    13.800  2  0   2   114.0     32.7    38.6   -30.8 1.0500 1.0500                               120.0  158    4
 147768 MOS25-26    13.800  2  0   2   114.0     21.1    38.6   -30.8 1.0200 1.0200                               120.0  158    4
 147770 MOS23-24    13.800  2  0   2   114.0     32.7    38.6   -30.8 1.0500 1.0500                               120.0  158    4
 147771 MOS27-28    13.800  2  0   2   114.0     10.5    38.6     0.0 1.0100 1.0100                               120.0  158    4
 147772 MOS29-30    13.800  2  0   2   114.0     11.3    38.6   -30.8 1.0100 1.0100                               120.0  158    4
 147774 MOS31-32    13.800  2  0   2   114.0     11.3    38.6   -30.8 1.0100 1.0100                               120.0  158    4
 148706 MRBLRV1_8G  0.6500  1  0   2    10.0      5.1   123.2   -82.6 1.0000 1.0000                               215.2  158    4
 180256 BHEA01      13.800  1  0   2    39.9      7.0    27.8   -27.8 0.9550 0.9550                                46.6 1145    4
 180257 BHEA02      13.800  1  0   2    38.1    -20.2    34.0   -34.0 0.9550 0.9550                                57.0 1145    4
 180258 BHEA03      13.800  1  0   2    39.9      7.0    27.8   -27.8 0.9550 0.9550                                46.6 1145    4
 180282 BHOA27      13.800  1  0   2    72.0     19.8    50.0   -25.0 1.0500 1.0500                                90.0 1145    4
 180283 BHOA28      13.800  1  0   2    53.7     18.5    50.3   -50.3 1.0000 1.0000                                90.0 1145    4
 SUBSYSTEM TOTALS                     1201.9    225.2   719.8  -480.6                                            1681.3
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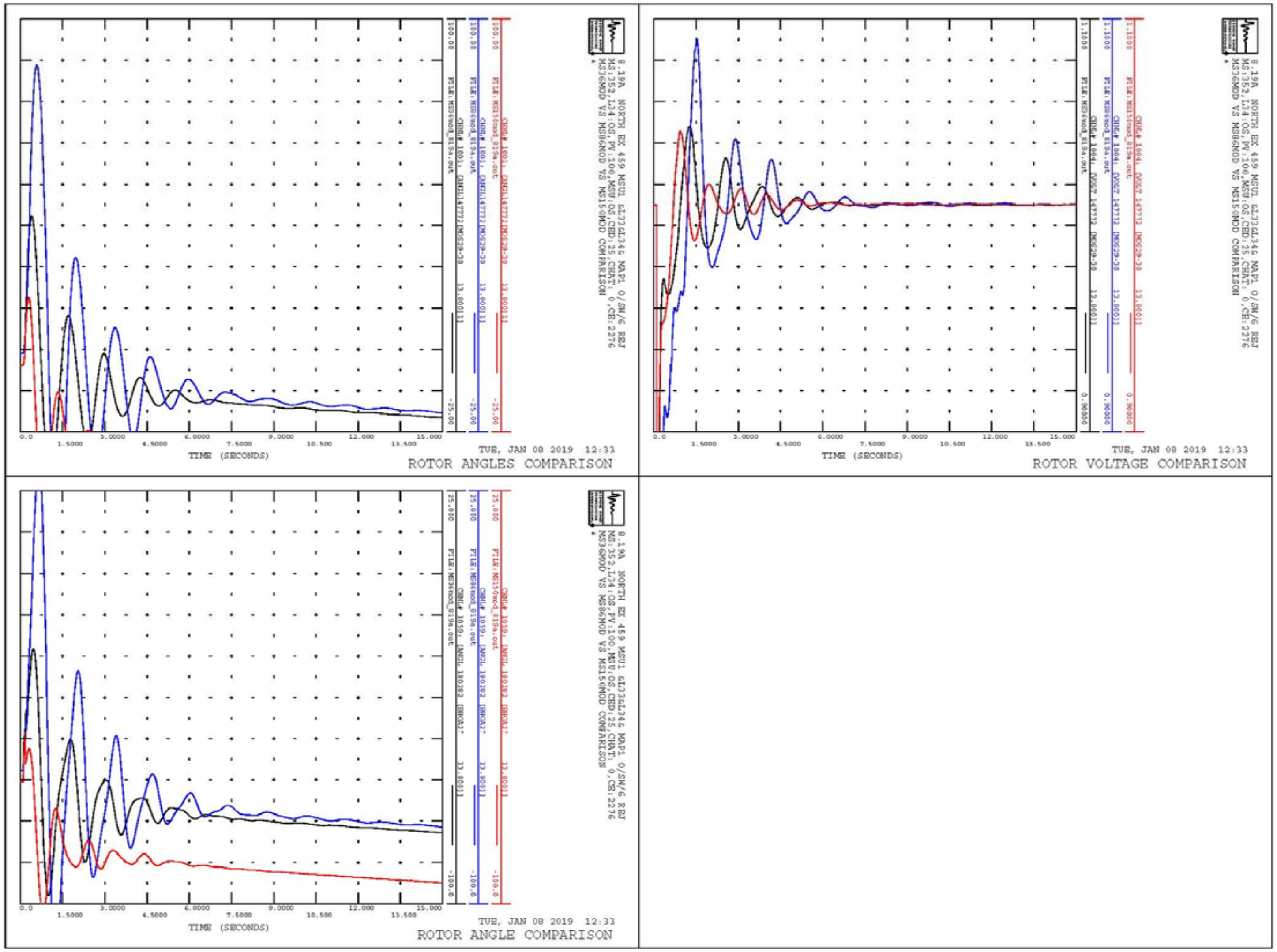

Fig A39 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

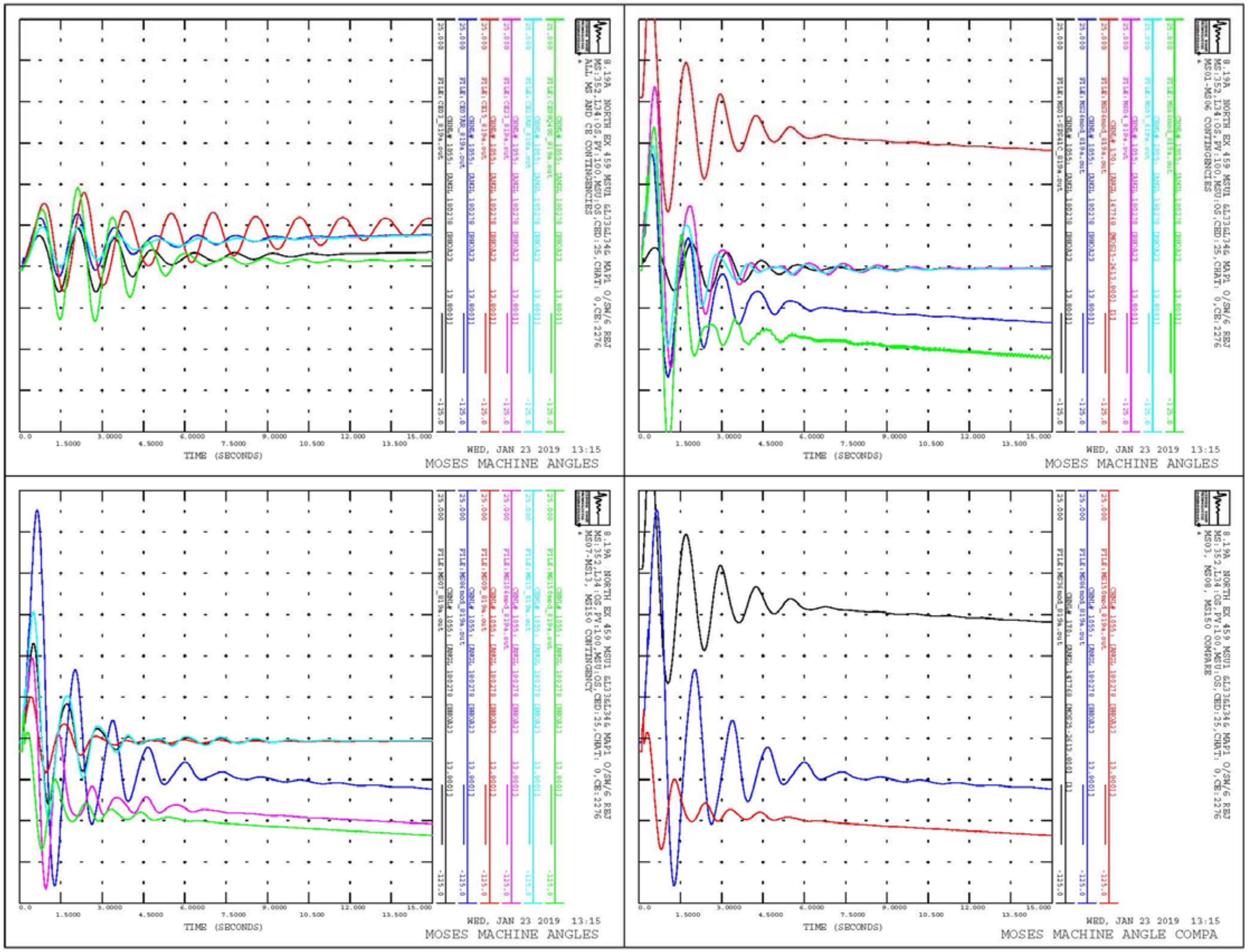

Fig A40: Comparative plots for Moses machine angle for all simulated contingencies

A.20 MSU1 & 7040 & MAP1 & MAP2 & L33 O/S with 6 Moses unit rejection

Test Level Interface Power Flow Summary and Key Voltages

CASE :8.20A NORTH EX 509 MSU1 & MAP1&2 &L33 O/S W/6 REJ
MS:284,L34:OS,PV:223,MSU:OS,CED:25,CHAT: 0,CE:2316

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	2164.2	36.1	DYSE-CLOSE	3512.1	251.2
WEST-CENTRAL	860.4	-173.0	WESTC-CLOSE	2208.3	42.1
VOLNEY-EAST	4329.4	-356.6	VOLNEY-CLOSE	5554.3	-176.9
MOSES-SOUTH	283.9	-12.6	MOSES-CLOSE	509.0	8.1
CENTRAL-EAST	2315.8	-393.5	TOTAL-EAST	5291.2	-291.5
UPNY-SENY	4364.9	120.2	UPNY-SENY-CL	5659.0	271.9
UPNY-CONED	4476.7	-84.6	UPNY-CON-CL	6600.1	-95.7
MILLWOOD-SO	7183.7	62.9	LIPA-IMPORT	2006.8	-162.7
DNWDIE-SO-PL	4457.9	-402.2	DNWDIE-SO-PC	6581.3	-413.3
DNWDIE-SO-OP	3542.6	-343.2	PJM-NY	1239.3	339.2
NE-NY-WCSC	-757.7	99.2	ON-NY	1222.6	157.7
ONT-MICH-PAR	26.7	4.7	Northern Export	509.0	0.7

STATION VOLTAGES

126260 BOWLINE1 345.00 = 359.1	126261 BOWLINE2 345.00 = 359.0	126263 BUCHANAN S 345.00 = 355.5
136150 CLAY 345.00 = 356.4	130750 COOPC345 345.00 = 358.5	126266 DUNWOODIE 345.00 = 353.0
137200 EDIC 345.00 = 357.2	126277 FARRAGUT 345.00 = 350.0	130753 FRASR345 345.00 = 360.1
135413 GRDNVL2 230.00 = 228.8	147831 GILB 345 345.00 = 361.1	126283 GOTHLS 345.00 = 348.0
126286 GOW R16 345.00 = 347.1	126290 LADENTWN 345.00 = 358.0	137451 LEEDS 3 345.00 = 361.1
147833 MARCY T1 345.00 = 357.9	126291 MILLWOOD 345.00 = 353.3	137452 N.SCOT77 345.00 = 359.6
137453 N.SCOT99 345.00 = 359.6	147841 NIAGAR2E 230.00 = 230.5	147842 NIAGAR2W 230.00 = 230.5
147834 NIAG 345 345.00 = 358.0	129341 NRTHPRT1 138.00 = 142.4	130755 OAKDL345 345.00 = 353.2
149001 PANNELL3 345.00 = 344.6	126294 PLTVLLEY 345.00 = 354.5	126295 RAINEY 345.00 = 350.3
126600 REAC71 345.00 = 352.4	126601 REAC72 345.00 = 352.5	126297 RAMAPO 345.00 = 357.4
126250 RAMAPO 5 500.00 = 520.4	125001 ROCK TAV 345.00 = 356.0	125002 ROSETON 345.00 = 356.4
130754 SOMERSET345 345.00 = 358.3	126298 SPRAINBROOK 345.00 = 353.1	149000 ROCH 345 345.00 = 342.7*
147840 MOSES W 230.00 = 238.5	130768 WATRC230 230.00 = 234.1	180819 CHA-NY 765.00 = 785.6
147827 MARCY765 765.00 = 767.7	147828 MASS 765 765.00 = 766.6	126281 E FISHKILL 345.00 = 355.8
125000 HURLEY 3 345.00 = 359.0	128835 SHORE RD 345.00 = 353.6	136156 VOLNEY 345.00 = 364.9*
130757 WATRC345 345.00 = 358.8	135250 DUNKIRK 230.00 = 227.8	130764 MEYER230 230.00 = 224.6
130765 OAKDL230 230.00 = 234.6	137730 ROTRDM.2 230.00 = 236.9	181219 CHANY2 120.00 = 131.5*
181119 CHANY1 120.00 = 131.5*	137716 ALB1 115.00 = 118.1	130774 BATH 115 115.00 = 115.2
137488 BETHLEHE 115.00 = 118.4	130776 BORDR115 115.00 = 113.8	136181 CLAY 115.00 = 118.5
130794 DELHI115 115.00 = 115.8	130796 E.NOR115 115.00 = 113.7	135277 FALCONER 115.00 = 115.7
130807 WESTOVER115 115.00 = 117.9	130826 MEYER115 115.00 = 115.5	147849 MOS 115 115.00 = 120.1
147850 NIAG115E 115.00 = 116.8	147851 NIAG115W 115.00 = 117.4	130836 N.WAV115 115.00 = 113.5
130838 OAKDL115 115.00 = 117.8	147852 PLAT T#3 115.00 = 116.6	125043 PL.VAL 1 115.00 = 117.5

137235 PORTER 1	115.00 = 116.7	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.2
125048 SHENANDO	115.00 = 117.8	149011 S82-1115	115.00 = 117.4	149008 RUS 115	115.00 = 114.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0314		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0215		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0287		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0151		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0196		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0216		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0310		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0029		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0040		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	0.4	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0300	1.0050		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0040		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.6	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	107.9	35.2	38.6	-30.8	1.0500	1.0500		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	35.7	38.6	-30.8	1.0500	1.0500		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	36.1	38.6	-30.8	1.0500	1.0500		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	25.0	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	36.1	38.6	-30.8	1.0500	1.0500		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	14.3	38.6	0.0	1.0100	1.0100		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	15.0	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	15.0	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	75.0	6.9	16.1	-17.6	1.0500	1.0500		118.6	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	25.0	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1264.2	265.7	612.8	-415.6				1584.6			

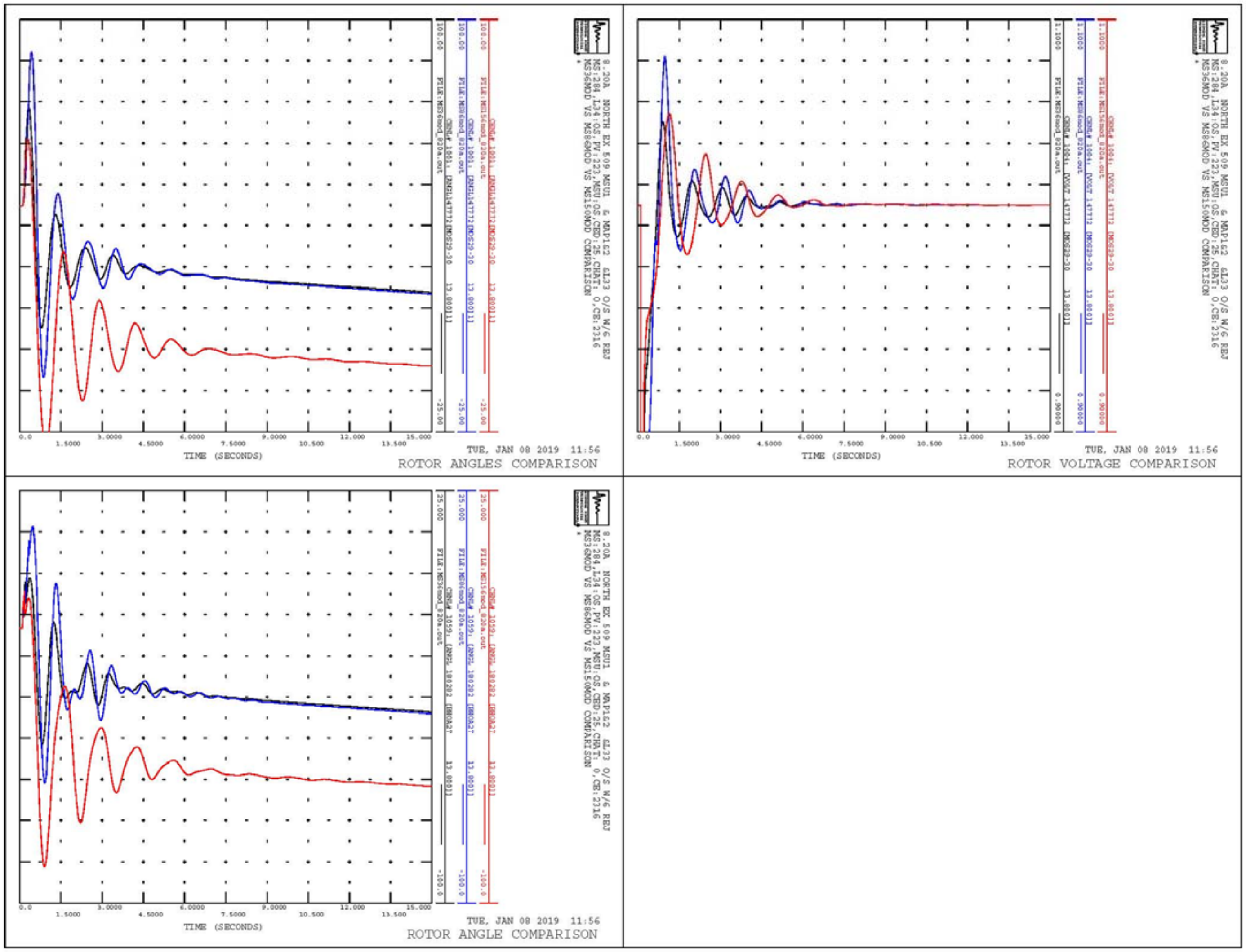

Fig A41 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

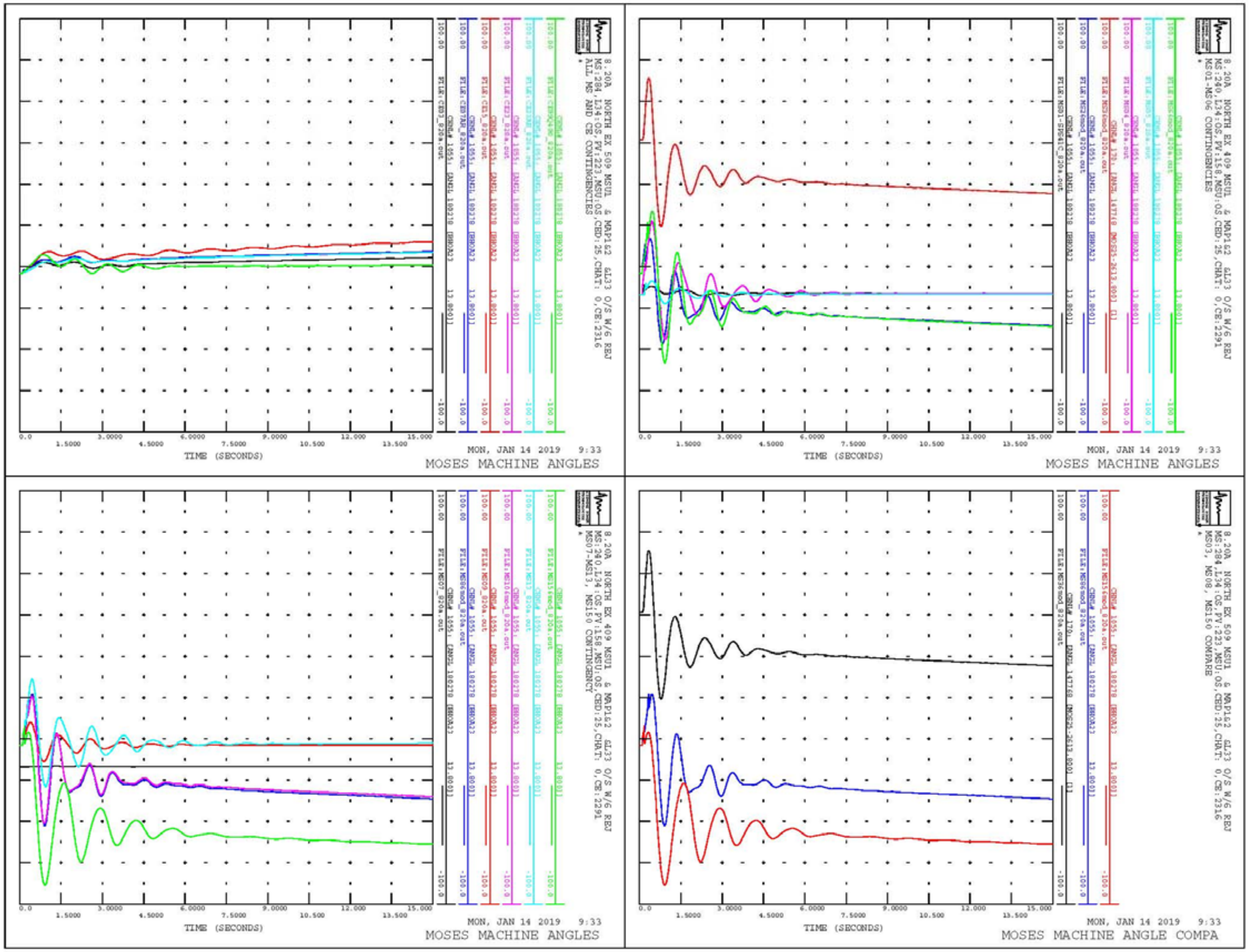

Fig A42: Comparative plots for Moses machine angle for all simulated contingencies

A.21 MSU1 & 7040 & L33 & L34 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.21A  NORTH EX 574 MSU1  & L33&L34  O/S
       MS:464,L34:OS,PV:100,MSU:OS,CED:25,CHAT:   0,CE:2255
                            INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr     DESCRIPTION          MW      MVAr
 DYSINGER-EAS        1888.2      2.6  DYSE-CLOSE          3193.4     227.3
 WEST-CENTRAL         584.9   -143.4  WESTC-CLOSE         1890.1      81.2
 VOLNEY-EAST         4251.7   -400.7  VOLNEY-CLOSE        5480.1    -205.6
 MOSES-SOUTH          464.2    -11.9  MOSES-CLOSE          574.4     -18.3
 CENTRAL-EAST        2306.5   -430.2  TOTAL-EAST          5319.6    -316.3
 UPNY-SENY           4363.8    120.2  UPNY-SENY-CL        5658.1     276.9
 UPNY-CONED          4474.8    -91.0  UPNY-CON-CL         6599.3     -97.9
 MILLWOOD-SO         7184.6     64.5  LIPA-IMPORT         2006.6    -163.0
 DNWDIE-SO-PL        4456.1   -405.2  DNWDIE-SO-PC        6580.6    -412.1
 DNWDIE-SO-OP        3540.7   -345.8  PJM-NY              1202.1     321.3
 NE-NY-WCSC          -758.0    122.8  ON-NY               1010.2     135.6
 ONT-MICH-PAR          -8.4      7.3  Northern Export      574.4     -25.7

                             STATION VOLTAGES
 126260 BOWLINE1     345.00 = 359.1      126261 BOWLINE2    345.00 = 358.9      126263 BUCHANAN S   345.00 = 355.5
 136150 CLAY         345.00 = 357.9      130750 COOPC345    345.00 = 358.5      126266 DUNWOODIE    345.00 = 353.0
 137200 EDIC         345.00 = 358.2      126277 FARRAGUT    345.00 = 350.0      130753 FRASR345     345.00 = 360.5
 135413 GRDNVL2      230.00 = 231.5      147831 GILB 345    345.00 = 361.0      126283 GOTHLS       345.00 = 348.0
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN    345.00 = 357.9      137451 LEEDS 3      345.00 = 360.9
 147833 MARCY T1     345.00 = 358.9      126291 MILLWOOD    345.00 = 353.3      137452 N.SCOT77     345.00 = 359.1
 137453 N.SCOT99     345.00 = 359.1      147841 NIAGAR2E    230.00 = 231.8      147842 NIAGAR2W     230.00 = 231.8
 147834 NIAG 345     345.00 = 357.7      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345     345.00 = 354.3
 149001 PANNELL3     345.00 = 347.0      126294 PLTVLLEY    345.00 = 354.3      126295 RAINEY       345.00 = 350.3
 126600 REAC71       345.00 = 352.4      126601 REAC72      345.00 = 352.5      126297 RAMAPO       345.00 = 357.3
 126250 RAMAPO 5     500.00 = 520.4      125001 ROCK TAV    345.00 = 355.9      125002 ROSETON      345.00 = 356.3
 130754 SOMERSET345 345.00 = 358.8       126298 SPRAINBROOK 345.00 = 353.0      149000 ROCH 345     345.00 = 345.4
 147840 MOSES W      230.00 = 238.8      130768 WATRC230    230.00 = 235.1      180819 CHA-NY       765.00 = 785.6
 147827 MARCY765     765.00 = 769.8      147828 MASS 765    765.00 = 767.9      126281 E FISHKILL   345.00 = 355.7
 125000 HURLEY 3     345.00 = 358.8      128835 SHORE RD    345.00 = 353.6      136156 VOLNEY       345.00 = 365.6*
 130757 WATRC345     345.00 = 360.0      135250 DUNKIRK     230.00 = 230.3      130764 MEYER230     230.00 = 227.8
 130765 OAKDL230     230.00 = 235.5      137730 ROTRDM.2    230.00 = 235.7      181219 CHANY2       120.00 = 131.5*
 181119 CHANY1       120.00 = 131.5*     137716 ALB1        115.00 = 118.1      130774 BATH 115     115.00 = 115.7
 137488 BETHLEHE     115.00 = 118.5      130776 BORDR115    115.00 = 114.4      136181 CLAY         115.00 = 119.6
 130794 DELHI115     115.00 = 116.1      130796 E.NOR115    115.00 = 113.7      135277 FALCONER     115.00 = 116.4
 130807 WESTOVER115 115.00 = 118.2       130826 MEYER115    115.00 = 116.1      147849 MOS 115      115.00 = 120.7
 147850 NIAG115E     115.00 = 117.0      147851 NIAG115W    115.00 = 117.7      130836 N.WAV115     115.00 = 113.8
```

130838 OAKDL115	115.00 = 118.2		147852 PLAT T#3	115.00 = 117.5		125043 PL.VAL 1	115.00 = 117.5	
137235 PORTER 1	115.00 = 117.8		125046 ROCK TV1	115.00 = 117.9		137532 RTRDM1	115.00 = 115.0	
125048 SHENANDO	115.00 = 117.8		149011 S82-1115	115.00 = 117.8		149008 RUS 115	115.00 = 114.9	

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV		ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0321		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0284		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0355		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0222		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0265		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0285		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0318		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0001		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0390		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-3.9	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	-0.2	1.0	-0.2	1.0300	1.0383		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0153		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	112.8	15.8	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	15.9	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	15.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	28.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	15.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	28.2	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	18.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	18.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	70.0	1.4	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	1.7	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	50.0	2.1	123.2	-82.6	1.0000	1.0000		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	19.0	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1316.2	195.2	746.8	-507.1				1794.9			

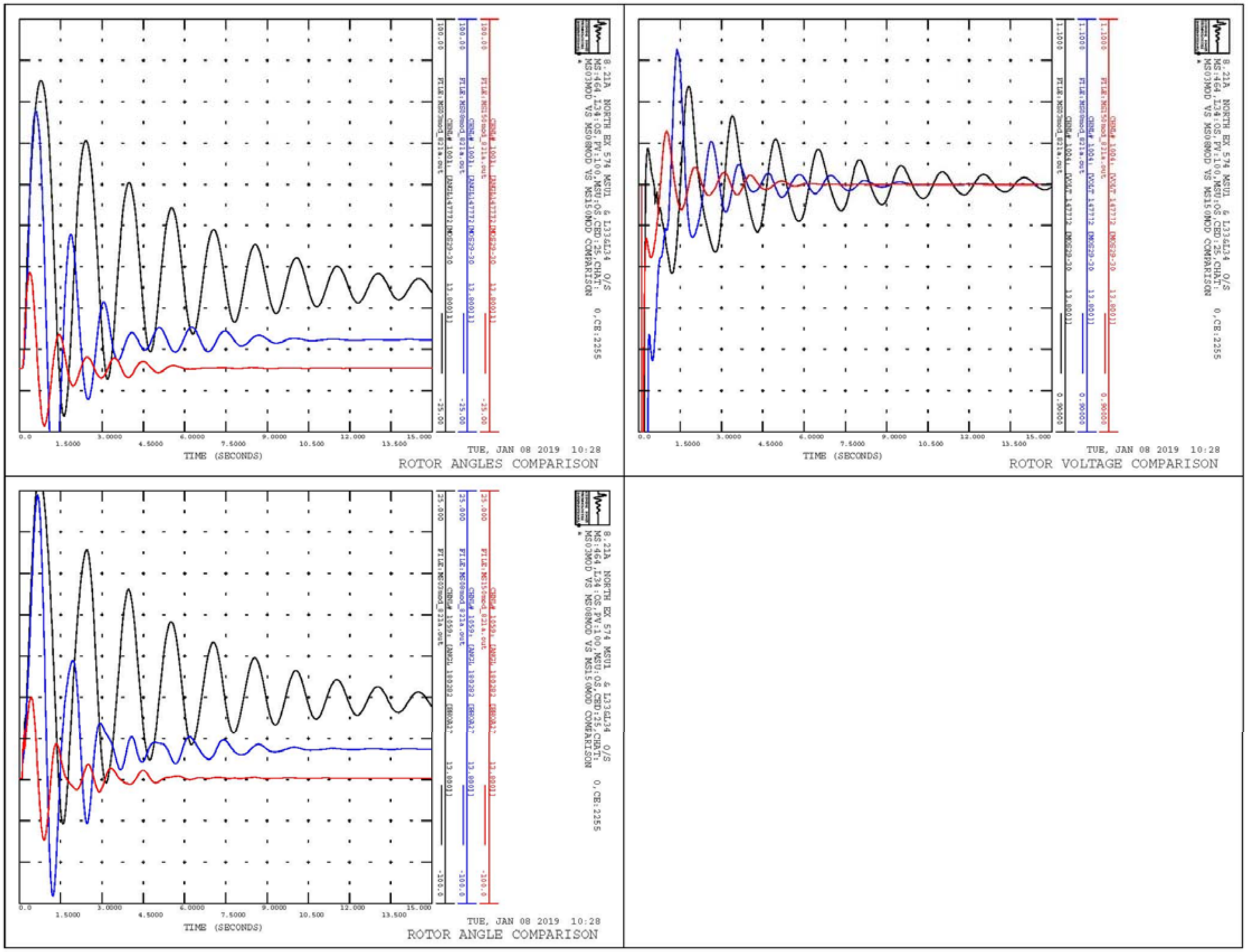

Fig A43 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

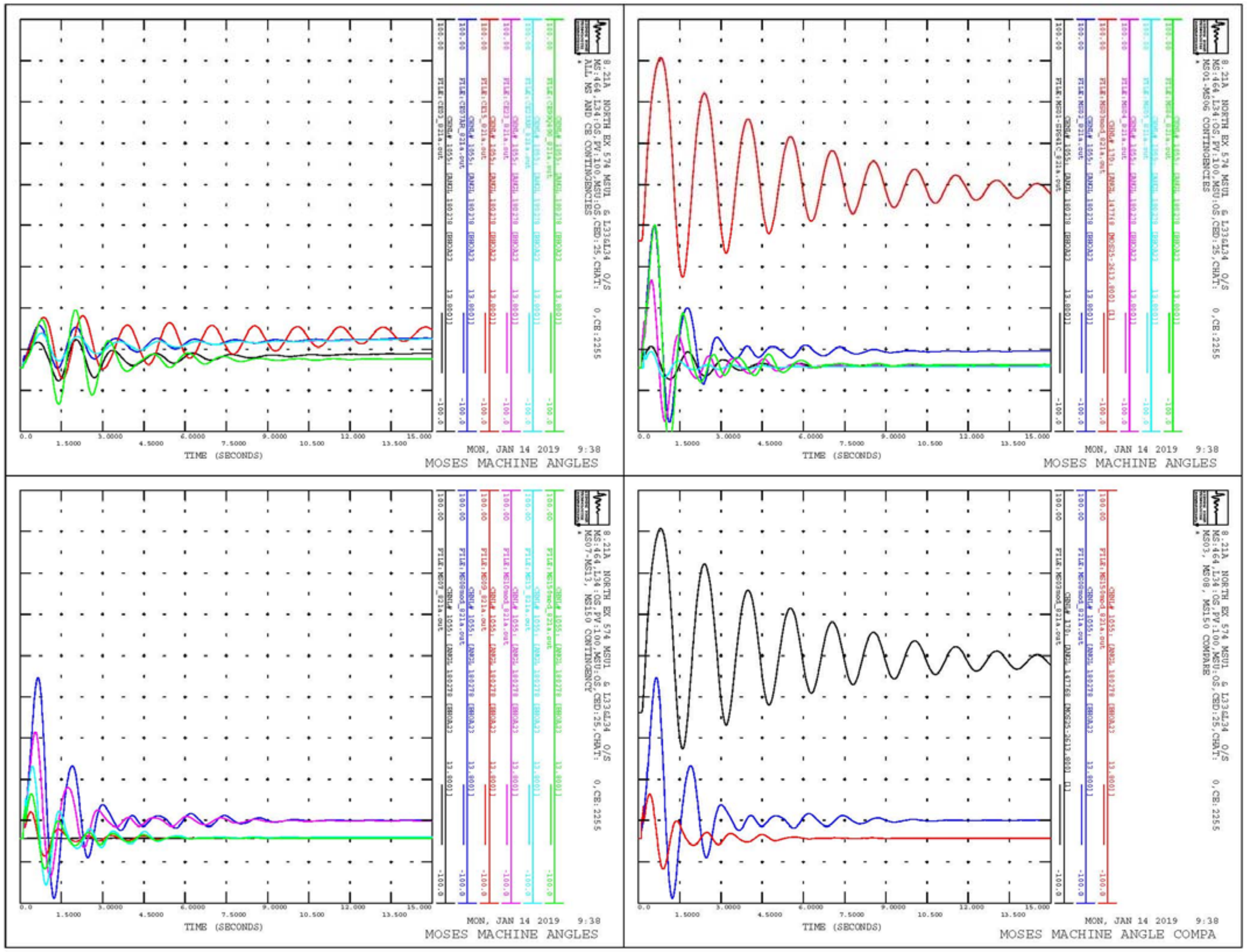

Fig A44: Comparative plots for Moses machine angle for all simulated contingencies

A.22 MSU1 & 7040 & L33 & L34 & R8105 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.22A  NORTH EX 375  MSU1 & R8105 & L33&L34 O/S
       MS:268,L34:OS,PV:100,MSU: 0,CED:25,CHAT:   0,CE:2298
                            INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS        1877.4      14.0  DYSE-CLOSE          3193.3     238.1
 WEST-CENTRAL         574.7    -143.4  WESTC-CLOSE         1890.6      80.8
 VOLNEY-EAST         4358.8    -458.8  VOLNEY-CLOSE        5583.3    -265.8
 MOSES-SOUTH          267.7     -29.1  MOSES-CLOSE          374.4     -36.6
 CENTRAL-EAST        2295.6    -404.7  TOTAL-EAST          5322.8    -291.1
 UPNY-SENY           4364.7     123.9  UPNY-SENY-CL        5659.2     278.0
 UPNY-CONED          4475.5     -89.9  UPNY-CON-CL         6599.4     -99.4
 MILLWOOD-SO         7184.7      62.8  LIPA-IMPORT         2006.8    -163.2
 DNWDIE-SO-PL        4456.9    -404.5  DNWDIE-SO-PC        6580.8    -414.0
 DNWDIE-SO-OP        3541.8    -345.0  PJM-NY              1209.9     321.5
 NE-NY-WCSC          -759.0     120.2  ON-NY               1002.3     137.6
 ONT-MICH-PAR          -0.9       7.5  Northern Export      374.4     -44.0

                             STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.1       126261 BOWLINE2    345.00 = 358.9      126263 BUCHANAN S  345.00 = 355.5
 136150 CLAY        345.00 = 357.9       130750 COOPC345    345.00 = 358.6      126266 DUNWOODIE   345.00 = 352.9
 137200 EDIC        345.00 = 358.7       126277 FARRAGUT    345.00 = 350.0      130753 FRASR345    345.00 = 360.6
 135413 GRDNVL2     230.00 = 231.4       147831 GILB 345    345.00 = 361.0      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16     345.00 = 347.1       126290 LADENTWN    345.00 = 357.9      137451 LEEDS 3     345.00 = 361.0
 147833 MARCY T1    345.00 = 359.3       126291 MILLWOOD    345.00 = 353.3      137452 N.SCOT77    345.00 = 359.3
 137453 N.SCOT99    345.00 = 359.3       147841 NIAGAR2E    230.00 = 231.8      147842 NIAGAR2W    230.00 = 231.8
 147834 NIAG 345    345.00 = 357.7       129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 354.3
 149001 PANNELL3    345.00 = 346.8       126294 PLTVLLEY    345.00 = 354.4      126295 RAINEY      345.00 = 350.3
 126600 REAC71      345.00 = 352.4       126601 REAC72      345.00 = 352.5      126297 RAMAPO      345.00 = 357.3
 126250 RAMAPO 5    500.00 = 520.4       125001 ROCK TAV    345.00 = 356.0      125002 ROSETON     345.00 = 356.3
 130754 SOMERSET345 345.00 = 358.7       126298 SPRAINBROOK 345.00 = 353.0      149000 ROCH 345    345.00 = 345.1
 147840 MOSES W     230.00 = 239.6       130768 WATRC230    230.00 = 234.7      180819 CHA-NY      765.00 = 785.6
 147827 MARCY765    765.00 = 770.9       147828 MASS 765    765.00 = 770.4      126281 E FISHKILL  345.00 = 355.7
 125000 HURLEY 3    345.00 = 358.8       128835 SHORE RD    345.00 = 353.6      136156 VOLNEY      345.00 = 365.7*
 130757 WATRC345    345.00 = 359.7       135250 DUNKIRK     230.00 = 230.2      130764 MEYER230    230.00 = 227.0
 130765 OAKDL230    230.00 = 235.3       137730 ROTRDM.2    230.00 = 236.7      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1      120.00 = 131.5*      137716 ALB1        115.00 = 118.2      130774 BATH 115    115.00 = 115.5
 137488 BETHLEHE    115.00 = 118.5       130776 BORDR115    115.00 = 114.4      136181 CLAY        115.00 = 119.7
 130794 DELHI115    115.00 = 116.1       130796 E.NOR115    115.00 = 114.6      135277 FALCONER    115.00 = 116.3
 130807 WESTOVER115 115.00 = 118.2       130826 MEYER115    115.00 = 115.8      147849 MOS 115     115.00 = 120.9
 147850 NIAG115E    115.00 = 117.0       147851 NIAG115W    115.00 = 117.7      130836 N.WAV115    115.00 = 113.6
 130838 OAKDL115    115.00 = 118.2       147852 PLAT T#3    115.00 = 117.4      125043 PL.VAL 1    115.00 = 117.5
```

137235 PORTER 1	115.00 = 118.4	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.3
125048 SHENANDO	115.00 = 117.8	149011 S82-1115	115.00 = 117.7	149008 RUS 115	115.00 = 114.8

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0312		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0275		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0346		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0212		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0256		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0276		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0308		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9989		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	-1.5	3.1	-1.5	1.0400	1.0418		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-3.7	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	-0.2	1.0	-0.2	1.0300	1.0408		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0148		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.1	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	113.2	12.9	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	12.9	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	12.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	26.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	12.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	26.6	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	16.4	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	34.0	12.7	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	1.9	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	14.5	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1116.6	159.2	601.4	-402.9				1489.4			

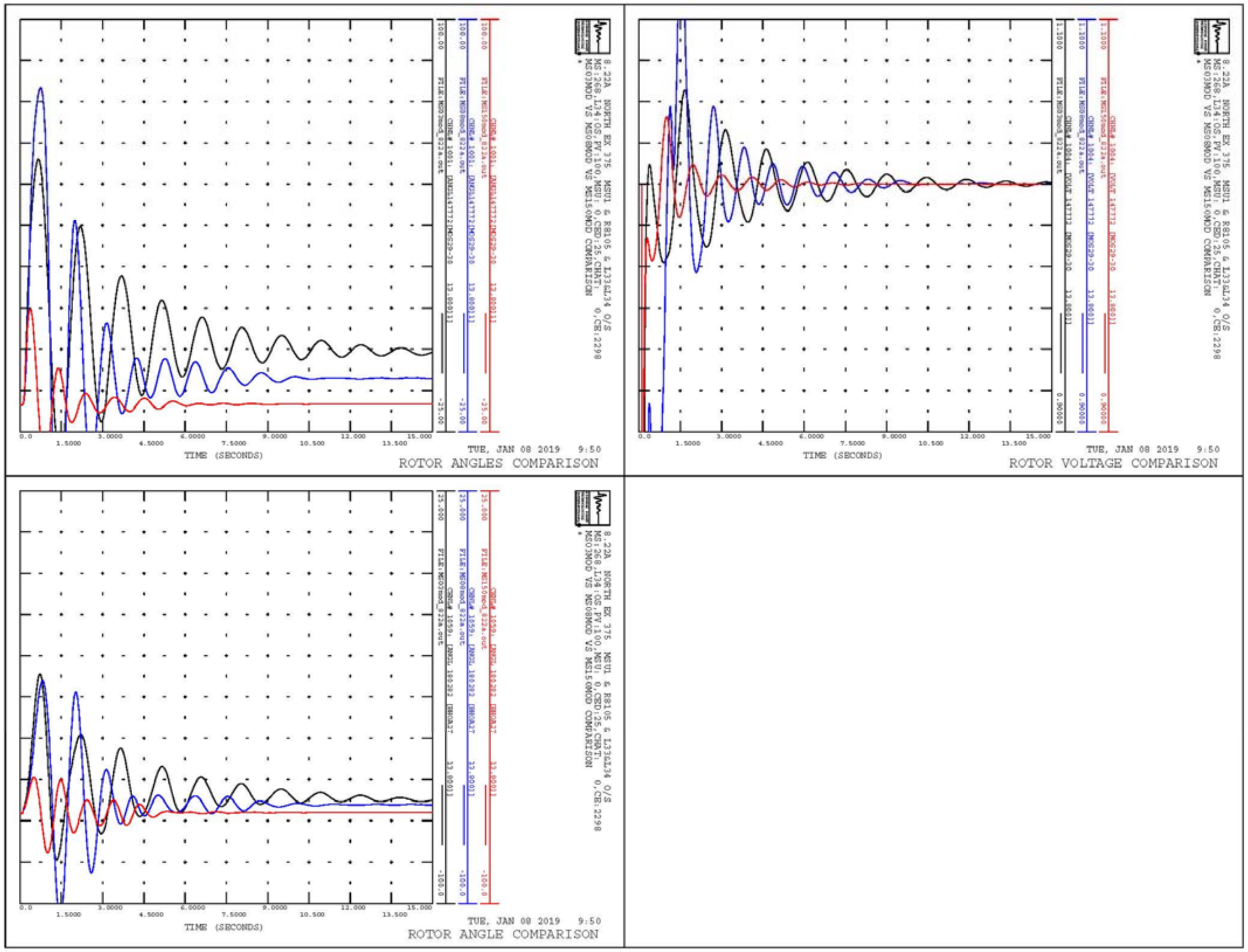

Fig A43 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

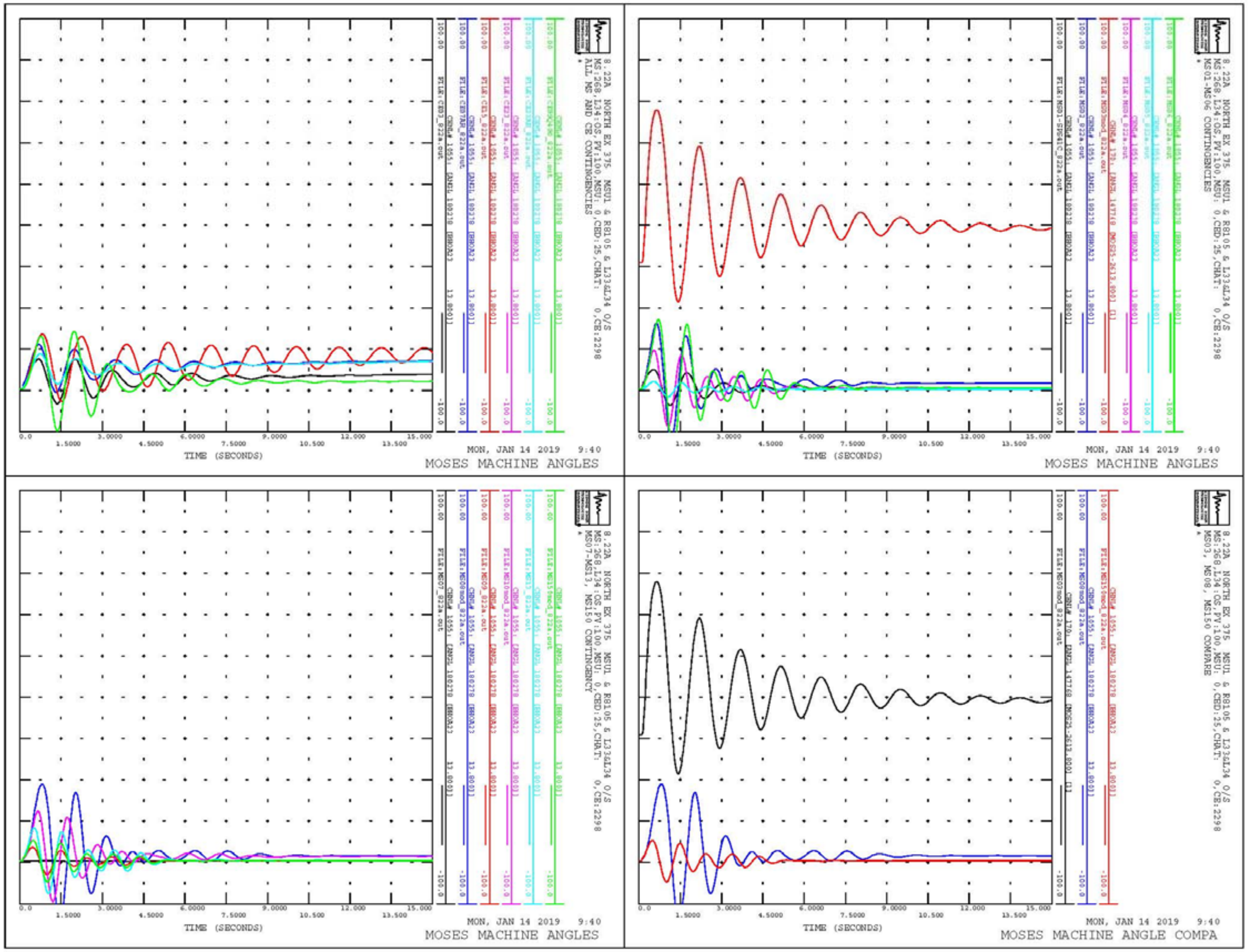

Fig A44: Comparative plots for Moses machine angle for all simulated contingencies

A.23 MSU1 & 7040 & L33 & L34 & PV20 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.23A  NORTH EX 275  MSU1 & PV20 & L33&L34 O/S
       MS:275,L34:OS,PV:OS,MSU: 0,CED:25,CHAT:   0,CE:2259
                            INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr    DESCRIPTION          MW       MVAr
 DYSINGER-EAS         1993.7     22.5  DYSE-CLOSE          3343.9     261.4
 WEST-CENTRAL          688.6   -167.5  WESTC-CLOSE         2038.9      71.4
 VOLNEY-EAST          4495.2   -453.6  VOLNEY-CLOSE        5733.0    -256.5
 MOSES-SOUTH           274.7    -30.1  MOSES-CLOSE          274.7     -30.1
 CENTRAL-EAST         2248.9   -443.4  TOTAL-EAST          5345.4    -367.0
 UPNY-SENY            4360.1     98.1  UPNY-SENY-CL        5661.4     254.2
 UPNY-CONED           4473.3   -101.5  UPNY-CON-CL         6600.9    -112.6
 MILLWOOD-SO          7189.4     58.4  LIPA-IMPORT         2007.4    -165.1
 DNWDIE-SO-PL         4455.7   -409.9  DNWDIE-SO-PC        6583.3    -421.0
 DNWDIE-SO-OP         3539.0   -348.2  PJM-NY              1225.3     345.4
 NE-NY-WCSC           -759.7    119.8  ON-NY               1038.9     151.5
 ONT-MICH-PAR           11.3      7.2  Northern Export      274.7     -37.6

                             STATION VOLTAGES
 126260 BOWLINE1     345.00 = 358.9      126261 BOWLINE2     345.00 = 358.8      126263 BUCHANAN S  345.00 = 355.3
 136150 CLAY         345.00 = 356.7      130750 COOPC345     345.00 = 357.3      126266 DUNWOODIE   345.00 = 352.7
 137200 EDIC         345.00 = 356.9      126277 FARRAGUT     345.00 = 349.8      130753 FRASR345    345.00 = 359.0
 135413 GRDNVL2      230.00 = 230.7      147831 GILB 345     345.00 = 360.3      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16      345.00 = 347.0      126290 LADENTWN     345.00 = 357.7      137451 LEEDS 3     345.00 = 360.5
 147833 MARCY T1     345.00 = 357.5      126291 MILLWOOD     345.00 = 353.1      137452 N.SCOT77    345.00 = 358.3
 137453 N.SCOT99     345.00 = 358.3      147841 NIAGAR2E     230.00 = 231.5      147842 NIAGAR2W    230.00 = 231.5
 147834 NIAG 345     345.00 = 357.2      129341 NRTHPRT1     138.00 = 142.3      130755 OAKDL345    345.00 = 352.7
 149001 PANNELL3     345.00 = 345.2      126294 PLTVLLEY     345.00 = 354.0      126295 RAINEY      345.00 = 350.2
 126600 REAC71       345.00 = 352.3      126601 REAC72       345.00 = 352.3      126297 RAMAPO      345.00 = 357.1
 126250 RAMAPO 5     500.00 = 520.2      125001 ROCK TAV     345.00 = 355.4      125002 ROSETON     345.00 = 356.0
 130754 SOMERSET345  345.00 = 358.4      126298 SPRAINBROOK  345.00 = 352.8      149000 ROCH 345    345.00 = 343.5
 147840 MOSES W      230.00 = 239.5      130768 WATRC230     230.00 = 233.8      180819 CHA-NY      765.00 = 785.6
 147827 MARCY765     765.00 = 766.9      147828 MASS 765     765.00 = 770.1      126281 E FISHKILL  345.00 = 355.4
 125000 HURLEY 3     345.00 = 358.4      128835 SHORE RD     345.00 = 353.4      136156 VOLNEY      345.00 = 365.0*
 130757 WATRC345     345.00 = 358.4      135250 DUNKIRK      230.00 = 229.5      130764 MEYER230    230.00 = 225.6
 130765 OAKDL230     230.00 = 234.1      137730 ROTRDM.2     230.00 = 235.9      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1       120.00 = 131.5*     137716 ALB1         115.00 = 118.0      130774 BATH 115    115.00 = 115.0
 137488 BETHLEHE     115.00 = 118.4      130776 BORDR115     115.00 = 114.0      136181 CLAY        115.00 = 119.3
 130794 DELHI115     115.00 = 115.5      130796 E.NOR115     115.00 = 114.1      135277 FALCONER    115.00 = 116.1
 130807 WESTOVER115  115.00 = 117.7      130826 MEYER115     115.00 = 115.3      147849 MOS 115     115.00 = 120.7
 147850 NIAG115E     115.00 = 116.8      147851 NIAG115W     115.00 = 117.6      130836 N.WAV115    115.00 = 113.3
 130838 OAKDL115     115.00 = 117.6      147852 PLAT T#3     115.00 = 118.6      125043 PL.VAL 1    115.00 = 117.4
```

137235 PORTER 1	115.00 = 117.9	125046 ROCK TV1	115.00 = 117.8	137532 RTRDM1	115.00 = 115.0
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.2	149008 RUS 115	115.00 = 114.2

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP		MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0338		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0363		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0434		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0302		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0344		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0364		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0335		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9974		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0398		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-3.2	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	-0.2	1.0	-0.2	1.0300	1.0389		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0144		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.1	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	109.9	12.9	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	13.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	12.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	10.0	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	12.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	10.0	38.6	0.0	1.0100	1.0100		120.0	158	4	
147772	MOS29-30	13.800	1	1	2	48.0	14.9	19.3	-15.4	1.0200	1.0200		60.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	-0.2	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	18.8	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1013.3	120.3	543.6	-356.7				1309.4			

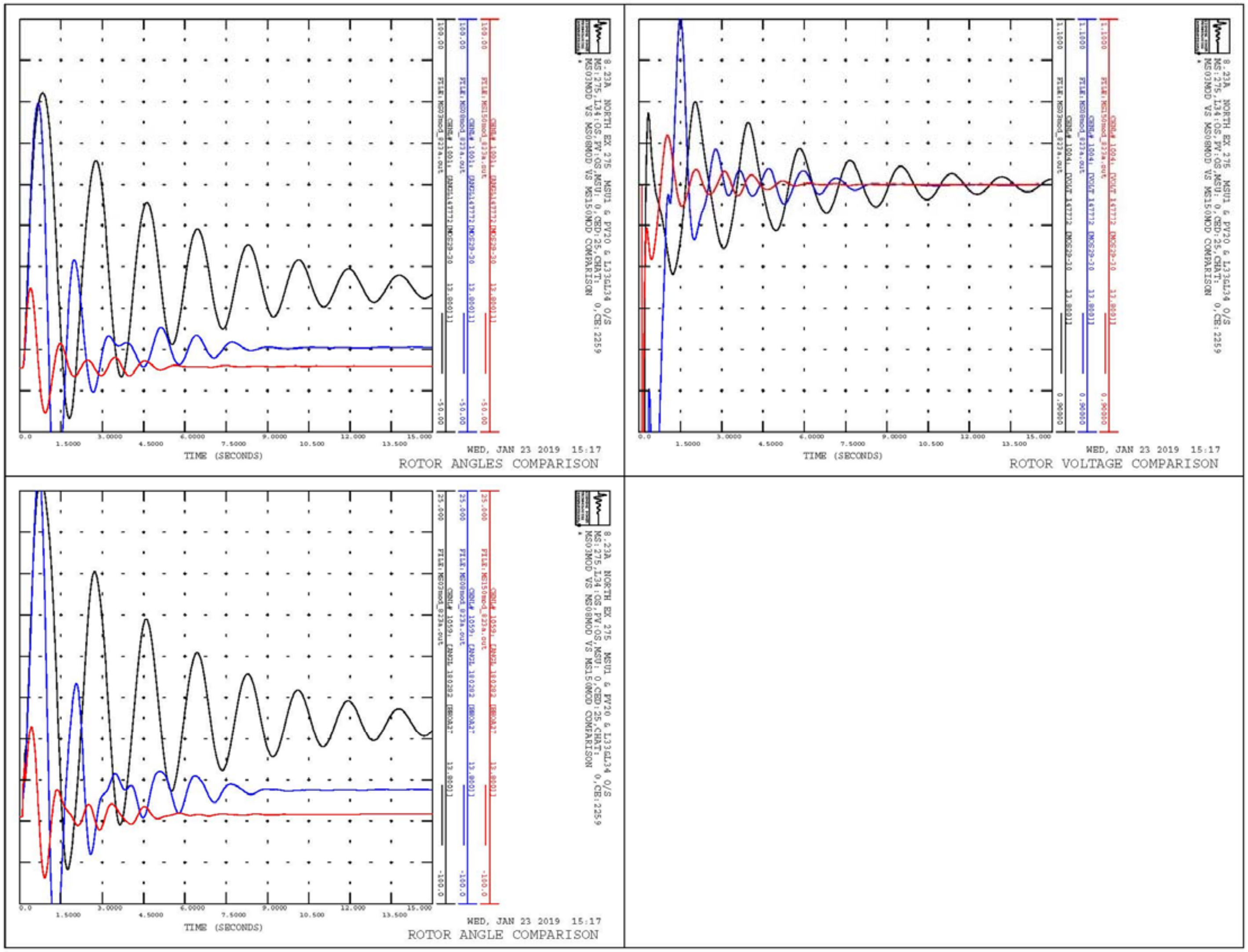

Fig A45 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

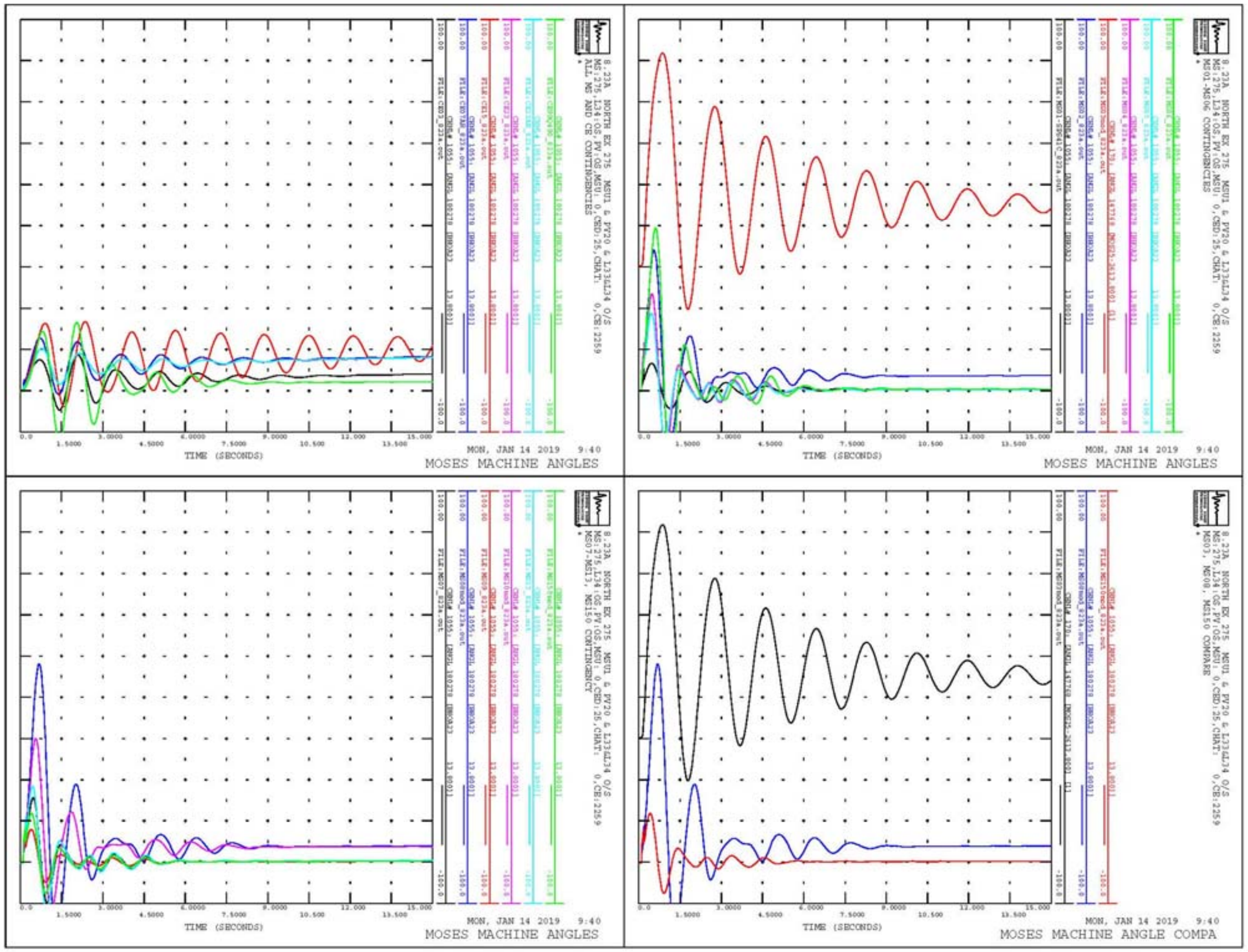

Fig A46: Comparative plots for Moses machine angle for all simulated contingencies

A.24 MSU1 & 7040 & MAP1 & MAP2 O/S

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.24A  NORTH EX 505 MSU1  & MAP1&MAP2  O/S
       MS:282,L34:OS,PV:100,MSU:OS,CED:25,CHAT: 0,CE:2323
                            INTERFACE FLOW REPORT
   DESCRIPTION           MW      MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS         1931.7     26.5   DYSE-CLOSE          3266.1     247.7
 WEST-CENTRAL          627.9   -138.0   WESTC-CLOSE         1962.3      83.2
 VOLNEY-EAST          4445.1   -344.9   VOLNEY-CLOSE        5675.2    -167.9
 MOSES-SOUTH           282.0    -13.2   MOSES-CLOSE          504.7      17.6
 CENTRAL-EAST         2323.0   -410.3   TOTAL-EAST          5323.9    -328.1
 UPNY-SENY            4363.8    104.8   UPNY-SENY-CL        5659.7     258.8
 UPNY-CONED           4476.2    -88.8   UPNY-CON-CL         6600.6     -99.1
 MILLWOOD-SO          7184.8     62.3   LIPA-IMPORT         2007.0    -163.3
 DNWDIE-SO-PL         4457.6   -404.5   DNWDIE-SO-PC        6582.0    -414.9
 DNWDIE-SO-OP         3542.1   -344.8   PJM-NY              1215.8     338.8
 NE-NY-WCSC           -759.0     98.3   ON-NY               1070.4     128.7
 ONT-MICH-PAR            0.1      6.4   Northern Export      504.7      10.4


                             STATION VOLTAGES

 126260 BOWLINE1    345.00 = 359.0      126261 BOWLINE2    345.00 = 358.9      126263 BUCHANAN S  345.00 = 355.5
 136150 CLAY        345.00 = 355.9      130750 COOPC345    345.00 = 357.9      126266 DUNWOODIE   345.00 = 352.9
 137200 EDIC        345.00 = 355.9      126277 FARRAGUT    345.00 = 349.9      130753 FRASR345    345.00 = 359.2
 135413 GRDNVL2     230.00 = 230.8      147831 GILB 345    345.00 = 360.7      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 357.9      137451 LEEDS 3     345.00 = 361.0
 147833 MARCY T1    345.00 = 356.6      126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 359.1
 137453 N.SCOT99    345.00 = 359.1      147841 NIAGAR2E    230.00 = 231.5      147842 NIAGAR2W    230.00 = 231.5
 147834 NIAG 345    345.00 = 357.3      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 352.3
 149001 PANNELL3    345.00 = 345.2      126294 PLTVLLEY    345.00 = 354.4      126295 RAINEY      345.00 = 350.3
 126600 REAC71      345.00 = 352.4      126601 REAC72      345.00 = 352.4      126297 RAMAPO      345.00 = 357.3
 126250 RAMAPO 5    500.00 = 520.3      125001 ROCK TAV    345.00 = 355.8      125002 ROSETON     345.00 = 356.3
 130754 SOMERSET345 345.00 = 358.4      126298 SPRAINBROOK 345.00 = 353.0      149000 ROCH 345    345.00 = 343.7
 147840 MOSES W     230.00 = 237.0      130768 WATRC230    230.00 = 233.8      180819 CHA-NY      765.00 = 785.6
 147827 MARCY765    765.00 = 765.0      147828 MASS 765    765.00 = 761.9      126281 E FISHKILL  345.00 = 355.7
 125000 HURLEY 3    345.00 = 358.8      128835 SHORE RD    345.00 = 353.6      136156 VOLNEY      345.00 = 364.4*
 130757 WATRC345    345.00 = 358.2      135250 DUNKIRK     230.00 = 229.6      130764 MEYER230    230.00 = 225.9
 130765 OAKDL230    230.00 = 234.0      137730 ROTRDM.2    230.00 = 236.7      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1      120.00 = 131.5*     137716 ALB1        115.00 = 118.0      130774 BATH 115    115.00 = 115.0
 137488 BETHLEHE    115.00 = 118.4      130776 BORDR115    115.00 = 113.8      136181 CLAY        115.00 = 118.3
 130794 DELHI115    115.00 = 115.4      130796 E.NOR115    115.00 = 112.9      135277 FALCONER    115.00 = 116.1
```

130807	WESTOVER115	115.00 = 117.5	130826	MEYER115	115.00 = 115.4	147849	MOS 115	115.00 = 119.8
147850	NIAG115E	115.00 = 116.9	147851	NIAG115W	115.00 = 117.6	130836	N.WAV115	115.00 = 113.3
130838	OAKDL115	115.00 = 117.5	147852	PLAT T#3	115.00 = 117.0	125043	PL.VAL 1	115.00 = 117.5
137235	PORTER 1	115.00 = 116.3	125046	ROCK TV1	115.00 = 117.9	137532	RTRDM1	115.00 = 115.1
125048	SHENANDO	115.00 = 117.8	149011	S82-1115	115.00 = 117.2	149008	RUS 115	115.00 = 114.3

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV		ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0284		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0249		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0320		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0186		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0230		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0250		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0281		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9996		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0040		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-0.5	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0300	1.0051		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0055		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.5	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	106.4	22.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	23.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	22.8	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	35.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	22.8	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	35.3	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	25.6	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	25.6	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	70.0	10.7	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	-2	2.1	4.8	4.8	-5.0	1.0500	1.0435		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	25.5	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1259.8	273.7	623.6	-424.5				1579.6			

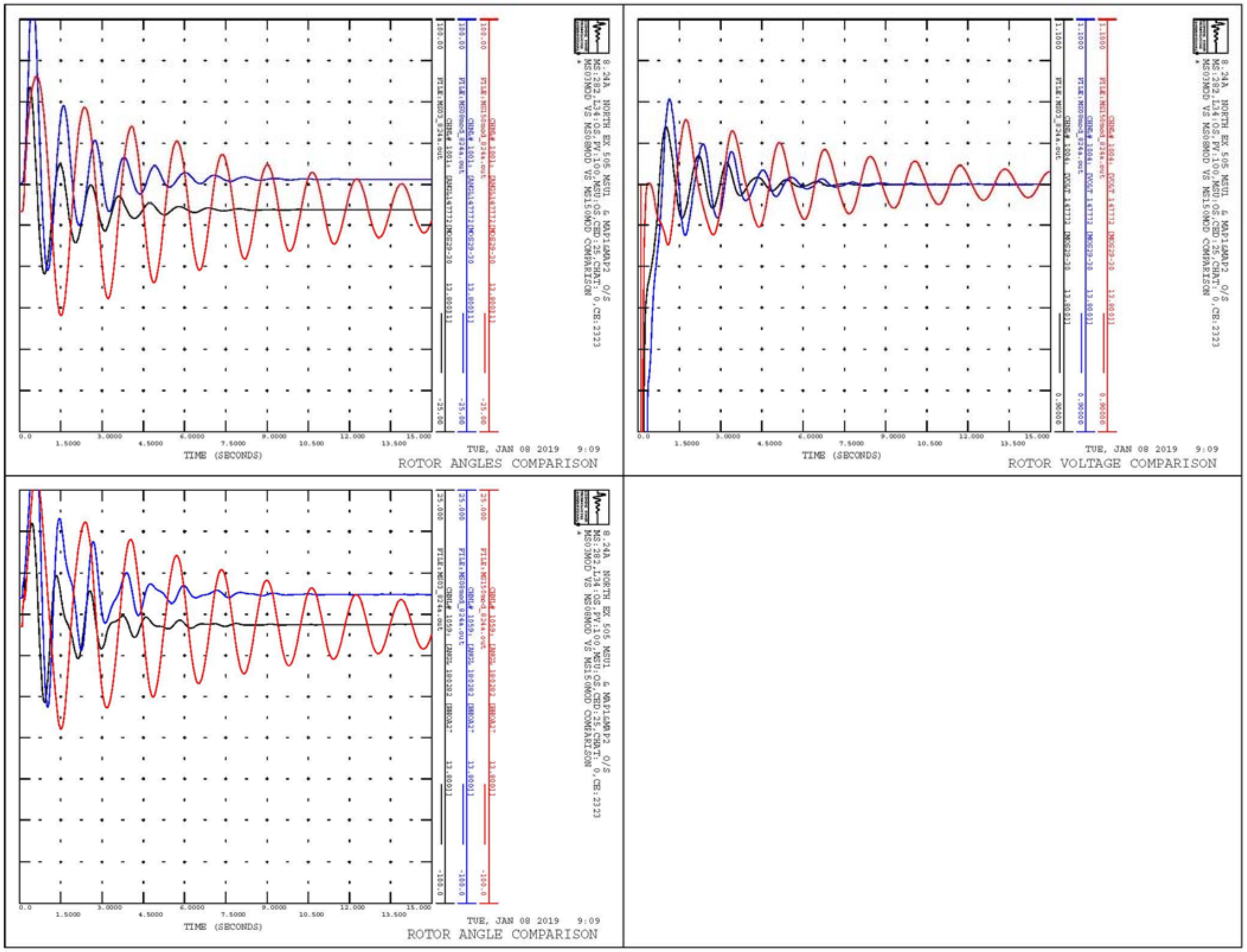

Fig A47 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

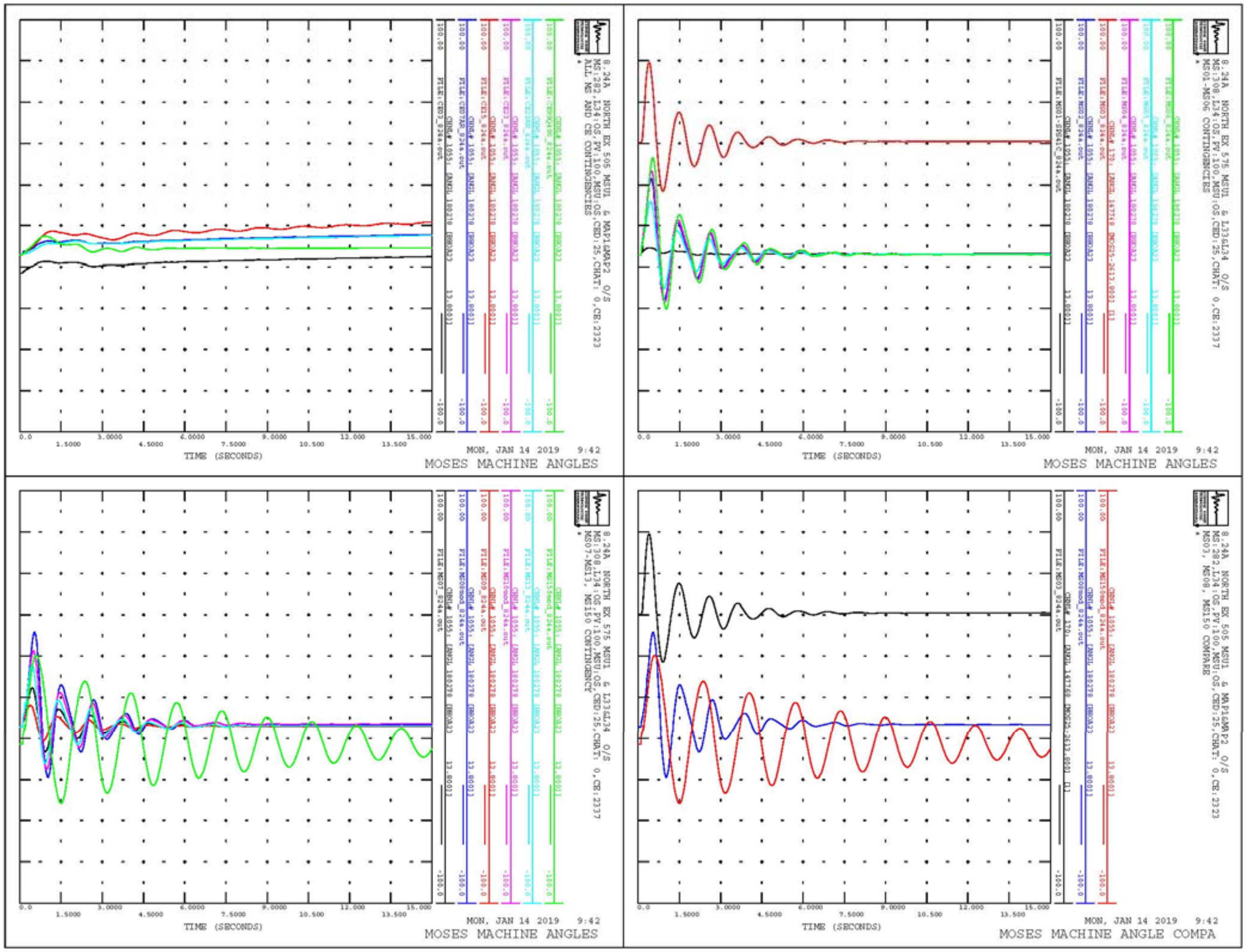

Fig A48: Comparative plots for Moses machine angle for all simulated contingencies

A.25 MSU1 & 7040 & MAP1 & MAP2 & R8105 O/S

Test Level Interface Power Flow Summary and Key Voltages

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  CASE :8.25A   NORTH EX 300 MSU1  & R8105& MAP1 &MAP2 O/S
       MS:135, L34:0, PV:165, MSU:OS,CED:25,CHAT: 0,CE:2282
                           INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr    DESCRIPTION          MW       MVAr
 DYSINGER-EAS         2016.0     24.0  DYSE-CLOSE          3364.1     230.8
 WEST-CENTRAL          711.9   -173.5  WESTC-CLOSE         2060.0      33.3
 VOLNEY-EAST          4531.1   -455.7  VOLNEY-CLOSE        5754.0    -288.1
 MOSES-SOUTH           135.1    -37.1  MOSES-CLOSE          299.6     -11.9
 CENTRAL-EAST         2280.7   -402.6  TOTAL-EAST          5288.0    -311.4
 UPNY-SENY            4365.7    115.4  UPNY-SENY-CL        5659.3     267.5
 UPNY-CONED           4479.2    -88.2  UPNY-CON-CL         6600.3    -100.6
 MILLWOOD-SO          7184.4     61.2  LIPA-IMPORT         2006.9    -163.7
 DNWDIE-SO-PL         4460.7   -405.2  DNWDIE-SO-PC        6581.8    -417.6
 DNWDIE-SO-OP         3545.4   -345.1  PJM-NY              1223.8     337.1
 NE-NY-WCSC           -758.7    108.1  ON-NY               1090.0     124.3
 ONT-MICH-PAR            9.9      6.3  Northern Export      299.6     -19.2

                            STATION VOLTAGES
 126260 BOWLINE1     345.00 = 359.0      126261 BOWLINE2     345.00 = 358.9      126263 BUCHANAN S   345.00 = 355.4
 136150 CLAY         345.00 = 356.5      130750 COOPC345     345.00 = 358.1      126266 DUNWOODIE    345.00 = 352.9
 137200 EDIC         345.00 = 357.1      126277 FARRAGUT     345.00 = 349.9      130753 FRASR345     345.00 = 359.7
 135413 GRDNVL2      230.00 = 230.8      147831 GILB 345     345.00 = 360.8      126283 GOTHLS       345.00 = 347.9
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 357.9      137451 LEEDS 3      345.00 = 361.0
 147833 MARCY T1     345.00 = 357.7      126291 MILLWOOD     345.00 = 353.2      137452 N.SCOT77     345.00 = 359.4
 137453 N.SCOT99     345.00 = 359.4      147841 NIAGAR2E     230.00 = 231.4      147842 NIAGAR2W     230.00 = 231.4
 147834 NIAG 345     345.00 = 357.1      129341 NRTHPRT1     138.00 = 142.4      130755 OAKDL345     345.00 = 352.9
 149001 PANNELL3     345.00 = 344.9      126294 PLTVLLEY     345.00 = 354.3      126295 RAINEY       345.00 = 350.2
 126600 REAC71       345.00 = 352.3      126601 REAC72       345.00 = 352.4      126297 RAMAPO       345.00 = 357.3
 126250 RAMAPO 5     500.00 = 520.4      125001 ROCK TAV     345.00 = 355.8      125002 ROSETON      345.00 = 356.3
 130754 SOMERSET345  345.00 = 358.3      126298 SPRAINBROOK  345.00 = 353.0      149000 ROCH 345     345.00 = 343.2
 147840 MOSES W      230.00 = 237.9      130768 WATRC230     230.00 = 233.8      180819 CHA-NY       765.00 = 785.5
 147827 MARCY765     765.00 = 767.4      147828 MASS 765     765.00 = 765.0      126281 E FISHKILL   345.00 = 355.7
 125000 HURLEY 3     345.00 = 358.8      128835 SHORE RD     345.00 = 353.5      136156 VOLNEY       345.00 = 364.8*
 130757 WATRC345     345.00 = 358.4      135250 DUNKIRK      230.00 = 229.5      130764 MEYER230     230.00 = 225.6
 130765 OAKDL230     230.00 = 234.2      137730 ROTRDM.2     230.00 = 237.1      181219 CHANY2       120.00 = 131.5*
 181119 CHANY1       120.00 = 131.5*     137716 ALB1         115.00 = 118.0      130774 BATH 115     115.00 = 115.0
 137488 BETHLEHE     115.00 = 118.4      130776 BORDR115     115.00 = 113.9      136181 CLAY         115.00 = 119.1
 130794 DELHI115     115.00 = 115.7      130796 E.NOR115     115.00 = 113.8      135277 FALCONER     115.00 = 116.2
 130807 WESTOVER115  115.00 = 117.7      130826 MEYER115     115.00 = 115.3      147849 MOS 115      115.00 = 120.3
 147850 NIAG115E     115.00 = 116.8      147851 NIAG115W     115.00 = 117.6      130836 N.WAV115     115.00 = 113.3
 130838 OAKDL115     115.00 = 117.7      147852 PLAT T#3     115.00 = 118.1      125043 PL.VAL 1     115.00 = 117.5
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137235 PORTER 1 115.00 = 117.6 125046 ROCK TV1 115.00 = 117.9 137532 RTRDM1 115.00 = 115.2
125048 SHENANDO 115.00 = 117.8 149011 S82-1115 115.00 = 117.1 149008 RUS 115 115.00 = 114.1

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0315				3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0341				5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0412				16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0279				10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0322				13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0342				6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0311				3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9998				4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0289				5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-4.8	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0300	1.0286				5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0195				3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0136				2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.1	3.2	-1.7	0.9700	0.9700				3.6	175	4	
147763	MOS17-18	13.800	2	0	2	81.7	16.8	38.6	-30.8	1.0300	1.0300				120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	19.0	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	18.8	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	31.7	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	18.8	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	31.9	38.6	0.0	1.0300	1.0300				120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	21.3	38.6	-30.8	1.0200	1.0200				120.0	158	4	
147774	MOS31-32	13.800	2	0	2	14.0	17.6	38.6	-30.8	1.0200	1.0200				120.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	3.6	4.8	-5.0	1.0500	1.0500				23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	18.9	50.0	-25.0	1.0500	1.0500				90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS						1063.6	214.2	599.4	-401.9						1482.4			

