SCHEDULES TO THE

CONTINUING SITE/INTERCONNECTION AGREEMENT
BY AND BETWEEN
O&R
AND
NY-GEN LLC

Schedule A to Continuing Site/Interconnection Agreement

Confidential Energy Infrastructure Information ("CEII")

Schedule A (Part II) to Continuing Site/Interconnection Agreement

PLANT: RIO

TRIPS BREAKER	RELAY TYPE	DEVICE #	OWNER	
			ORU	SC
15-3-2	HZ	21-1	X	
15-3-2	HZ	21-2	X	
15-3-2	HZ	21-3	X	
15-3-2	JBCG	67N	X	
53-2	CA	87T-1	X	
53-2	CA	87T-2	X	
53-2	CA	87T-3	X	
53-2	C0-9	51N	X	
69KV	IJS	25A	X	
BKR 13A-2B & 13B-2B	C0	51-1		X
BKR 13A-2B & 13B-2B	C0	51-2		X
BKR 13A-2B & 13B-2B	C0	51-3		X
BKR 13A-2B & 13B-2B	C0	87T-1		X
BKR 13A-2B & 13B-2B	C0	87T-2		X
BKR 13A-2B & 13B-2B	C0	87T-3		X
STATION SERVICE	C0	51-1		X
STATION SERVICE	C0	51-2		X
STATION SERVICE	C0	51-3		X
GEN. #1 LOCKOUT	IAC	50/51/1		X
GEN. #1 LOCKOUT	IAC	50/51/2		X
GEN. #1 LOCKOUT	IAC	50/51/3		X
GEN. #1 LOCKOUT	IJC	46		X
GEN. #1 LOCKOUT	IAV	46X		X
GEN. #1 LOCKOUT	CA	87G-1		X
GEN. #1 LOCKOUT	CA	87G-2		X
GEN. #1 LOCKOUT	CA	87G-3		X
GEN. #1 LOCKOUT	CFT	49		X
GEN. #2 LOCKOUT	IAC	50/51/1		X
GEN. #2 LOCKOUT	IAC	50/51/2		X
GEN. #2 LOCKOUT	IAC	50/51/3		X
GEN. #2 LOCKOUT	IJC	46		X
GEN. #2 LOCKOUT	IAV	46X		X
GEN. #2 LOCKOUT	CA	87G-1		X
GEN. #2 LOCKOUT	CA	87G-2		X
GEN. #2 LOCKOUT	CA	87G-3		X
GEN. #2 LOCKOUT	CFT	49		X
GEN. SYNC.	BECKWITH M-0193	25		X
GEN. CONTROL	BECKWITH M-0194	15		X
18-3-2	MG-6	TRIP	X	
18-3-2	MG-6	CLOSE	X	

PLANT: RIO (CONTINUED)

TRIPS BREAKER	RELAY TYPE	DEVICE #	OWNER	
			ORU	SC
18-3-2	CR-11	67-1	X	
18-3-2	CR-11	67-2	X	
18-3-2	CR-11	67-3	X	
18-3-2	C0-11	50/51/N	X	
3-1D-2	C0-11	50/51/1	X	
3-1D-2	C0-11	50/51/2	X	
3-1D-2	C0-11	50/51/3	X	
3-1D-2	C0-11	50/51/N	X	

PLANT: RIO (CONTINUED)

TRIPS BREAKER	RELAY TYPE	DEVICE #	OWNER	
			ORU	SC
18-3-2	CR-11	67-1	X	
18-3-2	CR-11	67-2	X	
18-3-2	CR-11	67-3	X	
18-3-2	CO-11	50/51/N	X	
3-1D-2	CO-11	50/51/1	X	
3-1D-2	CO-11	50/51/2	X	
3-1D-2	CO-11	50/51/3	X	
3-1D-2	CO-11	50/51/N	X	

PLANT: SWINGING BRIDGE #1				
TRIPS BREAKER	RELAY TYPE	DEVICE #	OWNER	
			ORU	SC
GEN. #1	CA	87T-1		X
GEN. #1	CA	87T-2		X
GEN. #1	CA	87T-3		X
GEN. #1	CA	87G-1		X
GEN. #1	CA	87G-2		X
GEN. #1	CA	87G-3		X
11-2	IAC	51-1		X
11-2	IAC	51-2		X
11-2	IAC	51-3		X
11-2	CO-9	51-N		X
GEN. #1	CP	47		X
GEN. #1	BL-1	49-1		X
GEN. #1	BL-2	49-2		X
GEN. #1	BL-3	49-3		X
STATION SERVICE	CO	151-1		X
31-2B	CO	151-3		X
GATE HOUSE	IAC	51-OPEN		X
GATE HOUSE	IAC	51-CLOSE		X
ALARM ONLY FIELD GRD. DET.	PJG	64F		X
PICKS 52Z	CV	2S		X
SYN GEN. #1	BECKWITH M-0993B	25		X

PLANT: SWINGING BRIDGE #2				
TRIPS BREAKER	RELAY TYPE	DEVICE #	OWNER	
			ORU	SC
21-2	IAC	51-1		X
21-2	IAC	51-2		X
21-2	IAC	51-3		X
21-2	C0-9	50/51N		X
21-1 & LOCKOUT	IAV	46X		X
21-1 & LOCKOUT	IJC	46		X
21-1 & LOCKOUT	IJD	87G-1		X
21-1 & LOCKOUT	IJD	87G-2		X
21-1 & LOCKOUT	IJD	87G-3		X
21-1 & LOCKOUT	IJD	87T-1		X
21-1 & LOCKOUT	IJD	87T-2		X
21-1 & LOCKOUT	IJD	87T-3		X
21-1 & LOCKOUT	ICT	49		X
SYN	M-0193	25		X
ALARM ONLY	PJG	64F'		X

PLANT: MONGAUP

TRIPS BREAKER	RELAY TYPE	DEVICE #	OWNER	
			ORU	SC
52-2	IA-201	51-1		X
52-2	IA-201	51-2		X
52-2	IA-201	51-3		X
9-2-2	IA-201	51-1	X	
9-2-2	IA-201	51-2	X	
9-2-2	IA-201	51-3	X	
9-2-2	CWP	67N	X	
12-2-2	HZ	21-1	X	
12-2-2	HZ	21-2	X	
12-2-2	HZ	21-3	X	
12-2-2	JBCC	67NB	X	
12-2-2, 131-2-2	RPM	21X	X	
131-2-2	HZ	21-1	X	
131-2-2	HZ	21-2	X	
131-2-2	HZ	21-3	X	
131-2-2	JBCC	67NB	X	
15-2-2	HZ	21-1	X	
15-2-2	HZ	21-2	X	
15-2-2	HZ	21-3	X	
15-2-2	JBCG	67N	X	
69KV BREAKER	GES	25	X	
69KV BREAKER	IJS	25A	X	
GEN. 1-2-3-4	GES	25G		X
GEN. #1	IAC	50/51-1		X
GEN. #1	IAC	50/51-2		X
GEN. #1	IAC	50/51-3		X
GEN. #1	IJC	46		X
GEN. #1	IAV	46X		X
GEN. #1	DDG	87G-1		X
GEN. #1	DDG	87G-2		X
GEN. #1	DDG	87G-3		X
GEN. #2	IAC	50/51-1		X
GEN. #2	IAC	50/51-2		X
GEN. #2	IAC	50/51-3		X
GEN. #2	IJC	46		X
GEN. #2	IAV	46X		X
GEN. #3	IAC	50/51-1		X
GEN. #3	IAC	50/51-2		X
GEN. #3	IAC	50/51-3		X
GEN. #3	IJC	46		X
GEN. #3	IAV	46X		X

PLANT: MONGAUP (CONTINUED)				
TRIPS BREAKER	RELAY TYPE	DEVICE #	OWNER	
			ORU	SC
GEN. #4	IAC	50/51-1		X
GEN. #4	IAC	50/51-2		X
GEN. #4	IAC	50/51-3		X
GEN. #4	IJC	46		X
GEN. #4	IAC	46X		X
GEN. #4	DDG	87G-1		X
GEN. #4	DDG	87G-2		X
GEN. #4	DDG	87G-3		X
2-1-2K	CO-11	50/51-1	X	
2-1-2K	CO-11	50/51-2	X	
2-1-2K	CO-11	50/51-3	X	

PLANT: MONGAUP (CONTINUED)				
TRIPS BREAKER	RELAY TYPE	DEVICE #	OWNER	
			ORU	SC
GEN. #4	IAC	50/51-1		X
GEN. #4	IAC	50/51-2		X
GEN. #4	IAC	50/51-3		X
GEN. #4	IJC	46		X
GEN. #4	IAC	46X		X
GEN. #4	DDG	87G-1		X
GEN. #4	DDG	87G-2		X
GEN. #4	DDG	87G-3		X
2-1-2K	C0-11	50/51-1	X	
2-1-2K	C0-11	50/51-2	X	
2-1-2K	C0-11	50/51-3	X	

PLANT - MONGAUP 69KV YARD

DIVESTED ASSET - OCB 52-2

		OWNER	
CABLE #	FUNCTION	ORU	SEI
75	CONTROL		X
195	DC CONTROL POWER		X
26	BANK 52 RELAYS		X

PLANT - MONGAUP 69KV YARD			
DIVESTED ASSET - BANK 52			
		OWNER	
CABLE #	FUNCTION	ORU	SEI
44 87	LINE POLARIZING CURRENT TEMPERATURE INDICATION	X	X

PLANT - RIO 69KV YARD			
DIVESTED ASSET - OCB 13-2			
		OWNER	
CABLE #	FUNCTION	ORU	SEI
ALL CABLES	RELAY AND CONTROL		X

PLANT - SWINGING BRIDGE 69KV YARD			
DIVESTED ASSET - OCB 11-2			
		OWNER	
CABLE #	FUNCTION	ORU	SEI
ALL CABLES	RELAY AND CONTROL		X

PLANT - SWINGING BRIDGE 69KV YARD			
DIVESTED ASSET - OCB 21-2			
		OWNER	
CABLE #	FUNCTION	ORU	SEI
ALL CABLES	RELAY AND CONTROL		X

SELLER PROVIDED SYSTEM INFORMATION

1. Hourly billing (MWH)
2. Actual output in MW
3. AGC signals sent by the ISO
4. VAR contributions
5. Voltages of busses at plants
6. MW at busses at plants
7. MVAR at busses at plants
8. Breaker positions on busses
9. Station service MWH at busses at plants

VOLTAGE LEVEL FOR SYSTEM LOADS

SYSTEM LOAD		300	400	500	600	700	800	900	1000	1100	1160
LOVETT	138	140.0	141.0	141.5	142.3	142.6	142.9	143.8	144.4	144.6	144.6
RAMAPO	138	140.5	141.0	141.5	142.0	142.6	143.0	143.7	144.5	144.7	144.6
SOUTH MAHWAH	138	140.5	140.5	142.0	142.5	142.9	143.5	144.0	144.5	144.6	144.8
WEST HAVERSTRAW	138	140.0	141.0	141.5	142.7	143.0	143.5	143.7	144.0	144.5	144.8
BURNS	69	70.0	70.0	70.5	71.0	71.4	71.8	72.0	72.0	72.2	72.2
HARINGS CORNER	69	69.5	70.0	70.5	71.2	71.5	71.8	72.2	72.5	72.5	72.5
HILLBURN	69	69.5	70.0	70.5	71.2	71.5	71.7	72.0	72.2	72.6	72.8
LOVETT	69	70.0	71.0	71.0	71.4	71.5	71.8	72.2	72.2	72.2	72.4
SOUTH MAHWAH	69	70.0	70.5	71.0	71.3	71.5	71.7	72.0	72.1	72.4	72.5
SUGARLOAF	69	70.0	70.5	70.5	71.0	71.6	71.8	72.0	72.2	72.2	72.2
WEST NYACK	69	69.5	70.0	70.5	71.2	71.5	71.9	72.2	72.5	72.5	72.5
PORT JERVIS	34	35.0	35.5	35.5	35.5	35.6	35.6	36.0	36.0	36.0	36.0
SHOEMAKER	34	35.0	35.5	35.5	35.5	35.6	35.6	36.0	36.0	36.3	36.3
CUDDEBACKVILLE	34	35.0	35.4	35.4	35.5	35.8	35.8	35.8	36.0	36.1	36.2
LOAD		5MW	10MW	15MW							
CRESSKILL	34	33.4	33.8	34.3							

NOTE: THE 345KV TIE (RAMAPO, SOUTH MAHWAH, WEST HAVERSTRAW) STATION VOLTAGES ARE ASSUMED TO RANGE FROM 362KV TO 350KV THESE STATION VOLTAGES ARE CONTROLLED BY NYPP.

Schedule D to Continuing Site/Interconnection Agreement

Schedule D

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

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BLACK START AND SYSTEM RESTORATION PLAN

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General

This plan is to be implemented following a total blackout of the Orange and Rockland system. It defines the general strategies to be employed for restarting the system from any available tie or available black start generation source. In addition, this plan will serve as a guide for the complete restoration of service to all customers of the franchise area.

Organization

Critical to the success of this operation is the strict adherence to an organizational plan which will oversee and direct the startup and complete restoration of the system. It will be the responsibility and authority of this organization to accomplish the following:

1. Provide timely and thorough communication with appropriate inter-company and intra-company personnel.
2. To effectively deploy company field crews and generating personnel in such manner as to re-energize the O&R bulk power system as expeditiously as possible and to direct as frequency and stability considerations permit, the restoration of the distribution system.
3. To implement this operating procedure with discretion such that the risk of damage to company transmission, generation and distribution facilities is at all time minimized.

