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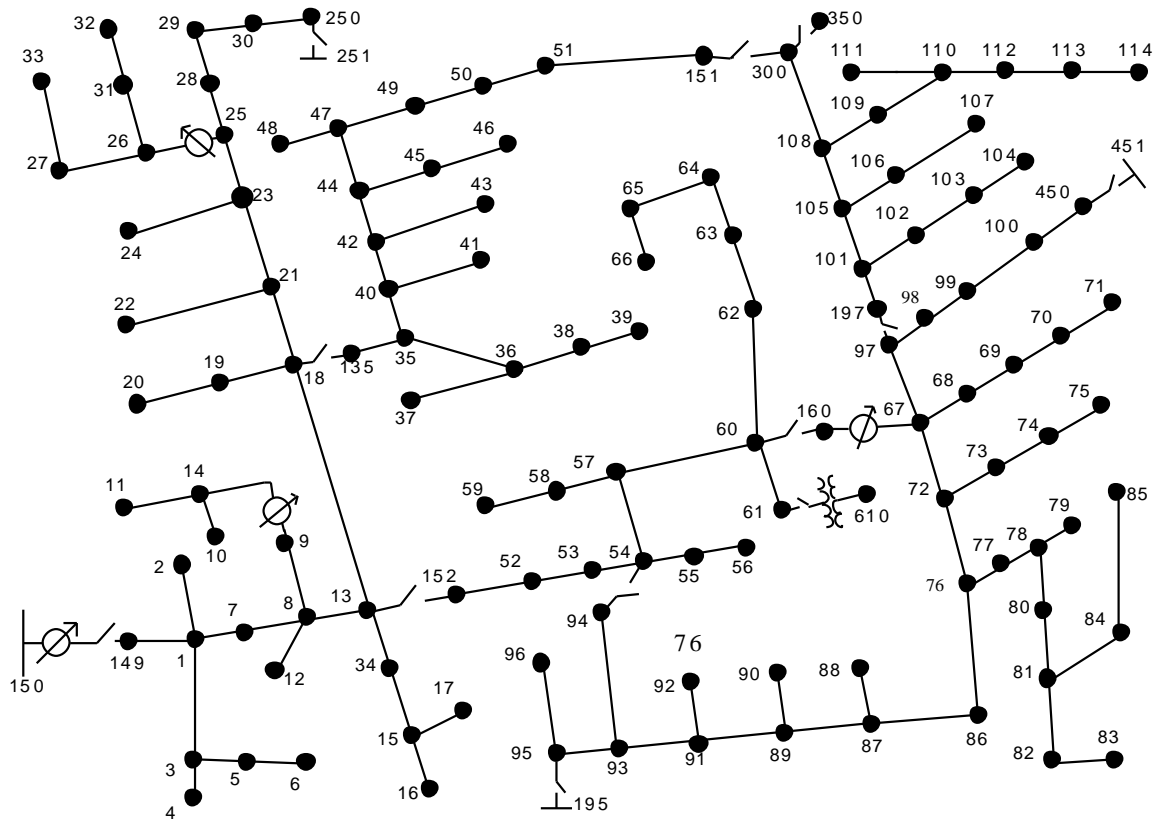
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**Distribution System Analysis Subcommittee**

# IEEE 123 Node Test Feeder



## IEEE 123 Node Test Feeder



## Line Segment Data

Node A	Node B	Length (ft.)	Config.
1	2	175	10
1	3	250	11
1	7	300	1
3	4	200	11
3	5	325	11
5	6	250	11
7	8	200	1
8	12	225	10
8	9	225	9
8	13	300	1
9	14	425	9
13	34	150	11
13	18	825	2
14	11	250	9
14	10	250	9
15	16	375	11
15	17	350	11
18	19	250	9
18	21	300	2
19	20	325	9
21	22	525	10
21	23	250	2
23	24	550	11
23	25	275	2
25	26	350	7
25	28	200	2
26	27	275	7
26	31	225	11
27	33	500	9
28	29	300	2
29	30	350	2
30	250	200	2
31	32	300	11
34	15	100	11
35	36	650	8
35	40	250	1
36	37	300	9
36	38	250	10
38	39	325	10
40	41	325	11
40	42	250	1
42	43	500	10

42	44	200	1
44	45	200	9
44	47	250	1
45	46	300	9
47	48	150	4
47	49	250	4
49	50	250	4
50	51	250	4
52	53	200	1
53	54	125	1
54	55	275	1
54	57	350	3
55	56	275	1
57	58	250	10
57	60	750	3
58	59	250	10
60	61	550	5
60	62	250	12
62	63	175	12
63	64	350	12
64	65	425	12
65	66	325	12
67	68	200	9
67	72	275	3
67	97	250	3
68	69	275	9
69	70	325	9
70	71	275	9
72	73	275	11
72	76	200	3
73	74	350	11
74	75	400	11
76	77	400	6
76	86	700	3
77	78	100	6
78	79	225	6
78	80	475	6
80	81	475	6
81	82	250	6
81	84	675	11
82	83	250	6
84	85	475	11
86	87	450	6
87	88	175	9
87	89	275	6



## Line Segment Data (cont.)

89	90	225	10
89	91	225	6
91	92	300	11
91	93	225	6
93	94	275	9
93	95	300	6
95	96	200	10
97	98	275	3
98	99	550	3
99	100	300	3
100	450	800	3
101	102	225	11
101	105	275	3
102	103	325	11
103	104	700	11
105	106	225	10
105	108	325	3
106	107	575	10
108	109	450	9
108	300	1000	3
109	110	300	9
110	111	575	9
110	112	125	9
112	113	525	9
113	114	325	9
135	35	375	4
149	1	400	1
152	52	400	1
160	67	350	6
197	101	250	3

Three Phase Switches		
Node A	Node B	Normal
13	152	closed
18	135	closed
60	160	closed
61	610	closed
97	197	closed
150	149	closed
250	251	open
450	451	open
54	94	open
151	300	open
300	350	open

## Overhead Line Configurations (Config.)

Config.	Phasing	Phase Cond.	Neutral Cond.	Spacing
		ACSR	ACSR	ID
1	A B C N	336,400 26/7	4/0 6/1	500
2	C A B N	336,400 26/7	4/0 6/1	500
3	B C A N	336,400 26/7	4/0 6/1	500
4	C B A N	336,400 26/7	4/0 6/1	500
5	B A C N	336,400 26/7	4/0 6/1	500
6	A C B N	336,400 26/7	4/0 6/1	500
7	A C N	336,400 26/7	4/0 6/1	505
8	A B N	336,400 26/7	4/0 6/1	505
9	A N	1/0	1/0	510
10	B N	1/0	1/0	510
11	C N	1/0	1/0	510

## Underground Line Configuration (Config.)

Config.	Phasing	Cable	Spacing ID
12	A B C	1/0 AA, CN	515

## Transformer Data

	kVA	kV-high	kV-low	R - %	X - %
Substation	5,000	115 - D	4.16 Gr-W	1	8
XFM - 1	150	4.16 - D	.480 - D	1.27	2.72

## Shunt Capacitors

Node	Ph-A	Ph-B	Ph-C
	kVAr	kVAr	kVAr
83	200	200	200
88	50		
90		50	
92			50
Total	250	250	250



## Regulator Data

Regulator ID:	1		
Line Segment:	150 - 149		
Location:	150		
Phases:	A-B-C		
Connection:	3-Ph, Wye		
Monitoring Phase:	A		
Bandwidth:	2.0 volts		
PT Ratio:	20		
Primary CT Rating:	700		
Compensator:	Ph-A		
R - Setting:	3		
X - Setting:	7.5		
Voltage Level:	120		
Regulator ID:	2		
Line Segment:	9 - 14		
Location:	9		
Phases:	A		
Connection:	1-Ph, L-G		
Monitoring Phase:	A		
Bandwidth:	2.0 volts		
PT Ratio:	20		
Primary CT Rating:	50		
Compensator:	Ph-A		
R - Setting:	0.4		
X - Setting:	0.4		
Voltage Level:	120		

Regulator ID:	3		
Line Segment:	25 - 26		
Location:	25		
Phases:	A-C		
Connection:	2-Ph, L-G		
Monitoring Phase:	A & C		
Bandwidth:	1		
PT Ratio:	20		
Primary CT Rating:	50		
Compensator:	Ph-A	Ph-C	
R - Setting:	0.4	0.4	
X - Setting:	0.4	0.4	
Voltage Level:	120	120	
Regulator ID:	4		
Line Segment:	160 - 67		
Location:	160		
Phases:	A-B-C		
Connection:	3-Ph, LG		
Monitoring Phase:	A-B-C		
Bandwidth:	2		
PT Ratio:	20		
Primary CT Rating:	300		
Compensator:	Ph-A	Ph-B	Ph-C
R - Setting:	0.6	1.4	0.2
X - Setting:	1.3	2.6	1.4
Voltage Level:	124	124	124



Spot Loads							
Node	Load	Ph-1	Ph-1	Ph-2	Ph-2	Ph-3	Ph-4
	Model	kW	kVAr	kW	kVAr	kW	kVAr
1	Y-PQ	40	20	0	0	0	0
2	Y-PQ	0	0	20	10	0	0
4	Y-PQ	0	0	0	0	40	20
5	Y-I	0	0	0	0	20	10
6	Y-Z	0	0	0	0	40	20
7	Y-PQ	20	10	0	0	0	0
9	Y-PQ	40	20	0	0	0	0
10	Y-I	20	10	0	0	0	0
11	Y-Z	40	20	0	0	0	0
12	Y-PQ	0	0	20	10	0	0
16	Y-PQ	0	0	0	0	40	20
17	Y-PQ	0	0	0	0	20	10
19	Y-PQ	40	20	0	0	0	0
20	Y-I	40	20	0	0	0	0
22	Y-Z	0	0	40	20	0	0
24	Y-PQ	0	0	0	0	40	20
28	Y-I	40	20	0	0	0	0
29	Y-Z	40	20	0	0	0	0
30	Y-PQ	0	0	0	0	40	20
31	Y-PQ	0	0	0	0	20	10
32	Y-PQ	0	0	0	0	20	10
33	Y-I	40	20	0	0	0	0
34	Y-Z	0	0	0	0	40	20
35	D-PQ	40	20	0	0	0	0
37	Y-Z	40	20	0	0	0	0
38	Y-I	0	0	20	10	0	0
39	Y-PQ	0	0	20	10	0	0
41	Y-PQ	0	0	0	0	20	10
42	Y-PQ	20	10	0	0	0	0
43	Y-Z	0	0	40	20	0	0
45	Y-I	20	10	0	0	0	0
46	Y-PQ	20	10	0	0	0	0
47	Y-I	35	25	35	25	35	25
48	Y-Z	70	50	70	50	70	50
49	Y-PQ	35	25	70	50	35	20
50	Y-PQ	0	0	0	0	40	20
51	Y-PQ	20	10	0	0	0	0
52	Y-PQ	40	20	0	0	0	0
53	Y-PQ	40	20	0	0	0	0
55	Y-Z	20	10	0	0	0	0
56	Y-PQ	0	0	20	10	0	0