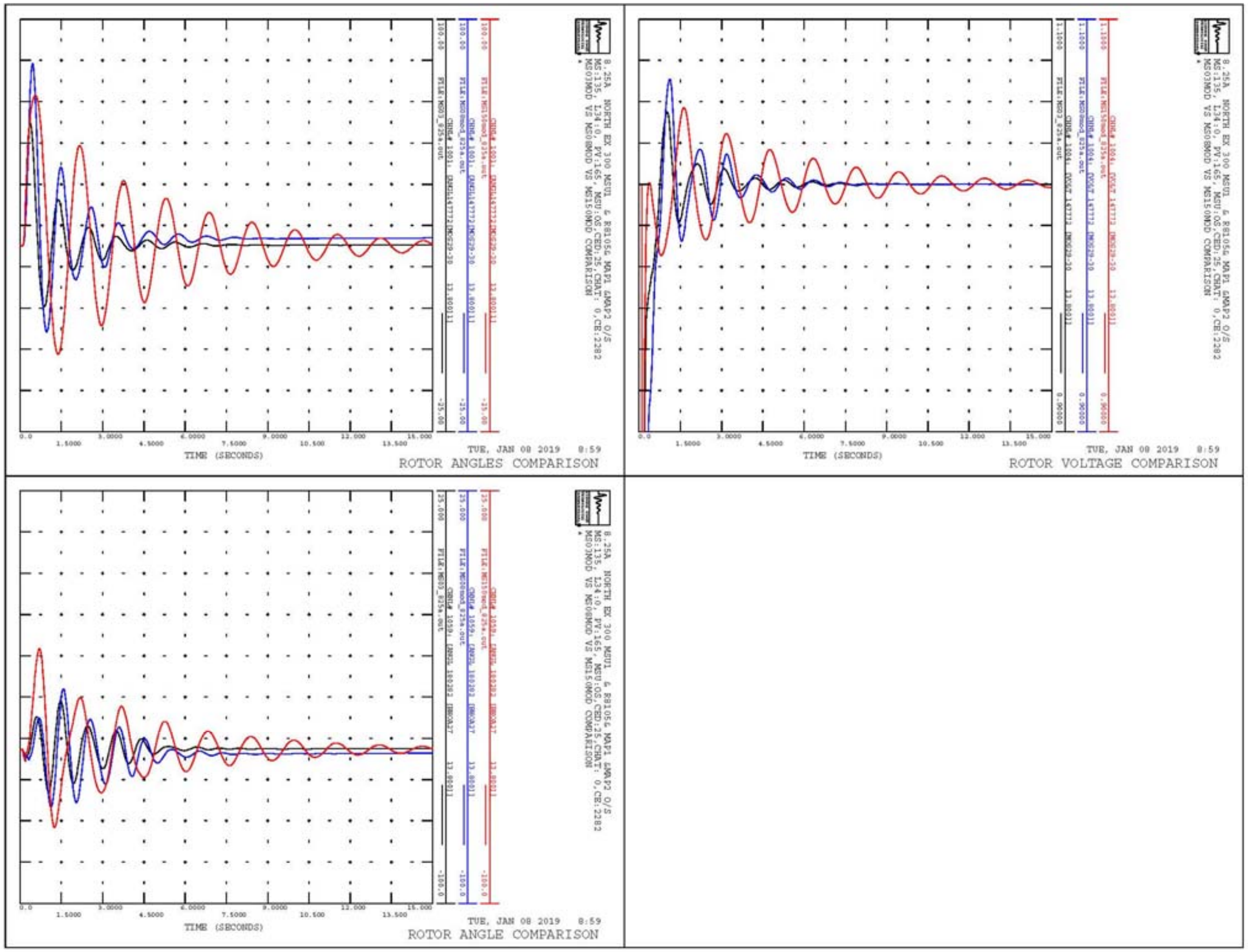

Fig A49 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

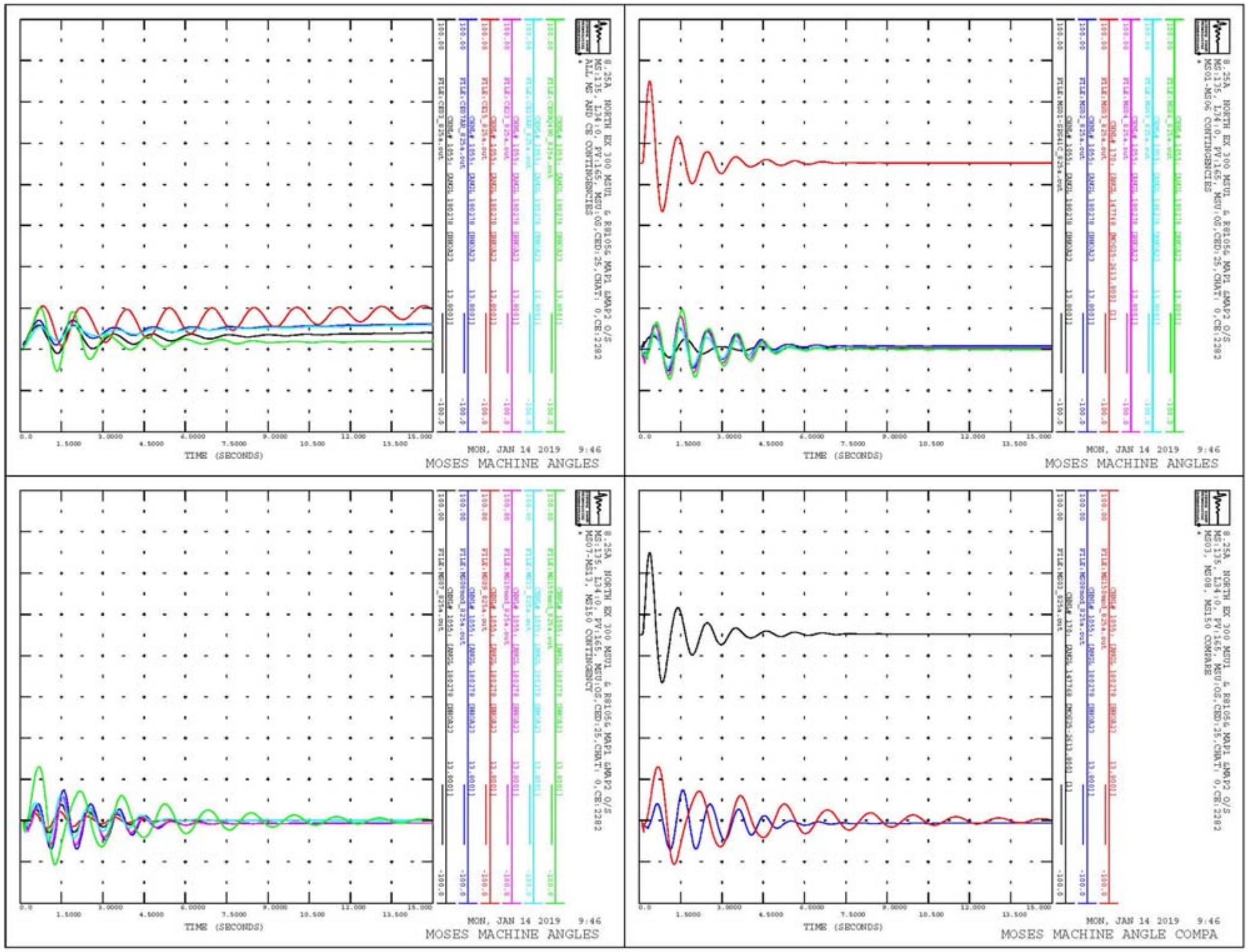

Fig A50: Comparative plots for Moses machine angle for all simulated contingencies

A.26 MSU1 & 7040 & MAP1 & MAP2 & PV20 O/S

Test Level Interface Power Flow Summary and Key Voltages

CASE :8.26A NORTH EX 200 MSU1 & PV20& MAP1 &MAP2 O/S

MS:200, L34:0, PV:OS, MSU:OS,CED:25,CHAT: 0,CE:2250

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	2242.8	86.1	DYSE-CLOSE	3660.5	357.5
WEST-CENTRAL	939.7	-233.4	WESTC-CLOSE	2357.4	38.0
VOLNEY-EAST	4823.5	-397.8	VOLNEY-CLOSE	6052.4	-199.6
MOSES-SOUTH	205.3	-32.8	MOSES-CLOSE	199.7	-26.4
CENTRAL-EAST	2239.1	-523.9	TOTAL-EAST	5385.3	-540.5
UPNY-SENY	4364.1	45.3	UPNY-SENY-CL	5657.7	202.3
UPNY-CONED	4475.2	-111.3	UPNY-CON-CL	6598.3	-129.2
MILLWOOD-SO	7186.0	53.9	LIPA-IMPORT	2006.7	-162.7
DNWDIE-SO-PL	4458.0	-415.5	DNWDIE-SO-PC	6581.1	-433.3
DNWDIE-SO-OP	3542.9	-356.4	PJM-NY	1265.0	401.0
NE-NY-WCSC	-758.5	132.5	ON-NY	1345.0	175.1
ONT-MICH-PAR	56.0	0.6	Northern Export	199.7	-33.8

STATION VOLTAGES

126260 BOWLINE1	345.00 = 358.5	126261 BOWLINE2	345.00 = 358.4	126263 BUCHANAN S	345.00 = 354.9
136150 CLAY	345.00 = 352.7	130750 COOPC345	345.00 = 354.5	126266 DUNWOODIE	345.00 = 352.3
137200 EDIC	345.00 = 351.5	126277 FARRAGUT	345.00 = 349.6	130753 FRASR345	345.00 = 354.9
135413 GRDNVL2	230.00 = 228.7	147831 GILB 345	345.00 = 358.8	126283 GOTHLS	345.00 = 347.9
126286 GOW R16	345.00 = 347.0	126290 LADENTWN	345.00 = 357.4	137451 LEEDS 3	345.00 = 359.7
147833 MARCY T1	345.00 = 352.1	126291 MILLWOOD	345.00 = 352.6	137452 N.SCOT77	345.00 = 356.9
137453 N.SCOT99	345.00 = 356.8	147841 NIAGAR2E	230.00 = 230.2	147842 NIAGAR2W	230.00 = 230.2
147834 NIAG 345	345.00 = 357.0	129341 NRTHPRT1	138.00 = 142.4	130755 OAKDL345	345.00 = 347.0
149001 PANNELL3	345.00 = 339.5*	126294 PLTVLLEY	345.00 = 353.5	126295 RAINEY	345.00 = 350.0
126600 REAC71	345.00 = 352.0	126601 REAC72	345.00 = 352.1	126297 RAMAPO	345.00 = 356.6
126250 RAMAPO 5	500.00 = 519.9	125001 ROCK TAV	345.00 = 354.4	125002 ROSETON	345.00 = 355.4
130754 SOMERSET345	345.00 = 357.3	126298 SPRAINBROOK	345.00 = 352.4	149000 ROCH 345	345.00 = 337.6*
147840 MOSES W	230.00 = 238.7	130768 WATRC230	230.00 = 230.4	180819 CHA-NY	765.00 = 785.5
147827 MARCY765	765.00 = 755.4	147828 MASS 765	765.00 = 767.5	126281 E FISHKILL	345.00 = 354.8
125000 HURLEY 3	345.00 = 357.8	128835 SHORE RD	345.00 = 353.0	136156 VOLNEY	345.00 = 362.7*
130757 WATRC345	345.00 = 352.2	135250 DUNKIRK	230.00 = 227.6	130764 MEYER230	230.00 = 220.7
130765 OAKDL230	230.00 = 230.4	137730 ROTRDM.2	230.00 = 234.8	181219 CHANY2	120.00 = 131.5*
181119 CHANY1	120.00 = 131.5*	137716 ALB1	115.00 = 117.7	130774 BATH 115	115.00 = 114.6
137488 BETHLEHE	115.00 = 118.0	130776 BORDR115	115.00 = 113.3	136181 CLAY	115.00 = 118.1
130794 DELHI115	115.00 = 114.9	130796 E.NOR115	115.00 = 112.7	135277 FALCONER	115.00 = 115.6
130807 WESTOVER115	115.00 = 115.9	130826 MEYER115	115.00 = 114.9	147849 MOS 115	115.00 = 120.7
147850 NIAG115E	115.00 = 116.7	147851 NIAG115W	115.00 = 117.3	130836 N.WAV115	115.00 = 112.8
130838 OAKDL115	115.00 = 115.9	147852 PLAT T#3	115.00 = 117.5	125043 PL.VAL 1	115.00 = 117.2

137235 PORTER 1	115.00 = 115.5	125046 ROCK TV1	115.00 = 117.5	137532 RTRDM1	115.00 = 114.4
125048 SHENANDO	115.00 = 117.6	149011 S82-1115	115.00 = 116.5	149008 RUS 115	115.00 = 113.3

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV		ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	1	1	-2	0.4	0.0	0.0	0.0	1.0000	1.0341		1.0	163	4	
131769	CADYVILE	46.000	2	1	-2	1.4	0.0	1.2	0.0	1.0000	1.0167		2.0	163	4	
131789	MILL C46	46.000	2	1	-2	1.3	2.0	2.0	0.0	1.0187	1.0183		2.2	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0337		3.0	163	4	
131813	CHATGY34	34.500	1	2	-2	0.7	0.0	0.0	0.0	1.0000	1.0039		2.0	163	4	
136777	LK COLBY	115.00	1	0	2	0.0	-1.5	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0125		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	108.6	15.9	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	16.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	15.7	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	28.7	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	15.7	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	28.8	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	14.0	15.2	38.6	-30.8	1.0200	1.0200		120.0	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	21.1	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						944.0	172.0	541.8	-366.9				1276.2			

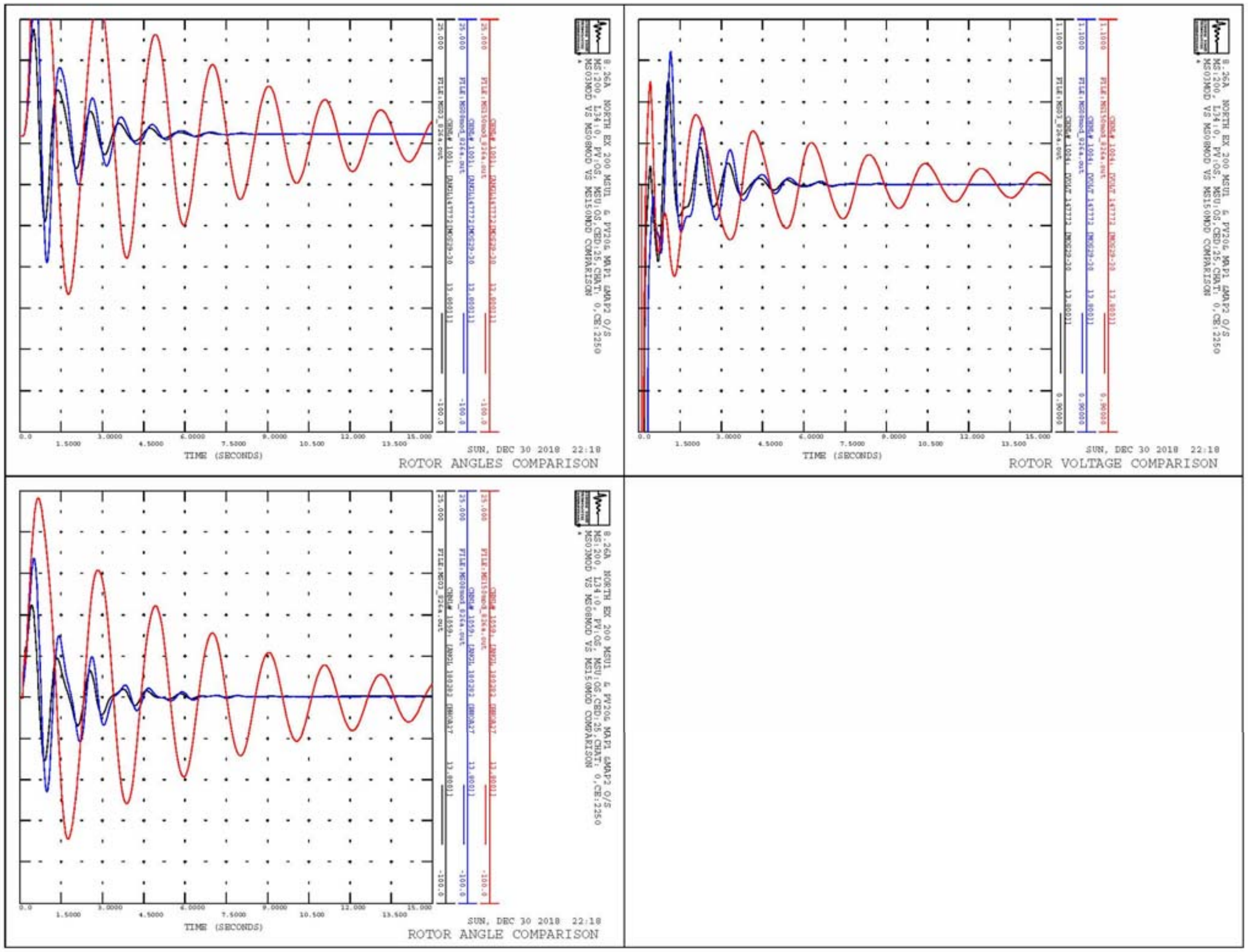

Fig A51 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

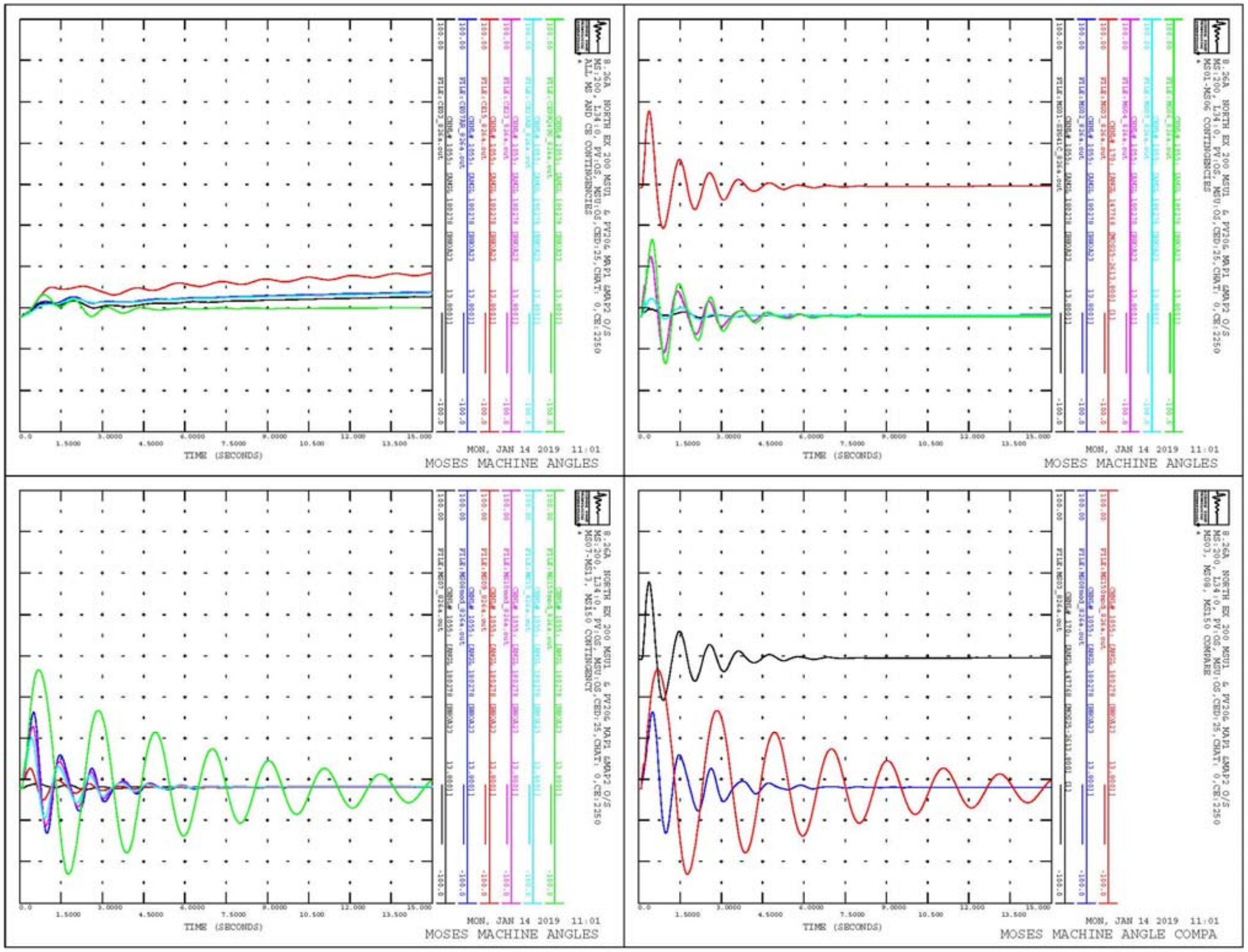

Fig A52: Comparative plots for Moses machine angle for all simulated contingencies

A.27 MSU1 & 7040 & L33 & L34 & MAP1 O/S

Test Level Interface Power Flow Summary and Key Voltages

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CASE :8.27A  NORTH EX 205 MSU1  & L33&L34 & MAP1 O/S
       MS:98, L34:OS, PV:100, MSU:OS,CED:25,CHAT:0,CE:2259
                            INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr      DESCRIPTION         MW       MVAr
 DYSINGER-EAS         2086.9      24.3   DYSE-CLOSE         3463.4     253.9
 WEST-CENTRAL          784.1    -202.0   WESTC-CLOSE        2160.6      27.6
 VOLNEY-EAST          4628.2    -524.2   VOLNEY-CLOSE       5853.3    -333.2
 MOSES-SOUTH            97.6     -34.5   MOSES-CLOSE         204.7     -42.1
 CENTRAL-EAST         2259.5    -408.4   TOTAL-EAST         5302.4    -322.1
 UPNY-SENY            4364.8     114.6   UPNY-SENY-CL       5659.1     264.9
 UPNY-CONED           4475.7     -91.5   UPNY-CON-CL        6599.9    -106.3
 MILLWOOD-SO          7185.5      58.2   LIPA-IMPORT        2006.9    -164.1
 DNWDIE-SO-PL         4457.3    -404.9   DNWDIE-SO-PC       6581.6    -419.8
 DNWDIE-SO-OP         3542.2    -344.3   PJM-NY             1254.6     338.3
 NE-NY-WCSC           -758.6     117.8   ON-NY              1208.6     136.4
 ONT-MICH-PAR           42.2     -10.0   Northern Export     204.7     -49.5

                             STATION VOLTAGES
 126260 BOWLINE1     345.00 = 359.0       126261 BOWLINE2    345.00 = 358.9      126263 BUCHANAN S  345.00 = 355.4
 136150 CLAY         345.00 = 356.6       130750 COOPC345    345.00 = 358.0      126266 DUNWOODIE   345.00 = 352.9
 137200 EDIC         345.00 = 357.5       126277 FARRAGUT    345.00 = 349.8      130753 FRASR345    345.00 = 359.6
 135413 GRDNVL2      230.00 = 230.0       147831 GILB 345    345.00 = 360.8      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16      345.00 = 347.0       126290 LADENTWN    345.00 = 357.9      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1     345.00 = 358.1       126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 359.3
 137453 N.SCOT99     345.00 = 359.3       147841 NIAGAR2E    230.00 = 230.7      147842 NIAGAR2W    230.00 = 230.7
 147834 NIAG 345     345.00 = 357.4       129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 352.7
 149001 PANNELL3     345.00 = 344.1       126294 PLTVLLEY    345.00 = 354.3      126295 RAINEY      345.00 = 350.2
 126600 REAC71       345.00 = 352.3       126601 REAC72      345.00 = 352.4      126297 RAMAPO      345.00 = 357.2
 126250 RAMAPO 5     500.00 = 520.3       125001 ROCK TAV    345.00 = 355.7      125002 ROSETON     345.00 = 356.2
 130754 SOMERSET345  345.00 = 358.1       126298 SPRAINBROOK 345.00 = 353.0      149000 ROCH 345    345.00 = 342.1*
 147840 MOSES W      230.00 = 239.7       130768 WATRC230    230.00 = 233.4      180819 CHA-NY      765.00 = 785.5
 147827 MARCY765     765.00 = 768.2       147828 MASS 765    765.00 = 770.8      126281 E FISHKILL  345.00 = 355.6
 125000 HURLEY 3     345.00 = 358.8       128835 SHORE RD    345.00 = 353.5      136156 VOLNEY      345.00 = 364.9*
 130757 WATRC345     345.00 = 357.9       135250 DUNKIRK     230.00 = 228.8      130764 MEYER230    230.00 = 224.8
 130765 OAKDL230     230.00 = 233.9       137730 ROTRDM.2    230.00 = 237.1      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1       120.00 = 131.5*      137716 ALB1        115.00 = 118.0      130774 BATH 115    115.00 = 114.7
 137488 BETHLEHE     115.00 = 118.4       130776 BORDR115    115.00 = 113.8      136181 CLAY        115.00 = 119.3
 130794 DELHI115     115.00 = 115.6       130796 E.NOR115    115.00 = 113.9      135277 FALCONER    115.00 = 115.9
 130807 WESTOVER115  115.00 = 117.6       130826 MEYER115    115.00 = 115.0      147849 MOS 115     115.00 = 121.1*
 147850 NIAG115E     115.00 = 116.8       147851 NIAG115W    115.00 = 117.5      130836 N.WAV115    115.00 = 113.2
 130838 OAKDL115     115.00 = 117.6       147852 PLAT T#3    115.00 = 117.5      125043 PL.VAL 1    115.00 = 117.4
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137235 PORTER 1	115.00 = 118.3	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.2
125048 SHENANDO	115.00 = 117.8	149011 S82-1115	115.00 = 117.2	149008 RUS 115	115.00 = 114.2

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0304		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0267		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0339		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0204		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0249		13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0268		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0300		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9988		4.0	163	4	
136751	ALLENS F	115.00	1	0	2	2.6	1.8	3.1	-1.5	1.0400	1.0400		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-1.8	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	-0.2	1.0	-0.2	1.0300	1.0388		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0116		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	104.0	11.6	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	12.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	11.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	25.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	11.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	101.0	24.5	38.6	0.0	1.0300	1.0300		120.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	1.6	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	17.8	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						946.4	132.4	524.3	-341.3				1249.4			

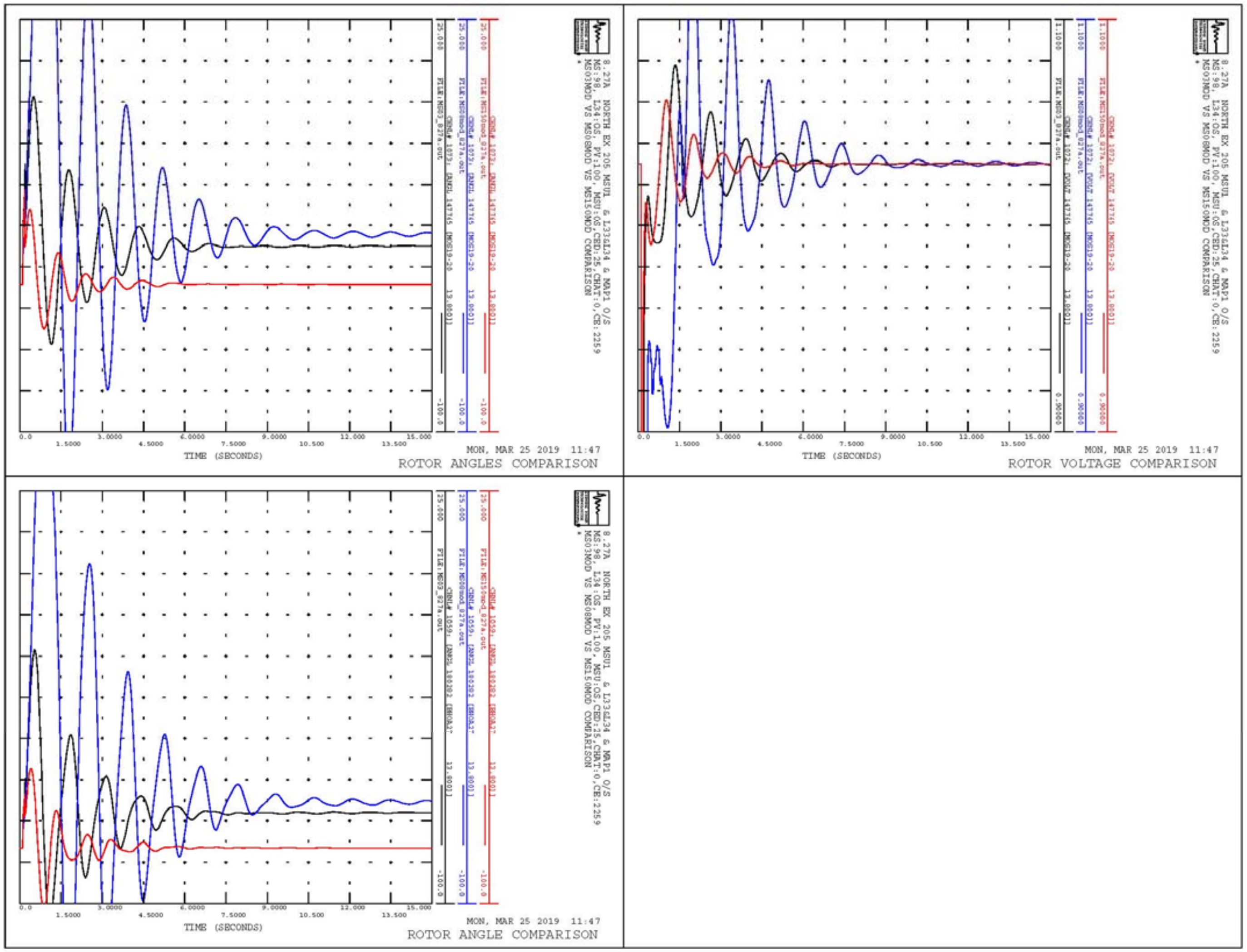

Fig A53 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

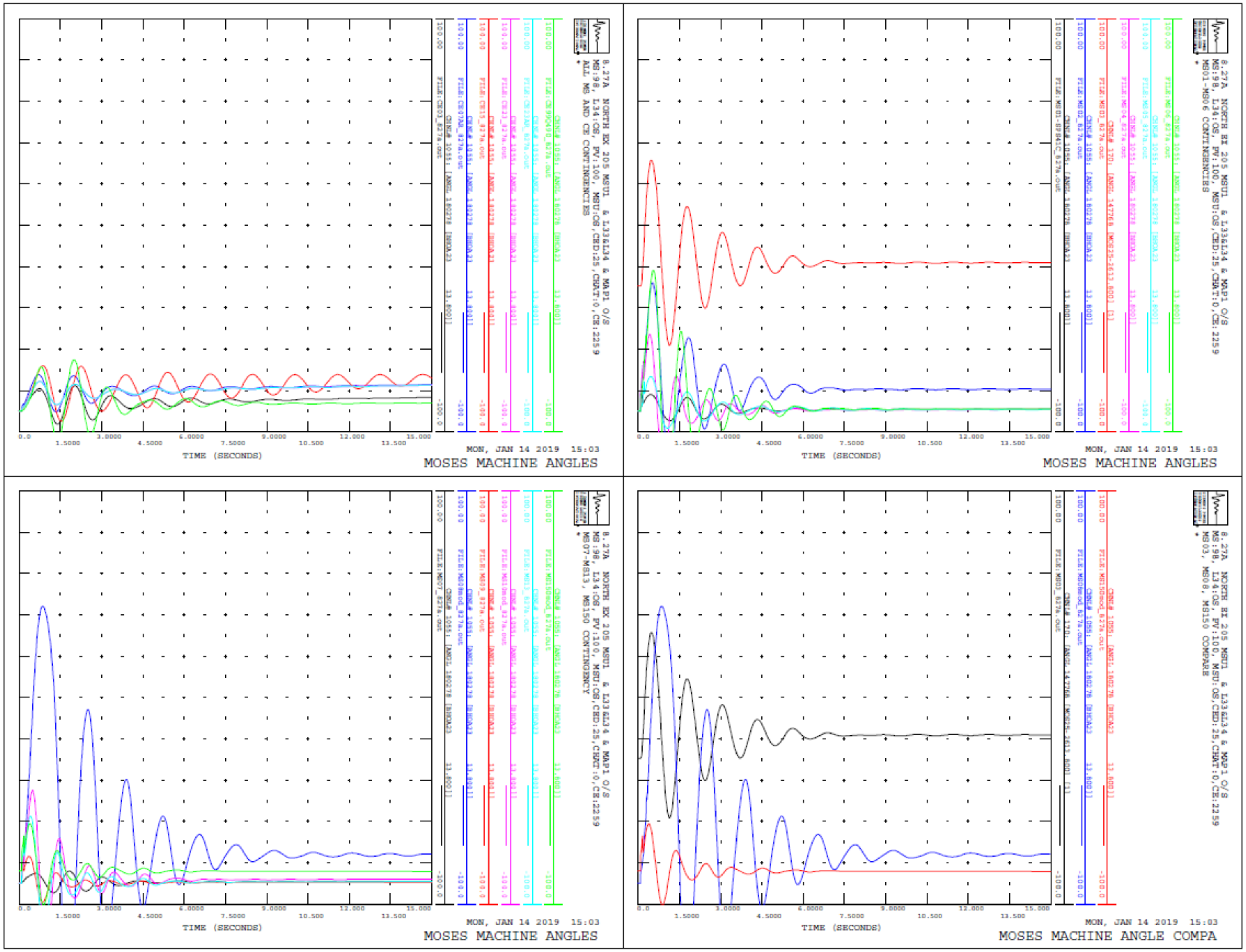

Fig A54: Comparative plots for Moses machine angle for all simulated contingencies

A.28 MSU1 & 7040 & MAP1 & MAP2 & L33 O/S

Test Level Interface Power Flow Summary and Key Voltages

CASE :8.28A NORTH EX 475 MSU1 & L33& MAP1 &MAP2 O/S
MS:288, L34:0, PV:189, MSU:OS,CED:25,CHAT: 0,CE:2284

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1938.0	25.1	DYSE-CLOSE	3264.2	255.0
WEST-CENTRAL	634.8	-142.4	WESTC-CLOSE	1961.0	87.5
VOLNEY-EAST	4430.9	-374.0	VOLNEY-CLOSE	5652.1	-183.1
MOSES-SOUTH	288.5	-21.1	MOSES-CLOSE	474.6	-17.7
CENTRAL-EAST	2283.9	-409.5	TOTAL-EAST	5262.2	-315.3
UPNY-SENY	4369.5	114.5	UPNY-SENY-CL	5659.1	268.5
UPNY-CONED	4477.9	-88.2	UPNY-CON-CL	6599.7	-98.4
MILLWOOD-SO	7183.2	62.8	LIPA-IMPORT	2006.8	-163.5
DNWDIE-SO-PL	4459.2	-405.3	DNWDIE-SO-PC	6581.1	-415.5
DNWDIE-SO-OP	3544.3	-345.4	PJM-NY	1207.6	335.6
NE-NY-WCSC	-758.2	109.9	ON-NY	1005.8	143.7
ONT-MICH-PAR	-4.5	7.2	Northern Export	474.6	-24.9

STATION VOLTAGES

126260	BOWLINE1	345.00 = 359.0	126261	BOWLINE2	345.00 = 358.9	126263	BUCHANAN S	345.00 = 355.5
136150	CLAY	345.00 = 356.4	130750	COOPC345	345.00 = 358.1	126266	DUNWOODIE	345.00 = 352.9
137200	EDIC	345.00 = 356.6	126277	FARRAGUT	345.00 = 349.9	130753	FRASR345	345.00 = 359.7
135413	GRDNVL2	230.00 = 231.2	147831	GILB 345	345.00 = 360.8	126283	GOTHLS	345.00 = 348.0
126286	GOW R16	345.00 = 347.1	126290	LADENTWN	345.00 = 357.9	137451	LEEDS 3	345.00 = 361.0
147833	MARCY T1	345.00 = 357.3	126291	MILLWOOD	345.00 = 353.2	137452	N.SCOT77	345.00 = 359.3
137453	N.SCOT99	345.00 = 359.3	147841	NIAGAR2E	230.00 = 231.6	147842	NIAGAR2W	230.00 = 231.6
147834	NIAG 345	345.00 = 357.4	129341	NRTHPRT1	138.00 = 142.4	130755	OAKDL345	345.00 = 352.9
149001	PANNELL3	345.00 = 345.5	126294	PLTVLLEY	345.00 = 354.3	126295	RAINEY	345.00 = 350.3
126600	REAC71	345.00 = 352.4	126601	REAC72	345.00 = 352.4	126297	RAMAPO	345.00 = 357.3
126250	RAMAPO 5	500.00 = 520.4	125001	ROCK TAV	345.00 = 355.8	125002	ROSETON	345.00 = 356.3
130754	SOMERSET345	345.00 = 358.5	126298	SPRAINBROOK	345.00 = 353.0	149000	ROCH 345	345.00 = 343.9
147840	MOSES W	230.00 = 237.3	130768	WATRC230	230.00 = 234.1	180819	CHA-NY	765.00 = 785.4
147827	MARCY765	765.00 = 766.4	147828	MASS 765	765.00 = 763.0	126281	E FISHKILL	345.00 = 355.7
125000	HURLEY 3	345.00 = 358.8	128835	SHORE RD	345.00 = 353.6	136156	VOLNEY	345.00 = 364.7*
130757	WATRC345	345.00 = 358.7	135250	DUNKIRK	230.00 = 230.0	130764	MEYER230	230.00 = 226.2
130765	OAKDL230	230.00 = 234.4	137730	ROTRDM.2	230.00 = 236.8	181219	CHANY2	120.00 = 131.4*
181119	CHANY1	120.00 = 131.4*	137716	ALB1	115.00 = 118.0	130774	BATH 115	115.00 = 115.2
137488	BETHLEHE	115.00 = 118.3	130776	BORDR115	115.00 = 114.0	136181	CLAY	115.00 = 118.6
130794	DELHI115	115.00 = 115.7	130796	E.NOR115	115.00 = 113.9	135277	FALCONER	115.00 = 116.4
130807	WESTOVER115	115.00 = 117.8	130826	MEYER115	115.00 = 115.5	147849	MOS 115	115.00 = 119.9
147850	NIAG115E	115.00 = 116.9	147851	NIAG115W	115.00 = 117.7	130836	N.WAV115	115.00 = 113.5
130838	OAKDL115	115.00 = 117.8	147852	PLAT T#3	115.00 = 115.7	125043	PL.VAL 1	115.00 = 117.5

137235 PORTER 1	115.00 = 116.7	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.1
125048 SHENANDO	115.00 = 117.8	149011 S82-1115	115.00 = 117.3	149008 RUS 115	115.00 = 114.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0297		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0178		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0254		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0113		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0159		13.0	163	4	
131789	MILL C46	46.000	3	0	2	3.5	1.7	3.0	0.0	1.0187	1.0187		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0294		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0047		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0092		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	1.1	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0300	1.0098		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0034		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.7	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	109.8	21.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	21.8	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	21.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	34.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	21.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	34.2	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	24.5	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	24.5	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	-2	2.1	4.8	4.8	-5.0	1.0500	1.0418		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	35.0	20.6	123.2	-82.6	1.0000	1.0000		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.1	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.1	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	24.8	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.6	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1228.2	277.5	724.6	-485.5				1704.7			

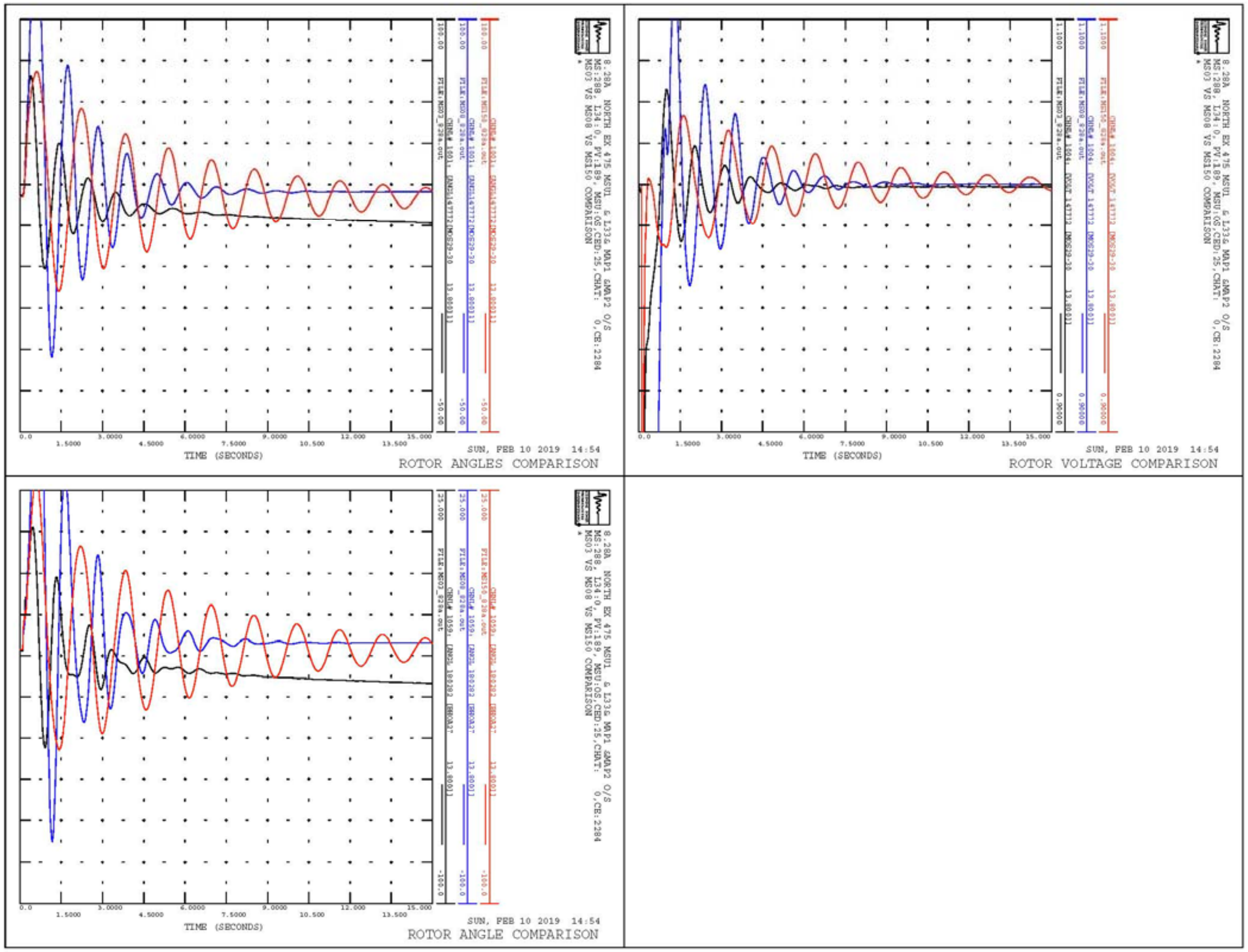

Fig A55 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

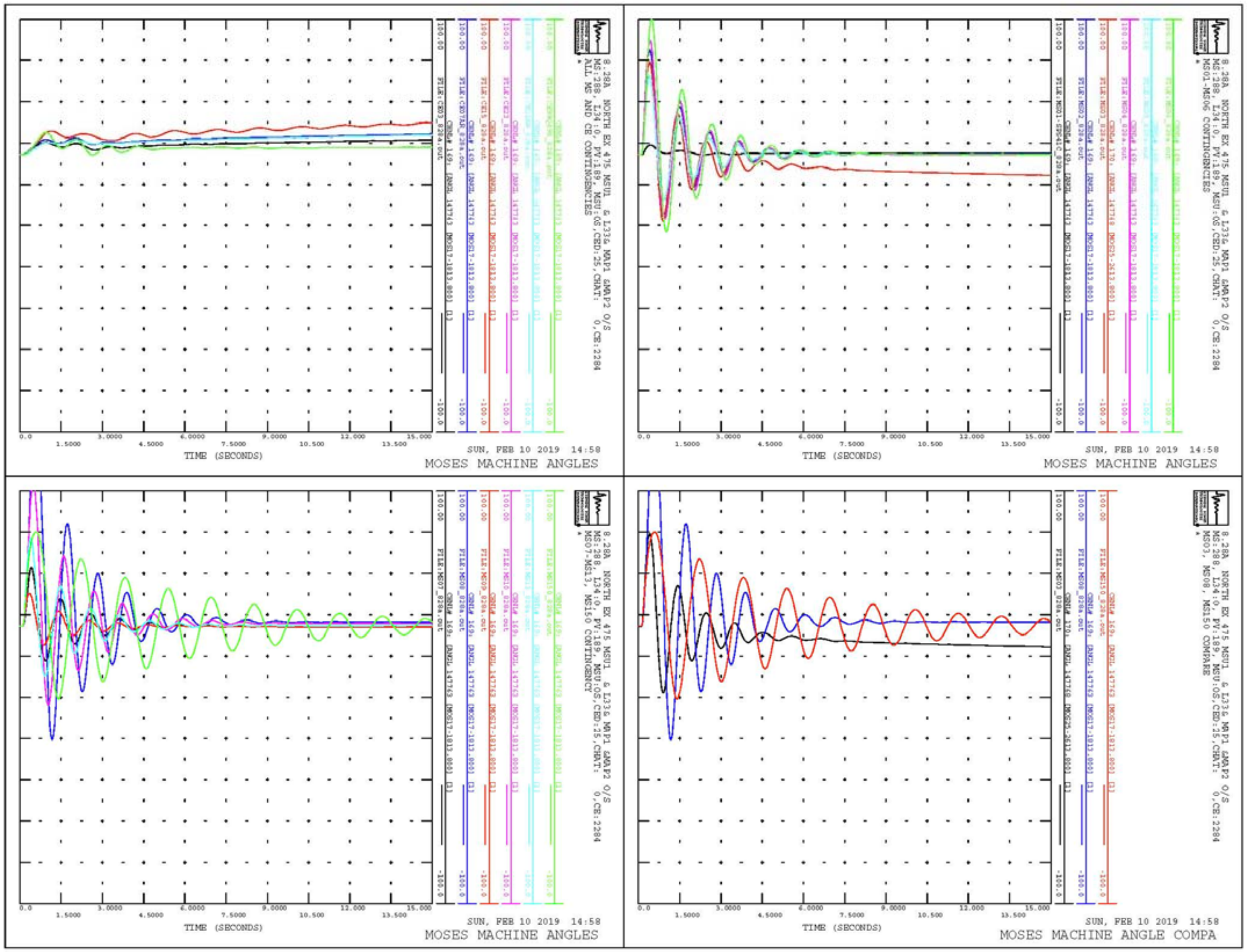

Fig A56: Comparative plots for Moses machine angle for all simulated contingencies

A.29 MSU1 & 7040 & L33 & L34 & MAP1 & PV20 O/S

Test Level Interface Power Flow Summary and Key Voltages

CASE :8.30B NORTH EX 9 MSU1 &L33&L34& MAP1&PV20 O/S
MS:9,L34:OS,PV:OS,MSU:OS,CED:25,CHAT: 0,CE:2238

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	2279.8	75.9	DYSE-CLOSE	3712.0	334.1
WEST-CENTRAL	976.3	-262.2	WESTC-CLOSE	2408.5	-4.1
VOLNEY-EAST	4901.1	-536.8	VOLNEY-CLOSE	6128.9	-339.9
MOSES-SOUTH	8.7	4.4	MOSES-CLOSE	8.7	4.4
CENTRAL-EAST	2238.7	-475.4	TOTAL-EAST	5391.0	-460.5
UPNY-SENY	4362.7	67.6	UPNY-SENY-CL	5658.2	219.0
UPNY-CONED	4473.4	-109.1	UPNY-CON-CL	6599.2	-129.2
MILLWOOD-SO	7187.4	48.3	LIPA-IMPORT	2006.7	-167.5
DNWDIE-SO-PL	4455.8	-415.5	DNWDIE-SO-PC	6581.6	-435.6
DNWDIE-SO-OP	3540.4	-351.2	PJM-NY	1292.2	381.0
NE-NY-WCSC	-758.5	125.3	ON-NY	1369.4	180.7
ONT-MICH-PAR	81.5	-13.5	Northern Export	8.7	-3.1

STATION VOLTAGES

126260 BOWLINE1	345.00 = 358.7	126261 BOWLINE2	345.00 = 358.6	126263 BUCHANAN S	345.00 = 355.1
136150 CLAY	345.00 = 354.0	130750 COOPC345	345.00 = 355.6	126266 DUNWOODIE	345.00 = 352.5
137200 EDIC	345.00 = 354.1	126277 FARRAGUT	345.00 = 349.7	130753 FRASR345	345.00 = 356.6
135413 GRDNVL2	230.00 = 228.5	147831 GILB 345	345.00 = 359.5	126283 GOTHLS	345.00 = 347.9
126286 GOW R16	345.00 = 347.0	126290 LADENTWN	345.00 = 357.5	137451 LEEDS 3	345.00 = 360.2
147833 MARCY T1	345.00 = 354.7	126291 MILLWOOD	345.00 = 352.8	137452 N.SCOT77	345.00 = 357.7
137453 N.SCOT99	345.00 = 357.7	147841 NIAGAR2E	230.00 = 230.1	147842 NIAGAR2W	230.00 = 230.1
147834 NIAG 345	345.00 = 356.8	129341 NRTHPRT1	138.00 = 142.3	130755 OAKDL345	345.00 = 349.0
149001 PANNELL3	345.00 = 339.8*	126294 PLTVLLEY	345.00 = 353.8	126295 RAINEY	345.00 = 350.0
126600 REAC71	345.00 = 352.1	126601 REAC72	345.00 = 352.2	126297 RAMAPO	345.00 = 356.8
126250 RAMAPO 5	500.00 = 520.1	125001 ROCK TAV	345.00 = 354.9	125002 ROSETON	345.00 = 355.7
130754 SOMERSET345	345.00 = 357.2	126298 SPRAINBROOK	345.00 = 352.6	149000 ROCH 345	345.00 = 337.7*
147840 MOSES W	230.00 = 242.1*	130768 WATRC230	230.00 = 230.6	180819 CHA-NY	765.00 = 785.5
147827 MARCY765	765.00 = 760.8	147828 MASS 765	765.00 = 778.5	126281 E FISHKILL	345.00 = 355.1
125000 HURLEY 3	345.00 = 358.1	128835 SHORE RD	345.00 = 353.2	136156 VOLNEY	345.00 = 363.6*
130757 WATRC345	345.00 = 354.1	135250 DUNKIRK	230.00 = 227.4	130764 MEYER230	230.00 = 220.7
130765 OAKDL230	230.00 = 231.1	137730 ROTRDM.2	230.00 = 236.1	181219 CHANY2	120.00 = 131.5*
181119 CHANY1	120.00 = 131.5*	137716 ALB1	115.00 = 117.9	130774 BATH 115	115.00 = 114.5
137488 BETHLEHE	115.00 = 118.2	130776 BORDR115	115.00 = 113.4	136181 CLAY	115.00 = 118.5
130794 DELHI115	115.00 = 114.6	130796 E.NOR115	115.00 = 113.1	135277 FALCONER	115.00 = 115.6
130807 WESTOVER115	115.00 = 116.4	130826 MEYER115	115.00 = 114.9	147849 MOS 115	115.00 = 121.8*

147850 NIAG115E	115.00 = 116.6	147851 NIAG115W	115.00 = 117.3	130836 N.WAV115	115.00 = 112.8
130838 OAKDL115	115.00 = 116.4	147852 PLAT T#3	115.00 = 119.8	125043 PL.VAL 1	115.00 = 117.3
137235 PORTER 1	115.00 = 117.4	125046 ROCK TV1	115.00 = 117.6	137532 RTRDM1	115.00 = 114.9
125048 SHENANDO	115.00 = 117.6	149011 S82-1115	115.00 = 116.6	149008 RUS 115	115.00 = 113.5

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	0.0	-3.4	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0376		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	7.3	17.1	38.6	-30.8	1.0500	1.0500		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	20.5	38.6	-30.8	1.0500	1.0500		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	20.9	38.6	-30.8	1.0500	1.0500		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	10.7	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	20.9	38.6	-30.8	1.0500	1.0500		120.0	158	4	
180256	BHEA01	13.800	1 0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	17.0	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					710.3	116.7	461.9	-335.9				1028.9			

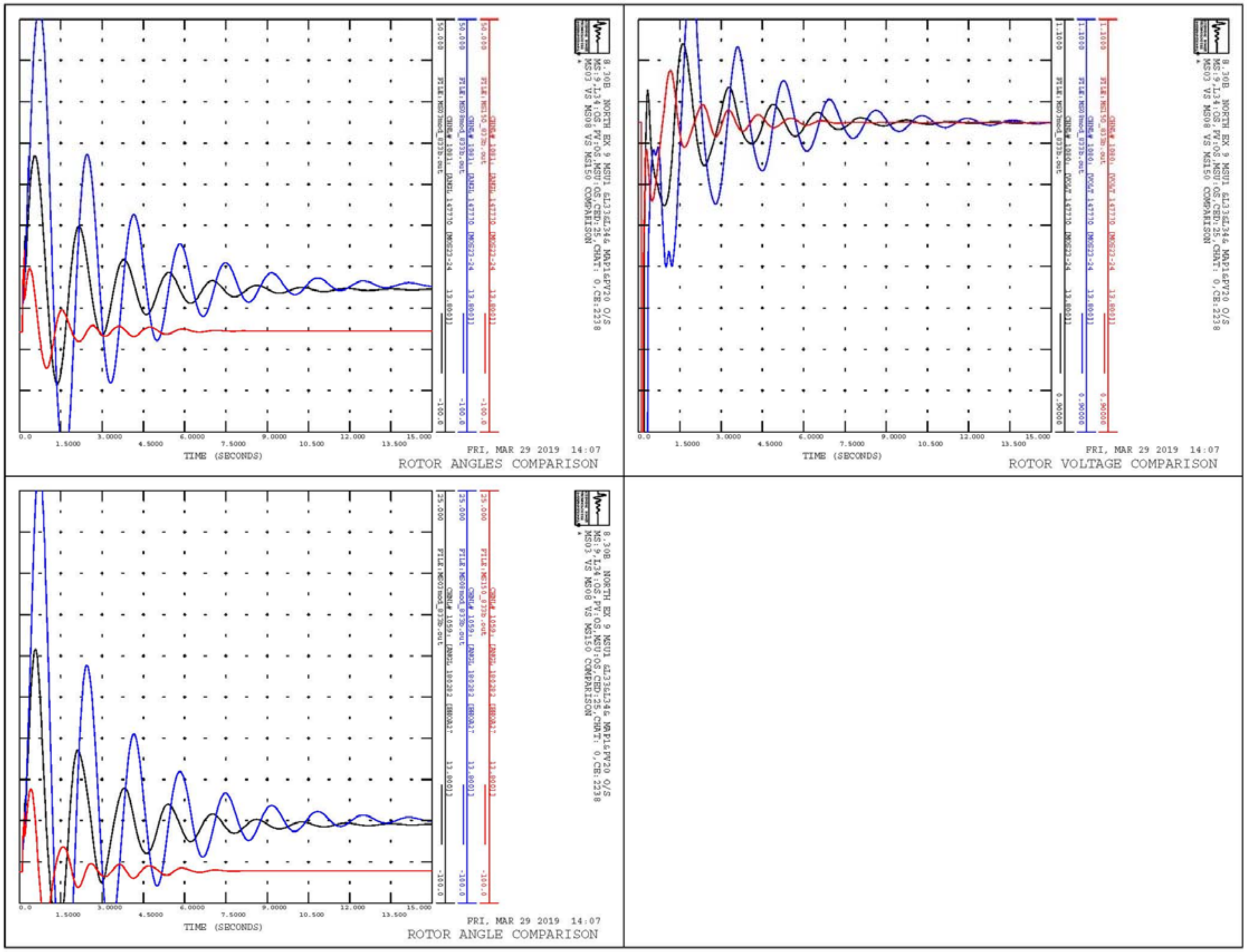

Fig A57 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

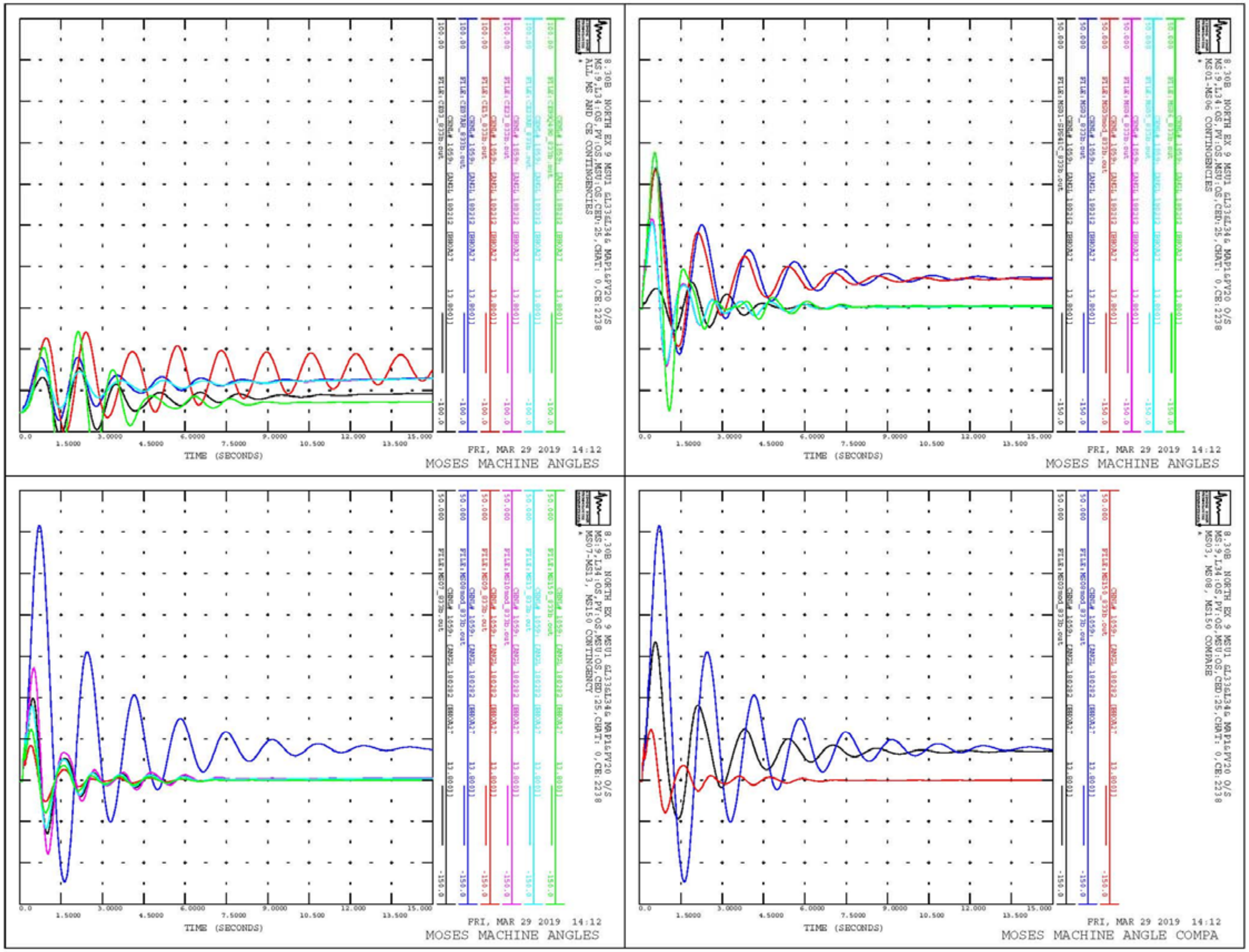

Fig A58: Comparative plots for Moses machine angle for all simulated contingencies

A.30 MSU1 & 7040 & L33 & L34 & MAP1 & R8105 O/S

Test Level Interface Power Flow Summary and Key Voltages

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CASE :8.31AB  NORTH EX 261 MSU1  & MAP1&2  &L33 & R8105 O/S
       MS:120,L34:0,PV:100,MSU:OS,CED:25,CHAT: 0,CE:2272

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS         2148.6     38.0   DYSE-CLOSE           3513.2    259.2
 WEST-CENTRAL          845.3   -194.4   WESTC-CLOSE          2209.9     26.8
 VOLNEY-EAST          4584.3   -461.1   VOLNEY-CLOSE         5808.4   -281.1
 MOSES-SOUTH           120.8    -40.3   MOSES-CLOSE           258.7    -24.7
 CENTRAL-EAST         2270.3   -413.6   TOTAL-EAST           5291.6   -334.0
 UPNY-SENY            4365.3    108.2   UPNY-SENY-CL         5658.7    259.1
 UPNY-CONED           4475.2    -92.4   UPNY-CON-CL          6599.9   -106.8
 MILLWOOD-SO          7184.9     57.3   LIPA-IMPORT          2006.7   -164.4
 DNWDIE-SO-PL         4456.8   -407.3   DNWDIE-SO-PC         6581.5   -421.7
 DNWDIE-SO-OP         3542.1   -346.6   PJM-NY               1241.4    346.7
 NE-NY-WCSC           -758.5    110.1   ON-NY                1221.3    155.8
 ONT-MICH-PAR           29.9      4.4   Northern Export       258.7    -32.0

                           STATION VOLTAGES

 126260 BOWLINE1    345.00 = 359.0      126261 BOWLINE2    345.00 = 358.9      126263 BUCHANAN S  345.00 = 355.4
 136150 CLAY        345.00 = 356.1      130750 COOPC345    345.00 = 357.8      126266 DUNWOODIE   345.00 = 352.9
 137200 EDIC        345.00 = 356.6      126277 FARRAGUT    345.00 = 349.9      130753 FRASR345    345.00 = 359.3
 135413 GRDNVL2     230.00 = 229.4      147831 GILB 345    345.00 = 360.7      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 357.9      137451 LEEDS 3     345.00 = 360.9
 147833 MARCY T1    345.00 = 357.3      126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 359.1
 137453 N.SCOT99    345.00 = 359.1      147841 NIAGAR2E    230.00 = 230.6      147842 NIAGAR2W    230.00 = 230.6
 147834 NIAG 345    345.00 = 358.0      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 352.3
 149001 PANNELL3    345.00 = 343.9*     126294 PLTVLLEY    345.00 = 354.3      126295 RAINEY      345.00 = 350.2
 126600 REAC71      345.00 = 352.3      126601 REAC72      345.00 = 352.4      126297 RAMAPO      345.00 = 357.2
 126250 RAMAPO 5    500.00 = 520.3      125001 ROCK TAV    345.00 = 355.7      125002 ROSETON     345.00 = 356.2
 130754 SOMERSET345 345.00 = 358.2      126298 SPRAINBROOK 345.00 = 353.0      149000 ROCH 345    345.00 = 342.0*
 147840 MOSES W     230.00 = 238.4      130768 WATRC230    230.00 = 233.4      180819 CHA-NY      765.00 = 785.6
 147827 MARCY765    765.00 = 766.4      147828 MASS 765    765.00 = 766.5      126281 E FISHKILL  345.00 = 355.6
 125000 HURLEY 3    345.00 = 358.7      128835 SHORE RD    345.00 = 353.5      136156 VOLNEY      345.00 = 364.6*
 130757 WATRC345    345.00 = 357.8      135250 DUNKIRK     230.00 = 228.3      130764 MEYER230    230.00 = 224.0
 130765 OAKDL230    230.00 = 233.8      137730 ROTRDM.2    230.00 = 236.8      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1      120.00 = 131.5*     137716 ALB1        115.00 = 118.0      130774 BATH 115    115.00 = 115.0
 137488 BETHLEHE    115.00 = 118.4      130776 BORDR115    115.00 = 113.8      136181 CLAY        115.00 = 119.0
 130794 DELHI115    115.00 = 115.4      130796 E.NOR115    115.00 = 113.4      135277 FALCONER    115.00 = 115.8
```

130807 WESTOVER115 115.00 = 117.5	130826 MEYER115 115.00 = 115.4	147849 MOS 115 115.00 = 120.1
147850 NIAG115E 115.00 = 116.8	147851 NIAG115W 115.00 = 117.4	130836 N.WAV115 115.00 = 113.2
130838 OAKDL115 115.00 = 117.5	147852 PLAT T#3 115.00 = 118.3	125043 PL.VAL 1 115.00 = 117.4
137235 PORTER 1 115.00 = 117.5	125046 ROCK TV1 115.00 = 117.8	137532 RTRDM1 115.00 = 115.1
125048 SHENANDO 115.00 = 117.8	149011 S82-1115 115.00 = 117.2	149008 RUS 115 115.00 = 114.2

Zone D Generation Profile:

BUS# X-- NAME --X BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777 LK COLBY 115.00	1 0	2	0.0	-0.2	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795 PARISHVL 115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0302		5.0	175	4	
137166 CHASM HY 2.2000	3 0	2	2.0	1.6	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763 MOS17-18 13.800	2 0	2	107.3	37.5	38.6	-30.8	1.0500	1.0500		120.0	158	4	AREA
147766 MOS21-22 13.800	1 1	2	57.0	19.3	19.3	-15.4	1.0500	1.0373		60.0	158	4	
147768 MOS25-26 13.800	2 0	2	114.0	24.9	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147770 MOS23-24 13.800	2 0	2	114.0	36.8	38.6	-30.8	1.0500	1.0500		120.0	158	4	
147771 MOS27-28 13.800	2 0	2	114.0	14.3	38.6	0.0	1.0100	1.0100		120.0	158	4	
147772 MOS29-30 13.800	2 0	2	114.0	15.0	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147774 MOS31-32 13.800	2 0	2	114.0	15.0	38.6	-30.8	1.0100	1.0100		120.0	158	4	
180256 BHEA01 13.800	1 0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257 BHEA02 13.800	1 0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258 BHEA03 13.800	1 0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282 BHOA27 13.800	1 0	2	72.0	16.2	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283 BHOA28 13.800	1 0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS			981.3	192.5	519.8	-351.3				1208.9			

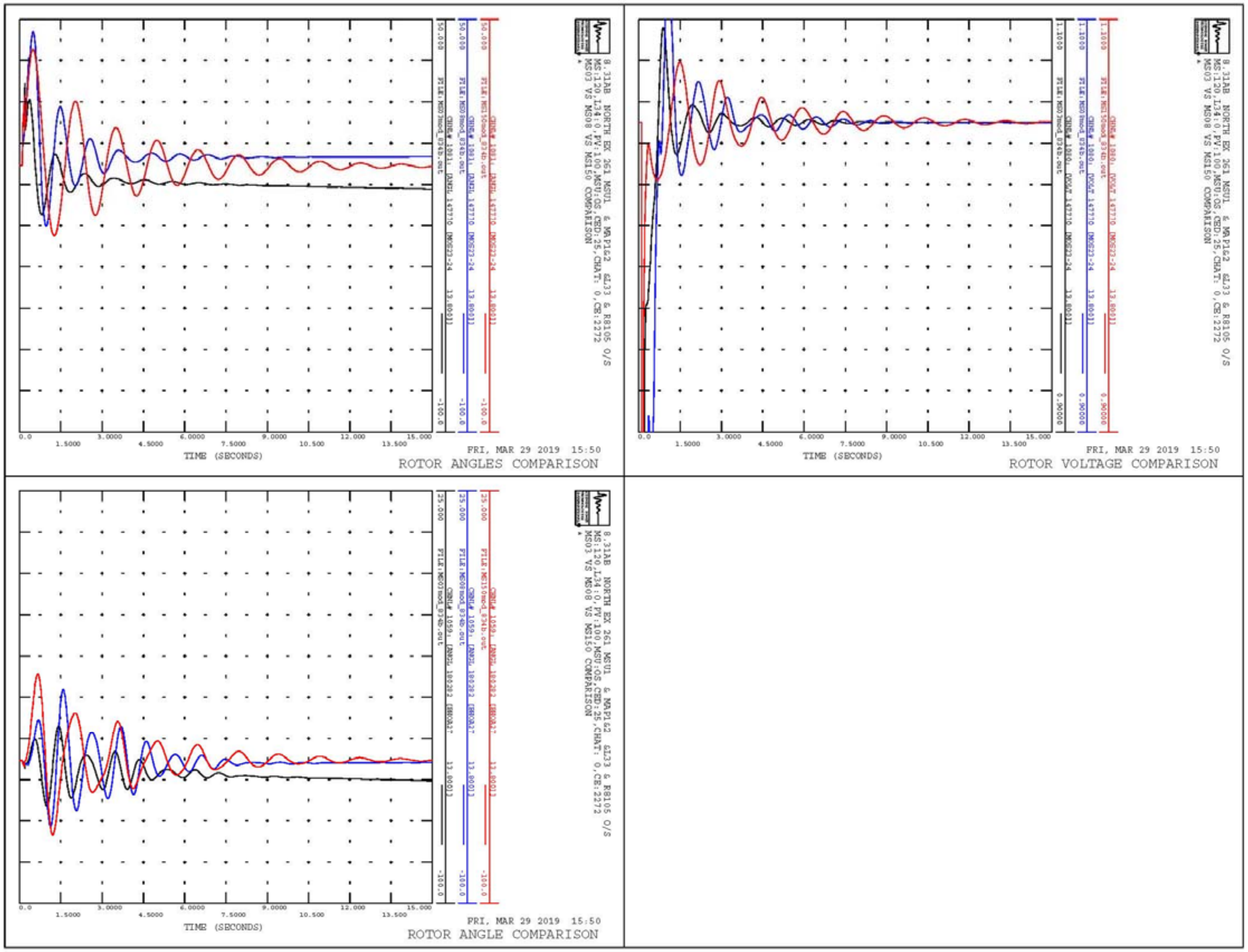

Fig A59 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

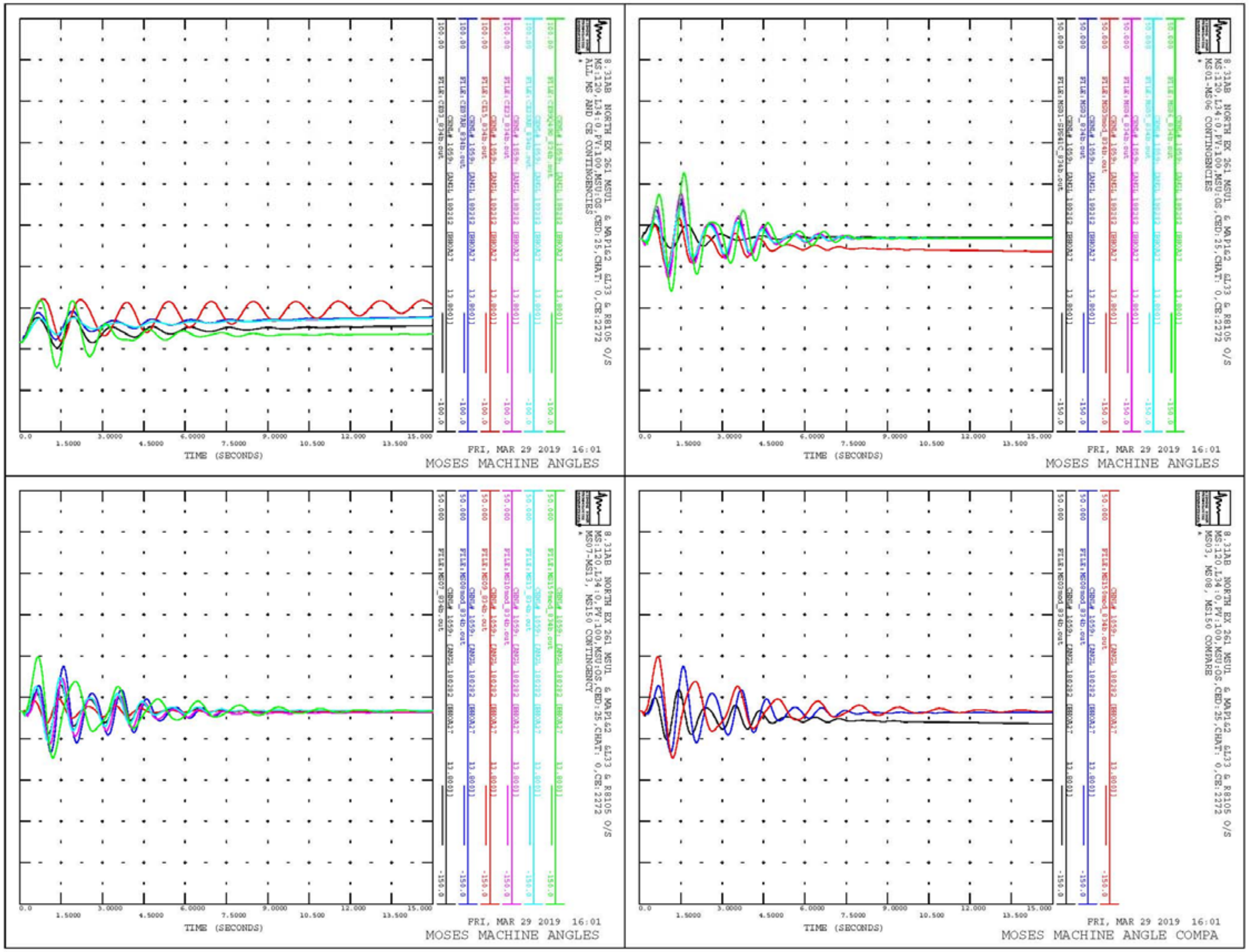

Fig A60: Comparative plots for Moses machine angle for all simulated contingencies

A.31 MSU1 & 7040 & L33 & L34 & MAP1 & PV20 O/S with 6 Moses Unit Rejection

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :8.30A  NORTH EX 309 MSU1 &L33&L34& MAP1&PV20 O/S W/6 REJ
       MS:309,L34:OS,PV:OS,MSU:OS,CED:25,CHAT: 0,CE:2259
                            INTERFACE FLOW REPORT
   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS         2133.5      48.4  DYSE-CLOSE           3512.8     301.3
 WEST-CENTRAL          829.9    -203.7  WESTC-CLOSE          2209.2      49.3
 VOLNEY-EAST          4601.2    -427.1  VOLNEY-CLOSE         5826.7    -227.6
 MOSES-SOUTH           308.7      12.7  MOSES-CLOSE           308.7      12.7
 CENTRAL-EAST         2259.3    -487.4  TOTAL-EAST           5390.9    -449.9
 UPNY-SENY            4364.8      77.3  UPNY-SENY-CL         5658.1     232.9
 UPNY-CONED           4475.9    -105.9  UPNY-CON-CL          6599.1    -120.7
 MILLWOOD-SO          7186.6      54.6  LIPA-IMPORT          2006.8    -166.7
 DNWDIE-SO-PL         4458.2    -413.8  DNWDIE-SO-PC         6581.5    -428.6
 DNWDIE-SO-OP         3542.6    -350.3  PJM-NY               1245.4     368.1
 NE-NY-WCSC           -758.5     127.3  ON-NY                1217.2     168.0
 ONT-MICH-PAR           33.9       3.9  Northern Export       308.7       5.3

                             STATION VOLTAGES
 126260 BOWLINE1    345.00 = 358.7      126261 BOWLINE2    345.00 = 358.6      126263 BUCHANAN S  345.00 = 355.2
 136150 CLAY        345.00 = 355.4      130750 COOPC345    345.00 = 356.1      126266 DUNWOODIE   345.00 = 352.6
 137200 EDIC        345.00 = 354.8      126277 FARRAGUT    345.00 = 349.7      130753 FRASR345    345.00 = 357.5
 135413 GRDNVL2     230.00 = 229.5      147831 GILB 345    345.00 = 359.8      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 357.6      137451 LEEDS 3     345.00 = 360.3
 147833 MARCY T1    345.00 = 355.4      126291 MILLWOOD    345.00 = 352.9      137452 N.SCOT77    345.00 = 357.9
 137453 N.SCOT99    345.00 = 357.9      147841 NIAGAR2E    230.00 = 230.6      147842 NIAGAR2W    230.00 = 230.6
 147834 NIAG 345    345.00 = 357.9      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 350.7
 149001 PANNELL3    345.00 = 343.1*     126294 PLTVLLEY    345.00 = 353.8      126295 RAINEY      345.00 = 350.1
 126600 REAC71      345.00 = 352.1      126601 REAC72      345.00 = 352.2      126297 RAMAPO      345.00 = 356.9
 126250 RAMAPO 5    500.00 = 520.1      125001 ROCK TAV    345.00 = 355.0      125002 ROSETON     345.00 = 355.8
 130754 SOMERSET345 345.00 = 358.0      126298 SPRAINBROOK 345.00 = 352.7      149000 ROCH 345    345.00 = 341.1*
 147840 MOSES W     230.00 = 240.4      130768 WATRC230    230.00 = 232.1      180819 CHA-NY      765.00 = 785.5
 147827 MARCY765    765.00 = 762.4      147828 MASS 765    765.00 = 772.8      126281 E FISHKILL  345.00 = 355.2
 125000 HURLEY 3    345.00 = 358.2      128835 SHORE RD    345.00 = 353.3      136156 VOLNEY      345.00 = 364.3*
 130757 WATRC345    345.00 = 356.1      135250 DUNKIRK     230.00 = 228.4      130764 MEYER230    230.00 = 223.2
 130765 OAKDL230    230.00 = 232.6      137730 ROTRDM.2    230.00 = 234.9      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1      120.00 = 131.5*     137716 ALB1        115.00 = 117.8      130774 BATH 115    115.00 = 114.8
 137488 BETHLEHE    115.00 = 118.1      130776 BORDR115    115.00 = 113.6      136181 CLAY        115.00 = 118.8
 130794 DELHI115    115.00 = 115.0      130796 E.NOR115    115.00 = 113.6      135277 FALCONER    115.00 = 115.8
 130807 WESTOVER115 115.00 = 117.0      130826 MEYER115    115.00 = 115.1      147849 MOS 115     115.00 = 121.0*
 147850 NIAG115E    115.00 = 116.8      147851 NIAG115W    115.00 = 117.4      130836 N.WAV115    115.00 = 113.1
 130838 OAKDL115    115.00 = 117.0      147852 PLAT T#3    115.00 = 119.0      125043 PL.VAL 1    115.00 = 117.3
```

137235 PORTER 1	115.00 = 116.9	125046 ROCK TV1	115.00 = 117.7	137532 RTRDM1	115.00 = 114.6
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 116.9	149008 RUS 115	115.00 = 113.9

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV		ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0295				3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0385				5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0456				16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0324				10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0367				13.0	163	4	
131789	MILL C46	46.000	3	0	-2	3.5	0.0	3.0	0.0	1.0187	1.0386				6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0292				3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0000				4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0361				5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-1.9	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	-0.2	1.0	-0.2	1.0300	1.0354				5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0217				3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	1.0121				2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700				3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	-0.3	2.0	-1.0	1.0000	1.0000				7.0	175	4	
147763	MOS17-18	13.800	2	0	2	101.7	27.2	38.6	-30.8	1.0500	1.0500				120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	28.1	38.6	-30.8	1.0500	1.0500				120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	28.2	38.6	-30.8	1.0500	1.0500				120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	17.5	38.6	-30.8	1.0200	1.0200				120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	28.2	38.6	-30.8	1.0500	1.0500				120.0	158	4	
147771	MOS27-28	13.800	2	0	2	107.0	6.3	38.6	0.0	1.0100	1.0100				120.0	158	4	
147772	MOS29-30	13.800	2	0	2	100.0	6.0	38.6	-30.8	1.0100	1.0100				120.0	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	18.7	50.0	-25.0	1.0500	1.0500				90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS						1048.0	177.4	558.1	-367.1						1346.1			

