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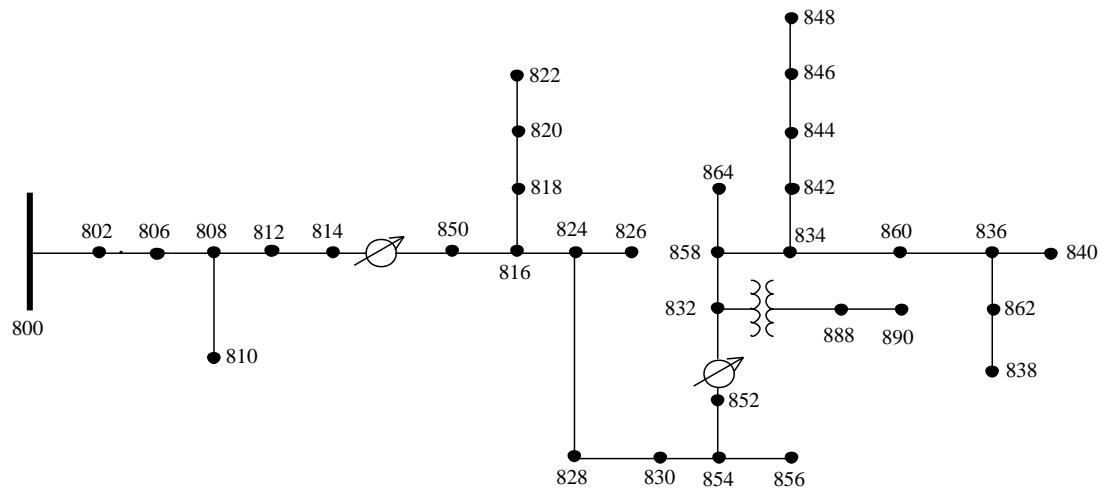
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Distribution System Analysis Subcommittee

IEEE 34 Node Test Feeder



IEEE 34 Node Test Feeder



Overhead Line Configurations (Config.)

Config.	Phasing	Phase ACSR	Neutral ACSR	Spacing ID
300	B A C N	1/0	1/0	500
301	B A C N	#2 6/1	#2 6/1	500
302	A N	#4 6/1	#4 6/1	510
303	B N	#4 6/1	#4 6/1	510
304	B N	#2 6/1	#2 6/1	510

Line Segment Data

Node A	Node B	Length(ft.)	Config.
800	802	2580	300
802	806	1730	300
806	808	32230	300
808	810	5804	303
808	812	37500	300
812	814	29730	300
814	850	10	301
816	818	1710	302
816	824	10210	301
818	820	48150	302
820	822	13740	302
824	826	3030	303
824	828	840	301
828	830	20440	301
830	854	520	301
832	858	4900	301
832	888	0	XFM-1
834	860	2020	301
834	842	280	301
836	840	860	301
836	862	280	301
842	844	1350	301
844	846	3640	301
846	848	530	301
850	816	310	301
852	832	10	301
854	856	23330	303
854	852	36830	301
858	864	1620	302
858	834	5830	301
860	836	2680	301
862	838	4860	304
888	890	10560	300



Transformer Data

	kVA	kV-high	kV-low	R - %	X - %
Substation:	2500	69 - D	24.9 - Gr. W	1	8
XFM -1	500	24.9 - Gr.W	4.16 - Gr. W	1.9	4.08

Spot Loads

Node	Load	Ph-1	Ph-1	Ph-2	Ph-2	Ph-3	Ph-4
	Model	kW	kVAr	kW	kVAr	kW	kVAr
860	Y-PQ	20	16	20	16	20	16
840	Y-I	9	7	9	7	9	7
844	Y-Z	135	105	135	105	135	105
848	D-PQ	20	16	20	16	20	16
890	D-I	150	75	150	75	150	75
830	D-Z	10	5	10	5	25	10
Total		344	224	344	224	359	229