This organization will be divided into two groups: The Directing Group and the Control Group. The former will be comprised of the Director of System Operations, and the managers of Substation Operations, and Delivery Systems Design. Under the leadership of the Director of System Operations, the Directing Group will be located in the Observation Room of the Energy Control Center (ECC) and will be responsible for the following:

1. The direction and overall implementation of this procedure.
2. Communicating system status with the Executive Staff and O&R Corporate Communications Department.
3. Directing the deployment of line crews by communication with the Director of Operations.
4. Providing advice and consultation for the Control Group.
5. Deploying substation, relay and hydro crews as requested by the Senior System Operator.
6. Directing the ECC computer group to cover remote terminal unit, uninterruptible power supply and computer problems.

The Control Group will be comprised of the Manager of System Operations, three Senior System Operators and three System Operators. This group will be positioned on the Operating Floor of the ECC. The Control Group will be responsible for the following:

1. Effecting the specific steps for starting up and restoring the system.
2. Communicating system status with the New York Power Pool and coordinating with that body, the restoration of the 345 KV system in the O&R franchise territory under O&R responsibility as detailed in the NYPP Operating Policy 13.

Revised by: System Operations Dept. - January 1999

Distributed to: G. V. Bubolo, Jr.
Distribution List

Approved by:

Supersedes: 6-E-10

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3. Coordinating with Consolidated Edison, Central Hudson and Public Service the synchronization of the systems. (Appendix I - list of substation with synchronizing scopes and breakers with sync-check relays.)
4. Advising the Distribution Supervisor of circuits to be restored on the Distribution system.
5. Maintaining the generation-load balance such that frequency is held at 60 Hz.
6. Maintaining reactive balance and system voltages such that the 5% plus or minus criteria is not violated.
7. Maintaining Transmission line ratings within the limits defined under OI 2-E.
8. Coordinating, whenever possible, with the DS, the restoration of critical loads such as hospitals, police and fire departments, military installations, gas, water, sewer plants and medical emergencies.

Communications with the various system operator functions is extremely important to the restoration and should be handled via the specific phone numbers as follows:

1.	Senior System Operator	a) 577-3354	b) 352-0095
2.	Eastern Switching (SO)	a) 577-3350	b) 352-2114
3.	Western/Central Switching (SO)	a) 577-3353	b) 352-2114
4.	Relay Department	a) 577-3351	b) 352-2114
5.	Generation	577-3352	
6.	Emergency	352-0096	

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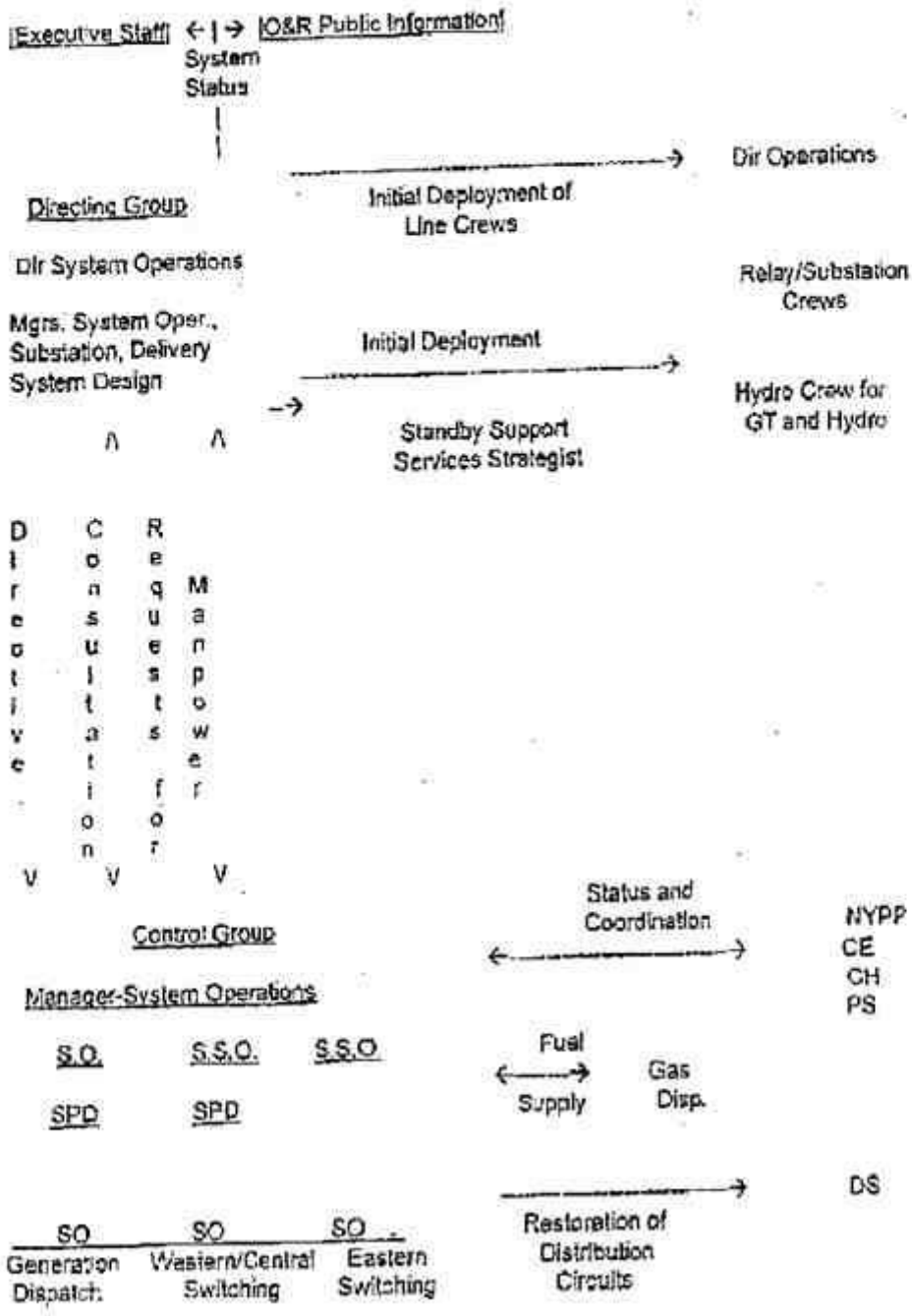

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Procedural Outline

The restoration of the system will proceed in general as outlined below.

I. System Assessment and Initial Operations
II. Tie Line, Gas Turbine, Co-generation, and Hydro Black Start Procedure
III. Startup Power for Lovett
IV. Startup Power for Bowline and Restoration of the 345 KV System under O&R authority
V. Restoration of the 138 KV System and Islanded Systems
VI. Selective Simultaneous Restoration of 69KV Loops
   A. South Mahwah - Hillburn - Montvale
   B. Hillburn - Harriman - Sugarloaf - West Point
   C. Sterling Forest
   D. Harings Corner
   E. Western Division
VII. Restoration of the 34.5 KV Systems
   A. Eastern
   B. Western
   C. Central

1. System Assessment and Initial Operations

The Senior System Operator will determine and use the most advantageous point of restart whether it be islanded generation, interconnection point or black start generation.

A. Generation - Following a major disruption on the bulk power interconnection which has caused a total shutdown or separation of systems, the Senior System Operator will communicate with all generating plants to make a determination whether any islanding of units has occurred. If units at Lovett have been islanded the following principles must be strictly observed.

1. A sustained high or low frequency can result in catastrophic failure of turbine generators. According to the EPRI report on Operation Below Normal Frequency, turbines can run at 58.5 Hz for one hour before sustaining damage and as low as 56 Hz for only 10 minutes. It is, therefore, absolutely critical to return frequency to 60 Hz as rapidly as possible. Otherwise, a controlled shutdown of the islanded units is mandatory. Adjustment of turbine throttle control and the connection or disconnection of load will return frequency within limits.

2. High voltage in excess of 110% of rated voltage can cause severe damage if sustained for longer than 10 minutes. Generator terminal voltage below 90% of rated voltage can cause instability - units going out of step or losing auxiliaries. Again, it is absolutely crucial to return voltages to within the plus or minus 5% criteria. This will be done by adjustment of generator excitation controls, connection or disconnection of load, and adjustment of load tap changers.

3. As quickly as possible supply islanded generators with sufficient load to meet their minimum load requirements.

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B. Transmission - The Senior System Operator will check all tie points and communicate with neighboring systems as to whether startup power is available from the interconnection. Should a tie be available proceed with the express route as outlined on the accompanying one-line diagram and described in this instruction.

If no startup is available from the tie points proceed with the express route to the black start generation (i.e., Hillburn GT, Shoemaker GT, Lederle Co. Gen. And/or Mongaup Hydro).

The following tie points must be opened by the SO prior to any attempted black start:

6108-2	Sugarloaf		
194E-27-2Y	West Haverstraw	1300-A	Ramapo
T194W-541	West Haverstraw	2300-4	Ramapo
671-94-4	West Haverstraw	2300-A	Ramapo
T258-J3410	South Mahwah		
1300-4	Ramapo		

C. The Senior System Operator and System Operator will initiate the callout of company manpower by calling additional operating personnel required to staff the ECC Control Group, the Directing Group and the Distribution Supervisor who, in turn, will notify those people on the Required Notification list (see page 6).

Directing Group

G. V. Bubolo, Jr. - Vice President, Energy Delivery Services
Ext. 2557 Home (914) 744-3178

V. J. Budd - Manager, System Operations
Ext. 3211 Home (914) 343-3629

D. A. Hunt - Manager, Substation Operations
Ext. 3104 Home (914) 361-4052

P. T. McGoldrick - Manager, Delivery System Design
Ext. 2844 Home (914) 928-2688
Alternate - J. M. Koza
Ext. 2672 Home (914) 429-0946

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REQUIRED NOTIFICATIONS

R. J. Biederman, Jr. - Vice President, Operations	Ext. 2722 or 3430	Home (914) 353-2343
A. M. Freedman - Director, Public Policy & Communications	Ext. 2922	Home (914) 359-3309
Alternate - J. Lois	Ext. 2941	Home (914) 634-6983
W. A. Palmatier, Jr. - Director, Electric Operations	Ext. 3358	Home (914) 268-9768
M. M. D'Auria - Manager, System Distribution	Ext. 3501	Home (914) 354-9560

The Director of Engineering & System Operations will inform the members of the Executive Staff of system status. The Manager of Substation Operations will notify the Substation and Relay Supervisors who will, in turn, be responsible for initially calling all available personnal.

Relay and Substation men will be assigned to the following locations:

Ramapo	1 Substation Crew	1 Relay Crew
Hillburn	1 Substation Crew	1 Relay Crew
West Haverstraw	1 Substation Crew	1 Relay Crew
Harings Corner) West Nyack) Sparkill)	1 Substation Crew	1 Relay Crew
Burns	1 Substation Crew	1 Relay Crew
Shoemaker	1 Substation Crew	1 Relay Crew
Sugarloaf	1 Substation Crew	1 Relay Crew
Ladentown	1 Substation Crew	1 Relay Crew
Franklin Lakes) South Mahwah)	1 Substation Crew	1 Relay Crew
Lovett	1 Substation Crew	1 Relay Crew
Bowline	1 Substation Crew	1 Relay Crew
Mongaup	1 Substation Crew	1 Relay Crew
Monroe) Harriman)	1 Substation Crew	1 Relay Crew
Montvale) Pearl River)	1 Substation Crew	1 Relay Crew

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BLACK START AND SYSTEM RESTORATION PLAN

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The SO on generation will also notify the Bowline and Lovett Plant Superintendents and, in addition, the Manager of Hydro and Gas Turbines of system conditions. The later will see that all hydro and gas turbine sites are immediately manned in preparation for the black start operations at Hillburn and the Western Division.

The Manager of System Operations will call out an appropriate staff for computer support.

The Directing Group will advise the Manager - System Distribution (ext. 3501, home 354-9550) at least every half hour of system status. He, in turn, will notify the Director of Electric Operations and the Director of Corporate Communications.

The SO on Generation will notify the Gas SO of the status of the electric system. If no gas for generation is available, he will be requested to man his pumping stations to maintain gas pressure in his system.

D. All distribution breakers on supervisory control will be opened by the SO. This will be done to minimize the possibility of inadvertently energizing blocks of cold load during the restoration procedure resulting in disturbance to generating machines.