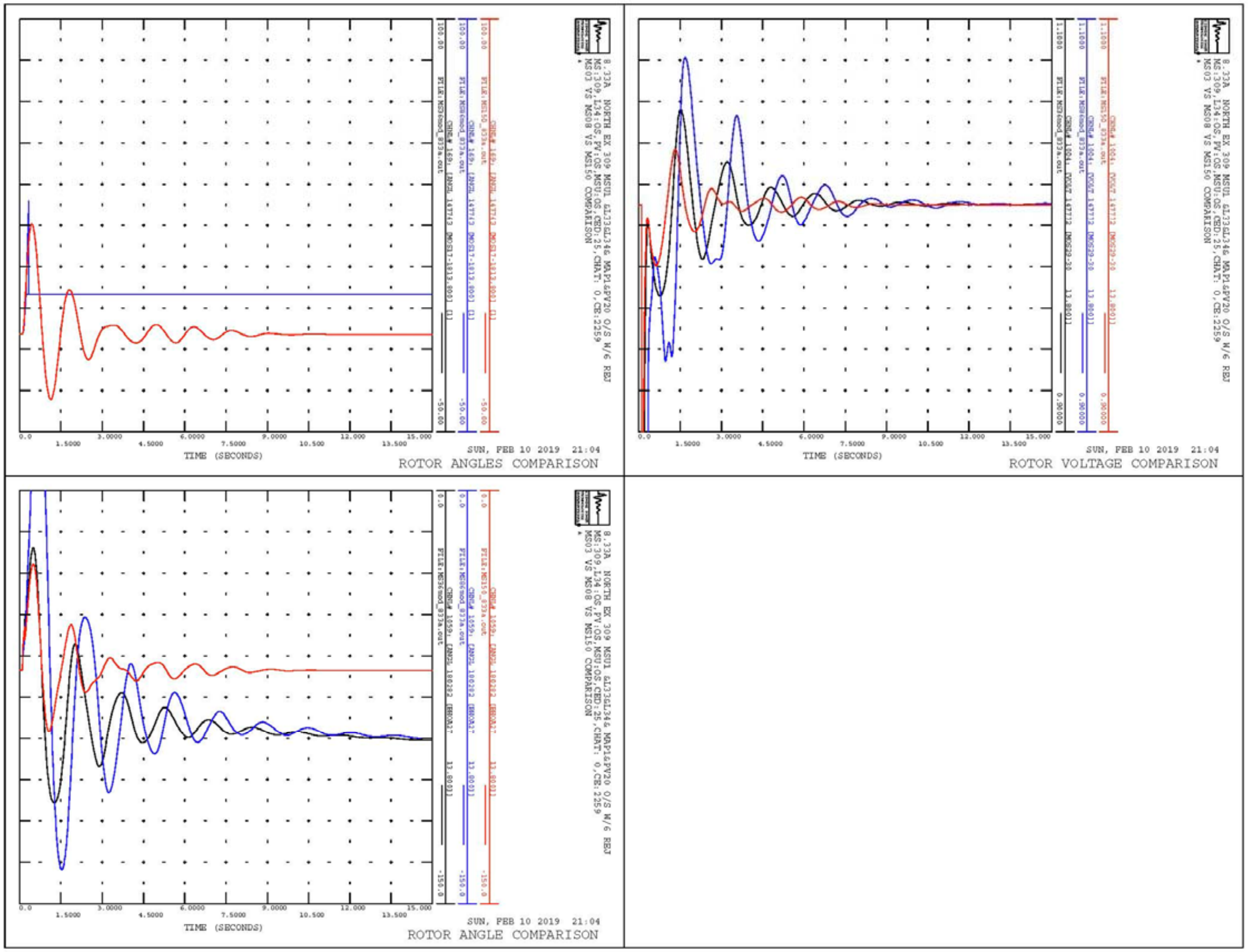

Fig A61 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

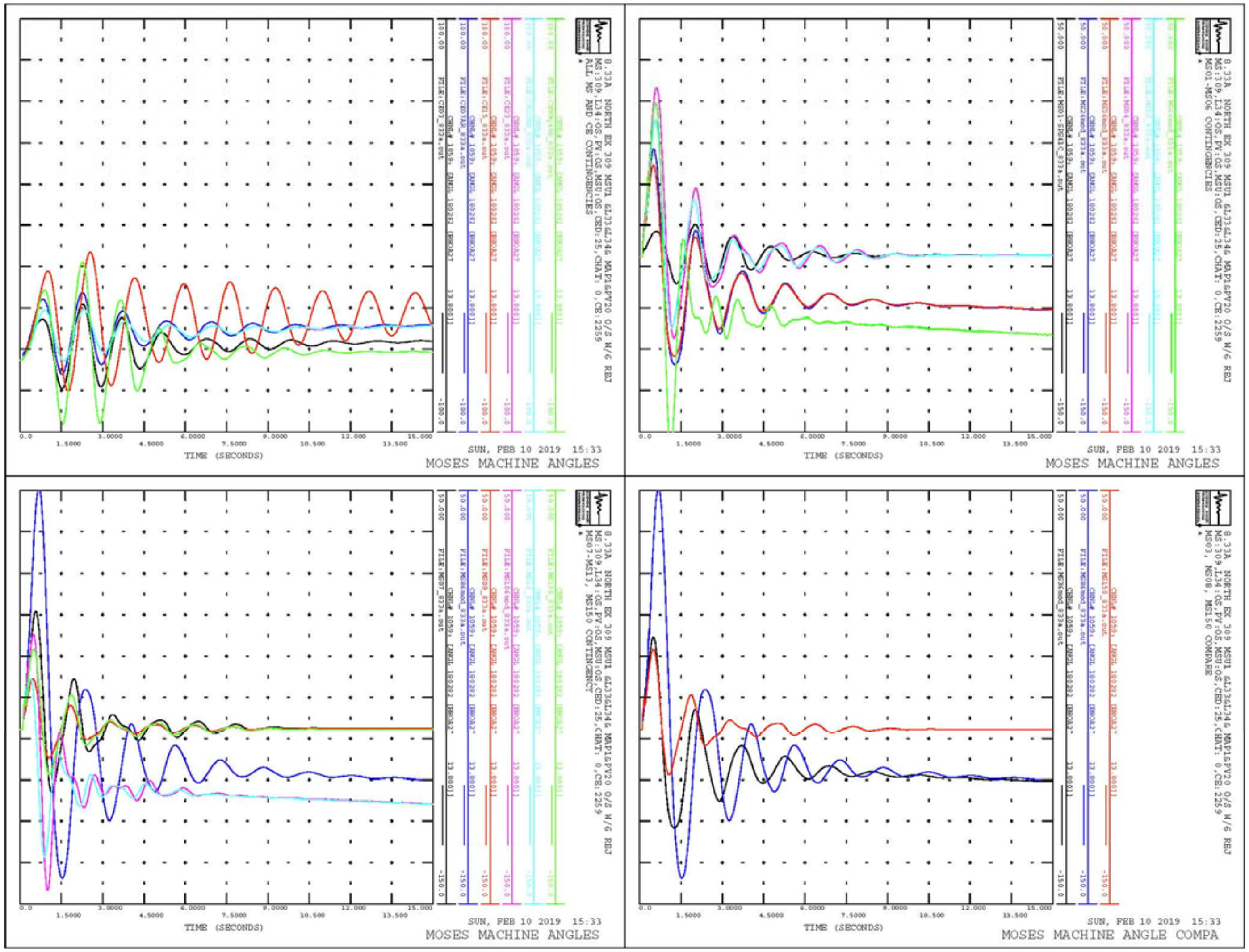

Fig A62: Comparative plots for Moses machine angle for all simulated contingencies

A.32 MSU1 & 7040 & MAP1 & MAP2 & L33 & R8105 O/S with 6 Moses Unit Rejection

Test Level Interface Power Flow Summary and Key Voltages

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CASE :8.31A  NORTH EX 350 MSU1 &L33& MAP1&MAP2&R8105  O/S W/6 REJ
       MS:147,L34:OS,PV:198,MSU:OS,CED:25,CHAT: 0,CE:2336
                            INTERFACE FLOW REPORT
   DESCRIPTION          MW      MVAr     DESCRIPTION          MW       MVAr
 DYSINGER-EAS        2130.3     48.4   DYSE-CLOSE          3513.7     276.7
 WEST-CENTRAL         826.7   -214.5   WESTC-CLOSE         2210.1      13.8
 VOLNEY-EAST         4553.6   -445.3   VOLNEY-CLOSE        5788.0    -262.9
 MOSES-SOUTH          146.6    -52.1   MOSES-CLOSE          348.9     -46.2
 CENTRAL-EAST        2336.1   -420.8   TOTAL-EAST          5391.9    -348.5
 UPNY-SENY           4363.3    103.4   UPNY-SENY-CL        5658.9     253.0
 UPNY-CONED          4475.8    -89.1   UPNY-CON-CL         6600.1    -104.3
 MILLWOOD-SO         7185.1     58.3   LIPA-IMPORT         2006.8    -163.6
 DNWDIE-SO-PL        4457.2   -403.4   DNWDIE-SO-PC        6581.5    -418.6
 DNWDIE-SO-OP        3541.6   -343.3   PJM-NY              1244.0     350.2
 NE-NY-WCSC          -758.6    112.6   ON-NY               1219.3     161.1
 ONT-MICH-PAR          31.8      4.2   Northern Export      348.9     -53.4

                             STATION VOLTAGES
 126260 BOWLINE1    345.00 = 359.0      126261 BOWLINE2    345.00 = 358.9      126263 BUCHANAN S  345.00 = 355.4
 136150 CLAY        345.00 = 355.9      130750 COOPC345    345.00 = 357.8      126266 DUNWOODIE   345.00 = 352.9
 137200 EDIC        345.00 = 356.4      126277 FARRAGUT    345.00 = 349.9      130753 FRASR345    345.00 = 359.1
 135413 GRDNVL2     230.00 = 229.6      147831 GILB 345    345.00 = 360.7      126283 GOTHLS      345.00 = 347.9
 126286 GOW R16     345.00 = 347.0      126290 LADENTWN    345.00 = 357.9      137451 LEEDS 3     345.00 = 361.0
 147833 MARCY T1    345.00 = 357.1      126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 359.2
 137453 N.SCOT99    345.00 = 359.2      147841 NIAGAR2E    230.00 = 230.6      147842 NIAGAR2W    230.00 = 230.6
 147834 NIAG 345    345.00 = 357.9      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 352.2
 149001 PANNELL3    345.00 = 343.0*     126294 PLTVLLEY    345.00 = 354.4      126295 RAINEY      345.00 = 350.2
 126600 REAC71      345.00 = 352.3      126601 REAC72      345.00 = 352.4      126297 RAMAPO      345.00 = 357.2
 126250 RAMAPO 5    500.00 = 520.3      125001 ROCK TAV    345.00 = 355.7      125002 ROSETON     345.00 = 356.3
 130754 SOMERSET345 345.00 = 358.0      126298 SPRAINBROOK 345.00 = 353.0      149000 ROCH 345    345.00 = 341.1*
 147840 MOSES W     230.00 = 237.7      130768 WATRC230    230.00 = 232.7      180819 CHA-NY      765.00 = 785.5
 147827 MARCY765    765.00 = 766.1      147828 MASS 765    765.00 = 764.4      126281 E FISHKILL  345.00 = 355.7
 125000 HURLEY 3    345.00 = 358.8      128835 SHORE RD    345.00 = 353.6      136156 VOLNEY      345.00 = 364.6*
 130757 WATRC345    345.00 = 357.2      135250 DUNKIRK     230.00 = 228.5      130764 MEYER230    230.00 = 223.0
 130765 OAKDL230    230.00 = 233.5      137730 ROTRDM.2    230.00 = 237.0      181219 CHANY2      120.00 = 131.5*
 181119 CHANY1      120.00 = 131.5*     137716 ALB1        115.00 = 118.1      130774 BATH 115    115.00 = 115.2
 137488 BETHLEHE    115.00 = 118.4      130776 BORDR115    115.00 = 113.9      136181 CLAY        115.00 = 119.0
 130794 DELHI115    115.00 = 115.9      130796 E.NOR115    115.00 = 114.3      135277 FALCONER    115.00 = 115.9
 130807 WESTOVER115 115.00 = 117.5      130826 MEYER115    115.00 = 115.9      147849 MOS 115     115.00 = 119.8
 147850 NIAG115E    115.00 = 116.8      147851 NIAG115W    115.00 = 117.4      130836 N.WAV115    115.00 = 113.4
 130838 OAKDL115    115.00 = 117.5      147852 PLAT T#3    115.00 = 116.0      125043 PL.VAL 1    115.00 = 117.5
```

137235 PORTER 1	115.00 = 117.3	125046 ROCK TV1	115.00 = 117.9	137532 RTRDM1	115.00 = 115.2
125048 SHENANDO	115.00 = 117.8	149011 S82-1115	115.00 = 117.2	149008 RUS 115	115.00 = 114.1

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0268		3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0184		5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0256		16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0119		10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0165		13.0	163	4	
131789	MILL C46	46.000	3	0	2	3.5	0.5	3.0	0.0	1.0187	1.0187		6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0265		3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	0.9950		4.0	163	4	
136751	ALLENS F	115.00	1	0	-2	2.6	3.1	3.1	-1.5	1.0400	1.0214		5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	1.5	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0300	1.0203		5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0034		3.0	175	4	
136914	MACOMB	34.500	1	0	-2	0.6	0.6	0.6	-0.4	1.0200	0.9989		2.2	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.9	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	3	0	2	1.5	0.7	2.0	-1.0	1.0000	1.0000		7.0	175	4	
147763	MOS17-18	13.800	2	0	2	96.0	37.1	38.6	-30.8	1.0500	1.0500		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	38.3	38.6	-30.8	1.0500	1.0500		120.0	158	4	
147766	MOS21-22	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0500	1.0495		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	26.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147770	MOS23-24	13.800	2	0	-2	114.0	38.6	38.6	-30.8	1.0500	1.0495		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	16.1	38.6	0.0	1.0100	1.0100		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	16.1	38.6	-30.8	1.0100	1.0100		120.0	158	4	
147774	MOS31-32	13.800	1	1	2	57.0	12.7	19.3	-15.4	1.0100	1.0100		60.0	158	4	
180256	BHEA01	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	-20.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	7.0	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	18.5	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	18.5	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1120.3	266.9	577.3	-382.5				1406.1			

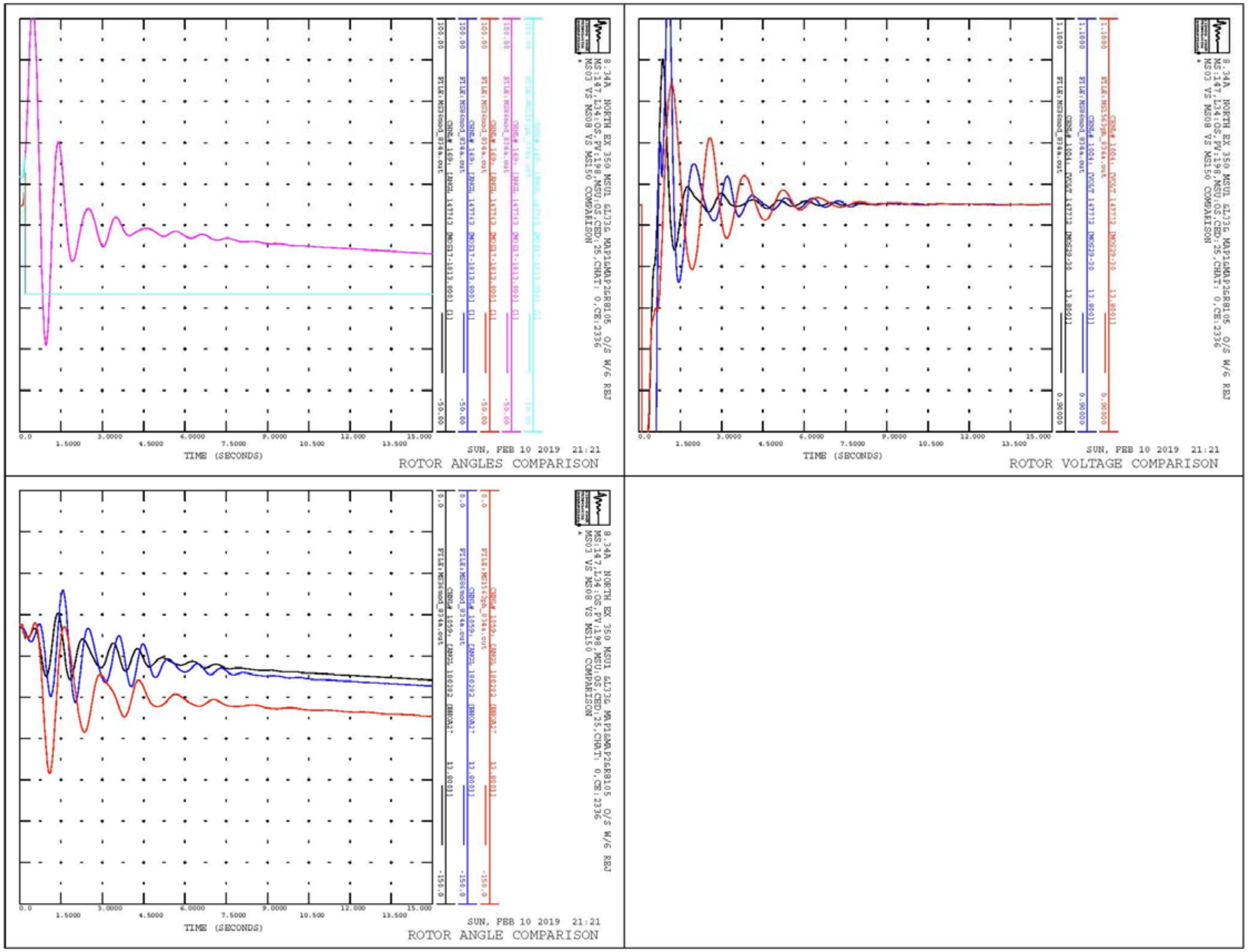

Fig A63 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

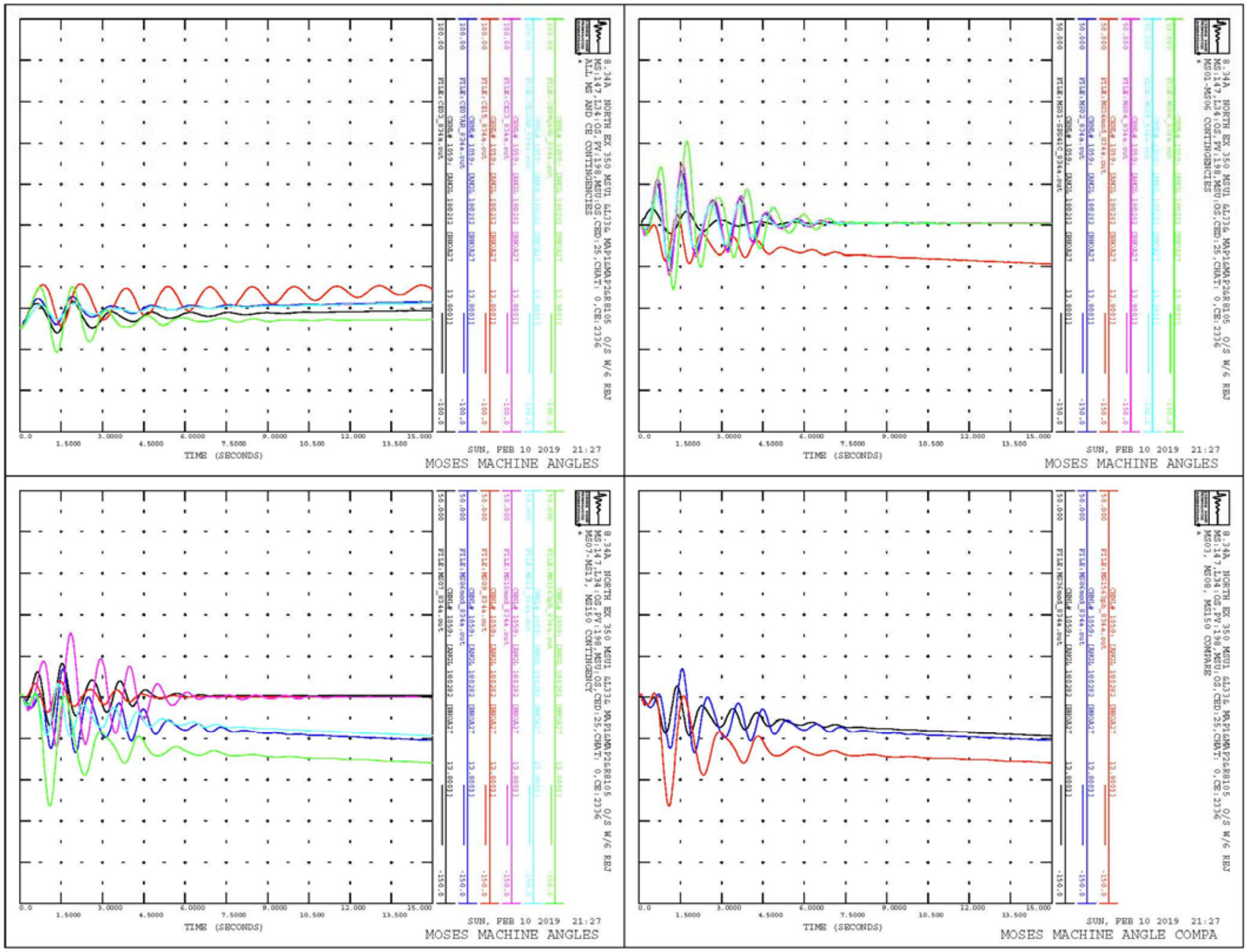

Fig A64: Comparative plots for Moses machine angle for all simulated contingencies

Appendix B – L33 & L34 O/S

B.1 L33 & L34 O/S:

Test Level Interface Power Flow Summary and Key Voltages

CASE :9.01A NORTH EX 1100 L33& L34 O/S
MS:2460,L34:OS,PV:100,MSU:IS,CED:25,CHAT: 0,CE:3045

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	2080.4	43.5	DYSE-CLOSE	3577.6	678.7
WEST-CENTRAL	768.4	-74.4	WESTC-CLOSE	2265.6	560.9
VOLNEY-EAST	3880.4	123.3	VOLNEY-CLOSE	5127.1	703.5
MOSES-SOUTH	2451.2	-103.6	MOSES-CLOSE	2596.6	-113.4
CENTRAL-EAST	3044.6	-931.4	TOTAL-EAST	6741.3	-956.7
UPNY-SENY	4710.8	-91.6	UPNY-SENY-CL	6029.1	273.1
UPNY-CONED	4914.2	298.5	UPNY-CON-CL	7065.7	475.5
MILLWOOD-SO	7572.3	496.0	LIPA-IMPORT	2007.9	-139.9
DNWDIE-SO-PL	4880.2	-472.0	DNWDIE-SO-PC	7031.7	-295.0
DNWDIE-SO-OP	3963.5	-437.1	PJM-NY	1474.9	721.3
NE-NY-WCSC	-1658.7	381.1	ON-NY	2095.0	216.0
ONT-MICH-PAR	219.7	-16.2	Northern Export	1101.2	9.9

STATION VOLTAGES

126260 BOWLINE1	345.00 = 354.0	126261 BOWLINE2	345.00 = 353.8
136150 CLAY	345.00 = 343.2*	130750 COOPC345	345.00 = 337.3*
137200 EDIC	345.00 = 331.7*	126277 FARRAGUT	345.00 = 337.7*
135413 GRDNVL2	230.00 = 226.9	147831 GILB 345	345.00 = 345.5*
126286 GOW R16	345.00 = 343.5	126290 LADENTWN	345.00 = 351.6
147833 MARCY T1	345.00 = 332.1*	126291 MILLWOOD	345.00 = 341.6*
137453 N.SCOT99	345.00 = 339.1*	147841 NIAGAR2E	230.00 = 229.0
147834 NIAG 345	345.00 = 358.3	129341 NRTHPRT1	138.00 = 142.3
149001 PANNELL3	345.00 = 337.9*	126294 PLTVLLEY	345.00 = 341.7*
126600 REAC71	345.00 = 339.2	126601 REAC72	345.00 = 339.3
126250 RAMAPO 5	500.00 = 509.4	125001 ROCK TAV	345.00 = 347.7*
130754 SOMERSET345	345.00 = 357.9	126298 SPRAINBROOK	345.00 = 339.7*
147840 MOSES W	230.00 = 227.3	130768 WATRC230	230.00 = 234.9
147827 MARCY765	765.00 = 740.5	147828 MASS 765	765.00 = 747.5
125000 HURLEY 3	345.00 = 347.4	128835 SHORE RD	345.00 = 339.8
130757 WATRC345	345.00 = 345.5	135250 DUNKIRK	230.00 = 226.2
130765 OAKDL230	230.00 = 234.5	137730 ROTRDM.2	230.00 = 220.0
181119 CHANY1	120.00 = 123.3	137716 ALB1	115.00 = 118.0
137488 BETHLEHE	115.00 = 118.2	130776 BORDR115	115.00 = 113.2
130794 DELHI115	115.00 = 114.5	130796 E.NOR115	115.00 = 111.2

126263 BUCHANAN S	345.00 = 345.8*
126266 DUNWOODIE	345.00 = 339.3*
130753 FRASR345	345.00 = 339.7
126283 GOTHLS	345.00 = 345.2
137451 LEEDS 3	345.00 = 347.1
137452 N.SCOT77	345.00 = 339.1*
147842 NIAGAR2W	230.00 = 229.0
130755 OAKDL345	345.00 = 334.8*
126295 RAINEY	345.00 = 337.3*
126297 RAMAPO	345.00 = 350.5
125002 ROSETON	345.00 = 347.9
149000 ROCH 345	345.00 = 337.8*
180819 CHA-NY	765.00 = 743.0
126281 E FISHKILL	345.00 = 344.0
136156 VOLNEY	345.00 = 353.0
130764 MEYER230	230.00 = 227.5
181219 CHANY2	120.00 = 123.3
130774 BATH 115	115.00 = 115.5
136181 CLAY	115.00 = 118.4
135277 FALCONER	115.00 = 116.7

130807 WESTOVER115 115.00 = 117.6	130826 MEYER115 115.00 = 115.5	147849 MOS 115 115.00 = 116.0
147850 NIAG115E 115.00 = 117.0	147851 NIAG115W 115.00 = 117.3	130836 N.WAV115 115.00 = 113.6
130838 OAKDL115 115.00 = 117.5	147852 PLAT T#3 115.00 = 116.2	125043 PL.VAL 1 115.00 = 116.9
137235 PORTER 1 115.00 = 119.5	125046 ROCK TV1 115.00 = 116.9	137532 RTRDM1 115.00 = 112.9
125048 SHENANDO 115.00 = 117.7	149011 S82-1115 115.00 = 116.9	149008 RUS 115 115.00 = 113.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131831	NOEND1G$	13.800	1 0	2	81.6	4.3	23.5	-2.2	1.0133	1.0133				105.8	163	4	
131832	NOEND2G$	13.800	1 0	2	81.6	3.1	21.6	-3.4	1.0120	1.0120				105.8	163	4	
131833	NOEND3S$	13.800	1 0	2	81.6	4.8	20.2	-1.8	1.0139	1.0139				105.8	163	4	
136777	LK COLBY	115.00	1 0	2	0.0	-1.1	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0267	1.0266				5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.3	3.2	-1.7	0.9700	0.9700				3.6	175	4	
146742	MASSENA_ST	13.800	1 0	2	22.2	-0.2	9.4	-4.7	1.0193	1.0193				39.6	175	4	
146743	MASSENA_GT	13.800	1 0	2	51.4	17.5	24.6	-12.3	1.0210	1.0210				78.3	175	4	
147763	MOS17-18	13.800	2 0	2	95.7	20.3	38.6	-30.8	0.9877	0.9877				120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	106.3	19.2	38.6	-30.8	0.9859	0.9859				120.0	158	4	
147766	MOS21-22	13.800	2 0	2	106.3	20.6	38.6	-30.8	0.9876	0.9876				120.0	158	4	
147768	MOS25-26	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0034				120.0	158	4	
147770	MOS23-24	13.800	2 0	2	106.3	20.6	38.6	-30.8	0.9876	0.9876				120.0	158	4	
147771	MOS27-28	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0033				120.0	158	4	
147772	MOS29-30	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0044				120.0	158	4	
147774	MOS31-32	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0044				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	67.5	11.0	22.9	-13.3	1.0300	1.0300				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	56.5	8.3	28.4	-17.6	1.0300	1.0300				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	49.5	10.0	26.1	-26.1	1.0300	1.0300				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	51.0	10.1	22.2	-21.6	1.0300	1.0300				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	21.0	1.9	6.9	-6.9	1.0300	1.0300				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	165.3	-8.3	-8.3	-8.3	0.9755	0.9438				215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	24.6	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	6.7	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	24.7	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180259	BHEA04	13.800	1 0	2	46.0	6.1	35.3	-15.4	0.9550	0.9550				57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	6.4	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180261	BHEA06	13.800	1 0	2	48.7	5.7	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180262	BHEA07	13.800	1 0	2	48.7	10.2	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180263	BHEA08	13.800	1 0	2	48.7	21.2	34.0	-34.0	0.9750	0.9750				57.0	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	15.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180271	BHEA16	13.800	1 0	2	34.0	15.6	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	15.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180273	BHEA18	13.800	1 0	2	34.0	15.7	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180274	BHEA19	13.800	1 0	2	42.8	15.4	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180275	BHEA20	13.800	1 0	2	33.0	15.4	30.8	-13.5	0.9750	0.9750				57.0	1145	4	
180278	BHOA23	13.800	1 0	2	39.0	9.3	32.1	-32.1	1.0000	1.0000				50.0	1145	4	
180279	BHOA24	13.800	1 0	2	41.4	20.0	29.8	-29.8	0.9600	0.9600				50.0	1145	4	
180281	BHOA26	13.800	1 0	2	33.0	11.1	30.8	-13.5	1.0000	1.0000				57.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	-10.1	50.3	-50.3	0.9200	0.9200				90.0	1145	4	
SUBSYSTEM TOTALS					2323.7	528.1	1170.9	-912.9						3130.3			

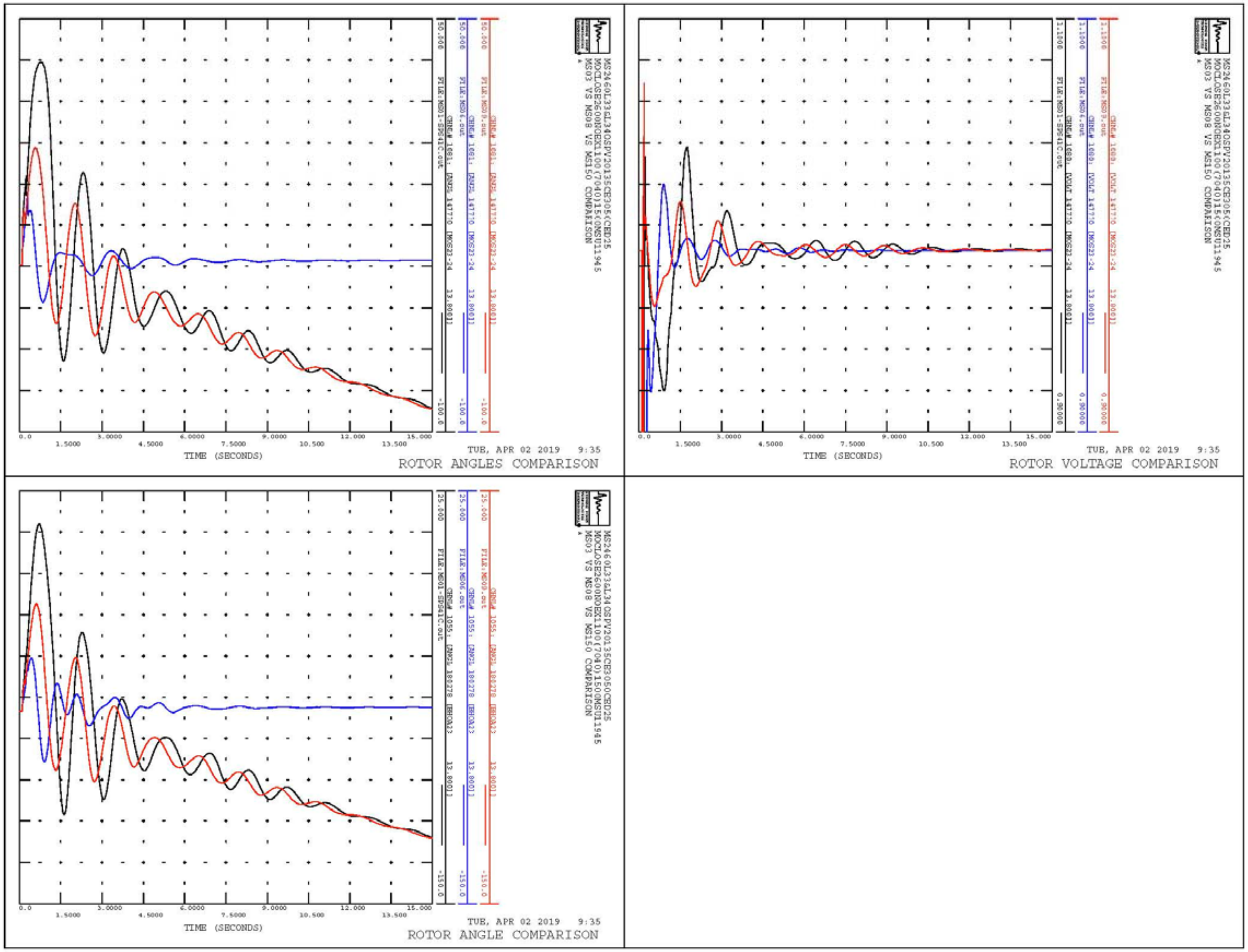

Fig B1 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

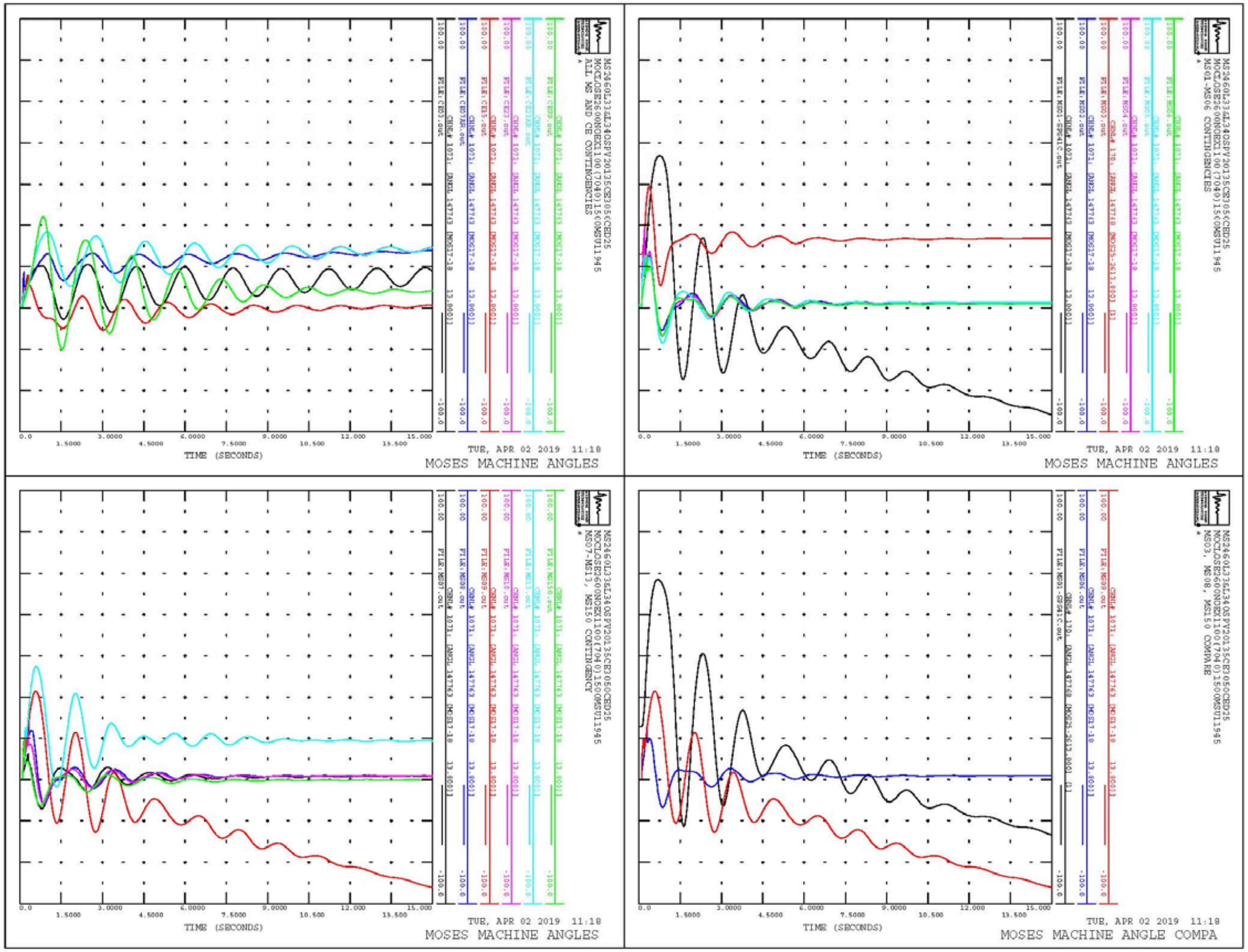

Fig B2: Comparative plots for Moses machine angle for all simulated contingencies

B.2 L33 & L34 & R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

CASE :9.02A: NX850 L33 & L34 &R8105 O/S
MSC2350,MS2240,PV100, CHAT0, CED25, CE2887

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	2098.5	2.5	DYSE-CLOSE	3553.3	460.3
WEST-CENTRAL	786.8	-127.6	WESTC-CLOSE	2241.7	330.2
VOLNEY-EAST	3860.3	-213.5	VOLNEY-CLOSE	5084.1	232.0
MOSES-SOUTH	2239.8	-274.9	MOSES-CLOSE	2346.7	-286.8
CENTRAL-EAST	2887.0	-764.1	TOTAL-EAST	6436.9	-774.8
UPNY-SENY	4735.6	136.2	UPNY-SENY-CL	6028.9	398.8
UPNY-CONED	4941.6	263.3	UPNY-CON-CL	7065.3	403.6
MILLWOOD-SO	7563.0	494.6	LIPA-IMPORT	2006.3	-130.0
DNWDIE-SO-PL	4899.9	-386.3	DNWDIE-SO-PC	7023.6	-246.0
DNWDIE-SO-OP	3985.3	-363.0	PJM-NY	1431.7	542.3
NE-NY-WCSC	-1657.2	229.7	ON-NY	2117.3	227.7
ONT-MICH-PAR	226.2	-5.3	Northern Export	850.7	-40.5

STATION VOLTAGES

126260 BOWLINE1	345.00 =	357.7	126261 BOWLINE2	345.00 =	357.6	126263 BUCHANAN S	345.00 =	350.3
136150 CLAY	345.00 =	348.4	130750 COOPC345	345.00 =	348.0	126266 DUNWOODIE	345.00 =	343.9*
137200 EDIC	345.00 =	344.4*	126277 FARRAGUT	345.00 =	340.2	130753 FRASR345	345.00 =	352.7
135413 GRDNVL2	230.00 =	227.4	147831 GILB 345	345.00 =	357.8	126283 GOTHLS	345.00 =	345.7
126286 GOW R16	345.00 =	344.2	126290 LADENTWN	345.00 =	355.6	137451 LEEDS 3	345.00 =	357.2
147833 MARCY T1	345.00 =	345.1*	126291 MILLWOOD	345.00 =	346.3*	137452 N.SCOT77	345.00 =	350.9
137453 N.SCOT99	345.00 =	350.9	147841 NIAGAR2E	230.00 =	229.4	147842 NIAGAR2W	230.00 =	229.4
147834 NIAG 345	345.00 =	359.1	129341 NRTHPRT1	138.00 =	142.4	130755 OAKDL345	345.00 =	343.3
149001 PANNELL3	345.00 =	340.7*	126294 PLTVLLEY	345.00 =	347.4*	126295 RAINEY	345.00 =	339.9
126600 REAC71	345.00 =	342.0	126601 REAC72	345.00 =	342.1	126297 RAMAPO	345.00 =	354.6
126250 RAMAPO 5	500.00 =	511.7	125001 ROCK TAV	345.00 =	353.5	125002 ROSETON	345.00 =	352.7
130754 SOMERSET345	345.00 =	358.3	126298 SPRAINBROOK	345.00 =	344.3*	149000 ROCH 345	345.00 =	340.2*
147840 MOSES W	230.00 =	230.8	130768 WATRC230	230.00 =	238.2	180819 CHA-NY	765.00 =	753.6
147827 MARCY765	765.00 =	768.4	147828 MASS 765	765.00 =	763.7	126281 E FISHKILL	345.00 =	349.3
125000 HURLEY 3	345.00 =	354.7	128835 SHORE RD	345.00 =	344.4	136156 VOLNEY	345.00 =	356.4
130757 WATRC345	345.00 =	351.4	135250 DUNKIRK	230.00 =	226.7	130764 MEYER230	230.00 =	229.2
130765 OAKDL230	230.00 =	239.0	137730 ROTRDM.2	230.00 =	225.4	181219 CHANY2	120.00 =	123.8
181119 CHANY1	120.00 =	123.8	137716 ALB1	115.00 =	118.5	130774 BATH 115	115.00 =	115.9
137488 BETHLEHE	115.00 =	118.8	130776 BORDR115	115.00 =	113.9	136181 CLAY	115.00 =	119.6
130794 DELHI115	115.00 =	116.3	130796 E.NOR115	115.00 =	113.2	135277 FALCONER	115.00 =	116.8
130807 WESTOVER115	115.00 =	120.1	130826 MEYER115	115.00 =	116.2	147849 MOS 115	115.00 =	117.0

147850 NIAG115E	115.00 = 117.1	147851 NIAG115W	115.00 = 117.4	130836 N.WAV115	115.00 = 114.4
130838 OAKDL115	115.00 = 120.1	147852 PLAT T#3	115.00 = 116.7	125043 PL.VAL 1	115.00 = 117.9
137235 PORTER 1	115.00 = 120.4	125046 ROCK TV1	115.00 = 117.4	137532 RTRDM1	115.00 = 114.6
125048 SHENANDO	115.00 = 118.3	149011 S82-1115	115.00 = 117.4	149008 RUS 115	115.00 = 114.2

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2 0	-2	1.3	0.0	0.0	0.0	1.0000	1.0308				3.0	163	4	
131769	CADYVILE	46.000	3 0	-2	2.1	0.0	3.1	0.0	1.0000	1.0209				5.0	163	4	
131778	HIGHFL46	46.000	3 0	-2	8.7	1.6	1.6	1.6	1.0000	1.0281				16.0	163	4	
131782	INDIAN T	46.000	1 0	-2	3.7	0.0	0.0	0.0	1.0000	1.0145				10.0	163	4	
131786	KENTSF46	46.000	3 0	-2	7.9	1.0	5.7	1.0	1.0000	1.0191				13.0	163	4	
131789	MILL C46	46.000	3 0	-2	3.5	0.0	3.0	0.0	1.0187	1.0210				6.0	163	4	
131795	RAINBOW	46.000	2 0	-2	1.5	0.0	0.0	0.0	1.0000	1.0304				3.0	163	4	
131813	CHATGY34	34.500	2 1	-2	1.5	0.0	0.0	0.0	1.0000	1.0011				4.0	163	4	
131831	NOEND1G$	13.800	1 0	2	81.6	1.7	23.5	-2.2	1.0133	1.0133				105.8	163	4	
131832	NOEND2G$	13.800	1 0	2	81.6	0.5	21.6	-3.4	1.0120	1.0120				105.8	163	4	
131833	NOEND3S$	13.800	1 0	2	51.6	0.6	20.2	-1.8	1.0139	1.0139				105.8	163	4	
136751	ALLENS F	115.00	1 0	-2	2.6	-1.5	3.1	-1.5	1.0266	1.0346				5.0	175	4	
136777	LK COLBY	115.00	1 0	2	0.0	-1.5	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1 0	-2	1.4	-0.2	1.0	-0.2	1.0267	1.0341				5.0	175	4	
136865	UNION	46.000	1 0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207				3.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.3	3.2	-1.7	0.9700	0.9700				3.6	175	4	
137179	FRANK HY	2.3000	2 1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000				4.0	175	4	
147763	MOS17-18	13.800	2 0	2	94.3	7.3	38.6	-30.8	0.9877	0.9877				120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	106.3	6.4	38.6	-30.8	0.9859	0.9859				120.0	158	4	
147766	MOS21-22	13.800	2 0	2	106.3	7.0	38.6	-30.8	0.9876	0.9876				120.0	158	4	
147768	MOS25-26	13.800	2 0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0117				120.0	158	4	
147770	MOS23-24	13.800	2 0	2	106.3	7.0	38.6	-30.8	0.9876	0.9876				120.0	158	4	
147771	MOS27-28	13.800	2 0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0115				120.0	158	4	
147772	MOS29-30	13.800	2 0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0127				120.0	158	4	
147774	MOS31-32	13.800	2 0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0127				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	67.5	2.5	22.9	-13.3	1.0300	1.0300				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	66.5	2.2	28.4	-17.6	1.0300	1.0300				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	49.5	4.2	26.1	-26.1	1.0300	1.0300				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	51.0	2.9	22.2	-21.6	1.0300	1.0300				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	21.0	0.3	6.9	-6.9	1.0300	1.0300				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	5.3	1.7	123.2	-82.6	0.9755	0.9755				215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	24.0	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	5.7	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	24.0	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180259	BHEA04	13.800	1 0	2	46.0	5.5	35.3	-15.4	0.9550	0.9550				57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	5.7	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180261	BHEA06	13.800	1 0	2	48.7	5.1	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180262	BHEA07	13.800	1 0	2	48.7	8.8	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180263	BHEA08	13.800	1 0	2	48.7	20.1	34.0	-34.0	0.9750	0.9750				57.0	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	14.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180271	BHEA16	13.800	1 0	2	34.0	14.6	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	14.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	

180273	BHEA18	13.800	1	0	2	34.0	14.7	30.7	-30.7	0.9750	0.9750	51.4	1145	4
180274	BHEA19	13.800	1	0	2	42.8	14.4	29.8	-29.8	0.9750	0.9750	50.0	1145	4
180275	BHEA20	13.800	1	0	2	33.0	14.5	30.8	-13.5	0.9750	0.9750	57.0	1145	4
180278	BHOA23	13.800	1	0	2	39.0	2.3	32.1	-32.1	1.0000	1.0000	50.0	1145	4
180279	BHOA24	13.800	1	0	2	41.4	1.5	29.8	-29.8	0.9600	0.9600	50.0	1145	4
180280	BHOA25	13.800	1	0	2	45.0	22.9	30.0	-13.1	1.0000	1.0000	57.0	1145	4
180281	BHOA26	13.800	1	0	2	33.0	3.3	30.8	-13.5	1.0000	1.0000	57.0	1145	4
180282	BHOA27	13.800	1	0	2	59.0	18.8	50.0	-25.0	1.0000	1.0000	90.0	1145	4
180283	BHOA28	13.800	1	0	2	53.7	19.0	50.3	-50.3	1.0000	1.0000	90.0	1145	4
SUBSYSTEM TOTALS						2207.8	453.3	1366.0	-1007.8			3231.4		

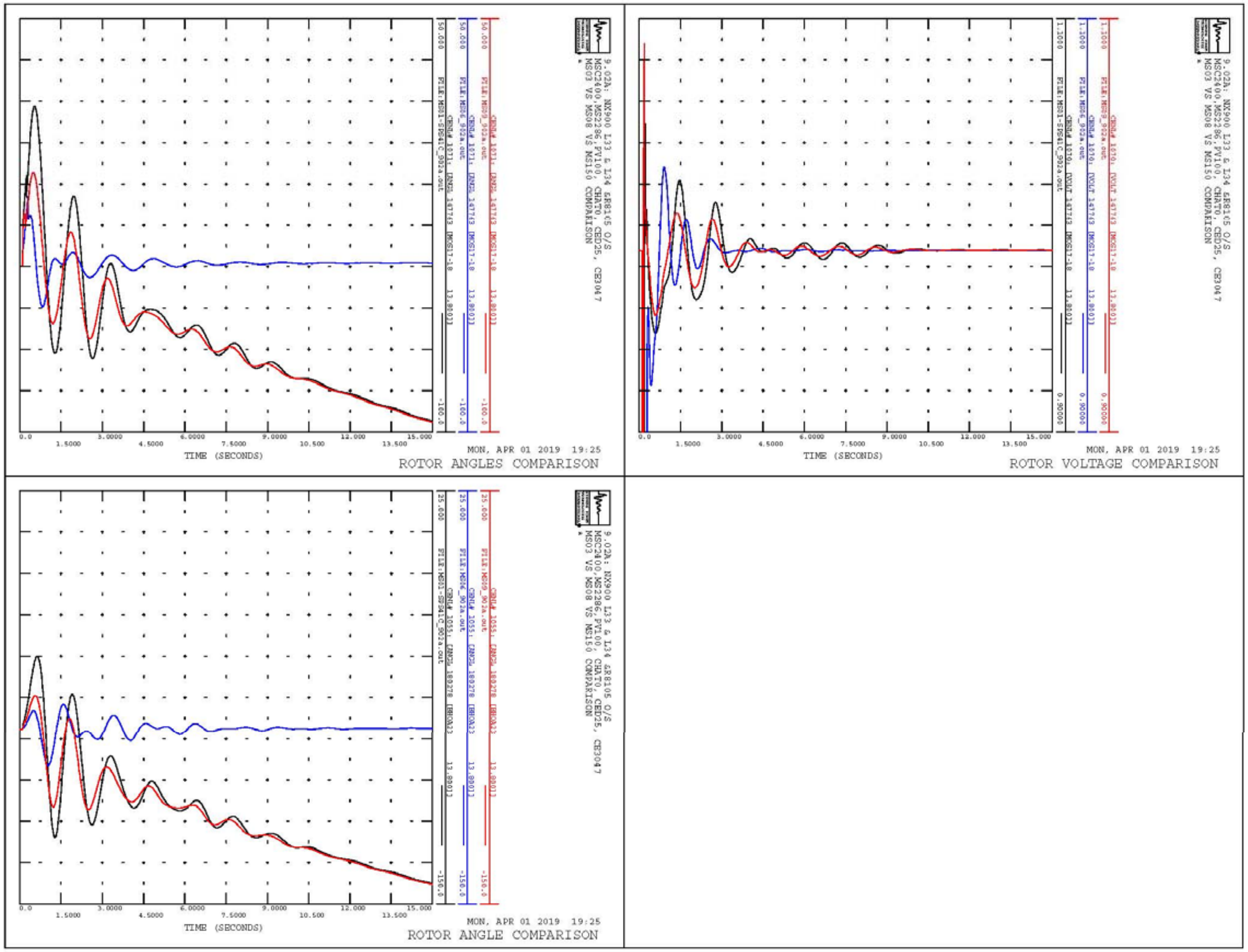

Fig B3 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

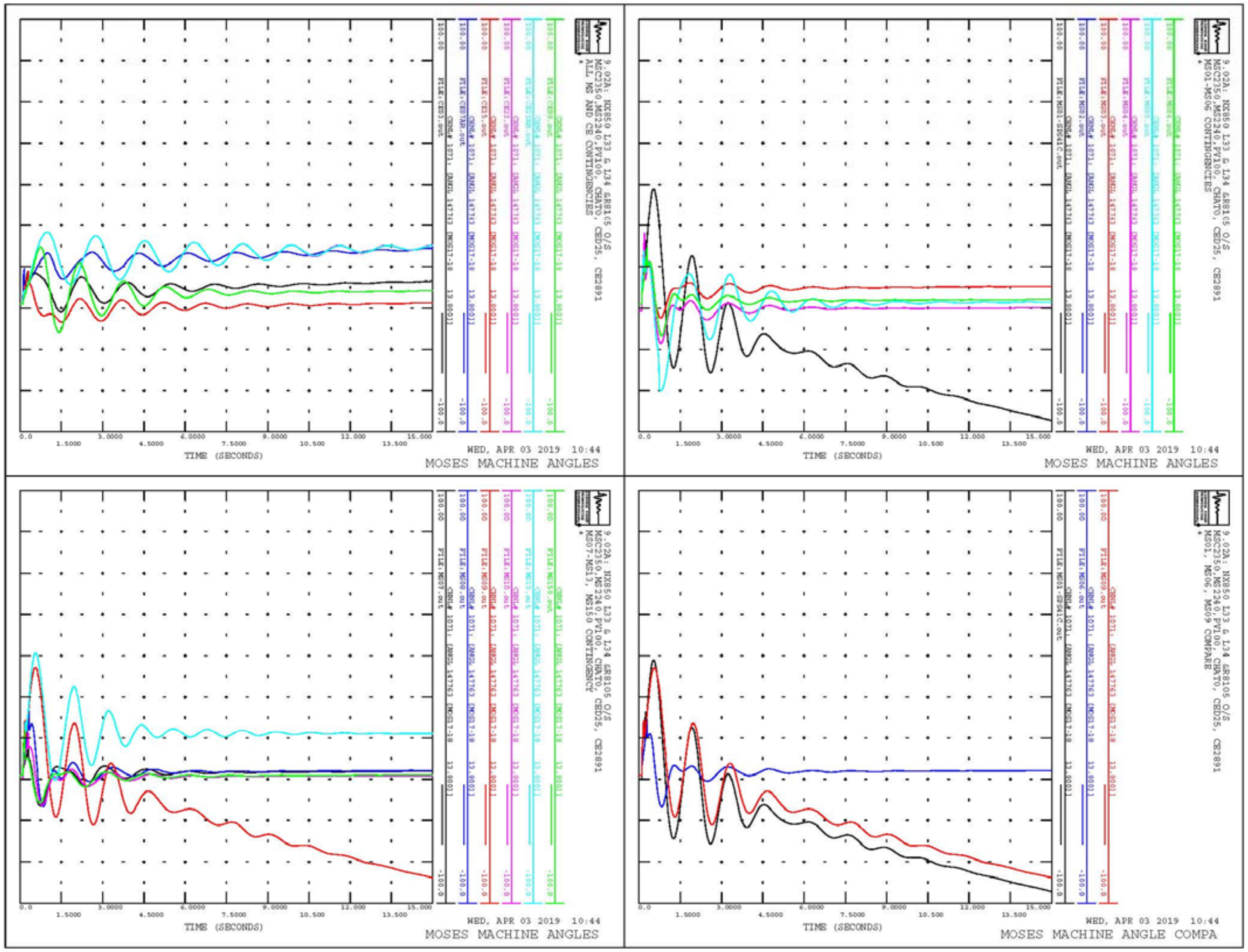

Fig B4 Comparative plots for Moses machine angle for all simulated contingencies

B.3 L33 & L34 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

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CASE :9.03A: NX850 L33 & L34 &PV20 O/S
       MSC2279,MS2279,PV100, CHAT0, CED25, CE2886

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW      MVAr     DESCRIPTION          MW      MVAr

  DYSINGER-EAS        2391.9    103.9  DYSE-CLOSE          3969.9    757.0
  WEST-CENTRAL        1068.3   -156.2  WESTC-CLOSE         2646.3    496.9
  VOLNEY-EAST         4066.6     98.8  VOLNEY-CLOSE        5379.2    677.5
  MOSES-SOUTH         2279.0    -87.0  MOSES-CLOSE         2279.0    -94.9
  CENTRAL-EAST        2885.6   -920.2  TOTAL-EAST          6643.1   -984.7
  UPNY-SENY           4645.5   -159.5  UPNY-SENY-CL        6027.9    204.8
  UPNY-CONED          4848.7    249.9  UPNY-CON-CL         7059.6    422.6
  MILLWOOD-SO         7578.3    467.0  LIPA-IMPORT         2007.0   -144.1
  DNWDIE-SO-PL        4814.1   -468.2  DNWDIE-SO-PC        7025.0   -295.5
  DNWDIE-SO-OP        3899.2   -429.0  PJM-NY              1520.4    753.3
  NE-NY-WCSC         -1660.8    383.7  ON-NY               2044.3    247.6
  ONT-MICH-PAR         308.4    -19.1  Northern Export      783.1     43.6

                             STATION VOLTAGES

  126260 BOWLINE1    345.00 = 353.8      126261 BOWLINE2    345.00 = 353.6      126263 BUCHANAN S  345.00 = 345.7*
  136150 CLAY        345.00 = 341.3*     130750 COOPC345    345.00 = 335.8*     126266 DUNWOODIE   345.00 = 339.4*
  137200 EDIC        345.00 = 329.6*     126277 FARRAGUT    345.00 = 337.9*     130753 FRASR345    345.00 = 336.8*
  135413 GRDNVL2     230.00 = 224.5*     147831 GILB 345    345.00 = 343.3*     126283 GOTHLS      345.00 = 345.2
  126286 GOW R16     345.00 = 343.6      126290 LADENTWN    345.00 = 351.4      137451 LEEDS 3     345.00 = 345.5
  147833 MARCY T1    345.00 = 330.1*     126291 MILLWOOD    345.00 = 341.5*     137452 N.SCOT77    345.00 = 337.5*
  137453 N.SCOT99    345.00 = 337.5*     147841 NIAGAR2E    230.00 = 227.4      147842 NIAGAR2W    230.00 = 227.4
  147834 NIAG 345    345.00 = 357.2      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 332.2*
  149001 PANNELL3    345.00 = 333.6*     126294 PLTVLLEY    345.00 = 341.1*     126295 RAINEY      345.00 = 337.5*
  126600 REAC71      345.00 = 339.4      126601 REAC72      345.00 = 339.5      126297 RAMAPO      345.00 = 350.3
  126250 RAMAPO 5    500.00 = 509.1      125001 ROCK TAV    345.00 = 347.1*     125002 ROSETON     345.00 = 347.4
  130754 SOMERSET345 345.00 = 356.0      126298 SPRAINBROOK 345.00 = 339.8*     149000 ROCH 345    345.00 = 332.9*
  147840 MOSES W     230.00 = 229.3      130768 WATRC230    230.00 = 233.0      180819 CHA-NY      765.00 = 745.2
  147827 MARCY765    765.00 = 739.0      147828 MASS 765    765.00 = 750.8      126281 E FISHKILL  345.00 = 343.5
  125000 HURLEY 3    345.00 = 346.4      128835 SHORE RD    345.00 = 339.9      136156 VOLNEY      345.00 = 352.0
  130757 WATRC345    345.00 = 343.0      135250 DUNKIRK     230.00 = 223.7      130764 MEYER230    230.00 = 224.2
  130765 OAKDL230    230.00 = 232.6      137730 ROTRDM.2    230.00 = 220.1      181219 CHANY2      120.00 = 123.4
  181119 CHANY1      120.00 = 123.4      137716 ALB1        115.00 = 117.9      130774 BATH 115    115.00 = 114.8
  137488 BETHLEHE    115.00 = 118.0      130776 BORDR115    115.00 = 112.8      136181 CLAY        115.00 = 117.7
  130794 DELHI115    115.00 = 114.4      130796 E.NOR115    115.00 = 110.7      135277 FALCONER    115.00 = 115.6
  130807 WESTOVER115 115.00 = 116.7      130826 MEYER115    115.00 = 114.9      147849 MOS 115     115.00 = 116.9
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147850	NIAG115E	115.00 =	116.6	147851	NIAG115W	115.00 =	116.9	130836	N.WAV115	115.00 =	112.9
130838	OAKDL115	115.00 =	116.7	147852	PLAT T#3	115.00 =	115.9	125043	PL.VAL 1	115.00 =	116.7
137235	PORTER 1	115.00 =	118.9	125046	ROCK TV1	115.00 =	116.8	137532	RTRDM1	115.00 =	112.8
125048	SHENANDO	115.00 =	117.5	149011	S82-1115	115.00 =	116.0	149008	RUS 115	115.00 =	112.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	0.0	-2.8	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	0.6	1.0	-0.2	1.0267	1.0267		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	-0.5	9.4	-4.7	1.0193	1.0193		39.6	175	4	
146743	MASSENA_GT	13.800	1	0	2	51.4	14.1	24.6	-12.3	1.0210	1.0210		78.3	175	4	
147763	MOS17-18	13.800	2	0	2	75.6	11.7	38.6	-30.8	0.9877	0.9877		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	106.3	11.9	38.6	-30.8	0.9859	0.9859		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	106.3	13.1	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	106.3	38.6	38.6	-30.8	1.0127	1.0105		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	106.3	13.1	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	106.3	38.6	38.6	-30.8	1.0127	1.0103		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	106.3	38.6	38.6	-30.8	1.0127	1.0115		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	106.3	38.6	38.6	-30.8	1.0127	1.0115		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	52.5	0.6	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	51.5	1.6	28.4	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	39.5	4.0	26.1	-26.1	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	41.0	2.9	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	21.0	0.0	6.9	-6.9	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	145.3	33.0	33.0	33.0	0.9755	1.0067		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	24.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	6.5	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	24.6	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	46.0	6.0	35.3	-15.4	0.9550	0.9550		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	6.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180261	BHEA06	13.800	1	0	2	48.7	5.6	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180262	BHEA07	13.800	1	0	2	48.7	9.9	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180263	BHEA08	13.800	1	0	2	48.7	21.0	34.0	-34.0	0.9750	0.9750		57.0	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	15.4	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1	0	2	34.0	15.4	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	15.4	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1	0	2	34.0	15.5	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180274	BHEA19	13.800	1	0	2	42.8	15.2	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180275	BHEA20	13.800	1	0	2	33.0	15.2	30.8	-13.5	0.9750	0.9750		57.0	1145	4	
180278	BHOA23	13.800	1	0	2	39.0	8.4	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1	0	2	41.4	4.0	29.8	-29.8	0.9600	0.9600		50.0	1145	4	
180280	BHOA25	13.800	1	0	2	45.0	25.5	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	33.0	10.1	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180283	BHOA28	13.800	1	0	2	45.7	22.9	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						2035.8	526.0	1176.9	-877.3				2870.0			

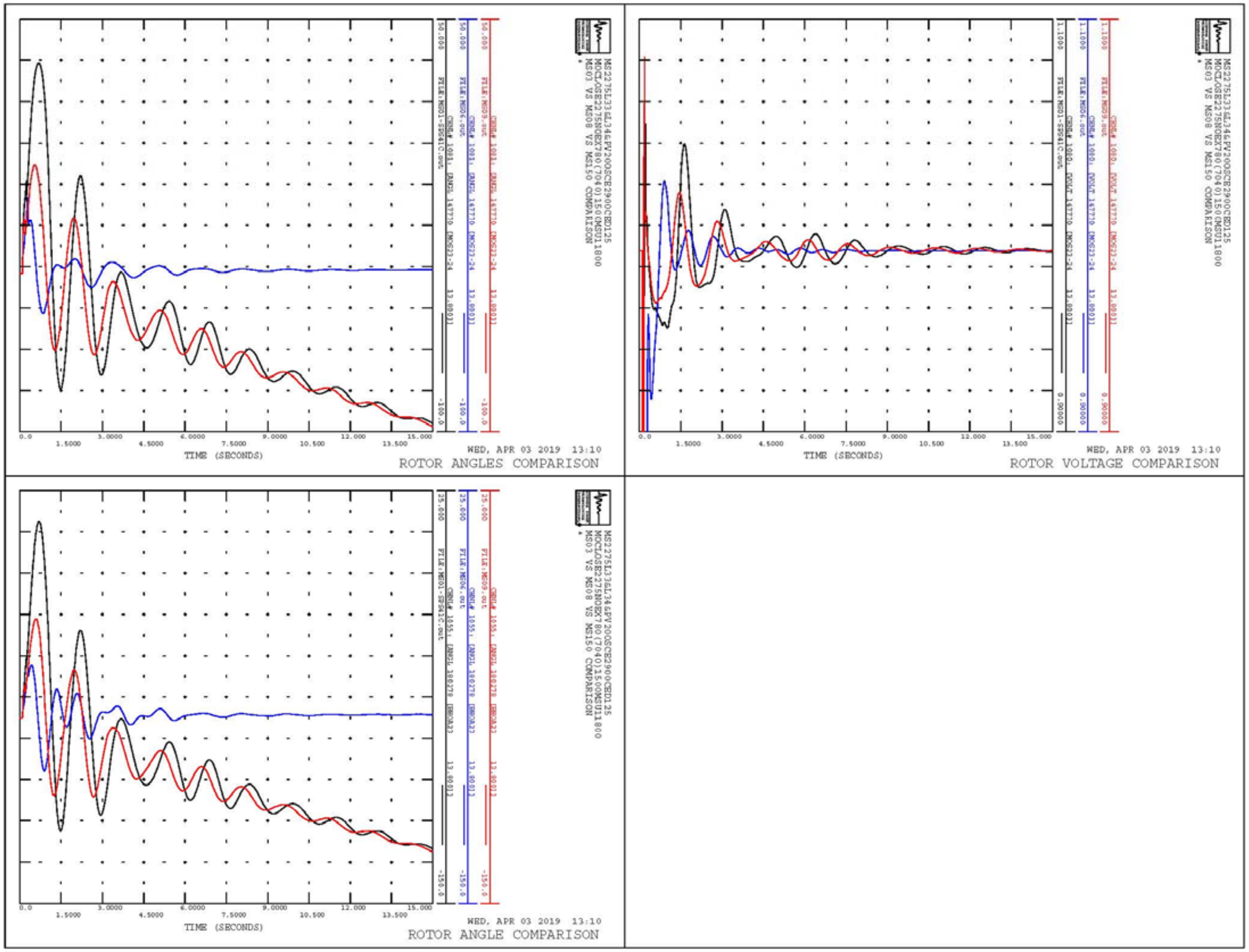

Fig B5 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

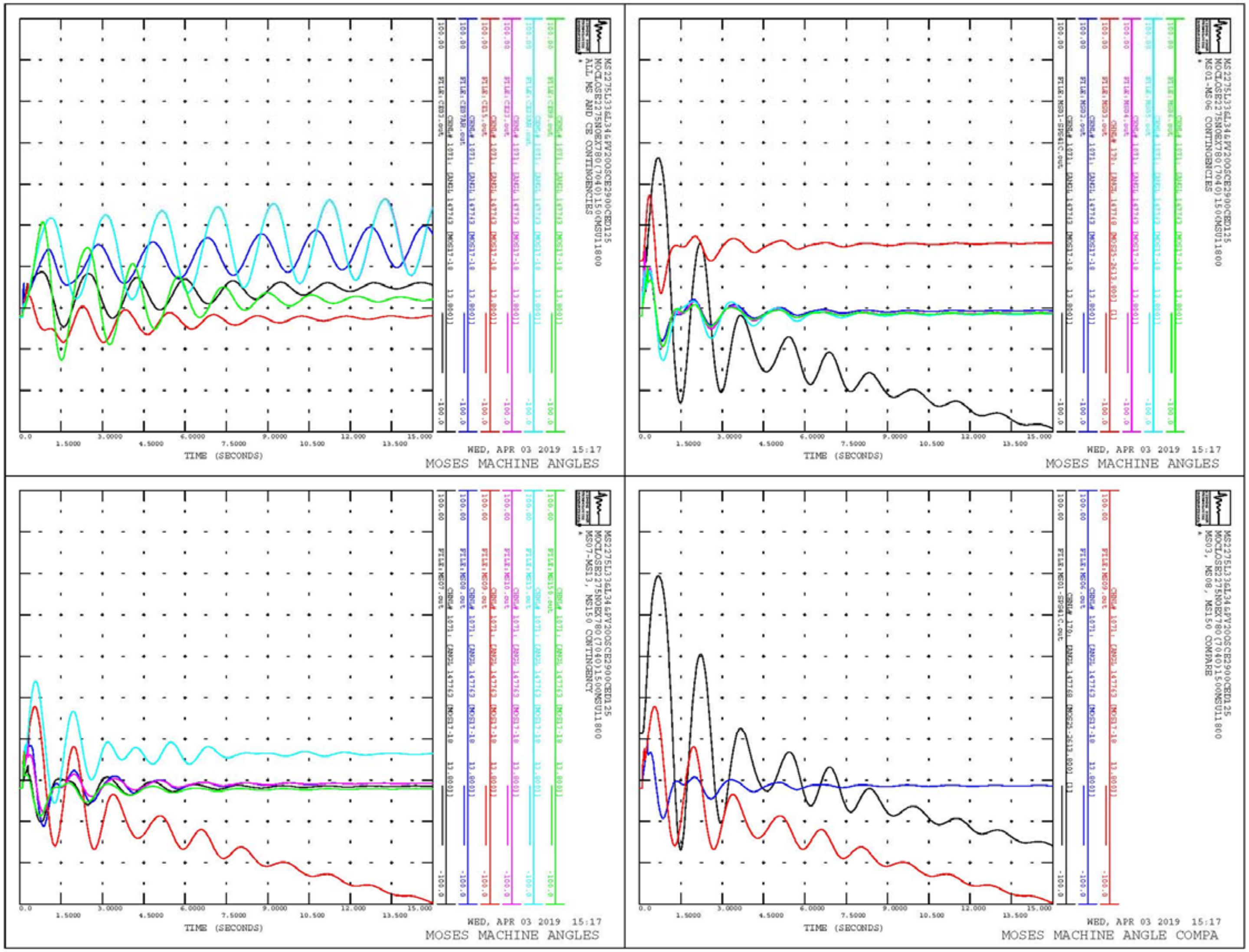

Fig B6 Comparative plots for Moses machine angle for all simulated contingencies

B.4 L33 & L34 & MAP1 O/S:

Test Level Interface Power Flow Summary and Key Voltages

CASE :9.04A NORTH EX 863 L33&L34&MAP1 O/S
MSC:1901 MS:1794,L34:OS,PV:100,MSU:IS,CED:25,CHAT:0,CE:2331

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1887.4	-2.4	DYSE-CLOSE	3192.8	199.0
WEST-CENTRAL	584.1	-161.4	WESTC-CLOSE	1889.5	40.0
VOLNEY-EAST	2955.2	-83.0	VOLNEY-CLOSE	4178.9	105.3
MOSES-SOUTH	1793.9	-395.3	MOSES-CLOSE	1900.7	-401.5
CENTRAL-EAST	2328.7	-394.8	TOTAL-EAST	5321.8	-382.0
UPNY-SENY	4366.2	-8.5	UPNY-SENY-CL	5659.4	144.1
UPNY-CONED	4476.7	-79.3	UPNY-CON-CL	6600.6	-85.1
MILLWOOD-SO	7185.6	70.1	LIPA-IMPORT	2006.6	-161.9
DNWDIE-SO-PL	4457.5	-398.7	DNWDIE-SO-PC	6581.4	-404.5
DNWDIE-SO-OP	3542.3	-340.8	PJM-NY	1209.8	292.7
NE-NY-WCSC	-758.3	126.0	ON-NY	1002.1	162.6
ONT-MICH-PAR	-1.2	4.9	Northern Export	865.6	71.1

STATION VOLTAGES

126260 BOWLINE1	345.00 =	359.3	126261 BOWLINE2	345.00 =	359.2	126263 BUCHANAN S	345.00 =	355.7
136150 CLAY	345.00 =	361.0	130750 COOPC345	345.00 =	355.8	126266 DUNWOODIE	345.00 =	353.0
137200 EDIC	345.00 =	358.8	126277 FARRAGUT	345.00 =	350.1	130753 FRASR345	345.00 =	360.6
135413 GRDNVL2	230.00 =	232.2	147831 GILB 345	345.00 =	360.7	126283 GOTHLS	345.00 =	348.0
126286 GOW R16	345.00 =	347.1	126290 LADENTWN	345.00 =	358.2	137451 LEEDS 3	345.00 =	360.5
147833 MARCY T1	345.00 =	358.9	126291 MILLWOOD	345.00 =	353.4	137452 N.SCOT77	345.00 =	357.8
137453 N.SCOT99	345.00 =	357.8	147841 NIAGAR2E	230.00 =	232.0	147842 NIAGAR2W	230.00 =	232.0
147834 NIAG 345	345.00 =	358.7	129341 NRTHPRT1	138.00 =	142.4	130755 OAKDL345	345.00 =	357.3
149001 PANNELL3	345.00 =	348.9	126294 PLTVLLEY	345.00 =	354.3	126295 RAINEY	345.00 =	350.4
126600 REAC71	345.00 =	352.5	126601 REAC72	345.00 =	352.6	126297 RAMAPO	345.00 =	357.7
126250 RAMAPO 5	500.00 =	520.6	125001 ROCK TAV	345.00 =	357.0	125002 ROSETON	345.00 =	356.6
130754 SOMERSET345	345.00 =	359.1	126298 SPRAINBROOK	345.00 =	353.1	149000 ROCH 345	345.00 =	347.1
147840 MOSES W	230.00 =	235.0	130768 WATRC230	230.00 =	236.1	180819 CHA-NY	765.00 =	724.4*
147827 MARCY765	765.00 =	761.3	147828 MASS 765	765.00 =	744.6	126281 E FISHKILL	345.00 =	355.8
125000 HURLEY 3	345.00 =	359.0	128835 SHORE RD	345.00 =	353.7	136156 VOLNEY	345.00 =	368.0*
130757 WATRC345	345.00 =	362.0	135250 DUNKIRK	230.00 =	231.7	130764 MEYER230	230.00 =	228.1
130765 OAKDL230	230.00 =	236.9	137730 ROTRDM.2	230.00 =	236.1	181219 CHANY2	120.00 =	116.0
181119 CHANY1	120.00 =	116.0	137716 ALB1	115.00 =	117.7	130774 BATH 115	115.00 =	116.1
137488 BETHLEHE	115.00 =	118.0	130776 BORDR115	115.00 =	114.6	136181 CLAY	115.00 =	119.5
130794 DELHI115	115.00 =	115.6	130796 E.NOR115	115.00 =	114.9	135277 FALCONER	115.00 =	117.4
130807 WESTOVER115	115.00 =	119.1	130826 MEYER115	115.00 =	116.4	147849 MOS 115	115.00 =	119.3

147850	NIAG115E	115.00 = 117.2	147851	NIAG115W	115.00 = 117.8	130836	N.WAV115	115.00 = 114.0
130838	OAKDL115	115.00 = 119.1	147852	PLAT T#3	115.00 = 117.3	125043	PL.VAL 1	115.00 = 117.2
137235	PORTER 1	115.00 = 118.4	125046	ROCK TV1	115.00 = 116.9	137532	RTRDM1	115.00 = 114.8
125048	SHENANDO	115.00 = 117.7	149011	S82-1115	115.00 = 117.7	149008	RUS 115	115.00 = 114.8

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	0.0	-2.5	75.0	-15.0	1.0303	1.0303		90.0	175	4
136795	PARISHVL	115.00	1	0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0345		5.0	175	4
137166	CHASM HY	2.2000	3	0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4
147763	MOS17-18	13.800	2	0	2	102.8	29.6	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	30.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	30.7	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0292		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	30.7	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	38.6	38.6	0.0	1.0300	1.0291		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	29.5	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	29.5	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	97.0	5.0	22.9	-13.3	1.0500	1.0500		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	103.0	5.3	16.1	-17.6	1.0500	1.0500		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	75.0	2.7	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	50.0	3.2	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	2.7	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	100.0	33.0	33.0	33.0	1.0000	1.0275		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9223		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	34.0	34.0	-34.0	0.9550	0.9527		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9222		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9798		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	24.7	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	22.2	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1671.5	517.1	763.9	-490.3				2147.3			

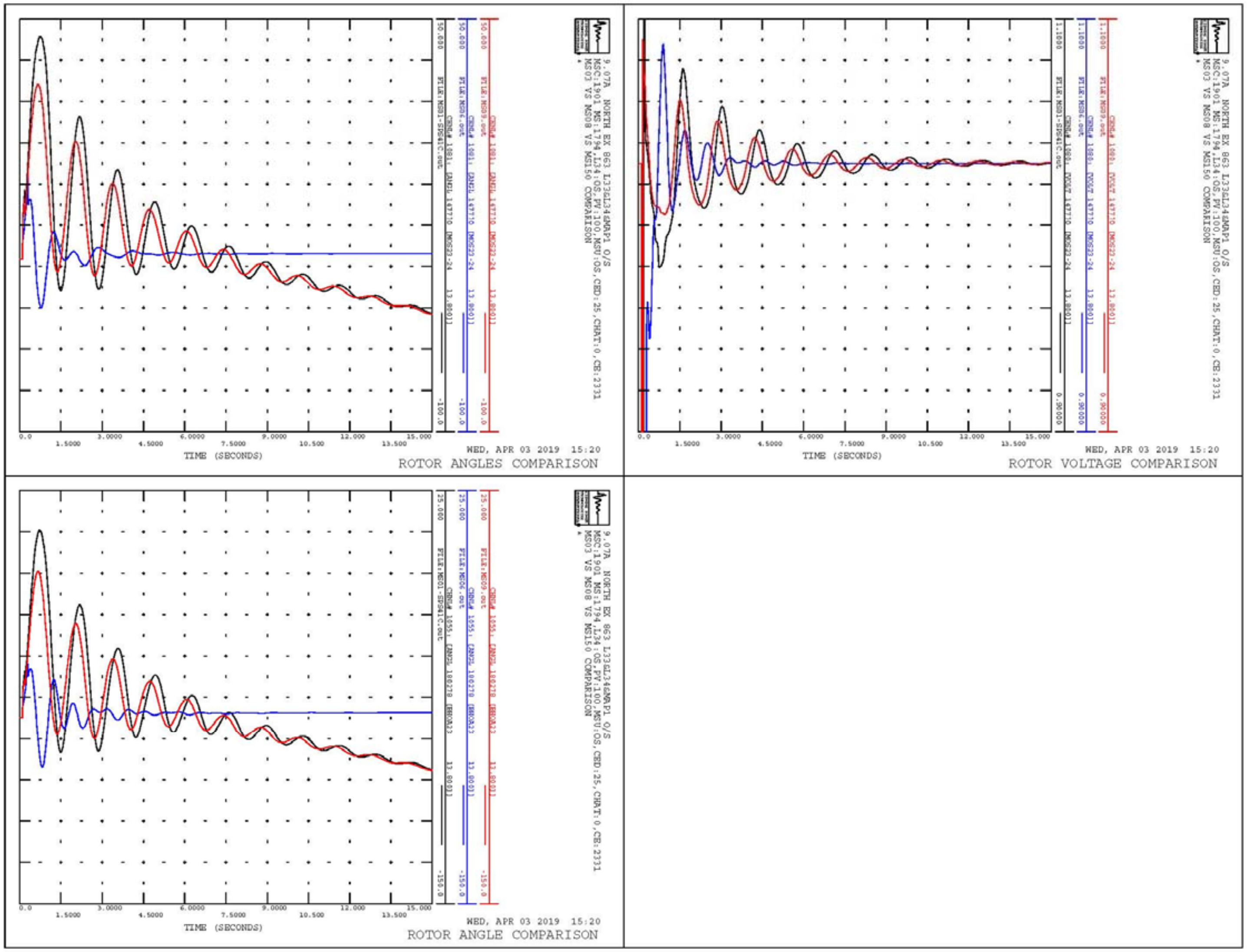

Fig B7 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

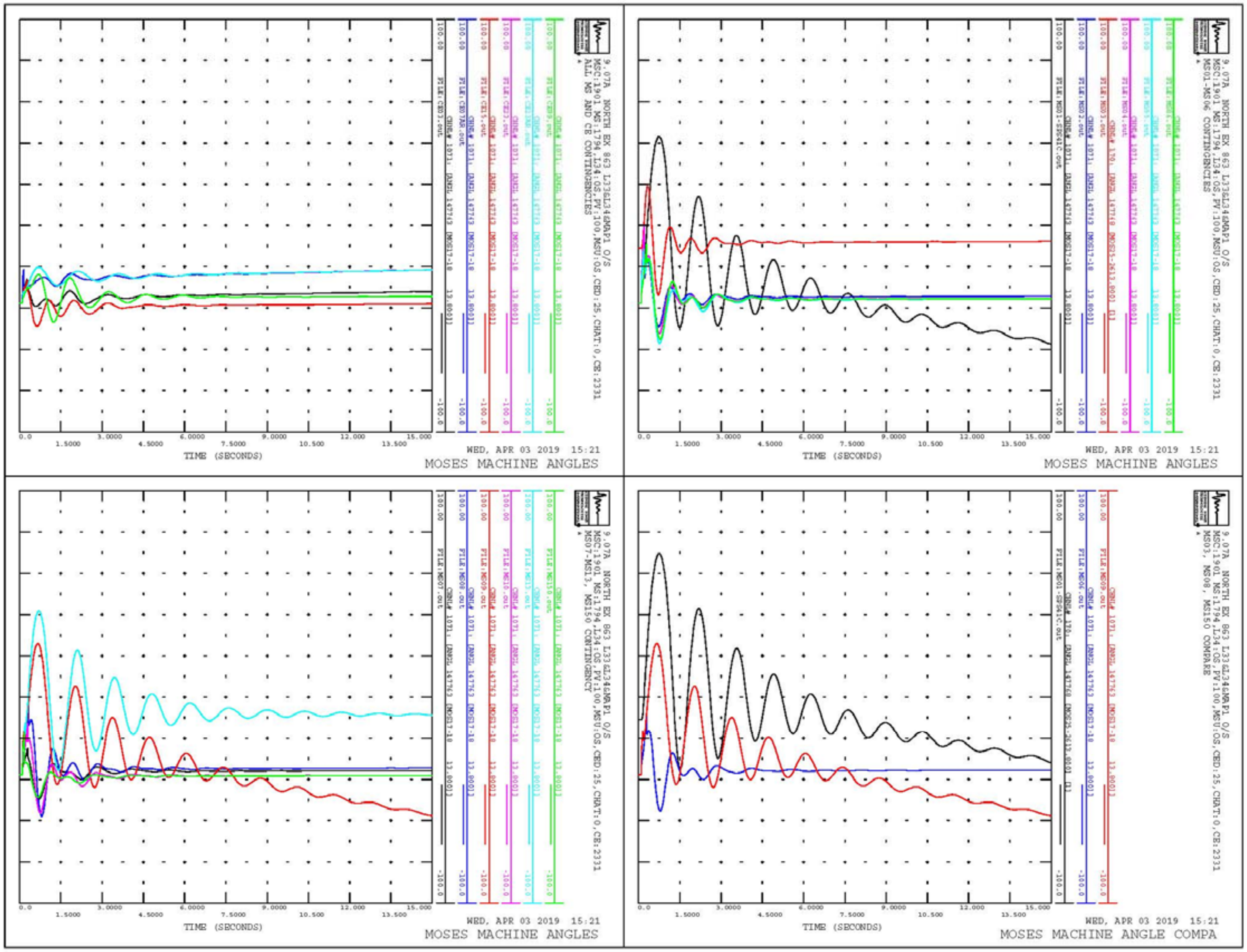

Fig B8 Comparative plots for Moses machine angle for all simulated contingencies

B.5 L33 & L34 & MAP1 &R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

CASE :9.08B NORTH EX 772 L33&L34&MAP1 &R8105 O/S
MSC:1807 MS:1700,L34:OS,PV:100,MSU:IS,CED:115,CHAT:0,CE:2326

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1885.1	-2.5	DYSE-CLOSE	3186.8	199.2
WEST-CENTRAL	581.9	-160.5	WESTC-CLOSE	1883.7	41.2
VOLNEY-EAST	3050.6	-114.4	VOLNEY-CLOSE	4273.4	73.0
MOSES-SOUTH	1700.2	-400.6	MOSES-CLOSE	1807.1	-406.6
CENTRAL-EAST	2326.2	-385.8	TOTAL-EAST	5321.9	-369.6
UPNY-SENY	4366.9	-4.8	UPNY-SENY-CL	5659.5	147.1
UPNY-CONED	4477.1	-78.2	UPNY-CON-CL	6600.6	-84.3
MILLWOOD-SO	7185.5	70.2	LIPA-IMPORT	2006.6	-161.8
DNWDIE-SO-PL	4457.9	-398.1	DNWDIE-SO-PC	6581.4	-404.2
DNWDIE-SO-OP	3542.8	-340.4	PJM-NY	1204.1	293.4
NE-NY-WCSC	-758.3	124.4	ON-NY	1001.8	162.8
ONT-MICH-PAR	-0.9	4.8	Northern Export	771.5	59.0

STATION VOLTAGES

126260 BOWLINE1 345.00 = 359.3	126261 BOWLINE2 345.00 = 359.2	126263 BUCHANAN S 345.00 = 355.7
136150 CLAY 345.00 = 361.0	130750 COOPC345 345.00 = 356.0	126266 DUNWOODIE 345.00 = 353.1
137200 EDIC 345.00 = 359.3	126277 FARRAGUT 345.00 = 350.1	130753 FRASR345 345.00 = 360.7
135413 GRDNVL2 230.00 = 232.1	147831 GILB 345 345.00 = 360.7	126283 GOTHLS 345.00 = 348.0
126286 GOW R16 345.00 = 347.1	126290 LADENTWN 345.00 = 358.2	137451 LEEDS 3 345.00 = 360.6
147833 MARCY T1 345.00 = 359.4	126291 MILLWOOD 345.00 = 353.4	137452 N.SCOT77 345.00 = 357.9
137453 N.SCOT99 345.00 = 357.9	147841 NIAGAR2E 230.00 = 232.0	147842 NIAGAR2W 230.00 = 232.0
147834 NIAG 345 345.00 = 358.7	129341 NRTHPRT1 138.00 = 142.4	130755 OAKDL345 345.00 = 357.2
149001 PANNELL3 345.00 = 348.9	126294 PLTVLLEY 345.00 = 354.3	126295 RAINEY 345.00 = 350.4
126600 REAC71 345.00 = 352.5	126601 REAC72 345.00 = 352.6	126297 RAMAPO 345.00 = 357.7
126250 RAMAPO 5 500.00 = 520.6	125001 ROCK TAV 345.00 = 357.1	125002 ROSETON 345.00 = 356.7
130754 SOMERSET345 345.00 = 359.1	126298 SPRAINBROOK 345.00 = 353.2	149000 ROCH 345 345.00 = 347.1
147840 MOSES W 230.00 = 235.5	130768 WATRC230 230.00 = 236.0	180819 CHA-NY 765.00 = 727.4
147827 MARCY765 765.00 = 763.7	147828 MASS 765 765.00 = 747.8	126281 E FISHKILL 345.00 = 355.8
125000 HURLEY 3 345.00 = 359.0	128835 SHORE RD 345.00 = 353.7	136156 VOLNEY 345.00 = 368.0*
130757 WATRC345 345.00 = 361.9	135250 DUNKIRK 230.00 = 231.7	130764 MEYER230 230.00 = 228.0
130765 OAKDL230 230.00 = 236.8	137730 ROTRDM.2 230.00 = 236.3	181219 CHANY2 120.00 = 116.4
181119 CHANY1 120.00 = 116.4	137716 ALB1 115.00 = 117.7	130774 BATH 115 115.00 = 116.0
137488 BETHLEHE 115.00 = 118.0	130776 BORDR115 115.00 = 114.6	136181 CLAY 115.00 = 119.4
130794 DELHI115 115.00 = 115.6	130796 E.NOR115 115.00 = 114.9	135277 FALCONER 115.00 = 117.4
130807 WESTOVER115 115.00 = 119.0	130826 MEYER115 115.00 = 116.4	147849 MOS 115 115.00 = 119.2

147850 NIAG115E	115.00 = 117.2	147851 NIAG115W	115.00 = 117.8	130836 N.WAV115	115.00 = 114.0
130838 OAKDL115	115.00 = 119.0	147852 PLAT T#3	115.00 = 117.4	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 118.5	125046 ROCK TV1	115.00 = 116.9	137532 RTRDM1	115.00 = 114.9
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.7	149008 RUS 115	115.00 = 114.8

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	-0.0	-3.9	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0359		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	102.1	27.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	28.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	28.6	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0288		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	28.6	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	38.6	38.6	0.0	1.0300	1.0287		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	29.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	29.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	97.0	4.7	22.9	-13.3	1.0500	1.0500		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	50.0	1.7	16.1	-17.6	1.0500	1.0500		118.6	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	2.7	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	90.0	33.0	33.0	33.0	1.0000	1.0283		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9250		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	33.7	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9249		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9826		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	23.5	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180278	BHOA23	13.800	1	0	2	48.0	3.6	34.2	-15.0	1.0000	1.0000		50.0	1145	4	
180281	BHOA26	13.800	1	0	2	48.0	0.2	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	23.6	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1578.9	501.7	788.7	-478.4				2075.6			

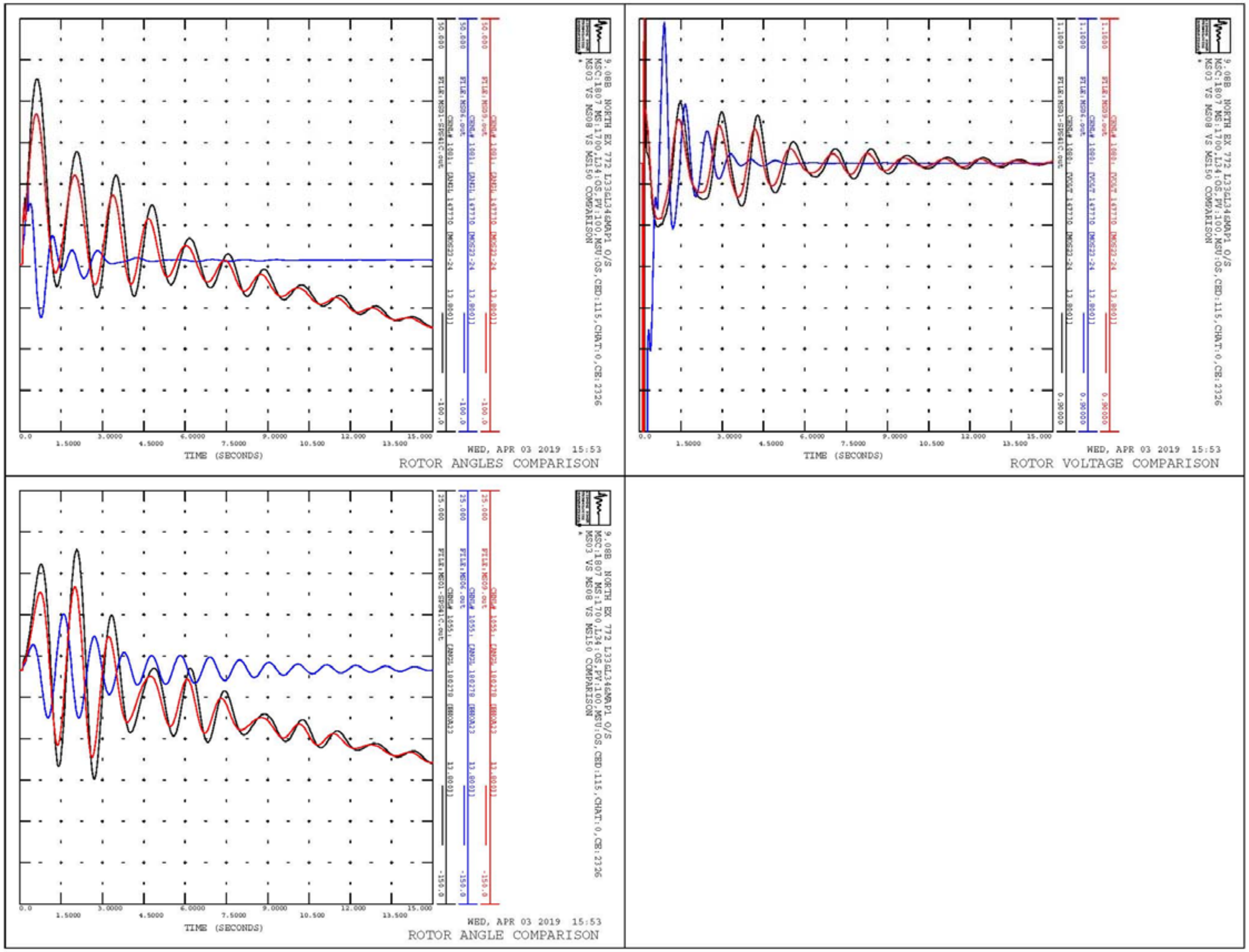

Fig B9 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

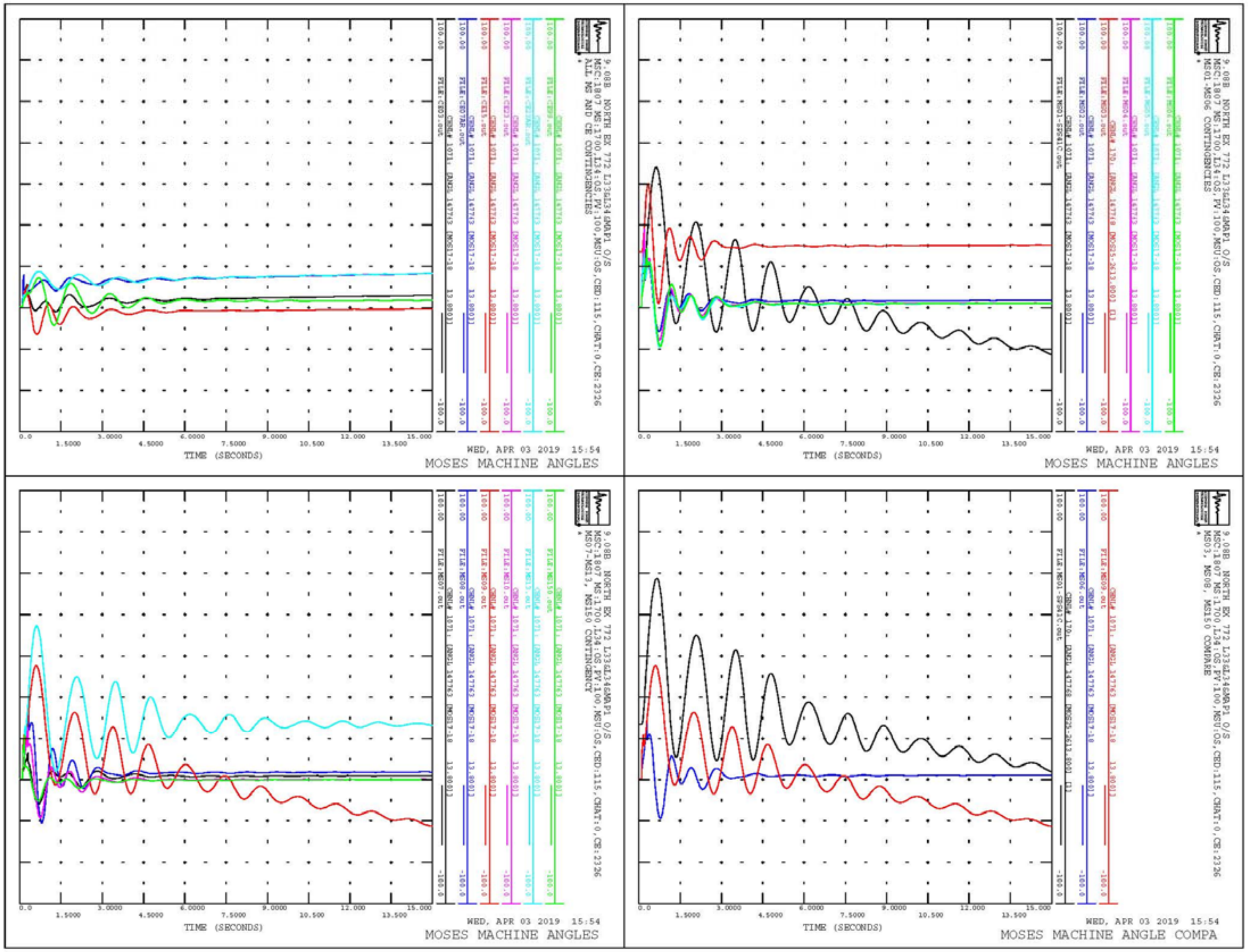

Fig B10 Comparative plots for Moses machine angle for all simulated contingencies

B.6 L33 & L34 & MAP1 &PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

CASE :9.09B NORTH EX 566 L33&L34&MAP1&PV20 O/S
MSC:1601 MS:1601,L34:OS,PV:100,MSU:IS,CED:125,CHAT:0,CE:2273

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1881.1	4.0	DYSE-CLOSE	3192.4	216.8
WEST-CENTRAL	578.0	-150.1	WESTC-CLOSE	1889.3	62.7
VOLNEY-EAST	3253.1	-125.2	VOLNEY-CLOSE	4479.8	66.8
MOSES-SOUTH	1601.7	-412.3	MOSES-CLOSE	1601.7	-412.3
CENTRAL-EAST	2274.3	-412.6	TOTAL-EAST	5321.9	-424.7
UPNY-SENY	4363.9	-24.5	UPNY-SENY-CL	5659.2	130.2
UPNY-CONED	4474.5	-89.2	UPNY-CON-CL	6600.2	-96.0
MILLWOOD-SO	7187.2	66.8	LIPA-IMPORT	2006.7	-163.6
DNWDIE-SO-PL	4455.8	-403.4	DNWDIE-SO-PC	6581.5	-410.2
DNWDIE-SO-OP	3540.7	-343.7	PJM-NY	1213.2	305.0
NE-NY-WCSC	-758.4	124.5	ON-NY	998.3	164.5
ONT-MICH-PAR	2.4	4.9	Northern Export	566.1	63.0

STATION VOLTAGES

126260 BOWLINE1	345.00 =	359.1	126261 BOWLINE2	345.00 =	359.0	126263 BUCHANAN S	345.00 =	355.5
136150 CLAY	345.00 =	360.2	130750 COOPC345	345.00 =	354.9	126266 DUNWOODIE	345.00 =	352.9
137200 EDIC	345.00 =	358.0	126277 FARRAGUT	345.00 =	350.0	130753 FRASR345	345.00 =	359.5
135413 GRDNVL2	230.00 =	232.1	147831 GILB 345	345.00 =	360.1	126283 GOTHLS	345.00 =	348.0
126286 GOW R16	345.00 =	347.1	126290 LADENTWN	345.00 =	358.0	137451 LEEDS 3	345.00 =	360.2
147833 MARCY T1	345.00 =	358.1	126291 MILLWOOD	345.00 =	353.2	137452 N.SCOT77	345.00 =	357.1
137453 N.SCOT99	345.00 =	357.1	147841 NIAGAR2E	230.00 =	232.0	147842 NIAGAR2W	230.00 =	232.0
147834 NIAG 345	345.00 =	358.6	129341 NRTHPRT1	138.00 =	142.4	130755 OAKDL345	345.00 =	356.0
149001 PANNELL3	345.00 =	348.5	126294 PLTVLLEY	345.00 =	354.0	126295 RAINEY	345.00 =	350.3
126600 REAC71	345.00 =	352.4	126601 REAC72	345.00 =	352.5	126297 RAMAPO	345.00 =	357.5
126250 RAMAPO 5	500.00 =	520.5	125001 ROCK TAV	345.00 =	356.6	125002 ROSETON	345.00 =	356.4
130754 SOMERSET345	345.00 =	359.1	126298 SPRAINBROOK	345.00 =	353.0	149000 ROCH 345	345.00 =	346.8
147840 MOSES W	230.00 =	235.3	130768 WATRC230	230.00 =	235.5	180819 CHA-NY	765.00 =	725.1*
147827 MARCY765	765.00 =	761.4	147828 MASS 765	765.00 =	746.0	126281 E FISHKILL	345.00 =	355.5
125000 HURLEY 3	345.00 =	358.6	128835 SHORE RD	345.00 =	353.5	136156 VOLNEY	345.00 =	367.4*
130757 WATRC345	345.00 =	361.0	135250 DUNKIRK	230.00 =	231.6	130764 MEYER230	230.00 =	227.7
130765 OAKDL230	230.00 =	236.2	137730 ROTRDM.2	230.00 =	235.6	181219 CHANY2	120.00 =	115.9
181119 CHANY1	120.00 =	115.9	137716 ALB1	115.00 =	117.6	130774 BATH 115	115.00 =	115.8
137488 BETHLEHE	115.00 =	117.9	130776 BORDR115	115.00 =	114.4	136181 CLAY	115.00 =	119.2
130794 DELHI115	115.00 =	115.2	130796 E.NOR115	115.00 =	114.5	135277 FALCONER	115.00 =	117.4
130807 WESTOVER115	115.00 =	118.7	130826 MEYER115	115.00 =	116.2	147849 MOS 115	115.00 =	119.2
147850 NIAG115E	115.00 =	117.2	147851 NIAG115W	115.00 =	117.8	130836 N.WAV115	115.00 =	113.8

130838 OAKDL115	115.00 = 118.6	147852 PLAT T#3	115.00 = 116.9	125043 PL.VAL 1	115.00 = 117.1		
137235 PORTER 1	115.00 = 118.2	125046 ROCK TV1	115.00 = 116.8	137532 RTRDM1	115.00 = 114.6		
125048 SHENANDO	115.00 = 117.6	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.7		

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	0.0	-0.7	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0315		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.4	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	95.8	27.9	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	29.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	29.6	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0283		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	29.6	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	38.6	38.6	0.0	1.0300	1.0282		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	30.3	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	30.3	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	25.0	4.8	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	1.8	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9219		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	34.0	34.0	-34.0	0.9550	0.9522		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9218		46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9793		57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	24.9	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180278	BHOA23	13.800	1 0	2	48.0	9.3	34.2	-15.0	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1 0	2	48.0	6.7	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1 0	2	48.0	6.8	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	34.0	6.6	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					1370.5	477.9	745.1	-500.7				1745.8			

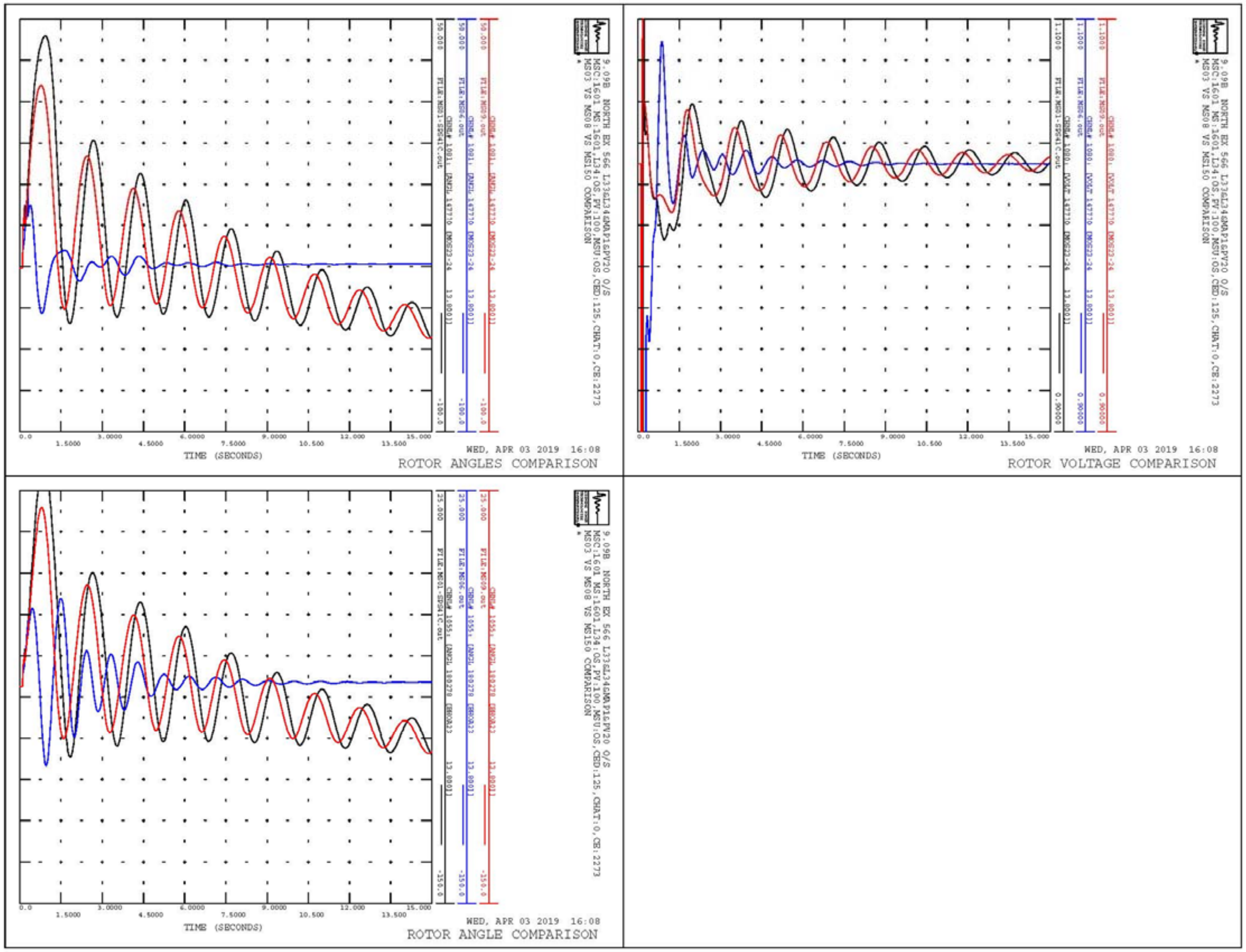

Fig B11 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

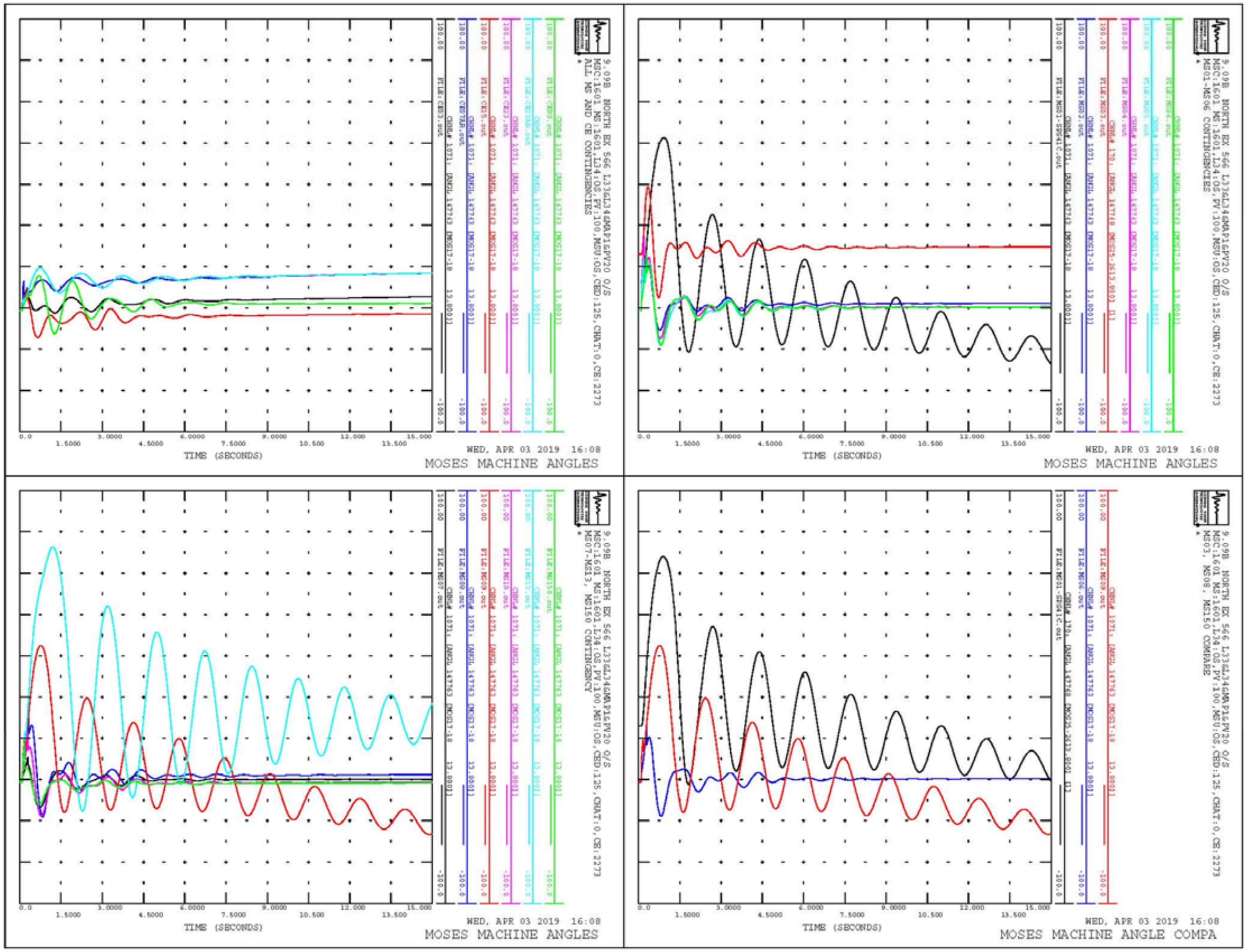

Fig B12 Comparative plots for Moses machine angle for all simulated contingencies

B.7 L33 & L34 & MAP1 & MMS1 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :9.07B  NORTH EX 563 L33&L34&MAP1&MMS1 O/S
       MSC:1600 MS:1493,L34:OS,PV:100,MSU:IS,CED:125,CHAT:0,CE:2320

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr    DESCRIPTION          MW       MVAr

 DYSINGER-EAS         1883.8      -0.1  DYSE-CLOSE          3186.9    203.0
 WEST-CENTRAL          580.7    -156.6  WESTC-CLOSE         1883.7     46.5
 VOLNEY-EAST          3255.3    -161.3  VOLNEY-CLOSE        4474.2     25.7
 MOSES-SOUTH          1497.1    -441.0  MOSES-CLOSE         1607.4   -448.1
 CENTRAL-EAST         2323.9    -384.3  TOTAL-EAST          5322.2   -372.1
 UPNY-SENY            4369.0      -5.5  UPNY-SENY-CL        5659.6    145.8
 UPNY-CONED           4477.6     -77.9  UPNY-CON-CL         6600.7    -85.0
 MILLWOOD-SO          7185.3      69.7  LIPA-IMPORT         2006.7   -162.0
 DNWDIE-SO-PL         4458.4    -398.2  DNWDIE-SO-PC        6581.5   -405.3
 DNWDIE-SO-OP         3543.8    -340.3  PJM-NY              1206.1    294.8
 NE-NY-WCSC           -758.4     125.5  ON-NY                999.9    163.4
 ONT-MICH-PAR            0.8       4.9  Northern Export      571.8     32.4

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 359.3      126261 BOWLINE2     345.00 = 359.2      126263 BUCHANAN S  345.00 = 355.7
 136150 CLAY         345.00 = 360.7      130750 COOPC345     345.00 = 355.9      126266 DUNWOODIE   345.00 = 353.0
 137200 EDIC         345.00 = 359.2      126277 FARRAGUT     345.00 = 350.0      130753 FRASR345    345.00 = 360.5
 135413 GRDNVL2      230.00 = 232.1      147831 GILB 345     345.00 = 360.7      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 358.2      137451 LEEDS 3     345.00 = 360.6
 147833 MARCY T1     345.00 = 359.4      126291 MILLWOOD     345.00 = 353.4      137452 N.SCOT77    345.00 = 357.9
 137453 N.SCOT99     345.00 = 357.9      147841 NIAGAR2E     230.00 = 232.0      147842 NIAGAR2W    230.00 = 232.0
 147834 NIAG 345     345.00 = 358.7      129341 NRTHPRT1     138.00 = 142.4      130755 OAKDL345    345.00 = 356.8
 149001 PANNELL3     345.00 = 348.8      126294 PLTVLLEY     345.00 = 354.3      126295 RAINEY      345.00 = 350.4
 126600 REAC71       345.00 = 352.5      126601 REAC72       345.00 = 352.6      126297 RAMAPO      345.00 = 357.7
 126250 RAMAPO 5     500.00 = 520.6      125001 ROCK TAV     345.00 = 357.1      125002 ROSETON     345.00 = 356.6
 130754 SOMERSET345 345.00 = 359.1       126298 SPRAINBROOK 345.00 = 353.1      149000 ROCH 345    345.00 = 347.0
 147840 MOSES W      230.00 = 236.8      130768 WATRC230     230.00 = 235.9      180819 CHA-NY      765.00 = 726.1*
 147827 MARCY765     765.00 = 764.3      147828 MASS 765     765.00 = 747.1      126281 E FISHKILL  345.00 = 355.8
 125000 HURLEY 3     345.00 = 359.0      128835 SHORE RD     345.00 = 353.7      136156 VOLNEY      345.00 = 367.8*
 130757 WATRC345     345.00 = 361.6      135250 DUNKIRK      230.00 = 231.7      130764 MEYER230    230.00 = 227.9
 130765 OAKDL230     230.00 = 236.6      137730 ROTRDM.2     230.00 = 236.4      181219 CHANY2      120.00 = 116.1
 181119 CHANY1       120.00 = 116.1      137716 ALB1         115.00 = 117.7      130774 BATH 115    115.00 = 116.0
 137488 BETHLEHE     115.00 = 118.0      130776 BORDR115     115.00 = 114.5      136181 CLAY        115.00 = 119.4
 130794 DELHI115     115.00 = 115.5      130796 E.NOR115     115.00 = 114.8      135277 FALCONER    115.00 = 117.4
 130807 WESTOVER115 115.00 = 118.9       130826 MEYER115     115.00 = 116.3      147849 MOS 115     115.00 = 119.8
```