Distributed Loads

Node	Node	Load	Ph-1	Ph-1	Ph-2	Ph-2	Ph-3	Ph-3
A	B	Model	kW	kVAr	kW	kVAr	kW	kVAr
802	806	Y-PQ	0	0	30	15	25	14
808	810	Y-I	0	0	16	8	0	0
818	820	Y-Z	34	17	0	0	0	0
820	822	Y-PQ	135	70	0	0	0	0
816	824	D-I	0	0	5	2	0	0
824	826	Y-I	0	0	40	20	0	0
824	828	Y-PQ	0	0	0	0	4	2
828	830	Y-PQ	7	3	0	0	0	0
854	856	Y-PQ	0	0	4	2	0	0
832	858	D-Z	7	3	2	1	6	3
858	864	Y-PQ	2	1	0	0	0	0
858	834	D-PQ	4	2	15	8	13	7
834	860	D-Z	16	8	20	10	110	55
860	836	D-PQ	30	15	10	6	42	22
836	840	D-I	18	9	22	11	0	0
862	838	Y-PQ	0	0	28	14	0	0
842	844	Y-PQ	9	5	0	0	0	0
844	846	Y-PQ	0	0	25	12	20	11
846	848	Y-PQ	0	0	23	11	0	0
Total			262	133	240	120	220	114



Shunt Capacitors

Node	Ph-A	Ph-B	Ph-C
	kVAr	kVAr	kVAr
844	100	100	100
848	150	150	150
Total	250	250	250

Regulator Data

Regulator ID:	1		
Line Segment:	814 - 850		
Location:	814		
Phases:	A - B -C		
Connection:	3-Ph,LG		
Monitoring Phase:	A-B-C		
Bandwidth:	2.0 volts		
PT Ratio:	120		
Primary CT Rating:	100		
Compensator Settings:	Ph-A	Ph-B	Ph-C
R - Setting:	2.7	2.7	2.7
X - Setting:	1.6	1.6	1.6
Voltage Level:	122	122	122

Regulator ID:	2		
Line Segment:	852 - 832		
Location:	852		
Phases:	A - B -C		
Connection:	3-Ph,LG		
Monitoring Phase:	A-B-C		
Bandwidth:	2.0 volts		
PT Ratio:	120		
Primary CT Rating:	100		
Compensator Settings:	Ph-A	Ph-B	Ph-C
R - Setting:	2.5	2.5	2.5
X - Setting:	1.5	1.5	1.5
Voltage Level:	124	124	124



IEEE 34 Node Test Feeder

Impedances

Configuration 300:

----- Z & B Matrices Before Changes -----

Z (R +jX) in ohms per mile
 1.3368 1.3343 0.2101 0.5779 0.2130 0.5015
 1.3238 1.3569 0.2066 0.4591
 1.3294 1.3471
 B in micro Siemens per mile
 5.3350 -1.5313 -0.9943
 5.0979 -0.6212
 4.8880

Configuration 301:

Z (R +jX) in ohms per mile
 1.9300 1.4115 0.2327 0.6442 0.2359 0.5691
 1.9157 1.4281 0.2288 0.5238
 1.9219 1.4209
 B in micro Siemens per mile
 5.1207 -1.4364 -0.9402
 4.9055 -0.5951
 4.7154

Configuration 302:

Z (R +jX) in ohms per mile
 2.7995 1.4855 0.0000 0.0000 0.0000 0.0000
 0.0000 0.0000 0.0000 0.0000
 0.0000 0.0000
 B in micro Siemens per mile
 4.2251 0.0000 0.0000
 0.0000 0.0000
 0.0000

Configuration 303:

Z (R +jX) in ohms per mile
 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 2.7995 1.4855 0.0000 0.0000
 0.0000 0.0000
 B in micro Siemens per mile
 0.0000 0.0000 0.0000
 4.2251 0.0000
 0.0000

Configuration 304:

Z (R +jX) in ohms per mile
 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 1.9217 1.4212 0.0000 0.0000
 0.0000 0.0000
 B in micro Siemens per mile
 0.0000 0.0000 0.0000
 4.3637 0.0000
 0.0000