Western Division

Rio		3-1D-2	
Port Jervis		6-7-2K 6-8-2K 6-9-2K Line 7 distribution 7-6-2K 10-6-2	11-6-2
Shoemaker	11-1-2K 11-2-2K 11-3-2K 11-4-2K 11-5-2K 4-11-2		6-11-2 20-11-2 19-11-2 11-11-2 120-11-2
Silver Lake		122-113-2 113-1-2K 113-2-2K 113-3-2K	
Cuddebackville		10-5-2 4-5-2 3-5-2	
Mongaup		2-1-2K	
East Wallkill	15-1-2B 15-2-2B 15-3-2B		15-4-2K 15-5-2K 15-6-2K

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Central Division

Sterling Forest		67-1-2K 67-2-2K	
Harriman	71-3-2B 71-4-2B 71-5-2B 71-6-2B		71-1-2B 71-2-2B 71-7-2B 71-8-2B
South Goshen		69-1-2K 69-2-2K 69-3-2K 69-10-2K 69-11-2K	
Ringwood		78-1-2K 78-2-2K	
West Milford	79-4-2K 79-5-2K 79-6-2K	79-1-2B 79-2-2B 79-3-2B	79-7-2B 79-8-2B
Wisner		80-1-2K 80-2-2K 80-3-2K 80-4-2K 80-5-2K	
Monroe		82-61-2 83-61-2 61-1-2K 61-2-2K 61-3-2K 61-4-2K	
Hunt		84-1-2K 84-2-2K	
Lake Road		82-1-2B 82-2-2B	

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Blooming Grove	76-1-2K 76-3-2K 76-4-2K
Highland Falls	73-1-2K 73-5-2K 73-6-2K

Eastern Division

Hillburn	17-1-2K 17-2-2K
Montvale	29-1-2B 29-2-2B 29-3-2B 29-4-2B 43-29-4 44-29-4
Allendale	39-1-2B 39-2-2B 39-3-2B 39-4-2B 39-5-2B 39-6-2B 39-7-2B 39-8-2B
Nanuet	53-1-2B 53-2-2B 53-3-2B 53-4-2B 53-5-2B 53-6-2B 53-7-2B 53-8-2B
Orangeburg	54-1-2B 54-2-2B 54-3-2B 54-5-2B 54-6-2B

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Grand Avenue	60-1-2B 60-2-2B 60-3-2B 60-4-2K 60-5-2K
Upper Saddle River	49-1-2B 49-2-2B 49-3-2B 49-4-2B
Sparkill	50-1-2B 50-2-2B 50-3-2B 50-4-2B
South Mahwah	52-1-2B 52-2-2B 52-3-2B 52-4-2B 58-1-2K 58-2-2K 58-3-2K
Franklin Lakes	35-5-2B 35-6-2B 35-7-2B 35-8-2B 35-9-2B 35-10-2B
Oakland	36-1-2K 36-2-2K 36-3-2K 36-4-2K
Cresskill	37-1-2B 37-2-2B 37-3-2B
Harings Corner	30-1-2B 30-2-2B 30-3-2B 30-4-2K 30-5-2K

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Congers	22-1-2B
	22-3-2B
	22-5-2B
	22-6-2B
West Haverstraw	27-1-2B
	27-2-2B
	27-3-2B
	27-4-2B
	27-5-2B
	27-6-2B (Ladentown station service)
	27-7-2B
	27-8-2B
Closter	28-2-2B
	28-3-2B
	28-4-2B
	28-5-2B
	28-6-2B
	28-7-2B
	28-8-2B
	28-9-2B
New Hempstead	45-1-2B
	45-2-2B
	45-3-2B
	45-4-2B
	45-5-2B
	45-6-2B
	45-7-2B
	45-8-2B
Tallman	51-1-2B
	51-2-2B
	51-3-2B
	51-4-2B (ECC Feed)
	51-5-2B
	51-6-2B

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Burns	19-8-2B
	19-9-2B
	19-12-2B
	19-13-2B
	19-10-2B
	19-11-2B
	19-14-2B (EOC Feed)
	19-15-2B
West Nyack	21-9-2B
	21-10-2B
	21-11-2B
	21-12-2B
	21-13-2B
	21-14-2B
	21-15-2B
	21-16-2B
	21-17-2B
Ford	38-1-2B
	38-2-2B
	38-3-2K
	38-4-2K
Sloatsburg	42-1-2B
	42-2-2B
	42-3-2B

If in service and on supervisory control, open Mobile low side:

Mobile #1
Mobile #2
Mobile #3
Mobile #4

E. In preparation for receiving startup power

At Lovett: Direct the Lovett Senior Shift Supervisor to open all low side breakers on the station service and startup busses off Banks 533, 647, 733.

At Bowline: Direct the Bowline Senior Shift Supervisor to open all low side breakers on the station service and startup busses off Banks 555 and 655.

F. Direct available Relay Technicians and Substation Electricians to reset the under frequency relays at the following stations:

Burns	Banks 619 and 719
Sparkill	Bank 150

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G. Reset via supervisory the under frequency relays at the following stations:

Montvale	Bank 429
West Nyack	Banks 521 and 621
Harings Corner	Banks 230 and 330
Monroe	Bank 161
Grand Avenue	Bank 260
East Wallkill	Bank 115 and 215
Cuddebackville	Bank 15
Hunt	Bank 384
Oakland	Bank 136
Cresskill	Bank 137
Congers	Bank 222
Franklin Lakes	Bank 235
Nanuet	Bank 153 and 253
South Mahwah	Bank 658

II. Tie Line, Gas Turbine and Hydro Black Start Procedure

Critical to the recovery of the O&R system is the availability of an energized tie or the success achieved in the black start of the Hillburn Gas Turbine or Lederle Cogen units.

The path for restart will be set up to follow an isolated express route which would allow startup power from any of the following points to Lovett Bank 533, 647 and 733:

West Haverstraw	Hillburn GT
Ramapo	Sugarloaf
South Mahwah	Lederle Co-generators

Concurrent with the procedure to provide start up power to Lovett, we will attempt to black start the Mongaup River Hydro and the Shoemaker Gas Turbine to form an island in the Western Division. (See Section IIG).

A. Black Start Procedure from West Haverstraw to Lovett

At Lovett

1. Close or check closed switch L-33-2X
2. Close or check closed switch L-33-2Y
3. Close or check closed switch 733-2X
4. Close or check closed switch 733-2Y

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5. Close or check closed switch 147-33-2X
6. Close or check closed switch 147-33-2Y
7. Open or check open switch 333-2X
8. Open or check open switch 333-2Y
9. Open or check open switch 55-33-2X
10. Open or check open switch 55-33-2Y
11. Open or check open switch 633-A
12. Close or check closed switch 147-2
13. Open or check open switch 59-47-2
14. Open or check open switch 447-2
15. Close or check closed switch T1-47-2
16. Open or check open switch 53-47-2
17. Close or check closed switch 647-2
18. Close or check closed switch T2-47-2
19. Open or check open switch 547-2
20. Close or check closed switch 54-47-2

At West Haverstraw
(West Haverstraw 345 to Lovett - Line 54)

If station is energized (345KV)

1. Open or check open switch 53-27-2Y
2. Open or check open switch 530-27-2X
3. Open or check open switch T53-530
4. Open or check open switch 541-27-2X
5. Close or check closed switch T54-227
6. Close or check closed switch 54-27-2Y
7. Open or check open switch 194E-27-2Y
8. Open or check open switch T194W-541
9. Close or check closed switch 671-94-4
10. Close or check closed switch 194E-27-2Y
    (This supplies startup power to Lovett Banks 533, 647 and 733 - Note Dist. Banks 127 & 227 available for voltage control.)

If station is dead

1. Open or check open switch 194E-27-2Y
2. Open or check open switch 53-27-2Y
3. Open or check open switch 530-27-2X
4. Open or check open switch T53-530
5. Close or check closed switch 541-27-2X
6. Close or check closed switch T54-227

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B. If no power is available at West Haverstraw, proceed on to Ramapo for black start power if available. (Ram 345 to Burns to West Haverstraw to Lovett, Lines 60,541, 54)

At Burns
1. Open or check open switch 531-19-2X
2. Close or check closed switch 60-19-2X
3. Close or check closed switch 819-2X
4. Open or check open switch 519-2
5. Open or check open switch T702-531
6. Close or check closed switch T541-60
7. Open or check open switch 702-19-2Y
8. Open or check open switch 541-19-2Y

At Ramapo

If 345 KV station is energized
1. Open or check open switch 51-2X
2. Open or check open switch 26-2X
3. Open or check open switch T-60-5102
4. Open or check open switch T-52-26-2
5. Open or check open switch 60-2Y
6. Open or check open switch 52-2Y
7. Close or check closed switch 2300-A
8. Close or check closed switch 2300-4
9. Close or check closed switch 60-2Y which will give Banks 533, 647 and 733 startup power.

C. With no power available at Ramapo, we will proceed on to South Mahwah or Hillburn gas turbine and the Lederle's co-generators.

If South Mahwah 345 KV station is energized:
(South Mahwah 345 to Lovett, lines 61, 60, 541, 54)

At Ramapo
1. Open or check open 2400-4
2. Open or check open 2300-A
3. Close or check closed 60-2Y
4. Close or check closed T60-51-2

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At South Mahwah
1. Open or check open switch T258-J3410
2. Open or check open switch T258-587
3. Open or check open switch T51-585
4. Close or check closed switch 258-58-2X
5. Close or check closed switch 51-58-2X

When power becomes available to South Mahwah 345 KV station we will close switch T258-J3410 supplying startup power to Lovett. Allendale distribution available if need for voltage control, also. Bank 658 & 452 for station service at South Mahwah 345 yard and 138-69 yard.

D. If power is not available at South Mahwah we will attempt a black start from the Hillburn GT. (Hillburn to Lovett, lines 52, 60, 541, 54)

At Ramapo
1. Open or check open switch T60-51-2
2. Close or check closed switch 60-2Y
3. Close or check closed switch 52-2Y

At Hillburn
1. Open or check open switch 87-17-2Y
2. Open or check open switch 31-17-2Y
3. Open or check open switch 23-17-2Y
4. Open or check open switch T917-23
5. Open or check open switch 31-17-2X
6. Open or check open switch T317-65
7. Open or check open switch T-69-59
8. Open or check open switch GT-17-2X
9. Open or check open switch 59-17-2X
10. Open or check open switch 85-17-2X
11. Open or check open switch 917-2X
12. Close or check closed switch 617-2Y
13. Close or check closed switch 317-2Y

Initiate black start of the Hillburn GT via CRT control. Machine should start, come up to speed and close generator breaker supplying start up power to Lovett 3, 4 and 5.

E. Should the Hillburn GT black start fail for any reason we will proceed with the express route from Hillburn to the Sugarloaf tie for startup power. (Sugarloaf to Lovett, lines 26, 60, 541, 54.)

At Hillburn
1. Open or check open 617-2Y
2. Open or check open 317-2Y

At Ramapo
1. Open or check open 1300-A
2. Open or check open 1300-4
3. Open or check open 52-2Y
4. Open or check open 60-2Y
5. Close or check closed 26-2X
6. Close or check closed 51-2X
7. Close or check closed T60-51-2

At South Mahwah
1. Open or check open 51-58-2X
2. Open or check open T51-585

At Sugarloaf
1. Open or check open switch 993-108-2
2. Open or check open switch 313-108-2
3. Open or check open switch 25-108-2
4. Open or check open switch 27-108-2
5. Open or check open switch 24-108-2
6. Close or check closed switch T1-108-2
7. Close or check closed switch 7108-2

When power becomes available from Central Hudson to Bank 6108 we will close switch 6108-2 providing startup power to Lovett.

F. Should the Ladene co-generators be available for service, advise them we will utilize their black start capability to provide start up for the Lovett units. (Pearl River to Lovett, lines 491, 49, 541, 54.)

At Pearl River
1. Open or check open 60-31-2
2. Open or check open 45-31-2
3. Open or check open 491-31-2

At Montvale
1. Open or check open 491-29-2

At Nanuet
1. Close or check closed T1-53-

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At Burns
1. Open or check open 319-2
2. Open or check open 419-2
3. Open or check open 591-19-2
4. Close or check closed 519-2
5. Close or check closed T2-19-2
6. Close or check closed 49-19-2
7. Open or check open 619-2
8. Open or check open 531-19-2X
9. Close or check closed 60-19-2X
10. Close or check closed T541-60
11. Open or check open 541-19-2Y

At Ramapo
1. Open or check open 60-2Y
2. Open or check open T60-51-2

Request Lederle to black start their co-generators. Coordinate generation load balance and system voltages to minimize equipment damage with the Lederle operator.

When units are stabilized, request them to energize the 34.5KV yard at Pearl River. When power becomes available close 491-31-2 which provides start up power to Lovett.

G. Mongaup and Shoemaker Black Start - Western Division Island

At Shoemaker
1. Open or check open switch 4-11-2
2. Open or check open switch 6-11-2
3. Open or check open switch 11-11-2
4. Open or check open switch 19-11-2
5. Open or check open switch 20-11-2
6. Open or check open switch 120-11-2
7. Open or check open switch 12-11-2
8. Open or check open switch 13-11-2
9. Open or check open switch 119-11-2
10. Open or check open switch 24-11-2
11. Open or check open switch C1-11-2
12. Open or check open switch 26-11-2
13. Open or check open switch T211-5
14. Open or check open switch 27-11-2X
15. Open or check open switch T111-27

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16. Close or check closed switch 811-2
17. Close or check closed switch 211-11-2Y
18. Close or check closed switch 111-11-2Y
19. Close or check closed switch 211-2
20. Close or check closed switch 111-2
21. Close or check closed switch 511-2

At Swinging Bridge

1. Open or check open switch 11-2
2. Open or check open switch 21-2

At Mongaup

1. Close or check closed switch 12-2-2
2. Close or check closed switch 131-2-2
3. Close or check closed switch 15-2-2
4. Close or check closed switch 9-2-2
5. Close or check closed switch 52-2

At Rio

1. Open or check open switch 18-3-2
2. Close or check closed switch 53-2
3. Close or check closed switch 15-3-2
4. Close or check closed switch 3-1D-2K
5. Close or check closed switch 13-2

At Shoemaker

Initiate black start of the Shoemaker GT. Machine should start, come up to speed and close generator breaker. Pick up Bank 311 distribution circuits by:

1. Close or check closed switch 11-1-2K
2. Close or check closed switch 11-2-2K
3. Close or check closed switch 11-3-2K
4. Close or check closed switch 11-4-2K
5. Close or check closed switch 12-11-2 (This provides startup power for Mongaup, Swinging Bridge and Rio energizes the St. Joseph and Glen Spey distribution circuit.)
6. Synchronize Mongaup, Swinging Bridge and Rio machines
7. Close or check closed switch 13-11-2 (This energizes the Shoemaker 69KV Y Bus, the 34.5KV cables and Bank 811 station service.) This also energizes Cuddebackville substation.
8. Close or check closed switch T211-5

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Should excess generation be available at this point in the restoration, switch 119-11-2 should be closed and the East Waikill and Silver Lake distribution circuits re-energized. This will conclude islanding of the Western Division in which all 69KV facilities have been restored. Lines 24, 25 and 27 will be restored when synchronization of this island is ready.