147850 NIAG115E 115.00 = 117.2	147851 NIAG115W 115.00 = 117.8	130836 N.WAV115 115.00 = 113.9
130838 OAKDL115 115.00 = 118.9	147852 PLAT T#3 115.00 = 117.3	125043 PL.VAL 1 115.00 = 117.2
137235 PORTER 1 115.00 = 118.6	125046 ROCK TV1 115.00 = 116.9	137532 RTRDM1 115.00 = 114.9
125048 SHENANDO 115.00 = 117.7	149011 S82-1115 115.00 = 117.6	149008 RUS 115 115.00 = 114.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	0.0	-2.1	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0340		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.3	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	112.1	23.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	23.7	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	23.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	35.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	23.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	35.4	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	25.6	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	25.6	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	2.7	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	18.0	33.0	33.0	33.0	1.0000	1.0272		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9228		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	34.0	34.0	-34.0	0.9550	0.9532		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9227		46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9803		57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	24.5	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180278	BHOA23	13.800	1 0	2	38.0	5.1	34.2	-15.0	1.0000	1.0000		50.0	1145	4	
180280	BHOA25	13.800	1 0	2	32.0	0.7	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	40.0	0.9	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	68.0	24.9	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					1379.9	469.2	779.7	-460.5				1905.5			

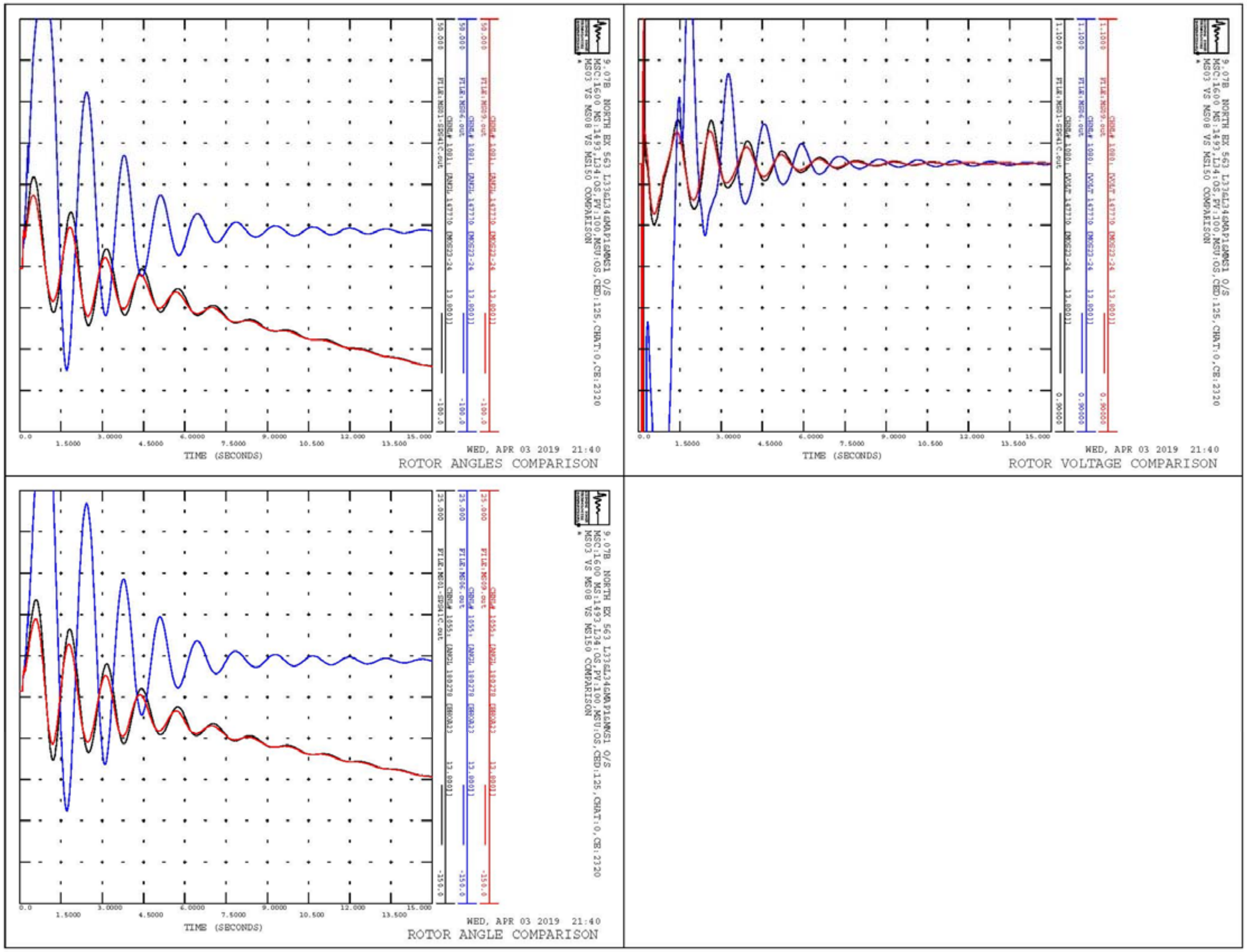

Fig B13 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

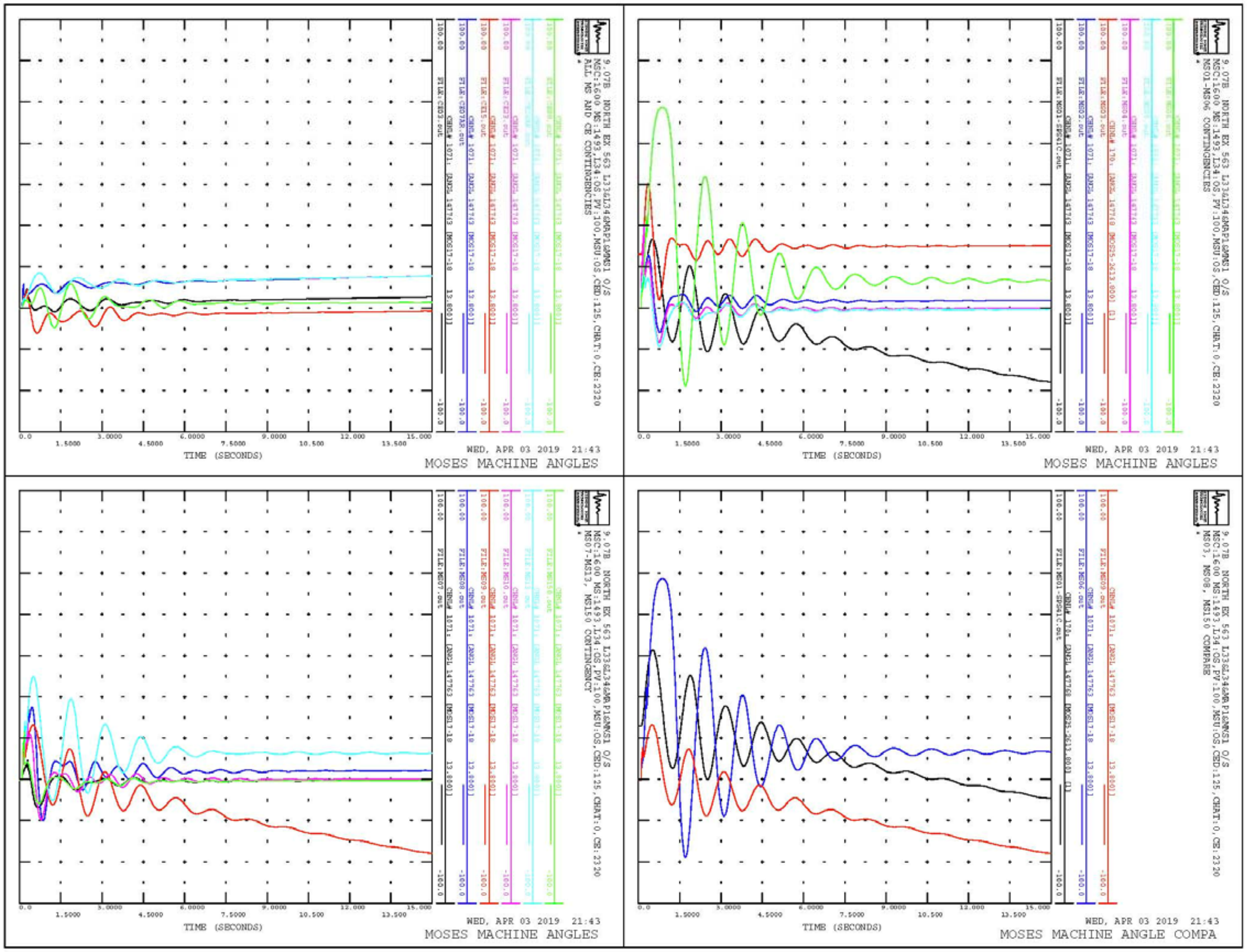

Fig B14 Comparative plots for Moses machine angle for all simulated contingencies

B.8 L33 & L34 & MAP1 & MMS1 & R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :9.08B  NORTH EX 471 L33&L34&MAP1&MMS1&R8105 O/S
       MSC:1506 MS:1400,L34:OS,PV:100,MSU:IS,CED:125,CHAT:0,CE:2316

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS        1882.2       1.4  DYSE-CLOSE          3187.1     205.8
 WEST-CENTRAL         579.0    -153.8  WESTC-CLOSE         1884.0      50.6
 VOLNEY-EAST         3349.3    -189.7  VOLNEY-CLOSE        4574.8      -3.5
 MOSES-SOUTH         1400.6    -450.6  MOSES-CLOSE         1507.4    -463.1
 CENTRAL-EAST        2316.7    -385.8  TOTAL-EAST          5322.2    -373.5
 UPNY-SENY           4365.0      -5.3  UPNY-SENY-CL        5659.6     145.7
 UPNY-CONED          4475.9     -78.3  UPNY-CON-CL         6600.7     -85.3
 MILLWOOD-SO         7186.0      69.4  LIPA-IMPORT         2006.7    -161.7
 DNWDIE-SO-PL        4456.7    -397.2  DNWDIE-SO-PC        6581.5    -404.3
 DNWDIE-SO-OP        3541.4    -339.6  PJM-NY              1204.8     296.9
 NE-NY-WCSC          -758.4     130.1  ON-NY               1001.5     164.0
 ONT-MICH-PAR          -0.6       4.8  Northern Export      471.5      10.2

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 359.3      126261 BOWLINE2     345.00 = 359.2      126263 BUCHANAN S  345.00 = 355.7
 136150 CLAY         345.00 = 360.5      130750 COOPC345     345.00 = 356.0      126266 DUNWOODIE   345.00 = 353.1
 137200 EDIC         345.00 = 359.3      126277 FARRAGUT     345.00 = 350.1      130753 FRASR345    345.00 = 360.5
 135413 GRDNVL2      230.00 = 232.1      147831 GILB 345     345.00 = 360.7      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 358.2      137451 LEEDS 3     345.00 = 360.6
 147833 MARCY T1     345.00 = 359.5      126291 MILLWOOD     345.00 = 353.4      137452 N.SCOT77    345.00 = 357.9
 137453 N.SCOT99     345.00 = 358.0      147841 NIAGAR2E     230.00 = 232.0      147842 NIAGAR2W    230.00 = 232.0
 147834 NIAG 345     345.00 = 358.6      129341 NRTHPRT1     138.00 = 142.4      130755 OAKDL345    345.00 = 356.6
 149001 PANNELL3     345.00 = 348.7      126294 PLTVLLEY     345.00 = 354.4      126295 RAINEY      345.00 = 350.4
 126600 REAC71       345.00 = 352.5      126601 REAC72       345.00 = 352.6      126297 RAMAPO      345.00 = 357.7
 126250 RAMAPO 5     500.00 = 520.6      125001 ROCK TAV     345.00 = 357.1      125002 ROSETON     345.00 = 356.7
 130754 SOMERSET345  345.00 = 359.1      126298 SPRAINBROOK 345.00 = 353.2      149000 ROCH 345    345.00 = 346.9
 147840 MOSES W      230.00 = 236.7      130768 WATRC230     230.00 = 235.8      180819 CHA-NY      765.00 = 728.0
 147827 MARCY765     765.00 = 765.6      147828 MASS 765     765.00 = 749.1      126281 E FISHKILL  345.00 = 355.8
 125000 HURLEY 3     345.00 = 359.0      128835 SHORE RD     345.00 = 353.7      136156 VOLNEY      345.00 = 367.6*
 130757 WATRC345     345.00 = 361.5      135250 DUNKIRK      230.00 = 231.6      130764 MEYER230    230.00 = 227.8
 130765 OAKDL230     230.00 = 236.5      137730 ROTRDM.2     230.00 = 236.5      181219 CHANY2      120.00 = 116.4
 181119 CHANY1       120.00 = 116.4      137716 ALB1         115.00 = 117.8      130774 BATH 115    115.00 = 115.9
 137488 BETHLEHE     115.00 = 118.0      130776 BORDR115     115.00 = 114.5      136181 CLAY        115.00 = 119.3
 130794 DELHI115     115.00 = 115.5      130796 E.NOR115     115.00 = 114.7      135277 FALCONER    115.00 = 117.4
 130807 WESTOVER115  115.00 = 118.9      130826 MEYER115     115.00 = 116.3      147849 MOS 115     115.00 = 119.7
 147850 NIAG115E     115.00 = 117.2      147851 NIAG115W     115.00 = 117.8      130836 N.WAV115    115.00 = 113.9
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130838 OAKDL115	115.00 = 118.8	147852 PLAT T#3	115.00 = 116.3	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 118.5	125046 ROCK TV1	115.00 = 116.9	137532 RTRDM1	115.00 = 114.9
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	-0.0	1.4	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	-0.1	1.0	-0.2	1.0300	1.0300		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.6	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	88.8	22.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	24.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	24.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	35.8	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	24.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	36.0	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	25.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	1	1	2	57.0	19.3	19.3	-15.4	1.0200	1.0170		60.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	4.8	4.8	-5.0	1.0500	1.0497		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9245		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	34.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9244		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9821		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	23.7	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180278	BHOA23	13.800	1	0	2	38.0	4.2	34.2	-15.0	1.0000	1.0000		50.0	1145	4	
180280	BHOA25	13.800	1	0	2	32.0	0.1	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	40.0	0.3	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	68.0	24.1	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1281.5	433.5	727.4	-478.1				1630.2			

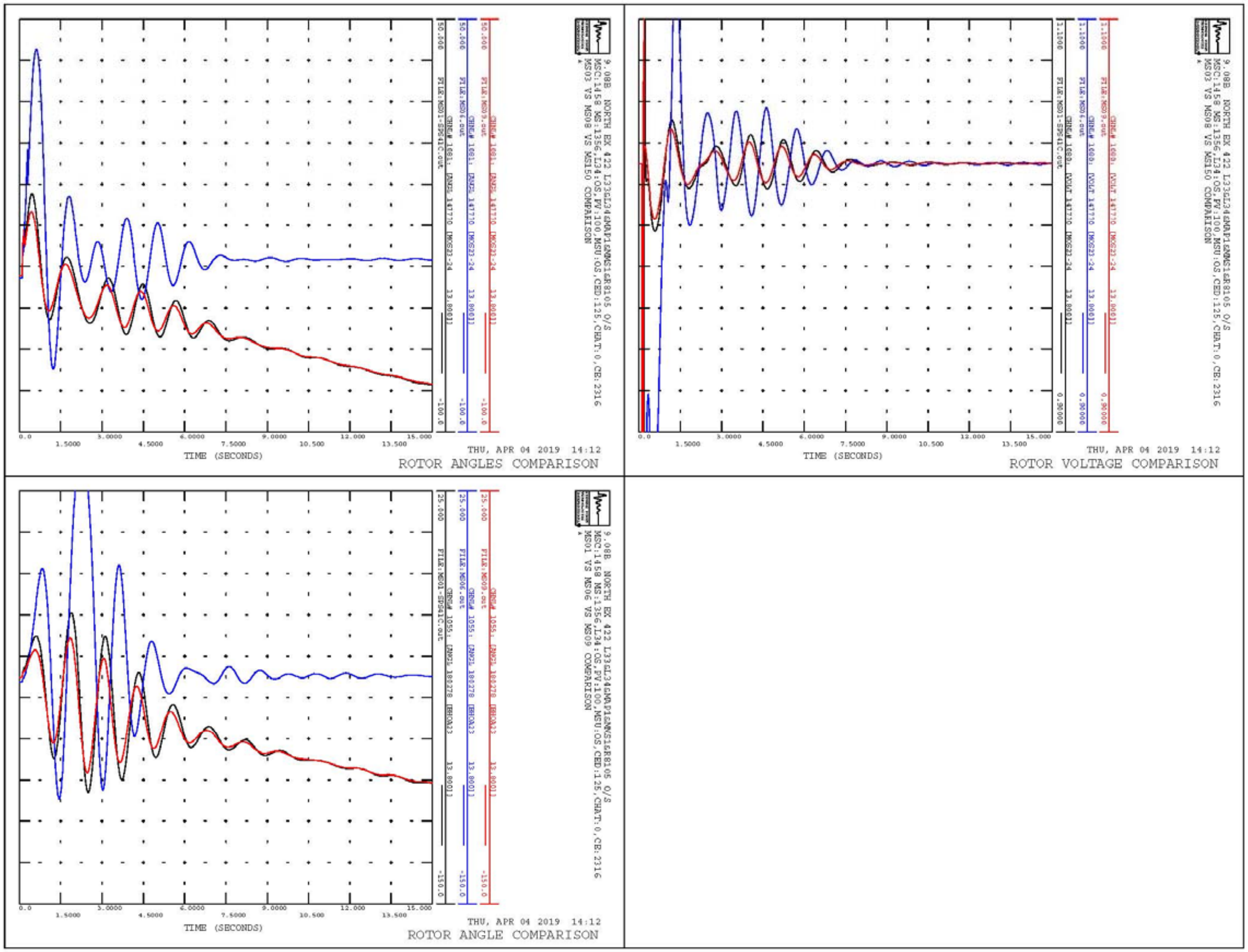

Fig B15 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

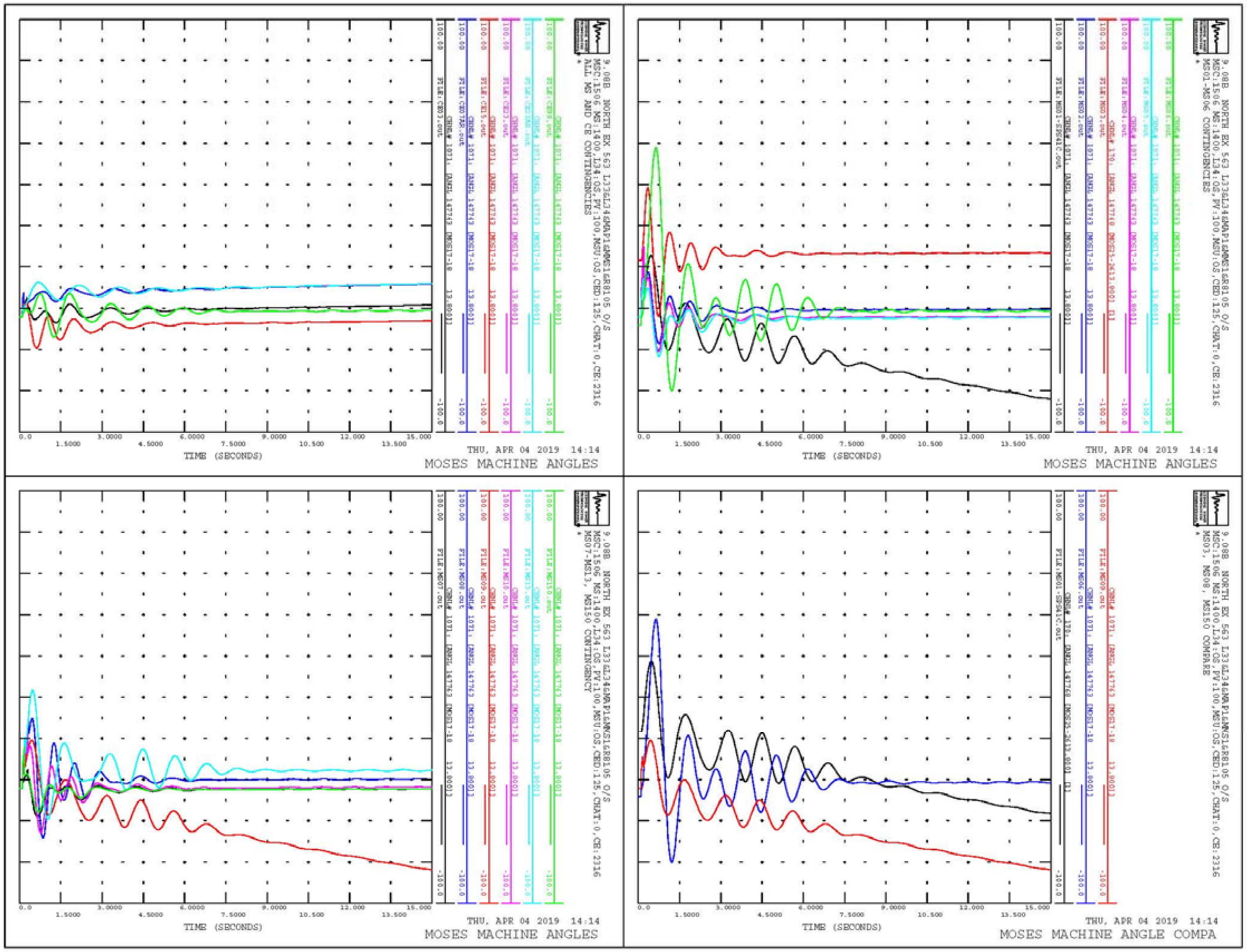

Fig B16 Comparative plots for Moses machine angle for all simulated contingencies

B.9 L33 & L34 & MAP1 & MMS1 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

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CASE :9.09A  NORTH EX 363 L33&L34&MAP1&MMS1&PV20 O/S
       MSC:1396 MS:1396,L34:OS,PV:OS,MSU:IS,CED:0,CHAT:0,CE:2271

                           INTERFACE FLOW REPORT

  DESCRIPTION         MW      MVAr      DESCRIPTION         MW      MVAr

DYSINGER-EAS        1882.6      6.3  DYSE-CLOSE          3193.4    220.6
WEST-CENTRAL         579.5   -147.1  WESTC-CLOSE         1890.3     67.2
VOLNEY-EAST         3460.7   -178.4  VOLNEY-CLOSE        4681.7     13.0
MOSES-SOUTH         1400.7   -425.5  MOSES-CLOSE         1400.7   -425.5
CENTRAL-EAST        2270.9   -407.2  TOTAL-EAST          5322.0   -421.0
UPNY-SENY           4366.6    -22.8  UPNY-SENY-CL        5659.3    131.0
UPNY-CONED          4475.3    -88.8  UPNY-CON-CL         6600.2    -96.7
MILLWOOD-SO         7186.8     66.0  LIPA-IMPORT         2006.7   -163.8
DNWDIE-SO-PL        4456.5   -403.7  DNWDIE-SO-PC        6581.5   -411.6
DNWDIE-SO-OP        3542.1   -343.8  PJM-NY              1212.6    306.6
NE-NY-WCSC          -758.4    124.0  ON-NY                999.9    165.1
ONT-MICH-PAR           0.9      4.8  Northern Export      364.9     48.9

                            STATION VOLTAGES

126260 BOWLINE1    345.00 = 359.1      126261 BOWLINE2    345.00 = 359.0      126263 BUCHANAN S  345.00 = 355.5
136150 CLAY        345.00 = 359.9      130750 COOPC345    345.00 = 354.9      126266 DUNWOODIE   345.00 = 352.9
137200 EDIC        345.00 = 358.1      126277 FARRAGUT    345.00 = 350.0      130753 FRASR345    345.00 = 359.4
135413 GRDNVL2     230.00 = 232.0      147831 GILB 345    345.00 = 360.1      126283 GOTHLS      345.00 = 348.0
126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 358.0      137451 LEEDS 3     345.00 = 360.2
147833 MARCY T1    345.00 = 358.3      126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 357.1
137453 N.SCOT99    345.00 = 357.1      147841 NIAGAR2E    230.00 = 232.0      147842 NIAGAR2W    230.00 = 232.0
147834 NIAG 345    345.00 = 358.6      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 355.6
149001 PANNELL3    345.00 = 348.4      126294 PLTVLLEY    345.00 = 354.0      126295 RAINEY      345.00 = 350.3
126600 REAC71      345.00 = 352.4      126601 REAC72      345.00 = 352.5      126297 RAMAPO      345.00 = 357.5
126250 RAMAPO 5    500.00 = 520.5      125001 ROCK TAV    345.00 = 356.6      125002 ROSETON     345.00 = 356.3
130754 SOMERSET345 345.00 = 359.1      126298 SPRAINBROOK 345.00 = 353.0      149000 ROCH 345    345.00 = 346.7
147840 MOSES W     230.00 = 237.3      130768 WATRC230    230.00 = 235.3      180819 CHA-NY      765.00 = 726.7*
147827 MARCY765    765.00 = 763.0      147828 MASS 765    765.00 = 747.7      126281 E FISHKILL  345.00 = 355.5
125000 HURLEY 3    345.00 = 358.6      128835 SHORE RD    345.00 = 353.5      136156 VOLNEY      345.00 = 367.2*
130757 WATRC345    345.00 = 360.7      135250 DUNKIRK     230.00 = 231.6      130764 MEYER230    230.00 = 227.6
130765 OAKDL230    230.00 = 235.9      137730 ROTRDM.2    230.00 = 235.8      181219 CHANY2      120.00 = 116.2
181119 CHANY1      120.00 = 116.2      137716 ALB1        115.00 = 117.7      130774 BATH 115    115.00 = 115.7
137488 BETHLEHE    115.00 = 117.9      130776 BORDR115    115.00 = 114.4      136181 CLAY        115.00 = 119.2
130794 DELHI115    115.00 = 115.1      130796 E.NOR115    115.00 = 114.4      135277 FALCONER    115.00 = 117.4
130807 WESTOVER115 115.00 = 118.5      130826 MEYER115    115.00 = 116.1      147849 MOS 115     115.00 = 120.2
147850 NIAG115E    115.00 = 117.2      147851 NIAG115W    115.00 = 117.8      130836 N.WAV115    115.00 = 113.7
130838 OAKDL115    115.00 = 118.5      147852 PLAT T#3    115.00 = 117.6      125043 PL.VAL 1    115.00 = 117.1
```

137235 PORTER 1	115.00 = 118.3	125046 ROCK TV1	115.00 = 116.8	137532 RTRDM1	115.00 = 114.7
125048 SHENANDO	115.00 = 117.6	149011 S82-1115	115.00 = 117.5	149008 RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	0.0	-2.8	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0371		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	77.6	19.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	21.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	21.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	32.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	21.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	32.5	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	22.2	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	1	1	2	57.0	18.9	19.3	-15.4	1.0200	1.0200		60.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	2.4	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9233		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	34.0	34.0	-34.0	0.9550	0.9537		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9232		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9808		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	24.3	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	20.1	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1164.4	396.9	632.4	-436.5				1466.2			

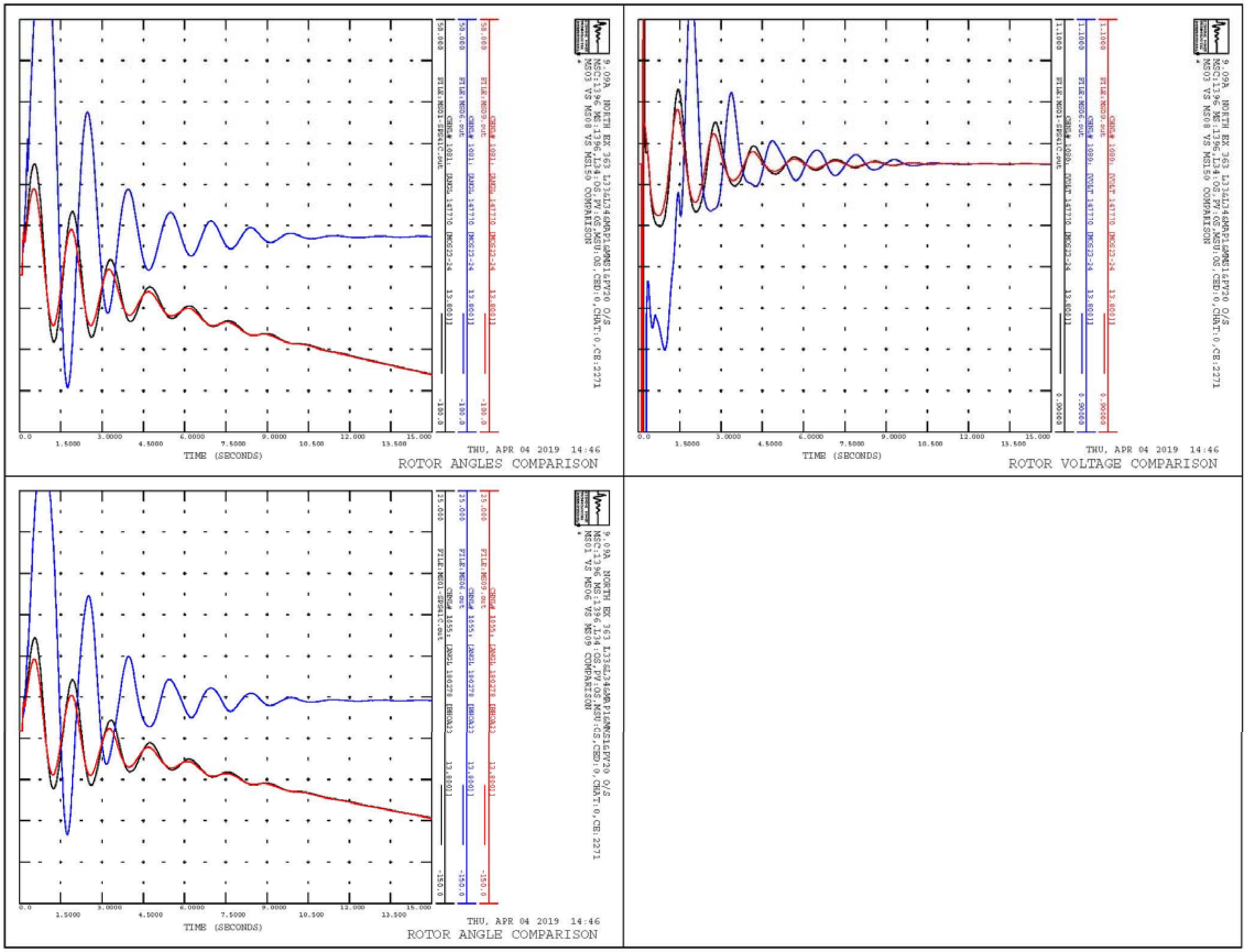

Fig B17 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

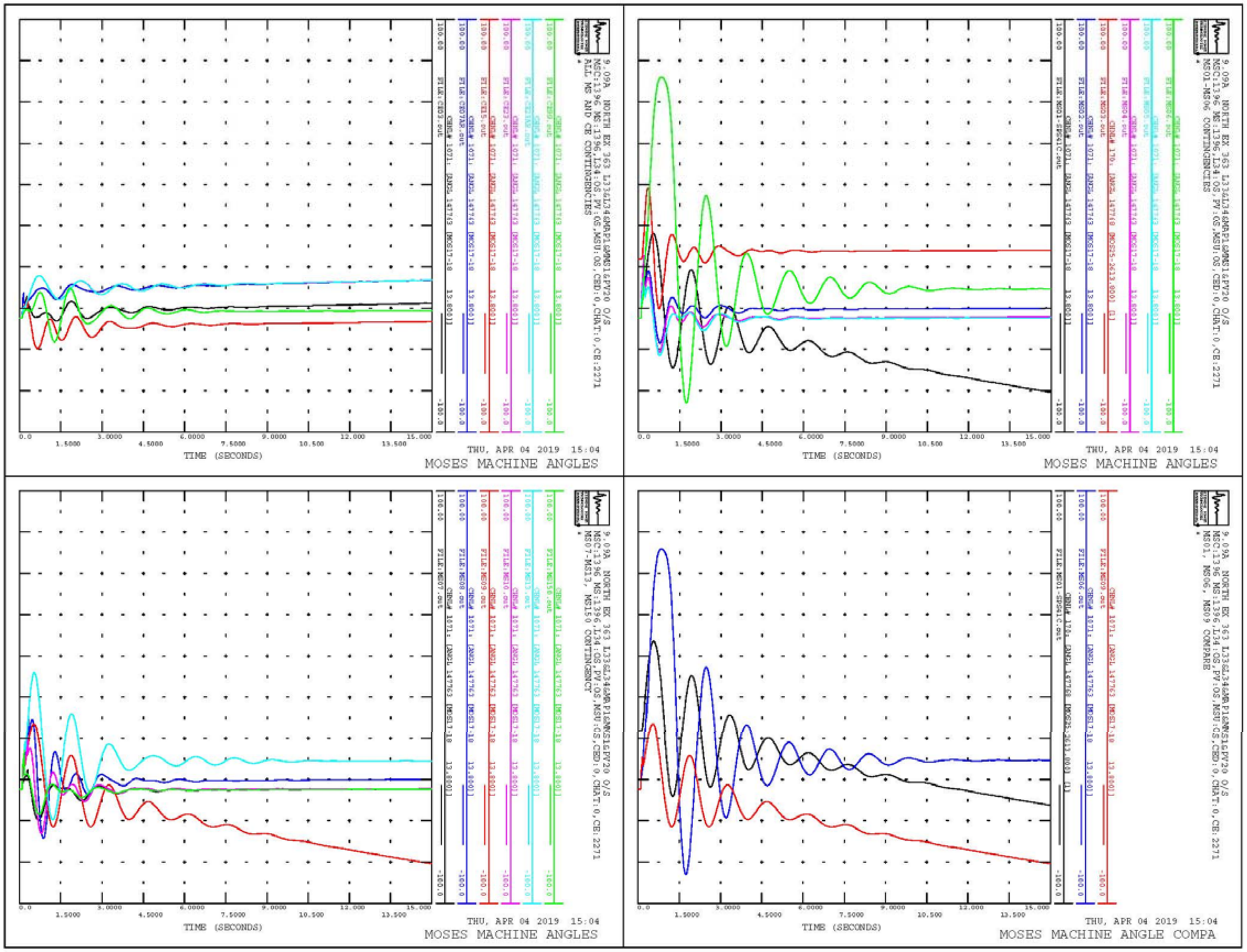

Fig B18 Comparative plots for Moses machine angle for all simulated contingencies

B.10 L33 & L34 & MAP1 & MAP2 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :9.10A  NORTH EX 363 L33&L34&MAP1&MMS1&PV20 O/S
       MSC:1396 MS:1396,L34:OS,PV:OS,MSU:IS,CED:0,CHAT:0,CE:2271
```

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1882.6	6.3	DYSE-CLOSE	3193.4	220.6
WEST-CENTRAL	579.5	-147.1	WESTC-CLOSE	1890.3	67.2
VOLNEY-EAST	3460.7	-178.4	VOLNEY-CLOSE	4681.7	13.0
MOSES-SOUTH	1400.7	-425.5	MOSES-CLOSE	1400.7	-425.5
CENTRAL-EAST	2270.9	-407.2	TOTAL-EAST	5322.0	-421.0
UPNY-SENY	4366.6	-22.8	UPNY-SENY-CL	5659.3	131.0
UPNY-CONED	4475.3	-88.8	UPNY-CON-CL	6600.2	-96.7
MILLWOOD-SO	7186.8	66.0	LIPA-IMPORT	2006.7	-163.8
DNWDIE-SO-PL	4456.5	-403.7	DNWDIE-SO-PC	6581.5	-411.6
DNWDIE-SO-OP	3542.1	-343.8	PJM-NY	1212.6	306.6
NE-NY-WCSC	-758.4	124.0	ON-NY	999.9	165.1
ONT-MICH-PAR	0.9	4.8	Northern Export	364.9	48.9

STATION VOLTAGES

126260 BOWLINE1	345.00 = 359.1	126261 BOWLINE2	345.00 = 359.0	126263 BUCHANAN S	345.00 = 355.5
136150 CLAY	345.00 = 359.9	130750 COOPC345	345.00 = 354.9	126266 DUNWOODIE	345.00 = 352.9
137200 EDIC	345.00 = 358.1	126277 FARRAGUT	345.00 = 350.0	130753 FRASR345	345.00 = 359.4
135413 GRDNVL2	230.00 = 232.0	147831 GILB 345	345.00 = 360.1	126283 GOTHLS	345.00 = 348.0
126286 GOW R16	345.00 = 347.1	126290 LADENTWN	345.00 = 358.0	137451 LEEDS 3	345.00 = 360.2
147833 MARCY T1	345.00 = 358.3	126291 MILLWOOD	345.00 = 353.2	137452 N.SCOT77	345.00 = 357.1
137453 N.SCOT99	345.00 = 357.1	147841 NIAGAR2E	230.00 = 232.0	147842 NIAGAR2W	230.00 = 232.0
147834 NIAG 345	345.00 = 358.6	129341 NRTHPRT1	138.00 = 142.4	130755 OAKDL345	345.00 = 355.6
149001 PANNELL3	345.00 = 348.4	126294 PLTVLLEY	345.00 = 354.0	126295 RAINEY	345.00 = 350.3
126600 REAC71	345.00 = 352.4	126601 REAC72	345.00 = 352.5	126297 RAMAPO	345.00 = 357.5
126250 RAMAPO 5	500.00 = 520.5	125001 ROCK TAV	345.00 = 356.6	125002 ROSETON	345.00 = 356.3
130754 SOMERSET345	345.00 = 359.1	126298 SPRAINBROOK	345.00 = 353.0	149000 ROCH 345	345.00 = 346.7
147840 MOSES W	230.00 = 237.3	130768 WATRC230	230.00 = 235.3	180819 CHA-NY	765.00 = 726.7*
147827 MARCY765	765.00 = 763.0	147828 MASS 765	765.00 = 747.7	126281 E FISHKILL	345.00 = 355.5
125000 HURLEY 3	345.00 = 358.6	128835 SHORE RD	345.00 = 353.5	136156 VOLNEY	345.00 = 367.2*
130757 WATRC345	345.00 = 360.7	135250 DUNKIRK	230.00 = 231.6	130764 MEYER230	230.00 = 227.6
130765 OAKDL230	230.00 = 235.9	137730 ROTRDM.2	230.00 = 235.8	181219 CHANY2	120.00 = 116.2
181119 CHANY1	120.00 = 116.2	137716 ALB1	115.00 = 117.7	130774 BATH 115	115.00 = 115.7
137488 BETHLEHE	115.00 = 117.9	130776 BORDR115	115.00 = 114.4	136181 CLAY	115.00 = 119.2
130794 DELHI115	115.00 = 115.1	130796 E.NOR115	115.00 = 114.4	135277 FALCONER	115.00 = 117.4
130807 WESTOVER115	115.00 = 118.5	130826 MEYER115	115.00 = 116.1	147849 MOS 115	115.00 = 120.2
147850 NIAG115E	115.00 = 117.2	147851 NIAG115W	115.00 = 117.8	130836 N.WAV115	115.00 = 113.7

130838 OAKDL115	115.00 = 118.5	147852 PLAT T#3	115.00 = 117.6	125043 PL.VAL 1	115.00 = 117.1
137235 PORTER 1	115.00 = 118.3	125046 ROCK TV1	115.00 = 116.8	137532 RTRDM1	115.00 = 114.7
125048 SHENANDO	115.00 = 117.6	149011 S82-1115	115.00 = 117.5	149008 RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	0.0	-2.8	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0371		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	77.6	19.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	21.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	21.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	32.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	21.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	32.5	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	22.2	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	1 1	2	57.0	18.9	19.3	-15.4	1.0200	1.0200		60.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	2.4	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9233		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	34.0	34.0	-34.0	0.9550	0.9537		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9232		46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9808		57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	24.3	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	20.1	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					1164.4	396.9	632.4	-436.5				1466.2			

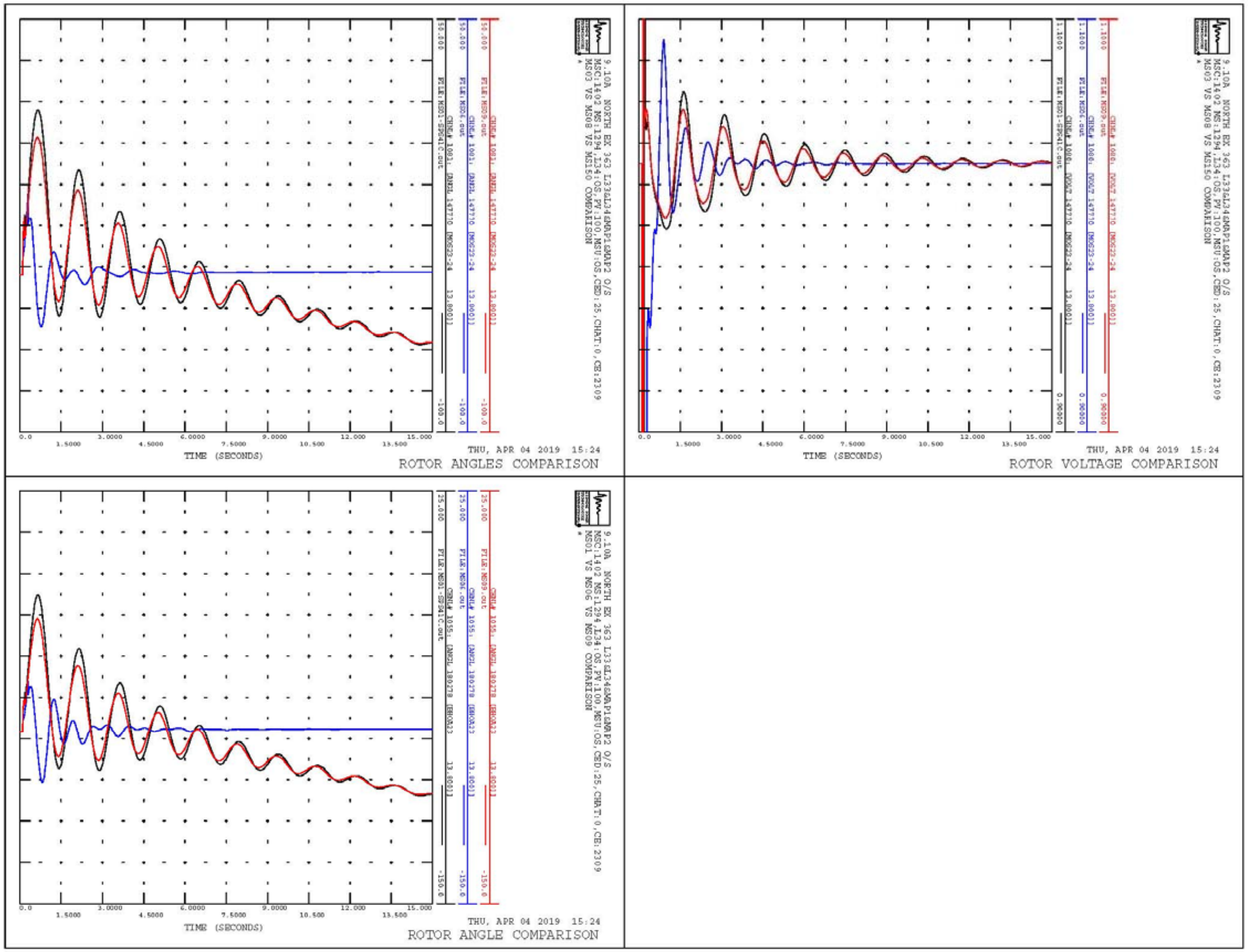

Fig B19 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

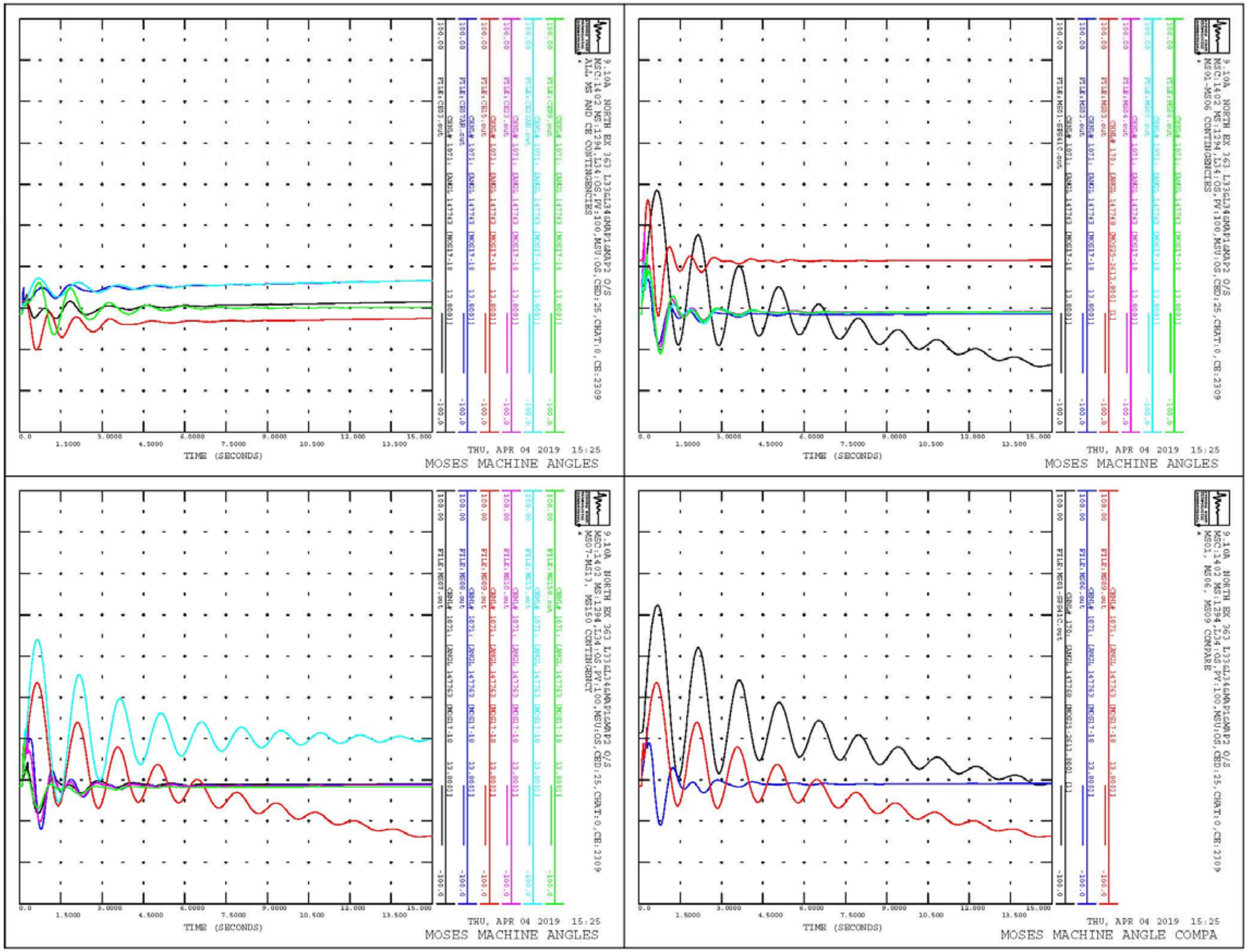

Fig B20 Comparative plots for Moses machine angle for all simulated contingencies