58	Y-I	0	0	20	10	0	0
59	Y-PQ	0	0	20	10	0	0
60	Y-PQ	20	10	0	0	0	0
62	Y-Z	0	0	0	0	40	20
63	Y-PQ	40	20	0	0	0	0
64	Y-I	0	0	75	35	0	0
65	D-Z	35	25	35	25	70	50
66	Y-PQ	0	0	0	0	75	35
68	Y-PQ	20	10	0	0	0	0
69	Y-PQ	40	20	0	0	0	0
70	Y-PQ	20	10	0	0	0	0
71	Y-PQ	40	20	0	0	0	0
73	Y-PQ	0	0	0	0	40	20
74	Y-Z	0	0	0	0	40	20
75	Y-PQ	0	0	0	0	40	20
76	D-I	105	80	70	50	70	50
77	Y-PQ	0	0	40	20	0	0
79	Y-Z	40	20	0	0	0	0
80	Y-PQ	0	0	40	20	0	0
82	Y-PQ	40	20	0	0	0	0
83	Y-PQ	0	0	0	0	20	10
84	Y-PQ	0	0	0	0	20	10
85	Y-PQ	0	0	0	0	40	20
86	Y-PQ	0	0	20	10	0	0
87	Y-PQ	0	0	40	20	0	0
88	Y-PQ	40	20	0	0	0	0
90	Y-I	0	0	40	20	0	0
92	Y-PQ	0	0	0	0	40	20
94	Y-PQ	40	20	0	0	0	0
95	Y-PQ	0	0	20	10	0	0
96	Y-PQ	0	0	20	10	0	0
98	Y-PQ	40	20	0	0	0	0
99	Y-PQ	0	0	40	20	0	0
100	Y-Z	0	0	0	0	40	20
102	Y-PQ	0	0	0	0	20	10
103	Y-PQ	0	0	0	0	40	20
104	Y-PQ	0	0	0	0	40	20
106	Y-PQ	0	0	40	20	0	0
107	Y-PQ	0	0	40	20	0	0
109	Y-PQ	40	20	0	0	0	0
111	Y-PQ	20	10	0	0	0	0
112	Y-I	20	10	0	0	0	0
113	Y-Z	40	20	0	0	0	0
114	Y-PQ	20	10	0	0	0	0
Total		1420	775	915	515	1155	635



## IEEE 123 Node Test Feeder Impedances

### Configuration 1:

Z (R +jX) in ohms per mile

0.4576	1.0780	0.1560	0.5017	0.1535	0.3849
		0.4666	1.0482	0.1580	0.4236
				0.4615	1.0651

B in micro Siemens per mile

5.6765	-1.8319	-0.6982
	5.9809	-1.1645
		5.3971

### Configuration 2:

Z (R +jX) in ohms per mile

0.4666	1.0482	0.1580	0.4236	0.1560	0.5017
		0.4615	1.0651	0.1535	0.3849
				0.4576	1.0780

B in micro Siemens per mile

5.9809	-1.1645	-1.8319
	5.3971	-0.6982
		5.6765

### Configuration 3:

Z (R +jX) in ohms per mile

0.4615	1.0651	0.1535	0.3849	0.1580	0.4236
		0.4576	1.0780	0.1560	0.5017
				0.4666	1.0482

B in micro Siemens per mile

5.3971	-0.6982	-1.1645
	5.6765	-1.8319
		5.9809

### Configuration 4:

Z (R +jX) in ohms per mile

0.4615	1.0651	0.1580	0.4236	0.1535	0.3849
		0.4666	1.0482	0.1560	0.5017
				0.4576	1.0780

B in micro Siemens per mile

5.3971	-1.1645	-0.6982
	5.9809	-1.8319
		5.6765



**Configuration 5:**

Z (R +jX) in ohms per mile

0.4666	1.0482	0.1560	0.5017	0.1580	0.4236
		0.4576	1.0780	0.1535	0.3849
				0.4615	1.0651

B in micro Siemens per mile

5.9809	-1.8319	-1.1645
	5.6765	-0.6982
		5.3971

**Configuration 6:**

Z (R +jX) in ohms per mile

0.4576	1.0780	0.1535	0.3849	0.1560	0.5017
		0.4615	1.0651	0.1580	0.4236
				0.4666	1.0482

B in micro Siemens per mile

5.6765	-0.6982	-1.8319
	5.3971	-1.1645
		5.9809

**Configuration 7:**

Z (R +jX) in ohms per mile

0.4576	1.0780	0.0000	0.0000	0.1535	0.3849
		0.0000	0.0000	0.0000	0.0000
				0.4615	1.0651

B in micro Siemens per mile

5.1154	0.0000	-1.0549
	0.0000	0.0000
		5.1704

**Configuration 8:**

Z (R +jX) in ohms per mile

0.4576	1.0780	0.1535	0.3849	0.0000	0.0000
		0.4615	1.0651	0.0000	0.0000
				0.0000	0.0000

B in micro Siemens per mile

5.1154	-1.0549	0.0000
	5.1704	0.0000
		0.0000





**Configuration 9:**

Z (R +jX) in ohms per mile					
1.3292	1.3475	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					
	4.5193	0.0000	0.0000		
		0.0000	0.0000		
			0.0000		

**Configuration 10:**

Z (R +jX) in ohms per mile					
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		1.3292	1.3475	0.0000	0.0000
				0.0000	0.0000
B in micro Siemens per mile					
	0.0000	0.0000	0.0000		
		4.5193	0.0000		
			0.0000		

**Configuration 11:**

Z (R +jX) in ohms per mile					
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		0.0000	0.0000	0.0000	0.0000
				1.3292	1.3475
B in micro Siemens per mile					
	0.0000	0.0000	0.0000		
		0.0000	0.0000		
			4.5193		

**Configuration 12:**

Z (R +jX) in ohms per mile					
1.5209	0.7521	0.5198	0.2775	0.4924	0.2157
		1.5329	0.7162	0.5198	0.2775
				1.5209	0.7521
B in micro Siemens per mile					
	67.2242	0.0000	0.0000		
		67.2242	0.0000		
			67.2242		



## 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 16:54:14 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

SYSTEM	PHASE		PHASE		PHASE		TOTAL	
INPUT	(A)		(B)		(C)			
kW :	1463.861		963.484		1193.153		3620.498	
kVAr :	582.101		343.687		398.976		1324.765	
kVA :	1575.351		1022.947		1258.092		3855.257	
PF :	.9292		.9419		.9484		.9391	
LOAD	-- (A-N) ----	(A-B) -	-- (B-N) ----	(B-C) -	-- (C-N) ----	(C-A) -	---WYE-----	DELTA--
kW :	1242.8	182.3	822.8	108.1	1026.3	142.6	3091.9	433.0
TOT :	1425.022		930.965		1168.900		3524.887	
kVAr :	651.0	126.7	447.3	77.2	535.9	101.8	1634.3	305.8
TOT :	777.767		524.544		637.773		1940.083	
kVA :	1403.0	222.0	936.6	132.9	1157.8	175.2	3497.3	530.1
TOT :	1623.455		1068.570		1331.571		4023.524	
PF :	.8858	.8210	.8786	.8137	.8864	.8137	.8841	.8168
TOT :	.8778		.8712		.8778		.8761	
LOSSES	----- (A) -----		----- (B) -----		----- (C) -----		-----	
kW :	50.540		10.134		34.937		95.611	
kVAr :	102.653		38.837		52.237		193.727	
kVA :	114.420		40.137		62.844		216.036	
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:	271.3	.0	268.0	.0	269.7	.0	809.0	.0
TOT :	271.290		268.023		269.733		809.046	



--- V O L T A G E P R O F I L E ---- DATE: 6-24-2004 AT 16:54:32 HOURS ----  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	MAG	ANGLE	MAG	ANGLE	MAG	ANGLE	mi.to SR
	A-N		B-N		C-N		
150	1.0000	at .00	1.0000	at -120.00	1.0000	at 120.00	.000
RG1	1.0437	at .00	1.0438	at -120.00	1.0438	at 120.00	.000
149	1.0436	at -.02	1.0437	at -120.02	1.0436	at 119.98	.000
1	1.0311	at -.66	1.0412	at -120.33	1.0348	at 119.60	.076
2			1.0410	at -120.33			.109
3					1.0331	at 119.57	.123
4					1.0326	at 119.56	.161
5					1.0318	at 119.55	.185
6					1.0311	at 119.53	.232
7	1.0218	at -1.13	1.0395	at -120.57	1.0291	at 119.35	.133
8	1.0158	at -1.44	1.0382	at -120.74	1.0253	at 119.18	.171
12			1.0379	at -120.74			.213
13	1.0079	at -1.87	1.0360	at -120.97	1.0196	at 118.90	.227
152	1.0078	at -1.88	1.0360	at -120.98	1.0196	at 118.89	.227
52	1.0018	at -2.26	1.0348	at -121.22	1.0164	at 118.64	.303
53	.9991	at -2.43	1.0340	at -121.34	1.0148	at 118.51	.341
54	.9976	at -2.53	1.0334	at -121.41	1.0138	at 118.43	.365
55	.9974	at -2.54	1.0334	at -121.42	1.0139	at 118.43	.417
56	.9974	at -2.53	1.0332	at -121.43	1.0140	at 118.43	.469
57	.9945	at -2.83	1.0306	at -121.61	1.0113	at 118.21	.431
58			1.0300	at -121.63			.478
59			1.0296	at -121.63			.526
60	.9880	at -3.51	1.0256	at -122.00	1.0052	at 117.76	.573
160	.9880	at -3.52	1.0256	at -122.01	1.0052	at 117.75	.573
RG4	1.0374	at -3.52	1.0320	at -122.01	1.0366	at 117.75	.573
67	1.0355	at -3.77	1.0311	at -122.19	1.0345	at 117.61	.640
68	1.0340	at -3.79					.677
69	1.0322	at -3.83					.730
70	1.0310	at -3.85					.791
71	1.0303	at -3.86					.843
72	1.0359	at -3.86	1.0302	at -122.29	1.0343	at 117.50	.692
73					1.0321	at 117.46	.744
74					1.0303	at 117.42	.810
75					1.0293	at 117.40	.886
76	1.0358	at -3.92	1.0297	at -122.38	1.0349	at 117.45	.730
77	1.0370	at -3.99	1.0308	at -122.46	1.0358	at 117.37	.805
78	1.0373	at -4.01	1.0312	at -122.48	1.0360	at 117.35	.824
79	1.0370	at -4.02	1.0313	at -122.48	1.0359	at 117.36	.867
80	1.0394	at -4.07	1.0329	at -122.54	1.0368	at 117.24	.914
81	1.0415	at -4.14	1.0352	at -122.57	1.0374	at 117.14	1.004
82	1.0424	at -4.18	1.0364	at -122.60	1.0382	at 117.11	1.052
83	1.0436	at -4.20	1.0375	at -122.63	1.0390	at 117.07	1.099
84					1.0348	at 117.09	1.132
85					1.0336	at 117.07	1.222
86	1.0349	at -3.95	1.0279	at -122.55	1.0364	at 117.42	.862
87	1.0342	at -3.97	1.0272	at -122.63	1.0369	at 117.39	.947
88	1.0342	at -4.00					.980
89	1.0338	at -3.96	1.0270	at -122.68	1.0373	at 117.38	.999
90			1.0269	at -122.72			1.042



--- V O L T A G E   P R O F I L E   ---- DATE:   6-24-2004 AT 16:54:32 HOURS ----  
SUBSTATION:   IEEE 123;   FEEDER:   IEEE 123

