WITHOUT CAPACITORS

	BUS-1		BUS-2		BUS-3		BUS-4		BUS-5		BUS-6	
Iteration	Voltage	Angle	Voltage	Angle	Voltage	Angle	Voltage	Angle	Voltage	Angle	Voltage	Angle
1	1.01000	0.00	0.82460	-8.46	1.05000	8.51	0.79317	-6.78	1.05000	0.30	0.82798	-5.55
2	1.01000	0.00	0.74824	-12.32	1.05000	6.69	0.70511	-11.19	1.05000	-2.49	0.75575	-9.51
3	1.01000	0.00	0.73009	-13.16	1.05000	6.24	0.68451	-12.29	1.05000	-3.23	0.73936	-10.48
4	1.01000	0.00	0.72902	-13.21	1.05000	6.21	0.68328	-12.36	1.05000	-3.28	0.73840	-10.54
5	1.01000	0.00	0.72902	-13.21	1.05000	6.21	0.68328	-12.36	1.05000	-3.28	0.73839	-10.54

YBUS FOR LOAD FLOW (IN PER UNIT)

8.1461/_-76.0	4.5822/_104.0	3.5639/_104.0	0.0000/_ 0.0	0.0000/_ 0.0	0.0000/_ 0.0
4.5822/_104.0	8.5916/_-76.0	0.0000/_ 0.0	4.0094/_104.0	0.0000/_ 0.0	0.0000/_ 0.0
3.5639/_104.0	0.0000/_ 0.0	8.9098/_-76.0	0.0000/_ 0.0	5.3459/_104.0	0.0000/_ 0.0
0.0000/_ 0.0	4.0094/_104.0	0.0000/_ 0.0	13.6320/_-76.0	3.2075/_104.0	6.4151/_104.0
0.0000/_ 0.0	0.0000/_ 0.0	5.3459/_104.0	3.2075/_104.0	12.3270/_-76.0	3.7736/_104.0
0.0000/_ 0.0	0.0000/_ 0.0	0.0000/_ 0.0	6.4151/_104.0	3.7736/_104.0	10.1886/_-76.0

Power Flow Solution by Newton-Raphson Method

Bus No.	Voltage Mag.	Angle Degree	------Load------ MW	Mvar	---Generation--- MW	Mvar
1	1.010	0.000	50.000	80.000	115.875	194.212
2	0.729	-13.207	95.000	50.000	0.000	0.000
3	1.050	6.208	60.000	110.000	200.000	101.020
4	0.683	-12.358	70.000	100.000	0.000	0.000
5	1.050	-3.277	80.000	40.000	120.000	298.269
6	0.738	-10.536	40.000	50.000	0.000	0.000
Total			395.000	430.000	435.875	593.500

Line Flow and Losses and Bus Injections

--Line-- from	to	Power at bus & line flow MW	Mvar	MVA	--Line loss-- MW	Mvar
1		65.875	114.212	131.848		
	2	108.483	116.118	158.909	13.102	52.410
	3	-42.606	-1.905	42.649	1.213	4.854
2		-95.000	-50.000	107.355		
	1	-95.380	-63.708	114.700	13.102	52.410
	4	0.380	13.708	13.714	0.214	0.856
3		140.000	-8.980	140.288		
	1	43.820	6.759	44.338	1.213	4.854
	5	96.180	-15.739	97.460	3.909	15.635
4		-70.000	-100.000	122.066		
	2	-0.166	-12.852	12.853	0.214	0.856
	5	-54.031	-66.365	85.578	11.861	47.445
	6	-15.803	-20.783	26.109	0.552	2.208
5		40.000	258.269	261.348		
	4	65.892	113.810	131.509	11.861	47.445
	6	66.379	113.088	131.130	10.024	40.097
	3	-92.272	31.374	97.460	3.909	15.635
6		-40.000	-50.000	64.031		
	4	16.355	22.991	28.215	0.552	2.208
	5	-56.355	-72.991	92.215	10.024	40.097