B.11 L33 & L34 & MAP1 & MAP2 & R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :9.11A  NORTH EX 363 L33&L34&MAP1&MAP2 O/S
       MSC:1301 MS:1194,L34:OS,PV:100,MSU:IS,CED:25,CHAT:0,CE:2304
```

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1882.8	5.6	DYSE-CLOSE	3193.4	214.3
WEST-CENTRAL	579.6	-148.0	WESTC-CLOSE	1890.2	60.7
VOLNEY-EAST	3557.4	-210.1	VOLNEY-CLOSE	4782.0	-22.7
MOSES-SOUTH	1193.7	-402.5	MOSES-CLOSE	1300.7	-417.5
CENTRAL-EAST	2304.5	-391.3	TOTAL-EAST	5322.1	-395.2
UPNY-SENY	4366.0	-15.5	UPNY-SENY-CL	5659.4	135.9
UPNY-CONED	4476.4	-80.9	UPNY-CON-CL	6600.5	-88.9
MILLWOOD-SO	7186.0	68.1	LIPA-IMPORT	2006.7	-162.4
DNWDIE-SO-PL	4457.3	-399.1	DNWDIE-SO-PC	6581.5	-407.0
DNWDIE-SO-OP	3542.2	-340.7	PJM-NY	1211.5	301.2
NE-NY-WCSC	-758.3	135.4	ON-NY	1001.0	165.0
ONT-MICH-PAR	-0.1	4.8	Northern Export	264.8	64.8

STATION VOLTAGES

126260 BOWLINE1	345.00 = 359.2		126261 BOWLINE2	345.00 = 359.1		126263 BUCHANAN S	345.00 = 355.6	
136150 CLAY	345.00 = 360.0		130750 COOPC345	345.00 = 355.5		126266 DUNWOODIE	345.00 = 353.0	
137200 EDIC	345.00 = 358.5		126277 FARRAGUT	345.00 = 350.0		130753 FRASR345	345.00 = 359.9	
135413 GRDNVL2	230.00 = 232.0		147831 GILB 345	345.00 = 360.4		126283 GOTHLS	345.00 = 348.0	
126286 GOW R16	345.00 = 347.1		126290 LADENTWN	345.00 = 358.1		137451 LEEDS 3	345.00 = 360.4	
147833 MARCY T1	345.00 = 358.7		126291 MILLWOOD	345.00 = 353.4		137452 N.SCOT77	345.00 = 357.6	
137453 N.SCOT99	345.00 = 357.6		147841 NIAGAR2E	230.00 = 232.0		147842 NIAGAR2W	230.00 = 232.0	
147834 NIAG 345	345.00 = 358.6		129341 NRTHPRT1	138.00 = 142.4		130755 OAKDL345	345.00 = 355.9	
149001 PANNELL3	345.00 = 348.4		126294 PLTVLLEY	345.00 = 354.3		126295 RAINEY	345.00 = 350.4	
126600 REAC71	345.00 = 352.4		126601 REAC72	345.00 = 352.5		126297 RAMAPO	345.00 = 357.6	
126250 RAMAPO 5	500.00 = 520.6		125001 ROCK TAV	345.00 = 356.9		125002 ROSETON	345.00 = 356.6	
130754 SOMERSET345	345.00 = 359.1		126298 SPRAINBROOK	345.00 = 353.1		149000 ROCH 345	345.00 = 346.7	
147840 MOSES W	230.00 = 234.9		130768 WATRC230	230.00 = 235.5		180819 CHA-NY	765.00 = 725.8*	
147827 MARCY765	765.00 = 763.8		147828 MASS 765	765.00 = 747.5		126281 E FISHKILL	345.00 = 355.7	
125000 HURLEY 3	345.00 = 358.9		128835 SHORE RD	345.00 = 353.6		136156 VOLNEY	345.00 = 367.3*	
130757 WATRC345	345.00 = 361.0		135250 DUNKIRK	230.00 = 231.6		130764 MEYER230	230.00 = 227.6	
130765 OAKDL230	230.00 = 236.1		137730 ROTRDM.2	230.00 = 237.0		181219 CHANY2	120.00 = 115.9	
181119 CHANY1	120.00 = 115.9		137716 ALB1	115.00 = 117.8		130774 BATH 115	115.00 = 115.8	
137488 BETHLEHE	115.00 = 118.1		130776 BORDR115	115.00 = 114.4		136181 CLAY	115.00 = 119.1	
130794 DELHI115	115.00 = 115.7		130796 E.NOR115	115.00 = 114.6		135277 FALCONER	115.00 = 117.4	
130807 WESTOVER115	115.00 = 118.7		130826 MEYER115	115.00 = 116.2		147849 MOS 115	115.00 = 118.8	
147850 NIAG115E	115.00 = 117.2		147851 NIAG115W	115.00 = 117.8		130836 N.WAV115	115.00 = 113.7	

130838 OAKDL115	115.00 = 118.6	147852 PLAT T#3	115.00 = 115.9	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 118.5	125046 ROCK TV1	115.00 = 116.8	137532 RTRDM1	115.00 = 115.0
125048 SHENANDO	115.00 = 117.6	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	0.0	-1.7	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0388		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	37.8	26.6	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	30.3	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	31.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0254		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	31.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	38.6	38.6	0.0	1.0300	1.0252		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	34.7	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	4.8	4.8	-5.0	1.0500	1.0435		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9215		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	34.0	34.0	-34.0	0.9550	0.9518		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9213		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9789		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	25.1	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	14.9	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
SUBSYSTEM TOTALS						1013.8	400.2	562.9	-370.9				1316.2			

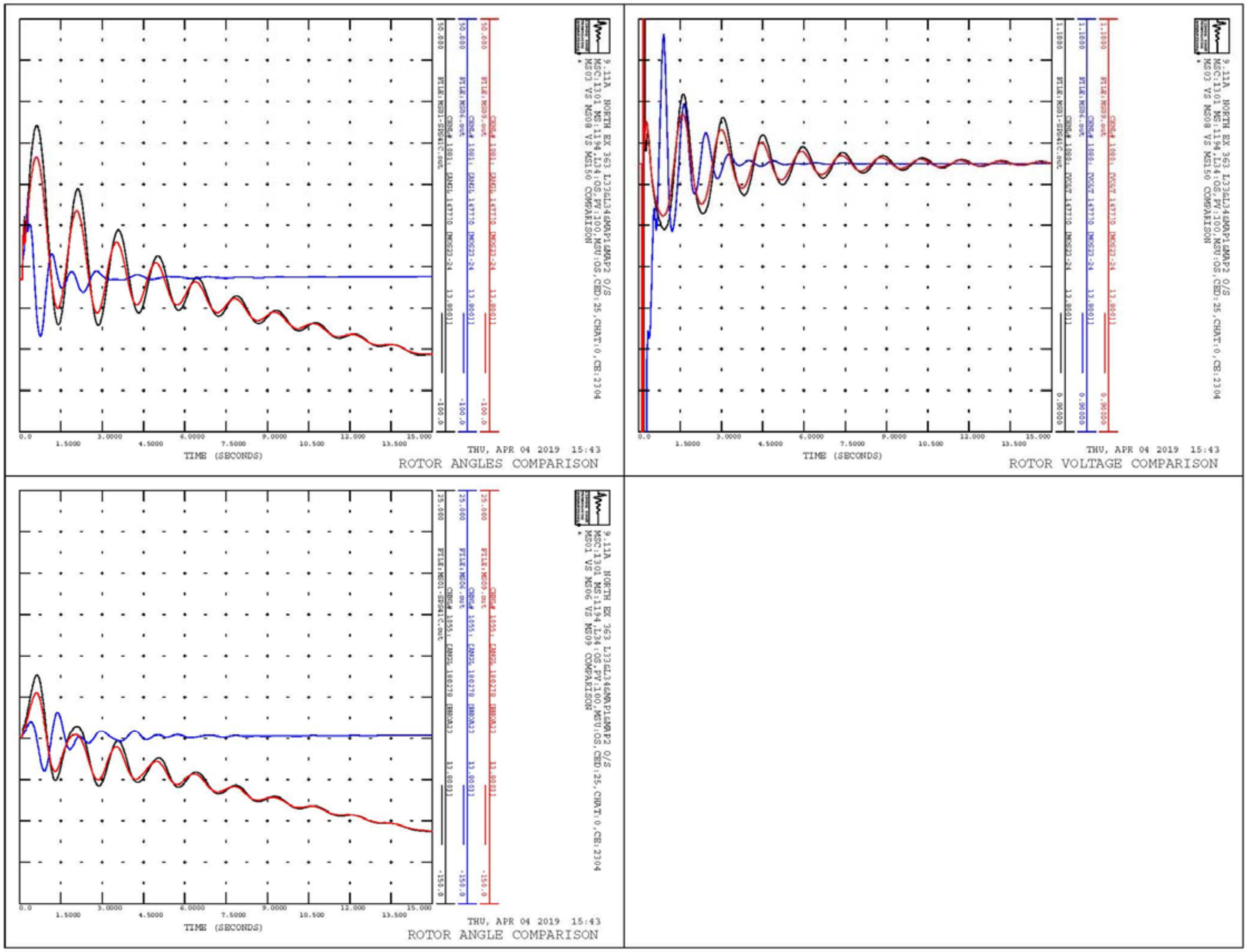

Fig B21 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

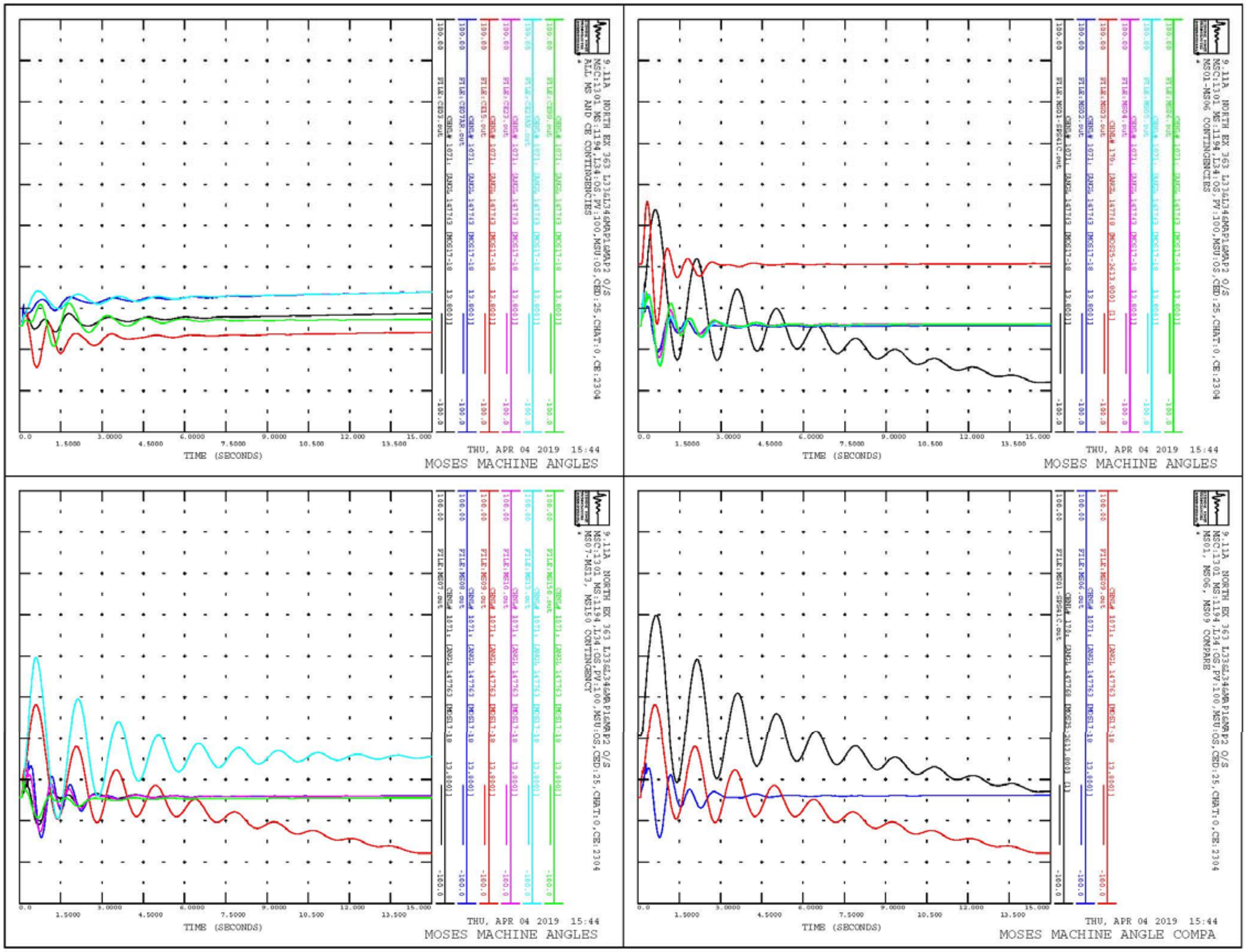

Fig B22 Comparative plots for Moses machine angle for all simulated contingencies

B.12 L33 & L34 & MAP1 & MAP2 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :9.12A  NORTH EX 115 L33&L34&MAP1&MAP2&PV20 O/S
       MSC:1150 MS:1150,L34:OS,PV:OS,MSU:IS,CED:25,CHAT:0,CE:2255
```

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1880.2	11.7	DYSE-CLOSE	3193.1	231.8
WEST-CENTRAL	577.1	-138.4	WESTC-CLOSE	1890.0	81.6
VOLNEY-EAST	3708.9	-210.8	VOLNEY-CLOSE	4932.4	-18.0
MOSES-SOUTH	1150.7	-419.1	MOSES-CLOSE	1150.7	-419.1
CENTRAL-EAST	2256.1	-410.7	TOTAL-EAST	5321.8	-440.3
UPNY-SENY	4365.2	-33.5	UPNY-SENY-CL	5659.1	120.9
UPNY-CONED	4475.0	-91.7	UPNY-CON-CL	6600.0	-100.0
MILLWOOD-SO	7187.1	64.9	LIPA-IMPORT	2006.7	-164.3
DNWDIE-SO-PL	4456.4	-405.2	DNWDIE-SO-PC	6581.4	-413.5
DNWDIE-SO-OP	3541.6	-344.7	PJM-NY	1212.0	313.1
NE-NY-WCSC	-758.3	126.8	ON-NY	1000.2	166.6
ONT-MICH-PAR	0.7	4.8	Northern Export	114.7	62.4

STATION VOLTAGES

```
126260 BOWLINE1    345.00 = 359.1      126261 BOWLINE2    345.00 = 359.0      126263 BUCHANAN S  345.00 = 355.4
136150 CLAY        345.00 = 359.2      130750 COOPC345    345.00 = 354.4      126266 DUNWOODIE   345.00 = 352.8
137200 EDIC        345.00 = 357.2      126277 FARRAGUT    345.00 = 349.9      130753 FRASR345    345.00 = 358.7
135413 GRDNVL2     230.00 = 232.0      147831 GILB 345    345.00 = 359.8      126283 GOTHLS      345.00 = 348.0
126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 358.0      137451 LEEDS 3     345.00 = 360.0
147833 MARCY T1    345.00 = 357.5      126291 MILLWOOD    345.00 = 353.2      137452 N.SCOT77    345.00 = 356.8
137453 N.SCOT99    345.00 = 356.8      147841 NIAGAR2E    230.00 = 231.9      147842 NIAGAR2W    230.00 = 231.9
147834 NIAG 345    345.00 = 358.6      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 354.8
149001 PANNELL3    345.00 = 348.0      126294 PLTVLLEY    345.00 = 353.9      126295 RAINEY      345.00 = 350.3
126600 REAC71      345.00 = 352.3      126601 REAC72      345.00 = 352.4      126297 RAMAPO      345.00 = 357.4
126250 RAMAPO 5    500.00 = 520.4      125001 ROCK TAV    345.00 = 356.5      125002 ROSETON     345.00 = 356.3
130754 SOMERSET345 345.00 = 359.0      126298 SPRAINBROOK 345.00 = 352.9      149000 ROCH 345    345.00 = 346.4
147840 MOSES W     230.00 = 235.4      130768 WATRC230    230.00 = 235.1      180819 CHA-NY      765.00 = 726.0*
147827 MARCY765    765.00 = 762.0      147828 MASS 765    765.00 = 747.7      126281 E FISHKILL  345.00 = 355.4
125000 HURLEY 3    345.00 = 358.5      128835 SHORE RD    345.00 = 353.5      136156 VOLNEY      345.00 = 366.7*
130757 WATRC345    345.00 = 360.2      135250 DUNKIRK     230.00 = 231.5      130764 MEYER230    230.00 = 227.4
130765 OAKDL230    230.00 = 235.5      137730 ROTRDM.2    230.00 = 236.2      181219 CHANY2      120.00 = 115.9
181119 CHANY1      120.00 = 115.9      137716 ALB1        115.00 = 117.7      130774 BATH 115    115.00 = 115.7
137488 BETHLEHE    115.00 = 118.0      130776 BORDR115    115.00 = 114.2      136181 CLAY        115.00 = 118.9
130794 DELHI115    115.00 = 115.3      130796 E.NOR115    115.00 = 114.2      135277 FALCONER    115.00 = 117.3
130807 WESTOVER115 115.00 = 118.3      130826 MEYER115    115.00 = 116.1      147849 MOS 115     115.00 = 119.2
147850 NIAG115E    115.00 = 117.2      147851 NIAG115W    115.00 = 117.8      130836 N.WAV115    115.00 = 113.6
```

130838	OAKDL115	115.00 = 118.3	147852	PLAT T#3	115.00 = 116.8	125043	PL.VAL 1	115.00 = 117.1
137235	PORTER 1	115.00 = 118.1	125046	ROCK TV1	115.00 = 116.7	137532	RTRDM1	115.00 = 114.8
125048	SHENANDO	115.00 = 117.6	149011	S82-1115	115.00 = 117.5	149008	RUS 115	115.00 = 114.5

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	0.0	-3.3	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0382				5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700				3.6	175	4	
147763	MOS17-18	13.800	2 0	2	54.7	25.3	38.6	-30.8	1.0300	1.0300				120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	28.6	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	29.2	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0277				120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	29.2	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147771	MOS27-28	13.800	1 1	2	57.0	19.3	19.3	0.0	1.0300	1.0130				60.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	4.5	4.8	-5.0	1.0500	1.0500				23.4	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9217				46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	34.0	34.0	-34.0	0.9550	0.9520				57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9215				46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9791				57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	25.0	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	21.6	50.0	-25.0	1.0500	1.0500				90.0	1145	4	
SUBSYSTEM TOTALS					859.7	343.8	505.0	-340.0						1136.2			

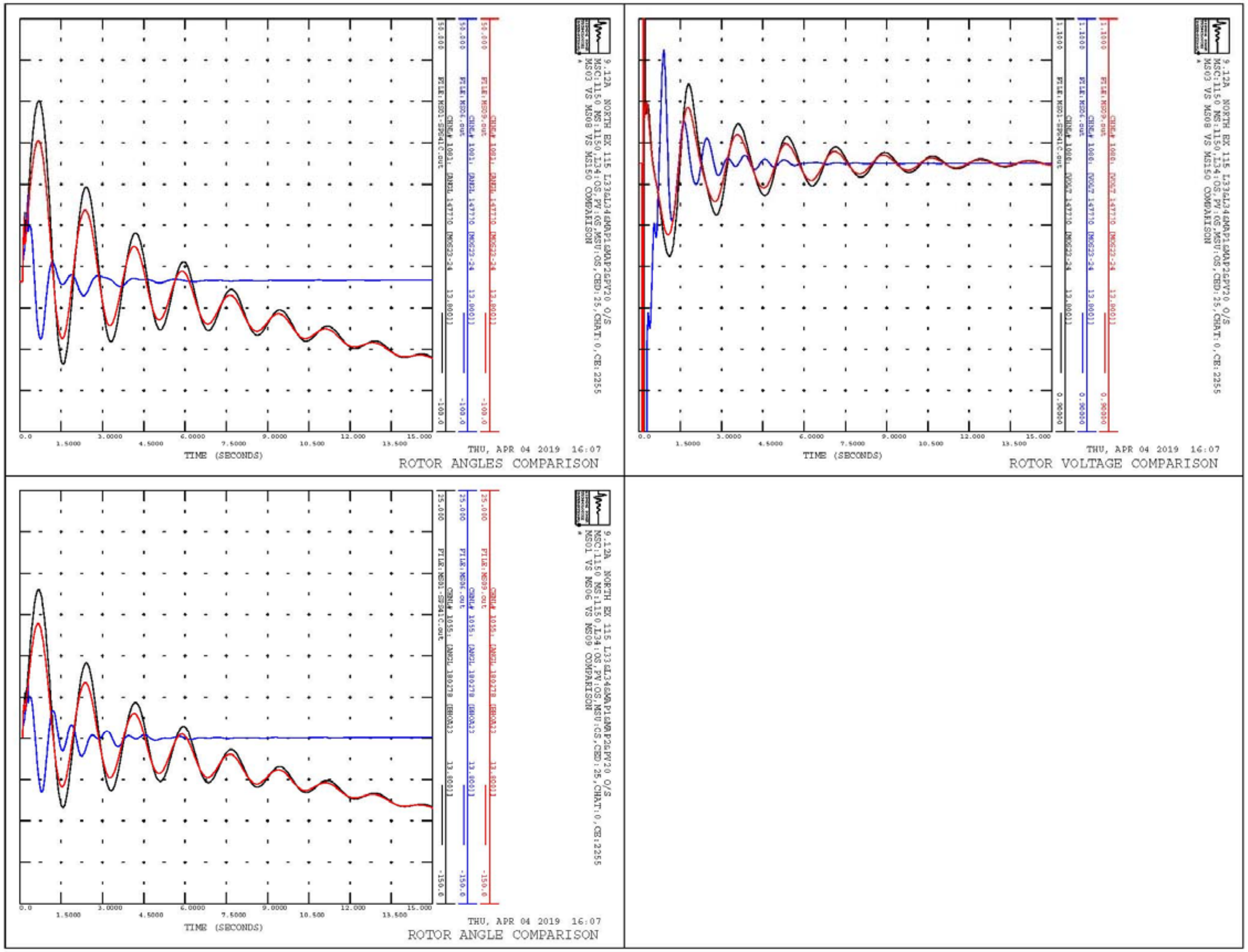

Fig B23 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

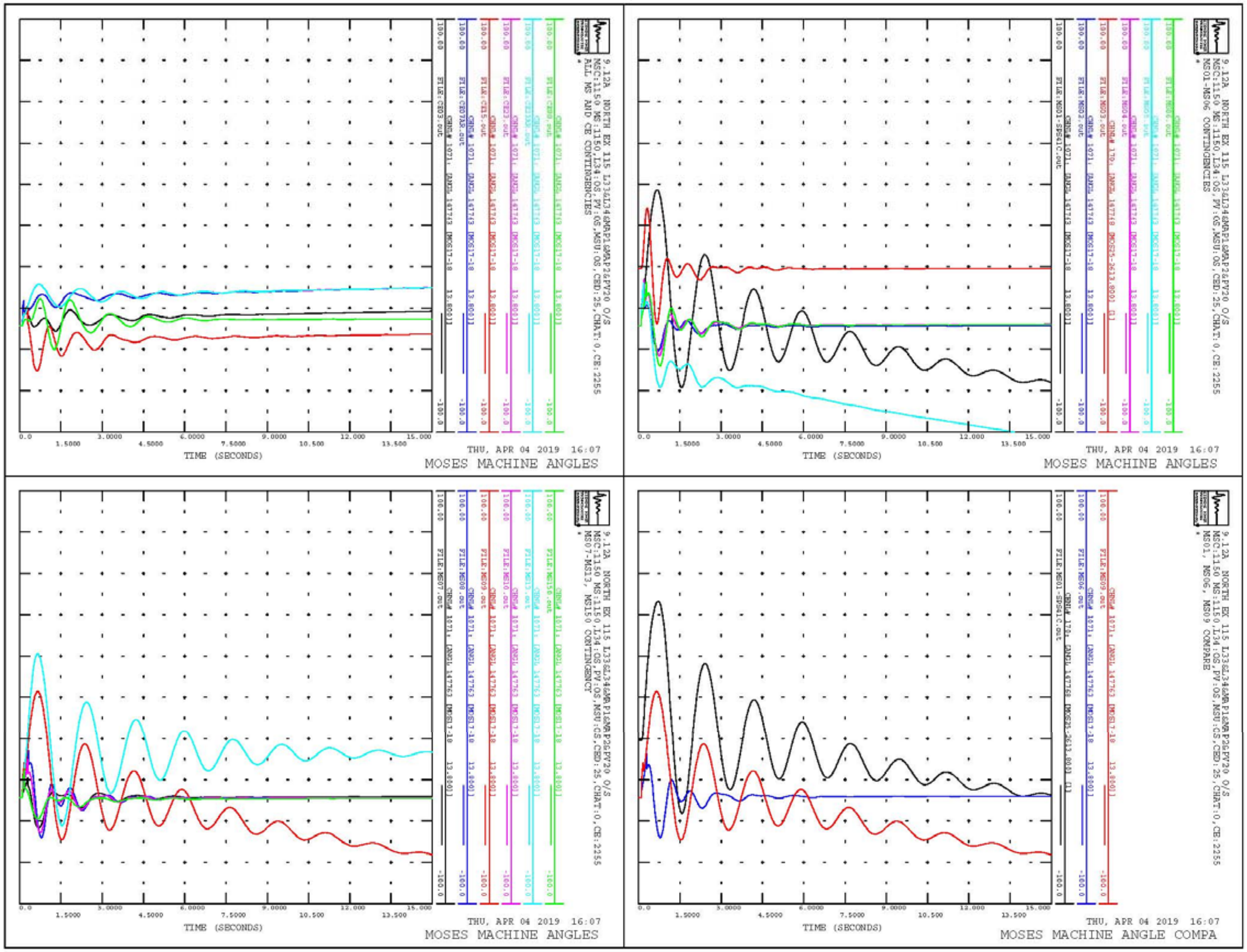

Fig B24 Comparative plots for Moses machine angle for all simulated contingencies

Appendix C – MAP1 & MAP2 O/S

C.1 MAP1 & MAP2 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :10.01B  NORTH EX 1350 MSU1 I/S MSSC I/S
       MSC:2460 MS:2300,L34:0,PV:100,CED:200,CHAT:0,CE:2877

                              INTERFACE FLOW REPORT

   DESCRIPTION          MW      MVAr     DESCRIPTION          MW      MVAr

  DYSINGER-EAS        1914.7      52.0  DYSE-CLOSE          3301.3     401.8
  WEST-CENTRAL         591.9      13.4  WESTC-CLOSE         1978.4     363.2
  VOLNEY-EAST         3656.0      86.0  VOLNEY-CLOSE        4882.2     364.9
  MOSES-SOUTH         2295.3    -169.6  MOSES-CLOSE         2458.2    -182.8
  CENTRAL-EAST        2860.0    -841.4  TOTAL-EAST          6338.7   -1099.6
  UPNY-SENY           4370.8    -264.9  UPNY-SENY-CL        5668.0     -60.2
  UPNY-CONED          4480.0    -190.5  UPNY-CON-CL         6605.6    -189.7
  MILLWOOD-SO         7197.1      55.4  LIPA-IMPORT         2006.7    -167.9
  DNWDIE-SO-PL        4455.3    -472.6  DNWDIE-SO-PC        6580.9    -471.8
  DNWDIE-SO-OP        3540.5    -408.1  PJM-NY              1340.3     420.4
  NE-NY-WCSC         -1658.6     261.3  ON-NY               1630.5     226.7
  ONT-MICH-PAR         122.5     -11.2  Northern Export     1352.5     -29.8

                               STATION VOLTAGES

  126260 BOWLINE1    345.00 = 357.0      126261 BOWLINE2    345.00 = 356.9      126263 BUCHANAN S  345.00 = 352.8
  136150 CLAY        345.00 = 343.0*     130750 COOPC345    345.00 = 343.4      126266 DUNWOODIE   345.00 = 349.7
  137200 EDIC        345.00 = 332.8*     126277 FARRAGUT    345.00 = 348.7      130753 FRASR345    345.00 = 345.7
  135413 GRDNVL2     230.00 = 229.7      147831 GILB 345    345.00 = 352.0      126283 GOTHLS      345.00 = 347.7
  126286 GOW R16     345.00 = 346.7      126290 LADENTWN    345.00 = 355.6      137451 LEEDS 3     345.00 = 352.7
  147833 MARCY T1    345.00 = 332.8*     126291 MILLWOOD    345.00 = 350.0      137452 N.SCOT77    345.00 = 346.1*
  137453 N.SCOT99    345.00 = 346.1*     147841 NIAGAR2E    230.00 = 230.4      147842 NIAGAR2W    230.00 = 230.4
  147834 NIAG 345    345.00 = 358.4      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 340.9
  149001 PANNELL3    345.00 = 340.1*     126294 PLTVLLEY    345.00 = 348.5      126295 RAINEY      345.00 = 349.1
  126600 REAC71      345.00 = 350.9      126601 REAC72      345.00 = 351.0      126297 RAMAPO      345.00 = 354.8
  126250 RAMAPO 5    500.00 = 518.8      125001 ROCK TAV    345.00 = 352.2      125002 ROSETON     345.00 = 352.0
  130754 SOMERSET345 345.00 = 358.5      126298 SPRAINBROOK 345.00 = 349.8      149000 ROCH 345    345.00 = 340.2*
  147840 MOSES W     230.00 = 227.0      130768 WATRC230    230.00 = 231.9      180819 CHA-NY      765.00 = 731.0
  147827 MARCY765    765.00 = 731.3      147828 MASS 765    765.00 = 726.3*     126281 E FISHKILL  345.00 = 350.6
  125000 HURLEY 3    345.00 = 352.4      128835 SHORE RD    345.00 = 350.3      136156 VOLNEY      345.00 = 350.8
  130757 WATRC345    345.00 = 352.1      135250 DUNKIRK     230.00 = 229.1      130764 MEYER230    230.00 = 227.2
  130765 OAKDL230    230.00 = 231.3      137730 ROTRDM.2    230.00 = 225.8      181219 CHANY2      120.00 = 123.0
  181119 CHANY1      120.00 = 123.0      137716 ALB1        115.00 = 117.6      130774 BATH 115    115.00 = 115.7
```

137488 BETHLEHE	115.00 = 117.8	130776 BORDR115	115.00 = 113.7	136181 CLAY	115.00 = 117.4
130794 DELHI115	115.00 = 114.9	130796 E.NOR115	115.00 = 111.2	135277 FALCONER	115.00 = 116.7
130807 WESTOVER115	115.00 = 115.7	130826 MEYER115	115.00 = 116.2	147849 MOS 115	115.00 = 115.5
147850 NIAG115E	115.00 = 117.1	147851 NIAG115W	115.00 = 117.6	130836 N.WAV115	115.00 = 113.0
130838 OAKDL115	115.00 = 115.7	147852 PLAT T#3	115.00 = 115.9	125043 PL.VAL 1	115.00 = 115.8
137235 PORTER 1	115.00 = 119.6	125046 ROCK TV1	115.00 = 116.7	137532 RTRDM1	115.00 = 114.4
125048 SHENANDO	115.00 = 116.5	149011 S82-1115	115.00 = 117.2	149008 RUS 115	115.00 = 114.2

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131831	NOEND1G$	13.800	1 0	2	81.6	6.1	23.5	-2.2	1.0133	1.0133		105.8	163	4	
131832	NOEND2G$	13.800	1 0	2	81.6	4.9	21.6	-3.4	1.0120	1.0120		105.8	163	4	
131833	NOEND3S$	13.800	1 0	2	81.6	6.6	20.2	-1.8	1.0139	1.0139		105.8	163	4	
136777	LK COLBY	115.00	1 0	2	0.0	0.5	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0267	1.0219		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.5	3.2	-1.7	0.9700	0.9700		3.6	175	4	
146742	MASSENA_ST	13.800	1 0	2	22.2	0.1	9.4	-4.7	1.0193	1.0193		39.6	175	4	
146743	MASSENA_GT	13.800	1 0	2	51.4	21.4	24.6	-12.3	1.0210	1.0210		78.3	175	4	
147763	MOS17-18	13.800	2 0	2	99.7	21.9	38.6	-30.8	0.9877	0.9877		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	106.3	20.5	38.6	-30.8	0.9859	0.9859		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	106.3	21.9	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9994		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	106.3	21.9	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9992		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0003		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0003		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	77.8	7.2	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	79.6	7.6	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	67.2	8.8	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	67.3	8.3	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	20.9	2.0	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	174.4	33.0	33.0	33.0	0.9755	0.9934		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	11.6	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9548		46.6	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	19.2	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1 0	2	44.0	19.1	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	19.2	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1 0	2	44.0	19.2	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1 0	2	45.0	12.4	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1 0	2	41.4	16.8	29.8	-29.8	0.9600	0.9600		50.0	1145	4	
180280	BHOA25	13.800	1 0	2	45.0	15.2	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	45.0	14.7	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	70.0	8.2	50.0	-25.0	1.0000	1.0000		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	8.9	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					2240.4	569.8	1037.7	-705.6				2885.3			

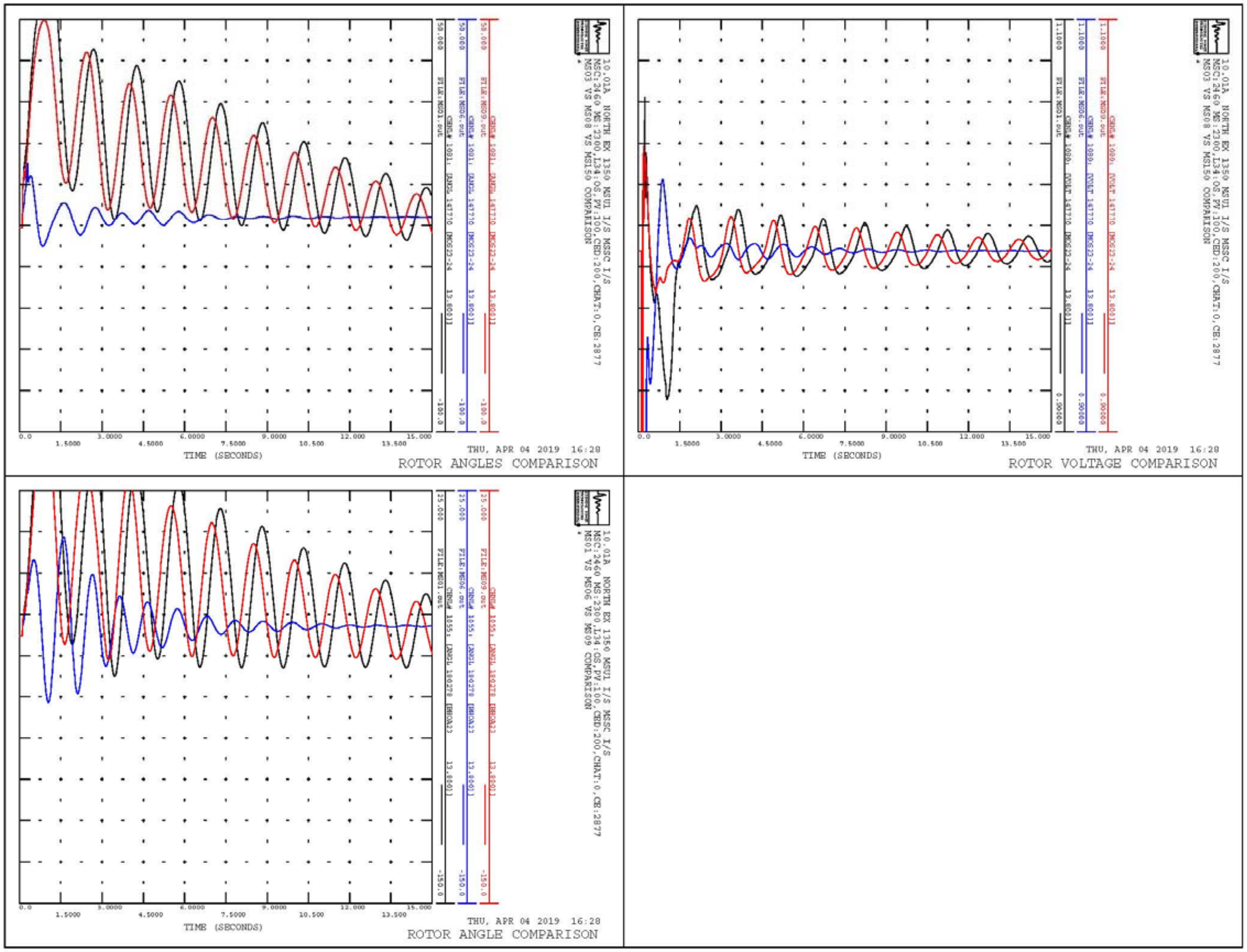

Fig C1 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

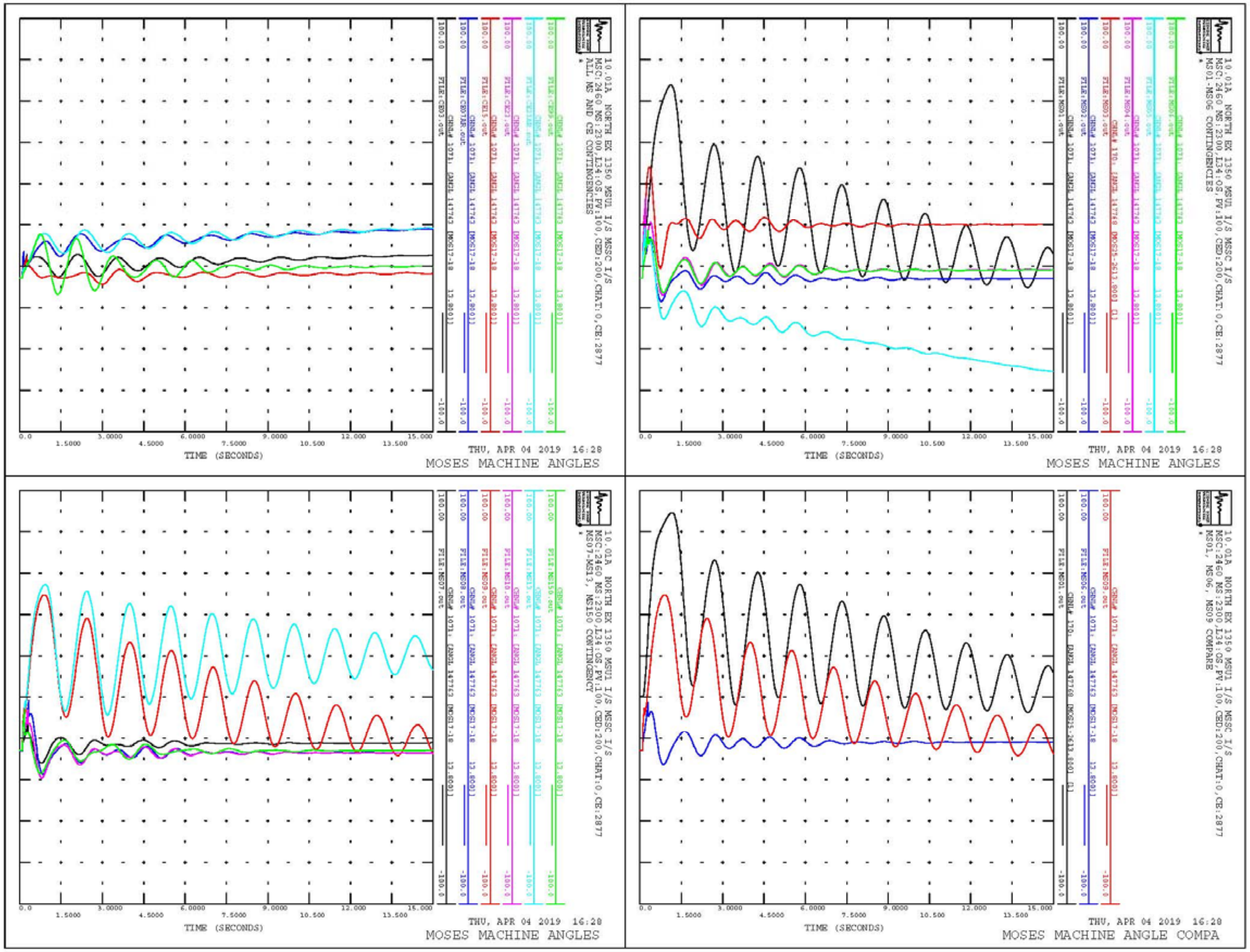

Fig C2 Comparative plots for Moses machine angle for all simulated contingencies

C.2 MAP1 & MAP2 & R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :10.02B  NORTH EX 1330 MAP1& MAP2 O/S MSU1 I/S
      MSC:2440 MS:2275,L34:0,PV:100,CED:125,CHAT:0,CE:2928

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS         1909.3      61.7  DYSE-CLOSE          3301.7     437.7
 WEST-CENTRAL          586.2      31.6  WESTC-CLOSE         1978.6     407.6
 VOLNEY-EAST          3756.7      97.9  VOLNEY-CLOSE        4982.9     394.1
 MOSES-SOUTH          2265.7    -117.2  MOSES-CLOSE         2438.8    -142.3
 CENTRAL-EAST         2928.0    -907.6  TOTAL-EAST          6469.1   -1212.3
 UPNY-SENY            4370.3    -284.5  UPNY-SENY-CL        5667.8     -76.8
 UPNY-CONED           4480.4    -194.3  UPNY-CON-CL         6605.8    -194.3
 MILLWOOD-SO          7197.7      52.7  LIPA-IMPORT         2006.7    -169.3
 DNWDIE-SO-PL         4455.7    -476.8  DNWDIE-SO-PC        6581.1    -476.7
 DNWDIE-SO-OP         3540.9    -410.7  PJM-NY              1344.4     435.7
 NE-NY-WCSC          -1658.7     277.9  ON-NY               1626.6     241.2
 ONT-MICH-PAR          126.0     -11.4  Northern Export     1332.7     -24.4

                             STATION VOLTAGES

 126260 BOWLINE1    345.00 = 356.8      126261 BOWLINE2    345.00 = 356.7      126263 BUCHANAN S  345.00 = 352.6
 136150 CLAY        345.00 = 341.7*     130750 COOPC345    345.00 = 341.6      126266 DUNWOODIE   345.00 = 349.5
 137200 EDIC        345.00 = 330.4*     126277 FARRAGUT    345.00 = 348.6      130753 FRASR345    345.00 = 343.3
 135413 GRDNVL2     230.00 = 229.5      147831 GILB 345    345.00 = 351.0      126283 GOTHLS      345.00 = 347.6
 126286 GOW R16     345.00 = 346.7      126290 LADENTWN    345.00 = 355.4      137451 LEEDS 3     345.00 = 352.8
 147833 MARCY T1    345.00 = 330.4*     126291 MILLWOOD    345.00 = 349.8      137452 N.SCOT77    345.00 = 344.9*
 137453 N.SCOT99    345.00 = 344.9*     147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 358.3      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 338.4
 149001 PANNELL3    345.00 = 339.7*     126294 PLTVLLEY    345.00 = 348.4      126295 RAINEY      345.00 = 349.0
 126600 REAC71      345.00 = 350.8      126601 REAC72      345.00 = 350.9      126297 RAMAPO      345.00 = 354.6
 126250 RAMAPO 5    500.00 = 518.6      125001 ROCK TAV    345.00 = 351.6      125002 ROSETON     345.00 = 351.8
 130754 SOMERSET345 345.00 = 358.4      126298 SPRAINBROOK 345.00 = 349.6      149000 ROCH 345    345.00 = 339.8*
 147840 MOSES W     230.00 = 225.4      130768 WATRC230    230.00 = 231.3      180819 CHA-NY      765.00 = 729.1
 147827 MARCY765    765.00 = 727.0*     147828 MASS 765    765.00 = 723.5*     126281 E FISHKILL  345.00 = 350.5
 125000 HURLEY 3    345.00 = 352.3      128835 SHORE RD    345.00 = 350.2      136156 VOLNEY      345.00 = 349.7
 130757 WATRC345    345.00 = 350.5      135250 DUNKIRK     230.00 = 228.9      130764 MEYER230    230.00 = 226.7
 130765 OAKDL230    230.00 = 230.8      137730 ROTRDM.2    230.00 = 222.3      181219 CHANY2      120.00 = 122.9
 181119 CHANY1      120.00 = 122.9      137716 ALB1        115.00 = 117.6      130774 BATH 115    115.00 = 115.5
 137488 BETHLEHE    115.00 = 117.9      130776 BORDR115    115.00 = 113.4      136181 CLAY        115.00 = 117.1
 130794 DELHI115    115.00 = 114.7      130796 E.NOR115    115.00 = 110.9      135277 FALCONER    115.00 = 116.7
 130807 WESTOVER115 115.00 = 115.5      130826 MEYER115    115.00 = 115.9      147849 MOS 115     115.00 = 114.2
 147850 NIAG115E    115.00 = 117.1      147851 NIAG115W    115.00 = 117.6      130836 N.WAV115    115.00 = 112.8
```

130838	OAKDL115	115.00 = 115.5		147852	PLAT T#3	115.00 = 115.4		125043	PL.VAL 1	115.00 = 115.9	
137235	PORTER 1	115.00 = 119.5		125046	ROCK TV1	115.00 = 116.5		137532	RTRDM1	115.00 = 114.2	
125048	SHENANDO	115.00 = 116.5		149011	S82-1115	115.00 = 117.0		149008	RUS 115	115.00 = 114.0	

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131831	NOEND1G$	13.800	1 0	2	81.6	8.7	23.5	-2.2	1.0133	1.0133		105.8	163	4	
131832	NOEND2G$	13.800	1 0	2	81.6	7.6	21.6	-3.4	1.0120	1.0120		105.8	163	4	
131833	NOEND3S$	13.800	1 0	2	81.6	9.3	20.2	-1.8	1.0139	1.0139		105.8	163	4	
136777	LK COLBY	115.00	1 0	2	0.0	1.5	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0267	1.0251		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.6	3.2	-1.7	0.9700	0.9700		3.6	175	4	
146742	MASSENA_ST	13.800	1 0	2	22.2	-1.7	9.4	-4.7	1.0193	1.0193		39.6	175	4	
146743	MASSENA_GT	13.800	1 0	2	51.4	1.9	24.6	-12.3	1.0210	1.0210		78.3	175	4	
147763	MOS17-18	13.800	2 0	2	103.6	28.0	38.6	-30.8	0.9877	0.9877		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	106.3	26.3	38.6	-30.8	0.9859	0.9859		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	106.3	28.1	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9890		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	106.3	28.1	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9888		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9900		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9900		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	97.8	12.4	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	99.6	12.3	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	77.2	11.8	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	37.3	11.2	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	20.9	3.1	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	209.4	33.0	33.0	33.0	0.9755	0.9817		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9546		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	11.9	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9544		46.6	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	19.4	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1 0	2	44.0	19.3	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	19.4	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1 0	2	44.0	19.4	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1 0	2	39.0	6.8	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1 0	2	41.4	19.1	29.8	-29.8	0.9600	0.9600		50.0	1145	4	
180280	BHOA25	13.800	1 0	2	40.0	8.5	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	38.0	8.3	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	60.0	0.0	50.0	-25.0	1.0000	1.0000		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	-11.1	50.3	-50.3	0.9200	0.9200		90.0	1145	4	
SUBSYSTEM TOTALS					2271.3	555.3	1037.7	-705.6				2885.3			

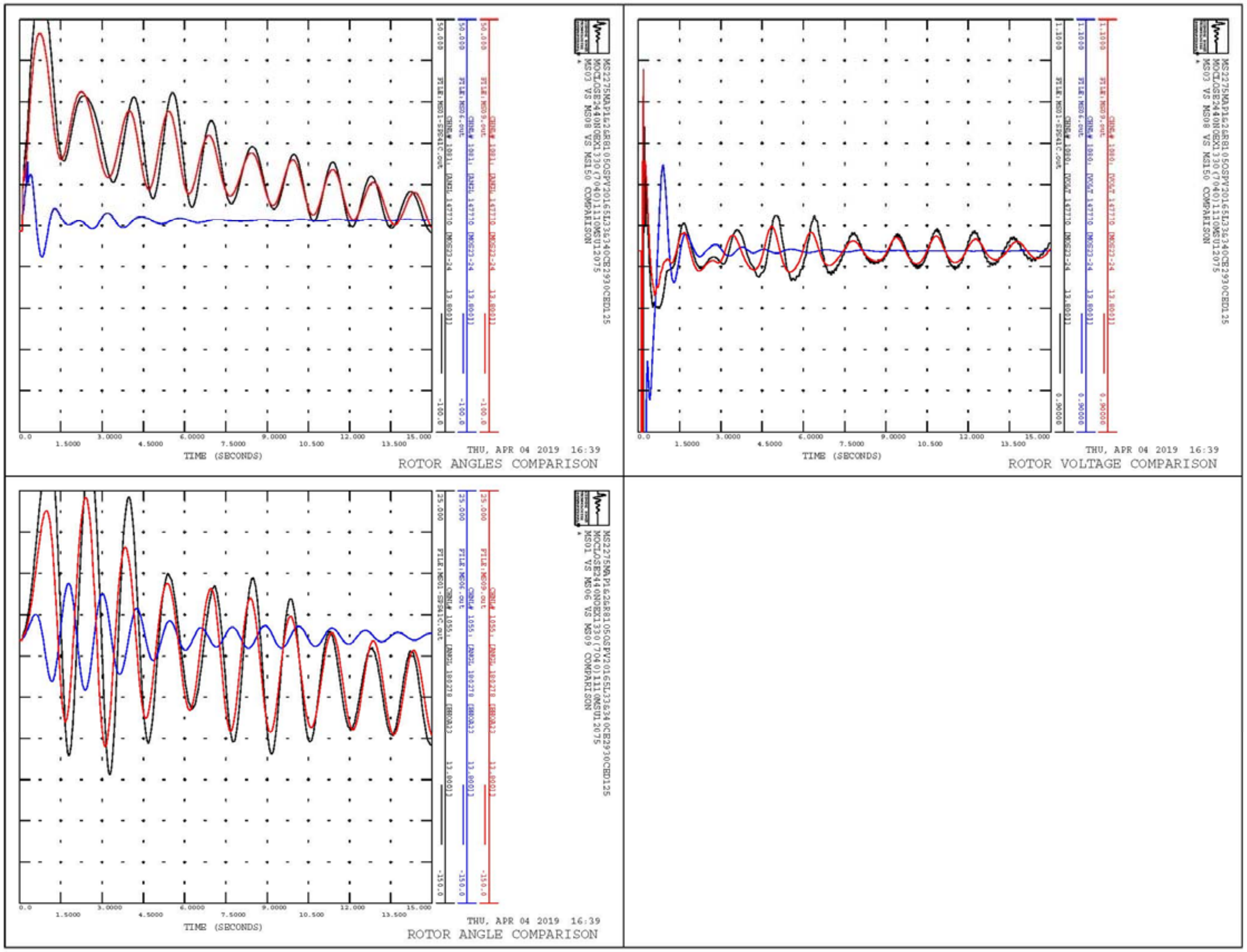

Fig C3 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

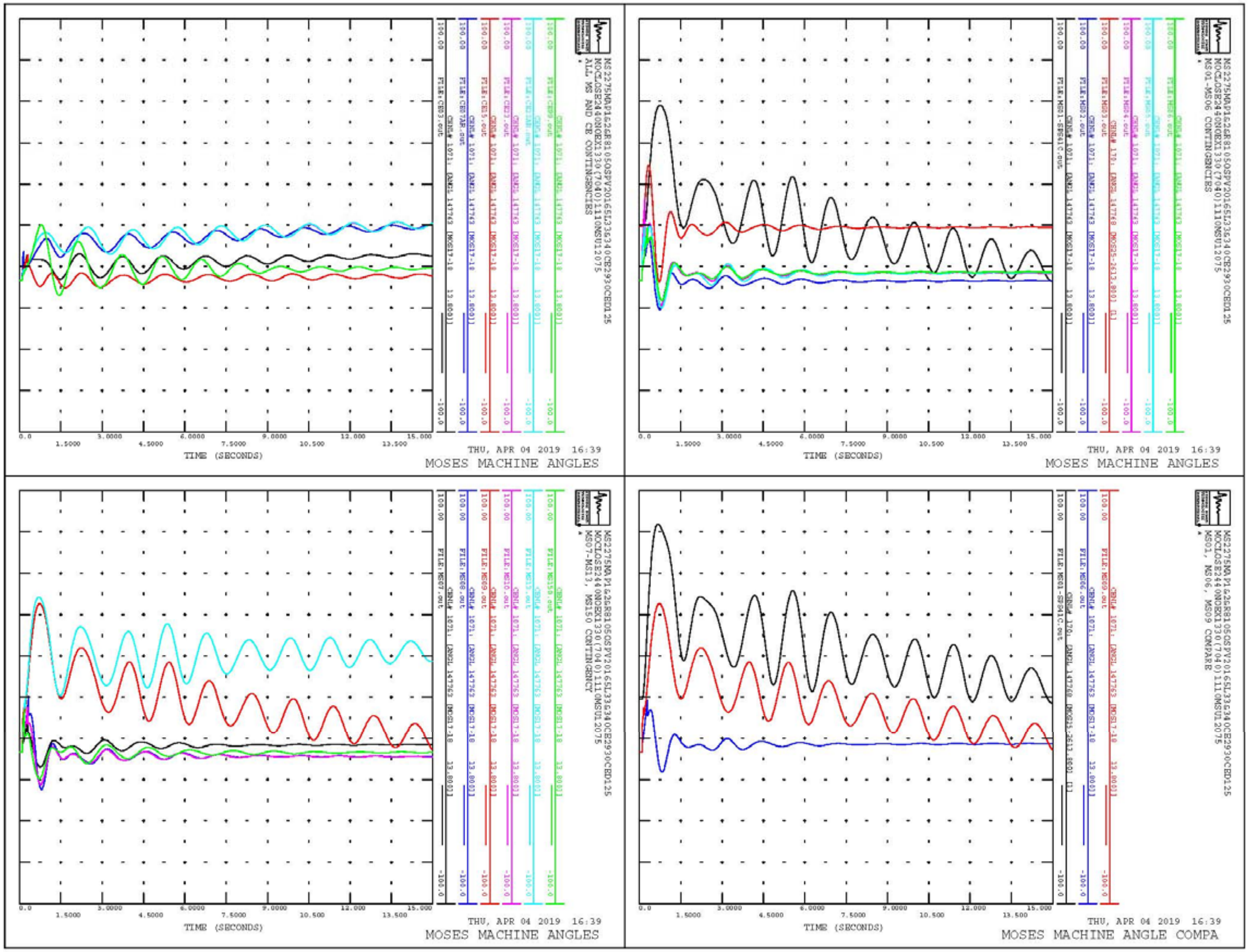

Fig C4 Comparative plots for Moses machine angle for all simulated contingencies

C.3 MAP1 & MAP2 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :10.03B: NX 1030  MAP1&2 & PV20 O/S
       MSC2139,MS2143,L34:0,PV20:OS,CED125,CE2850

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS        1889.1     103.9  DYSE-CLOSE          3304.2     569.0
 WEST-CENTRAL         565.9      63.9  WESTC-CLOSE         1981.0     529.0
 VOLNEY-EAST         4061.0     135.5  VOLNEY-CLOSE        5288.2     480.5
 MOSES-SOUTH         2137.0     -75.4  MOSES-CLOSE         2139.4     -79.9
 CENTRAL-EAST        2837.0    -963.5  TOTAL-EAST          6473.8   -1294.4
 UPNY-SENY           4371.2    -401.8  UPNY-SENY-CL        5668.6    -151.3
 UPNY-CONED          4479.6    -185.4  UPNY-CON-CL         6605.1    -178.0
 MILLWOOD-SO         7200.6      53.2  LIPA-IMPORT         2006.7    -157.6
 DNWDIE-SO-PL        4455.4    -512.2  DNWDIE-SO-PC        6580.8    -504.8
 DNWDIE-SO-OP        3539.7    -459.1  PJM-NY              1356.6     542.6
 NE-NY-WCSC         -1659.7     354.3  ON-NY               1617.2     240.1
 ONT-MICH-PAR         135.1     -12.0  Northern Export     1032.8      16.8

                             STATION VOLTAGES

 126260 BOWLINE1    345.00 = 355.0      126261 BOWLINE2    345.00 = 354.8       126263 BUCHANAN S  345.00 = 350.2
 136150 CLAY        345.00 = 337.8*     130750 COOPC345    345.00 = 335.4*      126266 DUNWOODIE   345.00 = 346.8*
 137200 EDIC        345.00 = 324.3*     126277 FARRAGUT    345.00 = 347.8       130753 FRASR345    345.00 = 336.0*
 135413 GRDNVL2     230.00 = 229.4      147831 GILB 345    345.00 = 344.0*      126283 GOTHLS      345.00 = 347.4
 126286 GOW R16     345.00 = 346.4      126290 LADENTWN    345.00 = 353.4       137451 LEEDS 3     345.00 = 347.4
 147833 MARCY T1    345.00 = 324.5*     126291 MILLWOOD    345.00 = 347.2*      137452 N.SCOT77    345.00 = 338.0*
 137453 N.SCOT99    345.00 = 338.0*     147841 NIAGAR2E    230.00 = 230.3       147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 358.2      129341 NRTHPRT1    138.00 = 142.3       130755 OAKDL345    345.00 = 332.4*
 149001 PANNELL3    345.00 = 337.2*     126294 PLTVLLEY    345.00 = 344.9*      126295 RAINEY      345.00 = 348.1
 126600 REAC71      345.00 = 349.8      126601 REAC72      345.00 = 349.8       126297 RAMAPO      345.00 = 352.3
 126250 RAMAPO 5    500.00 = 517.2      125001 ROCK TAV    345.00 = 348.2       125002 ROSETON     345.00 = 348.9
 130754 SOMERSET345 345.00 = 358.1      126298 SPRAINBROOK 345.00 = 347.0*      149000 ROCH 345    345.00 = 337.7*
 147840 MOSES W     230.00 = 227.1      130768 WATRC230    230.00 = 230.1       180819 CHA-NY      765.00 = 728.9
 147827 MARCY765    765.00 = 717.4*     147828 MASS 765    765.00 = 723.2*      126281 E FISHKILL  345.00 = 347.2
 125000 HURLEY 3    345.00 = 348.0      128835 SHORE RD    345.00 = 347.4       136156 VOLNEY      345.00 = 346.9
 130757 WATRC345    345.00 = 345.3      135250 DUNKIRK     230.00 = 228.7       130764 MEYER230    230.00 = 225.1
 130765 OAKDL230    230.00 = 229.8      137730 ROTRDM.2    230.00 = 215.6*      181219 CHANY2      120.00 = 122.9
 181119 CHANY1      120.00 = 122.9      137716 ALB1        115.00 = 117.5       130774 BATH 115    115.00 = 115.5
 137488 BETHLEHE    115.00 = 117.7      130776 BORDR115    115.00 = 113.2       136181 CLAY        115.00 = 117.1
 130794 DELHI115    115.00 = 114.2      130796 E.NOR115    115.00 = 110.3       135277 FALCONER    115.00 = 116.6
 130807 WESTOVER115 115.00 = 115.3      130826 MEYER115    115.00 = 115.4       147849 MOS 115     115.00 = 115.7
 147850 NIAG115E    115.00 = 117.1      147851 NIAG115W    115.00 = 117.5       130836 N.WAV115    115.00 = 113.1
```

130838 OAKDL115	115.00 = 115.2	147852 PLAT T#3	115.00 = 115.9	125043 PL.VAL 1	115.00 = 116.1
137235 PORTER 1	115.00 = 118.8	125046 ROCK TV1	115.00 = 115.9	137532 RTRDM1	115.00 = 113.8
125048 SHENANDO	115.00 = 116.7	149011 S82-1115	115.00 = 116.7	149008 RUS 115	115.00 = 113.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131831	NOEND1G$	13.800	1 0	2	81.6	6.0	23.5	-2.2	1.0133	1.0133		105.8	163	4	
131832	NOEND2G$	13.800	1 0	2	81.6	4.8	21.6	-3.4	1.0120	1.0120		105.8	163	4	
131833	NOEND3S$	13.800	1 0	2	81.6	6.5	20.2	-1.8	1.0139	1.0139		105.8	163	4	
136777	LK COLBY	115.00	1 0	2	0.0	-1.0	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0267	1.0247		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.4	3.2	-1.7	0.9700	0.9700		3.6	175	4	
146742	MASSENA_ST	13.800	1 0	2	22.2	-0.1	9.4	-4.7	1.0193	1.0193		39.6	175	4	
146743	MASSENA_GT	13.800	1 0	2	51.4	19.2	24.6	-12.3	1.0210	1.0210		78.3	175	4	
147763	MOS17-18	13.800	2 0	2	103.7	21.9	38.6	-30.8	0.9877	0.9877		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	106.3	20.2	38.6	-30.8	0.9859	0.9859		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	106.3	21.6	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0013		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	106.3	21.6	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0012		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0023		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0023		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	97.8	10.4	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	77.2	10.3	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	37.3	9.4	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	20.9	2.7	4.8	-5.0	1.0300	1.0300		23.4	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9545		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	12.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9544		46.6	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	19.4	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1 0	2	44.0	19.4	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	19.5	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1 0	2	44.0	19.4	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1 0	2	39.0	9.4	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1 0	2	41.4	19.1	29.8	-29.8	0.9600	0.9600		50.0	1145	4	
180280	BHOA25	13.800	1 0	2	40.0	11.6	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	38.0	11.2	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	60.0	4.0	50.0	-25.0	1.0000	1.0000		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	-11.1	50.3	-50.3	0.9200	0.9200		90.0	1145	4	
SUBSYSTEM TOTALS					1962.4	499.7	988.6	-721.0				2551.5			

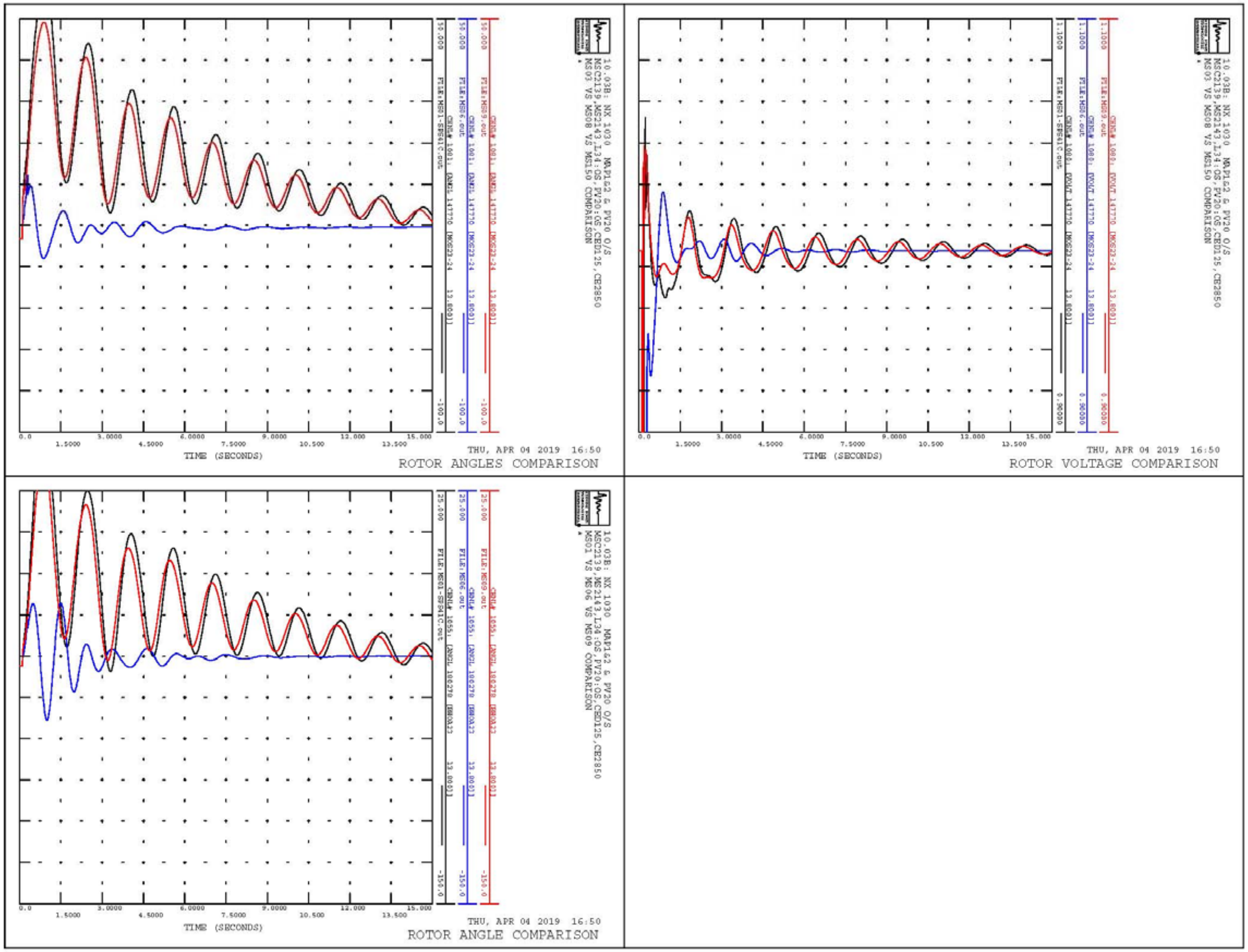

Fig C5 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

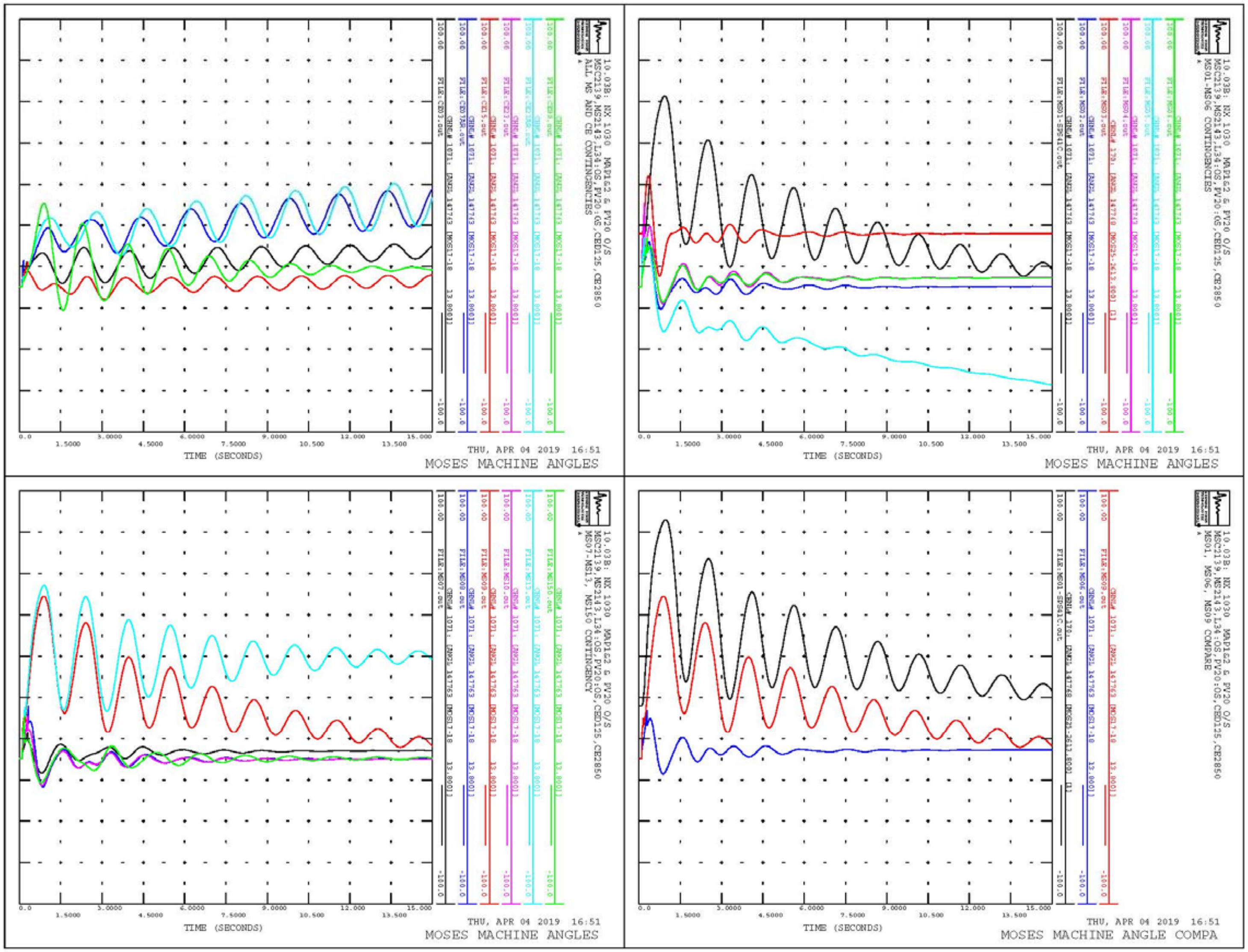

Fig C6 Comparative plots for Moses machine angle for all simulated contingencies

C.4 MAP1 & MAP2 & L33 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :10.04B: NX 1000  MAP1&2 & L33 O/S
       MSC2108,MS2002,L34:0,PV20:0,CED200,CE2894

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW      MVAr     DESCRIPTION          MW      MVAr

 DYSINGER-EAS        1899.4     61.2  DYSE-CLOSE          3302.1    372.6
 WEST-CENTRAL         576.1     18.7  WESTC-CLOSE         1978.9    330.2
 VOLNEY-EAST         4091.6   -163.5  VOLNEY-CLOSE        5314.2     76.2
 MOSES-SOUTH         2002.2   -239.3  MOSES-CLOSE         2108.3   -244.0
 CENTRAL-EAST        2893.8   -840.3  TOTAL-EAST          6469.0  -1074.5
 UPNY-SENY           4375.4   -186.3  UPNY-SENY-CL        5667.9      0.7
 UPNY-CONED          4483.5   -176.8  UPNY-CON-CL         6606.6   -185.1
 MILLWOOD-SO         7198.3     59.7  LIPA-IMPORT         2006.6   -161.1
 DNWDIE-SO-PL        4457.5   -444.4  DNWDIE-SO-PC        6580.6   -452.7
 DNWDIE-SO-OP        3542.5   -387.5  PJM-NY              1345.5    400.4
 NE-NY-WCSC         -1658.4    236.2  ON-NY               1625.8    210.6
 ONT-MICH-PAR         126.9    -11.2  Northern Export     1000.7    -48.6

                             STATION VOLTAGES

 126260 BOWLINE1    345.00 = 357.4      126261 BOWLINE2    345.00 = 357.3      126263 BUCHANAN S  345.00 = 353.4
 136150 CLAY        345.00 = 343.4*     130750 COOPC345    345.00 = 344.6      126266 DUNWOODIE   345.00 = 350.3
 137200 EDIC        345.00 = 336.4*     126277 FARRAGUT    345.00 = 348.9      130753 FRASR345    345.00 = 347.3
 135413 GRDNVL2     230.00 = 229.6      147831 GILB 345    345.00 = 351.6      126283 GOTHLS      345.00 = 347.7
 126286 GOW R16     345.00 = 346.8      126290 LADENTWN    345.00 = 356.1      137451 LEEDS 3     345.00 = 356.4
 147833 MARCY T1    345.00 = 337.0*     126291 MILLWOOD    345.00 = 350.7      137452 N.SCOT77    345.00 = 347.9*
 137453 N.SCOT99    345.00 = 347.9*     147841 NIAGAR2E    230.00 = 230.4      147842 NIAGAR2W    230.00 = 230.4
 147834 NIAG 345    345.00 = 358.4      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 340.4
 149001 PANNELL3    345.00 = 340.3*     126294 PLTVLLEY    345.00 = 349.9      126295 RAINEY      345.00 = 349.3
 126600 REAC71      345.00 = 351.2      126601 REAC72      345.00 = 351.2      126297 RAMAPO      345.00 = 355.4
 126250 RAMAPO 5    500.00 = 519.1      125001 ROCK TAV    345.00 = 352.9      125002 ROSETON     345.00 = 353.0
 130754 SOMERSET345 345.00 = 358.4      126298 SPRAINBROOK 345.00 = 350.5      149000 ROCH 345    345.00 = 340.2*
 147840 MOSES W     230.00 = 230.0      130768 WATRC230    230.00 = 231.3      180819 CHA-NY      765.00 = 738.8
 147827 MARCY765    765.00 = 744.2      147828 MASS 765    765.00 = 738.3      126281 E FISHKILL  345.00 = 351.8
 125000 HURLEY 3    345.00 = 354.7      128835 SHORE RD    345.00 = 351.0      136156 VOLNEY      345.00 = 350.9
 130757 WATRC345    345.00 = 351.3      135250 DUNKIRK     230.00 = 229.0      130764 MEYER230    230.00 = 225.8
 130765 OAKDL230    230.00 = 231.4      137730 ROTRDM.2    230.00 = 224.1      181219 CHANY2      120.00 = 123.3
 181119 CHANY1      120.00 = 123.3      137716 ALB1        115.00 = 117.9      130774 BATH 115    115.00 = 115.5
 137488 BETHLEHE    115.00 = 118.2      130776 BORDR115    115.00 = 113.6      136181 CLAY        115.00 = 117.6
 130794 DELHI115    115.00 = 115.6      130796 E.NOR115    115.00 = 111.4      135277 FALCONER    115.00 = 116.7
 130807 WESTOVER115 115.00 = 116.1      130826 MEYER115    115.00 = 115.8      147849 MOS 115     115.00 = 116.8
 147850 NIAG115E    115.00 = 117.1      147851 NIAG115W    115.00 = 117.6      130836 N.WAV115    115.00 = 113.1
```

130838 OAKDL115	115.00 = 116.1	147852 PLAT T#3	115.00 = 115.7	125043 PL.VAL 1	115.00 = 116.3
137235 PORTER 1	115.00 = 120.5	125046 ROCK TV1	115.00 = 117.0	137532 RTRDM1	115.00 = 114.9
125048 SHENANDO	115.00 = 116.8	149011 S82-1115	115.00 = 117.2	149008 RUS 115	115.00 = 114.1

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2 0	-2	1.3	0.0	0.0	0.0	1.0000	1.0314		3.0	163	4	
131769	CADYVILE	46.000	3 0	-2	2.1	0.0	3.1	0.0	1.0000	1.0181		5.0	163	4	
131778	HIGHFL46	46.000	3 0	-2	8.7	1.6	1.6	1.6	1.0000	1.0255		16.0	163	4	
131782	INDIAN T	46.000	1 0	-2	3.7	0.0	0.0	0.0	1.0000	1.0116		10.0	163	4	
131786	KENTSF46	46.000	3 0	-2	7.9	1.0	5.7	1.0	1.0000	1.0162		13.0	163	4	
131789	MILL C46	46.000	3 0	2	3.5	1.1	3.0	0.0	1.0187	1.0187		6.0	163	4	
131795	RAINBOW	46.000	2 0	-2	1.5	0.0	0.0	0.0	1.0000	1.0311		3.0	163	4	
131813	CHATGY34	34.500	2 1	-2	1.5	0.0	0.0	0.0	1.0000	1.0017		4.0	163	4	
136751	ALLENS F	115.00	1 0	2	2.6	1.4	3.1	-1.5	1.0266	1.0266		5.0	175	4	
136777	LK COLBY	115.00	1 0	2	0.0	-3.5	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	0.2	1.0	-0.2	1.0267	1.0267		5.0	175	4	
136865	UNION	46.000	1 0	-2	1.4	0.0	0.0	0.0	1.0000	1.0236		3.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4	
137179	FRANK HY	2.3000	2 1	2	0.9	0.2	1.1	-0.6	1.0100	1.0100		4.0	175	4	
147763	MOS17-18	13.800	2 0	2	85.2	9.5	38.6	-30.8	0.9877	0.9877		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	106.3	9.2	38.6	-30.8	0.9859	0.9859		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	106.3	8.0	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147768	MOS25-26	13.800	2 0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0101		120.0	158	4	
147770	MOS23-24	13.800	2 0	-2	106.3	38.6	38.6	-30.8	1.0300	1.0157		120.0	158	4	
147771	MOS27-28	13.800	2 0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0100		120.0	158	4	
147772	MOS29-30	13.800	2 0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0111		120.0	158	4	
147774	MOS31-32	13.800	2 0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0111		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	80.0	8.6	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	79.5	9.0	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	8.2	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	20.9	2.4	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	200.0	18.5	123.2	-82.6	0.9755	0.9755		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.1	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	10.5	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.2	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	18.3	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1 0	2	44.0	18.3	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	18.4	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1 0	2	44.0	18.3	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180277	BHEA22	13.800	1 0	-2	48.0	30.0	30.0	-13.1	1.0000	0.9911		57.0	1145	4	
180278	BHOA23	13.800	1 0	2	46.0	8.4	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1 0	2	41.4	19.1	29.8	-29.8	0.9600	0.9600		50.0	1145	4	
180280	BHOA25	13.800	1 0	2	48.0	10.4	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	48.0	10.2	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	68.0	2.1	50.0	-25.0	1.0000	1.0000		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	-11.1	50.3	-50.3	0.9200	0.9200		90.0	1145	4	
SUBSYSTEM TOTALS					1970.1	476.5	1060.0	-791.9				2460.5			

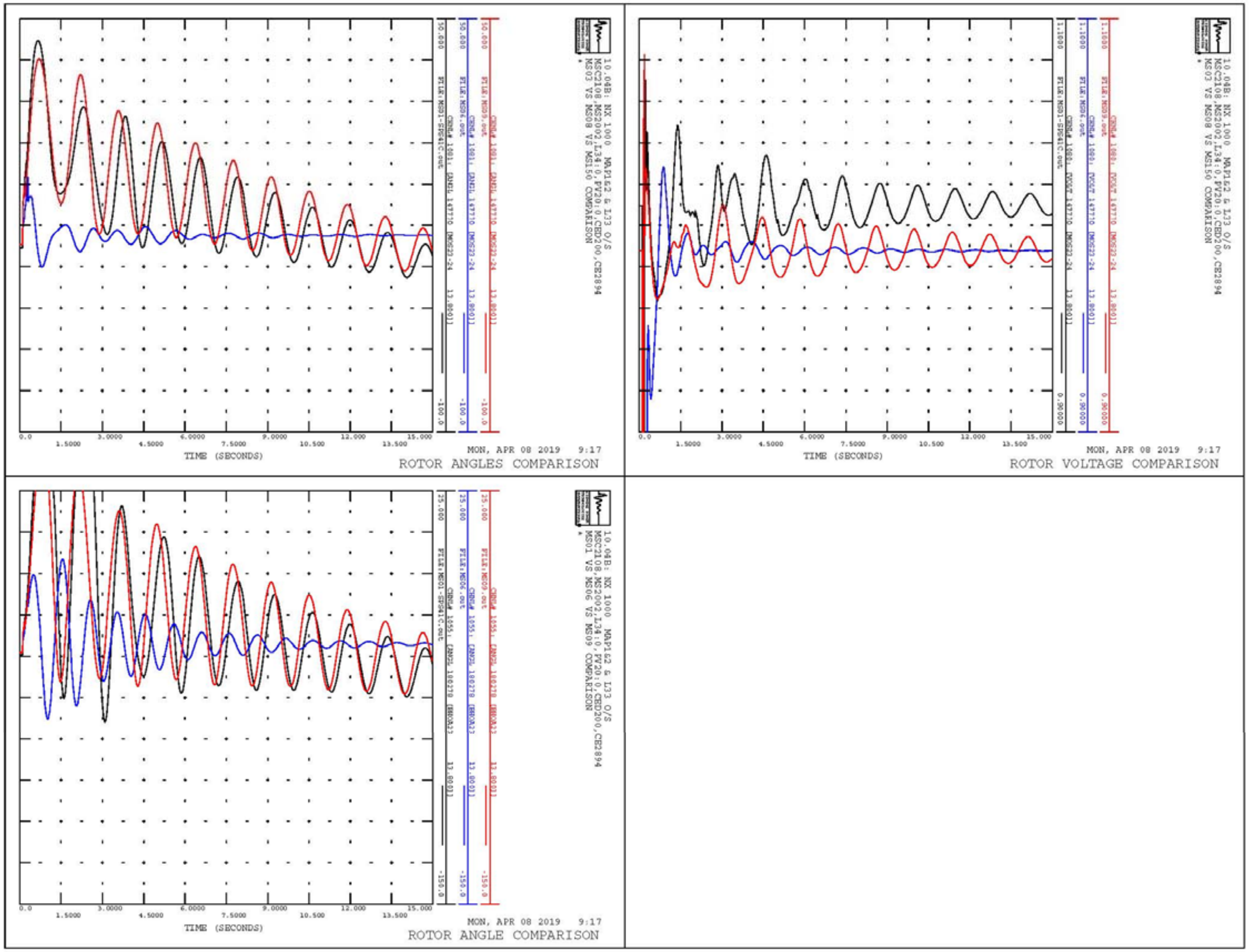

Fig C7 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

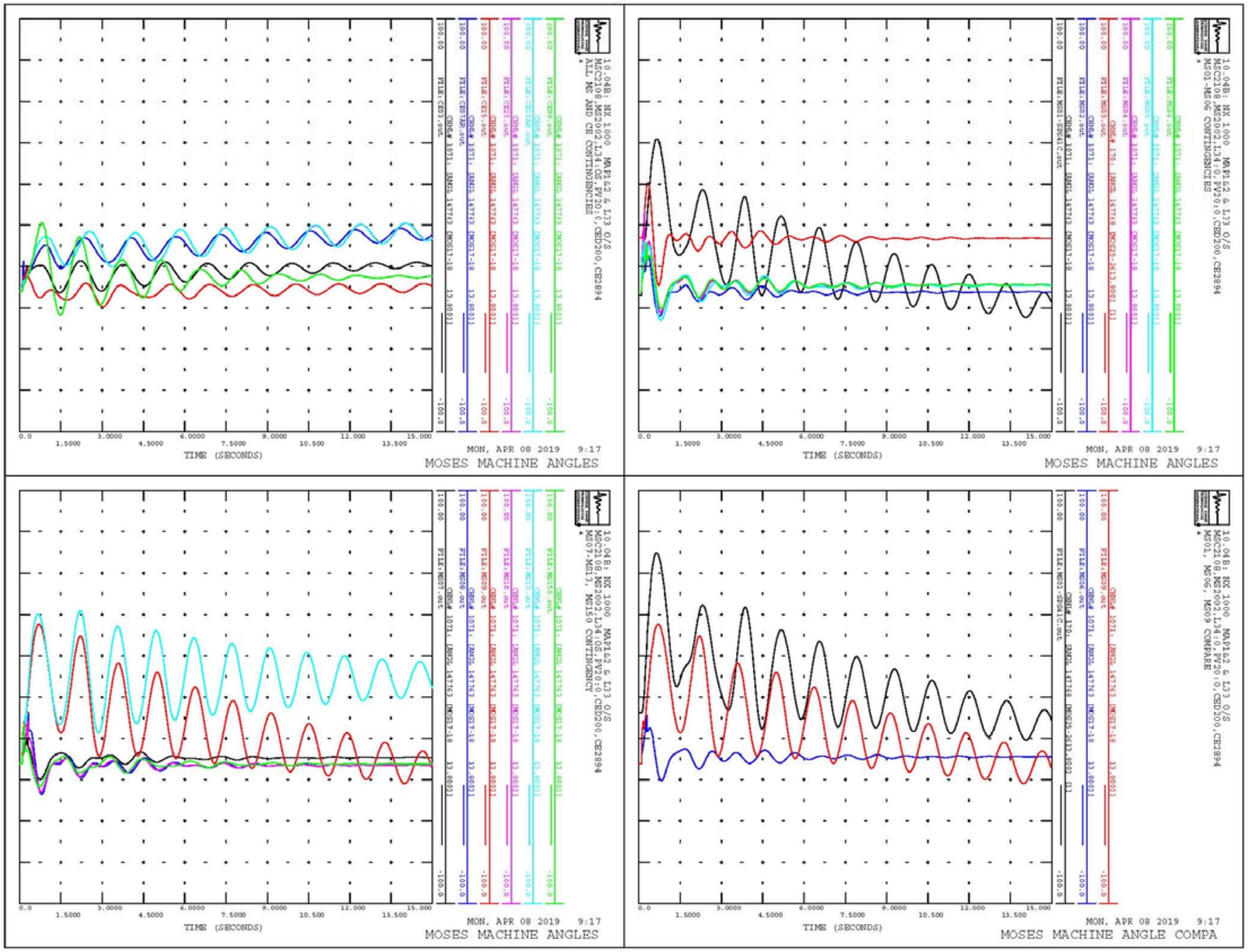

Fig C8 Comparative plots for Moses machine angle for all simulated contingencies

C.5 MAP1 & MAP2 & L33 & R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

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CASE :10.05B: NX 1150  MAP1&2 & L33 &R8105 O/S
       MSC2259,MS2121,L34:0,PV20:0,CED125,CE2915