Power Flow Results

- R A D I A L F L O W S U M M A R Y - DATE: 6-24-2004 AT 16:34:11 HOURS --

SUBSTATION: IEEE 34; FEEDER: IEEE 34

SYSTEM	PHASE		PHASE		PHASE		TOTAL	
INPUT	(A)		(B)		(C)			
kW :	759.136		666.663		617.072		2042.872	
kVAr :	171.727		90.137		28.394		290.258	
kVA :	778.318		672.729		617.725		2063.389	
PF :	.9754		.9910		.9989		.9901	
LOAD	(A-N)	(A-B)	(B-N)	(B-C)	(C-N)	(C-A)	WYE	DELTA
kW :	359.9	246.4	339.3	243.3	221.8	359.0	921.0	848.8
TOT :	606.322		582.662		580.840		1769.824	
kVAr :	230.9	128.7	216.9	128.7	161.8	184.6	609.6	441.9
TOT :	359.531		345.609		346.407		1051.547	
kVA :	427.6	278.0	402.7	275.3	274.6	403.7	1104.5	957.0
TOT :	704.903		677.452		676.293		2058.647	
PF :	.8417	.8864	.8425	.8840	.8078	.8894	.8339	.8870
TOT :	.8601		.8601		.8589		.8597	
LOSSES	(A)		(B)		(C)			
kW :	114.836		80.389		77.824		273.049	
kVAr :	14.200		10.989		9.810		34.999	
kVA :	115.711		81.137		78.440		275.283	
CAPAC	(A-N)	(A-B)	(B-N)	(B-C)	(C-N)	(C-A)	WYE	DELTA
R-kVA:	250.0	.0	250.0	.0	250.0	.0	750.0	.0
TOT :	250.000		250.000		250.000		750.000	
A-kVA:	265.7	.0	264.8	.0	265.9	.0	796.3	.0
TOT :	265.658		264.760		265.869		796.287	



--- **V O L T A G E P R O F I L E** ---- DATE: 6-24-2004 AT 16:34:18 HOURS ----
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

NODE	MAG	ANGLE	MAG	ANGLE	MAG	ANGLE	mi.to SR
	A-N		B-N		C-N		
800	1.0500	at .00	1.0500	at -120.00	1.0500	at 120.00	.000
802	1.0475	at -.05	1.0484	at -120.07	1.0484	at 119.95	.489
806	1.0457	at -.08	1.0474	at -120.11	1.0474	at 119.92	.816
808	1.0136	at -.75	1.0296	at -120.95	1.0289	at 119.30	6.920
810			1.0294	at -120.95			8.020
812	.9763	at -1.57	1.0100	at -121.92	1.0069	at 118.59	14.023
814	.9467	at -2.26	.9945	at -122.70	.9893	at 118.01	19.653
RG10	1.0177	at -2.26	1.0255	at -122.70	1.0203	at 118.01	19.654
850	1.0176	at -2.26	1.0255	at -122.70	1.0203	at 118.01	19.655
816	1.0172	at -2.26	1.0253	at -122.71	1.0200	at 118.01	19.714
818	1.0163	at -2.27					20.038
820	.9926	at -2.32					29.157
822	.9895	at -2.33					31.760
824	1.0082	at -2.37	1.0158	at -122.94	1.0116	at 117.76	21.648
826			1.0156	at -122.94			22.222
828	1.0074	at -2.38	1.0151	at -122.95	1.0109	at 117.75	21.807
830	.9894	at -2.63	.9982	at -123.39	.9938	at 117.25	25.678
854	.9890	at -2.64	.9978	at -123.40	.9934	at 117.24	25.777
852	.9581	at -3.11	.9680	at -124.18	.9637	at 116.33	32.752
RG11	1.0359	at -3.11	1.0345	at -124.18	1.0360	at 116.33	32.752
832	1.0359	at -3.11	1.0345	at -124.18	1.0360	at 116.33	32.754
858	1.0336	at -3.17	1.0322	at -124.28	1.0338	at 116.22	33.682
834	1.0309	at -3.24	1.0295	at -124.39	1.0313	at 116.09	34.786
842	1.0309	at -3.25	1.0294	at -124.39	1.0313	at 116.09	34.839
844	1.0307	at -3.27	1.0291	at -124.42	1.0311	at 116.06	35.095
846	1.0309	at -3.32	1.0291	at -124.46	1.0313	at 116.01	35.784
848	1.0310	at -3.32	1.0291	at -124.47	1.0314	at 116.00	35.885
860	1.0305	at -3.24	1.0291	at -124.39	1.0310	at 116.09	35.169
836	1.0303	at -3.23	1.0287	at -124.39	1.0308	at 116.09	35.677
840	1.0303	at -3.23	1.0287	at -124.39	1.0308	at 116.09	35.839
862	1.0303	at -3.23	1.0287	at -124.39	1.0308	at 116.09	35.730
838			1.0285	at -124.39			36.650
864	1.0336	at -3.17					33.989
XF10	.9997	at -4.63	.9983	at -125.73	1.0000	at 114.82	32.754
888	.9996	at -4.64	.9983	at -125.73	1.0000	at 114.82	32.754
890	.9167	at -5.19	.9235	at -126.78	.9177	at 113.98	34.754
856			.9977	at -123.41			30.195