NODE	MAG	ANGLE	MAG	ANGLE	MAG	ANGLE	mi.to SR
91	1.0336 at	-3.96	1.0266 at	-122.69	1.0376 at	117.36	1.042
92					1.0375 at	117.31	1.099
93	1.0333 at	-3.97	1.0265 at	-122.71	1.0377 at	117.37	1.085
94	1.0326 at	-3.98					1.137
95	1.0332 at	-3.96	1.0261 at	-122.73	1.0378 at	117.37	1.141
96			1.0258 at	-122.73			1.179
97	1.0345 at	-3.82	1.0306 at	-122.21	1.0338 at	117.60	.687
197	1.0345 at	-3.82	1.0306 at	-122.21	1.0338 at	117.59	.687
101	1.0337 at	-3.86	1.0303 at	-122.22	1.0332 at	117.59	.734
102					1.0318 at	117.56	.777
103					1.0301 at	117.53	.838
104					1.0283 at	117.49	.971
105	1.0323 at	-3.90	1.0301 at	-122.27	1.0335 at	117.61	.786
106			1.0290 at	-122.29			.829
107			1.0275 at	-122.32			.938
108	1.0309 at	-3.97	1.0308 at	-122.28	1.0334 at	117.65	.848
109	1.0267 at	-4.05					.933
110	1.0248 at	-4.09					.990
111	1.0240 at	-4.10					1.099
112	1.0241 at	-4.10					1.014
113	1.0220 at	-4.14					1.113
114	1.0216 at	-4.15					1.175
300	1.0309 at	-3.97	1.0308 at	-122.28	1.0334 at	117.65	1.037
98	1.0343 at	-3.83	1.0303 at	-122.22	1.0336 at	117.59	.739
99	1.0346 at	-3.82	1.0295 at	-122.23	1.0332 at	117.55	.843
100	1.0348 at	-3.82	1.0294 at	-122.21	1.0328 at	117.53	.900
450	1.0348 at	-3.82	1.0294 at	-122.21	1.0328 at	117.53	1.052
61	.9880 at	-3.51	1.0256 at	-122.00	1.0052 at	117.76	.677
XF1	.9880 at	-3.51	1.0256 at	-122.00	1.0052 at	117.76	.677
610	.9880 at	-3.51	1.0256 at	-122.00	1.0052 at	117.76	.677
62	.9872 at	-3.50	1.0245 at	-121.98	1.0032 at	117.75	.620
63	.9866 at	-3.49	1.0236 at	-121.97	1.0022 at	117.74	.654
64	.9863 at	-3.47	1.0217 at	-121.93	1.0000 at	117.70	.720
65	.9856 at	-3.48	1.0214 at	-121.89	.9970 at	117.70	.800
66	.9858 at	-3.51	1.0216 at	-121.87	.9955 at	117.70	.862
18	.9988 at	-2.29	1.0319 at	-121.22	1.0122 at	118.83	.384
135	.9988 at	-2.29	1.0318 at	-121.23	1.0122 at	118.83	.384
35	.9960 at	-2.38	1.0293 at	-121.31	1.0112 at	118.77	.455
36	.9951 at	-2.40	1.0288 at	-121.36			.578
37	.9943 at	-2.41					.635
38			1.0282 at	-121.37			.625
39			1.0278 at	-121.38			.687
40	.9945 at	-2.42	1.0282 at	-121.36	1.0101 at	118.72	.502
41					1.0097 at	118.71	.564
42	.9929 at	-2.45	1.0270 at	-121.41	1.0092 at	118.68	.549
43			1.0257 at	-121.43			.644
44	.9918 at	-2.48	1.0263 at	-121.44	1.0084 at	118.65	.587



--- V O L T A G E   P R O F I L E   ---- DATE:   6-24-2004 AT 16:54:32 HOURS ----  
SUBSTATION:   IEEE 123;   FEEDER:   IEEE 123

NODE	MAG	ANGLE	MAG	ANGLE	MAG	ANGLE	mi.to SR
45	.9913 at	-2.49					.625
46	.9909 at	-2.50					.682
47	.9908 at	-2.50	1.0253 at	-121.47	1.0074 at	118.61	.635
48	.9905 at	-2.51	1.0250 at	-121.47	1.0072 at	118.60	.663
49	.9905 at	-2.51	1.0247 at	-121.48	1.0071 at	118.58	.682
50	.9905 at	-2.52	1.0247 at	-121.47	1.0067 at	118.57	.729
51	.9903 at	-2.53	1.0248 at	-121.47	1.0067 at	118.58	.777
151	.9903 at	-2.53	1.0248 at	-121.47	1.0067 at	118.58	.871
19	.9975 at	-2.31					.431
20	.9967 at	-2.33					.493
21	.9983 at	-2.34	1.0320 at	-121.22	1.0111 at	118.81	.441
22			1.0305 at	-121.25			.540
23	.9979 at	-2.39	1.0323 at	-121.20	1.0100 at	118.79	.488
24					1.0085 at	118.77	.592
25	.9972 at	-2.45	1.0328 at	-121.20	1.0091 at	118.80	.540
28	.9968 at	-2.48	1.0330 at	-121.19	1.0087 at	118.80	.578
29	.9967 at	-2.50	1.0332 at	-121.19	1.0083 at	118.79	.635
30	.9969 at	-2.50	1.0331 at	-121.18	1.0078 at	118.77	.701
250	.9969 at	-2.50	1.0331 at	-121.18	1.0078 at	118.77	.739
RG3	.9972 at	-2.45			1.0028 at	118.80	.540
26	.9970 at	-2.48			1.0023 at	118.79	.606
27	.9966 at	-2.49			1.0022 at	118.79	.659
33	.9953 at	-2.52					.753
31					1.0017 at	118.77	.649
32					1.0013 at	118.77	.706
34					1.0187 at	118.88	.256
15					1.0183 at	118.87	.275
16					1.0173 at	118.85	.346
17					1.0178 at	118.86	.341
9	1.0144 at	-1.47					.213
RG2	1.0080 at	-1.47					.213
14	1.0063 at	-1.50					.294
10	1.0060 at	-1.50					.341
11	1.0057 at	-1.51					.341



----- **VOLTAGE REGULATOR DATA** ---- DATE: 6-24-2004 AT 16:54:35 HOURS --  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

[NODE]	--	[VREG]	-----	[SEG]	-----	[NODE]	MODEL	OPT	BNDW
150		RG1		149		149	Phase A, 3 Phase Ganged Wye	RX	2.00
.....									
		PHASE		LDCTR		VOLT HOLD	R-VOLT	X-VOLT	PT RATIO
		1				120.000	3.000	7.500	20.00
								CT RATE	TAP
								700.00	7

[NODE]	--	[VREG]	-----	[SEG]	-----	[NODE]	MODEL	OPT	BNDW
160		RG4		67		67	Phase A & B & C, Wye	RX	2.00
.....									
		PHASE		LDCTR		VOLT HOLD	R-VOLT	X-VOLT	PT RATIO
		1				124.000	.600	1.300	20.00
		2				124.000	1.400	2.600	20.00
		3				124.000	.200	1.400	20.00
								CT RATE	TAP
								300.00	8
								300.00	1
								300.00	5

[NODE]	--	[VREG]	-----	[SEG]	-----	[NODE]	MODEL	OPT	BNDW
25		RG3		26		26	Phase A & C, Wye	RX	1.00
.....									
		PHASE		LDCTR		VOLT HOLD	R-VOLT	X-VOLT	PT RATIO
		1				120.000	.400	.400	20.00
		3				120.000	.400	.400	20.00
								CT RATE	TAP
								50.00	0
								50.00	-1

[NODE]	--	[VREG]	-----	[SEG]	-----	[NODE]	MODEL	OPT	BNDW
9		RG2		14		14	Phase A, Wye	RX	2.00
.....									
		PHASE		LDCTR		VOLT HOLD	R-VOLT	X-VOLT	PT RATIO
		1				120.000	.400	.400	20.00
								CT RATE	TAP
								50.00	-1



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 150	VOLTS:	1.000	.00	1.000 -120.00	1.000 120.00 MAG/ANG
kV11	4.160	NO LOAD OR CAPACITOR REPRESENTED AT SOURCE NODE			
TO NODE RG1 <VRG>... 655.91 -21.69 425.91 -139.63 523.82 101.51 AMP/DG <					
<RG1 > LOSS= .000: ( .000) ( .000) ( .000) kW					
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: RG1	VOLTS:	1.044	.00	1.044 -120.00	1.044 120.00 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 .00 kW/kVR
kV11	4.160	CAP:	.00	.00	.00 kVR
FROM NODE 150 <VRG>: 628.42 -21.69 408.06 -139.63 501.86 101.51 AMP/DG <					
<RG1 > LOSS= .000: ( .000) ( .000) ( .000) kW					
TO NODE 149 ..... 628.42 -21.69 408.06 -139.63 501.86 101.51 AMP/DG <					
<149 > LOSS= .000: ( .000) ( .000) ( .000) kW					
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 149	VOLTS:	1.044	-.02	1.044 -120.02	1.044 119.98 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 .00 kW/kVR
kV11	4.160	CAP:	.00	.00	.00 kVR
FROM NODE RG1 ..... 628.42 -21.69 408.06 -139.63 501.86 101.51 AMP/DG <					
<149 > LOSS= .000: ( .000) ( .000) ( .000) kW					
TO NODE 1 ..... 628.42 -21.69 408.06 -139.63 501.86 101.51 AMP/DG <					
<1 > LOSS= 19.159: ( 11.176) ( .429) ( 7.554) kW					
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 1	VOLTS:	1.031	-.66	1.041 -120.33	1.035 119.60 MAG/ANG
	Y-LD:	40.00	20.00	.00 .00	.00 .00 kW/kVR
kV11	4.160	Y CAP:	.00	.00	.00 kVR
FROM NODE 149 ..... 628.42 -21.69 408.06 -139.63 501.86 101.51 AMP/DG <					
<1 > LOSS= 19.159: ( 11.176) ( .429) ( 7.554) kW					
TO NODE 2 ..... 8.94 -146.89 AMP/DG					
<2 > LOSS= .004: ( .004) kW					
TO NODE 3 ..... 46.54 92.99 AMP/DG					
<3 > LOSS= .136: ( .136) kW					
TO NODE 7 ..... 610.45 -21.52 399.19 -139.47 455.89 102.38 AMP/DG <					
<7 > LOSS= 13.090: ( 8.408) ( .167) ( 4.515) kW					
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 2	VOLTS:		1.041 -120.33		MAG/ANG
	Y-LD:		20.00 10.00		kW/kVR
kV11	4.160	Y CAP:	.00		kVR
FROM NODE 1 ..... 8.94 -146.89 AMP/DG					
<2 > LOSS= .004: ( .004) kW					



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 3	VOLTS:			1.033	119.57 MAG/ANG
	-LD:			.00	.00 kW/kVR
kVLL 4.160	CAP:				.00 kVR
FROM NODE 1	.....:			46.54	92.98 AMP/DG
<3 > LOSS=	.136:			(.136)	kW
TO NODE 4	.....:			18.03	93.00 AMP/DG
<4 > LOSS=	.016:			(.016)	kW
TO NODE 5	.....:			28.51	92.98 AMP/DG
<5 > LOSS=	.066:			(.066)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 4	VOLTS:			1.033	119.56 MAG/ANG
	Y-LD:			40.00	20.00 kW/kVR
kVLL 4.160	Y CAP:				.00 kVR
FROM NODE 3	.....:			18.03	93.00 AMP/DG
<4 > LOSS=	.016:			(.016)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 5	VOLTS:			1.032	119.55 MAG/ANG
	Y-LD:			20.64	10.32 kW/kVR
kVLL 4.160	Y CAP:				.00 kVR
FROM NODE 3	.....:			28.51	92.97 AMP/DG
<5 > LOSS=	.066:			(.066)	kW
TO NODE 6	.....:			19.20	92.97 AMP/DG
<6 > LOSS=	.023:			(.023)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 6	VOLTS:			1.031	119.53 MAG/ANG
	Y-LD:			42.53	21.27 kW/kVR
kVLL 4.160	Y CAP:				.00 kVR
FROM NODE 5	.....:			19.20	92.97 AMP/DG
<6 > LOSS=	.023:			(.023)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 7	VOLTS:	1.022	-1.13	1.039	-120.57
	Y-LD:	20.00	10.00	.00	.00
kVll 4.160	Y CAP:		.00	.00	.00
FROM NODE 1	.....:	610.45	-21.52	399.19	-139.47
<7 > LOSS=	13.090:	( 8.408)		(.167)	
TO NODE 8	.....:	601.39	-21.43	399.19	-139.47
<8 > LOSS=	8.583:	( 5.420)		(.184)	
				( 2.979)	kW





- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 8	VOLTS:	1.016	-1.44	1.038 -120.74	1.025 119.18 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 .00 kW/kVR
kv11 4.160	CAP:		.00	.00	.00 kVR
FROM NODE 7 ..... 601.39 -21.43 399.19 -139.47 455.89 102.38 AMP/DG <					
<8 > LOSS=	8.583:	( 5.420)	( .184)	( 2.979)	kW
TO NODE 12 .....:			8.97 -147.31		AMP/DG
<12 > LOSS=	.005:		( .005)		kW
TO NODE 13 .....:	555.51 -20.88	390.31 -139.29	455.89 102.38	AMP/DG <	
<13 > LOSS=	11.745:	( 6.704)	( .700)	( 4.341)	kW
TO NODE 9 .....:	46.22 -28.05			AMP/DG	
<9 > LOSS=	.122:	( .122)			kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 12	VOLTS:		1.038 -120.74		MAG/ANG
	Y-LD:		20.00 10.00		kW/kVR
kv11 4.160	Y CAP:		.00		kVR
FROM NODE 8 ..... 8.97 -147.31 AMP/DG					
<12 > LOSS=	.005:		( .005)		kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 13	VOLTS:	1.008	-1.87	1.036 -120.97	1.020 118.90 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 .00 kW/kVR
kv11 4.160	CAP:		.00	.00	.00 kVR
FROM NODE 8 ..... 555.51 -20.88 390.31 -139.29 455.89 102.38 AMP/DG <					
<13 > LOSS=	11.745:	( 6.704)	( .700)	( 4.341)	kW
TO NODE 152 .....:	332.01 -14.31	244.34 -129.30	265.02 112.07	AMP/DG	
<152 > LOSS=	.000:	( .000)	( .000)	( .000)	kW
TO NODE 18 .....:	228.85 -30.43	155.56 -155.10	153.35 88.61	AMP/DG	
<18 > LOSS=	4.907:	( 2.436)	( .341)	( 2.131)	kW
TO NODE 34 .....:			46.42 92.30	AMP/DG	
<34 > LOSS=	.081:		( .081)		kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 152	VOLTS:	1.008	-1.88	1.036 -120.98	1.020 118.89 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 .00 kW/kVR
kv11 4.160	CAP:		.00	.00	.00 kVR
FROM NODE 13 ..... 332.01 -14.31 244.34 -129.30 265.02 112.07 AMP/DG					
<152 > LOSS=	.000:	( .000)	( .000)	( .000)	kW
TO NODE 52 .....:	332.01 -14.31	244.34 -129.30	265.02 112.07	AMP/DG <	
<52 > LOSS=	5.621:	( 3.538)	( .363)	( 1.719)	kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: 52	VOLTS:	1.002	-2.26	1.035	-121.22	1.016	118.64	MAG/ANG
	Y-LD:	40.00	20.00	.00	.00	.00	.00	kW/kVR
kv11 4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 152 .....: 332.01 -14.31 244.34 -129.30 265.02 112.07 AMP/DG <								
<52 > LOSS=	5.621:	( 3.538)		( .363)		( 1.719)		kW
TO NODE 53 .....: 314.05 -13.46 244.34 -129.30 265.02 112.07 AMP/DG								
<53 > LOSS=	2.663:	( 1.555)		( .271)		( .837)		kW
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: 53	VOLTS:	.999	-2.43	1.034	-121.34	1.015	118.51	MAG/ANG
	Y-LD:	40.00	20.00	.00	.00	.00	.00	kW/kVR
kv11 4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 52 .....: 314.05 -13.46 244.34 -129.30 265.02 112.07 AMP/DG								
<53 > LOSS=	2.663:	( 1.555)		( .271)		( .837)		kW
TO NODE 54 .....: 296.14 -12.50 244.34 -129.30 265.02 112.07 AMP/DG								
<54 > LOSS=	1.580:	( .846)		( .226)		( .508)		kW
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: 54	VOLTS:	.998	-2.53	1.033	-121.41	1.014	118.43	MAG/ANG
	-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11 4.160	CAP:		.00		.00		.00	kVR
FROM NODE 53 .....: 296.14 -12.50 244.34 -129.30 265.02 112.07 AMP/DG								
<54 > LOSS=	1.580:	( .846)		( .226)		( .508)		kW
TO NODE 55 .....: 9.28 -29.09 9.01 -147.98 .00 .00 AMP/DG								
<55 > LOSS=	.003:	( .003)		( .000)		( .000)		kW
TO NODE 57 .....: 287.25 -11.97 235.82 -128.60 265.02 112.07 AMP/DG								
<57 > LOSS=	4.240:	( 1.543)		( 1.328)		( 1.369)		kW
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: 55	VOLTS:	.997	-2.54	1.033	-121.42	1.014	118.43	MAG/ANG
	Y-LD:	19.90	9.95	.00	.00	.00	.00	kW/kVR
kv11 4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 54 .....: 9.29 -29.10 9.01 -147.99 .00 .00 AMP/DG								
<55 > LOSS=	.003:	( .003)		( .000)		( .000)		kW
TO NODE 56 .....: .00 .00 9.01 -147.99 .00 .00 AMP/DG								
<56 > LOSS=	.002:	( .000)		( .002)		( .000)		kW
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: 56	VOLTS:	.997	-2.53	1.033	-121.43	1.014	118.43	MAG/ANG
	Y-LD:	.00	.00	20.00	10.00	.00	.00	kW/kVR
kv11 4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 55 .....: .00 .00 9.01 -147.99 .00 .00 AMP/DG								
<56 > LOSS=	.002:	( .000)		( .002)		( .000)		kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 57		VOLTS:	.994	-2.83	1.031	-121.61	1.011	118.21	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 54		.....:	287.25	-11.97	235.82	-128.60	265.02	112.07	AMP/DG
<57	> LOSS=	4.240:	( 1.543)		( 1.328)		( 1.369)		kW
TO NODE 58		.....:			18.35	-148.19			AMP/DG
<58	> LOSS=	.021:			( .021)				kW
TO NODE 60		.....:	287.25	-11.97	218.62	-126.99	265.02	112.07	AMP/DG
<60	> LOSS=	8.780:	( 3.190)		( 2.296)		( 3.294)		kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 58		VOLTS:			1.030	-121.63			MAG/ANG
		Y-LD:			20.60	10.30			kW/kVR
kv11	4.160	Y CAP:				.00			kVR
FROM NODE 57		.....:			18.35	-148.19			AMP/DG
<58	> LOSS=	.021:			( .021)				kW
TO NODE 59		.....:			9.04	-148.19			AMP/DG
<59	> LOSS=	.005:			( .005)				kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 59		VOLTS:			1.030	-121.63			MAG/ANG
		Y-LD:			20.00	10.00			kW/kVR
kv11	4.160	Y CAP:				.00			kVR
FROM NODE 58		.....:			9.04	-148.20			AMP/DG
<59	> LOSS=	.005:			( .005)				kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 60		VOLTS:	.988	-3.51	1.026	-122.00	1.005	117.76	MAG/ANG
		Y-LD:	20.00	10.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 57		.....:	287.25	-11.97	218.62	-126.99	265.02	112.07	AMP/DG
<60	> LOSS=	8.780:	( 3.190)		( 2.296)		( 3.294)		kW
TO NODE 160		.....:	240.09	-5.95	172.00	-120.02	191.06	120.31	AMP/DG
<160	> LOSS=	.000:	( .000)		( .000)		( .000)		kW
TO NODE 61		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<61	> LOSS=	.000:	( .000)		( .001)		( .000)		kW
TO NODE 62		.....:	45.37	-41.35	52.24	-150.54	80.73	92.22	AMP/DG
<62	> LOSS=	.565:	( .072)		( .151)		( .341)		kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 160		VOLTS:	.988	-3.52	1.026	-122.01	1.005	117.75	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 60		.....:	240.09	-5.95	172.00	-120.02	191.06	120.31	AMP/DG
<160	> LOSS=	.000:	( .000)		( .000)		( .000)		kW
TO NODE RG4		.<VRG>..:	240.09	-5.95	172.00	-120.02	191.06	120.31	AMP/DG <
<RG4	> LOSS=	.000:	( .000)		( .000)		( .000)		kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L<60.%
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: RG4		VOLTS:	1.037	-3.52	1.032	-122.01	1.037	117.75	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:	.00		.00		.00		kVR
FROM NODE 160		<VRG>:	228.66	-5.95	170.93	-120.02	185.27	120.31	AMP/DG
<RG4 > LOSS=		.000:	( .000)		( .000)		( .000)		kW
TO NODE 67		.....:	228.66	-5.95	170.93	-120.02	185.27	120.31	AMP/DG
<67 > LOSS=		2.371:	( .940)		( .429)		( 1.001)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 67		VOLTS:	1.036	-3.77	1.031	-122.19	1.035	117.61	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:	.00		.00		.00		kVR
FROM NODE RG4		.....:	228.66	-5.95	170.93	-120.02	185.27	120.31	AMP/DG
<67 > LOSS=		2.371:	( .940)		( .429)		( 1.001)		kW
TO NODE 68		.....:	54.15	-30.40					AMP/DG
<68 > LOSS=		.148:	( .148)						kW
TO NODE 72		.....:	118.75	22.68	126.10	-108.04	132.91	134.06	AMP/DG
<72 > LOSS=		.769:	( .117)		( .396)		( .256)		kW
TO NODE 97		.....:	82.68	-30.60	54.30	-148.83	64.43	90.97	AMP/DG
<97 > LOSS=		.206:	( .094)		( .035)		( .077)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 68		VOLTS:	1.034	-3.79					MAG/ANG
		Y-LD:	20.00	10.00					kW/kVR
kv11	4.160	Y CAP:	.00						kVR
FROM NODE 67		.....:	54.15	-30.40					AMP/DG
<68 > LOSS=		.148:	( .148)						kW
TO NODE 69		.....:	45.14	-30.41					AMP/DG
<69 > LOSS=		.141:	( .141)						kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 69		VOLTS:	1.032	-3.83					MAG/ANG
		Y-LD:	40.00	20.00					kW/kVR
kv11	4.160	Y CAP:	.00						kVR
FROM NODE 68		.....:	45.14	-30.41					AMP/DG
<69 > LOSS=		.141:	( .141)						kW
TO NODE 70		.....:	27.10	-30.42					AMP/DG
<70 > LOSS=		.060:	( .060)						kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 70		VOLTS:	1.031	-3.85					MAG/ANG
		Y-LD:	20.00	10.00					kW/kVR
kv11	4.160	Y CAP:	.00						kVR
FROM NODE 69		.....:	27.10	-30.42					AMP/DG
<70 > LOSS=		.060:	( .060)						kW
TO NODE 71		.....:	18.07	-30.43					AMP/DG
<71 > LOSS=		.023:	( .023)						kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 71	VOLTS:	1.030	-3.86		MAG/ANG
	Y-LD:	40.00	20.00		kW/kVR
kv11 4.160	Y CAP:		.00		kVR
FROM NODE 70	.....:	18.07	-30.43		AMP/DG
<71 > LOSS=	.023:	( .023)			kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 72	VOLTS:	1.036	-3.86	1.030 -122.29	1.034 117.50 MAG/ANG
	-LD:	.00	.00	.00 .00	.00 .00 kW/kVR
kv11 4.160	CAP:		.00	.00	.00 kVR
FROM NODE 67	.....:	118.75	22.68	126.10 -108.04	132.91 134.06 AMP/DG
<72 > LOSS=	.769:	( .117)	( .396)	( .256)	kW
TO NODE 73	.....:				55.31 90.86 AMP/DG
<73 > LOSS=	.212:			( .212)	kW
TO NODE 76	.....:	118.75	22.68	126.10 -108.04	100.03 156.30 AMP/DG
<76 > LOSS=	.473:	( .168)	( .284)	( .020)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 73	VOLTS:			1.032 117.46	MAG/ANG
	Y-LD:			40.00 20.00	kW/kVR
kvLL 4.160	Y CAP:				.00 kVR
FROM NODE 72	.....:			55.31 90.86	AMP/DG
<73 > LOSS=	.212:			( .212)	kW
TO NODE 74	.....:			37.27 90.85	AMP/DG
<74 > LOSS=	.122:			( .122)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 74	VOLTS:			1.030 117.42	MAG/ANG
	Y-LD:			42.46 21.23	kW/kVR
kvLL 4.160	Y CAP:				.00 kVR
FROM NODE 73	.....:			37.27 90.85	AMP/DG
<74 > LOSS=	.122:			( .122)	kW
TO NODE 75	.....:			18.09 90.84	AMP/DG
<75 > LOSS=	.033:			( .033)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 75	VOLTS:			1.029 117.40	MAG/ANG
	Y-LD:			40.00 20.00	kW/kVR
kvLL 4.160	Y CAP:				.00 kVR
FROM NODE 74	.....:			18.09 90.84	AMP/DG
<75 > LOSS=	.033:			( .033)	kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 76		VOLTS:	1.036	-3.92	1.030	-122.38	1.035	117.45	MAG/ANG	
		D-LD:	107.59	81.97	72.32	51.66	72.97	52.12	kW/kVR	
kv11	4.160	Y CAP:		.00		.00		.00	kVR	
FROM NODE 72			.....:	118.75	22.68	126.10	-108.04	100.03	156.30	AMP/DG
<76 > LOSS=		.473:	(	.168)	(	.284)	(	.020)	kW	
TO NODE 77		.....:	77.82	60.48	77.40	-57.30	77.45	-177.48	AMP/DG	
<77 > LOSS=		.418:	(	.101)	(	.151)	(	.166)	kW	
TO NODE 86		.....:	32.69	5.55	57.67	-129.86	21.03	157.54	AMP/DG	
<86 > LOSS=		.229:	(	.075)	(	.191)	(	-.036)	kW	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 77		VOLTS:	1.037	-3.99	1.031	-122.46	1.036	117.37	MAG/ANG	
		Y-LD:	.00	.00	40.00	20.00	.00	.00	kW/kVR	
kv11	4.160	Y CAP:		.00		.00		.00	kVR	
FROM NODE 76			.....:	77.82	60.48	77.40	-57.30	77.45	-177.48	AMP/DG
<77 > LOSS=		.418:	(	.101)	(	.151)	(	.166)	kW	
TO NODE 78		.....:	77.82	60.48	80.01	-44.26	77.45	-177.48	AMP/DG	
<78 > LOSS=		.108:	(	.034)	(	.031)	(	.043)	kW	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 78		VOLTS:	1.037	-4.01	1.031	-122.48	1.036	117.35	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kv11	4.160	CAP:		.00		.00		.00	kVR	
FROM NODE 77			.....:	77.82	60.48	80.01	-44.26	77.45	-177.48	AMP/DG
<78 > LOSS=		.108:	(	.034)	(	.031)	(	.043)	kW	
TO NODE 79		.....:	19.31	-30.58	.00	.00	.00	.00	AMP/DG	
<79 > LOSS=		.007:	(	.008)	(	.000)	(	.000)	kW	
TO NODE 80		.....:	80.52	74.35	80.01	-44.26	77.45	-177.48	AMP/DG	
<80 > LOSS=		.524:	(	.126)	(	.139)	(	.259)	kW	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 79		VOLTS:	1.037	-4.02	1.031	-122.48	1.036	117.36	MAG/ANG	
		Y-LD:	43.01	21.51	.00	.00	.00	.00	kW/kVR	
kv11	4.160	Y CAP:		.00		.00		.00	kVR	
FROM NODE 78			.....:	19.31	-30.59	.00	.00	.00	.00	AMP/DG
<79 > LOSS=		.007:	(	.008)	(	.000)	(	.000)	kW	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 80		VOLTS:	1.039	-4.07	1.033	-122.54	1.037	117.24	MAG/ANG	
		Y-LD:	.00	.00	40.00	20.00	.00	.00	kW/kVR	
kv11	4.160	Y CAP:		.00		.00		.00	kVR	
FROM NODE 78			.....:	80.52	74.35	80.01	-44.26	77.45	-177.48	AMP/DG
<80 > LOSS=		.524:	(	.126)	(	.139)	(	.259)	kW	
TO NODE 81		.....:	80.52	74.35	86.40	-32.63	77.45	-177.48	AMP/DG	
<81 > LOSS=		.562:	(	.175)	(	.120)	(	.267)	kW	