H. Should the black start of the Shoemaker GT fail for any reason, we will proceed with Mongaup Hydro black start.

At Shoemaker

1. Close or check closed switch 12-11-2
2. Close or check closed switch 13-11-2

At Rio

1. Open or check open switch 18-3-2
2. Close or check closed switch 53-2
3. Close or check closed switch 15-3-2
4. Close or check closed switch 3-1D-2K
5. Close or check closed switch 13-2

At Mongaup

1. Open or check open switch 12-2-2
2. Open or check open switch 131-2-2
3. Open or check open switch 16-2-2
4. Open or check open switch 52-2
5. Open St. Joseph distribution circuit bkr. 2-1-2K
6. Close or check closed switch 9-2-2
7. Place Mongaup #1 governor on manual control
8. Open governor to bring machine up to 60 cycles
9. Close on Mongaup #1 generator breaker on 2300 KV bus (This will give plant auxiliary power of ~1MW)
10. Place governor for Mongaup #1 on automatic control
11. Synchronize Mongaup #2, #3, and #4 to bus
12. Close St. Joseph distribution circuit bkr. 2-1-2K
13. Close or check closed switch 52-2 (This energizes and picks up auxiliary for Swinging Bridge #1 and #2)
14. Startup and synchronize Swinging Bridge #1 and #2
15. Close or check closed switch 15-2-2 (This picks up Glen Spey distribution circuit and provides startup for Rio #1 and #2)
16. Synchronize Rio #1 and #2 on line
17. Close or check closed switch 12-2-2 (This energizes Bk 311 and the Shoemaker 69KV X Bus) As loading permits restore the distribution circuits off Bank 311.

18. Close or check closed switch 11-1-2K
19. Close or check closed switch 11-2-2K
20. Close or check closed switch 11-3-2K
21. Close or check closed switch 11-4-2K
22. Close or check closed switch 131-2-2 (This energizes the Shoemaker 69KV Y Bus, the 34.5KV upper and lower buses and Bank 911 station service)

This will conclude islanding of the Western Division. Further attempts to start the Shoemaker Gas Turbine should be attempted when the unit is once again made available.

III. Startup Power for Lovett

A. Coordination for Startup Power

When Banks 533, 647 or 733 become energized provicing startup power for Lovett 3, 4, or 5, it will be necessary to closely coordinate the startup of plant auxiliaries with the speed of the machines following this load, whether those machines be internal to the O&R system or external via the tie points. Neighboring System Operators who offer startup power must be informed of the requirement at Lovett, approximately 5MW to start one unit. Operators at gas turbine and hydro stations must be notified immediately prior to load being put on their units.

B. Determination of the Preferred Unit

After consultation with the Lovett Senior Shift Supervisor, a determination will be made regarding which unit can be more readily brought up to speed and synchronized.

C. Interim Operations

While the startup of the preferred Lovett unit is being accomplished, a restoration of power to the ECC will be accomplished:

At Burns

1. Close or check closed switch 541-19-2Y (This energizes Burns Bank 719.)
2. Close or check closed switch 19-14-2B (Normal feed) (This energizes the 13.2 primary feed to the ECC.)
3. If more load is required to stabilize the Hillburn GT, close the distribution breakers as required.

D. Stabilizing Lovett

Once synchronized to the 138KV bus, the unit must be stabilized with sufficient load to at least meet its minimum load requirement. Closely coordinate all load pickups with Lovett operating personnel and direct them to maintain 60 Hz on their machine. To that end the following switching will be performed.

At West Haverstraw
1. Close or check closed switch 54-27-2Y
2. Close all distribution circuits via supervisory. (This will pickup approximately 45 MVA of load.)

At Lovett
1. Close or check closed switch L-33-2X. (This energizes Lovett Bank 633 - startup for the 69KV units - Bank 633 which feeds New York Trap Rock and local Tomkins Cove distribution.)
2. Close or check closed switch L-33-2Y
3. Close or check closed switch 53-47-2

At West Heverstraw
1. Close or check closed switches 530-45-2, 531-45-2 and T1-45-2
2. Close all distribution circuits via supervisory. (This will pick up approximately 65MVA of load).

Having stabilized Lovett with load, startup of the second Lovett generator may commence. Power dispatch under Automatic Generation control may also begin. Operations will be in the constant or flat frequency control mode with scheduled frequency at 60 Hz. Beware that the bias setting is based on peak connected load. If the load prior to the black out was considerably under peak, the bias will result in an indication of greater deficiency than actually exists. It should therefore, be adjusted accordingly.

IV. Startup for Bowline and Restoration of the 345/500KV System

A. Bowline Startup

With one Lovett unit stabilized, startup power will be supplied to Bowline.

At Bowline
1. Open or check open switch 561-55-2X
2. Open or check open switch 561-55-2Y
3. Close or check closed switch 56-55-2X
4. Close or check closed switch 56-55-2Y

At Lovett
1. Close or check closed switch 56-47-2 (This energizes Bowline startup transformers 555 and 655)

Once again closely coordinate the startup of Bowline auxiliaries with Lovett operators.

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B. Restoration of the 345/500KV system will be accomplished under the direction of the New York Power Pool as defined on OP 13. All switching performed at Ladentown, South Mahwah and West Haverstraw will be done with the assent and permission of all interconnected parties who share or own completely facilities in these substations.

C. Requests to supply startup power to neighboring companies generating facilities may now be granted.

V. Restoration of the 138KV System and Islanded Systems

A. Synchronization of Western Division and Lovett Islands

Assuming that Lovett has been successfully provided with startup capability either from Hillburn or any of the 345KV ties and has been synchronized, and that a successful island has been established in the Western Division, it will be advantageous to synchronize the two systems in order to improve stability. Synchronization will be accomplished by means of the 138KV system Line 26 Ramapo to Sugarloaf and Line 27 Sugarloaf to Shoemaker.

At Ramapo
1. Open or check open switch 26-2X
2. Open or check open switch T52-26-2

At Sugarloaf
1. Open or check open switch 6108-2
2. Open or check open switch 313-108-2
3. Close or check closed switch 7108-2
4. Open or check open switch 993-108-2
5. Close or check closed switch 27-108-2
6. Open or check open switch 25-108-2
7. Open or check open switch 24-108-2
8. Close or check closed switch T1-108-2

At Shoemaker
1. Close or check closed switch 27-11-2X
2. Close or check closed switch T111-27

At Ramapo
NOTE: Synchronizing scopes and sync. Check relays available.
1. Close or check closed switch 26-2X (This synchronizes the two islands)
2. Close or check closed switch T52-26-2

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At Sugarloaf
1. Close or check closed switch 25-108-2 (This energizes South Goshen Banks 189 and 289)
2. Close or check closed switch 24-108-2

At Shoemaker
1. Close or check closed switch 24-11-2
2. Close or check closed switch 25-11-2

B. Restoration of the 138KV Loop

If excess generation is available from the synchronized Lovett unit or the second Lovett unit has come on, the 138KV loop will be completed.

At West Nyack
1. Open or check open switch 75-21-2
2. Close or check closed switch 701-21-2
3. Close or check closed switch 221-2Y
4. Close or check closed switch 221-2X
5. Open or check open switch 551-21-2
6. Open or check open switch 562-21-2

At Hemings Corner
1. Open or check open switch 46-30-2
2. Open or check open switch 130-2
3. Open or check open switch 658-30-2
4. Close or check closed switch 701-30-2
5. Close or check closed switch 702-30-2
6. Close or check closed switch T1-30-2

At Congers
1. Close or check closed switch 662-22-2
2. Close or check closed switch 561-22-2

At New Hempstead
1. Close or check closed 530-45-2
2. Close or check closed 531-45-2

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At Burns
1. Close or check closed switch 80-19-2X
2. Close or check closed switch 531-19-2X
3. Close or check closed switch T702-531 (This energizes Harings Corner Banks 230, 330-130; West Nyack Banks 621, 521, 421, and 321)
4. Close or check closed switch 702-19-2Y
5. Close or check closed switch 819-2X (This energizes Burns Bank 819)

At Harings Corner
1. Close Bank 230 and 330 distribution breakers (This picks up approximately 28.0MVA of load)

At West Nyack
1. Close Banks 321, 421, 521, and 621 distribution breakers (This picks up approximately 48.0MVA of load)
2. Close or check closed switch 562-21-2 (This energizes Bank 222 at Congers)

At Bowline Point
1. Close or check closed switch 561-55-2X (This completes the 138KV loop)
2. Close or check closed switch 561-55-2Y

At Lovett
1. Close or check closed switch 55-33-2X (This picks up Grassy Point load of 3.5MVA)
2. Close or check closed switch 55-33-2Y

At West Nyack
1. Close or check closed switch 551-21-2

VI. Selective Simultaneous Restoration of the 69KV System

When sufficient internal generation permits, or external sources have been synchronized to the O&R system, selective simultaneous restoration of 69KV loops may commence. If, due to constraints on generating capability, priorities need to be established, follow successively the restoration as listed in order.

A. Restoration of the 69KV loop Hillburn - Burns - Montvale - South Mahwah

This restoration provides support for the 138KV loop and thus reinforces the security of the system. In addition, it allows the continued restoration of heavily populated areas in Eastern Division and New Jersey.

Points of energization for this loop may be South Mahwah via the 69KV system, Hillburn, Burns or Harings Corner via the 138KV system.

At Ramapo
1. Close or check closed switch T-60-51-2

At Burns
1. Open or check open switch 319-2
2. Open or check open switch 419-2
3. Close or check closed switch 591-19-2
4. Close or check closed switch 49-19-2
5. Close or check closed switch T2-19-2

At Nanuet
1. Close or check closed T1-53-2

At Pearl River
1. Open or check open switch 491-31-2
2. Close or check closed switch 50-31-2
3. Close or check closed switch 45-31-2

At Montvale
1. Close or check closed switch 491-29-2
2. Close or check closed switch 658-29-2
3. Close or check closed switch T-29-2
4. Close or check closed switch 658-29-2

At Hillburn
1. Close or check closed switch 59-17-2X
2. Close or check closed switch 65-17-2X
3. Close or check closed switch 817-2X

At South Mahwah
1. Open or check open switch 585-58-2Y
2. Open or check open switch 587-58-2Y
3. Close or check closed switch T61-585
4. Close or check closed switch T258-587
   a) If the South Mahwah interconnection is unavailable
      Open or check open switch T258-J3410
5. Close or check closed switch 57-52-2
6. Close or check closed switch 652-52-2
7. Close or check closed switch 58-52-2
8. Close or check closed switch 65-52-2
9. Close or check closed switch 852-2
10. Close or check closed switch T1-52-2
11. Open or check open switch 36-52-2

At Franklin Lakes

1. Close or check closed switch 58-35-2
2. Close or check closed switch 67-35-2
3. Close or check closed switch T1-35-2
4. Close or check closed 570-35-2
5. Close or check closed 580-35-2

This loop may now be energized from Burns by closing 519-2, from Hartings Corner by closing 658-30-2, from Hilburn by closing T317-65 or from South Mahwah (if available) by closing T258-J3410, 587-58-2Y and 585-58-2Y. Close as many feeds as are available. This operation energizes the following banks:

Tallman	151 and 251
Burns	319 and 419
Nanuet	153 and 253
Pearl River	431
Hillburn	917
Blue Hill	148 and 246
Grand Avenue	150 and 250
Upper Saddle River	149
South Mahwah	452
Franklin Lakes	335 and 435
Montvale	429
Oakland	135

Following this restoration Allendale may be energized.

At Allendale

1. Close or check closed switch T587-139
2. Close or check closed switch T588-239
3. Close or check closed switch T139-2Y
4. Close or check closed switch T239-2Y

Close Allendale distribution breakers.

B. Restoration of the Hillburn to Sugarloaf 69KV path and the West Point Loop

This restoration continues to reinforce the tie between Western and Eastern Division and begins the re-energization of Central Division loads. Prior to energizing West Point, coordinate restoration activities with the West Point Power House.

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At Harriman
1. Open or check open switch 851-71-2
2. Open or check open switch 841-71-2
3. Close or check closed switch 311-71-2
4. Close or check closed switch 312-71-2

At Monroe
1. Close or check closed switch 312-61-2
2. Close or check closed switch 313-61-2

At Hillburn
1. Close or check closed switch 31-17-2Y (This energizes Sloatsburg Bank 242 and picks up 2.5 MVA of load, Harriman Bank 471, Monroe Banks 161, 561)
2. Close or check closed switch 31-17-2X

At Sugarloaf
1. Close or check closed switch 313-108-2 (This completes the loop)

At West Point #2
1. Close or check closed switch 851-90-2
2. Close or check closed switch T1-90-2
3. Open or check open switch 853-90-2

At Harriman
1. Close or check closed switch 851-71-2 (This energizes Bank 671 and West Point 2 Substation)
2. Close or check closed switch 841-71-2 (This energizes Bank 571 and West Point 1, Highland Falls, Stoney Lonesome, Long Pond, Dean and Queensboro substations)
3. Close Bank 471 distribution breakers

C. Restoration of the 69KV Harings Corner Loop

At Harings Corner
1. Open or check open switch 45-30-2
2. Close or check closed switch 42-30-2

At Cloister
1. Close or check closed switch 46-28-2
2. Close or check closed switch T1-28-2
3. Close or check closed switch 751-28-2
4. Close or check closed switch 328-2

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At Sparkill
1. Close or check closed switch 751-50-2
2. Close or check closed switch 750-50-2

This loop may now be energized from West Nyack by closing 75-21-2, or from Harings Corner by closing 45-30-2. Close as many feeds as are available. This operation energizes the following Banks:

Orangeburg	Bank 254
Sparkill	Bank 150
Closter	Banks 128 and 228
Cresskill	Banks 137 and 237
RC Sewer District	Bank 196

D. Restoration of the 69KV Sterling Forest Loop

At Sterling Forest
1. Close or check closed switch 99-67-2
2. Close or check closed switch 98-67-2

At Lakes Road
1. Close or check closed switch 981-82-2
2. Open or check open switch 98-82-2

At Ringwood
1. Close or check closed switch 982-78-2
2. Close or check closed switch 99-78-2
3. Close or check closed switch 984-78-2
4. Close or check closed switch 983-78-2

At West Milford
1. Close or check closed switch 983-79-2
2. Open or check open switch 984-79-2

At Hillburn
1. Close or check closed switch 89-17-2Y
2. Close or check closed switch T-89-59