----- **V O L T A G E R E G U L A T O R D A T A** ---- DATE: 6-24-2004 AT 16:34:22 HOURS --
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

[NODE]	--[VREG]	-----[SEG]	-----[NODE]	MODEL	OPT	BNDW
814	RG10	850	850	Phase A & B & C, Wye	RX	2.00
.....						
	PHASE	LDCTR	VOLT HOLD	R-VOLT	X-VOLT	PT RATIO CT RATE TAP
	1		122.000	2.700	1.600	120.00 100.00 12
	2		122.000	2.700	1.600	120.00 100.00 5
	3		122.000	2.700	1.600	120.00 100.00 5
.....						
[NODE]	--[VREG]	-----[SEG]	-----[NODE]	MODEL	OPT	BNDW
852	RG11	832	832	Phase A & B & C, Wye	RX	2.00
.....						
	PHASE	LDCTR	VOLT HOLD	R-VOLT	X-VOLT	PT RATIO CT RATE TAP
	1		124.000	2.500	1.500	120.00 100.00 13
	2		124.000	2.500	1.500	120.00 100.00 11
	3		124.000	2.500	1.500	120.00 100.00 12



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:34:32 HOURS ---
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 800	VOLTS:	1.050	.00	1.050 -120.00	1.050 120.00 MAG/ANG
kv11 24.900		NO LOAD OR CAPACITOR REPRESENTED AT SOURCE NODE			
TO NODE 802	.....:	51.56	-12.74	44.57 -127.70	40.92 117.37 AMP/DG
<802 > LOSS=	3.472:	(1.637)		(.978)	(.858) kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 802	VOLTS:	1.047	-.05	1.048 -120.07	1.048 119.95 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 .00 kW/kVR
kv11 24.900	CAP:	.00	.00	.00	.00 kVR
FROM NODE 800	.....:	51.58	-12.80	44.57 -127.76	40.93 117.31 AMP/DG
<802 > LOSS=	3.472:	(1.637)		(.978)	(.858) kW
TO NODE 806	.....:	51.58	-12.80	44.57 -127.76	40.93 117.31 AMP/DG
<806 > LOSS=	2.272:	(1.102)		(.618)	(.552) kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 806	VOLTS:	1.046	-.08	1.047 -120.11	1.047 119.92 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 .00 kW/kVR
kv11 24.900	CAP:	.00	.00	.00	.00 kVR
FROM NODE 802	.....:	51.59	-12.83	42.47 -126.83	39.24 118.52 AMP/DG
<806 > LOSS=	2.272:	(1.102)		(.618)	(.552) kW
TO NODE 808	.....:	51.59	-12.83	42.47 -126.83	39.24 118.52 AMP/DG
<808 > LOSS=	41.339:	(20.677)		(10.780)	(9.882) kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 808	VOLTS:	1.014	-.75	1.030 -120.95	1.029 119.30 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 .00 kW/kVR
kv11 24.900	CAP:	.00	.00	.00	.00 kVR
FROM NODE 806	.....:	51.76	-13.47	42.46 -127.59	39.28 117.76 AMP/DG
<808 > LOSS=	41.339:	(20.677)		(10.780)	(9.882) kW
TO NODE 810	.....:			1.22 -144.62	AMP/DG
<810 > LOSS=	.002:			(.002)	kW
TO NODE 812	.....:	51.76	-13.47	41.30 -127.10	39.28 117.76 AMP/DG
<812 > LOSS=	47.531:	(24.126)		(11.644)	(11.761) kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 810	VOLTS:			1.029 -120.95	MAG/ANG
	-LD:			.00 .00	kW/kVR
kv11 24.900	CAP:			.00	kVR
FROM NODE 808	.....:			.00 .00	AMP/DG
<810 > LOSS=	.002:			(.002)	kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:34:32 HOURS ---
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%	
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: 812		VOLTS:	.976	-1.57	1.010	-121.92	1.007	118.59	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 808			.....:	51.95	-14.18	41.29	-127.99	39.33	116.90	AMP/DG
<812 > LOSS=			47.531:	(24.126)		(11.644)		(11.761)		kW
TO NODE 814			.....:	51.95	-14.18	41.29	-127.99	39.33	116.90	AMP/DG
<814 > LOSS=			37.790:	(19.245)		(9.140)		(9.404)		kW