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS        1914.2      43.8  DYSE-CLOSE          3303.4     352.4
 WEST-CENTRAL         591.2       9.2  WESTC-CLOSE         1980.4     317.8
 VOLNEY-EAST         3945.2    -120.6  VOLNEY-CLOSE        5165.9     121.1
 MOSES-SOUTH         2120.7    -216.2  MOSES-CLOSE         2259.3    -220.8
 CENTRAL-EAST        2915.3    -842.6  TOTAL-EAST          6471.9   -1068.7
 UPNY-SENY           4375.6    -175.4  UPNY-SENY-CL        5669.7      10.1
 UPNY-CONED          4483.2    -170.4  UPNY-CON-CL         6607.5    -177.7
 MILLWOOD-SO         7198.7      62.2  LIPA-IMPORT         2006.8    -159.6
 DNWDIE-SO-PL        4456.9    -439.9  DNWDIE-SO-PC        6581.2    -447.2
 DNWDIE-SO-OP        3542.4    -384.6  PJM-NY              1343.2     391.2
 NE-NY-WCSC         -1659.0     230.2  ON-NY               1629.6     212.3
 ONT-MICH-PAR         122.2     -11.4  Northern Export     1152.1     -41.0

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 357.6       126261 BOWLINE2     345.00 = 357.5       126263 BUCHANAN S  345.00 = 353.5
 136150 CLAY         345.00 = 344.0*      130750 COOPC345     345.00 = 345.3       126266 DUNWOODIE   345.00 = 350.5
 137200 EDIC         345.00 = 336.8*      126277 FARRAGUT     345.00 = 349.0       130753 FRASR345    345.00 = 348.1
 135413 GRDNVL2      230.00 = 229.7       147831 GILB 345     345.00 = 352.3       126283 GOTHLS      345.00 = 347.7
 126286 GOW R16      345.00 = 346.8       126290 LADENTWN     345.00 = 356.3       137451 LEEDS 3     345.00 = 356.8
 147833 MARCY T1     345.00 = 337.3*      126291 MILLWOOD     345.00 = 350.9       137452 N.SCOT77    345.00 = 348.6
 137453 N.SCOT99     345.00 = 348.6       147841 NIAGAR2E     230.00 = 230.4       147842 NIAGAR2W    230.00 = 230.4
 147834 NIAG 345     345.00 = 358.5       129341 NRTHPRT1     138.00 = 142.3       130755 OAKDL345    345.00 = 341.5
 149001 PANNELL3     345.00 = 340.8*      126294 PLTVLLEY     345.00 = 350.2       126295 RAINEY      345.00 = 349.3
 126600 REAC71       345.00 = 351.3       126601 REAC72       345.00 = 351.3       126297 RAMAPO      345.00 = 355.5
 126250 RAMAPO 5     500.00 = 519.2       125001 ROCK TAV     345.00 = 353.3       125002 ROSETON     345.00 = 353.3
 130754 SOMERSET345 345.00 = 358.5        126298 SPRAINBROOK 345.00 = 350.6        149000 ROCH 345    345.00 = 340.8*
 147840 MOSES W      230.00 = 228.2       130768 WATRC230     230.00 = 232.1       180819 CHA-NY      765.00 = 736.5
 147827 MARCY765     765.00 = 743.2       147828 MASS 765     765.00 = 734.8       126281 E FISHKILL  345.00 = 352.1
 125000 HURLEY 3     345.00 = 355.0       128835 SHORE RD     345.00 = 351.1       136156 VOLNEY      345.00 = 351.3
 130757 WATRC345     345.00 = 352.4       135250 DUNKIRK      230.00 = 229.1       130764 MEYER230    230.00 = 227.2
 130765 OAKDL230     230.00 = 231.5       137730 ROTRDM.2     230.00 = 224.5       181219 CHANY2      120.00 = 123.2
 181119 CHANY1       120.00 = 123.2       137716 ALB1         115.00 = 117.8       130774 BATH 115    115.00 = 115.7
 137488 BETHLEHE     115.00 = 118.1       130776 BORDR115     115.00 = 113.7       136181 CLAY        115.00 = 117.6
 130794 DELHI115     115.00 = 115.3       130796 E.NOR115     115.00 = 111.4       135277 FALCONER    115.00 = 116.7
 130807 WESTOVER115 115.00 = 115.9        130826 MEYER115     115.00 = 116.2       147849 MOS 115     115.00 = 115.6
 147850 NIAG115E     115.00 = 117.1       147851 NIAG115W     115.00 = 117.6       130836 N.WAV115    115.00 = 113.1
```

130838 OAKDL115	115.00 = 115.9	147852 PLAT T#3	115.00 = 116.1	125043 PL.VAL 1	115.00 = 116.3
137235 PORTER 1	115.00 = 120.1	125046 ROCK TV1	115.00 = 117.1	137532 RTRDM1	115.00 = 114.7
125048 SHENANDO	115.00 = 116.9	149011 S82-1115	115.00 = 117.3	149008 RUS 115	115.00 = 114.3

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
131761	ALICE F$	46.000	2	0	-2	1.3	0.0	0.0	0.0	1.0000	1.0324				3.0	163	4	
131769	CADYVILE	46.000	3	0	-2	2.1	0.0	3.1	0.0	1.0000	1.0182				5.0	163	4	
131778	HIGHFL46	46.000	3	0	-2	8.7	1.6	1.6	1.6	1.0000	1.0256				16.0	163	4	
131782	INDIAN T	46.000	1	0	-2	3.7	0.0	0.0	0.0	1.0000	1.0117				10.0	163	4	
131786	KENTSF46	46.000	3	0	-2	7.9	1.0	5.7	1.0	1.0000	1.0163				13.0	163	4	
131789	MILL C46	46.000	3	0	2	3.5	0.8	3.0	0.0	1.0187	1.0187				6.0	163	4	
131795	RAINBOW	46.000	2	0	-2	1.5	0.0	0.0	0.0	1.0000	1.0320				3.0	163	4	
131813	CHATGY34	34.500	2	1	-2	1.5	0.0	0.0	0.0	1.0000	1.0050				4.0	163	4	
131831	NOEND1G$	13.800	1	0	2	81.6	5.1	23.5	-2.2	1.0133	1.0133				105.8	163	4	
131832	NOEND2G$	13.800	1	0	2	81.6	3.9	21.6	-3.4	1.0120	1.0120				105.8	163	4	
131833	NOEND3S$	13.800	1	0	2	81.6	5.6	20.2	-1.8	1.0139	1.0139				105.8	163	4	
136751	ALLENS F	115.00	1	0	2	2.6	-0.6	3.1	-1.5	1.0266	1.0266				5.0	175	4	
136777	LK COLBY	115.00	1	0	2	0.0	-0.5	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1	0	-2	1.4	1.0	1.0	-0.2	1.0267	1.0263				5.0	175	4	
136865	UNION	46.000	1	0	-2	1.4	0.0	0.0	0.0	1.0000	1.0207				3.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.4	3.2	-1.7	0.9700	0.9700				3.6	175	4	
137179	FRANK HY	2.3000	2	1	2	0.9	-0.2	1.1	-0.6	1.0000	1.0000				4.0	175	4	
146742	MASSENA_ST	13.800	1	0	2	22.2	-1.7	9.4	-4.7	1.0193	1.0193				39.6	175	4	
146743	MASSENA_GT	13.800	1	0	2	51.4	1.3	24.6	-12.3	1.0210	1.0210				78.3	175	4	
147763	MOS17-18	13.800	2	0	2	85.1	16.4	38.6	-30.8	0.9877	0.9877				120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	106.3	16.0	38.6	-30.8	0.9859	0.9859				120.0	158	4	
147766	MOS21-22	13.800	2	0	2	106.3	17.4	38.6	-30.8	0.9876	0.9876				120.0	158	4	
147768	MOS25-26	13.800	2	0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0005				120.0	158	4	
147770	MOS23-24	13.800	2	0	2	106.3	17.4	38.6	-30.8	0.9876	0.9876				120.0	158	4	
147771	MOS27-28	13.800	2	0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0003				120.0	158	4	
147772	MOS29-30	13.800	2	0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0015				120.0	158	4	
147774	MOS31-32	13.800	2	0	-2	106.3	38.6	38.6	-30.8	1.0127	1.0015				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	97.8	8.5	22.9	-13.3	1.0300	1.0300				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	99.6	8.8	16.1	-17.6	1.0300	1.0300				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	77.2	8.6	18.0	-18.8	1.0300	1.0300				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	37.3	7.3	22.2	-21.6	1.0300	1.0300				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	20.9	2.2	4.8	-5.0	1.0300	1.0300				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	39.4	7.8	123.2	-82.6	0.9755	0.9755				215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.3	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	10.8	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.4	27.8	-27.8	0.9550	0.9550				46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	18.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	18.5	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	18.6	29.8	-29.8	0.9750	0.9750				50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	18.6	30.7	-30.7	0.9750	0.9750				51.4	1145	4	
180278	BHOA23	13.800	1	0	2	39.0	6.6	32.1	-32.1	1.0000	1.0000				50.0	1145	4	
180279	BHOA24	13.800	1	0	2	41.4	19.1	29.8	-29.8	0.9600	0.9600				50.0	1145	4	
180280	BHOA25	13.800	1	0	2	40.0	8.4	30.0	-13.1	1.0000	1.0000				57.0	1145	4	
180281	BHOA26	13.800	1	0	2	38.0	8.2	30.8	-13.5	1.0000	1.0000				57.0	1145	4	

180282	BHOA27	13.800	1	0	2	60.0	-0.2	50.0	-25.0	1.0000	1.0000	90.0	1145	4
180283	BHOA28	13.800	1	0	2	53.7	-11.1	50.3	-50.3	0.9200	0.9200	90.0	1145	4
SUBSYSTEM TOTALS						2118.0	454.3	1145.5	-820.7			2957.3		

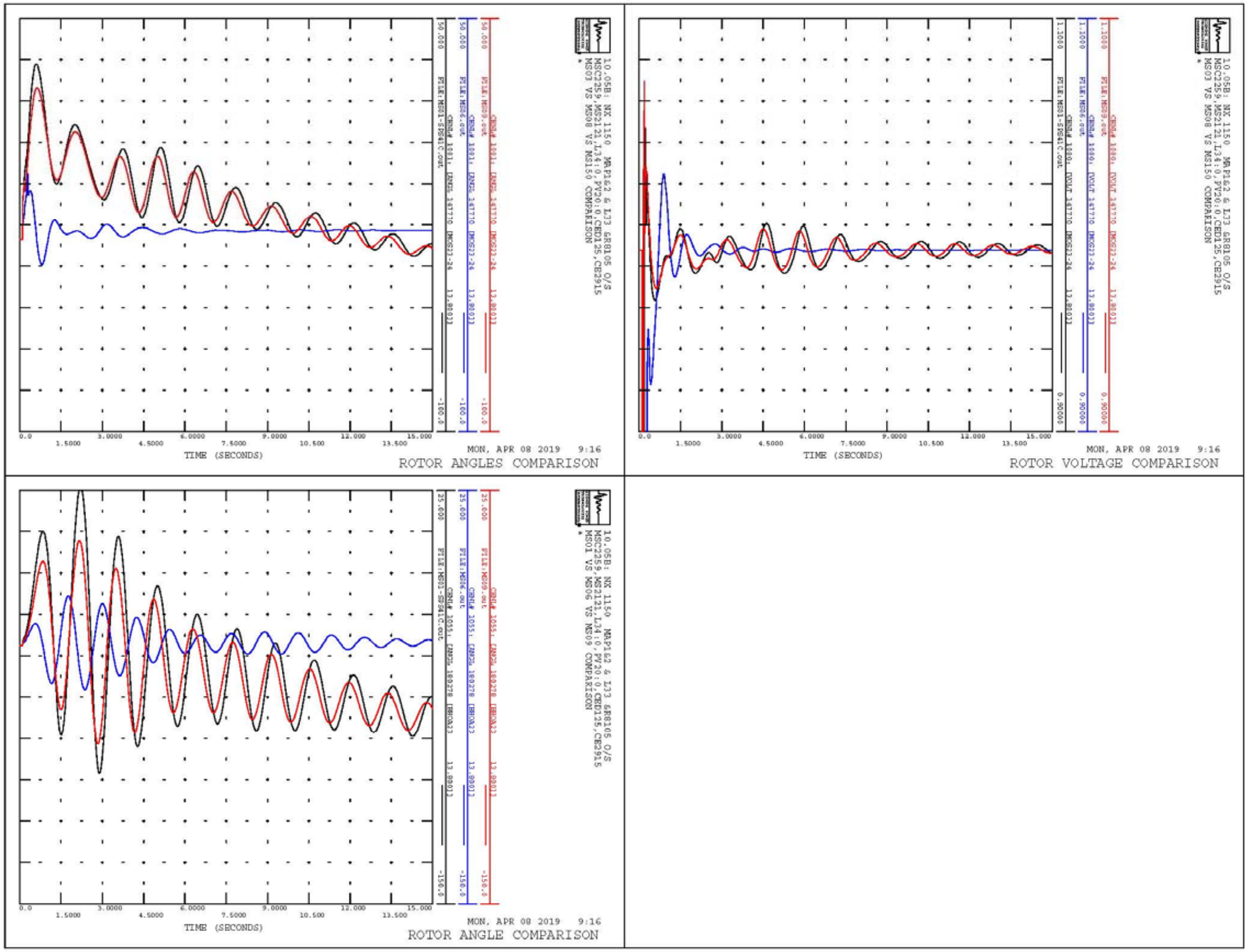

Fig C9 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

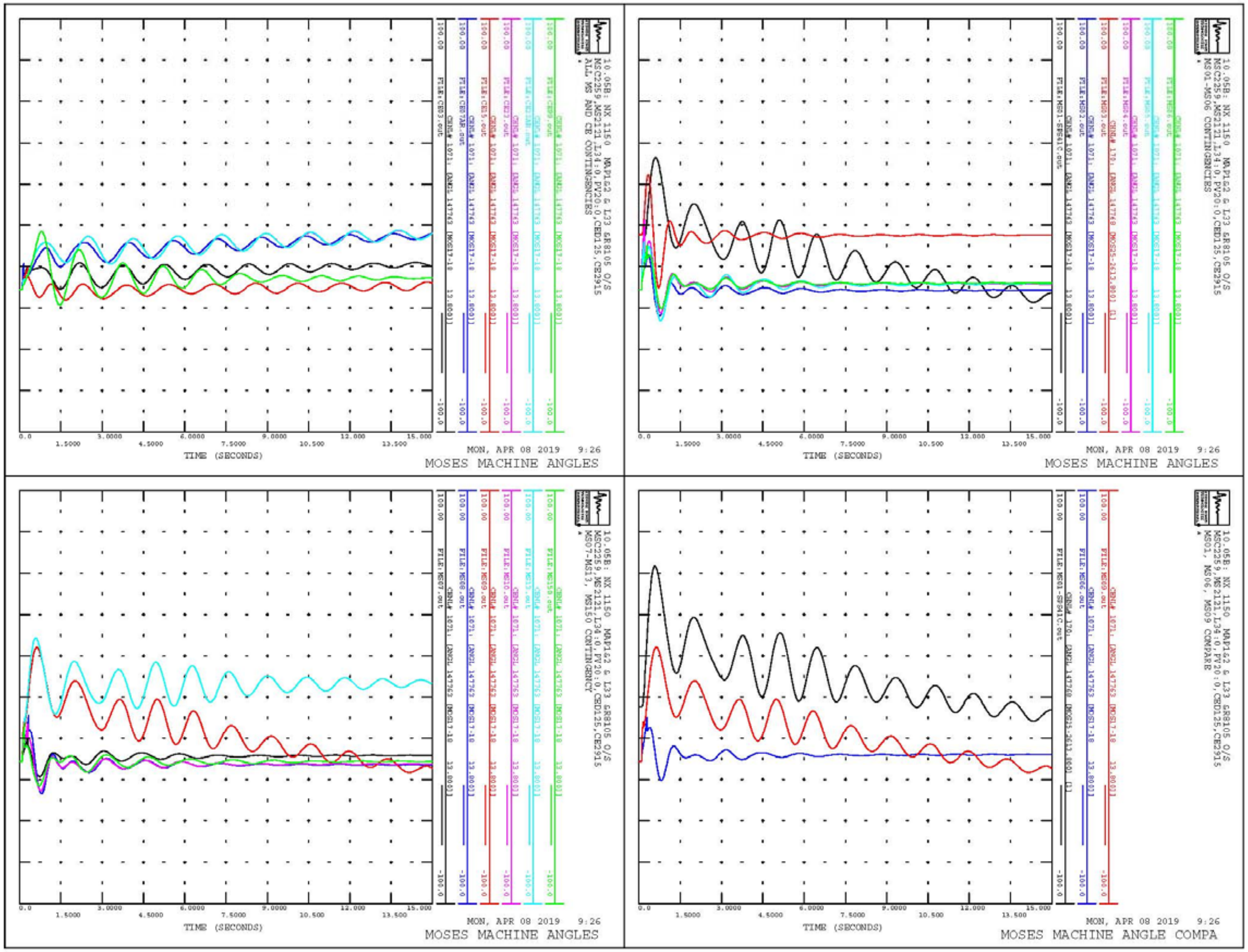

Fig C10 Comparative plots for Moses machine angle for all simulated contingencies

C.6 MAP1 & MAP2 & L33 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :10.06B: NX 850  MAP1&2 & L33&PV20 O/S
       MSC1959,MS1992,L34:0,PV20:OS,CED125,CE2837

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

  DYSINGER-EAS        1840.7     114.3  DYSE-CLOSE          3303.0     550.1
  WEST-CENTRAL         517.4      47.8  WESTC-CLOSE         1979.7     483.6
  VOLNEY-EAST         4211.0      37.4  VOLNEY-CLOSE        5466.7     354.8
  MOSES-SOUTH         1986.2    -125.2  MOSES-CLOSE         1958.1    -124.1
  CENTRAL-EAST        2827.0    -934.9  TOTAL-EAST          6470.0   -1268.6
  UPNY-SENY           4372.4    -369.8  UPNY-SENY-CL        5668.4    -135.6
  UPNY-CONED          4481.2    -189.8  UPNY-CON-CL         6605.8    -189.8
  MILLWOOD-SO         7200.6      46.3  LIPA-IMPORT         2006.5    -161.4
  DNWDIE-SO-PL        4456.2    -502.2  DNWDIE-SO-PC        6580.7    -502.2
  DNWDIE-SO-OP        3541.3    -444.9  PJM-NY              1351.7     519.0
  NE-NY-WCSC         -1658.6     321.4  ON-NY               1620.7     229.7
  ONT-MICH-PAR         131.8     -11.6  Northern Export      850.5      -6.7

                             STATION VOLTAGES

  126260 BOWLINE1    345.00 = 355.5      126261 BOWLINE2    345.00 = 355.3       126263 BUCHANAN S  345.00 = 350.9
  136150 CLAY        345.00 = 338.6*     130750 COOPC345    345.00 = 337.1*      126266 DUNWOODIE   345.00 = 347.6*
  137200 EDIC        345.00 = 326.6*     126277 FARRAGUT    345.00 = 348.0       130753 FRASR345    345.00 = 337.6*
  135413 GRDNVL2     230.00 = 230.0      147831 GILB 345    345.00 = 345.8*      126283 GOTHLS      345.00 = 347.5
  126286 GOW R16     345.00 = 346.5      126290 LADENTWN    345.00 = 353.9       137451 LEEDS 3     345.00 = 348.9
  147833 MARCY T1    345.00 = 326.9*     126291 MILLWOOD    345.00 = 348.0*      137452 N.SCOT77    345.00 = 340.0*
  137453 N.SCOT99    345.00 = 340.0*     147841 NIAGAR2E    230.00 = 230.4       147842 NIAGAR2W    230.00 = 230.4
  147834 NIAG 345    345.00 = 358.1      129341 NRTHPRT1    138.00 = 142.3       130755 OAKDL345    345.00 = 333.2*
  149001 PANNELL3    345.00 = 337.0*     126294 PLTVLLEY    345.00 = 345.9*      126295 RAINEY      345.00 = 348.3
  126600 REAC71      345.00 = 350.0      126601 REAC72      345.00 = 350.1       126297 RAMAPO      345.00 = 352.9
  126250 RAMAPO 5    500.00 = 517.6      125001 ROCK TAV    345.00 = 349.1       125002 ROSETON     345.00 = 349.7
  130754 SOMERSET345 345.00 = 357.9      126298 SPRAINBROOK 345.00 = 347.7*      149000 ROCH 345    345.00 = 337.3*
  147840 MOSES W     230.00 = 228.4      130768 WATRC230    230.00 = 230.2       180819 CHA-NY      765.00 = 732.9
  147827 MARCY765    765.00 = 724.6*     147828 MASS 765    765.00 = 729.3       126281 E FISHKILL  345.00 = 348.1
  125000 HURLEY 3    345.00 = 349.1      128835 SHORE RD    345.00 = 348.1       136156 VOLNEY      345.00 = 347.5
  130757 WATRC345    345.00 = 344.5      135250 DUNKIRK     230.00 = 229.4       130764 MEYER230    230.00 = 224.5
  130765 OAKDL230    230.00 = 229.9      137730 ROTRDM.2    230.00 = 218.8*      181219 CHANY2      120.00 = 123.0
  181119 CHANY1      120.00 = 123.0      137716 ALB1        115.00 = 117.5       130774 BATH 115    115.00 = 115.3
  137488 BETHLEHE    115.00 = 117.7      130776 BORDR115    115.00 = 113.4       136181 CLAY        115.00 = 117.3
  130794 DELHI115    115.00 = 114.5      130796 E.NOR115    115.00 = 110.4       135277 FALCONER    115.00 = 116.8
  130807 WESTOVER115 115.00 = 115.5      130826 MEYER115    115.00 = 115.5       147849 MOS 115     115.00 = 116.0
  147850 NIAG115E    115.00 = 117.1      147851 NIAG115W    115.00 = 117.6       130836 N.WAV115    115.00 = 112.9
```

130838 OAKDL115	115.00 = 115.4	147852 PLAT T#3	115.00 = 115.7	125043 PL.VAL 1	115.00 = 115.8
137235 PORTER 1	115.00 = 118.8	125046 ROCK TV1	115.00 = 116.1	137532 RTRDM1	115.00 = 113.9
125048 SHENANDO	115.00 = 116.7	149011 S82-1115	115.00 = 116.6	149008 RUS 115	115.00 = 113.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	-0.0	-2.4	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0267	1.0257		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.3	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	91.6	16.1	38.6	-30.8	0.9877	0.9877		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	106.3	15.4	38.6	-30.8	0.9859	0.9859		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	106.3	16.6	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0038		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	106.3	16.6	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0037		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0048		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0048		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	80.0	8.6	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	40.0	6.0	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	79.5	9.3	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	8.6	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	20.9	2.5	4.8	-5.0	1.0300	1.0300		23.4	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.6	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	11.3	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.7	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	19.0	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1 0	2	44.0	18.9	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	19.0	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1 0	2	44.0	19.0	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180277	BHEA22	13.800	1 0	2	48.0	30.0	30.0	-13.1	1.0000	0.9899		57.0	1145	4	
180278	BHOA23	13.800	1 0	2	46.0	9.0	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1 0	2	41.4	19.1	29.8	-29.8	0.9600	0.9600		50.0	1145	4	
180280	BHOA25	13.800	1 0	2	48.0	11.1	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	48.0	10.9	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	68.0	3.0	50.0	-25.0	1.0000	1.0000		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	-11.1	50.3	-50.3	0.9200	0.9200		90.0	1145	4	
SUBSYSTEM TOTALS					1781.3	468.3	935.4	-727.4				2291.9			

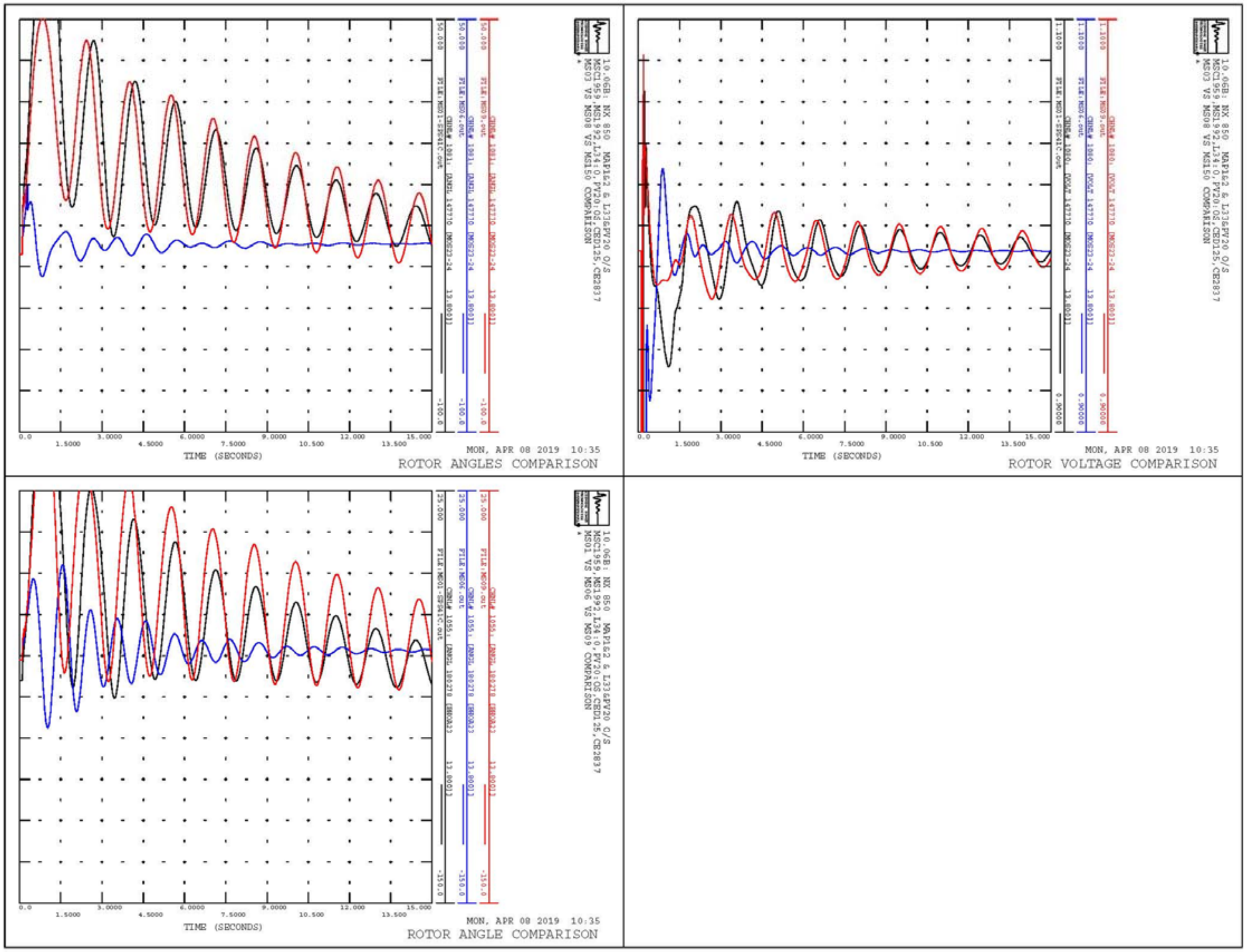

Fig C11 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

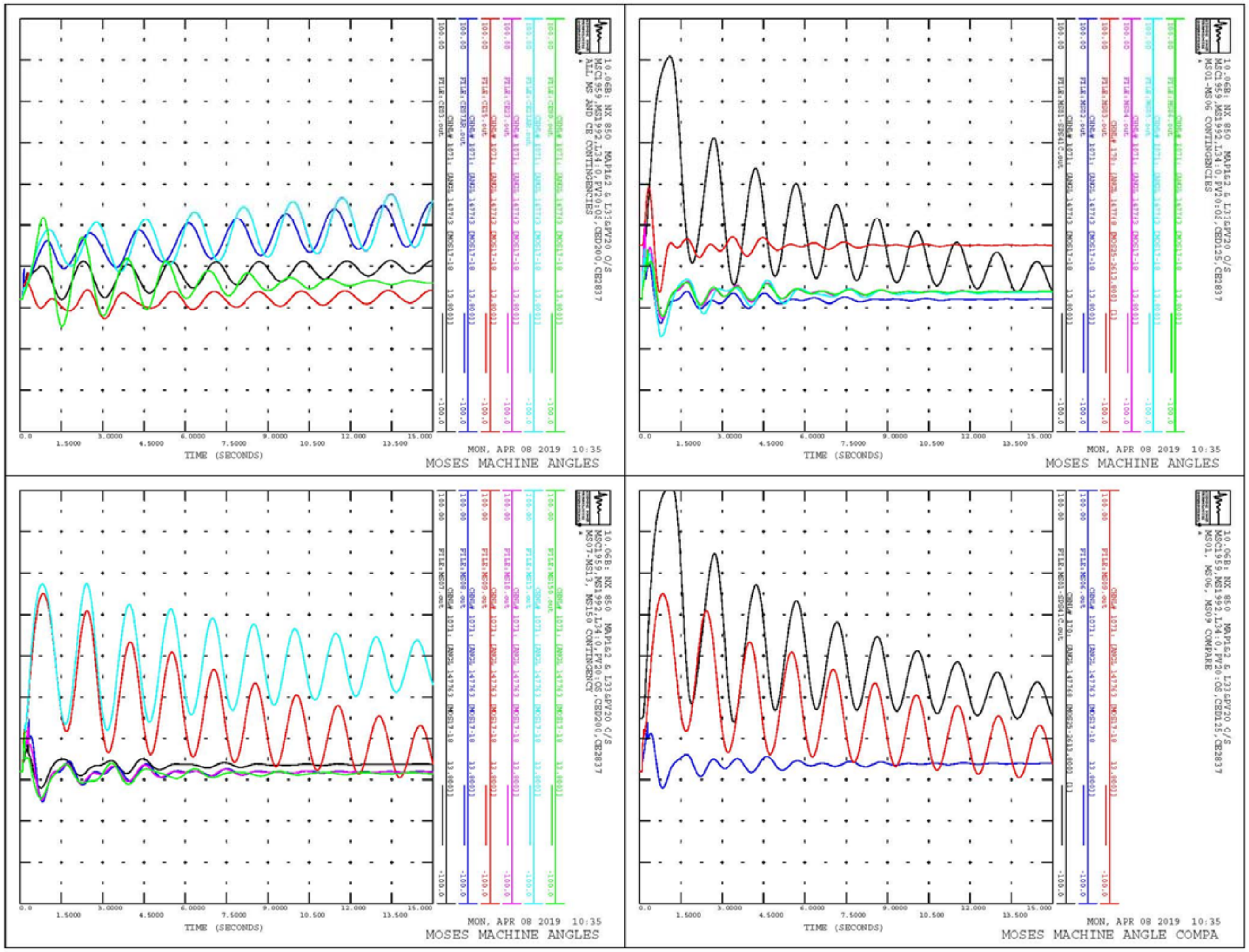

Fig C12 Comparative plots for Moses machine angle for all simulated contingencies

C.7 MAP1 & MAP2 & L33 & MMS1 O/S:

Test Level Interface Power Flow Summary and Key Voltages

CASE :10.07B: NX 950 MAP1&2 & L33 &MMS1 O/S
MSC2058,MS1954,L34:0,PV20:100,CED200,CE2889

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1878.1	103.3	DYSE-CLOSE	3301.2	463.4
WEST-CENTRAL	554.9	47.2	WESTC-CLOSE	1978.1	407.3
VOLNEY-EAST	4141.3	-37.5	VOLNEY-CLOSE	5364.0	231.7
MOSES-SOUTH	1944.1	-196.5	MOSES-CLOSE	2057.8	-198.3
CENTRAL-EAST	2887.1	-903.8	TOTAL-EAST	6468.0	-1225.2
UPNY-SENY	4371.7	-296.8	UPNY-SENY-CL	5667.2	-89.7
UPNY-CONED	4481.2	-199.6	UPNY-CON-CL	6605.4	-204.8
MILLWOOD-SO	7197.8	43.9	LIPA-IMPORT	2006.7	-171.7
DNWDIE-SO-PL	4456.8	-485.2	DNWDIE-SO-PC	6581.0	-490.4
DNWDIE-SO-OP	3542.2	-416.4	PJM-NY	1354.1	452.1
NE-NY-WCSC	-1658.5	281.9	ON-NY	1616.7	220.6
ONT-MICH-PAR	135.7	-11.2	Northern Export	951.7	-9.9

STATION VOLTAGES

126260 BOWLINE1	345.00 = 356.6	126261 BOWLINE2	345.00 = 356.5	126263 BUCHANAN S	345.00 = 352.4
136150 CLAY	345.00 = 340.3*	130750 COOPC345	345.00 = 340.9	126266 DUNWOODIE	345.00 = 349.3
137200 EDIC	345.00 = 330.3*	126277 FARRAGUT	345.00 = 348.5	130753 FRASR345	345.00 = 342.0
135413 GRDNVL2	230.00 = 229.3	147831 GILB 345	345.00 = 350.0	126283 GOTHLS	345.00 = 347.6
126286 GOW R16	345.00 = 346.6	126290 LADENTWN	345.00 = 355.2	137451 LEEDS 3	345.00 = 352.3
147833 MARCY T1	345.00 = 330.7*	126291 MILLWOOD	345.00 = 349.6	137452 N.SCOT77	345.00 = 344.4*
137453 N.SCOT99	345.00 = 344.4*	147841 NIAGAR2E	230.00 = 230.3	147842 NIAGAR2W	230.00 = 230.3
147834 NIAG 345	345.00 = 358.1	129341 NRTHPRT1	138.00 = 142.3	130755 OAKDL345	345.00 = 335.8*
149001 PANNELL3	345.00 = 338.2*	126294 PLTVLLEY	345.00 = 348.0*	126295 RAINEY	345.00 = 348.9
126600 REAC71	345.00 = 350.7	126601 REAC72	345.00 = 350.8	126297 RAMAPO	345.00 = 354.3
126250 RAMAPO 5	500.00 = 518.5	125001 ROCK TAV	345.00 = 351.1	125002 ROSETON	345.00 = 351.5
130754 SOMERSET345	345.00 = 358.1	126298 SPRAINBROOK	345.00 = 349.4	149000 ROCH 345	345.00 = 338.2*
147840 MOSES W	230.00 = 228.8	130768 WATRC230	230.00 = 230.4	180819 CHA-NY	765.00 = 734.3
147827 MARCY765	765.00 = 732.2	147828 MASS 765	765.00 = 731.5	126281 E FISHKILL	345.00 = 350.1
125000 HURLEY 3	345.00 = 351.9	128835 SHORE RD	345.00 = 350.0	136156 VOLNEY	345.00 = 348.8
130757 WATRC345	345.00 = 346.8	135250 DUNKIRK	230.00 = 228.7	130764 MEYER230	230.00 = 223.4
130765 OAKDL230	230.00 = 229.9	137730 ROTRDM.2	230.00 = 222.5	181219 CHANY2	120.00 = 123.1
181119 CHANY1	120.00 = 123.1	137716 ALB1	115.00 = 117.5	130774 BATH 115	115.00 = 115.3
137488 BETHLEHE	115.00 = 117.8	130776 BORDR115	115.00 = 113.3	136181 CLAY	115.00 = 117.7
130794 DELHI115	115.00 = 114.7	130796 E.NOR115	115.00 = 110.5	135277 FALCONER	115.00 = 116.6
130807 WESTOVER115	115.00 = 115.3	130826 MEYER115	115.00 = 115.7	147849 MOS 115	115.00 = 116.3
147850 NIAG115E	115.00 = 117.1	147851 NIAG115W	115.00 = 117.6	130836 N.WAV115	115.00 = 112.8

130838 OAKDL115	115.00 = 115.3	147852 PLAT T#3	115.00 = 116.0	125043 PL.VAL 1	115.00 = 115.8
137235 PORTER 1	115.00 = 119.6	125046 ROCK TV1	115.00 = 116.4	137532 RTRDM1	115.00 = 114.2
125048 SHENANDO	115.00 = 116.4	149011 S82-1115	115.00 = 116.8	149008 RUS 115	115.00 = 113.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	-0.0	-1.8	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	1.0	1.0	-0.2	1.0267	1.0248		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.3	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	94.2	14.6	38.6	-30.8	0.9877	0.9877		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	106.3	13.6	38.6	-30.8	0.9859	0.9859		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	106.3	14.7	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	106.3	38.6	38.6	-30.8	1.0127	1.0057		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	106.3	14.7	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	106.3	38.6	38.6	-30.8	1.0127	1.0055		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	106.3	38.6	38.6	-30.8	1.0127	1.0067		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	106.3	38.6	38.6	-30.8	1.0127	1.0067		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	80.0	5.7	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	25.0	4.3	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	79.5	7.4	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	81.0	6.3	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	20.9	2.0	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	115.0	33.0	33.0	33.0	0.9755	1.0038		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.5	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	11.1	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.6	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1	0	2	41.0	18.8	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1	0	2	44.0	18.8	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1	0	2	41.0	18.9	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1	0	2	44.0	18.8	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180277	BHEA22	13.800	1	0	2	48.0	30.0	30.0	-13.1	1.0000	0.9901		57.0	1145	4	
180278	BHOA23	13.800	1	0	2	46.0	8.9	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1	0	2	41.4	19.1	29.8	-29.8	0.9600	0.9600		50.0	1145	4	
180280	BHOA25	13.800	1	0	2	48.0	11.0	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	48.0	10.8	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	68.0	2.8	50.0	-25.0	1.0000	1.0000		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	-11.1	50.3	-50.3	0.9200	0.9200		90.0	1145	4	
SUBSYSTEM TOTALS						1883.9	484.1	968.4	-694.4				2507.1			

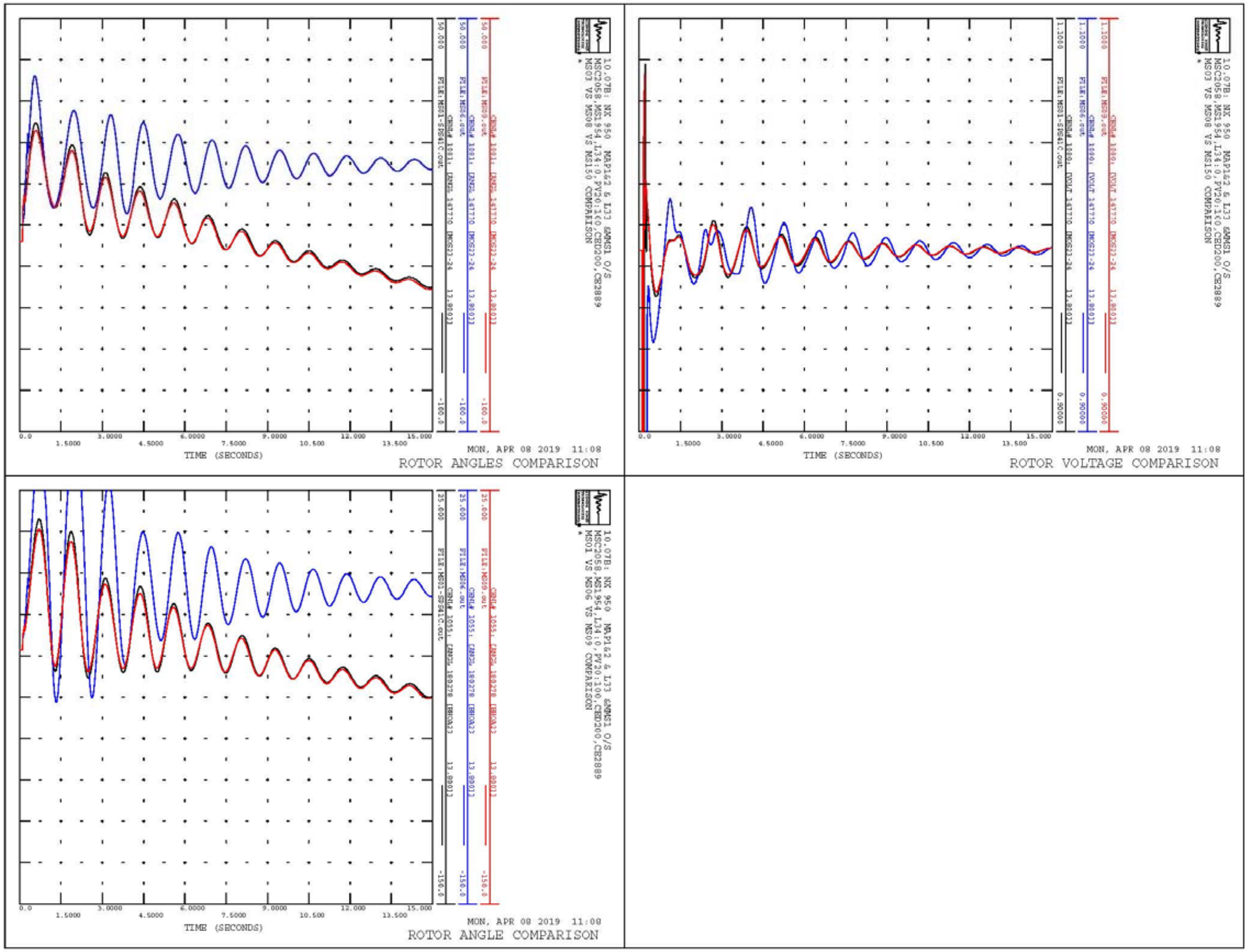

Fig C13 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

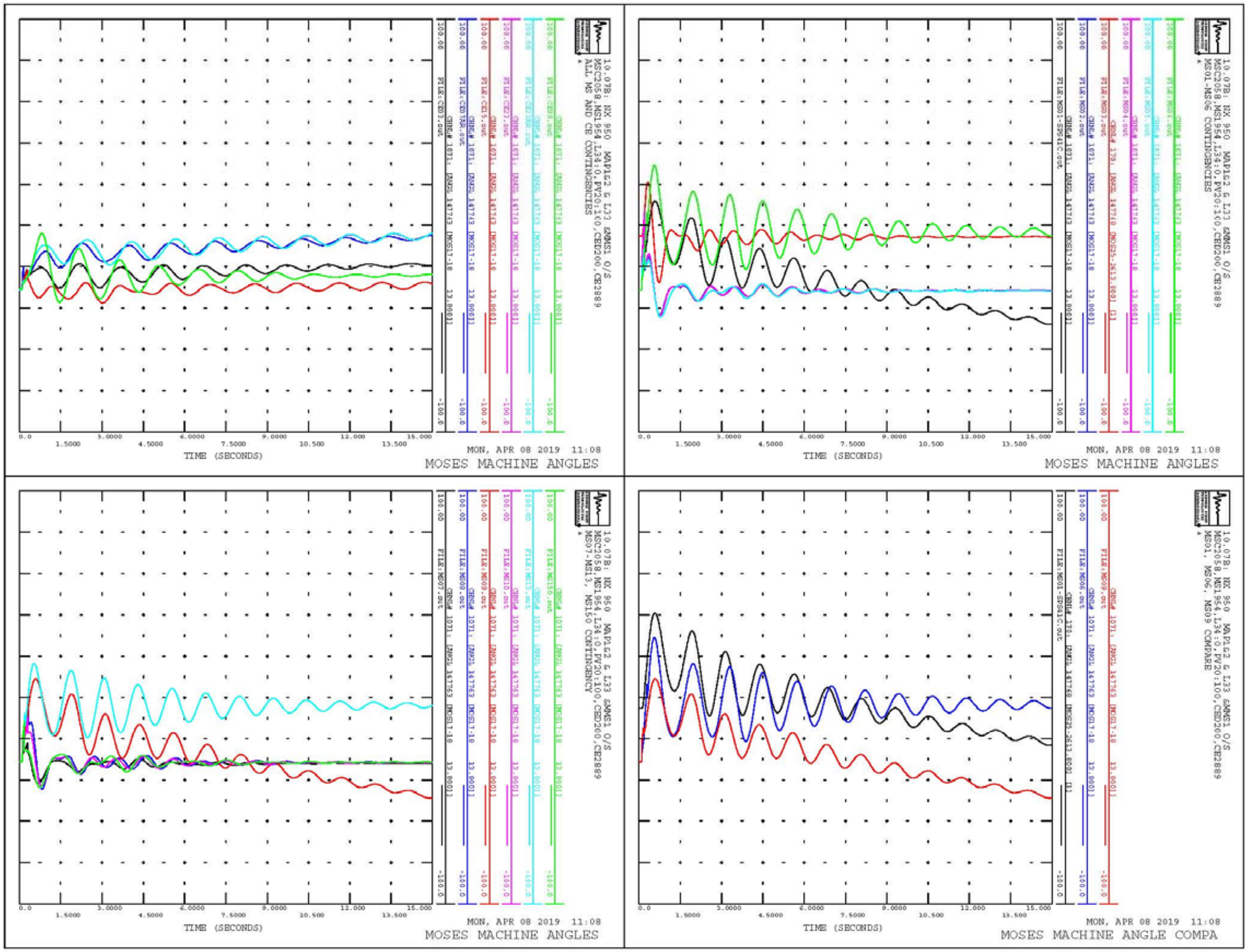

Fig C14 Comparative plots for Moses machine angle for all simulated contingencies

C.8 MAP1 & MAP2 & L33 & MMS1 & R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :10.08B: NX 950  MAP1&2 & L33 &MMS1 & R8105 O/S
       MSC2058,MS1954,L34:0,PV20:100,CED125,CE2889

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS        1877.9     102.7  DYSE-CLOSE          3300.3     472.0
 WEST-CENTRAL         554.8      46.9  WESTC-CLOSE         1977.1     416.2
 VOLNEY-EAST         4140.4     -36.4  VOLNEY-CLOSE        5363.0     242.8
 MOSES-SOUTH         1939.2    -169.6  MOSES-CLOSE         2058.8    -182.4
 CENTRAL-EAST        2889.6    -904.7  TOTAL-EAST          6468.0   -1225.4
 UPNY-SENY           4371.8    -296.4  UPNY-SENY-CL        5667.2     -89.0
 UPNY-CONED          4481.2    -198.6  UPNY-CON-CL         6605.4    -203.3
 MILLWOOD-SO         7197.7      45.1  LIPA-IMPORT         2006.7    -171.6
 DNWDIE-SO-PL        4456.8    -484.1  DNWDIE-SO-PC        6581.0    -488.8
 DNWDIE-SO-OP        3542.1    -415.4  PJM-NY              1353.4     451.4
 NE-NY-WCSC         -1658.5     282.9  ON-NY               1616.4     230.0
 ONT-MICH-PAR         136.0     -11.2  Northern Export      952.7      -2.2

                             STATION VOLTAGES

 126260 BOWLINE1    345.00 = 356.6      126261 BOWLINE2    345.00 = 356.5      126263 BUCHANAN S  345.00 = 352.4
 136150 CLAY        345.00 = 340.3*     130750 COOPC345    345.00 = 340.9      126266 DUNWOODIE   345.00 = 349.3
 137200 EDIC        345.00 = 330.3*     126277 FARRAGUT    345.00 = 348.5      130753 FRASR345    345.00 = 342.0
 135413 GRDNVL2     230.00 = 229.4      147831 GILB 345    345.00 = 350.1      126283 GOTHLS      345.00 = 347.6
 126286 GOW R16     345.00 = 346.6      126290 LADENTWN    345.00 = 355.2      137451 LEEDS 3     345.00 = 352.4
 147833 MARCY T1    345.00 = 330.6*     126291 MILLWOOD    345.00 = 349.6      137452 N.SCOT77    345.00 = 344.4*
 137453 N.SCOT99    345.00 = 344.4*     147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345    345.00 = 358.1      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 335.9*
 149001 PANNELL3    345.00 = 338.2*     126294 PLTVLLEY    345.00 = 348.0      126295 RAINEY      345.00 = 348.9
 126600 REAC71      345.00 = 350.7      126601 REAC72      345.00 = 350.8      126297 RAMAPO      345.00 = 354.3
 126250 RAMAPO 5    500.00 = 518.5      125001 ROCK TAV    345.00 = 351.2      125002 ROSETON     345.00 = 351.5
 130754 SOMERSET345 345.00 = 358.1      126298 SPRAINBROOK 345.00 = 349.4      149000 ROCH 345    345.00 = 338.2*
 147840 MOSES W     230.00 = 227.7      130768 WATRC230    230.00 = 230.4      180819 CHA-NY      765.00 = 733.6
 147827 MARCY765    765.00 = 731.8      147828 MASS 765    765.00 = 730.4      126281 E FISHKILL  345.00 = 350.2
 125000 HURLEY 3    345.00 = 351.9      128835 SHORE RD    345.00 = 350.0      136156 VOLNEY      345.00 = 348.8
 130757 WATRC345    345.00 = 346.9      135250 DUNKIRK     230.00 = 228.8      130764 MEYER230    230.00 = 224.0
 130765 OAKDL230    230.00 = 230.0      137730 ROTRDM.2    230.00 = 222.5      181219 CHANY2      120.00 = 123.1
 181119 CHANY1      120.00 = 123.1      137716 ALB1        115.00 = 117.6      130774 BATH 115    115.00 = 115.1
 137488 BETHLEHE    115.00 = 117.8      130776 BORDR115    115.00 = 113.3      136181 CLAY        115.00 = 117.7
 130794 DELHI115    115.00 = 114.7      130796 E.NOR115    115.00 = 110.6      135277 FALCONER    115.00 = 116.6
 130807 WESTOVER115 115.00 = 115.3      130826 MEYER115    115.00 = 115.1      147849 MOS 115     115.00 = 115.4
 147850 NIAG115E    115.00 = 117.1      147851 NIAG115W    115.00 = 117.6      130836 N.WAV115    115.00 = 112.8
```

130838	OAKDL115	115.00 = 115.3	147852	PLAT T#3	115.00 = 115.6	125043	PL.VAL 1	115.00 = 115.8			
137235	PORTER 1	115.00 = 119.6	125046	ROCK TV1	115.00 = 116.4	137532	RTRDM1	115.00 = 114.2			
125048	SHENANDO	115.00 = 116.4	149011	S82-1115	115.00 = 116.8	149008	RUS 115	115.00 = 113.7			

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	-0.0	-3.4	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0267	1.0322		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.2	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	98.1	19.2	38.6	-30.8	0.9877	0.9877		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	106.3	17.9	38.6	-30.8	0.9859	0.9859		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	106.3	19.3	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9985		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	106.3	19.3	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9984		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9995		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	0.9995		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	80.0	8.0	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	100.0	9.7	16.1	-17.6	1.0300	1.0300		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	79.5	9.6	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	9.0	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	20.9	2.5	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	115.0	33.0	33.0	33.0	0.9755	0.9992		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.6	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	11.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.6	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	18.9	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1 0	2	44.0	18.8	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	18.9	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1 0	2	44.0	18.9	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1 0	2	46.0	2.5	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1 0	2	41.4	19.1	29.8	-29.8	0.9600	0.9600		50.0	1145	4	
180280	BHOA25	13.800	1 0	2	32.0	3.6	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	33.0	3.6	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	66.0	14.2	50.0	-25.0	1.0300	1.0300		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	-11.1	50.3	-50.3	0.9200	0.9200		90.0	1145	4	
SUBSYSTEM TOTALS					1881.9	473.3	938.4	-681.3				2450.1			

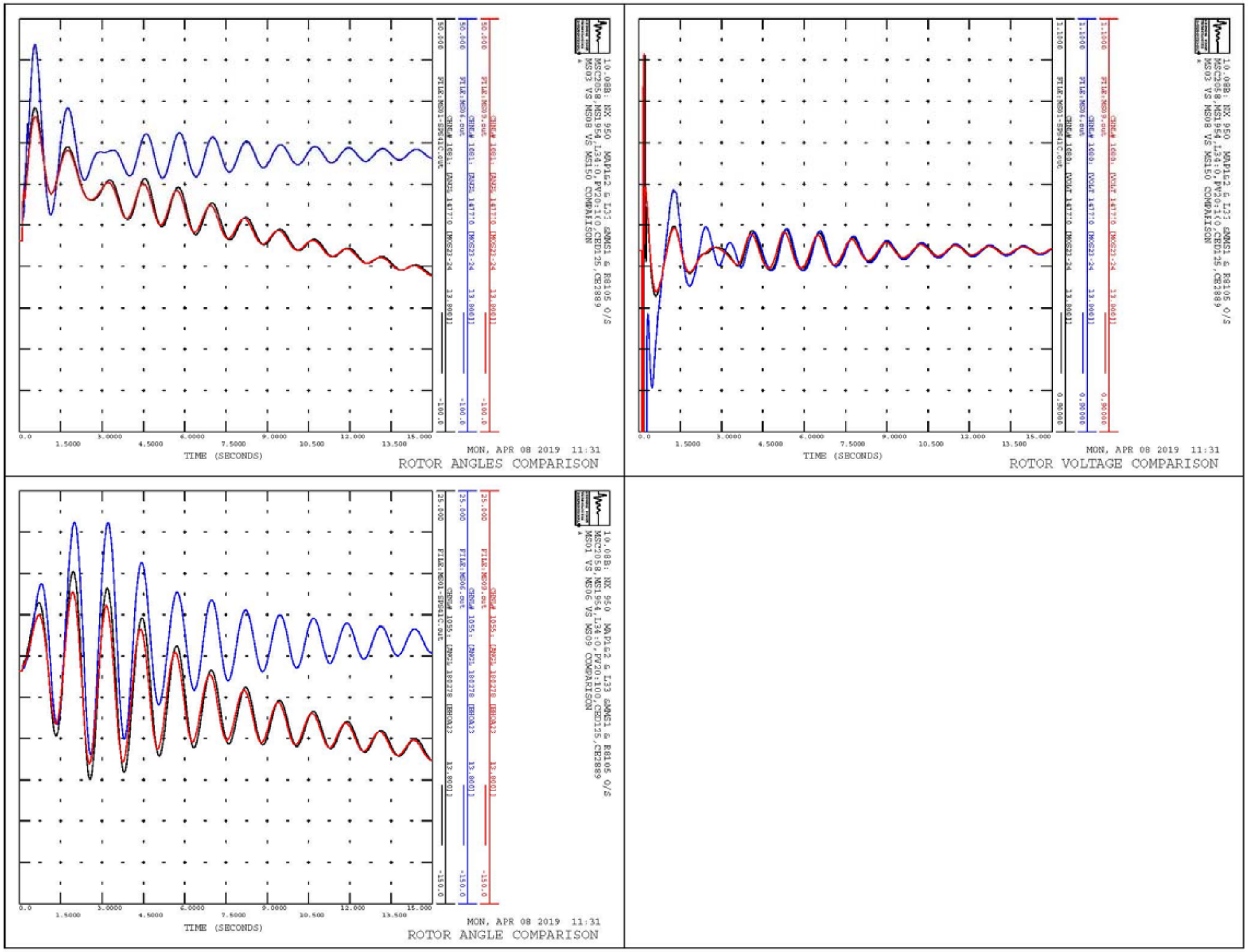

Fig C15 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

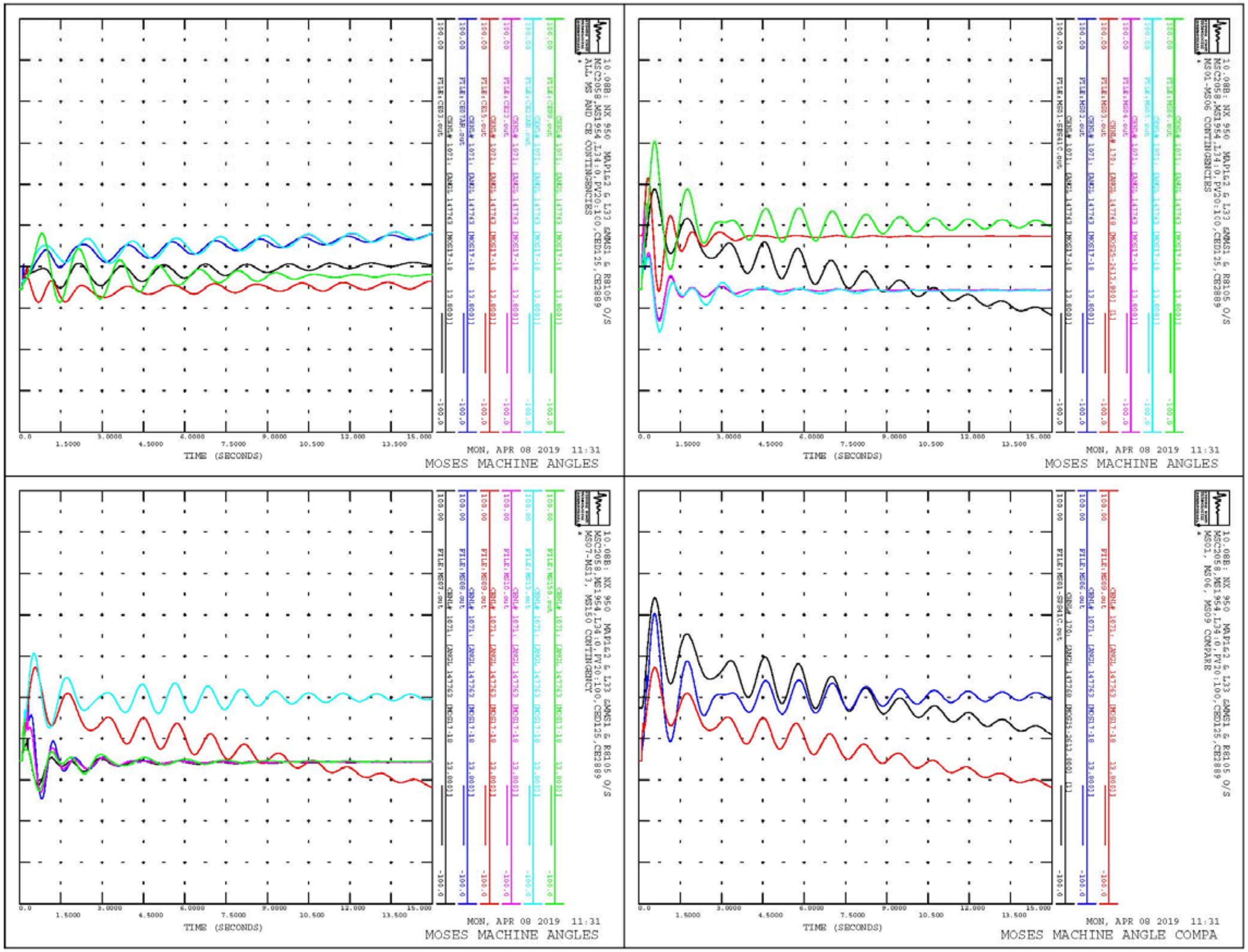

Fig C16 Comparative plots for Moses machine angle for all simulated contingencies

C.9 MAP1 & MAP2 & L33 & MMS1 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

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CASE :10.09B: NX 850  MAP1&2 & L33 &MMS1 & PV20 O/S
       MSC1959,MS1967,L34:0,PV20:OS,CED125,CE2829

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS        1859.0     122.3  DYSE-CLOSE          3301.8     572.3
 WEST-CENTRAL         535.8      45.8  WESTC-CLOSE         1978.7     495.7
 VOLNEY-EAST         4237.8      40.0  VOLNEY-CLOSE        5466.8     369.7
 MOSES-SOUTH         1957.3    -134.4  MOSES-CLOSE         1959.2    -140.1
 CENTRAL-EAST        2825.0    -940.8  TOTAL-EAST          6471.7   -1284.5
 UPNY-SENY           4370.8    -385.7  UPNY-SENY-CL        5669.1    -147.7
 UPNY-CONED          4480.6    -189.6  UPNY-CON-CL         6606.1    -188.9
 MILLWOOD-SO         7201.5      45.3  LIPA-IMPORT         2006.8    -163.3
 DNWDIE-SO-PL        4456.1    -504.9  DNWDIE-SO-PC        6581.5    -504.2
 DNWDIE-SO-OP        3540.4    -445.5  PJM-NY              1363.2     527.9
 NE-NY-WCSC         -1659.0     335.4  ON-NY               1608.2     240.4
 ONT-MICH-PAR         144.0     -12.0  Northern Export      853.4      16.5

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 355.3      126261 BOWLINE2    345.00 = 355.2      126263 BUCHANAN S  345.00 = 350.7
 136150 CLAY         345.00 = 337.8*     130750 COOPC345    345.00 = 336.3*     126266 DUNWOODIE   345.00 = 347.3*
 137200 EDIC         345.00 = 325.6*     126277 FARRAGUT    345.00 = 347.9      130753 FRASR345    345.00 = 336.6*
 135413 GRDNVL2      230.00 = 229.7      147831 GILB 345    345.00 = 345.1*     126283 GOTHLS      345.00 = 347.5
 126286 GOW R16      345.00 = 346.5      126290 LADENTWN    345.00 = 353.7      137451 LEEDS 3     345.00 = 348.5
 147833 MARCY T1     345.00 = 326.0*     126291 MILLWOOD    345.00 = 347.7*     137452 N.SCOT77    345.00 = 339.4*
 137453 N.SCOT99     345.00 = 339.4*     147841 NIAGAR2E    230.00 = 230.3      147842 NIAGAR2W    230.00 = 230.3
 147834 NIAG 345     345.00 = 357.9      129341 NRTHPRT1    138.00 = 142.3      130755 OAKDL345    345.00 = 331.6*
 149001 PANNELL3     345.00 = 336.1*     126294 PLTVLLEY    345.00 = 345.6*     126295 RAINEY      345.00 = 348.2
 126600 REAC71       345.00 = 349.9      126601 REAC72      345.00 = 350.0      126297 RAMAPO      345.00 = 352.7
 126250 RAMAPO 5     500.00 = 517.5      125001 ROCK TAV    345.00 = 348.8      125002 ROSETON     345.00 = 349.4
 130754 SOMERSET345  345.00 = 357.8      126298 SPRAINBROOK 345.00 = 347.5*     149000 ROCH 345    345.00 = 336.5*
 147840 MOSES W      230.00 = 228.9      130768 WATRC230    230.00 = 230.3      180819 CHA-NY      765.00 = 731.4
 147827 MARCY765     765.00 = 722.7*     147828 MASS 765    765.00 = 726.9*     126281 E FISHKILL  345.00 = 347.8
 125000 HURLEY 3     345.00 = 349.1      128835 SHORE RD    345.00 = 347.9      136156 VOLNEY      345.00 = 347.0
 130757 WATRC345     345.00 = 343.0      135250 DUNKIRK     230.00 = 229.0      130764 MEYER230    230.00 = 223.3
 130765 OAKDL230     230.00 = 230.1      137730 ROTRDM.2    230.00 = 216.1*     181219 CHANY2      120.00 = 123.0
 181119 CHANY1       120.00 = 123.0      137716 ALB1        115.00 = 117.4      130774 BATH 115    115.00 = 115.5
 137488 BETHLEHE     115.00 = 117.7      130776 BORDR115    115.00 = 113.3      136181 CLAY        115.00 = 117.1
 130794 DELHI115     115.00 = 114.3      130796 E.NOR115    115.00 = 110.4      135277 FALCONER    115.00 = 116.6
 130807 WESTOVER115  115.00 = 115.6      130826 MEYER115    115.00 = 115.8      147849 MOS 115     115.00 = 116.5
 147850 NIAG115E     115.00 = 117.1      147851 NIAG115W    115.00 = 117.6      130836 N.WAV115    115.00 = 113.1
```

130838	OAKDL115	115.00 = 115.5	147852	PLAT T#3	115.00 = 116.5	125043	PL.VAL 1	115.00 = 115.6
137235	PORTER 1	115.00 = 118.8	125046	ROCK TV1	115.00 = 115.9	137532	RTRDM1	115.00 = 113.9
125048	SHENANDO	115.00 = 116.6	149011	S82-1115	115.00 = 116.6	149008	RUS 115	115.00 = 113.4

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	0.0	-2.1	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0267	1.0267		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.3	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	96.0	14.6	38.6	-30.8	0.9877	0.9877		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	106.3	13.5	38.6	-30.8	0.9859	0.9859		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	106.3	14.6	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0077		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	106.3	14.6	38.6	-30.8	0.9876	0.9876		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0076		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0087		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	106.3	38.6	38.6	-30.8	1.0127	1.0087		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	80.0	4.0	22.9	-13.3	1.0300	1.0300		108.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	79.5	7.0	18.0	-18.8	1.0300	1.0300		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	5.8	22.2	-21.6	1.0300	1.0300		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	20.9	1.9	4.8	-5.0	1.0300	1.0300		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	115.0	33.0	33.0	33.0	0.9755	1.0054		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9550		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	11.6	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9549		46.6	1145	4	
180270	BHEA15	13.800	1 0	2	41.0	19.2	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180271	BHEA16	13.800	1 0	2	44.0	19.1	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180272	BHEA17	13.800	1 0	2	41.0	19.2	29.8	-29.8	0.9750	0.9750		50.0	1145	4	
180273	BHEA18	13.800	1 0	2	44.0	19.2	30.7	-30.7	0.9750	0.9750		51.4	1145	4	
180278	BHOA23	13.800	1 0	2	46.0	5.8	32.1	-32.1	1.0000	1.0000		50.0	1145	4	
180279	BHOA24	13.800	1 0	2	41.4	19.1	29.8	-29.8	0.9600	0.9600		50.0	1145	4	
180280	BHOA25	13.800	1 0	2	32.0	7.4	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	33.0	7.2	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	66.0	19.4	50.0	-25.0	1.0300	1.0300		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	-11.1	50.3	-50.3	0.9200	0.9200		90.0	1145	4	
SUBSYSTEM TOTALS					1779.7	454.8	922.3	-663.7				2331.5			

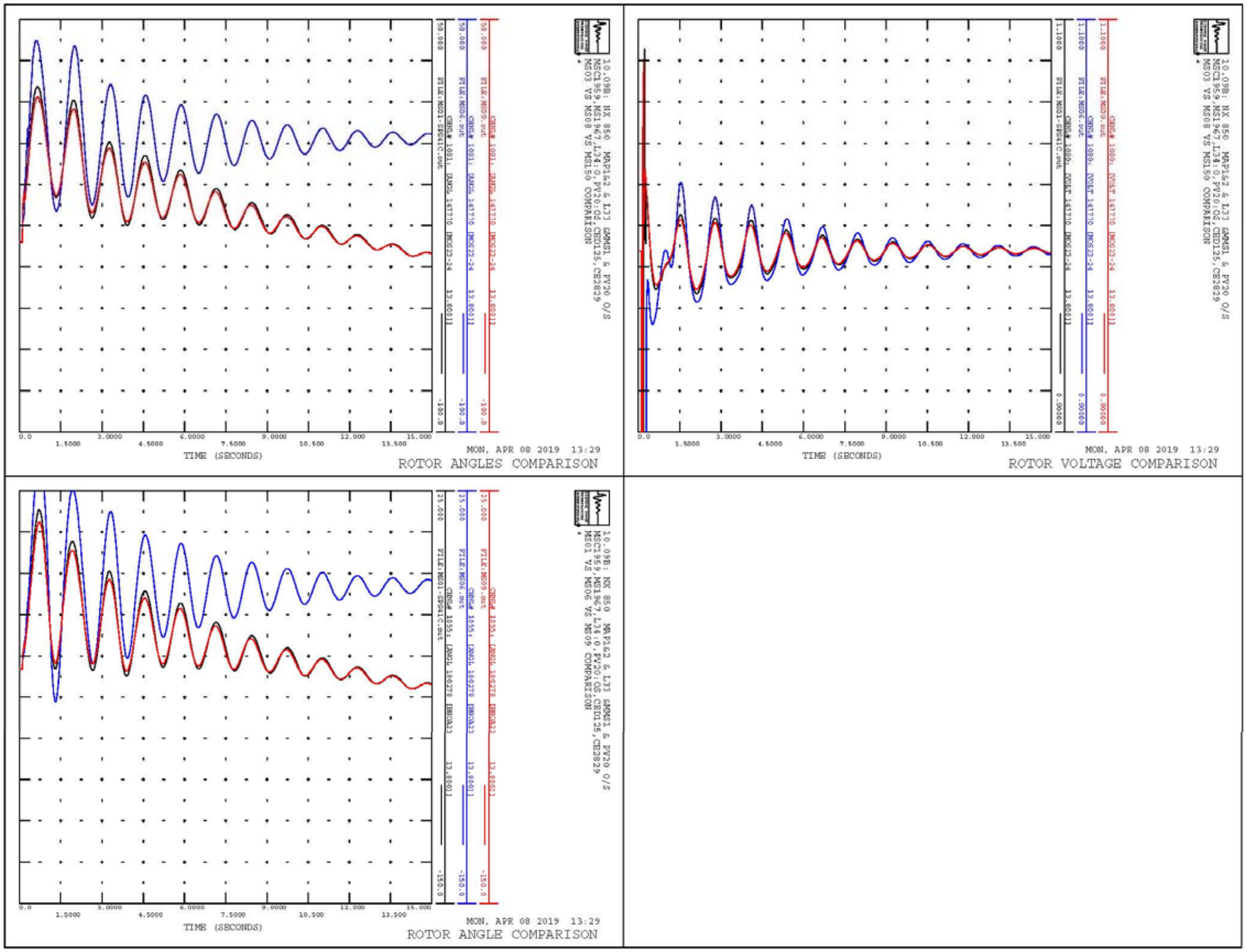

Fig C17 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS01, MS06 and MS09 contingencies

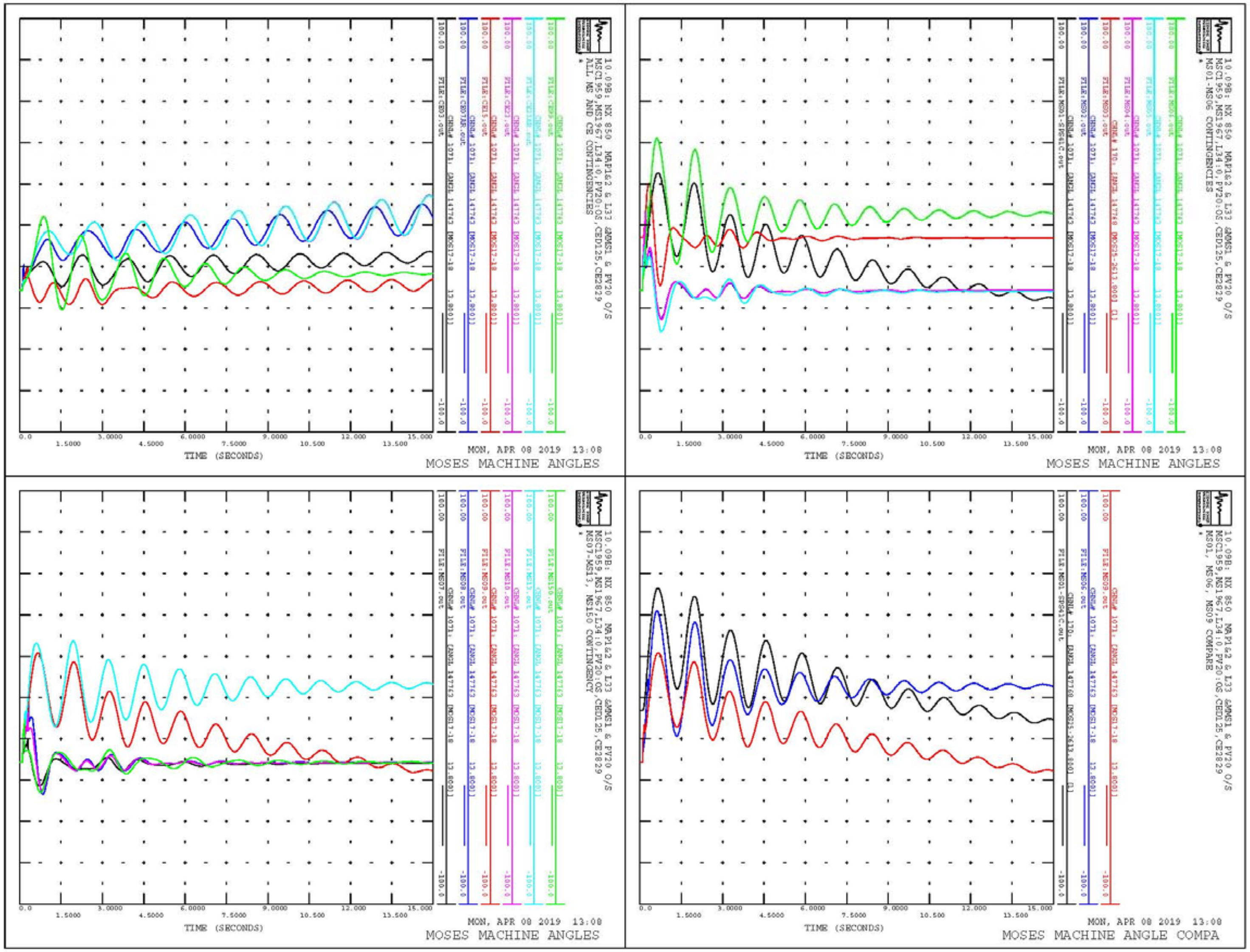

Fig C18 Comparative plots for Moses machine angle for all simulated contingencies

Appendix D – MMS1 & MMS2 O/S

D.1 MMS1 & MMS2 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :11.01B  NORTH EX 975 MMS1&MMS2 O/S
       MSC:2011 MS:1914,L34:OS,PV:100,MSU:OS,CED:125,CHAT:0,CE:2326

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS        1878.1       5.2  DYSE-CLOSE          3193.5     174.7
 WEST-CENTRAL         575.0    -148.2  WESTC-CLOSE         1890.4      21.3
 VOLNEY-EAST         3032.4      19.6  VOLNEY-CLOSE        4270.5     172.0
 MOSES-SOUTH         1907.3    -388.8  MOSES-CLOSE         2009.8    -371.5
 CENTRAL-EAST        2320.8    -453.8  TOTAL-EAST          5322.4    -374.3
 UPNY-SENY           4358.9      37.0  UPNY-SENY-CL        5659.9     181.8
 UPNY-CONED          4472.4     -70.9  UPNY-CON-CL         6600.8     -78.5
 MILLWOOD-SO         7187.5      70.8  LIPA-IMPORT         2006.6    -160.3
 DNWDIE-SO-PL        4452.9    -391.7  DNWDIE-SO-PC        6581.4    -399.3
 DNWDIE-SO-OP        3538.0    -335.8  PJM-NY              1215.2     282.3
 NE-NY-WCSC          -758.3     152.1  ON-NY                997.3     141.3
 ONT-MICH-PAR           3.5       6.5  Northern Export      973.8     106.3