This energizes the following Banks:

Ringwood	Bank 278
Blue Lake	Bank 177
West Milford	Bank 279
Lakes Road	Banks 182 and 282

Load will be picked up off all banks except 278 and the Lakes Road circuit 82-4. Closing the distribution breakers the following loads will be restored:

At Sugarloaf
1. Close or check closed switch 993-108-2

This energizes the following Banks:

Wisner 280	Hunt 184	Sterling Forest 367
Wisner 380	Hunt 284	

At Lakes Road
1. Close or check closed switch 98-82-2 (This completes the loop)

E. Restoration of the Western Division

At Port Jervis
1. Close or check closed switch 11-6-2
2. Close or check closed switch 18-6-2
3. Open or check open switch 7-6-2

At Shoemaker
1. Close or check closed switch 11-11-2 (This energizes Port Jervis and Lines 11 and 18 distribution taps)

At Rio
1. Close or check closed switch 18-3-2

VII. Restoration of the 34.5KV System

A. Eastern Division

At Hillburn
1. Close or check closed switch 917-2X
2. Close or check closed switch T917-23
3. Close or check closed switch 17-1-2K
4. Close or check closed switch 17-2-2K

At Burns
1. Close or check closed switch 731-19-2
2. Close or check closed switch 741-19-2
3. Close or check closed switch 50-19-2
4. Close or check closed switch T1-19-2

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At Ford
1. Close or check closed switch T-38-2
2. Close or check closed switch 73-38-2
3. Close or check closed switch 74-38-2

At Pearl River
1. Close or check closed switch 50-31-2
2. Close or check closed switch 45-31-2

Close as available the following feeds to this system:

At Burns	319-2	419-2
At Pearl River	491-31-2	
At Harings Corner	45-30-2	130-2

B. Western Division

1. Close or check closed 120-11-2
2. Close or check closed 19-11-2
3. Close or check closed 20-11-2

Restoration of 34.5/19/9KV circuits 4 and 6 emanating from Shoemaker and 7 from Port Jervis Lines 3, 4, 10 from Cuddebackville will be accomplished under the direction of the Distribution Supervisor.

C. Central Division

Monroe and Blooming Grove and the associated 34.5/13.2KV loads may be energized.

At Monroe
1. Close or check closed 96-61-2

Under direction from the Distribution Supervisor

1. Close or check closed switch 82-61-2
2. Close or check closed switch 83-61-2

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APPENDIX 1
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Synchronizing Scopes

Grahamsville Power House
Swinging Bridge Power House
Mongaup Power House
Rio Power House
Shoemaker Substation
Shoemaker Gas Turbine
Lovett Plant
Ramapo 138 Substation
Ramapo 345 Substation
West Haverstraw Substation
Hillburn Gas Turbine
Hillburn Substation
Bowline 345 Plant

Sync-Check Relays

Swinging Bridge	11-2	21-2			
Mongaup	9-2-2	12-2-2	13-2-2	15-2-2	
Shoemaker	12-11-2 T111-27 5-11-2	13-11-2 111-11-2Y 11-11-2	24-11-2 211-11-2Y 211-2	25-11-2 T211-5 111-2	27-11-2X 4-11-2
Sugarloaf	6108-2				
Lovett	547-2	447-2	56-47-2	54-47-2	53-47-2
Ladentown	6-56-2	3-56-2	4-56-2	1-56-2	
Ramapo 138	All 138 CCBs				
West Haverstraw	All breakers				
Hillburn	89-17-2Y T-89-59 65-17-2X	317-2Y T317-65 417-2X	31-17-2Y T417-31 817-2X	23-17-2Y T917-23	59-17-2X
South Mahwah	T258-J3410 587-58-2Y		258-58-2X T2-52-2		T258-587 585-58-2Y
Bowline	T255-68	T155-67			
Burns	50-19-2				
Hardings Corner	45-30-2				

Schedule E

INSURANCE

Each Party at its cost and expense, shall maintain and keep in full force and effect during the term of this Agreement the following insurance forms and with insurance companies acceptable to the other Party:

(a) Workers' Compensation Insurance for statutory obligations imposed by Workers' Compensation or Occupational Disease Laws, and Employer's Liability Insurance with a minimum limit of $1,000,000. When applicable, coverage shall include the United States Longshoreman's and Harbor Workers' Compensation Act and the Jones Act.

(b) General Liability Insurance including Bodily Injury, Personal Injury, Broad Form Property Damage, Excess Auto Liability, Products/Completed Operations, Explosion, Collapse and Underground (XCU) Liability, Contractual Liability and Contractors Protective Liability Insurance with minimum limits of liability of $25,000,000 per occurrence. If any such coverage is maintained on a "claims made" basis, each Party agrees the retroactive date shall be no later than the effective date of this Agreement and the policy shall carry a minimum 5 year extended discovery period in the event the policy is cancelled or non-renewed.

(c) Automobile Liability Insurance, including coverage for all owned, non-owned and hired automotive equipment used by the Parties with minimum limits of liability of $1,000,000 per occurrence.

(d) If applicable, Builders risk insurance or an installation floater with minimum limits of two times the probable maximum loss of the facilities as determined by a recognized expert, including, but not limited to coverage for earthquake and flood, collapse, faulty workmanship, materials and design, testing of machinery or equipment, freezing or changes in temperature, debris removal, partial occupancy and loss of revenues.

(e) During commercial operation of the facilities, property damage insurance including boiler and machinery coverage, with minimum limits of two times the probable maximum loss of the facilities as determined by a recognized expert.

(f) Business interruption and extra expense insurance covering expenses and losses due to business interruption, resulting from damage to facilities.

(g) Each Party shall have the right to accept reasonable deductibles or self insured retentions for the insurance listed in this Schedule E and each Party shall be responsible for such deductibles or self insured retentions under their respective policies.

(h) Each Party shall name the other an additional insured under the General Liability coverage listed above in clause (b), however such additional insured status shall only apply for each Parties' vicarious liability arising out of the other's facilities.

Schedule F (Part I) to Continuing Site/Interconnection Agreement

Schedule F
(Part I)

PRODUCTION METER LOCATIONS - /HYDRO

DESCRIPTION	COMPANY USE	PURPOSE	ACCT/METER #	LOCATION	COMPENSATION REQUIRED
Rio Hydro	Electric	Unit 1 Generation Unit 1 Condensing Unit 2 Generation Unit 2 Condensing Station Service		4KV System 4KV System 4KV System 4KV System 4KV System	Bank 13 Bank 13 Bank 13 Bank 13 Bank 63
Mongaup Hydro	Electric	Unit 1 Generation Unit 1 Condensing Unit 2 Generation Unit 2 Condensing Unit 3 Generation Unit 3 Condensing Unit 4 Generation Unit 4 Condensing Station Service		2.4KV System 2.4KV System 2.4KV System 2.4KV System 2.4KV System 2.4KV System 2.4KV System 2.4KV System 2.4KV System	Bank 52 Bank 52 Bank 52 Bank 52 Bank 52 Bank 52 Bank 52 Bank 52 Bank 52

Schedule F
(Part I)

DESCRIPTION	COMPANY USE	PURPOSE	ACCT/METER #	LOCATION	COMPENSATION REQUIRED
Swinging Bridge Hydro	Electric	Unit 1 Generation		13.2KV System	Bank 11
		Unit 1 Condensing		13.2KV System	Bank 11
		Unit 1A Generation		13.2KV System	Bank 21
		Unit 1A Condensing		13.2KV System	Bank 21
		Station Service		2.4KV System	Bank 31

Schedule F (Part II) to Continuing Site/Interconnection Agreement

Schedule F
(Part II)

ANTICIPATED METER POINTS FOR PRODUCTION METERS

STATION NAME	STATION NO.	DATE
MONGAUP	GDM2-A	5-6-99
MONGAUP	GDM2-B	5-6-99
RIO	GDM3-A	5-6-99
RIO	GDM3-B	5-6-99
SWINGING BRIDGE	GDM1-A	5-6-99

Confidential Energy Infrastructure Information ("CEII")

Confidential Energy Infrastructure Information ("CEII")

Schedule G to Continuing Site/Interconnection Agreement

Schedule G

METERING FOR RETAIL ACCOUNTS - GT/HYDRO

DESCRIPTION	COMPANY USE	PURPOSE	ACCT/METER #	OWNER		COMMENTS
				ORU	SEI	
NYC Water Substation Neversink Drive - PJ	Electric	Lights	033641950		X	Secondary Service
Mongaup	Electric	Well Pump	045485914		X	Secondary Service
NYC Water Substation North Street - PJ	Electric	Lights	055021053		X	Secondary Service
NYC Water Substation Neversink Drive - PJ	Electric	Lights	055021054		X	Secondary Service
Hydro Shop and Garage	Electric	Lights	055333410		X	Secondary Service
Rio Plant	Electric	Lights/Heat	050909324		X	Secondary Service
Mongaup Hydro	Electric	Lights	061000148		X	Secondary Service
Rio Dam	Electric	Warning Siren	076958874		X	Secondary Service

DESCRIPTION	COMPANY USE	PURPOSE	ACCT/METER #	OWNER		COMMENTS
				ORU	SEI	
Swinging Bridge Plant	Electric	Heat and Lights	076958909		X	Secondary Service
NYC Water Substation Neversink Drive - PJ	Electric	Lights	078776798		X	Secondary Service
Mongaup Plant	Electric	Lights	079189344		X	Secondary Service
Mongaup Hydro	Electric	Hydro-Gas Pumps	096841136		X	Secondary Service

Schedule H to Continuing Site/Interconnection Agreement

1.0 PURPOSE

This Operating Instruction defines the responsibility of the System Operations Department in directing and performing switching on equipment under the authority of the System Operator.

2.0 ACRONYMS & DEFINITIONS

CSO – Chief System Operator
DS – Distribution Supervisor
ECC – Energy Control Center (Spring Valley)
EMS – Energy Management System
LCC Local Control Center
NYISO – New York independent System Operator
PJM – Pennsylvania, New Jersey, and Maryland Regional Transmission Operator
SO – System Operator
SSO – Senior System Operator

Definitions –

3.0 PERIODICITY OF REVIEW –

This policy shall be reviewed annually.

4.0 COMMUNICATIONS

All communications conducted by the S.O. concerning any action, request for action, response to such request, or information having a potential impact on any ongoing operations during normal or emergency conditions, will be conducted via the use of a taped communications device using Three-Part-Communication. Recorded telephones should be used for switching whenever available, keeping radio use to a minimum.

5.0 SCHEDULING AND SWITCH ORDER PREPARATION

Scheduling work on equipment under System Operator jurisdiction:

- All requests to schedule removal of equipment will be made in accordance with OI 3 S "Switch Order Preparation, Execution and Approval" and the employee safety manual section 43.3, paragraph A.

New construction and equipment under the jurisdiction of the System Operator:

- See the employee safety manual section 43.3

In preparing switch orders, the following guidelines should be observed where practical:

- Perform only necessary switching to provide complete safety clearance; unnecessary switching should be eliminated.
- Always interrupt load with a breaker where one is available; a load break device would be a second choice if no breaker is available.
- Switching should be written such that it will minimize unnecessary travel; assume only one crew will be available to switch.
- Disable relaying only when necessary, such as for breaker failure relays during trip tests.
- Switch order steps should not include those steps which are part of routine responsibilities such as to "check and adjust voltage," "check loop closed," etc.
- In switching transformers into or out of service, the transformer is always de-energized and re-energized from the high side.

6.0 GUIDELINES FOR REMOVAL AND RESTORATION OF EQUIPMENT

Removing Equipment from service:

- Supervisory control will always be used to open or close breakers, air breaks, or any remotely controlled switch to verify supervisory capability.
- Place a Control Inhibit Tag and verify a blue "C" on the CRT screen.
- Have the supervisory control turned off at the station for the device(s) that are included in the area of isolation.
- Have the switchman turn the recloser off, before switching a breaker out of service.
- Have the switchman make a check of the breaker to verify the open position and place a red tag on it before opening the line disconnects. Disconnect switches should be operated in the de-energized mode whenever possible.
- In the case of a motor operated air breaker or motor operated disconnect, request the switchman turn off the control power at the switch in addition to placing the supervisory in the off or local manual position.
- After all operation by supervisory are complete, proceed with the manual portion of the switch order as detailed in the Orange and Rockland Safety Manual.
- Always adhere to the testing and grounding procedures as detailed in the Orange and Rockland Employee Safety Manual.

Restoring equipment to service:

Complete the restoration process in the reverse order as above with the following exception: When a line has been removed for maintenance and when one end of the line is equipped with a circuit breaker and the other disconnect or air break switch, the SO shall first test the line by energizing via the circuit breaker. If the line proves to be fault free then the circuit breaker shall be re-opened, the disconnect or air break closed and the circuit breaker closed to place the line back in service.

NOTE: Care must be taken that a control inhibit tag is not removed from the CRT screen until all personnel having clearance are clear of facilities or in the case of an OCB until we are ready to close the particular breaker.

7.0 LIVE LINE RECLOSER CLEARANCE

- Perform necessary steps to change recloser to off position
- Verify change on screen
- Perform necessary steps to install live line recloser clearance tags
- Verify "control inhibit C" on screen
- Issue Clearance making certain person receiving same is aware he has live line recloser protection only.

8.0 TAGGING PROCEDURE

See Section 43.2 of the Employee Safety Manual for information on tags and their proper use. This includes both red and green tags.

Additional Considerations for System Operations

- All transmission and distribution equipment inside the substation fence and the entire high voltage electrical system (34.5KV* and over) is under the jurisdiction of the System Operator and no work or switching may be done on any part of it without orders or permission from the System Operator. When any piece of electrical apparatus is removed from service for repairs or maintenance each switch or control mechanism the operation of which might endanger workmen, must be properly tagged with standard safety tags so that no one may operate any portion of this equipment by mistake. (*The 34.5KV transmission has no 19.9KV Distribution taps.)