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%	
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 81	VOLTS:	1.042	-4.14	1.035	-122.57	1.037 117.14 MAG/ANG
	-LD:	.00	.00	.00	.00	.00 kW/kVR
kv11 4.160	CAP:		.00		.00	.00 kVR
FROM NODE 80	.....:	80.52	74.35	86.40	-32.63	77.44 -177.48 AMP/DG
<81 > LOSS=	.562:	(.175)		(.120)		(.267) kW
TO NODE 82	.....:	80.52	74.35	86.40	-32.63	82.90 -158.48 AMP/DG
<82 > LOSS=	.304:	(.091)		(.112)		(.100) kW
TO NODE 84	.....:					27.01 90.52 AMP/DG
<84 > LOSS=	.124:					(.124) kW
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 82	VOLTS:	1.042	-4.18	1.036	-122.60	1.038 117.11 MAG/ANG
	Y-LD:	40.00	20.00	.00	.00	.00 kW/kVR
kv11 4.160	Y CAP:		.00		.00	.00 kVR
FROM NODE 81	.....:	80.52	74.35	86.40	-32.63	82.90 -158.48 AMP/DG
<82 > LOSS=	.304:	(.091)		(.112)		(.100) kW
TO NODE 83	.....:	86.90	85.80	86.40	-32.63	82.90 -158.48 AMP/DG
<83 > LOSS=	.318:	(.081)		(.102)		(.135) kW
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 83	VOLTS:	1.044	-4.20	1.038	-122.63	1.039 117.07 MAG/ANG
	Y-LD:	.00	.00	.00	.00	20.00 10.00 kW/kVR
kv11 4.160	Y CAP:		217.81		215.30	215.91 kVR
FROM NODE 82	.....:	86.90	85.80	86.40	-32.63	82.90 -158.48 AMP/DG
<83 > LOSS=	.318:	(.081)		(.102)		(.135) kW
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 84	VOLTS:			1.035	117.09	MAG/ANG
	Y-LD:			20.00	10.00	kW/kVR
kvLL 4.160	Y CAP:				.00	kVR
FROM NODE 81	.....:			27.01	90.52	AMP/DG
<84 > LOSS=	.124:			(.124)		kW
TO NODE 85	.....:			18.01	90.51	AMP/DG
<85 > LOSS=	.039:			(.039)		kW
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 85	VOLTS:			1.034	117.07	MAG/ANG
	Y-LD:			40.00	20.00	kW/kVR
kvLL 4.160	Y CAP:				.00	kVR
FROM NODE 84	.....:			18.01	90.51	AMP/DG
<85 > LOSS=	.039:			(.039)		kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 86		VOLTS:	1.035	-3.95	1.028	-122.55	1.036	117.42	MAG/ANG	
		Y-LD:	.00	.00	20.00	10.00	.00	.00	kW/kVR	
kv11	4.160	Y CAP:		.00		.00		.00	kVR	
FROM NODE 76			.....:	32.69	5.55	57.67	-129.86	21.02	157.54	AMP/DG
<86 > LOSS=		.229:	(	.075)	(	.191)	(	-.036)	kW	
TO NODE 87		.....:	32.69	5.55	49.21	-126.38	21.02	157.54	AMP/DG	
<87 > LOSS=		.116:	(	.059)	(	.066)	(	-.009)	kW	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 87		VOLTS:	1.034	-3.97	1.027	-122.63	1.037	117.39	MAG/ANG	
		Y-LD:	.00	.00	40.00	20.00	.00	.00	kW/kVR	
kv11	4.160	Y CAP:		.00		.00		.00	kVR	
FROM NODE 86			.....:	32.69	5.55	49.21	-126.39	21.02	157.54	AMP/DG
<87 > LOSS=		.116:	(	.059)	(	.066)	(	-.009)	kW	
TO NODE 88		.....:	21.00	35.93					AMP/DG	
<88 > LOSS=		.019:	(	.019)					kW	
TO NODE 89		.....:	18.03	-30.54	33.25	-114.18	21.02	157.54	AMP/DG	
<89 > LOSS=		.040:	(	.019)	(	.031)	(	-.009)	kW	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 88		VOLTS:	1.034	-4.00					MAG/ANG	
		Y-LD:	40.00	20.00					kW/kVR	
kv11	4.160	Y CAP:		53.48					kVR	
FROM NODE 87			.....:	21.00	35.93				AMP/DG	
<88 > LOSS=		.019:	(	.019)					kW	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 89		VOLTS:	1.034	-3.96	1.027	-122.68	1.037	117.38	MAG/ANG	
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR	
kv11	4.160	CAP:		.00		.00		.00	kVR	
FROM NODE 87			.....:	18.03	-30.54	33.25	-114.19	21.02	157.53	AMP/DG
<89 > LOSS=		.040:	(	.019)	(	.031)	(	-.009)	kW	
TO NODE 90		.....:			21.16	-84.64			AMP/DG	
<90 > LOSS=		.025:			(	.025)			kW	
TO NODE 91		.....:	18.03	-30.54	18.15	-149.29	21.02	157.53	AMP/DG	
<91 > LOSS=		.018:	(	.009)	(	.008)	(	.001)	kW	
			-----*-----A-----*-----		-----*-----B-----*-----		-----*-----C-----*-----			
NODE: 90		VOLTS:			1.027	-122.72			MAG/ANG	
		Y-LD:			41.08	20.54			kW/kVR	
kv11	4.160	Y CAP:				52.72			kVR	
FROM NODE 89			.....:		21.16	-84.64			AMP/DG	
<90 > LOSS=		.025:			(	.025)			kW	





- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L<60.%
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 91		VOLTS:	1.034	-3.96	1.027	-122.69	1.038	117.36	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 89		.....:	18.03	-30.54	18.15	-149.29	21.02	157.53	AMP/DG
<91	> LOSS=	.018:	(.009)		(.008)		(.001)		kW
TO NODE 92		.....:					21.02	157.53	AMP/DG
<92	> LOSS=	.033:					(.033)		kW
TO NODE 93		.....:	18.03	-30.54	18.15	-149.29	.00	.00	AMP/DG
<93	> LOSS=	.011:	(.010)		(.001)		(.000)		kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 92		VOLTS:					1.037	117.31	MAG/ANG
		Y-LD:					40.00	20.00	kW/kVR
kvLL	4.160	Y CAP:						53.82	kVR
FROM NODE 91		.....:					21.02	157.53	AMP/DG
<92	> LOSS=	.033:					(.033)		kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 93		VOLTS:	1.033	-3.97	1.026	-122.71	1.038	117.37	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 91		.....:	18.03	-30.54	18.15	-149.29	.00	.00	AMP/DG
<93	> LOSS=	.011:	(.010)		(.001)		(.000)		kW
TO NODE 94		.....:	18.03	-30.55					AMP/DG
<94	> LOSS=	.023:	(.023)						kW
TO NODE 95		.....:	.00	.00	18.15	-149.29	.00	.00	AMP/DG
<95	> LOSS=	.009:	(.000)		(.008)		(.000)		kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 94		VOLTS:	1.033	-3.98					MAG/ANG
		Y-LD:	40.00	20.00					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 93		.....:	18.03	-30.55					AMP/DG
<94	> LOSS=	.023:	(.023)						kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 95		VOLTS:	1.033	-3.96	1.026	-122.73	1.038	117.37	MAG/ANG
		Y-LD:	.00	.00	20.00	10.00	.00	.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 93		.....:	.00	.00	18.15	-149.29	.00	.00	AMP/DG
<95	> LOSS=	.009:	(.000)		(.008)		(.000)		kW
TO NODE 96		.....:			9.08	-149.29			AMP/DG
<96	> LOSS=	.004:			(.004)				kW
-----*-----A-----*-----B-----*-----C-----*-----									