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: 814		VOLTS:	.947	-2.26	.994	-122.70	.989	118.01	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 812			.....:	52.10	-14.73	41.29	-128.69	39.37	116.23	AMP/DG
<814 > LOSS=			37.790:	(19.245)		(9.140)		(9.404)		kW
TO NODE RG10			<VRG>..:	52.10	-14.73	41.29	-128.69	39.37	116.23	AMP/DG
<RG10 > LOSS=			.000:	(.000)		(.000)		(.000)		kW
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: RG10		VOLTS:	1.018	-2.26	1.026	-122.70	1.020	118.01	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 814			<VRG>:	48.47	-14.73	40.04	-128.69	38.17	116.23	AMP/DG
<RG10 > LOSS=			.000:	(.000)		(.000)		(.000)		kW
TO NODE 850			.....:	48.47	-14.73	40.04	-128.69	38.17	116.23	AMP/DG
<850 > LOSS=			.017:	(.008)		(.005)		(.005)		kW
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: 850		VOLTS:	1.018	-2.26	1.026	-122.70	1.020	118.01	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE RG10			.....:	48.47	-14.73	40.04	-128.69	38.17	116.23	AMP/DG
<850 > LOSS=			.017:	(.008)		(.005)		(.005)		kW
TO NODE 816			.....:	48.47	-14.73	40.04	-128.69	38.17	116.23	AMP/DG
<816 > LOSS=			.538:	(.254)		(.145)		(.139)		kW
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: 816		VOLTS:	1.017	-2.26	1.025	-122.71	1.020	118.01	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 850			.....:	48.47	-14.74	40.04	-128.70	38.17	116.23	AMP/DG
<816 > LOSS=			.538:	(.254)		(.145)		(.139)		kW
TO NODE 818			.....:	13.02	-26.69					AMP/DG
<818 > LOSS=			.154:	(.154)						kW
TO NODE 824			.....:	35.83	-10.42	40.04	-128.70	38.17	116.23	AMP/DG
<824 > LOSS=			14.181:	(4.312)		(5.444)		(4.425)		kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:34:32 HOURS ---
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 818	VOLTS:	1.016	-2.27		MAG/ANG
	-LD:	.00	.00		kW/kVR
kV11 24.900	CAP:		.00		kVR
FROM NODE 816	.....	13.03	-26.77		AMP/DG
<818 > LOSS=	.154:	(.154)			kW
TO NODE 820	.....	13.03	-26.77		AMP/DG
<820 > LOSS=	3.614:	(3.614)			kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 820	VOLTS:	.993	-2.32		MAG/ANG
	-LD:	.00	.00		kW/kVR
kV11 24.900	CAP:		.00		kVR
FROM NODE 818	.....	10.62	-28.98		AMP/DG
<820 > LOSS=	3.614:	(3.614)			kW
TO NODE 822	.....	10.62	-28.98		AMP/DG
<822 > LOSS=	.413:	(.413)			kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 822	VOLTS:	.990	-2.33		MAG/ANG
	-LD:	.00	.00		kW/kVR
kV11 24.900	CAP:		.00		kVR
FROM NODE 820	.....	.00	.00		AMP/DG
<822 > LOSS=	.413:	(.413)			kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 824	VOLTS:	1.008	-2.37	1.016 -122.94	1.012 117.76 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 kW/kVR
kV11 24.900	CAP:		.00	.00	.00 kVR
FROM NODE 816	.....	35.87	-10.70	39.82 -129.02	38.05 116.25 AMP/DG
<824 > LOSS=	14.181:	(4.312)		(5.444)	(4.425) kW
TO NODE 826	.....			3.10 -148.92	AMP/DG
<826 > LOSS=	.008:			(.008)	kW
TO NODE 828	.....	35.87	-10.70	36.93 -127.39	38.05 116.25 AMP/DG
<828 > LOSS=	1.108:	(.361)		(.393)	(.354) kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 826	VOLTS:			1.016 -122.94	MAG/ANG
	-LD:			.00 .00	kW/kVR
kV11 24.900	CAP:			.00	kVR
FROM NODE 824	.....			.00 .00	AMP/DG
<826 > LOSS=	.008:			(.008)	kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:34:32 HOURS ---
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%	