Total loss 40.876 MW 163.505 MVAR

WITH CAPACITORS

	BUS-1		BUS-2		BUS-3		BUS-4		BUS-5		BUS-6	
Iteration	Voltage	Angle	Voltage	Angle	Voltage	Angle	Voltage	Angle	Voltage	Angle	Voltage	Angle
1	1.01000	0.00	0.99452	-10.63	1.05000	8.75	0.98783	-9.07	1.05000	0.70	1.01252	-7.64
2	1.01000	0.00	0.96717	-11.35	1.05000	7.89	0.96089	-10.15	1.05000	-0.52	0.98854	-8.73
3	1.01000	0.00	0.96600	-11.38	1.05000	7.87	0.95972	-10.20	1.05000	-0.56	0.98755	-8.78
4	1.01000	0.00	0.96600	-11.38	1.05000	7.87	0.95972	-10.20	1.05000	-0.56	0.98755	-8.78

YBUS FOR LOAD FLOW (IN PER UNIT)

8.1461/_-76.0	4.5822/_104.0	3.5639/_104.0	0.0000/_ 0.0	0.0000/_ 0.0	0.0000/_ 0.0
4.5822/_104.0	7.9143/_-74.7	0.0000/_ 0.0	4.0094/_104.0	0.0000/_ 0.0	0.0000/_ 0.0
3.5639/_104.0	0.0000/_ 0.0	8.9098/_-76.0	0.0000/_ 0.0	5.3459/_104.0	0.0000/_ 0.0
0.0000/_ 0.0	4.0094/_104.0	0.0000/_ 0.0	12.8574/_-75.1	3.2075/_104.0	6.4151/_104.0
0.0000/_ 0.0	0.0000/_ 0.0	5.3459/_104.0	3.2075/_104.0	12.3270/_-76.0	3.7736/_104.0
0.0000/_ 0.0	0.0000/_ 0.0	0.0000/_ 0.0	6.4151/_104.0	3.7736/_104.0	9.6077/_-75.1

Power Flow Solution by Newton-Raphson Method

Bus No.	Voltage Mag.	Angle Degree	------Load------ MW	Mvar	---Generation--- MW	Mvar	Injected Mvar
1	1.010	0.000	50.000	80.000	89.835	88.916	0.000
2	0.966	-11.380	95.000	50.000	0.000	0.000	65.321
3	1.050	7.867	60.000	110.000	200.000	100.65	0.000
4	0.960	-10.198	70.000	100.000	0.000	0.000	73.685
5	1.050	-0.559	80.000	40.000	120.000	102.25	0.000
6	0.988	-8.778	40.000	50.000	0.000	0.000	58.515
Total			395.00	430.00	409.835	291.819	197.521

Line Flow and Losses and Bus Injections

--Line-- from	to	Power at bus & line flow MW	Mvar	MVA	--Line loss-- MW	Mvar
1		39.835	8.916	40.820		
	2	92.650	6.888	92.906	4.479	17.915
	3	-52.815	2.029	52.854	1.864	7.454
2		-95.000	15.321	107.355		
	1	-88.172	11.026	88.858	4.479	17.915
	4	-6.828	4.294	8.066	0.042	0.169
3		140.000	-9.348	140.312		
	1	54.678	5.426	54.947	1.864	7.454
	5	85.322	-14.774	86.591	3.085	12.342
4		-70.000	-26.315	122.066		
	2	6.871	-4.126	8.014	0.042	0.169
	5	-58.142	-9.406	58.898	2.848	11.391
	6	-18.729	-12.783	22.675	0.211	0.844
5		40.000	62.251	73.994		
	4	60.989	20.798	64.438	2.848	11.391
	6	61.247	14.339	62.903	2.307	9.227
	3	-82.236	27.116	86.591	3.085	12.342
6		-40.000	8.515	64.031		
	4	18.940	13.627	23.333	0.211	0.844
	5	-58.940	-5.112	59.161	2.307	9.227

Total loss 14.835 MW 59.342 MVAR