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 96	VOLTS:			1.026	-122.73			MAG/ANG
	Y-LD:			20.00	10.00			kW/kVR
kv11	4.160	Y CAP:				.00		kVR
FROM NODE 95	.....:			9.08	-149.30			AMP/DG
<96	> LOSS=	.004:		( .004)				kW
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 97	VOLTS:	1.035	-3.82	1.031	-122.21	1.034	117.60	MAG/ANG
	-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		kVR
FROM NODE 67	.....:	82.68	-30.60	54.30	-148.83	64.43	90.97	AMP/DG
<97	> LOSS=	.206:		( .094)		( .077)		kW
TO NODE 197	.....:	64.68	-30.66	36.21	-148.86	45.20	90.96	AMP/DG
<197	> LOSS=	.000:		( .000)		( .000)		kW
TO NODE 98	.....:	18.00	-30.38	18.08	-148.77	19.23	90.98	AMP/DG
<98	> LOSS=	.016:		( .004)		( .005)		kW
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 197	VOLTS:	1.034	-3.82	1.031	-122.21	1.034	117.59	MAG/ANG
	-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		kVR
FROM NODE 97	.....:	64.68	-30.66	36.21	-148.86	45.20	90.96	AMP/DG
<197	> LOSS=	.000:		( .000)		( .000)		kW
TO NODE 101	.....:	64.68	-30.66	36.21	-148.86	45.20	90.96	AMP/DG
<101	> LOSS=	.114:		( .060)		( .044)		kW
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 101	VOLTS:	1.034	-3.86	1.030	-122.22	1.033	117.59	MAG/ANG
	-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		kVR
FROM NODE 197	.....:	64.68	-30.66	36.21	-148.86	45.20	90.96	AMP/DG
<101	> LOSS=	.114:		( .060)		( .044)		kW
TO NODE 102	.....:					45.20	90.96	AMP/DG
<102	> LOSS=	.116:				( .116)		kW
TO NODE 105	.....:	64.68	-30.66	36.21	-148.86	.01	.00	AMP/DG
<105	> LOSS=	.114:		( .133)		( .000)		kW
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 102	VOLTS:					1.032	117.56	MAG/ANG
	Y-LD:					20.00	10.00	kW/kVR
kvLL	4.160	Y CAP:						.00 kVR
FROM NODE 101	.....:					45.20	90.96	AMP/DG
<102	> LOSS=	.116:				( .116)		kW
TO NODE 103	.....:					36.18	90.95	AMP/DG
<103	> LOSS=	.107:				( .107)		kW
		*-----A-----*		*-----B-----*		*-----C-----*		



- **R A D I A L   P O W E R   F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 103	VOLTS:					1.030	117.53	MAG/ANG
	Y-LD:					40.00	20.00	kW/kVR
kVLL 4.160	Y CAP:						.00	kVR
FROM NODE 102	.....:					36.18	90.95	AMP/DG
<103 > LOSS=	.107:					( .107)		kW
TO NODE 104	.....:					18.11	90.93	AMP/DG
<104 > LOSS=	.058:					( .058)		kW
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 104	VOLTS:					1.028	117.49	MAG/ANG
	Y-LD:					40.00	20.00	kW/kVR
kVLL 4.160	Y CAP:						.00	kVR
FROM NODE 103	.....:					18.11	90.93	AMP/DG
<104 > LOSS=	.058:					( .058)		kW
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 105	VOLTS:	1.032	-3.90	1.030	-122.27	1.034	117.61	MAG/ANG
	-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kV11 4.160	CAP:		.00		.00		.00	kVR
FROM NODE 101	.....:	64.68	-30.66	36.21	-148.86	.00	.00	AMP/DG
<105 > LOSS=	.114:	( .133)		( -.019)		( .000)		kW
TO NODE 106	.....:			36.22	-148.87			AMP/DG
<106 > LOSS=	.074:			( .074)				kW
TO NODE 108	.....:	64.68	-30.66	.00	.00	.00	.00	AMP/DG
<108 > LOSS=	.119:	( .119)		( .000)		( .000)		kW
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 106	VOLTS:			1.029	-122.29			MAG/ANG
	Y-LD:			40.00	20.00			kW/kVR
kV11 4.160	Y CAP:				.00			kVR
FROM NODE 105	.....:			36.22	-148.87			AMP/DG
<106 > LOSS=	.074:			( .074)				kW
TO NODE 107	.....:			18.12	-148.88			AMP/DG
<107 > LOSS=	.048:			( .048)				kW
		*-----A-----*		*-----B-----*		*-----C-----*		
NODE: 107	VOLTS:			1.028	-122.32			MAG/ANG
	Y-LD:			40.00	20.00			kW/kVR
kV11 4.160	Y CAP:				.00			kVR
FROM NODE 106	.....:			18.12	-148.88			AMP/DG
<107 > LOSS=	.048:			( .048)				kW
		*-----A-----*		*-----B-----*		*-----C-----*		



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L<60.%
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 108		VOLTS:	1.031	-3.97	1.031	-122.28	1.033	117.65	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 105		.....:	64.68	-30.66	.00	.00	.00	.00	AMP/DG
<108 >	LOSS=	.119:	(	.119)	(	.000)	(	.000)	kW
TO NODE 109		.....:	64.68	-30.66					AMP/DG
<109 >	LOSS=	.474:	(	.474)					kW
TO NODE 300		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<300 >	LOSS=	.000:	(	.000)	(	-.001)	(	.001)	kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 109		VOLTS:	1.027	-4.05					MAG/ANG
		Y-LD:	40.00	20.00					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 108		.....:	64.68	-30.67					AMP/DG
<109 >	LOSS=	.474:	(	.474)					kW
TO NODE 110		.....:	46.54	-30.69					AMP/DG
<110 >	LOSS=	.164:	(	.164)					kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 110		VOLTS:	1.025	-4.09					MAG/ANG
		-LD:	.00	.00					kW/kVR
kv11	4.160	CAP:		.00					kVR
FROM NODE 109		.....:	46.54	-30.69					AMP/DG
<110 >	LOSS=	.164:	(	.164)					kW
TO NODE 111		.....:	9.09	-30.66					AMP/DG
<111 >	LOSS=	.012:	(	.012)					kW
TO NODE 112		.....:	37.45	-30.69					AMP/DG
<112 >	LOSS=	.044:	(	.044)					kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 111		VOLTS:	1.024	-4.10					MAG/ANG
		Y-LD:	20.00	10.00					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 110		.....:	9.09	-30.67					AMP/DG
<111 >	LOSS=	.012:	(	.012)					kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 112		VOLTS:	1.024	-4.10					MAG/ANG
		Y-LD:	20.48	10.24					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 110		.....:	37.45	-30.69					AMP/DG
<112 >	LOSS=	.044:	(	.044)					kW
TO NODE 113		.....:	28.14	-30.70					AMP/DG
<113 >	LOSS=	.105:	(	.105)					kW



- **R A D I A L   P O W E R   F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 113		VOLTS:	1.022	-4.14					MAG/ANG
		Y-LD:	41.78	20.89					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 112		.....:	28.14	-30.70					AMP/DG
<113	> LOSS=	.105:	(	.105)					kW
TO NODE 114		.....:	9.11	-30.71					AMP/DG
<114	> LOSS=	.007:	(	.007)					kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 114		VOLTS:	1.022	-4.15					MAG/ANG
		Y-LD:	20.00	10.00					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 113		.....:	9.11	-30.71					AMP/DG
<114	> LOSS=	.007:	(	.007)					kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 300		VOLTS:	1.031	-3.97	1.031	-122.28	1.033	117.65	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 108		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<300	> LOSS=	.000:	(	.000)	(	-.001)	(	.001)	kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 98		VOLTS:	1.034	-3.83	1.030	-122.22	1.034	117.59	MAG/ANG
		Y-LD:	40.00	20.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 97		.....:	18.00	-30.38	18.08	-148.78	19.23	90.98	AMP/DG
<98	> LOSS=	.016:	(	.004)	(	.007)	(	.005)	kW
TO NODE 99		.....:	.00	.00	18.08	-148.78	19.23	90.98	AMP/DG
<99	> LOSS=	.028:	(	.000)	(	.028)	(	.000)	kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 99		VOLTS:	1.035	-3.82	1.029	-122.23	1.033	117.55	MAG/ANG
		Y-LD:	.00	.00	40.00	20.00	.00	.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 98		.....:	.00	.00	18.08	-148.78	19.23	90.97	AMP/DG
<99	> LOSS=	.028:	(	.000)	(	.028)	(	.000)	kW
TO NODE 100		.....:	.00	.00	.00	.00	19.23	90.97	AMP/DG
<100	> LOSS=	.010:	(	.000)	(	.000)	(	.010)	kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 100		VOLTS:	1.035	-3.82	1.029	-122.21	1.033	117.53	MAG/ANG
		Y-LD:	.00	.00	.00	.00	42.67	21.33	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 99		.....:	.00	.00	.00	.00	19.23	90.97	AMP/DG
<100	> LOSS=	.010:	(	.000)	(	.000)	(	.010)	kW
TO NODE 450		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<450	> LOSS=	.000:	(	.000)	(	-.001)	(	.001)	kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L<60.%
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 450		VOLTS:	1.035	-3.82	1.029	-122.21	1.033	117.53	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 100		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<450 > LOSS=		.000:	(.000)		(-.001)		(.001)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 61		VOLTS:	.988	-3.51	1.026	-122.00	1.005	117.76	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 60		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<61 > LOSS=		.000:	(.000)		(.001)		(.000)		kW
TO NODE XF1		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<XF1 > LOSS=		.000:	(.000)		(.000)		(.000)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: XF1		VOLTS:	.988	-3.51	1.026	-122.00	1.005	117.76	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	.480	CAP:		.00		.00		.00	kVR
FROM NODE 61		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<XF1 > LOSS=		.000:	(.000)		(.000)		(.000)		kW
TO NODE 610		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<610 > LOSS=		.000:	(.000)		(.000)		(.000)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 610		VOLTS:	.988	-3.51	1.026	-122.00	1.005	117.76	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	.480	CAP:		.00		.00		.00	kVR
FROM NODE XF1		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<610 > LOSS=		.000:	(.000)		(.000)		(.000)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 62		VOLTS:	.987	-3.50	1.024	-121.98	1.003	117.75	MAG/ANG
		Y-LD:	.00	.00	.00	.00	40.25	20.13	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 60		.....:	45.37	-41.36	52.24	-150.55	80.73	92.21	AMP/DG
<62 > LOSS=		.565:	(.072)		(.151)		(.341)		kW
TO NODE 63		.....:	45.37	-41.36	52.24	-150.55	62.06	92.52	AMP/DG
<63 > LOSS=		.295:	(.065)		(.106)		(.125)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 63		VOLTS:	.987	-3.49	1.024	-121.97	1.002	117.74	MAG/ANG
		Y-LD:	40.00	20.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 62		.....:	45.37	-41.36	52.25	-150.56	62.06	92.52	AMP/DG
<63 > LOSS=		.295:	(.065)		(.106)		(.125)		kW
TO NODE 64		.....:	27.12	-49.20	52.25	-150.56	62.06	92.52	AMP/DG
<64 > LOSS=		.533:	(.032)		(.245)		(.256)		kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L<60.%
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 64		VOLTS:	.986	-3.47	1.022	-121.93	1.000	117.70	MAG/ANG
		Y-LD:	.00	.00	76.63	35.76	.00	.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 63		.....:	27.13	-49.22	52.25	-150.57	62.06	92.51	AMP/DG
<64	> LOSS=	.533:	( .032)		( .245)		( .256)		kW
TO NODE 65		.....:	27.13	-49.22	17.99	-157.50	62.06	92.51	AMP/DG
<65	> LOSS=	.452:	( .024)		( .031)		( .398)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 65		VOLTS:	.986	-3.48	1.021	-121.89	.997	117.70	MAG/ANG
		D-LD:	34.68	24.77	35.79	25.57	69.60	49.72	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 64		.....:	27.14	-49.24	18.00	-157.54	62.07	92.50	AMP/DG
<65	> LOSS=	.452:	( .024)		( .031)		( .398)		kW
TO NODE 66		.....:	.01	.00	.01	.00	34.61	92.69	AMP/DG
<66	> LOSS=	.112:	( .000)		( .000)		( .112)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 66		VOLTS:	.986	-3.51	1.022	-121.87	.996	117.70	MAG/ANG
		Y-LD:	.00	.00	.00	.00	75.00	35.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 65		.....:	.00	.00	.00	.00	34.62	92.68	AMP/DG
<66	> LOSS=	.112:	( .000)		( .000)		( .112)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 18		VOLTS:	.999	-2.29	1.032	-121.22	1.012	118.83	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 13		.....:	228.85	-30.43	155.56	-155.10	153.36	88.61	AMP/DG
<18	> LOSS=	4.907:	( 2.436)		( .341)		( 2.131)		kW
TO NODE 135		.....:	135.82	-31.42	136.56	-156.13	98.12	86.58	AMP/DG
<135	> LOSS=	.000:	( .000)		( .000)		( .000)		kW
TO NODE 19		.....:	37.29	-28.89					AMP/DG
<19	> LOSS=	.087:	( .087)						kW
TO NODE 21		.....:	55.79	-29.05	19.19	-147.79	55.41	92.21	AMP/DG
<21	> LOSS=	.125:	( .011)		( -.002)		( .116)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 135		VOLTS:	.999	-2.29	1.032	-121.23	1.012	118.83	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 18		.....:	135.82	-31.42	136.56	-156.13	98.12	86.58	AMP/DG
<135	> LOSS=	.000:	( .000)		( .000)		( .000)		kW
TO NODE 35		.....:	135.82	-31.42	136.56	-156.13	98.12	86.58	AMP/DG
<35	> LOSS=	1.026:	( .555)		( .397)		( .074)		kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L<60.%	
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: 35		VOLTS:	.996	-2.38	1.029	-121.31	1.011	118.77	MAG/ANG	
		D-LD:	40.00	20.00	.00	.00	.00	.00	kW/kVR	
kv11	4.160	Y CAP:	.00		.00		.00		kVR	
FROM NODE 135			.....:	135.82	-31.42	136.56	-156.13	98.12	86.58	AMP/DG
<35	> LOSS=	1.026:	(	.555)	(	.397)	(	.074)	kW	
TO NODE 36		.....:	18.51	-28.97	18.37	-147.93			AMP/DG	
<36	> LOSS=	.032:	(	.030)	(	.003)			kW	
TO NODE 40		.....:	108.64	-34.95	108.47	-155.43	98.12	86.58	AMP/DG	
<40	> LOSS=	.482:	(	.246)	(	.126)	(	.110)	kW	
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: 36		VOLTS:	.995	-2.40	1.029	-121.36			MAG/ANG	
		-LD:	.00	.00	.00	.00			kW/kVR	
kvLL	4.160	CAP:	.00		.00				kVR	
FROM NODE 35			.....:	18.51	-28.98	18.37	-147.94			AMP/DG
<36	> LOSS=	.032:	(	.030)	(	.003)			kW	
TO NODE 37		.....:	18.51	-28.98					AMP/DG	
<37	> LOSS=	.026:	(	.026)					kW	
TO NODE 38		.....:			18.37	-147.94			AMP/DG	
<38	> LOSS=	.021:			(	.021)			kW	
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: 37		VOLTS:	.994	-2.41					MAG/ANG	
		Y-LD:	39.55	19.77					kW/kVR	
kv11	4.160	Y CAP:	.00						kVR	
FROM NODE 36			.....:	18.51	-28.98					AMP/DG
<37	> LOSS=	.026:	(	.026)					kW	
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: 38		VOLTS:			1.028	-121.37			MAG/ANG	
		Y-LD:			20.56	10.28			kW/kVR	
kv11	4.160	Y CAP:			.00				kVR	
FROM NODE 36			.....:			18.37	-147.94			AMP/DG
<38	> LOSS=	.021:			(	.021)			kW	
TO NODE 39		.....:			9.06	-147.94			AMP/DG	
<39	> LOSS=	.007:			(	.007)			kW	
-----*			-----A-----*		-----B-----*		-----C-----*			
NODE: 39		VOLTS:			1.028	-121.38			MAG/ANG	
		Y-LD:			20.00	10.00			kW/kVR	
kv11	4.160	Y CAP:			.00				kVR	
FROM NODE 38			.....:			9.06	-147.94			AMP/DG
<39	> LOSS=	.007:			(	.007)			kW	





- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L<60.%
			-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 40		VOLTS:	.994	-2.42	1.028	-121.36	1.010	118.72	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 35		.....:	108.64	-34.95	108.47	-155.43	98.12	86.58	AMP/DG
<40 > LOSS=		.482:	(.246)		(.126)		(.110)		kW
TO NODE 41		.....:					9.22	92.15	AMP/DG
<41 > LOSS=		.007:					(.007)		kW
TO NODE 42		.....:	108.64	-34.95	108.47	-155.43	88.95	86.00	AMP/DG
<42 > LOSS=		.459:	(.265)		(.110)		(.083)		kW
			-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 41		VOLTS:					1.010	118.71	MAG/ANG
		Y-LD:					20.00	10.00	kW/kVR
kvLL	4.160	Y CAP:						.00	kVR
FROM NODE 40		.....:					9.22	92.15	AMP/DG
<41 > LOSS=		.007:					(.007)		kW
			-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 42		VOLTS:	.993	-2.45	1.027	-121.41	1.009	118.68	MAG/ANG
		Y-LD:	20.00	10.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 40		.....:	108.64	-34.95	108.47	-155.43	88.95	86.00	AMP/DG
<42 > LOSS=		.459:	(.265)		(.110)		(.083)		kW
TO NODE 43		.....:			19.10	-148.00			AMP/DG
<43 > LOSS=		.046:			(.046)				kW
TO NODE 44		.....:	99.32	-35.51	89.57	-157.01	88.95	86.00	AMP/DG
<44 > LOSS=		.299:	(.151)		(.063)		(.086)		kW
			-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 43		VOLTS:			1.026	-121.43			MAG/ANG
		Y-LD:			42.08	21.04			kW/kVR
kv11	4.160	Y CAP:				.00			kVR
FROM NODE 42		.....:			19.10	-148.00			AMP/DG
<43 > LOSS=		.046:			(.046)				kW
			-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 44		VOLTS:	.992	-2.48	1.026	-121.44	1.008	118.65	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 42		.....:	99.32	-35.51	89.57	-157.01	88.95	86.00	AMP/DG
<44 > LOSS=		.299:	(.151)		(.063)		(.086)		kW
TO NODE 45		.....:	18.71	-29.06					AMP/DG
<45 > LOSS=		.018:	(.018)						kW
TO NODE 47		.....:	80.76	-37.00	89.57	-157.01	88.95	86.00	AMP/DG
<47 > LOSS=		.327:	(.125)		(.117)		(.085)		kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L<60.%
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 45		VOLTS:	.991	-2.49					MAG/ANG
		Y-LD:	19.83	9.91					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 44		.....:	18.71	-29.06					AMP/DG
<45	> LOSS=	.018:	(	.018)					kW
TO NODE 46		.....:	9.40	-29.06					AMP/DG
<46	> LOSS=	.007:	(	.007)					kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 46		VOLTS:	.991	-2.50					MAG/ANG
		Y-LD:	20.00	10.00					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 45		.....:	9.40	-29.06					AMP/DG
<46	> LOSS=	.007:	(	.007)					kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 47		VOLTS:	.991	-2.50	1.025	-121.47	1.007	118.61	MAG/ANG
		Y-LD:	34.68	24.77	35.88	25.63	35.26	25.18	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 44		.....:	80.76	-37.00	89.57	-157.01	88.95	86.00	AMP/DG
<47	> LOSS=	.327:	(	.125)	(	.117)	(	.085)	kW
TO NODE 48		.....:	35.48	-38.05	36.71	-157.01	36.07	83.06	AMP/DG
<48	> LOSS=	.034:	(	.012)	(	.015)	(	.007)	kW
TO NODE 49		.....:	27.40	-34.98	34.95	-157.01	35.15	90.51	AMP/DG
<49	> LOSS=	.047:	(	.010)	(	.030)	(	.007)	kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 48		VOLTS:	.990	-2.51	1.025	-121.47	1.007	118.60	MAG/ANG
		Y-LD:	68.68	49.05	73.54	52.53	71.01	50.72	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 47		.....:	35.48	-38.05	36.71	-157.01	36.07	83.06	AMP/DG
<48	> LOSS=	.034:	(	.012)	(	.015)	(	.007)	kW
-----*-----A-----*-----B-----*-----C-----*-----									
NODE: 49		VOLTS:	.991	-2.51	1.025	-121.48	1.007	118.58	MAG/ANG
		Y-LD:	35.00	25.00	70.00	50.00	35.00	20.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 47		.....:	27.40	-34.98	34.95	-157.01	35.15	90.51	AMP/DG
<49	> LOSS=	.047:	(	.010)	(	.030)	(	.007)	kW
TO NODE 50		.....:	9.40	-29.08	.00	.00	18.49	92.02	AMP/DG
<50	> LOSS=	.008:	(	-.002)	(	.000)	(	.010)	kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L<60.%
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 50		VOLTS:	.990	-2.52	1.025	-121.47	1.007	118.57	MAG/ANG
		Y-LD:	.00	.00	.00	.00	40.00	20.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 49		.....:	9.40	-29.08	.00	.00	18.49	92.01	AMP/DG
<50	> LOSS=	.008:	( -.002)		( .000)		( .010)		kW
TO NODE 51		.....:	9.40	-29.08	.00	.00	.00	.00	AMP/DG
<51	> LOSS=	.002:	( .002)		( .000)		( .000)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 51		VOLTS:	.990	-2.53	1.025	-121.47	1.007	118.58	MAG/ANG
		Y-LD:	20.00	10.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	Y CAP:		.00		.00		.00	kVR
FROM NODE 50		.....:	9.40	-29.09	.00	.00	.00	.00	AMP/DG
<51	> LOSS=	.002:	( .002)		( .000)		( .000)		kW
TO NODE 151		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<151	> LOSS=	.000:	( .000)		( .000)		( .001)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 151		VOLTS:	.990	-2.53	1.025	-121.47	1.007	118.58	MAG/ANG
		-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11	4.160	CAP:		.00		.00		.00	kVR
FROM NODE 51		.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<151	> LOSS=	.000:	( .000)		( .000)		( .001)		kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 19		VOLTS:	.998	-2.31					MAG/ANG
		Y-LD:	40.00	20.00					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 18		.....:	37.29	-28.89					AMP/DG
<19	> LOSS=	.087:	( .087)						kW
TO NODE 20		.....:	18.62	-28.89					AMP/DG
<20	> LOSS=	.028:	( .028)						kW
-----*			-----A-----*		-----B-----*		-----C-----*		
NODE: 20		VOLTS:	.997	-2.33					MAG/ANG
		Y-LD:	39.87	19.93					kW/kVR
kv11	4.160	Y CAP:		.00					kVR
FROM NODE 19		.....:	18.62	-28.90					AMP/DG
<20	> LOSS=	.028:	( .028)						kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%	
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 21	VOLTS:	.998	-2.34	1.032	-121.22	1.011 118.81 MAG/ANG
	-LD:	.00	.00	.00	.00	.00 kW/kVR
kV11 4.160	CAP:		.00		.00	.00 kVR
FROM NODE 18	.....:	55.80	-29.06	19.19	-147.80	55.41 92.21 AMP/DG
<21 > LOSS=	.125:	( .011)		( -.002)		( .116) kW
TO NODE 22	.....:			19.19	-147.81	AMP/DG
<22 > LOSS=	.049:			( .049)		kW
TO NODE 23	.....:	55.80	-29.06	.00	.00	55.41 92.21 AMP/DG
<23 > LOSS=	.112:	( -.006)		( .000)		( .117) kW
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 22	VOLTS:			1.031	-121.25	MAG/ANG
	Y-LD:			42.48	21.24	kW/kVR
kV11 4.160	Y CAP:				.00	kVR
FROM NODE 21	.....:			19.19	-147.81	AMP/DG
<22 > LOSS=	.049:			( .049)		kW
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 23	VOLTS:	.998	-2.39	1.032	-121.20	1.010 118.79 MAG/ANG
	-LD:	.00	.00	.00	.00	.00 kW/kVR
kV11 4.160	CAP:		.00		.00	.00 kVR
FROM NODE 21	.....:	55.80	-29.06	.00	.00	55.41 92.21 AMP/DG
<23 > LOSS=	.112:	( -.006)		( .000)		( .117) kW
TO NODE 24	.....:					18.46 92.21 AMP/DG
<24 > LOSS=	.047:					( .047) kW
TO NODE 25	.....:	55.80	-29.06	.00	.00	36.95 92.21 AMP/DG
<25 > LOSS=	.091:	( .021)		( .000)		( .070) kW
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 24	VOLTS:					1.009 118.77 MAG/ANG
	Y-LD:					40.00 20.00 kW/kVR
kVLL 4.160	Y CAP:					.00 kVR
FROM NODE 23	.....:					18.46 92.20 AMP/DG
<24 > LOSS=	.047:					( .047) kW
-----*-----A-----*-----B-----*-----C-----*-----						
NODE: 25	VOLTS:	.997	-2.45	1.033	-121.20	1.009 118.80 MAG/ANG
	-LD:	.00	.00	.00	.00	.00 kW/kVR
kV11 4.160	CAP:		.00		.00	.00 kVR
FROM NODE 23	.....:	55.80	-29.06	.00	.00	36.95 92.21 AMP/DG
<25 > LOSS=	.091:	( .021)		( .000)		( .070) kW
TO NODE 28	.....:	37.18	-29.05	.00	.00	18.47 92.21 AMP/DG
<28 > LOSS=	.026:	( .011)		( .000)		( .015) kW
TO NODE RG3	.<VRG>..:	18.62	-29.08			18.47 92.21 AMP/DG
<RG3 > LOSS=	.000:	( .000)				( .000) kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%			
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: 28	VOLTS:	.997	-2.48	1.033	-121.19	1.009	118.80	MAG/ANG
	Y-LD:	39.87	19.94	.00	.00	.00	.00	kW/kVR
kv11 4.160	Y CAP:		.00		.00		.00	kVR
-----*-----A-----*-----B-----*-----C-----*-----								
FROM NODE 25	.....:	37.18	-29.05	.00	.00	18.47	92.21	AMP/DG
<28 > LOSS=	.026:	(.011)		(.000)		(.015)		kW
TO NODE 29	.....:	18.56	-29.05	.00	.00	18.47	92.21	AMP/DG
<29 > LOSS=	.015:	(-.001)		(.000)		(.015)		kW
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: 29	VOLTS:	.997	-2.50	1.033	-121.19	1.008	118.79	MAG/ANG
	Y-LD:	39.73	19.87	.00	.00	.00	.00	kW/kVR
kv11 4.160	Y CAP:		.00		.00		.00	kVR
-----*-----A-----*-----B-----*-----C-----*-----								
FROM NODE 28	.....:	18.56	-29.06	.00	.00	18.47	92.21	AMP/DG
<29 > LOSS=	.015:	(-.001)		(.000)		(.015)		kW
TO NODE 30	.....:	.00	.00	.00	.00	18.47	92.21	AMP/DG
<30 > LOSS=	.010:	(.000)		(.000)		(.010)		kW
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: 30	VOLTS:	.997	-2.50	1.033	-121.18	1.008	118.77	MAG/ANG
	Y-LD:	.00	.00	.00	.00	40.00	20.00	kW/kVR
kv11 4.160	Y CAP:		.00		.00		.00	kVR
-----*-----A-----*-----B-----*-----C-----*-----								
FROM NODE 29	.....:	.00	.00	.00	.00	18.47	92.21	AMP/DG
<30 > LOSS=	.010:	(.000)		(.000)		(.010)		kW
TO NODE 250	.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<250 > LOSS=	.000:	(.000)		(.000)		(.000)		kW
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: 250	VOLTS:	.997	-2.50	1.033	-121.18	1.008	118.77	MAG/ANG
	-LD:	.00	.00	.00	.00	.00	.00	kW/kVR
kv11 4.160	CAP:		.00		.00		.00	kVR
-----*-----A-----*-----B-----*-----C-----*-----								
FROM NODE 30	.....:	.00	.00	.00	.00	.00	.00	AMP/DG
<250 > LOSS=	.000:	(.000)		(.000)		(.000)		kW
-----*-----A-----*-----B-----*-----C-----*-----								
NODE: RG3	VOLTS:	.997	-2.45			1.003	118.80	MAG/ANG
	-LD:	.00	.00			.00	.00	kW/kVR
kv11 4.160	CAP:		.00				.00	kVR
-----*-----A-----*-----B-----*-----C-----*-----								
FROM NODE 25	<VRG>:	18.62	-29.08			18.59	92.21	AMP/DG
<RG3 > LOSS=	.000:	(.000)				(.000)		kW
TO NODE 26	.....:	18.62	-29.08			18.59	92.21	AMP/DG
<26 > LOSS=	.017:	(.001)				(.016)		kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 26	VOLTS:	.997	-2.48	1.002	118.79 MAG/ANG
	-LD:	.00	.00	.00	.00 kW/kVR
kv11 4.160	CAP:		.00		.00 kVR
FROM NODE RG3	.....:	18.62	-29.08	18.59	92.21 AMP/DG
<26 > LOSS=	.017:	(	.001)	(	.016) kW
TO NODE 27	.....:	18.62	-29.08	.00	.00 AMP/DG
<27 > LOSS=	.008:	(	.009)	(	.000) kW
TO NODE 31	.....:			18.59	92.21 AMP/DG
<31 > LOSS=	.020:			(	.020) kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 27	VOLTS:	.997	-2.49	1.002	118.79 MAG/ANG
	-LD:	.00	.00	.00	.00 kW/kVR
kv11 4.160	CAP:		.00		.00 kVR
FROM NODE 26	.....:	18.62	-29.08	.00	.00 AMP/DG
<27 > LOSS=	.008:	(	.009)	(	.000) kW
TO NODE 33	.....:	18.62	-29.08		AMP/DG
<33 > LOSS=	.044:	(	.044)		kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 33	VOLTS:	.995	-2.52		MAG/ANG
	Y-LD:	39.81	19.91		kW/kVR
kv11 4.160	Y CAP:		.00		kVR
FROM NODE 27	.....:	18.62	-29.08		AMP/DG
<33 > LOSS=	.044:	(	.044)		kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 31	VOLTS:			1.002	118.77 MAG/ANG
	Y-LD:			20.00	10.00 kW/kVR
kvLL 4.160	Y CAP:				.00 kVR
FROM NODE 26	.....:			18.59	92.21 AMP/DG
<31 > LOSS=	.020:			(	.020) kW
TO NODE 32	.....:			9.30	92.20 AMP/DG
<32 > LOSS=	.007:			(	.007) kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 32	VOLTS:			1.001	118.77 MAG/ANG
	Y-LD:			20.00	10.00 kW/kVR
kvLL 4.160	Y CAP:				.00 kVR
FROM NODE 31	.....:			9.30	92.20 AMP/DG
<32 > LOSS=	.007:			(	.007) kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE	VALUE	PHASE A (LINE A)	PHASE B (LINE B)	PHASE C (LINE C)	UNT O/L< 60.%
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 34	VOLTS:			1.019	118.88 MAG/ANG
	Y-LD:			41.51	20.75 kW/kVR
kVLL 4.160	Y CAP:				.00 kVR
FROM NODE 13	.....:			46.42	92.30 AMP/DG
<34 > LOSS=	.081:			( .081)	kW
TO NODE 15	.....:			27.45	92.30 AMP/DG
<15 > LOSS=	.019:			( .019)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 15	VOLTS:			1.018	118.87 MAG/ANG
	-LD:			.00	.00 kW/kVR
kVLL 4.160	CAP:				.00 kVR
FROM NODE 34	.....:			27.45	92.30 AMP/DG
<15 > LOSS=	.019:			( .019)	kW
TO NODE 16	.....:			18.30	92.29 AMP/DG
<16 > LOSS=	.032:			( .032)	kW
TO NODE 17	.....:			9.15	92.30 AMP/DG
<17 > LOSS=	.007:			( .007)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 16	VOLTS:			1.017	118.85 MAG/ANG
	Y-LD:			40.00	20.00 kW/kVR
kVLL 4.160	Y CAP:				.00 kVR
FROM NODE 15	.....:			18.30	92.29 AMP/DG
<16 > LOSS=	.032:			( .032)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 17	VOLTS:			1.018	118.86 MAG/ANG
	Y-LD:			20.00	10.00 kW/kVR
kVLL 4.160	Y CAP:				.00 kVR
FROM NODE 15	.....:			9.15	92.30 AMP/DG
<17 > LOSS=	.007:			( .007)	kW
-----*-----A-----*-----B-----*-----C-----*-----					
NODE: 9	VOLTS:	1.014	-1.47		MAG/ANG
	Y-LD:	40.00	20.00		kW/kVR
kV11 4.160	Y CAP:		.00		kVR
FROM NODE 8	.....:	46.22	-28.05		AMP/DG
<9 > LOSS=	.122:	( .122)			kW
TO NODE RG2	.<VRG>..:	27.86	-28.07		AMP/DG
<RG2 > LOSS=	.000:	( .000)			kW