- Each Department Manager, Superintendent or Supervisor shall designate the qualified employees who may have equipment tagged out. Equipment shall be tagged only for the persons on these lists (Section 43.5.1, paragraph A). Each Manager, Superintendent or Supervisor shall provide System Operation with a quarterly updated list of qualified employees.

- All tags must be made out in the name of the person in charge of the job. This person will be responsible for all others working under his tags. If the equipment is available in an emergency, the person in charge must be available at the job site to clear people off equipment to facilitate a rapid restoration.

9.0 GENERAL PROCEDURE FOR REMOVING A LINE FROM SERVICE UNDER SYSTEM OPERATOR JURISDICTION

A. The switchman performing the switching at the first (sending) station (A) will be notified by the System Operator that the circuit breaker will be opened by supervisory control. The System Operator then will open the breaker via supervisory control and tag the breaker on the CRT with a control inhibiting tag.

B. After the switchman in station A has reported that the procedure above has been completed, the System Operator will notify the switchman in the second (receiving) switching station (B) that the circuit breaker will be opened by supervisory control.

- The System Operator will then open the breaker via supervisory control and tag the breaker on the EMS with a control inhibiting tag. When there is no circuit breaker in the line but a motor operated switch is available the switch will be opened via supervisory control.
- The switchman will be directed to confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled. On switches which are remotely controlled by supervisory equipment, the control power will be turned off, and the proper switch will be placed in the "local" position.
- The Switchman will check open the by-pass switch where one exists.
- The Switchman will open the appropriate disconnect's and, if gang operated, secure with lock or fastening device. Manually operated disconnect switches shall be locked as designated.
- The Switchman will remove all secondary fuses (open secondary cutouts) on all metering and relay transformers installed in the line and disable all associated coupling capacitor potential devices.
- Upon completion of these steps the switchman will report to the System Operator.

C. After the switchman in station B has reported that the above procedure has been completed, the System Operator will instruct the employee at the first (sending) switching station (A) to:

- Confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled. On switches which are remotely controlled by supervisory equipment, place the switch in the "local" position.
- Check open the by-pass switch where one exists.

- Open the appropriate disconnects.
- Remove all secondary fuses (open secondary cutouts) on all metering and relay transformers installed in the line and disable all associated coupling capacitor potential devices.
- Close the ground switch. Check that all ground switch blades are in correct positions.
- Apply the necessary red tags and report to the System Operator.

D. After the switchman in station A has reported that the procedure described in C is complete, the System Operator will instruct the operator at the second (receiving) switching station (B) to:

- Close the ground switch.
- Apply the necessary red tags and report to the system Operator.

E. If other work is to be done simultaneously which involves any station apparatus at either end of the line, the System Operator will order safety equipment tagging placed in accordance with Standard Tagging Rules.

10.0 GENERAL PROCEDURE FOR RESTORING A LINE TO SERVICE UNDER SYSTEM OPERATOR JURISDICTION

A. After work has been completed on a line or piece of equipment, the tag holder will report this to the System Operator who, in turn, will instruct the tag holder to remove all field grounds. After all tag holders report work complete, all grounds removed and all who received clearance have returned the line to the System Operator, the System Operator will then instruct the operator at the first (sending) switch station (A) to:

- Remove the tag from the ground switch.
- Open the ground switch and lock it open. Visually check that all switch blades are open.
- Report to the System Operator.

B. The switchman at the second (receiving) station (B) will then be instructed by the System Operator to:

- Remove all tags.
- Open the ground switches and lock them open. Visually check that all switch blades are open.
- Replace all secondary fuses in all metering on relay transformers if any are installed on the line and restore all coupling capacitor potential devises to normal operating conditions.
- Request relay techs enable any relaying that may have been disabled to complete the switching.

- Close the appropriate disconnects. Before closing any breaker disconnect switches, it is the responsibility of the switchman to visually check that the breaker position indicator is at the open position. Only when the open position has been confirmed, shall the disconnect be closed.
- Report to the System Operator.

C. The switchman at the first (sending) switching station will then be instructed to:

- Remove all remaining tags.
- Replace all secondary fuses in all metering and relay transformers if any are installed on the line and restore all coupling capacitor potential devices to normal operating condition.
- Request relay techs enable any relaying that may have been disabled to complete the switching.
- Close the appropriate disconnects. Before closing any breaker disconnect switches, it is the responsibility of the switchman to visually check that the breaker position indicator is at the open position. Only if the open position is observed or confirmed shall the disconnect be closed.
- Report to the System Operator.

D. The switchman at the first (sending) switching station (A) will be instructed to:

- Close the circuit breaker. On all breakers equipped with Automatic Reclosing equipment, the reclosing will be enabled after the breaker is closed, unless ordered otherwise.
- Report to the System Operator.

E. The switchman at the second (receiving) switching station (B) will be instructed to:

- Close or synchronize the circuit breaker. On all breakers equipped with Automatic Reclosing equipment, the reclosing will be enabled after the breaker is closed, unless ordered otherwise. On switches which are remotely controlled by supervisory equipment, place the proper switch in the remote control position.
- Note the reading of the voltmeters and ammeters on the line.
- Report to the System Operator.

11.0 RECEIVING CLEARANCE FROM THE SYSTEM OPERATOR

Line Clearances will be given as outlined in the employee safety manual section 17.6.3.

Clearance to "Work", is a permission to proceed with a specific task (maintenance, testing) as requested through the scheduling process (Or emergency), for specific identified equipment and for a specific purpose.

Clearance to "Work" is facilitated through a two part process as follows:

- Once all switching to isolate a piece of equipment is complete, the System Operator will issue clearance to "test and ground" on a facility. Upon completion of the testing for potential and after having installed field grounds, the tag holder will notify the System Operator of same.
- The System Operator will then issue a "Clearance for Work" as communicated below: (In certain instances, application of field grounds may be declined by the tag holder)

    - The time clearance is given.
    - The name of the person receiving the clearance.
    - The line or equipment that has been tagged.
    - The work clearance is being given to do.
    - The locations (if any) where substation grounds have been applied.

Additional tags:

Should there be a need to provide clearance to personnel on equipment that is being worked on by others, tags may be installed if requested. The SO will evaluate and discuss with the requestor precisely what clearance points are needed and provide tags as necessary following the same switching guidelines as if the equipment was in service. Once tags have been added to the required devices the SO shall discuss he need for additional grounds, or if existing grounds shall be used, and provide clearance to the individual after verification of grounding.

12.0 DISTRIBUTION SWITCHING

Principles of distribution switching:

In Substations with breaker & ½ schemes (Allendale, Burns, Montvale, New Hempstead, West Haverstraw)

- When removing a bus breaker and placing the circuit on the tie breaker, all switching must be done by local control in the substation and not by supervisory control. (Breaker inter-lock does not allow three breakers (2 bus and their tie) closed at one time.
- Both circuit reclosers in the bay the switching is being performed shall be off until all switch moves are complete.
- When returning a bus breaker all switching must be done by local control as in (1 & 2) above.
- See Appendix B for an example

In Substations (Breaker & ½ schemes) equipped with "Pro-logic" relays (i.e. Congers, Orangeburg):

Orange & Rockland

OI 2-S-14

SWITCHING/JURISDICTIONAL AUTHORITIES AT DIVESTED GENERATION AND SUBSTATION FACILITIES

DATE: January 11, 2010	SUPERSEDES: 2-S-13	DEPT. System Operations
Preparer: System Operations Distributed to: SO/SSO	SWITCHING/JURISDICTIONAL AUTHORITIES AT DIVESTED GENERATION AND SUBSTATION FACILITIES	APPROVED BY: Thomas Buhler Title: Chief System Operator

REVISION TABLE			
Revision Level	**Author**	**Date**	**Description**
10	Buhler/Poynton	1/11/10	Updated format and information related to Bowline

DATE: January 11, 2010	SUPERSEDES: 2-S-13	DEPT. System Operations
Preparer: System Operations Distributed to: SO/SSO	SWITCHING/JURISDICTIONAL AUTHORITIES AT DIVESTED GENERATION AND SUBSTATION FACILITIES	APPROVED BY: Thomas Buhler Title: Chief System Operator

TABLE OF CONTENTS

1.0 PURPOSE

The purpose of this instruction is to delineate and clarify the jurisdictional authorities of Orange and Rockland (ORU), Mirant New York, Inc. (Mirant), and Alliance Energy as they relate to interconnected switching between the companies and facilities.

This procedure does not supersede any conditions set forth in the Asset Purchase and Continuing Operating Agreement or any other provisions stipulated as a condition of sale.

2.0 ACRONYMS & DEFINITIONS

SO – System Operator
SSO – Senior System Operator

Definitions

Switching Authority
The company that operates and directs switching associated with a facility or certain piece of equipment. Generally speaking, Orange and Rockland is the switching authority for all devices under the control of the SO / SSO set forth in the "Jurisdictions" portion of this procedure.

3.0 PERIODICITY OF REVIEW

This policy shall be reviewed annually.

4.0 PROCEDURE

Scheduling

All Scheduled switching outages needed on the interconnection shall be made to the O&R Switching Coordinator in accordance with System Operations Operating Instruction 3S.

Switching Principles

1) Switching operations will be performed in accordance with the O&R Employee Safety Manual.

2) The System Operator will issue all switching and tagging steps.

3) Switching is strictly limited to personnel listed on the "Qualified Switching List". Updated lists will be emailed to O&R System Operations per the periodicity set forth in the "Continuing Operating Agreement" which states "Every Three months, each party shall provide the other party with an updated list of employees qualified for the inclusion on to the list". Switching with newly approved personnel **will not** take place until the updated "Qualified Switching List" is disseminated to the O&R operating floor.

4) Upon arrival at any of Mirant's or Alliance's properties, ORU personnel will contact the onsite personnel and inform them of the purpose of their visit. Likewise, Mirant or Alliance's employees will notify the System Operator upon entering ORU facilities.

5) Either party will parallel tag the other party's equipment in accordance with the procedures set out in the O&R Safety Manual. For example, in performing maintenance work for Mirant, ORU personnel will parallel tag Mirant owned switches to provide the proper safety clearance.

Bowline

In the 345KV yard the power circuit breakers and associated switches designed for isolation and grounding will be switched and tagged by the Bowline Shift Team Leaders, at the direction of the ORU System Operator.

The past practice of tagging these switches for the ORU System Operator during unit outages will no longer be performed. The Bowline Shift Team leader will install Mirant Switching tags in place of the ORU System Operator Red tags. Should Mirant be performing specific work whereby they are issuing a work permit under their internal Lock-Out / Tag-Out procedures these tags may also be installed in parallel with the tags installed under the direction of the System Operator.

In the 138KV yard, ORU maintains and operates the substation facilities that serve as terminations for lines 56 and 561. This would include the ring bus oil circuit breakers. Mirant personnel may also tag this equipment when clearance is required for maintenance on one of the start up banks 555 or 655.

Bank 455 provides a 400MVA tie from the 345KV yard to the 138KV yard. Mirant and ORU have a 25%:75% shared ownership respectively of the Bank 455. ORU will maintain and operate Bank 455 up to and including the 345KV ACB 455-2. Mirant will maintain and operate, at the direction of the ORU System Operator, from the MOD 455-1 on into the 345KV yard as outlined above.

Alliance Facilities

Any time there is switching being performed by Alliance personnel, where their switching steps are being performed to provide O&R personnel with safety clearance, a Substation Supervisor shall be on-site to observe the switch moves being performed.

Gas Turbine Sites

All generating plant alarms will require notification to the Alliance Energy (AE) 24 hour desk. AE will call out Hydro and Gas Turbine Maintenance personnel who will determine whether ORU substation or relay personnel are required to assist. Priority one alarms to be addressed immediately. Each party will switch and tag the equipment it owns.

Hydro Stations

As in the case of the gas turbines, Swinging Bridge, Mongaup, and Rio generating plant alarms will require notification to the Alliance Energy (AE) 24 hour desk. AE will determine whether or not to call out Hydro and Gas Turbine Maintenance personnel who will determine whether ORU substation or relay personnel are required to assist. Priority one alarms to be addressed immediately.

The System Operator will direct all switching and tagging of equipment shown on the system diagram and substation one-line diagrams. This equipment includes generator and line circuit breakers, disconnects, transformers, potential devices, and supervisory – local/remote switches.

In accordance with Exhibit "A" attached, Alliance Operators will perform all switching inside the Hydro Plants including such devices as supervisory local/remote switches for OCB's in the O&R yard. Orange and Rockland Electricians or Relay Technicians will perform all switching outside the plant buildings including such devices as station service disconnects.

Hydro and Gas Turbine personnel are responsible to provide clearance of the generator equipment. This equipment includes controls, exciter breakers, gates and valves.

Emergency Switching at Alliance Facilities

If an Alliance qualified switch crew is not readily available to respond to an emergency situation, the System Operator will notify the Alliance 24hr desk that

O&R personnel will be entering the applicable Alliance facility. Upon notification, the O&R Substation Supervisor will be directed to enter the Alliance control room and perform the Supervisory/Local switching step allowing switching to proceed in the most expeditious manner.

Alliance has granted O&R full access to both the Hillburn GT and Shoemaker GT facilities.

This emergency switching exception will only address system emergencies requiring switching in an Alliance facility for the purpose of isolating O&R equipment. This exception will be strictly limited to the Supervisory to local switching and tagging steps normally performed by Alliance personnel and associated with equipment necessary to clear an emergency condition.

5.0 RESPONSIBILITES

The responsible organization for this Procedure shall be the System Operations Department.

6.0 EXCEPTIONS

There are no exceptions or exclusions to compliance with the NERC standard, and any references to exceptions are only to the O&R policies and or procedures.

Should exceptions to this policy be required or necessary due to operational needs, technical limitations, special situations including construction or emergencies; the reasons and actions taken shall be documented.