-----*			-----A-----*		-----B-----*		-----C-----*		-----	
NODE: 828		VOLTS:	1.007	-2.38	1.015	-122.95	1.011	117.75	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 824			.....:	35.87	-10.72	36.93	-127.41	37.77	116.42	AMP/DG
<828 > LOSS=			1.108:	(.361)		(.393)		(.354)		kW
TO NODE 830			.....:	35.87	-10.72	36.93	-127.41	37.77	116.42	AMP/DG
<830 > LOSS=			26.587:	(8.443)		(9.214)		(8.930)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		-----	
NODE: 830		VOLTS:	.989	-2.63	.998	-123.39	.994	117.25	MAG/ANG	
		D-LD:	9.95	4.98	9.86	4.93	24.55	9.82	kW/kVR	
kV11	24.900	Y CAP:		.00		.00		.00	kVR	
FROM NODE 828			.....:	35.43	-11.06	36.91	-127.92	37.79	115.96	AMP/DG
<830 > LOSS=			26.587:	(8.443)		(9.214)		(8.930)		kW
TO NODE 854			.....:	34.22	-9.97	36.19	-127.47	36.49	116.26	AMP/DG
<854 > LOSS=			.635:	(.197)		(.227)		(.211)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		-----	
NODE: 854		VOLTS:	.989	-2.64	.998	-123.40	.993	117.24	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 830			.....:	34.23	-9.99	36.19	-127.48	36.49	116.25	AMP/DG
<854 > LOSS=			.635:	(.197)		(.227)		(.211)		kW
TO NODE 852			.....:	34.23	-9.99	35.93	-127.72	36.49	116.25	AMP/DG
<852 > LOSS=			44.798:	(13.996)		(15.778)		(15.023)		kW
TO NODE 856			.....:			.31	-98.70			AMP/DG
<856 > LOSS=			.001:			(.001)				kW
-----*			-----A-----*		-----B-----*		-----C-----*		-----	
NODE: 852		VOLTS:	.958	-3.11	.968	-124.18	.964	116.33	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 854			.....:	34.35	-11.00	35.90	-128.66	36.52	115.41	AMP/DG
<852 > LOSS=			44.798:	(13.996)		(15.778)		(15.023)		kW
TO NODE RG11			.<VRG>..:	34.35	-11.00	35.90	-128.66	36.52	115.41	AMP/DG
<RG11 > LOSS=			.000:	(.000)		(.000)		(.000)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		-----	
NODE: RG11		VOLTS:	1.036	-3.11	1.035	-124.18	1.036	116.33	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 852			<VRG>:	31.77	-11.00	33.59	-128.66	33.98	115.41	AMP/DG
<RG11 > LOSS=			.000:	(.000)		(.000)		(.000)		kW
TO NODE 832			.....:	31.77	-11.00	33.59	-128.66	33.98	115.41	AMP/DG
<832 > LOSS=			.011:	(.003)		(.004)		(.004)		kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:34:32 HOURS ---
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%	
-----*			-----A-----*		-----B-----*		-----C-----*		-----*	
NODE: 832		VOLTS:	1.036	-3.11	1.035	-124.18	1.036	116.33	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE RG11			31.77	-11.00	33.59	-128.66	33.98	115.41	AMP/DG
<832 > LOSS=		.011:	(	.003)	(	.004)	(	.004)	kW
TO NODE 858		.....	21.31	.47	23.40	-116.89	24.34	128.36	AMP/DG
<858 > LOSS=		2.467:	(	.643)	(	.997)	(	.827)	kW
TO NODE XF10		.....	11.68	-32.29	11.70	-152.73	11.61	87.39	AMP/DG <
<XF10 > LOSS=		9.625:	(	3.196)	(	3.241)	(	3.187)	kW
-----*			-----A-----*		-----B-----*		-----C-----*		-----*	
NODE: 858		VOLTS:	1.034	-3.17	1.032	-124.28	1.034	116.22	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 832			20.86	.86	23.13	-116.39	24.02	128.48	AMP/DG
<858 > LOSS=		2.467:	(	.643)	(	.997)	(	.827)	kW
TO NODE 834		.....	20.73	1.01	23.13	-116.39	24.02	128.48	AMP/DG
<834 > LOSS=		2.798:	(	.717)	(	1.145)	(	.936)	kW
TO NODE 864		.....	.14	-22.82					AMP/DG
<864 > LOSS=		.000:	(	.000)					kW
-----*			-----A-----*		-----B-----*		-----C-----*		-----*	