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 359.5      126261 BOWLINE2     345.00 = 359.4      126263 BUCHANAN S   345.00 = 355.9
 136150 CLAY         345.00 = 360.0      130750 COOPC345     345.00 = 359.2      126266 DUNWOODIE    345.00 = 353.2
 137200 EDIC         345.00 = 356.5      126277 FARRAGUT     345.00 = 350.1      130753 FRASR345     345.00 = 360.7
 135413 GRDNVL2      230.00 = 232.1      147831 GILB 345     345.00 = 360.4      126283 GOTHLS       345.00 = 348.0
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 358.5      137451 LEEDS 3      345.00 = 360.2
 147833 MARCY T1     345.00 = 356.8      126291 MILLWOOD     345.00 = 353.6      137452 N.SCOT77     345.00 = 356.6
 137453 N.SCOT99     345.00 = 356.6      147841 NIAGAR2E     230.00 = 232.0      147842 NIAGAR2W     230.00 = 232.0
 147834 NIAG 345     345.00 = 358.6      129341 NRTHPRT1     138.00 = 142.4      130755 OAKDL345     345.00 = 356.4
 149001 PANNELL3     345.00 = 348.4      126294 PLTVLLEY     345.00 = 354.5      126295 RAINEY       345.00 = 350.5
 126600 REAC71       345.00 = 352.6      126601 REAC72       345.00 = 352.7      126297 RAMAPO       345.00 = 358.0
 126250 RAMAPO 5     500.00 = 520.8      125001 ROCK TAV     345.00 = 358.0      125002 ROSETON      345.00 = 357.0
 130754 SOMERSET345 345.00 = 359.1       126298 SPRAINBROOK 345.00 = 353.3       149000 ROCH 345     345.00 = 346.7
 147840 MOSES W      230.00 = 232.0      130768 WATRC230     230.00 = 236.0      180819 CHA-NY       765.00 = 721.5*
 147827 MARCY765     765.00 = 764.9      147828 MASS 765     765.00 = 743.0      126281 E FISHKILL   345.00 = 356.0
 125000 HURLEY 3     345.00 = 359.0      128835 SHORE RD     345.00 = 353.9      136156 VOLNEY       345.00 = 367.4*
 130757 WATRC345     345.00 = 361.6      135250 DUNKIRK      230.00 = 231.6      130764 MEYER230     230.00 = 227.9
 130765 OAKDL230     230.00 = 236.6      137730 ROTRDM.2     230.00 = 229.3      181219 CHANY2       120.00 = 115.2
 181119 CHANY1       120.00 = 115.2      137716 ALB1         115.00 = 117.9      130774 BATH 115     115.00 = 115.8
 137488 BETHLEHE     115.00 = 118.2      130776 BORDR115     115.00 = 114.4      136181 CLAY         115.00 = 118.9
```

130794 DELHI115	115.00 = 115.8	130796 E.NOR115	115.00 = 115.0	135277 FALCONER	115.00 = 117.2
130807 WESTOVER115	115.00 = 118.9	130826 MEYER115	115.00 = 116.3	147849 MOS 115	115.00 = 117.9
147850 NIAG115E	115.00 = 117.2	147851 NIAG115W	115.00 = 117.8	130836 N.WAV115	115.00 = 113.7
130838 OAKDL115	115.00 = 118.8	147852 PLAT T#3	115.00 = 116.8	125043 PL.VAL 1	115.00 = 117.3
137235 PORTER 1	115.00 = 115.7	125046 ROCK TV1	115.00 = 117.1	137532 RTRDM1	115.00 = 114.5
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	-0.0	-8.5	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0305				5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	0.6	3.2	-1.7	0.9700	0.9700				3.6	175	4	
147763	MOS17-18	13.800	2 0	2	102.8	38.6	38.6	-30.8	1.0300	1.0271				120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0263				120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0255				120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0180				120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0255				120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	38.6	38.6	0.0	1.0300	1.0179				120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0200	1.0189				120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0200	1.0189				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	97.0	8.2	22.9	-13.3	1.0500	1.0500				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	106.5	8.9	16.1	-17.6	1.0500	1.0500				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	70.0	5.4	18.0	-18.8	1.0500	1.0500				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	7.4	22.2	-21.6	1.0500	1.0500				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	3.2	4.8	-5.0	1.0500	1.0500				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	85.0	33.0	33.0	33.0	1.0000	1.0215				215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9175				46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	34.0	34.0	-34.0	0.9550	0.9476				57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9174				46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9748				57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	27.0	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180279	BHOA24	13.800	1 0	2	32.0	3.4	30.4	-13.3	1.0000	1.0000				57.0	1145	4	
180280	BHOA25	13.800	1 0	2	36.0	3.4	30.0	-13.1	1.0000	1.0000				57.0	1145	4	
180281	BHOA26	13.800	1 0	2	38.0	3.4	30.8	-13.5	1.0000	1.0000				57.0	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	28.5	50.0	-25.0	1.0500	1.0500				90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS					1792.0	594.5	855.1	-530.2						2318.3			

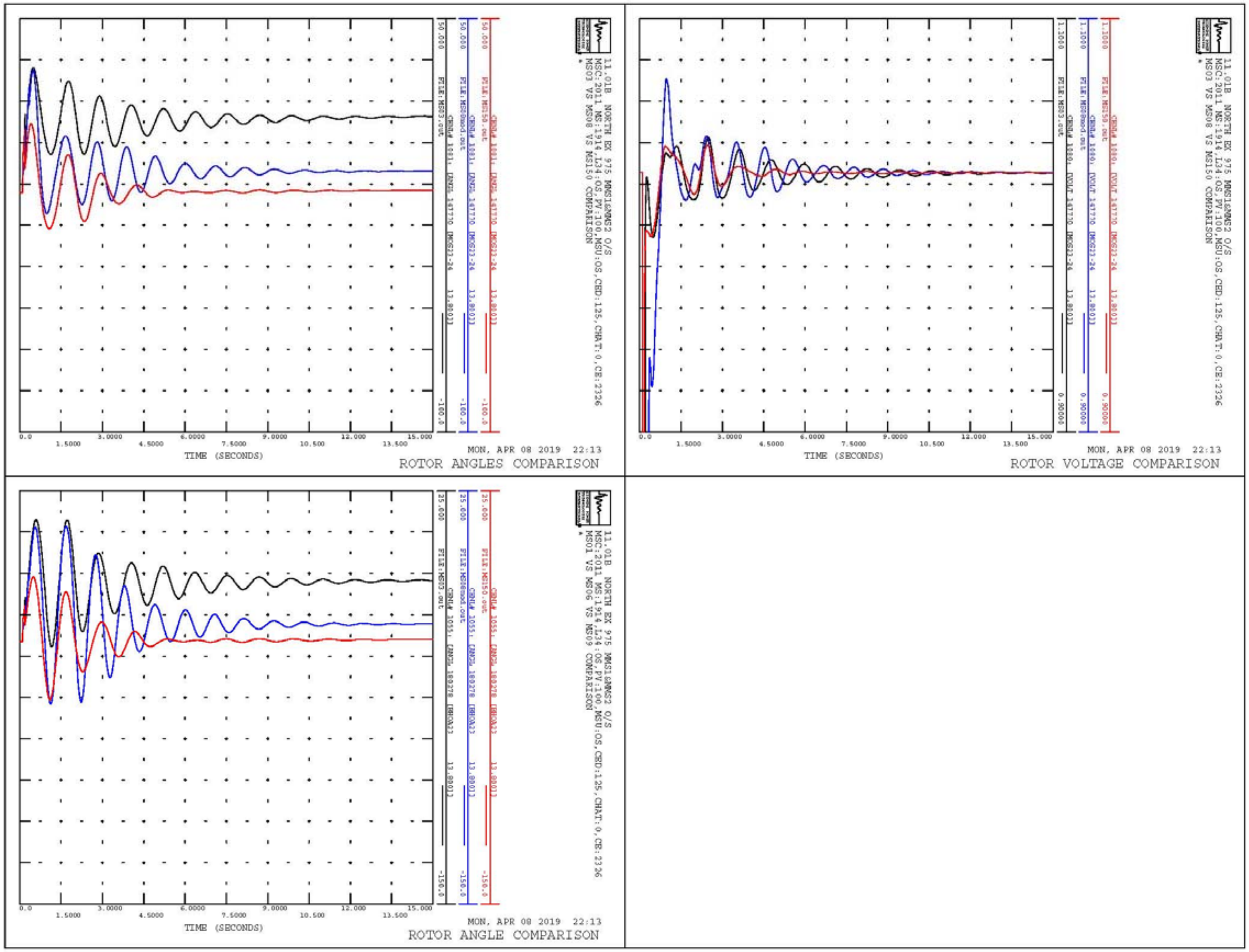

Fig D1 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

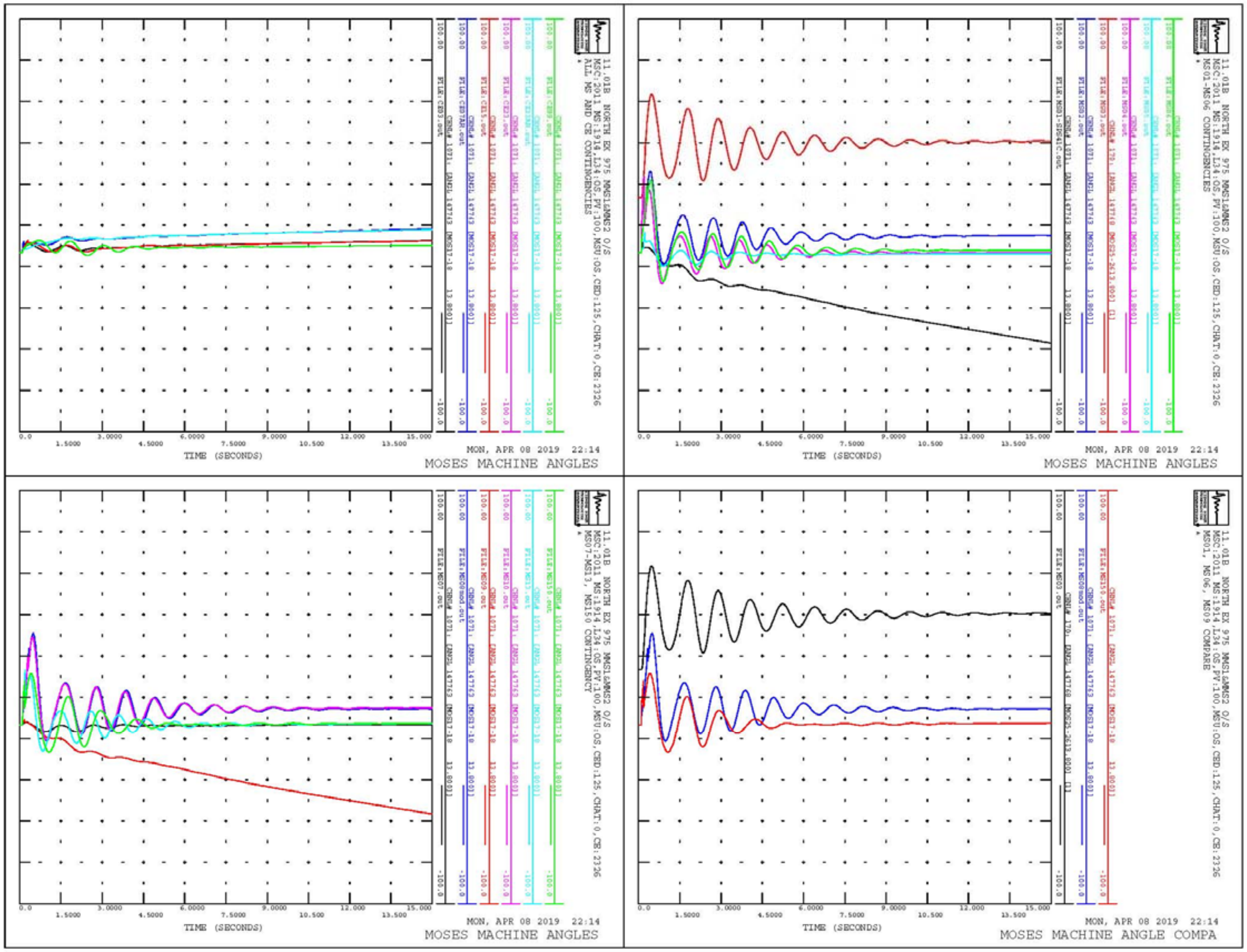

Fig D2 Comparative plots for Moses machine angle for all simulated contingencies

D.2 MMS1 & MMS2 &R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :11.02B   NORTH EX 775 MMS1&MMS2&R8105 O/S
       MSC:1811 MS:1703,L34:OS,PV:OS,CED:125,CHAT:0,CE:2323

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS        1885.6      -0.5  DYSE-CLOSE          3193.1     179.4
 WEST-CENTRAL         582.6    -158.4  WESTC-CLOSE         1890.1      21.6
 VOLNEY-EAST         3248.6    -143.9  VOLNEY-CLOSE        4470.7      23.7
 MOSES-SOUTH         1703.5    -427.6  MOSES-CLOSE         1810.8    -424.6
 CENTRAL-EAST        2323.7    -401.0  TOTAL-EAST          5322.5    -295.8
 UPNY-SENY           4367.6      59.4  UPNY-SENY-CL        5660.0     201.0
 UPNY-CONED          4477.1     -63.4  UPNY-CON-CL         6601.0     -72.4
 MILLWOOD-SO         7186.2      72.3  LIPA-IMPORT         2006.6    -159.5
 DNWDIE-SO-PL        4457.5    -388.9  DNWDIE-SO-PC        6581.4    -397.9
 DNWDIE-SO-OP        3542.6    -333.8  PJM-NY              1211.3     273.5
 NE-NY-WCSC          -758.3     127.1  ON-NY               1001.0     159.0
 ONT-MICH-PAR          -0.1       7.3  Northern Export      774.6      25.5

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 359.6      126261 BOWLINE2     345.00 = 359.5      126263 BUCHANAN S  345.00 = 355.9
 136150 CLAY         345.00 = 360.7      130750 COOPC345     345.00 = 360.2      126266 DUNWOODIE   345.00 = 353.3
 137200 EDIC         345.00 = 359.3      126277 FARRAGUT     345.00 = 350.1      130753 FRASR345    345.00 = 361.9
 135413 GRDNVL2      230.00 = 232.1      147831 GILB 345     345.00 = 360.9      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 358.6      137451 LEEDS 3     345.00 = 360.5
 147833 MARCY T1     345.00 = 359.6      126291 MILLWOOD     345.00 = 353.7      137452 N.SCOT77    345.00 = 357.4
 137453 N.SCOT99     345.00 = 357.4      147841 NIAGAR2E     230.00 = 232.0      147842 NIAGAR2W    230.00 = 232.0
 147834 NIAG 345     345.00 = 358.6      129341 NRTHPRT1     138.00 = 142.4      130755 OAKDL345    345.00 = 357.3
 149001 PANNELL3     345.00 = 348.7      126294 PLTVLLEY     345.00 = 354.6      126295 RAINEY      345.00 = 350.5
 126600 REAC71       345.00 = 352.6      126601 REAC72       345.00 = 352.7      126297 RAMAPO      345.00 = 358.1
 126250 RAMAPO 5     500.00 = 520.9      125001 ROCK TAV     345.00 = 358.3      125002 ROSETON     345.00 = 357.1
 130754 SOMERSET345 345.00 = 359.1      126298 SPRAINBROOK 345.00 = 353.4      149000 ROCH 345    345.00 = 346.9
 147840 MOSES W      230.00 = 237.3      130768 WATRC230     230.00 = 236.2      180819 CHA-NY      765.00 = 727.0*
 147827 MARCY765     765.00 = 766.0      147828 MASS 765     765.00 = 747.3      126281 E FISHKILL  345.00 = 356.2
 125000 HURLEY 3     345.00 = 359.2      128835 SHORE RD     345.00 = 353.9      136156 VOLNEY      345.00 = 367.8*
 130757 WATRC345     345.00 = 362.0*     135250 DUNKIRK      230.00 = 231.6      130764 MEYER230    230.00 = 228.0
 130765 OAKDL230     230.00 = 236.9      137730 ROTRDM.2     230.00 = 235.1      181219 CHANY2      120.00 = 116.4
 181119 CHANY1       120.00 = 116.4      137716 ALB1         115.00 = 118.0      130774 BATH 115    115.00 = 115.9
 137488 BETHLEHE     115.00 = 118.3      130776 BORDR115     115.00 = 114.5      136181 CLAY        115.00 = 119.3
 130794 DELHI115     115.00 = 116.2      130796 E.NOR115     115.00 = 115.2      135277 FALCONER    115.00 = 117.2
 130807 WESTOVER115 115.00 = 119.1      130826 MEYER115     115.00 = 116.3      147849 MOS 115     115.00 = 119.9
 147850 NIAG115E     115.00 = 117.2      147851 NIAG115W     115.00 = 117.8      130836 N.WAV115    115.00 = 113.8
```

130838 OAKDL115	115.00 = 119.0		147852 PLAT T#3	115.00 = 118.1		125043 PL.VAL 1	115.00 = 117.3	
137235 PORTER 1	115.00 = 117.7		125046 ROCK TV1	115.00 = 117.2		137532 RTRDM1	115.00 = 114.8	
125048 SHENANDO	115.00 = 117.8		149011 S82-1115	115.00 = 117.7		149008 RUS 115	115.00 = 114.8	

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	0.0	-9.0	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0368		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	0.6	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	101.2	20.7	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	21.7	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	21.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	34.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	21.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	34.4	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	24.6	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	24.6	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	55.0	-1.4	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	-0.7	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	1.1	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	100.0	33.0	33.0	33.0	1.0000	1.0362		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9247		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	33.9	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9245		46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9822		57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	23.6	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180279	BHOA24	13.800	1 0	2	32.0	1.6	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1 0	2	36.0	1.6	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	38.0	1.8	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	26.0	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					1586.9	443.3	816.1	-499.2				2091.2			

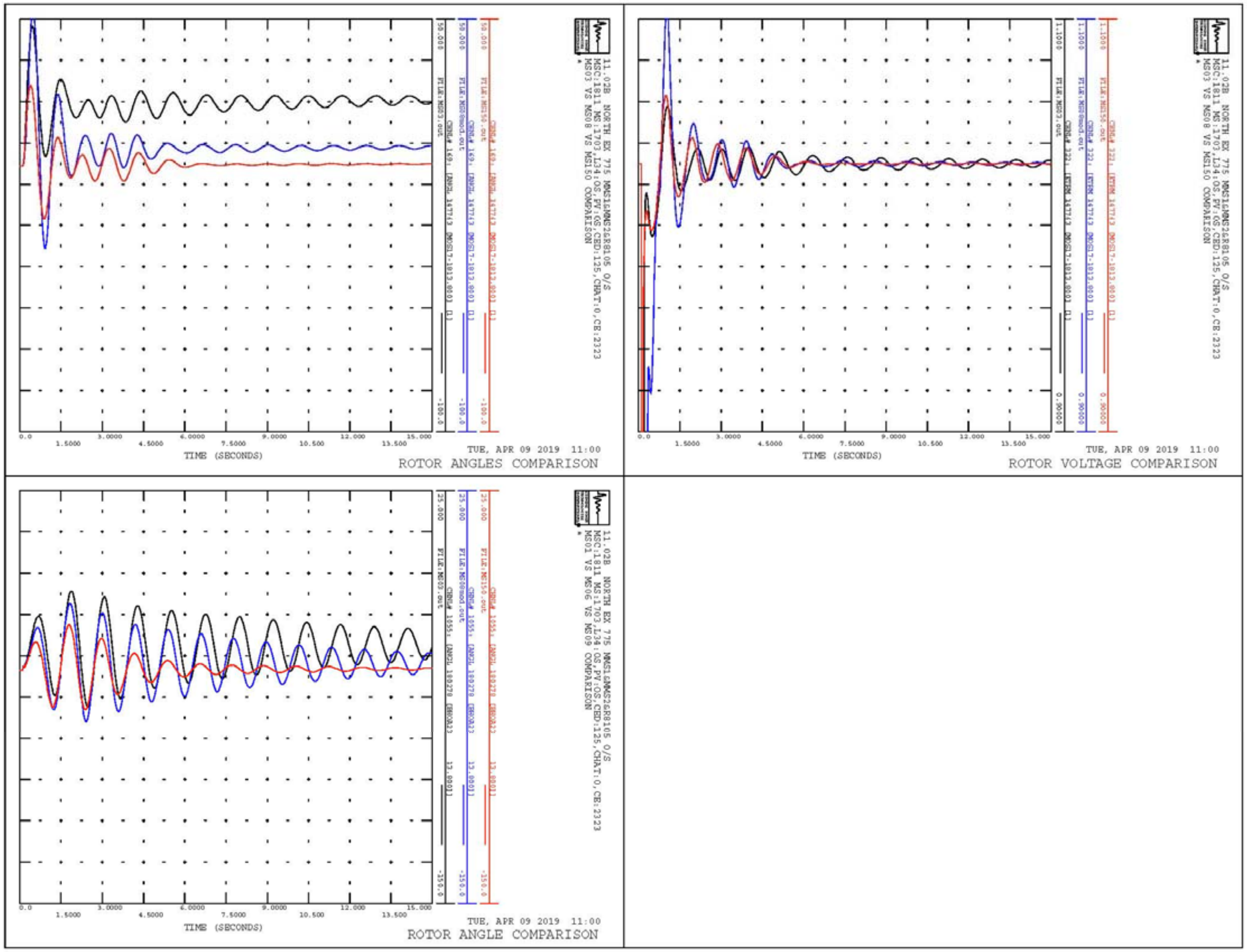

Fig D3 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

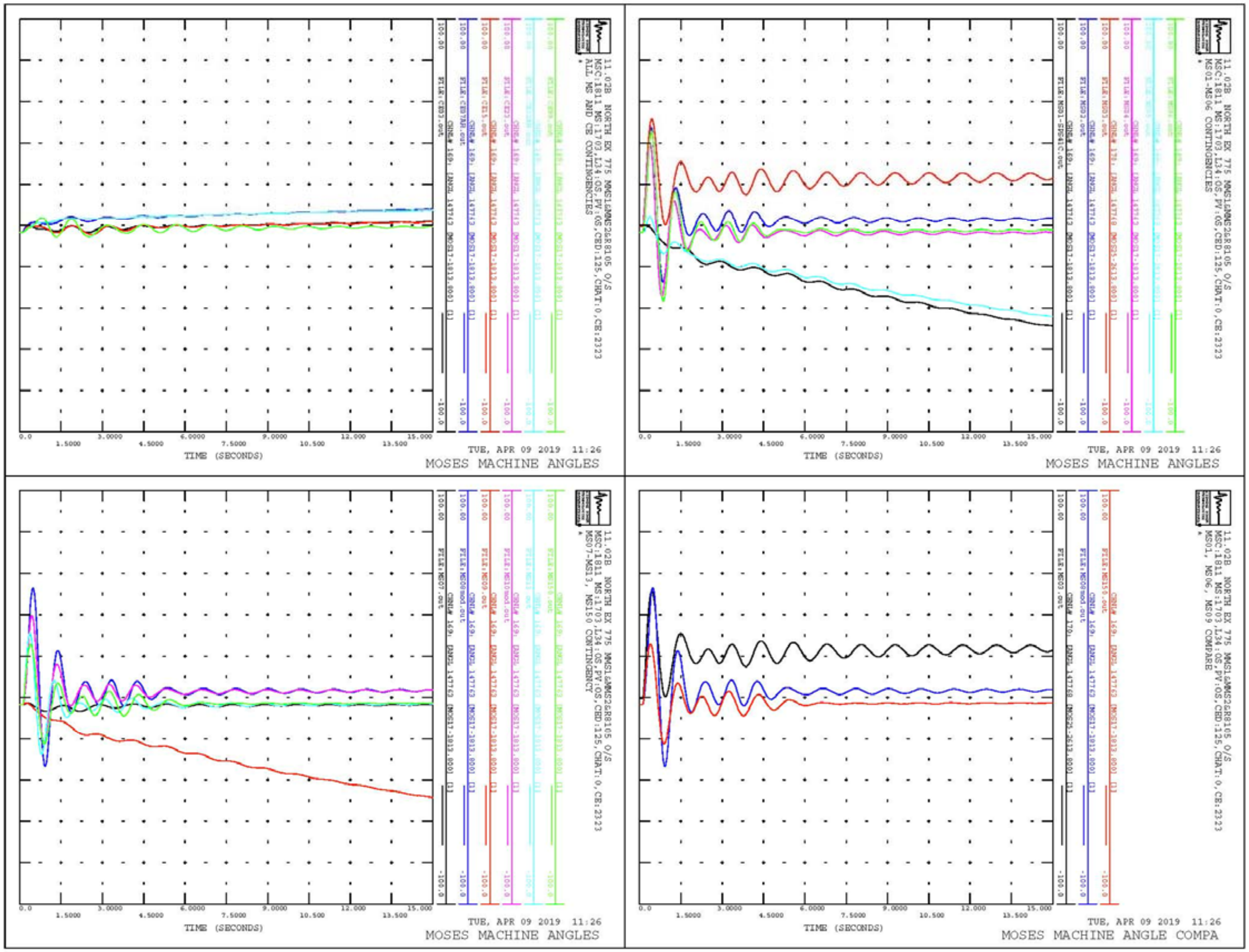

Fig D4 Comparative plots for Moses machine angle for all simulated contingencies

D.3 MMS1 & MMS2 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :11.03B  NORTH EX 675 MMS1&MMS2&PV20 O/S
       MSC:1711 MS:1717,L34:OS,PV:OS,CED:125,CHAT:0,CE:2273

                            INTERFACE FLOW REPORT

   DESCRIPTION           MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS         1881.1       6.0  DYSE-CLOSE          3193.7     205.7
 WEST-CENTRAL          578.0    -147.6  WESTC-CLOSE         1890.6      52.0
 VOLNEY-EAST          3336.0    -111.4  VOLNEY-CLOSE        4571.5      67.3
 MOSES-SOUTH          1716.6    -413.2  MOSES-CLOSE         1710.8    -413.1
 CENTRAL-EAST         2273.1    -434.2  TOTAL-EAST          5322.5    -360.1
 UPNY-SENY            4363.4      36.2  UPNY-SENY-CL        5659.9     182.5
 UPNY-CONED           4476.0     -75.0  UPNY-CON-CL         6600.7     -82.8
 MILLWOOD-SO          7187.9      70.2  LIPA-IMPORT         2006.7    -161.0
 DNWDIE-SO-PL         4456.8    -395.0  DNWDIE-SO-PC        6581.5    -402.8
 DNWDIE-SO-OP         3540.0    -338.0  PJM-NY              1204.2     290.2
 NE-NY-WCSC           -758.4     137.4  ON-NY               1008.8     165.8
 ONT-MICH-PAR           -7.3       7.0  Northern Export      674.6      31.0

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 359.4      126261 BOWLINE2     345.00 = 359.3      126263 BUCHANAN S  345.00 = 355.7
 136150 CLAY         345.00 = 359.9      130750 COOPC345     345.00 = 359.0      126266 DUNWOODIE   345.00 = 353.1
 137200 EDIC         345.00 = 357.5      126277 FARRAGUT     345.00 = 350.1      130753 FRASR345    345.00 = 360.6
 135413 GRDNVL2      230.00 = 231.9      147831 GILB 345     345.00 = 360.2      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 358.4      137451 LEEDS 3     345.00 = 360.1
 147833 MARCY T1     345.00 = 357.9      126291 MILLWOOD     345.00 = 353.5      137452 N.SCOT77    345.00 = 356.5
 137453 N.SCOT99     345.00 = 356.5      147841 NIAGAR2E     230.00 = 232.0      147842 NIAGAR2W    230.00 = 232.0
 147834 NIAG 345     345.00 = 358.6      129341 NRTHPRT1     138.00 = 142.4      130755 OAKDL345    345.00 = 356.1
 149001 PANNELL3     345.00 = 348.3      126294 PLTVLLEY     345.00 = 354.3      126295 RAINEY      345.00 = 350.4
 126600 REAC71       345.00 = 352.5      126601 REAC72       345.00 = 352.6      126297 RAMAPO      345.00 = 357.9
 126250 RAMAPO 5     500.00 = 520.8      125001 ROCK TAV     345.00 = 357.8      125002 ROSETON     345.00 = 356.8
 130754 SOMERSET345  345.00 = 359.1      126298 SPRAINBROOK  345.00 = 353.2      149000 ROCH 345    345.00 = 346.6
 147840 MOSES W      230.00 = 236.8      130768 WATRC230     230.00 = 235.7      180819 CHA-NY      765.00 = 723.6*
 147827 MARCY765     765.00 = 762.2      147828 MASS 765     765.00 = 743.7      126281 E FISHKILL  345.00 = 355.8
 125000 HURLEY 3     345.00 = 358.8      128835 SHORE RD     345.00 = 353.7      136156 VOLNEY      345.00 = 367.2*
 130757 WATRC345     345.00 = 361.2      135250 DUNKIRK      230.00 = 231.4      130764 MEYER230    230.00 = 227.6
 130765 OAKDL230     230.00 = 236.3      137730 ROTRDM.2     230.00 = 232.5      181219 CHANY2      120.00 = 115.9
 181119 CHANY1       120.00 = 115.9      137716 ALB1         115.00 = 117.9      130774 BATH 115    115.00 = 115.6
 137488 BETHLEHE     115.00 = 118.2      130776 BORDR115     115.00 = 114.3      136181 CLAY        115.00 = 119.1
 130794 DELHI115     115.00 = 115.7      130796 E.NOR115     115.00 = 114.8      135277 FALCONER    115.00 = 117.1
 130807 WESTOVER115  115.00 = 118.7      130826 MEYER115     115.00 = 116.1      147849 MOS 115     115.00 = 119.8
 147850 NIAG115E     115.00 = 117.2      147851 NIAG115W     115.00 = 117.8      130836 N.WAV115    115.00 = 113.6
```

130838 OAKDL115	115.00 = 118.7	147852 PLAT T#3	115.00 = 118.0	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 117.0	125046 ROCK TV1	115.00 = 117.1	137532 RTRDM1	115.00 = 114.6
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	-0.0	-7.8	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0343		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	0.7	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	99.6	22.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	23.5	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	23.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	35.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	23.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	35.6	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	25.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	25.8	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	55.0	-0.0	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	81.0	1.0	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	1.4	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9216		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	34.0	34.0	-34.0	0.9550	0.9519		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9214		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9790		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	25.1	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180279	BHOA24	13.800	1	0	2	32.0	2.1	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1	0	2	36.0	2.2	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	38.0	2.3	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	26.8	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1485.4	431.1	783.1	-532.2				1875.9			

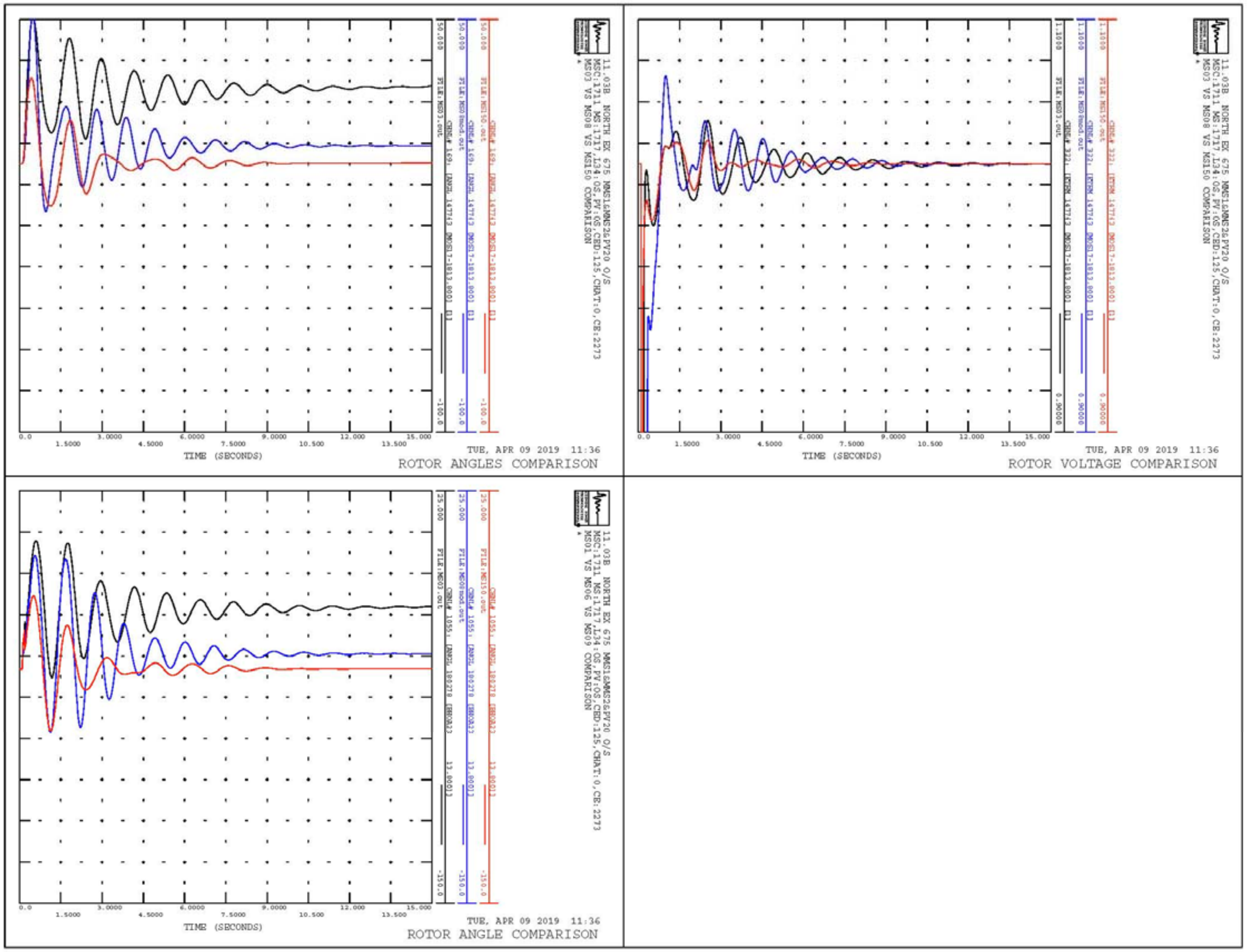

Fig D5 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

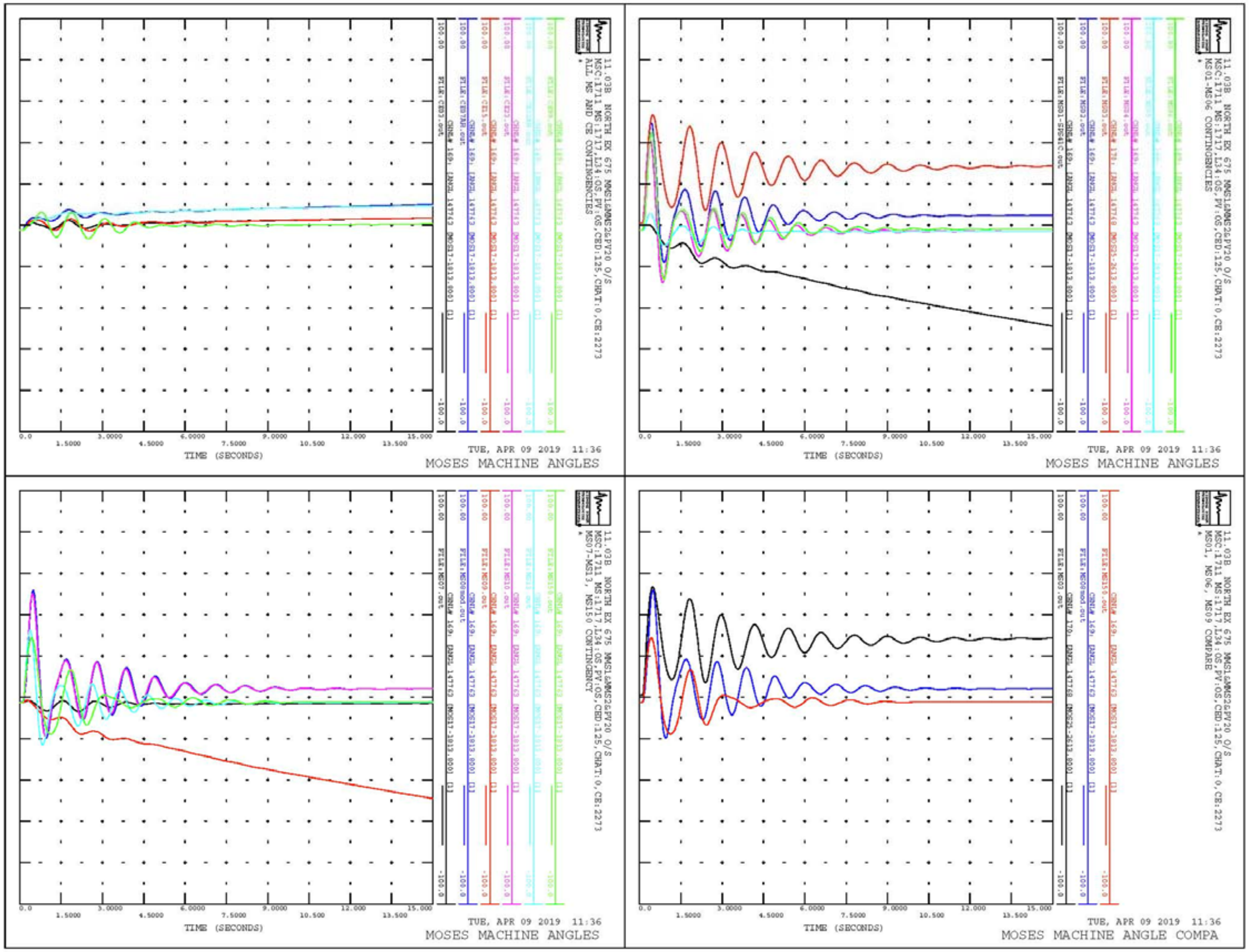

Fig D6 Comparative plots for Moses machine angle for all simulated contingencies

D.4 MMS1 & MMS2 & L33 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :11.04B  NORTH EX 975 MMS1&MMS2&L33 O/S
       MSC:2011 MS:1897,L34:OS,PV:100,MSU:OS,CED:125,CHAT:0,CE:2323
```

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1889.1	1.9	DYSE-CLOSE	3193.1	172.4
WEST-CENTRAL	586.0	-156.3	WESTC-CLOSE	1890.0	14.2
VOLNEY-EAST	3049.1	-24.6	VOLNEY-CLOSE	4270.3	130.7
MOSES-SOUTH	1899.3	-345.2	MOSES-CLOSE	2010.3	-331.5
CENTRAL-EAST	2322.6	-436.3	TOTAL-EAST	5322.4	-346.7
UPNY-SENY	4366.0	46.6	UPNY-SENY-CL	5660.0	190.1
UPNY-CONED	4476.5	-67.3	UPNY-CON-CL	6600.9	-75.6
MILLWOOD-SO	7186.5	71.6	LIPA-IMPORT	2006.6	-160.0
DNWDIE-SO-PL	4457.0	-391.2	DNWDIE-SO-PC	6581.4	-399.6
DNWDIE-SO-OP	3541.7	-335.5	PJM-NY	1212.9	279.0
NE-NY-WCSC	-758.3	149.1	ON-NY	999.4	144.8
ONT-MICH-PAR	1.4	6.4	Northern Export	974.0	100.2

STATION VOLTAGES

126260 BOWLINE1	345.00 = 359.6	126261 BOWLINE2	345.00 = 359.5	126263 BUCHANAN S	345.00 = 355.9
136150 CLAY	345.00 = 360.4	130750 COOPC345	345.00 = 359.6	126266 DUNWOODIE	345.00 = 353.2
137200 EDIC	345.00 = 357.7	126277 FARRAGUT	345.00 = 350.1	130753 FRASR345	345.00 = 361.2
135413 GRDNVL2	230.00 = 232.1	147831 GILB 345	345.00 = 360.6	126283 GOTHLS	345.00 = 348.0
126286 GOW R16	345.00 = 347.1	126290 LADENTWN	345.00 = 358.5	137451 LEEDS 3	345.00 = 360.3
147833 MARCY T1	345.00 = 358.1	126291 MILLWOOD	345.00 = 353.6	137452 N.SCOT77	345.00 = 356.9
137453 N.SCOT99	345.00 = 356.9	147841 NIAGAR2E	230.00 = 232.0	147842 NIAGAR2W	230.00 = 232.0
147834 NIAG 345	345.00 = 358.6	129341 NRTHPRT1	138.00 = 142.4	130755 OAKDL345	345.00 = 356.9
149001 PANNELL3	345.00 = 348.5	126294 PLTVLLEY	345.00 = 354.5	126295 RAINEY	345.00 = 350.5
126600 REAC71	345.00 = 352.6	126601 REAC72	345.00 = 352.6	126297 RAMAPO	345.00 = 358.1
126250 RAMAPO 5	500.00 = 520.9	125001 ROCK TAV	345.00 = 358.1	125002 ROSETON	345.00 = 357.0
130754 SOMERSET345	345.00 = 359.1	126298 SPRAINBROOK	345.00 = 353.3	149000 ROCH 345	345.00 = 346.8
147840 MOSES W	230.00 = 232.9	130768 WATRC230	230.00 = 236.1	180819 CHA-NY	765.00 = 726.7*
147827 MARCY765	765.00 = 763.3	147828 MASS 765	765.00 = 746.3	126281 E FISHKILL	345.00 = 356.0
125000 HURLEY 3	345.00 = 359.1	128835 SHORE RD	345.00 = 353.9	136156 VOLNEY	345.00 = 367.8*
130757 WATRC345	345.00 = 361.8	135250 DUNKIRK	230.00 = 231.6	130764 MEYER230	230.00 = 227.9
130765 OAKDL230	230.00 = 236.7	137730 ROTRDM.2	230.00 = 229.6	181219 CHANY2	120.00 = 116.5
181119 CHANY1	120.00 = 116.5	137716 ALB1	115.00 = 117.9	130774 BATH 115	115.00 = 115.8
137488 BETHLEHE	115.00 = 118.2	130776 BORDR115	115.00 = 114.4	136181 CLAY	115.00 = 119.1
130794 DELHI115	115.00 = 115.9	130796 E.NOR115	115.00 = 115.0	135277 FALCONER	115.00 = 117.2
130807 WESTOVER115	115.00 = 118.9	130826 MEYER115	115.00 = 116.3	147849 MOS 115	115.00 = 118.3
147850 NIAG115E	115.00 = 117.2	147851 NIAG115W	115.00 = 117.8	130836 N.WAV115	115.00 = 113.7

130838 OAKDL115	115.00 = 118.9	147852 PLAT T#3	115.00 = 116.9	125043 PL.VAL 1	115.00 = 117.3
137235 PORTER 1	115.00 = 116.0	125046 ROCK TV1	115.00 = 117.2	137532 RTRDM1	115.00 = 114.6
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.8

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	-0.0	-7.2	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0304				5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	0.7	3.2	-1.7	0.9700	0.9700				3.6	175	4	
147763	MOS17-18	13.800	2 0	2	102.8	37.8	38.6	-30.8	1.0300	1.0300				120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0299				120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0291				120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0210				120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0291				120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	38.6	38.6	0.0	1.0300	1.0209				120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	36.8	38.6	-30.8	1.0200	1.0200				120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	36.8	38.6	-30.8	1.0200	1.0200				120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1 0	2	97.0	7.0	22.9	-13.3	1.0500	1.0500				108.6	158	4	
147855	CHATG_GE_G1	0.5750	1 0	2	106.5	7.6	16.1	-17.6	1.0500	1.0500				118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	70.0	4.2	18.0	-18.8	1.0500	1.0500				88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	6.0	22.2	-21.6	1.0500	1.0500				90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	2.9	4.8	-5.0	1.0500	1.0500				23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	85.0	33.0	33.0	33.0	1.0000	1.0242				215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9254				46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	33.4	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9252				46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9829				57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	23.3	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180279	BHOA24	13.800	1 0	2	32.0	3.1	30.4	-13.3	1.0000	1.0000				57.0	1145	4	
180280	BHOA25	13.800	1 0	2	36.0	3.2	30.0	-13.1	1.0000	1.0000				57.0	1145	4	
180281	BHOA26	13.800	1 0	2	38.0	3.2	30.8	-13.5	1.0000	1.0000				57.0	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	28.1	50.0	-25.0	1.0500	1.0500				90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS					1792.1	581.0	855.1	-530.2						2318.3			

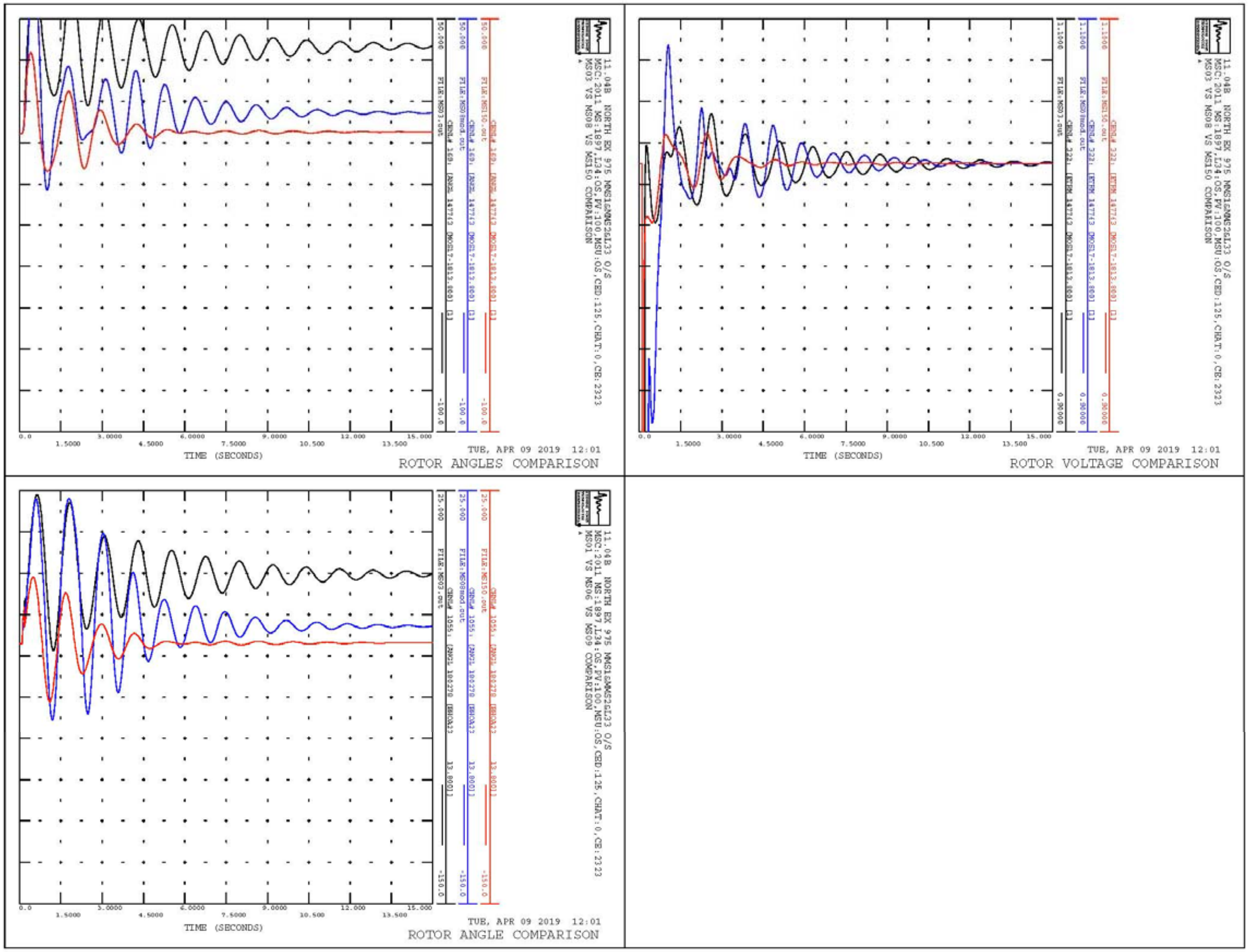

Fig D7 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

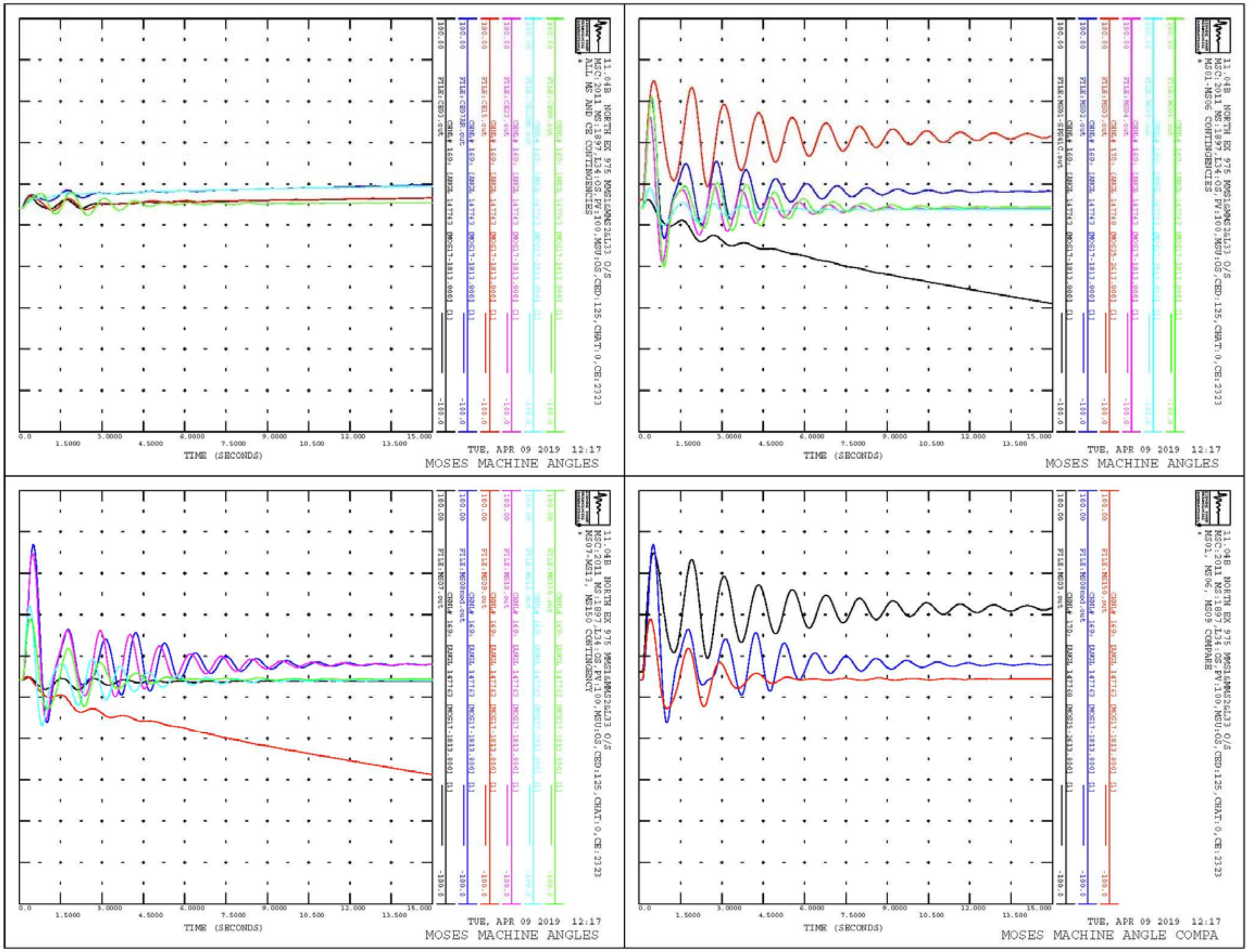

Fig D8 Comparative plots for Moses machine angle for all simulated contingencies

D.5 MMS1 & MMS2 & L33 & R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

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CASE :11.05B   NORTH EX 775 MMS1&MMS2&R8105&L33 O/S
       MSC:1811 MS:1703,L34:OS,PV:OS,CED:125,CHAT:0,CE:2323

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS         1885.5      -0.5  DYSE-CLOSE           3193.1     182.0
 WEST-CENTRAL          582.4    -158.4  WESTC-CLOSE          1890.0      24.2
 VOLNEY-EAST          3248.4    -144.0  VOLNEY-CLOSE         4470.7      26.2
 MOSES-SOUTH          1703.7    -427.3  MOSES-CLOSE          1810.8    -426.9
 CENTRAL-EAST         2323.8    -400.9  TOTAL-EAST           5322.5    -295.5
 UPNY-SENY            4367.7      59.5  UPNY-SENY-CL         5660.0     201.1
 UPNY-CONED           4477.2     -63.4  UPNY-CON-CL          6601.0     -72.4
 MILLWOOD-SO          7186.2      72.3  LIPA-IMPORT          2006.6    -159.5
 DNWDIE-SO-PL         4457.5    -388.9  DNWDIE-SO-PC         6581.4    -397.9
 DNWDIE-SO-OP         3542.7    -333.8  PJM-NY               1211.2     273.4
 NE-NY-WCSC           -758.3     127.0  ON-NY                1001.0     161.6
 ONT-MICH-PAR           -0.1       7.3  Northern Export       774.5      23.3

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 359.6      126261 BOWLINE2     345.00 = 359.5      126263 BUCHANAN S  345.00 = 355.9
 136150 CLAY         345.00 = 360.7      130750 COOPC345     345.00 = 360.2      126266 DUNWOODIE   345.00 = 353.3
 137200 EDIC         345.00 = 359.3      126277 FARRAGUT     345.00 = 350.1      130753 FRASR345    345.00 = 361.9
 135413 GRDNVL2      230.00 = 232.1      147831 GILB 345     345.00 = 360.9      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 358.6      137451 LEEDS 3     345.00 = 360.5
 147833 MARCY T1     345.00 = 359.6      126291 MILLWOOD     345.00 = 353.7      137452 N.SCOT77    345.00 = 357.4
 137453 N.SCOT99     345.00 = 357.4      147841 NIAGAR2E     230.00 = 232.0      147842 NIAGAR2W    230.00 = 232.0
 147834 NIAG 345     345.00 = 358.6      129341 NRTHPRT1     138.00 = 142.4      130755 OAKDL345    345.00 = 357.3
 149001 PANNELL3     345.00 = 348.7      126294 PLTVLLEY     345.00 = 354.6      126295 RAINEY      345.00 = 350.5
 126600 REAC71       345.00 = 352.6      126601 REAC72       345.00 = 352.7      126297 RAMAPO      345.00 = 358.1
 126250 RAMAPO 5     500.00 = 520.9      125001 ROCK TAV     345.00 = 358.3      125002 ROSETON     345.00 = 357.1
 130754 SOMERSET345 345.00 = 359.1      126298 SPRAINBROOK 345.00 = 353.4      149000 ROCH 345    345.00 = 346.9
 147840 MOSES W      230.00 = 237.4      130768 WATRC230     230.00 = 236.2      180819 CHA-NY      765.00 = 727.0
 147827 MARCY765     765.00 = 766.0      147828 MASS 765     765.00 = 747.3      126281 E FISHKILL  345.00 = 356.2
 125000 HURLEY 3     345.00 = 359.2      128835 SHORE RD     345.00 = 353.9      136156 VOLNEY      345.00 = 367.8*
 130757 WATRC345     345.00 = 362.1*     135250 DUNKIRK      230.00 = 231.6      130764 MEYER230    230.00 = 228.0
 130765 OAKDL230     230.00 = 236.9      137730 ROTRDM.2     230.00 = 235.1      181219 CHANY2      120.00 = 116.4
 181119 CHANY1       120.00 = 116.4      137716 ALB1         115.00 = 118.0      130774 BATH 115    115.00 = 115.9
 137488 BETHLEHE     115.00 = 118.3      130776 BORDR115     115.00 = 114.5      136181 CLAY        115.00 = 119.3
 130794 DELHI115     115.00 = 116.2      130796 E.NOR115     115.00 = 115.2      135277 FALCONER    115.00 = 117.2
 130807 WESTOVER115 115.00 = 119.1      130826 MEYER115     115.00 = 116.3      147849 MOS 115     115.00 = 120.0
 147850 NIAG115E     115.00 = 117.2      147851 NIAG115W     115.00 = 117.8      130836 N.WAV115    115.00 = 113.8
```

130838 OAKDL115	115.00 = 119.0	147852 PLAT T#3	115.00 = 118.1	125043 PL.VAL 1	115.00 = 117.3
137235 PORTER 1	115.00 = 117.7	125046 ROCK TV1	115.00 = 117.2	137532 RTRDM1	115.00 = 114.8
125048 SHENANDO	115.00 = 117.8	149011 S82-1115	115.00 = 117.7	149008 RUS 115	115.00 = 114.8

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	-0.0	-9.1	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0369		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	0.6	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	101.1	20.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	21.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	21.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	34.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	21.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	34.1	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	24.4	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	24.4	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	55.0	-1.5	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	81.0	-0.8	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	1.0	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	100.0	33.0	33.0	33.0	1.0000	1.0364		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9247		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	33.9	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9245		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9822		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	23.6	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180279	BHOA24	13.800	1	0	2	32.0	1.6	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1	0	2	36.0	1.6	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	38.0	1.8	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	26.0	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1586.9	440.9	816.1	-499.2				2091.2			

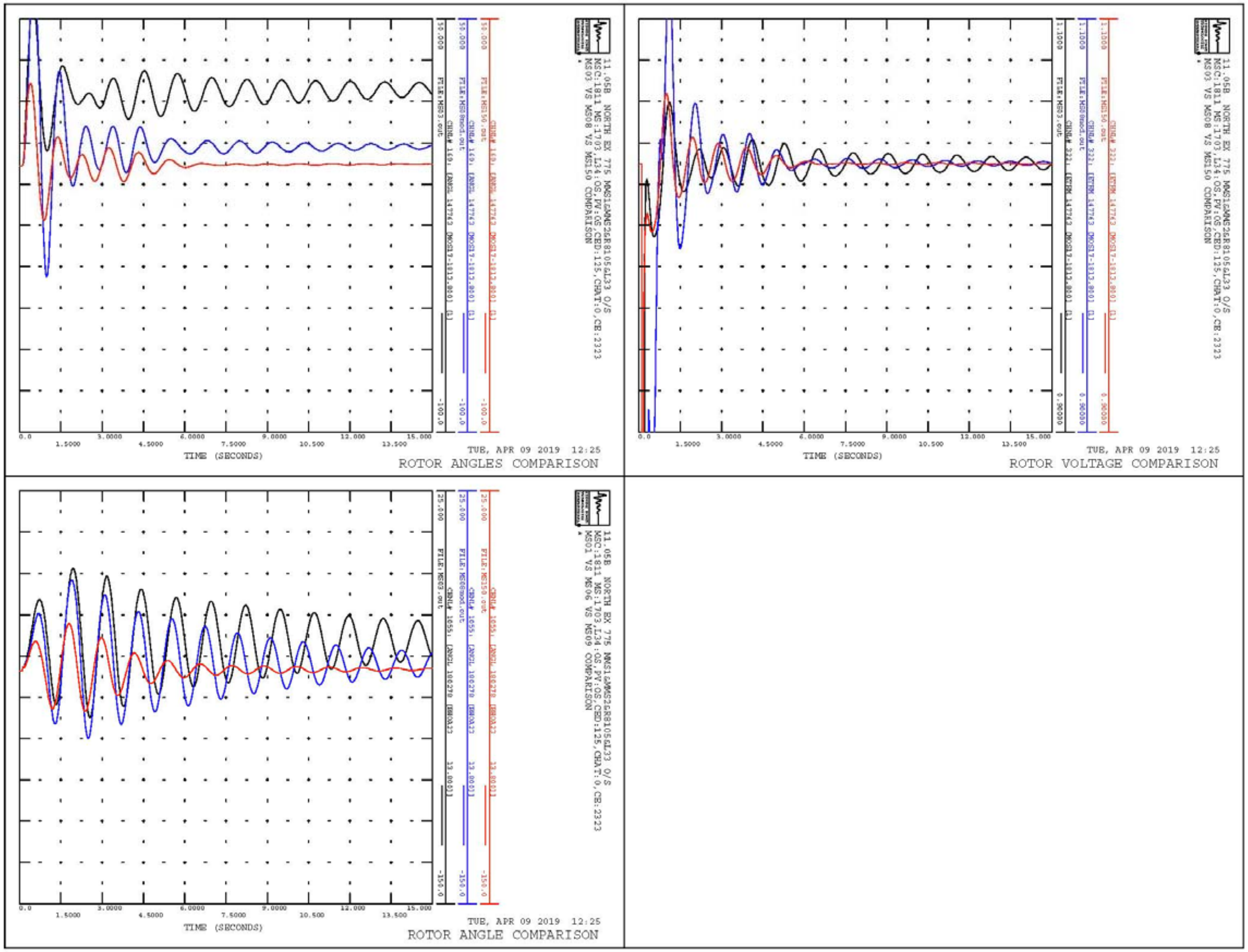

Fig D9 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

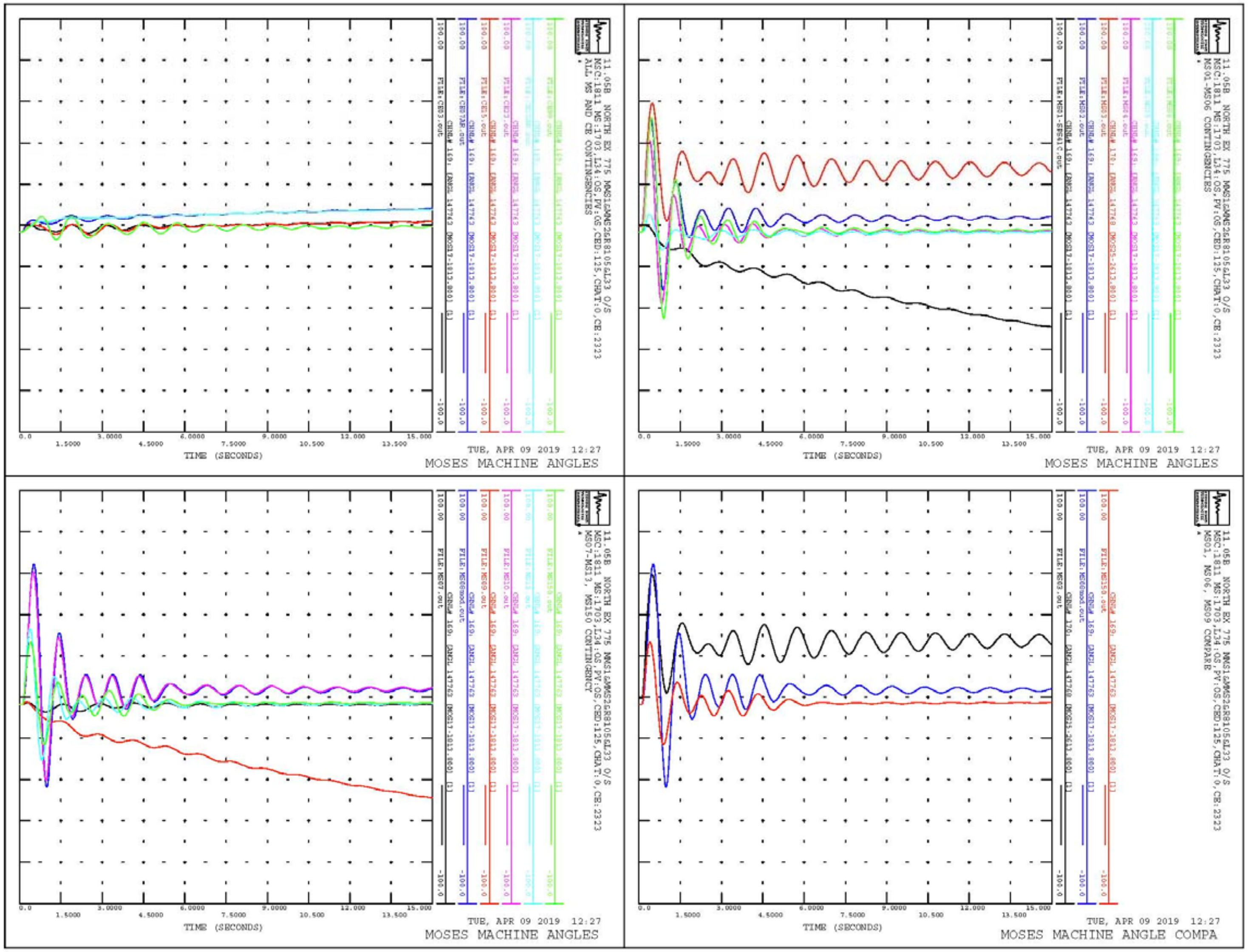

Fig D10 Comparative plots for Moses machine angle for all simulated contingencies

D.6 MMS1 & MMS2 & L33 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :11.06B   NORTH EX 675 MMS1&MMS2&PV20&L33 O/S
       MSC:1711 MS:1714,L34:OS,PV:OS,CED:125,CHAT:0,CE:2275
```

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1881.1	5.7	DYSE-CLOSE	3193.7	204.1
WEST-CENTRAL	578.0	-148.2	WESTC-CLOSE	1890.6	50.1
VOLNEY-EAST	3342.7	-117.6	VOLNEY-CLOSE	4571.5	61.2
MOSES-SOUTH	1714.2	-416.0	MOSES-CLOSE	1710.8	-416.6
CENTRAL-EAST	2275.2	-440.1	TOTAL-EAST	5322.5	-365.0
UPNY-SENY	4365.3	37.1	UPNY-SENY-CL	5659.9	182.7
UPNY-CONED	4476.0	-74.8	UPNY-CON-CL	6600.7	-83.4
MILLWOOD-SO	7187.7	69.6	LIPA-IMPORT	2006.7	-161.3
DNWDIE-SO-PL	4456.8	-395.3	DNWDIE-SO-PC	6581.5	-403.9
DNWDIE-SO-OP	3541.4	-338.1	PJM-NY	1209.8	287.5
NE-NY-WCSC	-758.4	133.0	ON-NY	1003.1	166.0
ONT-MICH-PAR	-2.0	7.2	Northern Export	674.6	28.1

STATION VOLTAGES

126260 BOWLINE1	345.00 = 359.4	126261 BOWLINE2	345.00 = 359.3	126263 BUCHANAN S	345.00 = 355.7
136150 CLAY	345.00 = 359.9	130750 COOPC345	345.00 = 359.0	126266 DUNWOODIE	345.00 = 353.1
137200 EDIC	345.00 = 357.7	126277 FARRAGUT	345.00 = 350.1	130753 FRASR345	345.00 = 360.6
135413 GRDNVL2	230.00 = 232.0	147831 GILB 345	345.00 = 360.2	126283 GOTHLS	345.00 = 348.0
126286 GOW R16	345.00 = 347.1	126290 LADENTWN	345.00 = 358.4	137451 LEEDS 3	345.00 = 360.1
147833 MARCY T1	345.00 = 358.1	126291 MILLWOOD	345.00 = 353.5	137452 N.SCOT77	345.00 = 356.5
137453 N.SCOT99	345.00 = 356.5	147841 NIAGAR2E	230.00 = 232.0	147842 NIAGAR2W	230.00 = 232.0
147834 NIAG 345	345.00 = 358.6	129341 NRTHPRT1	138.00 = 142.4	130755 OAKDL345	345.00 = 356.2
149001 PANNELL3	345.00 = 348.3	126294 PLTVLLEY	345.00 = 354.3	126295 RAINEY	345.00 = 350.4
126600 REAC71	345.00 = 352.5	126601 REAC72	345.00 = 352.6	126297 RAMAPO	345.00 = 357.9
126250 RAMAPO 5	500.00 = 520.8	125001 ROCK TAV	345.00 = 357.8	125002 ROSETON	345.00 = 356.8
130754 SOMERSET345	345.00 = 359.1	126298 SPRAINBROOK	345.00 = 353.2	149000 ROCH 345	345.00 = 346.6
147840 MOSES W	230.00 = 236.9	130768 WATRC230	230.00 = 235.7	180819 CHA-NY	765.00 = 723.9*
147827 MARCY765	765.00 = 762.6	147828 MASS 765	765.00 = 744.0	126281 E FISHKILL	345.00 = 355.8
125000 HURLEY 3	345.00 = 358.8	128835 SHORE RD	345.00 = 353.7	136156 VOLNEY	345.00 = 367.3*
130757 WATRC345	345.00 = 361.3	135250 DUNKIRK	230.00 = 231.5	130764 MEYER230	230.00 = 227.7
130765 OAKDL230	230.00 = 236.3	137730 ROTRDM.2	230.00 = 234.2	181219 CHANY2	120.00 = 115.9
181119 CHANY1	120.00 = 115.9	137716 ALB1	115.00 = 117.9	130774 BATH 115	115.00 = 115.7
137488 BETHLEHE	115.00 = 118.2	130776 BORDR115	115.00 = 114.4	136181 CLAY	115.00 = 119.1
130794 DELHI115	115.00 = 115.7	130796 E.NOR115	115.00 = 114.8	135277 FALCONER	115.00 = 117.2
130807 WESTOVER115	115.00 = 118.7	130826 MEYER115	115.00 = 116.2	147849 MOS 115	115.00 = 119.8
147850 NIAG115E	115.00 = 117.2	147851 NIAG115W	115.00 = 117.8	130836 N.WAV115	115.00 = 113.6

130838 OAKDL115	115.00 = 118.7	147852 PLAT T#3	115.00 = 118.1	125043 PL.VAL 1	115.00 = 117.2
137235 PORTER 1	115.00 = 117.1	125046 ROCK TV1	115.00 = 117.1	137532 RTRDM1	115.00 = 114.4
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	-0.0	-7.9	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0345		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	0.6	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	99.6	22.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	23.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	23.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	35.1	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	23.0	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	35.3	38.6	0.0	1.0300	1.0300		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	25.5	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	25.5	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	55.0	-0.1	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	81.0	0.9	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	1.4	4.8	-5.0	1.0500	1.0500		23.4	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9219		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	34.0	34.0	-34.0	0.9550	0.9522		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9217		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9793		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	25.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180279	BHOA24	13.800	1	0	2	32.0	2.1	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1	0	2	36.0	2.1	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	38.0	2.2	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	26.7	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	37.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1485.3	427.7	783.1	-532.2				1875.9			

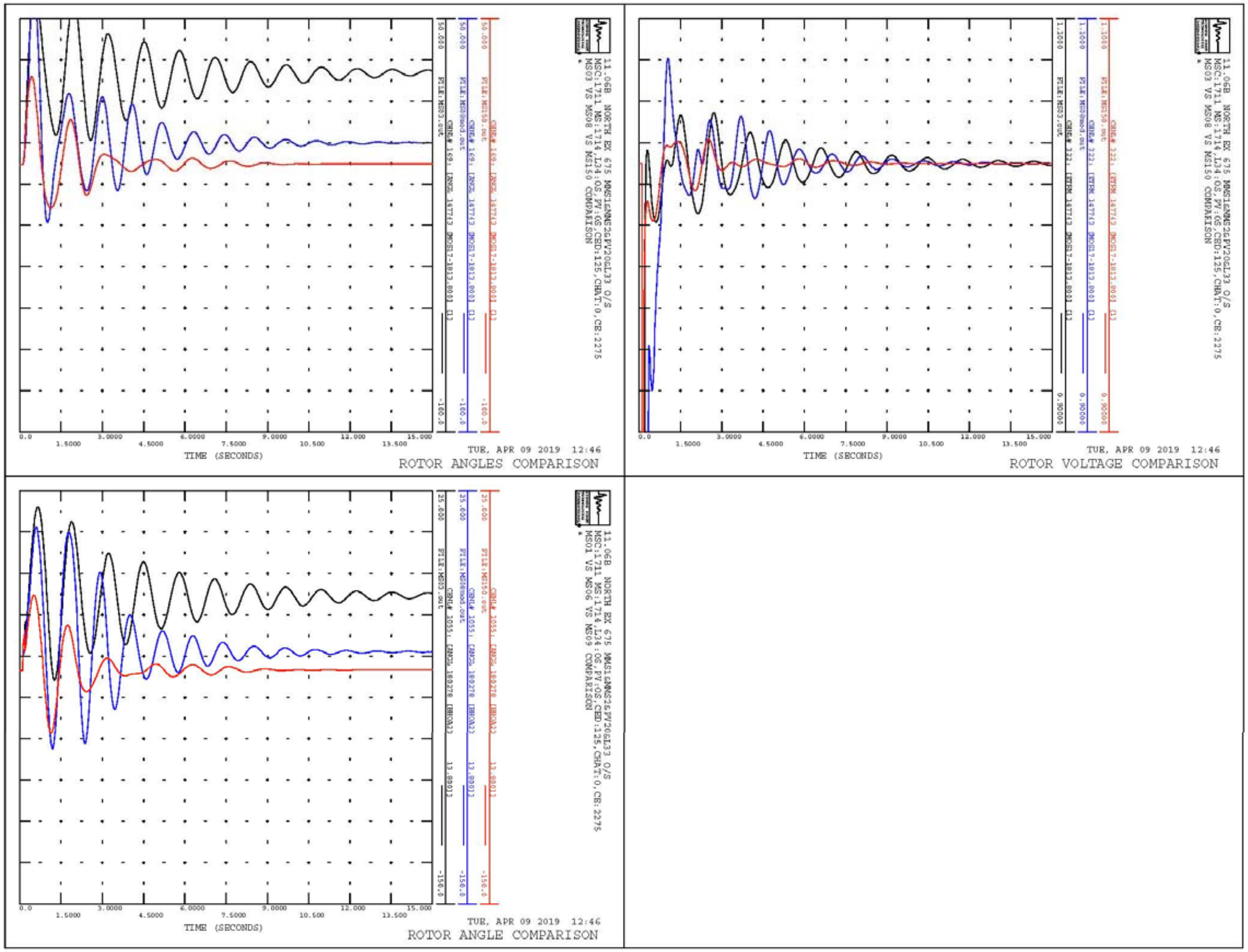

Fig D11 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

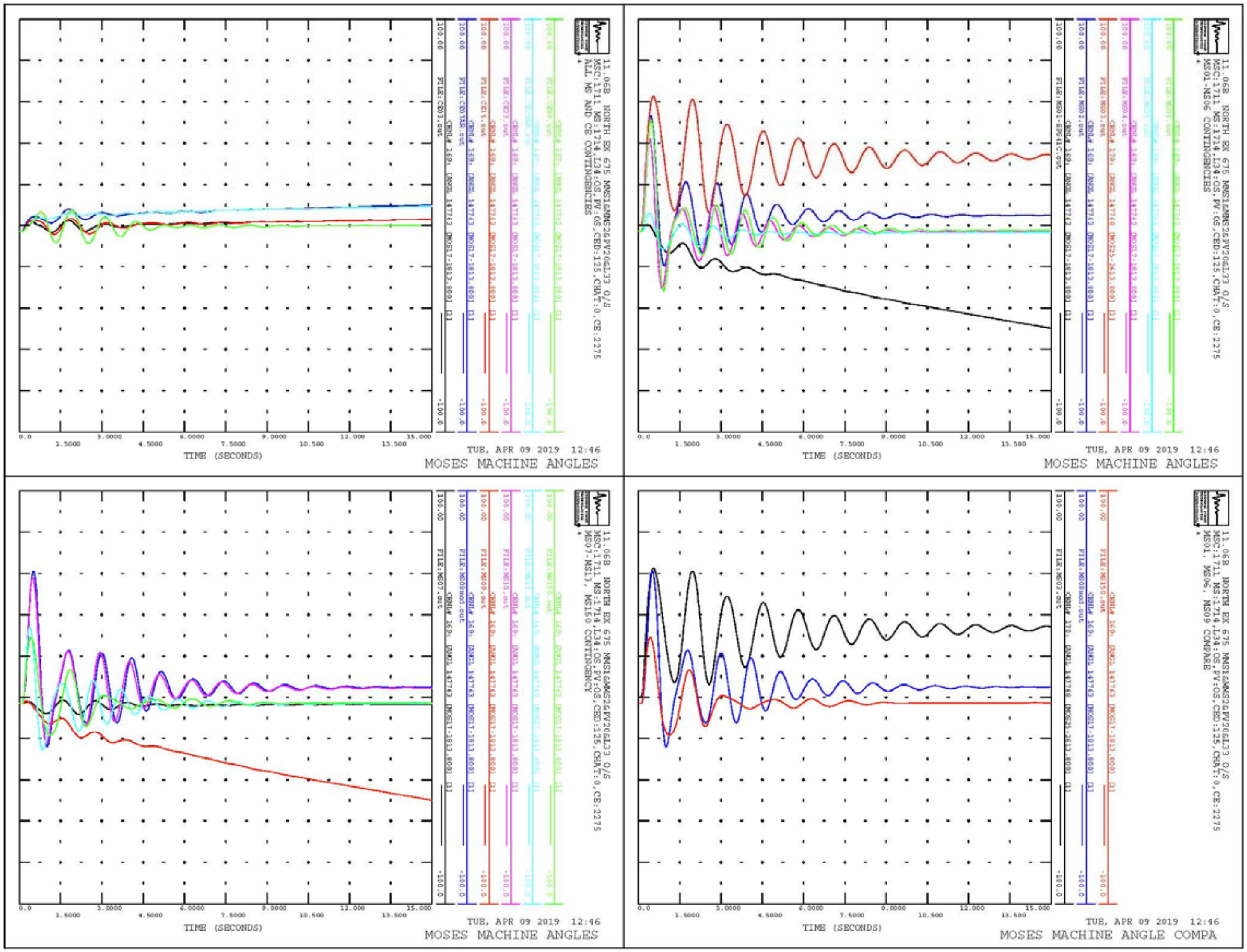

Fig D12 Comparative plots for Moses machine angle for all simulated contingencies

D.7 MMS1 & MMS2 & MAP1 O/S:

Test Level Interface Power Flow Summary and Key Voltages

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CASE :11.07B  NORTH EX 854 MMS1&MMS2&MAP1 O/S
       MSC:1836 MS:1681,L34:OS,PV:100,CED:125,CHAT:0,CE:2341

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS         1883.0     17.4  DYSE-CLOSE          3193.5    215.7
 WEST-CENTRAL          579.8   -140.9  WESTC-CLOSE         1890.3     57.4
 VOLNEY-EAST          3124.9     30.3  VOLNEY-CLOSE        4350.9    200.6
 MOSES-SOUTH          1681.7   -327.2  MOSES-CLOSE         1835.6   -307.5
 CENTRAL-EAST         2340.1   -463.8  TOTAL-EAST          5322.1   -486.0
 UPNY-SENY            4366.4    -41.7  UPNY-SENY-CL        5659.5    111.9
 UPNY-CONED           4476.4    -82.5  UPNY-CON-CL         6600.6    -89.0
 MILLWOOD-SO          7185.0     68.7  LIPA-IMPORT         2006.7   -162.7
 DNWDIE-SO-PL         4457.3   -401.0  DNWDIE-SO-PC        6581.5   -407.4
 DNWDIE-SO-OP         3542.4   -342.2  PJM-NY              1210.2    305.2
 NE-NY-WCSC           -758.3    138.5  ON-NY               1002.5    122.5
 ONT-MICH-PAR           -1.5      8.8  Northern Export      799.4    130.0