Temporary changes may not require written changes to policy but may be handled as written documented interim changes to security policy, procedures or post orders during this temporary situation.

7.0 ADVICE AND COUNSEL

The Chief System Operator shall provide advice and counsel on this instruction.

8.0 EXHIBIT A

SEE OI 2-S--

EXHIBIT "A"

Memorandum of Agreement
between
Mirant,
Orange & Rockland Utilities, Inc.
and
Local Union 503 I.B.E.W.

Operationally speaking (Switching), Mirant Operators are responsible for all switching inside the plants. O&R Electricians are responsible for all operations outside the Plants in accordance with the one line (demarcation) diagrams.

Mechanically, (Maintenance) each Company is responsible for the maintenance and repair of their own equipment.

Robert V. Citrulo — Date
President/Business Manager
Local Union 503 I.B.E.W.

Ray DeSew — Date
Local Union 503 I.B.E.W.

George Petty — Date
Local Union 503 I.B.E.W.

Daniel A. Hunt — Date
Manager – Substation Operations Engineer
Orange & Rockland Utilities, Inc.

A. Flint Hannay — Date
CT/Hydro Group Manager
Mirant

1.0 **PURPOSE**

This instruction shall be used for guidance on scheduling, preparing and approving scheduled switch orders as well as outline basic responsibilities of the System Operations Switching Coordinator. This instruction will outline notification requirements for scheduled outages with internal and external entities which include NYISO, PJM, other utilities and large commercial customers.

2.0 **ACRONYMS & DEFINITIONS**

CSO – Chief System Operator
DS – Distribution Supervisor
ECC – Energy Control Center (Spring Valley)
EMS – Energy Management System
NYISO – New York independent System Operator
PJM – Pennsylvania, New Jersey, and Maryland Regional Transmission Operator
SIRS – Scheduling Interface Recording System
SO – System Operator
SSO – Senior System Operator
SVOC – Spring Valley Operations Center
T&D – Transmission and Distribution
WMS – Work Management System

Definitions –

N-1 – The loss of any single generating unit, transmission line, transformer.

3.0 **PERIODICITY OF REVIEW –**

This policy shall be reviewed annually.

4.0 **SCHEDULED OUTAGE REQUESTS**

The System Operations Switching Coordinator, upon receiving a T&D Clearance Request, will review all areas of the request and if necessary, contact the requester for clarification or additional information.

The Switching Coordinator will then notify any other Orange and Rockland department that may have pending work on the facilities to ensure maximum coordination of activities for this particular outage.

The Switching Coordinator will then notify any other Orange and Rockland department that may have pending work on the facilities to ensure maximum coordination of activities for this particular outage.

The Switching Coordinator and Distribution Supervisor together will coordinate, establish, and provide a contingency plan for any loss of transmission and distribution facilities for all scheduled switching to mitigate exposure and maintain system reliability per N-1 criteria.

The Switching Coordinator must ensure that new equipment instructions are reviewed and approved before equipment is energized, and that all necessary EMS configuration changes have been modeled and tested.

Written work requests must be submitted to the Switch Coordinator no less than 72 hours before the requested switch start time. This will enable the creation of an efficient, safe, and fully approved switch order. Failure to comply with this request will normally result in postponement of the job.

All switch orders will be prepared and reviewed by Senior System Operators and System Operators in accordance with timelines in the SIRS and ECC personnel responsibilities portion of this section (5).

ENGINEERING, SUBSTATION AND EHV

Major construction and maintenance jobs will be requested in WMS as far in advance as possible. It is the responsibility of the requesting party to submit the WMS request. At no time will the Switching Coordinator be responsible for submitting WMS requests.

All job requests must contain a description of the work intended with a listing of adequate clearance points provided in the request. Any job requests that involve switching or clearances that cannot be adequately described on the WMS request form will be accompanied by an e-mail to the Switching Coordinator and Senior System Operators. This e-mail will provide a full description of the job scope and the work required to complete the job.

All requests must be made by 11 a.m. with no less than 72 hours notice prior to its scheduled date of execution. Jobs scheduled for Mondays must be scheduled no later than 11 a.m. Thursday of the previous week.

Emergency requests such as Hot Spots, Low Oil Levels, etc. do not require 72 hours notification. A phone call to the SSO is required and a WMS request should be submitted when time permits.

The Working Groups (Engineering, Substation & EHV) will meet with the Switching Coordinator on a regular basis to review upcoming jobs for scope and timing.

The night SO will prepare switching for requests on a rolling fourteen-day schedule.

Example: The night SO on Monday will be preparing the switching for the Monday two weeks from then. The day SO will look at current day scheduled work, checking for both accuracy and any scheduling conflicts.

5.0 SWITCH ORDER PREPARATION

The basic guidelines to follow in preparing a switch order are:

1. Check the request information to determine exactly what clearance is needed.

2. Check the one-line diagrams of stations and lines to determine that continuity will be maintained and that no service interruption or voltage problems will take place.

3. Follow all O&R safety procedures in accordance with the Orange & Rockland Switching and Tagging section of the Safety Book. Check one-line diagrams for devices such as secondary pots, which must be disabled for safety.

4. Check Substation Instruction Book as well as one-line diagrams and SCADA memos for special instructions, which apply to a particular station, line or piece of equipment.

5. Under normal circumstances all switching will be prepared in SIRS. When preparing a switch order, all fields will be filled out in their proper location on the appropriate sheets.

6. The clear (Headers and footers section) shall be completed to the extent possible. This section will be completed when the switch order is executed.

7. The "Job Briefing" section will include the clearance points provided on the switch order, including any additional clearance points provided by System Operations that may not have been requested in the "clearance points requested" section.

At this point the switch order will be reviewed by the SSO and if acceptable approved as detailed in section 4.

Orange & Rockland

OI 4-S-8

ORANGE AND ROCKLAND JOINT SWITCHING PRACTICES

DATE: January 11, 2010	SUPERSEDES: 4-S-7	DEPT. System Operations
Preparer: System Operations Distributed to: SO/SSO	ORANGE AND ROCKLAND JOINT SWITCHING PRACTICES	APPROVED BY: Thomas Buhler Title: Chief System Operator

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DATE: January 11, 2010	SUPERSEDES: 4-S-7	DEPT. System Operations
Prepared: System Operations Distributed to: SO/SSO	ORANGE AND ROCKLAND JOINT SWITCHING PRACTICES	APPROVED BY: Thomas Buhler Title: Chief System Operator

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1.0 PURPOSE

Orange and Rockland, Consolidated Edison, Public Service, Mirant NY, and Alliance Energy share in the direction of switching on several jointly owned facilities. These facilities are the Ramapo, Ladentown, Bowline, South Mahwah, and West Haverstraw substations; and various generating facilities.

This Instruction will clarify the responsibilities of the previously mentioned companies regarding each facility with respect to initiating requests for clearance, responsibility for authorizing work on equipment and the preparation and direction of switching.

2.0 ACRONYMS & DEFINITIONS

NYISO – New York Independent System Operator
PJM – Pennsylvania, Jersey, Maryland Independent System Operator
SO System Operator
SSO – Senior System Operator

Definitions

Switching Authority
The company that operates and directs switching associated with a facility or certain piece of equipment. Generally speaking, Orange and Rockland is the switching authority for all devices under the control of the SO / SSO set forth in the "Jurisdictions" portion of this procedure.

3.0 PERIODICITY OF REVIEW

This policy shall be reviewed annually.

4.0 PROCEDURE

Transmission Switching

Clearance for routine maintenance outages will be initiated by the company who is the switching authority. That company will assume responsibility for notification of all involved parties including New York Independent System Operator & PJM, describing the work and clearances required. Approval from all entities having termination points is required prior to the scheduling of the outage.

Jurisdictions

Orange and Rockland System Operators will direct company O&R substation/relay crews and qualified Mirant & Alliance personnel in switching and tagging the following facilities:

- The Mirant, NY owned facilities of Bowline 345KV yard – All switches and devices from where the lines come into the station from the Bulk Power System up to and including the T155-3 for Unit 1 and the 255-55-1 for Unit 2. Any switching beyond those devices will be under the direction of the Bowline Shift Team Leader only after switching has been completed with the Orange and Rockland System Operator isolating the unit from the Bulk Power System.
- Alliance Energy owned facilities of Monguap, Hillburn, Rio, Swinging Bridge and Shoemaker.
- Bowline: All 138 KV facilities.
- Ladentown: All 345 KV facilities.
- West Haverstraw: All facilities 345 KV to 13.2 KV.
- Ramapo: All facilities from and including the 345 KV 1300-4 and 2300-4 switches and the entire 138 KV yard.
- South Mahwah: All 345 KV switches in station 59, all 138 KV switches in station 58 and all 69 KV and 13.2 KV switches in station 52.

Joint Switching practices with other connected utilities

Any facility where two or more companies must switch in order to provide safety clearances, such as Y88, W72, Bank 1300/138 KV Bus "X", Bank 2300/138 KV Bus "Y", Bank 258, will be coordinated with the remote end company as appropriate, in accordance with individual company safety practices. None of the above-mentioned facilities, other than those owned by Mirant & Alliance need be directed by any one company on a step by step basis.

Routine maintenance and emergency repairs on certain 345 KV lines emanating from Ramapo will continue to be performed by O&R line crews. Clearance to O&R line crews will be issued by the O&R System Operator after being notified by the Con Edison system operator that switching for safety clearance has been completed and that clearance

to begin work may be issued. The O&R System Operator will issue clearance "to test and ground."

Relay Maintenance (In Service)

Request for routine in-service relay maintenance will be initiated by the Orange and Rockland Switching Coordinator or Senior System Operator. Orange and Rockland will be responsible for notifying the New York Independent System Operator Scheduling Department, or PJM via EDART as well as any other affected parties as required.

Mirant, NY will coordinate their in service relay maintenance with the O&R Switch Coordinator.

Emergency relay work will be coordinated directly by the Orange and Rockland Senior System Operator.

5.0 RESPONSIBILITES

The responsible organization for this Procedure shall be the System Operations Department.

6.0 EXCEPTIONS

There are no exceptions or exclusions to compliance with the NERC standard, and any references to exceptions are only to the O&R policies and or procedures.

Should exceptions to this policy be required or necessary due to operational needs, technical limitations, special situations including construction or emergencies; the reasons and actions taken shall be documented.

Temporary changes may not require written changes to policy but may be handled as written documented interim changes to security policy, procedures or post orders during this temporary situation.

7.0 ADVICE AND COUNSEL

The Chief System Operator shall provide advice and counsel on this instruction.

Employee Safety Manual

SAFETY
starts with **me**

Orange & Rockland

Program details can be obtained from the Safety Department as well as in the most recent version of O&R's "Safety Guidelines 7025" and "7026" and the Drug and Alcohol Misuse addendum, which are available on the Safety Web site.

17.0 Electrical Safety

17.1 Qualifications/Training

Qualified trainers who perform training shall be competent in the skills and techniques necessary to satisfactorily train personnel to distinguish exposed live parts from other parts of electric equipment, to determine the nominal voltage of exposed live parts and to know the safe working clearance distances specified in this manual.

Only qualified persons and trainees working under the direct supervision of a qualified person may work on or with energized lines or exposed live parts of 50 volts or greater.

17.2 Hand and Portable Power Tools

All hand and portable power tools shall be either double-insulated or equipped with a three-wire cord that is wired to ground the frame of the tool. It is recommended that a Ground Fault Circuit Interrupter (GFCI), which provides additional protection against electrical shock, be utilized with all extension cords when the GFCI is located at the source of the extension cord. The use of the GFCI is required in all wet or damp areas. Cords shall be inspected prior to use. Ground pins shall not be removed at any time from extension cords or electrical powered equipment.

17.3 Safe Approach Distances

No person(s) shall approach or bring any conductive object without an insulating handle closer to energized lines or exposed live parts than the distances(s) set forth in Table 17.3.1.

17.3.1 AC LIVE-LINE WORK

Minimum Approach Distances

Nominal Voltage in kilovolts, phase to phase	Distance			
	Phase to Ground Exposure		Phase to Phase Exposure	
	(ft-in)	(m)	(ft-in)	(m)
0.05 to 1.0	(*)	(*)	(*)	(*)
1.1 to 15.0	2-1	0.64	2-2	0.66
15.1 to 36.0	2-4	0.72	2-7	0.77
36.1 to 46.0	2-7	0.77	2-10	0.85
46.1 to 72.5	3-0	0.90	3-6	1.05
72.6 to 121	3-2	0.95	4-3	1.29
138 to 145	3-7	1.09	4-11	1.50
161 to 169	4-0	1.22	5-8	1.71
230 to 242	5-3	1.59	7-6	2.27
345 to 362	8-6	2.59	12-6	3.80
500 to 550	11-3	3.42	18-1	5.50
765 to 800	14-11	4.53	26-0	7.91

Note 1: These distances take into consideration the highest switching surge an employee will be exposed to on any system with air as the insulating medium and the maximum voltages shown.

Note 2: The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.

(*) Avoid Contact

A. For areas restricted to qualified persons, the materials therein may not be stored within the allowable working space of energized lines or equipment.

B. For areas that can be accessed by persons without the relevant qualifications, the distance at which materials and equipment shall be placed or stored is dependent on the power of the lines and equipment therein. If the power is:

1. 50 kV or less, the distance is 10 feet (305 cm).

2. More than 50 kV, the distance is 10 feet (305 cm) plus four (4) inches for every 10 kV over 50 kV.

C. All wires, regardless of the type of covering, must be considered live, unless they are positively known to be dead and grounded.

D. All conductors, terminations and related equipment shall be considered energized until de-energized, tested, grounded and tagged.

E. When working with equipment, switches, cutouts and grounding devices, the worker shall place himself in a safe position with all components in clear view.

17.4 Work Clearances in Substations

When employees are required to perform work near energized high-voltage equipment, care must always be taken to ensure that proper clearances are maintained by all personnel.