- **R A D I A L P O W E R F L O W** --- DATE: 6-24-2004 AT 16:54:45 HOURS ---  
 SUBSTATION: IEEE 123; FEEDER: IEEE 123

NODE		VALUE	PHASE A (LINE A)		PHASE B (LINE B)		PHASE C (LINE C)		UNT O/L< 60.%
			A		B		C		
NODE: RG2			VOLTS:	1.008	-1.47				MAG/ANG
			-LD:	.00	.00				kW/kVR
kv11	4.160	CAP:			.00				kVR
FROM NODE 9			<VRG>:	28.03	-28.07				AMP/DG
<RG2 > LOSS=			.000:	(	.000)				kW
TO NODE 14			.....:	28.03	-28.07				AMP/DG
<14 > LOSS=			.084:	(	.084)				kW
			A		B		C		
NODE: 14			VOLTS:	1.006	-1.50				MAG/ANG
			-LD:	.00	.00				kW/kVR
kv11	4.160	CAP:			.00				kVR
FROM NODE RG2			.....:	28.04	-28.07				AMP/DG
<14 > LOSS=			.084:	(	.084)				kW
TO NODE 10			.....:	9.31	-28.07				AMP/DG
<10 > LOSS=			.005:	(	.005)				kW
TO NODE 11			.....:	18.73	-28.07				AMP/DG
<11 > LOSS=			.022:	(	.022)				kW
			A		B		C		
NODE: 10			VOLTS:	1.006	-1.50				MAG/ANG
			Y-LD:	20.12	10.06				kW/kVR
kv11	4.160	Y CAP:			.00				kVR
FROM NODE 14			.....:	9.31	-28.07				AMP/DG
<10 > LOSS=			.005:	(	.005)				kW
			A		B		C		
NODE: 11			VOLTS:	1.006	-1.51				MAG/ANG
			Y-LD:	40.45	20.23				kW/kVR
kv11	4.160	Y CAP:			.00				kVR
FROM NODE 14			.....:	18.73	-28.08				AMP/DG
<11 > LOSS=			.022:	(	.022)				kW