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 359.2      126261 BOWLINE2     345.00 = 359.1      126263 BUCHANAN S  345.00 = 355.6
 136150 CLAY         345.00 = 359.0      130750 COOPC345     345.00 = 354.7      126266 DUNWOODIE   345.00 = 353.0
 137200 EDIC         345.00 = 355.5      126277 FARRAGUT     345.00 = 350.0      130753 FRASR345    345.00 = 358.7
 135413 GRDNVL2      230.00 = 231.8      147831 GILB 345     345.00 = 359.8      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 358.1      137451 LEEDS 3     345.00 = 360.1
 147833 MARCY T1     345.00 = 355.9      126291 MILLWOOD     345.00 = 353.3      137452 N.SCOT77    345.00 = 356.6
 137453 N.SCOT99     345.00 = 356.6      147841 NIAGAR2E     230.00 = 231.7      147842 NIAGAR2W    230.00 = 231.7
 147834 NIAG 345     345.00 = 357.7      129341 NRTHPRT1     138.00 = 142.4      130755 OAKDL345    345.00 = 355.2
 149001 PANNELL3     345.00 = 347.1      126294 PLTVLLEY     345.00 = 354.2      126295 RAINEY      345.00 = 350.4
 126600 REAC71       345.00 = 352.4      126601 REAC72       345.00 = 352.5      126297 RAMAPO      345.00 = 357.6
 126250 RAMAPO 5     500.00 = 520.5      125001 ROCK TAV     345.00 = 356.8      125002 ROSETON     345.00 = 356.5
 130754 SOMERSET345 345.00 = 358.7       126298 SPRAINBROOK 345.00 = 353.1       149000 ROCH 345    345.00 = 345.2
 147840 MOSES W      230.00 = 230.4      130768 WATRC230     230.00 = 235.1      180819 CHA-NY      765.00 = 719.7*
 147827 MARCY765     765.00 = 758.0      147828 MASS 765     765.00 = 739.6      126281 E FISHKILL  345.00 = 355.7
 125000 HURLEY 3     345.00 = 358.8      128835 SHORE RD     345.00 = 353.6      136156 VOLNEY      345.00 = 366.9*
 130757 WATRC345     345.00 = 360.4      135250 DUNKIRK      230.00 = 231.3      130764 MEYER230    230.00 = 227.5
 130765 OAKDL230     230.00 = 235.1      137730 ROTRDM.2     230.00 = 232.1      181219 CHANY2      120.00 = 115.3
 181119 CHANY1       120.00 = 115.3      137716 ALB1         115.00 = 117.6      130774 BATH 115    115.00 = 115.7
 137488 BETHLEHE     115.00 = 117.9      130776 BORDR115     115.00 = 113.9      136181 CLAY        115.00 = 118.2
 130794 DELHI115     115.00 = 115.1      130796 E.NOR115     115.00 = 114.0      135277 FALCONER    115.00 = 117.0
 130807 WESTOVER115 115.00 = 117.9       130826 MEYER115     115.00 = 116.1      147849 MOS 115     115.00 = 117.0
 147850 NIAG115E     115.00 = 117.2      147851 NIAG115W     115.00 = 117.8      130836 N.WAV115    115.00 = 113.5
```

130838 OAKDL115	115.00 = 117.8	147852 PLAT T#3	115.00 = 116.6	125043 PL.VAL 1	115.00 = 117.3
137235 PORTER 1	115.00 = 115.2	125046 ROCK TV1	115.00 = 116.9	137532 RTRDM1	115.00 = 114.0
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.5	149008 RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	0.0	-6.6	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0300	1.0194		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	0.9	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	105.0	38.6	38.6	-30.8	1.0300	1.0201		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0194		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0187		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0110		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0187		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	38.6	38.6	0.0	1.0300	1.0109		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0200	1.0120		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0200	1.0120		120.0	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	55.0	10.7	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	14.3	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	4.3	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	125.0	33.0	33.0	33.0	1.0000	1.0056		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9180		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	34.0	34.0	-34.0	0.9550	0.9482		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9179		46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9753		57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	26.7	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180279	BHOA24	13.800	1 0	2	32.0	4.4	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1 0	2	36.0	4.4	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	38.0	4.4	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	29.9	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	32.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					1615.8	593.3	816.1	-499.2				2091.2			

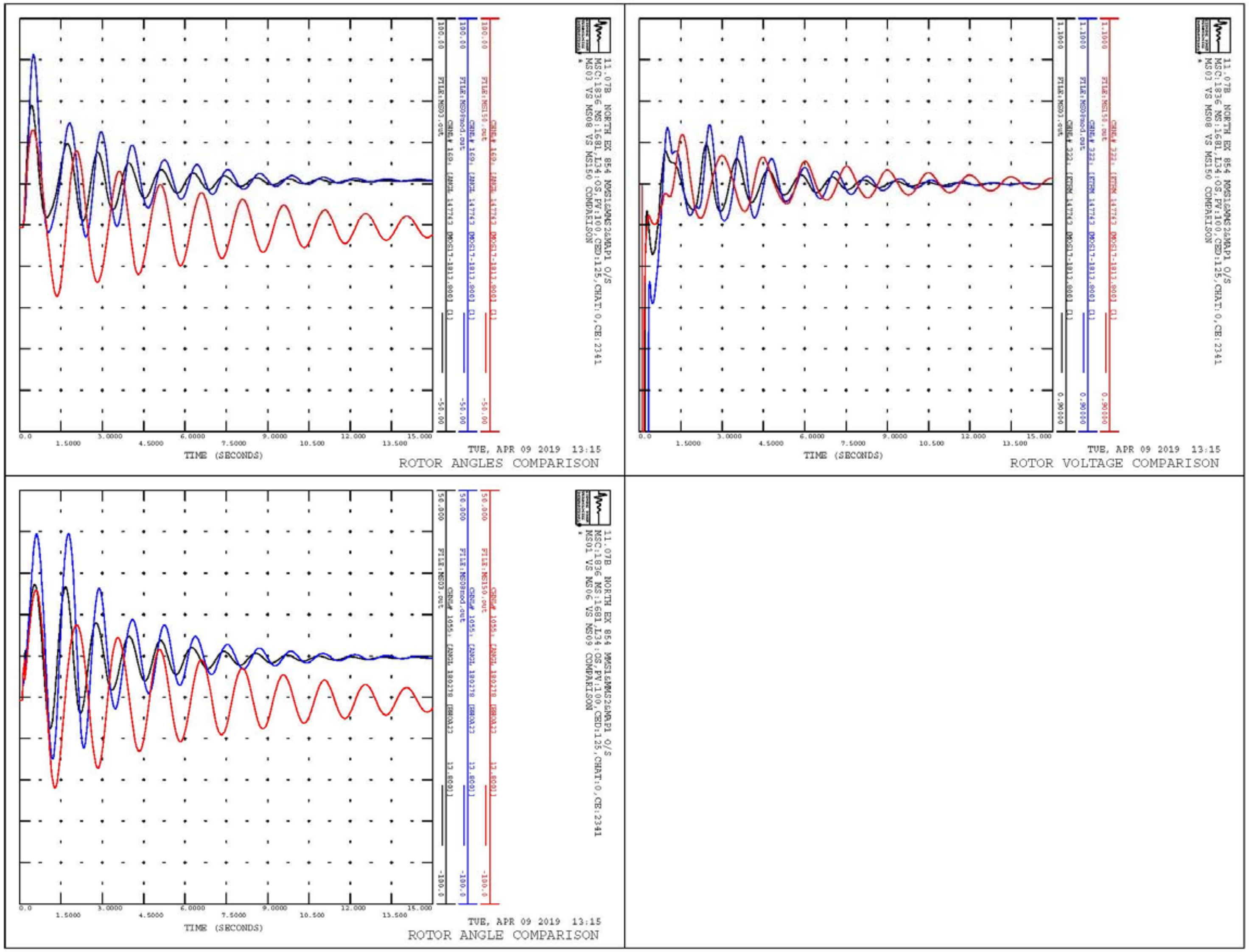

Fig D13 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

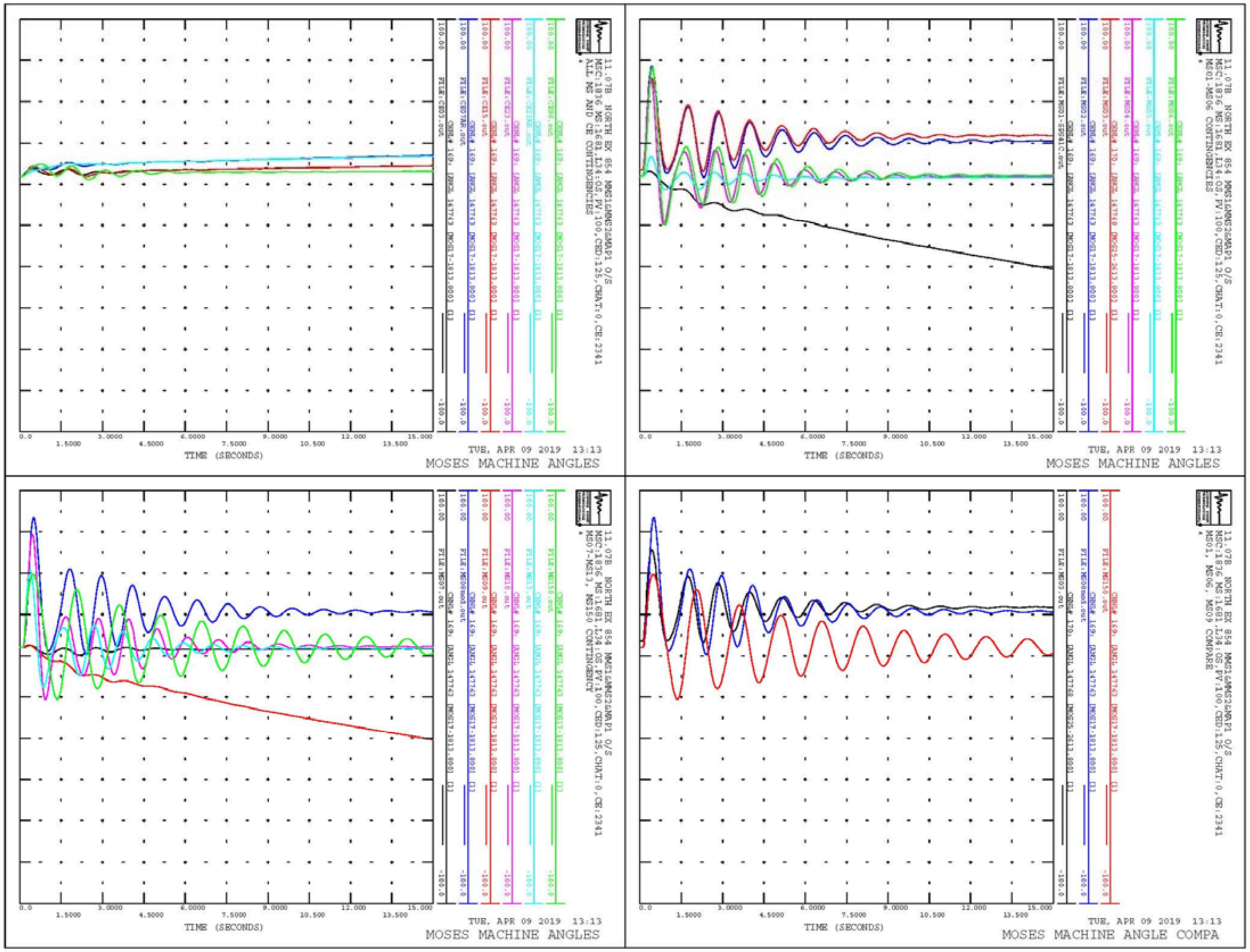

Fig D14 Comparative plots for Moses machine angle for all simulated contingencies

D.8 MMS1 & MMS2 & MAP1 & R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :11.08B   NORTH EX 775 MMS1&MMS2&R8105&MAP1 O/S
       MSC:1811 MS:1656,L34:OS,PV:OS,CED:125,CHAT:0,CE:2337

                            INTERFACE FLOW REPORT

   DESCRIPTION           MW       MVAr     DESCRIPTION           MW       MVAr

 DYSINGER-EAS        1891.1      16.9  DYSE-CLOSE          3192.9     248.9
 WEST-CENTRAL         588.0    -145.9  WESTC-CLOSE         1889.8      86.1
 VOLNEY-EAST         3137.1     -15.2  VOLNEY-CLOSE        4350.5     192.2
 MOSES-SOUTH         1656.2    -320.2  MOSES-CLOSE         1810.6    -343.8
 CENTRAL-EAST        2337.3    -455.3  TOTAL-EAST          5322.1    -467.1
 UPNY-SENY           4365.4     -33.7  UPNY-SENY-CL        5659.5     118.4
 UPNY-CONED          4475.0     -81.1  UPNY-CON-CL         6600.5     -88.2
 MILLWOOD-SO         7185.0      68.5  LIPA-IMPORT         2006.6    -162.4
 DNWDIE-SO-PL        4455.8    -399.2  DNWDIE-SO-PC        6581.4    -406.4
 DNWDIE-SO-OP        3540.9    -340.9  PJM-NY              1213.6     299.1
 NE-NY-WCSC          -758.3     138.4  ON-NY                998.4     189.7
 ONT-MICH-PAR           2.2       7.9  Northern Export      774.4      96.9
                             STATION VOLTAGES

 126260 BOWLINE1    345.00 = 359.2      126261 BOWLINE2    345.00 = 359.1      126263 BUCHANAN S  345.00 = 355.6
 136150 CLAY        345.00 = 359.6      130750 COOPC345    345.00 = 355.1      126266 DUNWOODIE   345.00 = 353.0
 137200 EDIC        345.00 = 356.5      126277 FARRAGUT    345.00 = 350.0      130753 FRASR345    345.00 = 359.3
 135413 GRDNVL2     230.00 = 232.0      147831 GILB 345    345.00 = 360.1      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 358.1      137451 LEEDS 3     345.00 = 360.2
 147833 MARCY T1    345.00 = 356.9      126291 MILLWOOD    345.00 = 353.4      137452 N.SCOT77    345.00 = 356.8
 137453 N.SCOT99    345.00 = 356.9      147841 NIAGAR2E    230.00 = 231.9      147842 NIAGAR2W    230.00 = 231.9
 147834 NIAG 345    345.00 = 358.5      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 355.7
 149001 PANNELL3    345.00 = 347.5      126294 PLTVLLEY    345.00 = 354.2      126295 RAINEY      345.00 = 350.4
 126600 REAC71      345.00 = 352.5      126601 REAC72      345.00 = 352.5      126297 RAMAPO      345.00 = 357.6
 126250 RAMAPO 5    500.00 = 520.6      125001 ROCK TAV    345.00 = 356.9      125002 ROSETON     345.00 = 356.6
 130754 SOMERSET345 345.00 = 358.9      126298 SPRAINBROOK 345.00 = 353.1      149000 ROCH 345    345.00 = 345.7
 147840 MOSES W     230.00 = 233.7      130768 WATRC230    230.00 = 235.3      180819 CHA-NY      765.00 = 721.6*
 147827 MARCY765    765.00 = 760.0      147828 MASS 765    765.00 = 741.5      126281 E FISHKILL  345.00 = 355.7
 125000 HURLEY 3    345.00 = 358.9      128835 SHORE RD    345.00 = 353.7      136156 VOLNEY      345.00 = 367.2*
 130757 WATRC345    345.00 = 360.7      135250 DUNKIRK     230.00 = 231.4      130764 MEYER230    230.00 = 227.6
 130765 OAKDL230    230.00 = 235.3      137730 ROTRDM.2    230.00 = 233.2      181219 CHANY2      120.00 = 115.6
 181119 CHANY1      120.00 = 115.6      137716 ALB1        115.00 = 117.7      130774 BATH 115    115.00 = 115.8
 137488 BETHLEHE    115.00 = 117.9      130776 BORDR115    115.00 = 114.0      136181 CLAY        115.00 = 118.6
 130794 DELHI115    115.00 = 114.8      130796 E.NOR115    115.00 = 114.0      135277 FALCONER    115.00 = 117.1
 130807 WESTOVER115 115.00 = 118.0      130826 MEYER115    115.00 = 116.2      147849 MOS 115     115.00 = 118.3
 147850 NIAG115E    115.00 = 117.2      147851 NIAG115W    115.00 = 117.8      130836 N.WAV115    115.00 = 113.6
 130838 OAKDL115    115.00 = 118.0      147852 PLAT T#3    115.00 = 116.2      125043 PL.VAL 1    115.00 = 117.4
```

137235 PORTER 1	115.00 = 115.9	125046 ROCK TV1	115.00 = 116.9	137532 RTRDM1	115.00 = 114.0
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.7	149008 RUS 115	115.00 = 114.7

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	-0.0	-4.1	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0300	1.0268		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	107.0	35.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	35.8	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	36.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0217		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	36.2	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	38.6	38.6	0.0	1.0300	1.0216		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	36.2	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	36.2	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	55.0	4.8	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	7.1	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	2.7	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	100.0	33.0	33.0	33.0	1.0000	1.0210		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9197		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	34.0	34.0	-34.0	0.9550	0.9499		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9196		46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9771		57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	26.0	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180279	BHOA24	13.800	1 0	2	32.0	2.4	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1 0	2	36.0	2.5	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	38.0	2.6	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	27.2	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	32.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					1592.8	556.5	816.1	-499.2				2091.2			

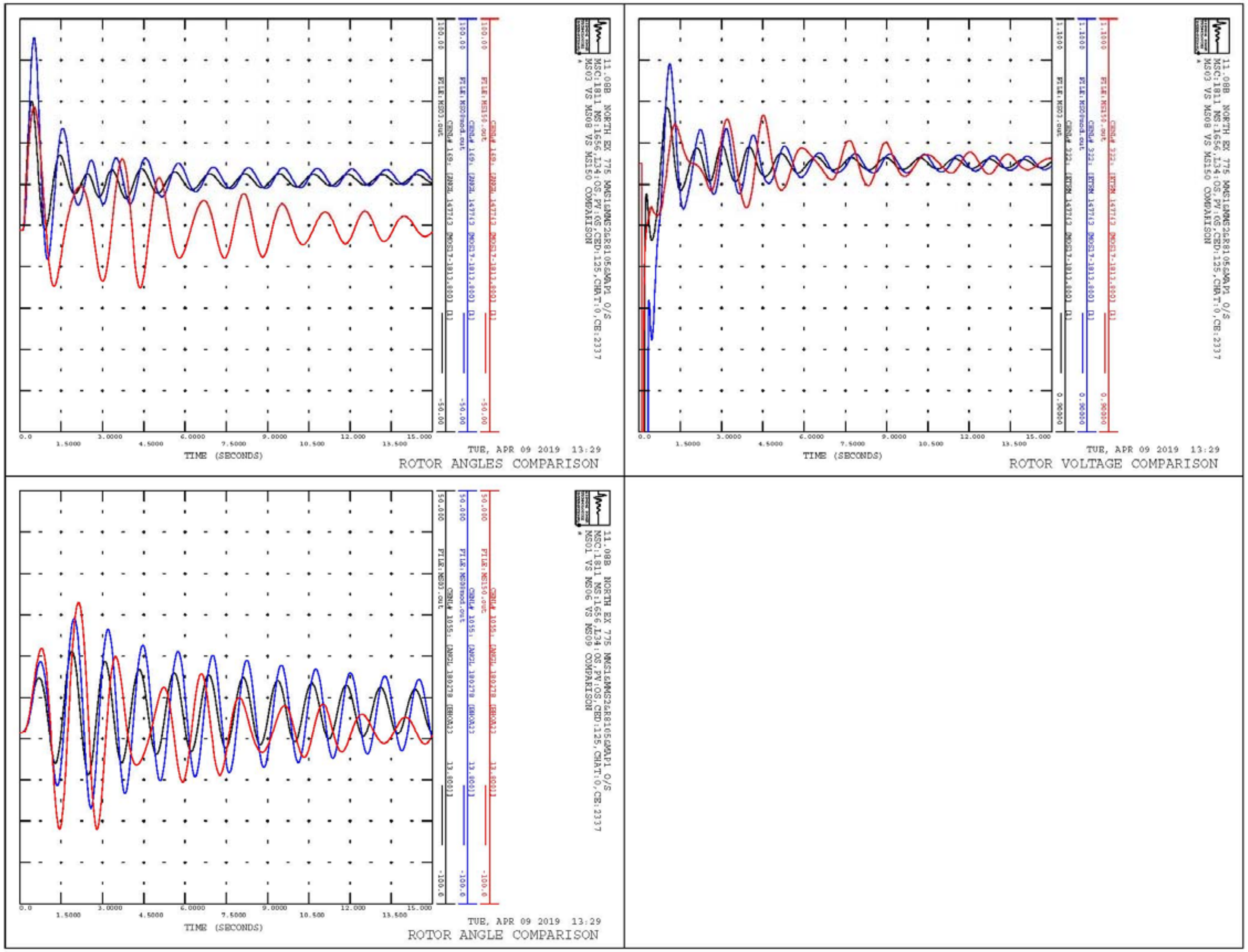

Fig D15 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

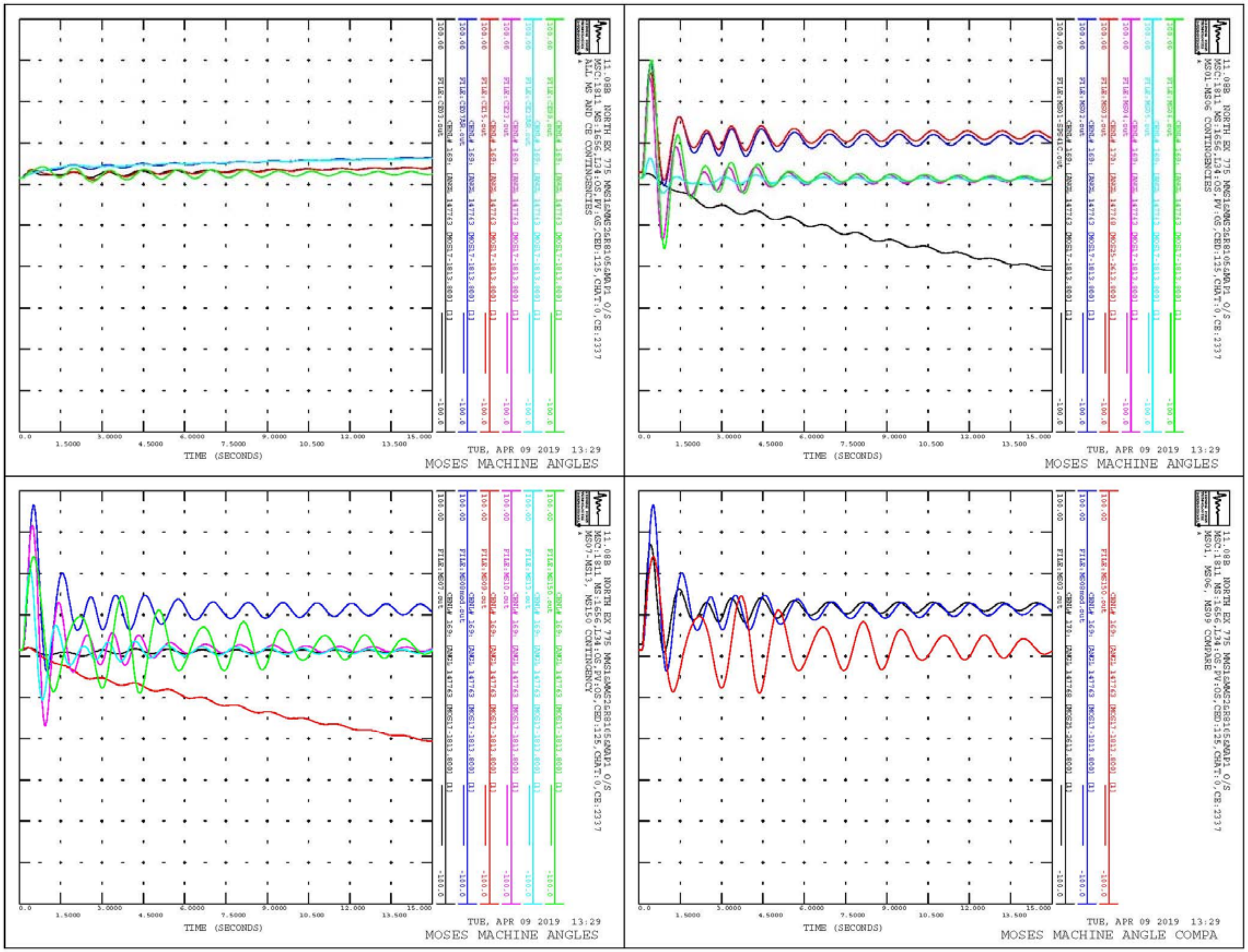

Fig D16 Comparative plots for Moses machine angle for all simulated contingencies

D.9 MMS1 & MMS2 & MAP1 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :11.09B  NORTH EX 675 MMS1&MMS2&PV20&MAP1 O/S
       MSC:1711 MS:1714,L34:OS,PV:OS,CED:125,CHAT:0,CE:2326
```

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1888.9	27.9	DYSE-CLOSE	3192.3	276.0
WEST-CENTRAL	585.8	-127.2	WESTC-CLOSE	1889.2	120.9
VOLNEY-EAST	3241.3	60.2	VOLNEY-CLOSE	4450.5	273.0
MOSES-SOUTH	1696.2	-306.8	MOSES-CLOSE	1710.2	-321.6
CENTRAL-EAST	2270.5	-504.8	TOTAL-EAST	5321.6	-566.3
UPNY-SENY	4364.7	-70.0	UPNY-SENY-CL	5658.9	88.1
UPNY-CONED	4475.3	-98.5	UPNY-CON-CL	6599.7	-105.7
MILLWOOD-SO	7186.4	63.9	LIPA-IMPORT	2006.6	-165.7
DNWDIE-SO-PL	4457.0	-410.3	DNWDIE-SO-PC	6581.4	-417.5
DNWDIE-SO-OP	3542.3	-348.3	PJM-NY	1218.9	320.4
NE-NY-WCSC	-758.4	153.1	ON-NY	992.6	188.3
ONT-MICH-PAR	7.7	7.9	Northern Export	674.2	122.5

STATION VOLTAGES

```
126260 BOWLINE1    345.00 = 358.9      126261 BOWLINE2    345.00 = 358.8      126263 BUCHANAN S  345.00 = 355.3
136150 CLAY        345.00 = 358.1      130750 COOPC345    345.00 = 353.1      126266 DUNWOODIE   345.00 = 352.7
137200 EDIC        345.00 = 353.4      126277 FARRAGUT    345.00 = 349.9      130753 FRASR345    345.00 = 357.0
135413 GRDNVL2     230.00 = 231.9      147831 GILB 345    345.00 = 358.8      126283 GOTHLS      345.00 = 348.0
126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 357.8      137451 LEEDS 3     345.00 = 359.4
147833 MARCY T1    345.00 = 353.8      126291 MILLWOOD    345.00 = 353.0      137452 N.SCOT77    345.00 = 355.4
137453 N.SCOT99    345.00 = 355.4      147841 NIAGAR2E    230.00 = 231.9      147842 NIAGAR2W    230.00 = 231.9
147834 NIAG 345    345.00 = 358.4      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 353.9
149001 PANNELL3    345.00 = 346.8      126294 PLTVLLEY    345.00 = 353.7      126295 RAINEY      345.00 = 350.2
126600 REAC71      345.00 = 352.3      126601 REAC72      345.00 = 352.4      126297 RAMAPO      345.00 = 357.2
126250 RAMAPO 5    500.00 = 520.3      125001 ROCK TAV    345.00 = 356.1      125002 ROSETON     345.00 = 356.0
130754 SOMERSET345 345.00 = 358.9      126298 SPRAINBROOK 345.00 = 352.8      149000 ROCH 345    345.00 = 345.1
147840 MOSES W     230.00 = 234.1      130768 WATRC230    230.00 = 234.6      180819 CHA-NY      765.00 = 712.8*
147827 MARCY765    765.00 = 752.9      147828 MASS 765    765.00 = 733.1      126281 E FISHKILL  345.00 = 355.2
125000 HURLEY 3    345.00 = 358.2      128835 SHORE RD    345.00 = 353.4      136156 VOLNEY      345.00 = 366.3*
130757 WATRC345    345.00 = 359.5      135250 DUNKIRK     230.00 = 231.3      130764 MEYER230    230.00 = 227.2
130765 OAKDL230    230.00 = 234.3      137730 ROTRDM.2    230.00 = 229.2      181219 CHANY2      120.00 = 114.1
181119 CHANY1      120.00 = 114.1      137716 ALB1        115.00 = 117.5      130774 BATH 115    115.00 = 115.6
137488 BETHLEHE    115.00 = 117.8      130776 BORDR115    115.00 = 113.8      136181 CLAY        115.00 = 118.1
130794 DELHI115    115.00 = 114.9      130796 E.NOR115    115.00 = 113.7      135277 FALCONER    115.00 = 117.0
130807 WESTOVER115 115.00 = 117.5      130826 MEYER115    115.00 = 116.0      147849 MOS 115     115.00 = 118.6
147850 NIAG115E    115.00 = 117.2      147851 NIAG115W    115.00 = 117.8      130836 N.WAV115    115.00 = 113.3
```

130838 OAKDL115	115.00 =	117.4	147852 PLAT T#3	115.00 =	118.0	125043 PL.VAL 1	115.00 =	117.2
137235 PORTER 1	115.00 =	114.6	125046 ROCK TV1	115.00 =	116.7	137532 RTRDM1	115.00 =	114.0
125048 SHENANDO	115.00 =	117.6	149011 S82-1115	115.00 =	117.5	149008 RUS 115	115.00 =	114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	-0.0	-5.5	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	1.0	1.0	-0.2	1.0300	1.0183		5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	0.8	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2 0	2	2.4	29.8	38.6	-30.8	1.0300	1.0300		120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	33.4	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	34.6	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	38.6	38.6	-30.8	1.0300	1.0236		120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	34.6	38.6	-30.8	1.0300	1.0300		120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	38.6	38.6	0.0	1.0300	1.0234		120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	34.5	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147774	MOS31-32	13.800	2 0	2	114.0	34.5	38.6	-30.8	1.0200	1.0200		120.0	158	4	
147967	CLNTN_GE_1G	0.5750	1 0	2	55.0	0.8	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1 0	2	81.0	2.1	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	1.6	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1 0	2	100.0	33.0	33.0	33.0	1.0000	1.0313		215.2	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9107		46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	34.0	34.0	-34.0	0.9550	0.9404		57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9105		46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9677		57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	30.2	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180279	BHOA24	13.800	1 0	2	32.0	3.6	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1 0	2	36.0	3.6	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1 0	2	38.0	3.6	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	28.7	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	32.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS					1488.2	539.5	816.1	-499.2				2091.2			

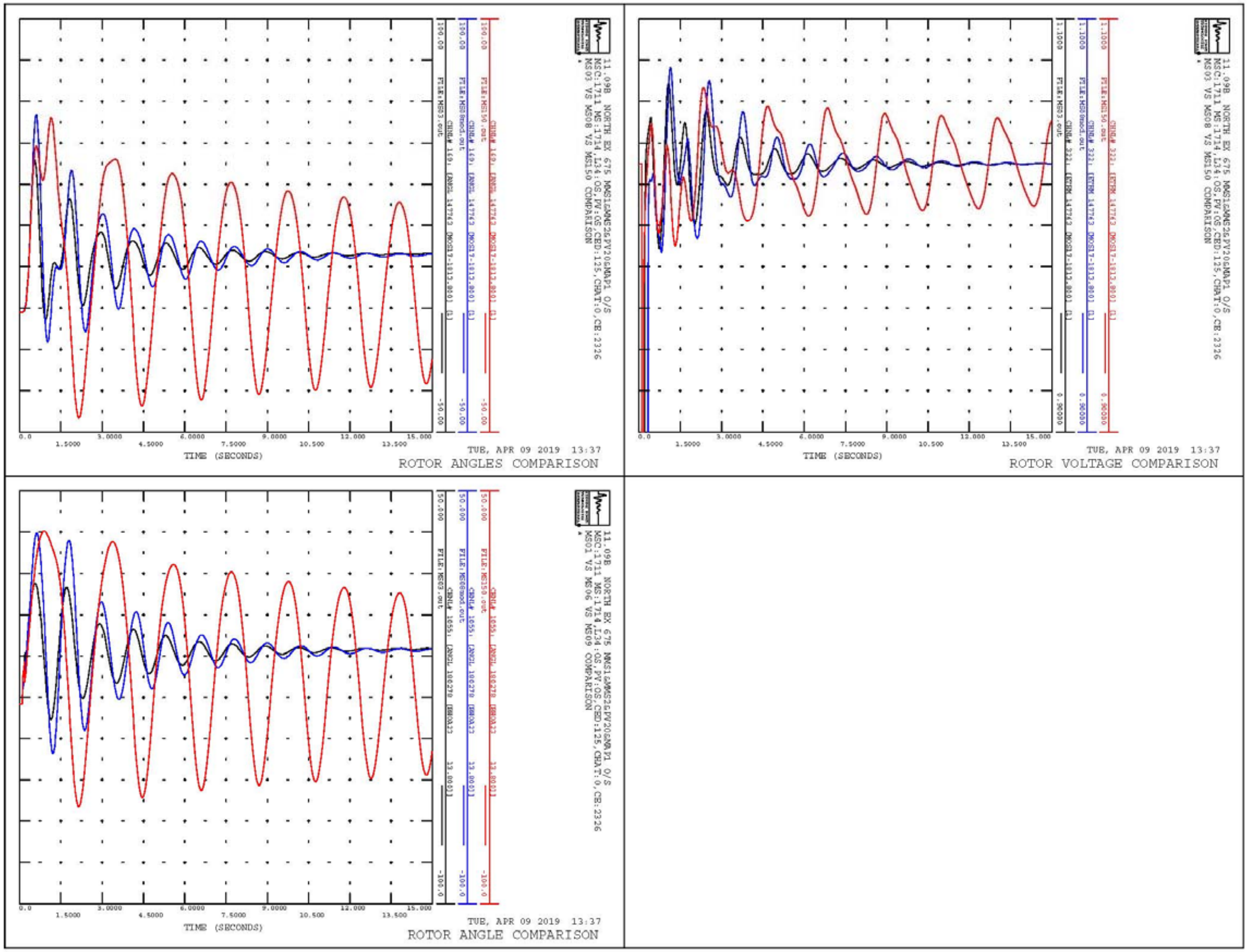

Fig D17 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

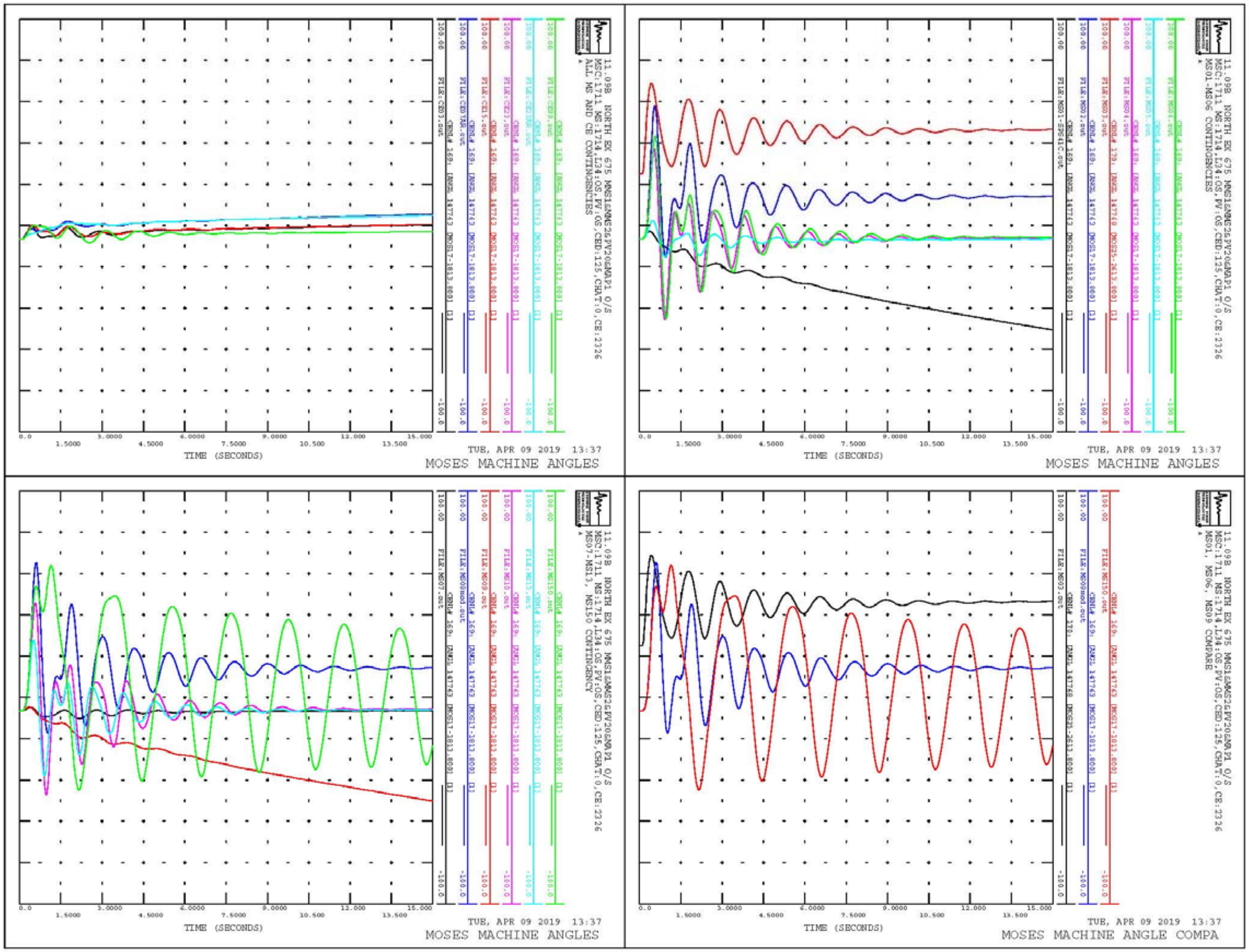

Fig D18 Comparative plots for Moses machine angle for all simulated contingencies

D.10 MMS1 & MMS2 & L33 & MAP1 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :11.10B   NORTH EX 900 MMS1&MMS2&MAP1&L33 O/S
       MSC:1935 MS:1735,L34:OS,PV:100,CED:125,CHAT:0,CE:2359
```

INTERFACE FLOW REPORT

DESCRIPTION	MW	MVAr	DESCRIPTION	MW	MVAr
DYSINGER-EAS	1885.8	16.3	DYSE-CLOSE	3193.8	238.0
WEST-CENTRAL	582.7	-143.6	WESTC-CLOSE	1890.6	78.2
VOLNEY-EAST	3033.7	53.7	VOLNEY-CLOSE	4256.0	249.3
MOSES-SOUTH	1735.8	-296.9	MOSES-CLOSE	1935.4	-301.7
CENTRAL-EAST	2358.4	-461.2	TOTAL-EAST	5322.3	-476.3
UPNY-SENY	4365.0	-37.9	UPNY-SENY-CL	5659.7	114.7
UPNY-CONED	4475.5	-79.6	UPNY-CON-CL	6600.8	-86.0
MILLWOOD-SO	7184.8	69.5	LIPA-IMPORT	2006.7	-162.2
DNWDIE-SO-PL	4456.3	-398.9	DNWDIE-SO-PC	6581.6	-405.3
DNWDIE-SO-OP	3541.2	-340.7	PJM-NY	1213.6	301.3
NE-NY-WCSC	-758.3	134.9	ON-NY	999.4	148.9
ONT-MICH-PAR	1.4	8.8	Northern Export	899.3	136.1

STATION VOLTAGES

126260 BOWLINE1 345.00 = 359.2	126261 BOWLINE2 345.00 = 359.1	126263 BUCHANAN S 345.00 = 355.6
136150 CLAY 345.00 = 359.1	130750 COOPC345 345.00 = 355.0	126266 DUNWOODIE 345.00 = 353.0
137200 EDIC 345.00 = 355.6	126277 FARRAGUT 345.00 = 350.0	130753 FRASR345 345.00 = 359.1
135413 GRDNVL2 230.00 = 231.9	147831 GILB 345 345.00 = 360.0	126283 GOTHLS 345.00 = 348.0
126286 GOW R16 345.00 = 347.1	126290 LADENTWN 345.00 = 358.2	137451 LEEDS 3 345.00 = 360.2
147833 MARCY T1 345.00 = 356.0	126291 MILLWOOD 345.00 = 353.4	137452 N.SCOT77 345.00 = 356.8
137453 N.SCOT99 345.00 = 356.8	147841 NIAGAR2E 230.00 = 231.7	147842 NIAGAR2W 230.00 = 231.7
147834 NIAG 345 345.00 = 357.7	129341 NRTHPRT1 138.00 = 142.4	130755 OAKDL345 345.00 = 355.5
149001 PANNELL3 345.00 = 347.1	126294 PLTVLLEY 345.00 = 354.3	126295 RAINEY 345.00 = 350.4
126600 REAC71 345.00 = 352.5	126601 REAC72 345.00 = 352.6	126297 RAMAPO 345.00 = 357.6
126250 RAMAPO 5 500.00 = 520.6	125001 ROCK TAV 345.00 = 356.9	125002 ROSETON 345.00 = 356.6
130754 SOMERSET345 345.00 = 358.7	126298 SPRAINBROOK 345.00 = 353.1	149000 ROCH 345 345.00 = 345.3
147840 MOSES W 230.00 = 228.8	130768 WATRC230 230.00 = 235.2	180819 CHA-NY 765.00 = 719.9*
147827 MARCY765 765.00 = 758.2	147828 MASS 765 765.00 = 739.8	126281 E FISHKILL 345.00 = 355.8
125000 HURLEY 3 345.00 = 358.9	128835 SHORE RD 345.00 = 353.7	136156 VOLNEY 345.00 = 367.0*
130757 WATRC345 345.00 = 360.6	135250 DUNKIRK 230.00 = 231.3	130764 MEYER230 230.00 = 227.6
130765 OAKDL230 230.00 = 235.2	137730 ROTRDM.2 230.00 = 231.8	181219 CHANY2 120.00 = 115.3
181119 CHANY1 120.00 = 115.3	137716 ALB1 115.00 = 117.6	130774 BATH 115 115.00 = 115.8
137488 BETHLEHE 115.00 = 117.9	130776 BORDR115 115.00 = 113.9	136181 CLAY 115.00 = 118.2
130794 DELHI115 115.00 = 114.7	130796 E.NOR115 115.00 = 113.9	135277 FALCONER 115.00 = 117.0
130807 WESTOVER115 115.00 = 117.9	130826 MEYER115 115.00 = 116.1	147849 MOS 115 115.00 = 116.2
147850 NIAG115E 115.00 = 117.2	147851 NIAG115W 115.00 = 117.8	130836 N.WAV115 115.00 = 113.6

130838	OAKDL115	115.00 = 117.9	147852	PLAT T#3	115.00 = 115.2	125043	PL.VAL 1	115.00 = 117.4
137235	PORTER 1	115.00 = 114.8	125046	ROCK TV1	115.00 = 116.9	137532	RTRDM1	115.00 = 114.0
125048	SHENANDO	115.00 = 117.7	149011	S82-1115	115.00 = 117.6	149008	RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	0.0	-2.1	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	1.0	1.0	-0.2	1.0300	1.0065		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.3	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	9.6	38.6	38.6	-30.8	1.0300	1.0176		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0141		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0121		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0041		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0121		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	38.6	38.6	0.0	1.0300	1.0039		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0200	1.0050		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0200	1.0050		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	97.0	18.7	22.9	-13.3	1.0500	1.0500		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	103.0	15.4	16.1	-17.6	1.0500	1.0500		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	55.0	11.3	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	81.0	15.1	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	4.4	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	125.0	33.0	33.0	33.0	1.0000	1.0044		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9182		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	34.0	34.0	-34.0	0.9550	0.9484		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9181		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9755		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	26.7	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180279	BHOA24	13.800	1	0	2	32.0	5.5	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1	0	2	36.0	5.5	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	38.0	5.4	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	31.3	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	32.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1720.4	638.4	855.1	-530.2				2318.3			

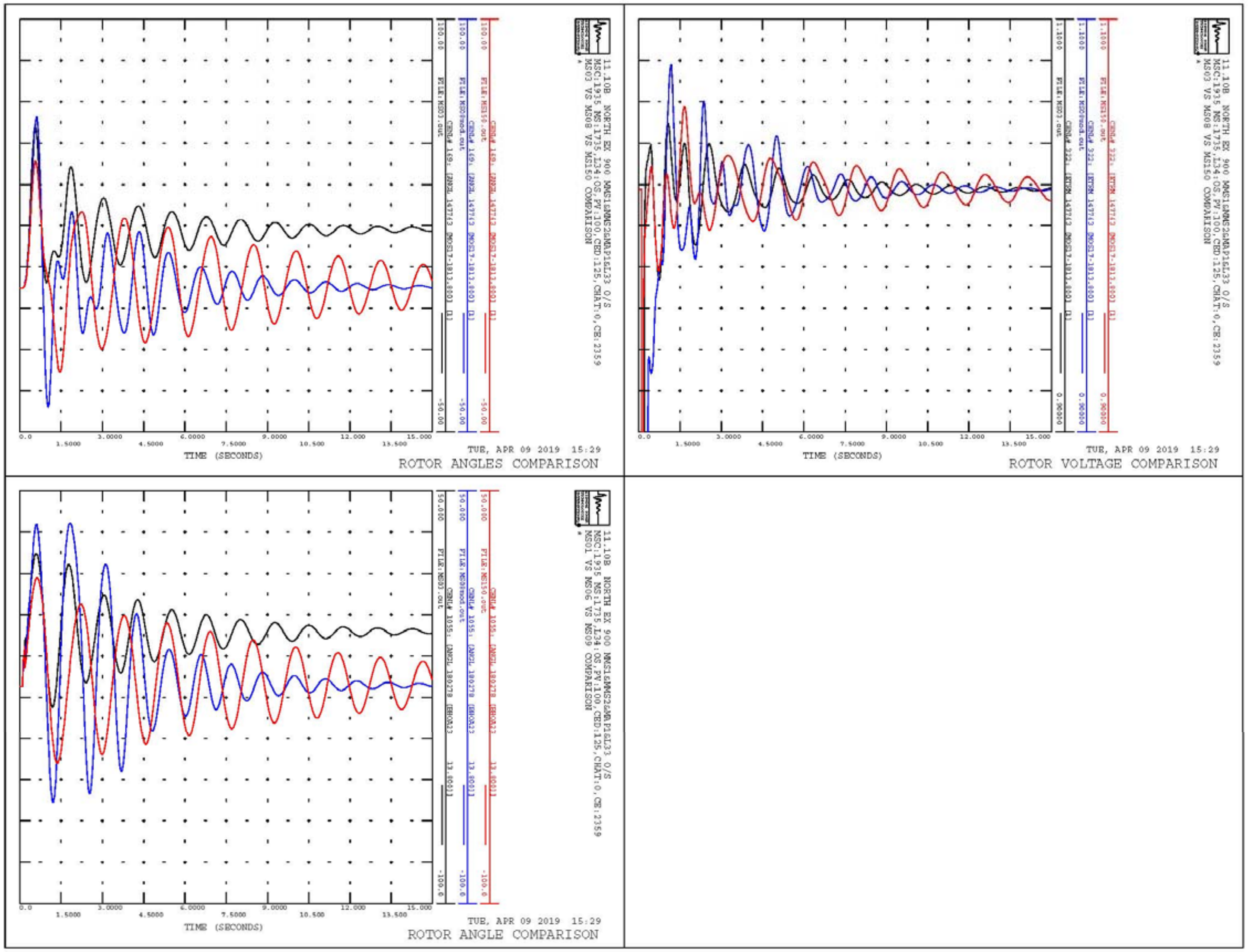

Fig D19 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

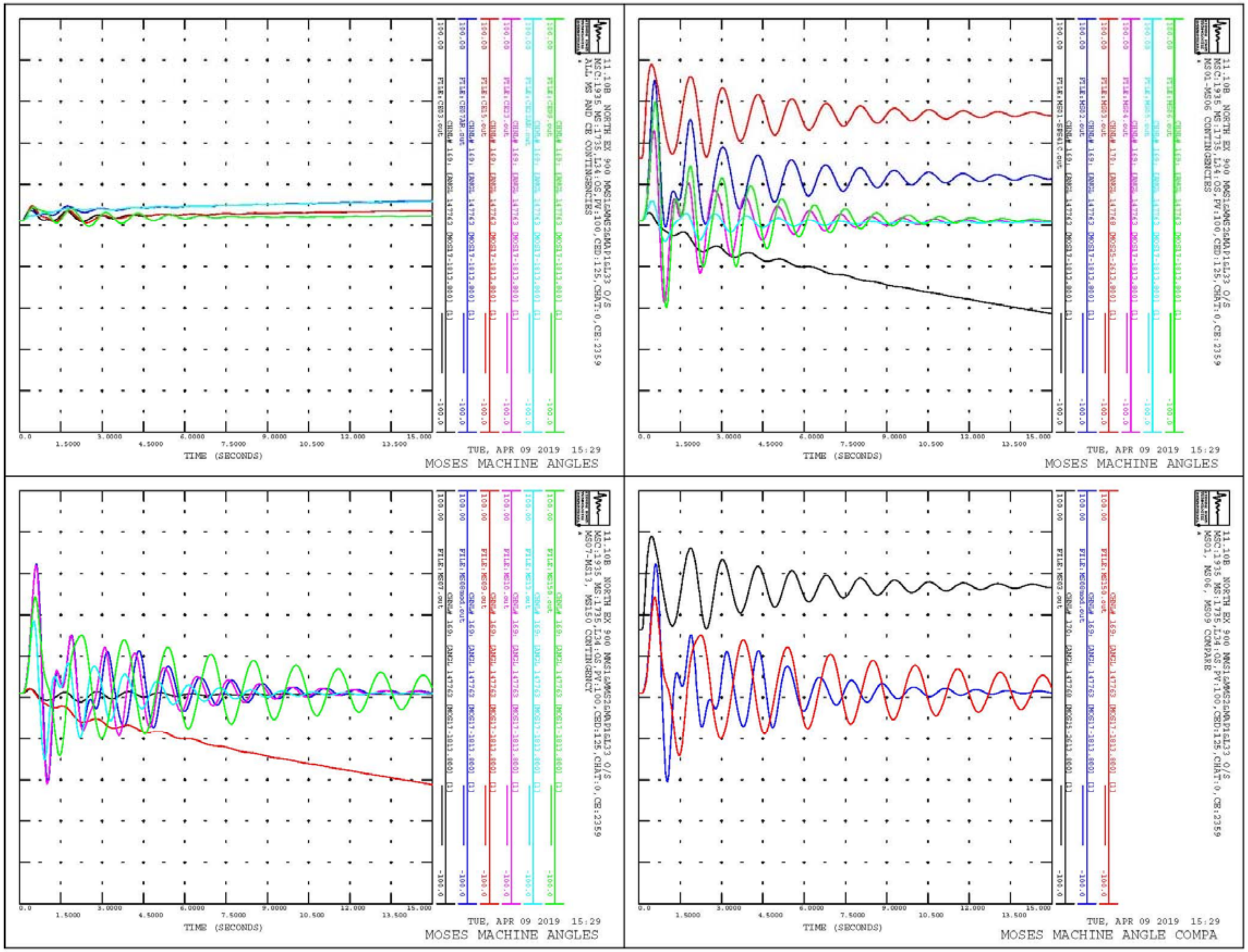

Fig D20 Comparative plots for Moses machine angle for all simulated contingencies

D.11 MMS1 & MMS2 & L33 & MAP1 & R8105 O/S:

Test Level Interface Power Flow Summary and Key Voltages

```
CASE :11.11B  NORTH EX 800 MMS1&MMS2&MAP1&L33&R8105 O/S
       MSC:1836 MS:1670,L34:OS,PV:100,CED:125,CHAT:0,CE:2348

                            INTERFACE FLOW REPORT

  DESCRIPTION          MW       MVAr     DESCRIPTION          MW       MVAr

 DYSINGER-EAS        1881.4      15.3  DYSE-CLOSE          3193.7     230.9
 WEST-CENTRAL         578.2    -143.3  WESTC-CLOSE         1890.5      72.3
 VOLNEY-EAST         3127.1       4.7  VOLNEY-CLOSE        4355.7     193.8
 MOSES-SOUTH         1670.1    -318.0  MOSES-CLOSE         1835.8    -318.7
 CENTRAL-EAST        2347.2    -457.3  TOTAL-EAST          5322.1    -472.0
 UPNY-SENY           4366.1     -36.7  UPNY-SENY-CL        5659.6     116.3
 UPNY-CONED          4476.7     -80.4  UPNY-CON-CL         6600.8     -86.7
 MILLWOOD-SO         7184.9      69.5  LIPA-IMPORT         2006.7    -162.3
 DNWDIE-SO-PL        4457.5    -399.6  DNWDIE-SO-PC        6581.6    -405.9
 DNWDIE-SO-OP        3542.1    -341.3  PJM-NY              1210.1     302.5
 NE-NY-WCSC          -758.3     137.3  ON-NY               1002.8     141.7
 ONT-MICH-PAR          -1.8       8.8  Northern Export      799.6     120.0

                             STATION VOLTAGES

 126260 BOWLINE1    345.00 = 359.2      126261 BOWLINE2    345.00 = 359.1      126263 BUCHANAN S  345.00 = 355.6
 136150 CLAY        345.00 = 359.2      130750 COOPC345    345.00 = 355.0      126266 DUNWOODIE   345.00 = 353.0
 137200 EDIC        345.00 = 355.9      126277 FARRAGUT    345.00 = 350.0      130753 FRASR345    345.00 = 359.1
 135413 GRDNVL2     230.00 = 231.9      147831 GILB 345    345.00 = 360.0      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16     345.00 = 347.1      126290 LADENTWN    345.00 = 358.1      137451 LEEDS 3     345.00 = 360.2
 147833 MARCY T1    345.00 = 356.3      126291 MILLWOOD    345.00 = 353.4      137452 N.SCOT77    345.00 = 356.8
 137453 N.SCOT99    345.00 = 356.8      147841 NIAGAR2E    230.00 = 231.7      147842 NIAGAR2W    230.00 = 231.7
 147834 NIAG 345    345.00 = 357.7      129341 NRTHPRT1    138.00 = 142.4      130755 OAKDL345    345.00 = 355.5
 149001 PANNELL3    345.00 = 347.2      126294 PLTVLLEY    345.00 = 354.3      126295 RAINEY      345.00 = 350.4
 126600 REAC71      345.00 = 352.5      126601 REAC72      345.00 = 352.5      126297 RAMAPO      345.00 = 357.6
 126250 RAMAPO 5    500.00 = 520.6      125001 ROCK TAV    345.00 = 356.9      125002 ROSETON     345.00 = 356.6
 130754 SOMERSET345 345.00 = 358.8      126298 SPRAINBROOK 345.00 = 353.1      149000 ROCH 345    345.00 = 345.3
 147840 MOSES W     230.00 = 229.9      130768 WATRC230    230.00 = 235.2      180819 CHA-NY      765.00 = 720.5*
 147827 MARCY765    765.00 = 758.8      147828 MASS 765    765.00 = 740.4      126281 E FISHKILL  345.00 = 355.7
 125000 HURLEY 3    345.00 = 358.9      128835 SHORE RD    345.00 = 353.6      136156 VOLNEY      345.00 = 367.0*
 130757 WATRC345    345.00 = 360.6      135250 DUNKIRK     230.00 = 231.3      130764 MEYER230    230.00 = 227.6
 130765 OAKDL230    230.00 = 235.2      137730 ROTRDM.2    230.00 = 232.2      181219 CHANY2      120.00 = 115.4
 181119 CHANY1      120.00 = 115.4      137716 ALB1        115.00 = 117.7      130774 BATH 115    115.00 = 115.8
 137488 BETHLEHE    115.00 = 117.9      130776 BORDR115    115.00 = 113.9      136181 CLAY        115.00 = 118.4
 130794 DELHI115    115.00 = 114.8      130796 E.NOR115    115.00 = 114.0      135277 FALCONER    115.00 = 117.0
 130807 WESTOVER115 115.00 = 117.9      130826 MEYER115    115.00 = 116.1      147849 MOS 115     115.00 = 116.5
 147850 NIAG115E    115.00 = 117.2      147851 NIAG115W    115.00 = 117.8      130836 N.WAV115    115.00 = 113.6
```

130838 OAKDL115	115.00 = 117.9	147852 PLAT T#3	115.00 = 116.0	125043 PL.VAL 1	115.00 = 117.4
137235 PORTER 1	115.00 = 115.4	125046 ROCK TV1	115.00 = 116.9	137532 RTRDM1	115.00 = 114.1
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF		TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS# X-- NAME --X BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1	0	2	0.0	-5.2	75.0	-15.0	1.0303	1.0303		90.0	175	4	
136795	PARISHVL	115.00	1	0	2	1.4	1.0	1.0	-0.2	1.0300	1.0285		5.0	175	4	
137166	CHASM HY	2.2000	3	0	2	2.0	1.0	3.2	-1.7	0.9700	0.9700		3.6	175	4	
147763	MOS17-18	13.800	2	0	2	10.8	38.6	38.6	-30.8	1.0300	1.0221		120.0	158	4	AREA
147765	MOS19-20	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0186		120.0	158	4	
147766	MOS21-22	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0167		120.0	158	4	
147768	MOS25-26	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0064		120.0	158	4	
147770	MOS23-24	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0300	1.0167		120.0	158	4	
147771	MOS27-28	13.800	2	0	2	114.0	38.6	38.6	0.0	1.0300	1.0062		120.0	158	4	
147772	MOS29-30	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0200	1.0073		120.0	158	4	
147774	MOS31-32	13.800	2	0	2	114.0	38.6	38.6	-30.8	1.0200	1.0073		120.0	158	4	
147808	ALTONA_GE_G1	0.5750	1	0	2	97.0	15.4	22.9	-13.3	1.0500	1.0500		108.6	158	4	
147855	CHATG_GE_G1	0.5750	1	0	2	103.0	13.2	16.1	-17.6	1.0500	1.0500		118.6	158	4	
147967	CLNTN_GE_1G	0.5750	1	0	2	55.0	9.4	18.0	-18.8	1.0500	1.0500		88.5	158	4	
147971	ELNBG_GE_1G	0.5750	1	0	2	81.0	12.7	22.2	-21.6	1.0500	1.0500		90.2	158	4	
147999	CLNTN2_GE_1G	0.5750	1	0	2	2.1	3.9	4.8	-5.0	1.0500	1.0500		23.4	158	4	
148706	MRBLRV1_8G	0.6500	1	0	2	25.0	33.0	33.0	33.0	1.0000	1.0103		215.2	158	4	
180256	BHEA01	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9187		46.6	1145	4	
180257	BHEA02	13.800	1	0	2	38.1	34.0	34.0	-34.0	0.9550	0.9489		57.0	1145	4	
180258	BHEA03	13.800	1	0	2	39.9	27.8	27.8	-27.8	0.9550	0.9186		46.6	1145	4	
180259	BHEA04	13.800	1	0	2	48.0	35.3	35.3	-15.4	1.0000	0.9760		57.0	1145	4	
180260	BHEA05	13.800	1	0	2	48.7	26.4	34.0	-34.0	0.9550	0.9550		57.0	1145	4	
180279	BHOA24	13.800	1	0	2	32.0	1.7	30.4	-13.3	1.0000	1.0000		57.0	1145	4	
180280	BHOA25	13.800	1	0	2	36.0	1.8	30.0	-13.1	1.0000	1.0000		57.0	1145	4	
180281	BHOA26	13.800	1	0	2	38.0	1.9	30.8	-13.5	1.0000	1.0000		57.0	1145	4	
180282	BHOA27	13.800	1	0	2	72.0	26.2	50.0	-25.0	1.0500	1.0500		90.0	1145	4	
180283	BHOA28	13.800	1	0	2	53.7	32.4	50.3	-50.3	1.0000	1.0000		90.0	1145	4	
SUBSYSTEM TOTALS						1621.6	608.3	855.1	-530.2				2318.3			

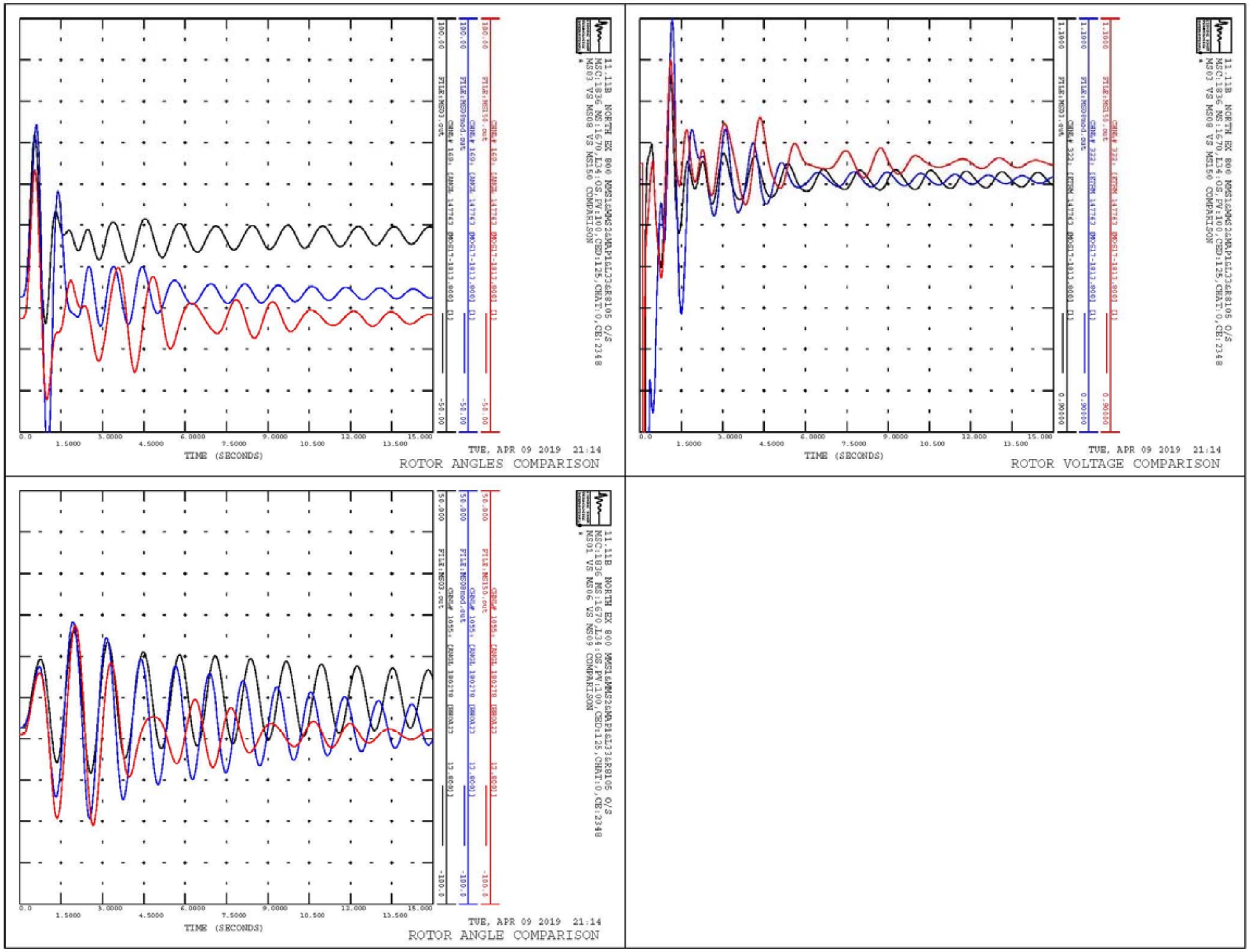

Fig D21 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

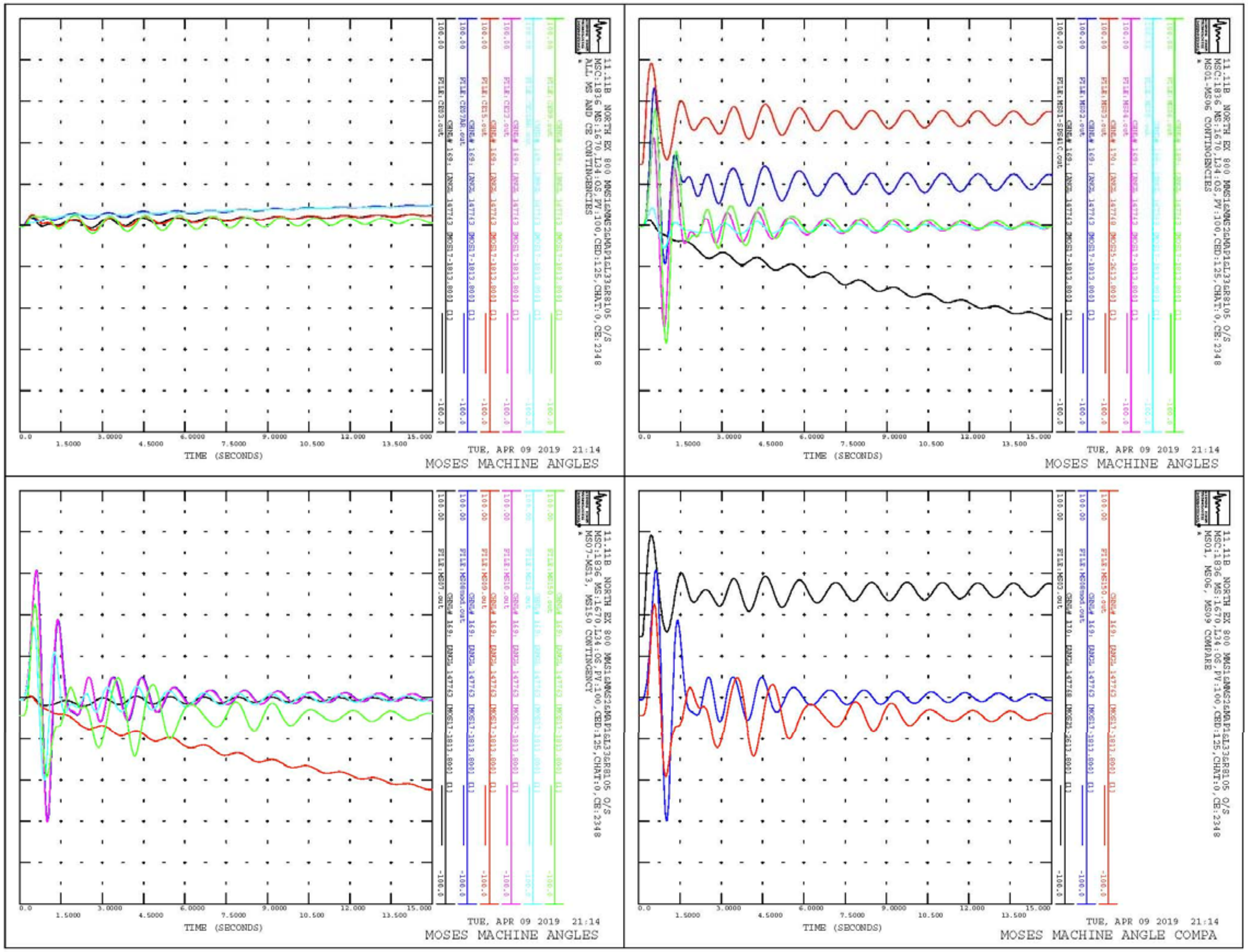

Fig D22 Comparative plots for Moses machine angle for all simulated contingencies

D.12 MMS1 & MMS2 & L33 & MAP1 & PV20 O/S:

Test Level Interface Power Flow Summary and Key Voltages

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CASE :11.12B  NORTH EX 500 MMS1&MMS2&MAP1&L33&PV20 O/S
       MSC:1535 MS:1535,L34:OS,PV:100,CED:125,CHAT:0,CE:2268

                            INTERFACE FLOW REPORT

   DESCRIPTION          MW       MVAr     DESCRIPTION         MW       MVAr

 DYSINGER-EAS         1880.7      21.6  DYSE-CLOSE          3193.2     239.2
 WEST-CENTRAL          577.6    -131.1  WESTC-CLOSE         1890.0      86.4
 VOLNEY-EAST          3442.5     -35.9  VOLNEY-CLOSE        4666.6     145.7
 MOSES-SOUTH          1535.0    -426.5  MOSES-CLOSE         1535.5    -411.7
 CENTRAL-EAST         2268.0    -458.9  TOTAL-EAST          5321.8    -512.5
 UPNY-SENY            4365.3     -61.2  UPNY-SENY-CL        5659.1      96.1
 UPNY-CONED           4475.5     -96.0  UPNY-CON-CL         6600.0    -103.2
 MILLWOOD-SO          7186.7      64.6  LIPA-IMPORT         2006.7    -165.0
 DNWDIE-SO-PL         4457.0    -408.3  DNWDIE-SO-PC        6581.5    -415.5
 DNWDIE-SO-OP         3541.8    -347.0  PJM-NY              1211.3     320.3
 NE-NY-WCSC           -758.3     151.9  ON-NY               1001.0     129.2
 ONT-MICH-PAR           -0.2      -5.0  Northern Export      499.6      49.4

                             STATION VOLTAGES

 126260 BOWLINE1     345.00 = 359.2      126261 BOWLINE2     345.00 = 359.1      126263 BUCHANAN S  345.00 = 355.6
 136150 CLAY         345.00 = 359.2      130750 COOPC345     345.00 = 355.0      126266 DUNWOODIE   345.00 = 353.0
 137200 EDIC         345.00 = 355.9      126277 FARRAGUT     345.00 = 350.0      130753 FRASR345    345.00 = 359.1
 135413 GRDNVL2      230.00 = 231.9      147831 GILB 345     345.00 = 360.0      126283 GOTHLS      345.00 = 348.0
 126286 GOW R16      345.00 = 347.1      126290 LADENTWN     345.00 = 358.1      137451 LEEDS 3     345.00 = 360.2
 147833 MARCY T1     345.00 = 356.3      126291 MILLWOOD     345.00 = 353.4      137452 N.SCOT77    345.00 = 356.8
 137453 N.SCOT99     345.00 = 356.8      147841 NIAGAR2E     230.00 = 231.7      147842 NIAGAR2W    230.00 = 231.7
 147834 NIAG 345     345.00 = 357.7      129341 NRTHPRT1     138.00 = 142.4      130755 OAKDL345    345.00 = 355.5
 149001 PANNELL3     345.00 = 347.2      126294 PLTVLLEY     345.00 = 354.3      126295 RAINEY      345.00 = 350.4
 126600 REAC71       345.00 = 352.5      126601 REAC72       345.00 = 352.5      126297 RAMAPO      345.00 = 357.6
 126250 RAMAPO 5     500.00 = 520.6      125001 ROCK TAV     345.00 = 356.9      125002 ROSETON     345.00 = 356.6
 130754 SOMERSET345 345.00 = 358.8      126298 SPRAINBROOK 345.00 = 353.1      149000 ROCH 345    345.00 = 345.3
 147840 MOSES W      230.00 = 229.9      130768 WATRC230     230.00 = 235.2      180819 CHA-NY      765.00 = 720.5*
 147827 MARCY765     765.00 = 758.8      147828 MASS 765     765.00 = 740.4      126281 E FISHKILL  345.00 = 355.7
 125000 HURLEY 3     345.00 = 358.9      128835 SHORE RD     345.00 = 353.6      136156 VOLNEY      345.00 = 367.0*
 130757 WATRC345     345.00 = 360.6      135250 DUNKIRK      230.00 = 231.3      130764 MEYER230    230.00 = 227.6
 130765 OAKDL230     230.00 = 235.2      137730 ROTRDM.2     230.00 = 232.2      181219 CHANY2      120.00 = 115.4
 181119 CHANY1       120.00 = 115.4      137716 ALB1         115.00 = 117.7      130774 BATH 115    115.00 = 115.8
 137488 BETHLEHE     115.00 = 117.9      130776 BORDR115     115.00 = 113.9      136181 CLAY        115.00 = 118.4
 130794 DELHI115     115.00 = 114.8      130796 E.NOR115     115.00 = 114.0      135277 FALCONER    115.00 = 117.0
 130807 WESTOVER115 115.00 = 117.9      130826 MEYER115     115.00 = 116.1      147849 MOS 115     115.00 = 116.5
 147850 NIAG115E     115.00 = 117.2      147851 NIAG115W     115.00 = 117.8      130836 N.WAV115    115.00 = 113.6
```

130838 OAKDL115	115.00 = 117.9	147852 PLAT T#3	115.00 = 116.0	125043 PL.VAL 1	115.00 = 117.4
137235 PORTER 1	115.00 = 115.4	125046 ROCK TV1	115.00 = 116.9	137532 RTRDM1	115.00 = 114.1
125048 SHENANDO	115.00 = 117.7	149011 S82-1115	115.00 = 117.6	149008 RUS 115	115.00 = 114.6

Zone D Generation Profile:

BUS#	X-- NAME --X	BASKV	ON/OFF	TYP	MW	MVAR	QMAX	QMIN	VSCHED	VACTUAL	BUS#	X-- NAME --X	BASKV	MVABASE	ZONE	AREA	SWING
136777	LK COLBY	115.00	1 0	2	-0.0	-8.7	75.0	-15.0	1.0303	1.0303				90.0	175	4	
136795	PARISHVL	115.00	1 0	2	1.4	-0.2	1.0	-0.2	1.0300	1.0347				5.0	175	4	
137166	CHASM HY	2.2000	3 0	2	2.0	0.7	3.2	-1.7	0.9700	0.9700				3.6	175	4	
147763	MOS17-18	13.800	2 0	2	110.6	25.0	38.6	-30.8	1.0300	1.0300				120.0	158	4	AREA
147765	MOS19-20	13.800	2 0	2	114.0	25.2	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147766	MOS21-22	13.800	2 0	2	114.0	25.0	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147768	MOS25-26	13.800	2 0	2	114.0	35.5	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147770	MOS23-24	13.800	2 0	2	114.0	25.0	38.6	-30.8	1.0300	1.0300				120.0	158	4	
147771	MOS27-28	13.800	2 0	2	114.0	35.7	38.6	0.0	1.0300	1.0300				120.0	158	4	
147772	MOS29-30	13.800	2 0	2	114.0	25.3	38.6	-30.8	1.0200	1.0200				120.0	158	4	
147774	MOS31-32	13.800	2 0	2	64.0	22.3	38.6	-30.8	1.0200	1.0200				120.0	158	4	
147999	CLNTN2_GE_1G	0.5750	1 0	2	2.1	2.5	4.8	-5.0	1.0500	1.0500				23.4	158	4	
180256	BHEA01	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9087				46.6	1145	4	
180257	BHEA02	13.800	1 0	2	38.1	34.0	34.0	-34.0	0.9550	0.9383				57.0	1145	4	
180258	BHEA03	13.800	1 0	2	39.9	27.8	27.8	-27.8	0.9550	0.9085				46.6	1145	4	
180259	BHEA04	13.800	1 0	2	48.0	35.3	35.3	-15.4	1.0000	0.9656				57.0	1145	4	
180260	BHEA05	13.800	1 0	2	48.7	31.1	34.0	-34.0	0.9550	0.9550				57.0	1145	4	
180279	BHOA24	13.800	1 0	2	32.0	2.1	30.4	-13.3	1.0000	1.0000				57.0	1145	4	
180280	BHOA25	13.800	1 0	2	36.0	2.1	30.0	-13.1	1.0000	1.0000				57.0	1145	4	
180281	BHOA26	13.800	1 0	2	38.0	2.2	30.8	-13.5	1.0000	1.0000				57.0	1145	4	
180282	BHOA27	13.800	1 0	2	72.0	26.7	50.0	-25.0	1.0500	1.0500				90.0	1145	4	
180283	BHOA28	13.800	1 0	2	53.7	32.4	50.3	-50.3	1.0000	1.0000				90.0	1145	4	
SUBSYSTEM TOTALS					1310.4	434.9	742.9	-491.8						1697.2			

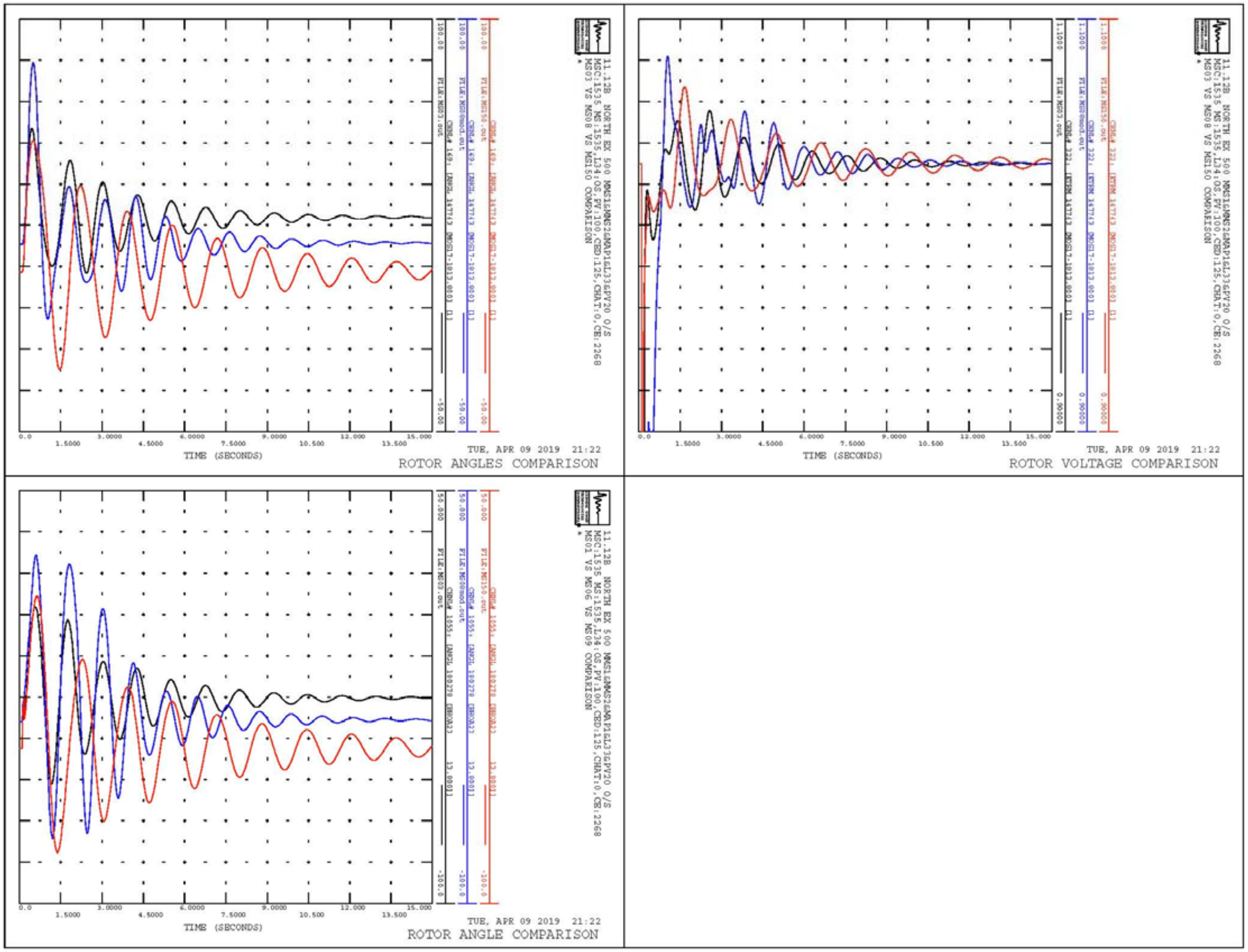

Fig D23 Comparative plots for Moses machine angle, voltage, Beaurhanois machine angle for MS03, MS08 and MS150 contingencies

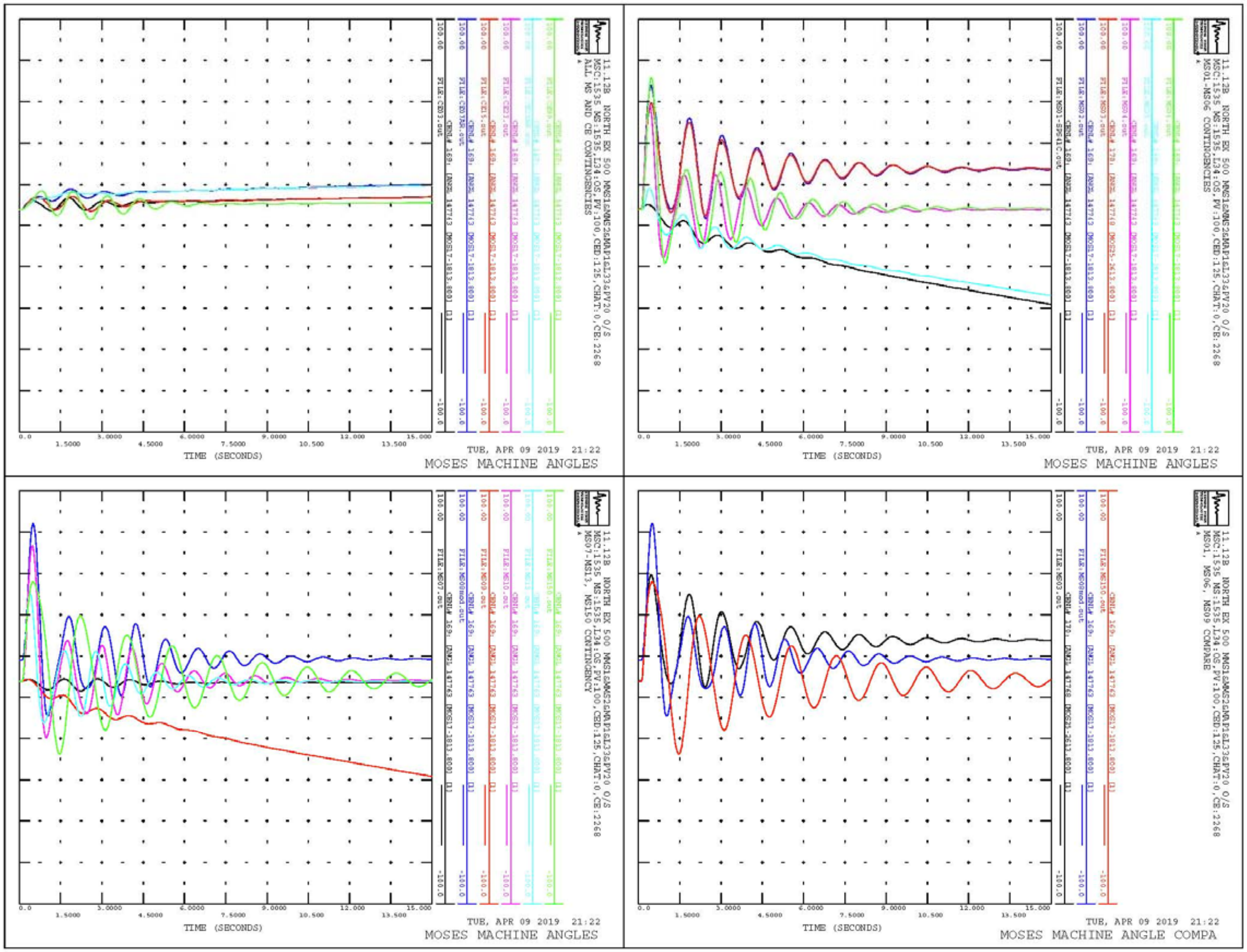

Fig D24 Comparative plots for Moses machine angle for all simulated contingencies