NODE: 834		VOLTS:	1.031	-3.24	1.029	-124.39	1.031	116.09	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 858			20.29	2.18	22.37	-116.07	23.23	130.06	AMP/DG
<834 > LOSS=		2.798:	(	.717)	(	1.145)	(	.936)	kW
TO NODE 842		.....	14.75	34.68	16.30	-95.63	15.12	151.05	AMP/DG
<842 > LOSS=		.064:	(	.015)	(	.032)	(	.017)	kW
TO NODE 860		.....	11.16	-43.05	9.09	-154.82	10.60	99.34	AMP/DG
<860 > LOSS=		.141:	(	.021)	(	.104)	(	.017)	kW
-----*			-----A-----*		-----B-----*		-----C-----*		-----*	
NODE: 842		VOLTS:	1.031	-3.25	1.029	-124.39	1.031	116.09	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11	24.900	CAP:		.00		.00		.00	kVR	
FROM NODE 834			14.74	34.67	16.30	-95.64	15.12	151.03	AMP/DG
<842 > LOSS=		.064:	(	.015)	(	.032)	(	.017)	kW
TO NODE 844		.....	14.74	34.67	16.30	-95.64	15.12	151.03	AMP/DG
<844 > LOSS=		.306:	(	.068)	(	.156)	(	.083)	kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:34:32 HOURS ---
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----		
NODE: 844		VOLTS:	1.031	-3.27	1.029	-124.42	1.031	116.06	MAG/ANG
		Y-LD:	143.41	111.54	142.97	111.20	143.51	111.62	kW/kVR
kv11	24.900	Y CAP:	106.23		105.90		106.31		kVR
FROM NODE 842		.....:	14.47	37.12	16.29	-95.71	15.11	150.97	AMP/DG
<844 > LOSS=		.306:	(	.068)	(	.156)	(	.083)	kW
TO NODE 846		.....:	9.83	78.88	9.40	-63.87	9.40	-170.67	AMP/DG
<846 > LOSS=		.323:	(	.043)	(	.212)	(	.068)	kW
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----		
NODE: 846		VOLTS:	1.031	-3.32	1.029	-124.46	1.031	116.01	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	24.900	CAP:	.00		.00		.00		kVR
FROM NODE 844		.....:	9.76	78.80	9.40	-52.54	9.78	-161.93	AMP/DG
<846 > LOSS=		.323:	(	.043)	(	.212)	(	.068)	kW
TO NODE 848		.....:	9.76	78.80	9.40	-52.54	9.78	-161.93	AMP/DG
<848 > LOSS=		.048:	(	.007)	(	.031)	(	.010)	kW
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----		
NODE: 848		VOLTS:	1.031	-3.32	1.029	-124.47	1.031	116.00	MAG/ANG
		D-LD:	20.00	16.00	20.00	16.00	20.00	16.00	kW/kVR
kv11	24.900	Y CAP:	159.43		158.86		159.56		kVR
FROM NODE 846		.....:	9.76	78.79	9.77	-42.47	9.78	-161.94	AMP/DG
<848 > LOSS=		.048:	(	.007)	(	.031)	(	.010)	kW
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----		
NODE: 860		VOLTS:	1.030	-3.24	1.029	-124.39	1.031	116.09	MAG/ANG
		Y-LD:	20.00	16.00	20.00	16.00	20.00	16.00	kW/kVR
kv11	24.900	Y CAP:	.00		.00		.00		kVR
FROM NODE 834		.....:	5.87	-33.62	7.68	-156.52	5.29	86.10	AMP/DG
<860 > LOSS=		.141:	(	.021)	(	.104)	(	.017)	kW
TO NODE 836		.....:	4.16	-30.19	5.96	-154.63	3.60	90.25	AMP/DG
<836 > LOSS=		.039:	(	-.035)	(	.103)	(	-.028)	kW
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----		
NODE: 836		VOLTS:	1.030	-3.23	1.029	-124.39	1.031	116.09	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	24.900	CAP:	.00		.00		.00		kVR
FROM NODE 860		.....:	1.49	-19.83	4.42	-150.74	1.74	68.08	AMP/DG
<836 > LOSS=		.039:	(	-.035)	(	.103)	(	-.028)	kW
TO NODE 840		.....:	1.50	-20.01	2.33	-151.97	1.75	68.00	AMP/DG
<840 > LOSS=		.002:	(	-.014)	(	.026)	(	-.010)	kW
TO NODE 862		.....:	.00	.00	2.09	-149.38	.00	.00	AMP/DG
<862 > LOSS=		.000:	(	-.005)	(	.009)	(	-.004)	kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:34:32 HOURS ---
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

NODE	VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT	O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 840	VOLTS:	1.030	-3.23	1.029	-124.39	1.031	116.09	MAG/ANG	
	Y-LD:	9.27	7.21	9.26	7.20	9.28	7.22	kW/kVR	
kV11 24.900	Y CAP:		.00		.00		.00	kVR	
-----*-----A-----*-----B-----*-----C-----*-----									
FROM NODE 836	.....	.79	-41.11	.79	-162.26	.79	78.21	AMP/DG	
<840 > LOSS=	.002:	(-.014)		(.026)		(-.010)		kW	
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 862	VOLTS:	1.030	-3.23	1.029	-124.39	1.031	116.09	MAG/ANG	
	-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11 24.900	CAP:		.00		.00		.00	kVR	
-----*-----A-----*-----B-----*-----C-----*-----									
FROM NODE 836	.....	.00	.00	2.09	-149.50	.00	.00	AMP/DG	
<862 > LOSS=	.000:	(-.005)		(.009)		(-.004)		kW	
TO NODE 838	.....			2.09	-149.50			AMP/DG	
<838 > LOSS=	.004:			(.004)				kW	
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 838	VOLTS:			1.029	-124.39			MAG/ANG	
	-LD:			.00	.00			kW/kVR	
kV11 24.900	CAP:				.00			kVR	
-----*-----A-----*-----B-----*-----C-----*-----									
FROM NODE 862	.....			.00	.00			AMP/DG	
<838 > LOSS=	.004:			(.004)				kW	
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 864	VOLTS:	1.034	-3.17					MAG/ANG	
	-LD:	.00	.00					kW/kVR	
kV11 24.900	CAP:		.00					kVR	
-----*-----A-----*-----B-----*-----C-----*-----									
FROM NODE 858	.....	.00	.00					AMP/DG	
<864 > LOSS=	.000:	(.000)						kW	
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: XF10	VOLTS:	1.000	-4.63	.998	-125.73	1.000	114.82	MAG/ANG	
	-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11 4.160	CAP:		.00		.00		.00	kVR	
-----*-----A-----*-----B-----*-----C-----*-----									
FROM NODE 832	.....	69.90	-32.29	70.04	-152.73	69.50	87.39	AMP/DG	<
<XF10 > LOSS=	9.625:	(3.196)		(3.241)		(3.187)		kW	
TO NODE 888	.....	69.90	-32.29	70.04	-152.73	69.50	87.39	AMP/DG	
<888 > LOSS=	.000:	(.000)		(.000)		(.000)		kW	
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 888	VOLTS:	1.000	-4.64	.998	-125.73	1.000	114.82	MAG/ANG	
	-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kV11 4.160	CAP:		.00		.00		.00	kVR	
-----*-----A-----*-----B-----*-----C-----*-----									
FROM NODE XF10	.....	69.90	-32.29	70.04	-152.73	69.50	87.39	AMP/DG	
<888 > LOSS=	.000:	(.000)		(.000)		(.000)		kW	
TO NODE 890	.....	69.90	-32.29	70.04	-152.73	69.50	87.39	AMP/DG	
<890 > LOSS=	32.760:	(11.638)		(9.950)		(11.173)		kW	



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:34:32 HOURS ---
 SUBSTATION: IEEE 34; FEEDER: IEEE 34

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      NODE      VALUE      PHASE A      PHASE B      PHASE C      UNT O/L<
                          (LINE A)      (LINE B)      (LINE C)      60.%
-----*-----*-----*-----*-----
NODE: 890      VOLTS:      .917   -5.19   .924 -126.78   .918   113.98 MAG/ANG
              D-LD:      139.11  69.55  137.56   68.78  137.01   68.50 kW/kVR
kv11   4.160    Y CAP:              .00              .00              .00 kVR

FROM NODE 888      . . . . .:   69.91  -32.31   70.05 -152.75   69.51   87.37 AMP/DG
<890   > LOSS= 32.760:   ( 11.638)      (  9.950)      ( 11.173)      kW
-----*-----*-----*-----*-----
NODE: 856      VOLTS:              .998 -123.41              MAG/ANG
              -LD:              .00      .00              kW/kVR
kv11   24.900    CAP:              .00              kVR

FROM NODE 854      . . . . .:              .00      .00              AMP/DG
<856   > LOSS=      .001:              (  .001)              kW
  
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