A. When lifting or handling loads in proximity to energized conductors and/or equipment in substations, ground trucks or cranes should be used (see Substation Work Procedure Manual).

B. The antennae of either mobile or portable radios shall be kept at a safe distance from energized conductors and/or equipment at all times.

C. Only trained personnel can enter an energized substation unescorted by a qualified person.

D. All personnel entering a substation or switching station that is under the control of the System Operator shall notify the System Operator upon their arrival and prior to unlocking the locked gates of the substation. Once work activities are completed, all personnel shall notify the System Operator that they have left the substation.

17.5 Switching

17.5.1 Basic Principles of Switching (Substations/Switching Stations)

Information regarding this subject can be found in the Substation Department Work Procedures.

17.5.2 Substation Backfeed Situations

Information on this subject can be found in Substation Department Work Procedures.

17.5.3 Distribution Switching and Tagging

For all distribution switching and tagging, please reference the company's/department's most current work procedures in the OHL, URD and the Control Center Procedures Book.

17.6 Clearances

17.6.1 Use of Electrical Mechanical Equipment within Substation Properties

Mechanical equipment shall be operated so that the required clearance distances are maintained for exposed energized lines and equipment.

Equipment and the attached load operating near energized lines or equipment shall be treated as energized by persons on the ground.

Further information can be found in the most recent version of the Substation Work Procedures SP 0110-1.

17.6.2 Procedure for Removing from Service a Line that is Under the Jurisdiction of the System Operator

Reference S.O. Operating Instructions 1-S and any revisions thereto in the Control Center Procedures Book.

17.6.3 Receiving Clearance from the System Operator

A. Use of the term "Clearance" - Upon completion of the steps of a Switch Order executed by a System Operator, the term "Clearance" will always be accompanied by a statement that defines its purpose. For example, upon completion of the required switching for a relay technical to perform his/her relay tests, the System Operator will issue "Clearance to (name of field person) on OCB (Name) for testing."

B. All lines are considered energized until ALL of the following have been completed:

1. The system operator issues clearance, AND
2. the designated tests to prove absence of potential have been performed at the work location, AND
3. the lines have been grounded.

C. Clearance is issued when the System Operator contacts the employee for whom the line or equipment has been tagged. Upon completing all switching steps to isolate a line, facility or piece of equipment for work or maintenance, the System Operator will proceed by making the following statement to the employee who is to receive the clearance: "At (state time) you have clearance to Test and Ground."

The employee receiving clearance to Test and Ground can now proceed to test the isolated area for potential and to install personal field grounds as required. After completing the testing and grounding procedures, the employee will then contact the System Operator to inform him/her that the testing and grounding have been completed. The System Operator will then issue the following declaration: "At this time (state time) you have clearance on (equipment) to do (purpose), e.g. Doble class #3 inspection, etc."

D. If Testing and Grounding is not required by field personnel, due to the nature of the work at hand (such as trip testing or work that is distant from the de-energized equipment), the fact that personal grounds will not be installed should be made known to the System Operator when the switching steps are completed. Since clearance to test and ground will not be issued, the System Operator can then issue clearance to perform the work that is needed.

17.6.4 Procedure to Be Used when Field Personnel Surrender Clearance

A. Upon completion of their work, field personnel will notify the System Operation that their work is done. At this time, field personnel will be instructed by the System Operator to remove all personal field grounds, if any.

B. After removing all personal field grounds, field personnel will report clear of the isolated area to the System Operator and clearly state that all field grounds have been removed. Switching to restore the isolated area can then begin.

17.6.5 General Procedure for Returning to Service a Line That Is Under the Jurisdiction of the System Operator

Reference S.O. Operating Instructions 1-S in the Control Center Procedure Book.

17.7 De-energization and Grounding Transmission and Distribution Lines and Equipment

Reference the most recent version of the following Department Work Procedures and:

Substation SP-0107-2
Electric Operations C3100 and C3201
UGL 3017 and 3018

A. De-energized lines shall be tested and found absent of nominal voltage before installing grounds or performing work on the lines or equipment.

B. Before de-energized lines are worked on, temporary protective grounds shall be installed at the work location, in compliance with the various department work procedures.

C. The grounds shall have impedance to ground low enough to permit for the prompt operation of protective devices, in case the lines or equipment is unexpectedly energized.

D. Protective grounds shall be capable of conducting the maximum ground-fault current that could flow at the point of grounding for the time necessary to clear the fault.

E. The ground-end connection shall be attached first, and then the other end shall be attached to the de-energized conductor by means of live-line tools.

F. Where facilities are 600 volts or less, grounds may be applied using appropriate PPE rated for the voltage to be worked on.

G. The grounding device shall be removed from the lines or equipment first, using live-line tools or other insulated devices, and removed from the grounding point last.

17.8 Fault-Locating Equipment Use

When using the fault-locating equipment, the truck and equipment shall be grounded per the manufacturer's recommendation. For all fault locating, Class 2 rubber gloves are required.

17.9 Guarding of Rooms Containing Electric Supply Equipment

Unqualified employees are prohibiting from entering rooms/spaces where electric-supply lines and equipment exist, without direct control from and the supervision of a qualified person. The unqualified employees shall heed the instructions of the qualified employees at all times.

17.10 Testing and Test Facilities

For information on this subject, reference Protective Equipment Test Center Work Procedures.

17.11 Handling Fallen Wires

A. Only trained, qualified and authorized persons shall handle fallen wires.

B. All wires, primary or secondary, that are on the ground but still attached to the pole on one end must be considered and treated as energized.

C. A line technician alone shall not attempt to put back up an energized primary wire which is down on the ground, but shall guard it and send for or seek assistance.

D. In handling a case of "wires down," a person must never climb a pole, unless climbing space is clear. If necessary, before repairs are made, wires must be cut dead on an adjacent pole that has clear climbing space, but only after any required temporary guying has been provided.

17.12 Inducted Voltage(s)

Before lines are installed parallel to existing energized lines, a determination shall be made of the approximate voltage to be induced in the new lines, or work shall proceed on the assumption that the induced voltage is hazardous. Unless it can be demonstrated that the lines being installed are not subject to the induction of a hazardous voltage or unless the lines are treated as energized, the following requirements also apply:

A. Each bare conductor shall be grounded at least every two miles.

B. The grounds shall remain in place until the conductor installation is completed between the dead ends, including during the aerial cleanup.

C. Grounds shall also be installed at each location where persons are working on bare conductors and at all open dead-end and catch-off points or at the next adjacent structure.

D. When two overhead conductors must be spliced, they shall be bonded and grounded.

E. Grounding procedures shall be in accordance with the work procedures of the various departments.

17.13 Current Transformer Secondaries

A. The secondary of a current transformer shall not be opened while the transformer is energized.

B. If the primary of the current transformer cannot be de-energized before work is performed on an instrument, a relay or another section of the current transformer secondary circuit, the circuit shall be bridged to prevent the current transformer secondary from being opened.

17.14 Transformers

A. When transformers are being raised or suspended in the air, any person on the pole must take a position above or well in the clear of the transformers.

B. A secondary voltage test must be made on all transformers before they are connected to the secondary mains.

C. When work requires the disconnection of taps from a supply line to equipment, the disconnection shall be made at the point where the taps meet the supply line, and never so an unprotected energized wire remains within reaching distance.

17.15 Capacitors

Capacitors are devices that store a charge. In our applications, they are used for voltage support and power factor correction. They are provided with a discharge device for draining the residual charge to a low value, approximately five minutes after they have been completely disconnected from the line. Before working on capacitors, they shall be de-energized, discharged and grounded. In addition, the capacitor bank-support framework shall be grounded.

These discharge devices must not be depended upon for safety. In light of this, employees shall adhere to the following rules when working with capacitors:

A. Capacitors shall not be worked on and the connections or terminals shall not be handled until the fuses or disconnect switches have been opened and the terminals have been shorted or grounded.

B. Where oil switches are installed, they will be opened before cutouts or disconnects are opened.

C. After opening the fuses or disconnects, wait at least five minutes before applying the shorting jumpers and grounds. The shorting jumpers shall be applied with a "hot stick."

D. Capacitor cases shall be considered energized as long as the capacitor is connected to the line and until after the capacitor has been shorted and grounded.

17.16 Operating Switches and Cutouts

A. When operating or replacing cutouts, the line technician must always protect himself/herself against accidental contact with energized wires or grounded equipment by using Class 2 Gloves.

B. Cutouts and disconnects equipped with Loadbuster® "ears" shall always be opened with a Loadbuster or other tool(s) that will provide arc-free interruption whenever possible. All other cutouts not adaptable to these tools shall be opened with an approved cutout or switch stick.

C. All cutouts or switches shall be closed with an approved cutout or switch stick. Before opening or closing, the main porcelain housing should be inspected for structural cracking. If the housing integrity is questionable and could be damaged when closing, the unit should be replaced.

D. When closing any cutout or switch, it is very important that it be done without hesitation, in order to prevent an arc.

E. Whenever a worker is called upon to operate any switch carrying more than 300 volts, appropriate rated rubber gloves must be worn.

F. Where line cutouts are used to permit dead-line work, the fuse holder shall be opened and removed and the de-energized conductor shall be tested and grounded before proceeding with work.

17.17 Mobile Substations

Reference Substation Department Work Procedures and any revisions thereto.

17.18 Transmission Operations

Transmission

In addition to the hazards particular to electrical operations, other non-electrical hazards may be encountered. Employees in the electrical operations departments should therefore be familiar with all other sections of the Safety Manual that may apply to their work.

Definition of Transmission Circuit: Any circuit, apparatus or equipment normally energized at 34.5 kV (Delta connected) or above shall be classified as transmission.

17.18.1 Live-Line Tools and Equipment

A. Only properly inspected and labeled tools with the proper voltage rating and sufficient length to secure proper clearance for safety shall be used. It is possible to depend too much on the voltage rating of the tools and not enough on clearance between the employee and the live wires.

B. The employee in charge must at all times be sure that the sticks, straps, ropes and other equipment are in first class condition and have been electrically tested in accordance with company standards.

17.18.2 Live-Line Maintenance

A. Maintenance, repair and construction work on electric circuits or apparatus shall not be done until the proper authorization has been obtained for performing the work.

B. Before any work is undertaken on energized equipment, workers shall be qualified by training and experience to perform work by the prescribed method for the voltage involved and shall be familiar with minimum working clearance.

C. Whenever it becomes necessary to replace a worker or supervisor during a job, such replacement should be made only after the replacement worker or supervisor has been fully informed of existing conditions.

D. Lines should always be de-energized, if it can be done without jeopardizing continuity of service.

E. Where it is necessary to maintain continuity of service on transmission lines, it is permissible to work on such lines when they are energized, provided that hot-line tools designed and tested for this type of work are used.

F. Routine live-line work shall be done only during favorable weather conditions. Rain, snow, sleet and dampness, for example, create dangerous conditions that preclude routine live-line work.

G. Obtain proper clearance from the system operator.

H. When it is necessary to work on transmission lines with more than one circuit, and there is insufficient working clearance between circuits for live-line work, the circuits not being worked on shall either be de-energized and grounded or shifted with hot-line tools, in order to provide proper working clearance.

I. Live-line work shall not be performed on any conductors smaller than No. 4 B & S gauge.

J. The principal factor in safe live-line work is adequate clearance between the employees and all wires on the pole or structure, including the wires being worked on.

17.19 Electric Meter Testing/Installation and/or Removal

General

The following rules apply specifically to conditions encountered in the checking and testing of electric meters in the field. However, all applicable rules set forth in other sections of this manual as well as departmental safety and procedural guidelines must also be observed by all persons doing service, meter or relay work. Please reference departmental safety and work procedures for additional information.

A. Employees must at all times realize that there may be hazards while testing or changing meters. Safe working conditions are essential to the safety of customers and employees.

B. Whenever any employee is called upon to operate a live switch, the employee shall wear an approved class of rubber gloves, approved apparel and safety glasses (flash) as defined in Apparel Wear section 5.0. Gloves shall be tested and inspected prior to use.

C. Work gloves and safety glasses MUST be worn while setting or removing socket meters. When testing meters, an approved class of rubber gloves and safety glasses shall be worn.

D. When applicable in testing, repairing, installing and charging meter equipment, personal protective safety equipment such as hardhats, eye protection, leather protective gloves or rubber gloves shall be used.

E. Electric meter and control wiring shall be treated as energized at all times. The handling of circuits with a voltage of 120, 240 or higher requires reasonable precautions to prevent personal injuries.

17.20 Underground Electric Operations (UGL)

17.20.1 General

A. Class 2 rubber gloves shall be used on all energized cables and equipment. Hot-line tools shall also be used while working on primary circuits for switching, load-breaking and grounding operations.

B. Test points, when provided, shall be used.

C. A primary or secondary system neutral shall never be operated for any reason while the system is energized.

D. Before doing work on de-energized primary circuits or equipment:

1. A visible open break shall be provided, if possible.
2. A voltage test shall be made.
3. The equipment shall be grounded.
4. The cable or equipment shall be tagged per the instructions of the Distribution Supervisor.

E. When work is to be done on equipment or cable of an underground system, precaution to prevent backfeed shall be taken. This shall include grounding of the conductors or other approved methods where applicable.

F. Before paralleling positions of an open loop, it shall be determined that the separate sections of the loop are of the same phase.

G. Faulted cables shall be isolated, tested, grounded and tagged before repair work. Approved tester/equipment shall be used to ensure that the cable is de-energized before grounding.

H. When unattended, hand holes, manholes, silo covers and pad-mounted equipment shall be secured or bolted at all locking points with approved company locks and special keyed bolts supplied by the manufacturer. Missing bolts shall be replaced.

I. Ladders or other climbing devices shall be used to enter and exit manholes and subsurface vaults that exceed four (4) feet (122 cm) in depth. Ladders shall be inspected prior to use.

J. Persons shall not step on cables or hangers to exit out of manholes or vaults.

K. When work is performed on buried cable or on cable in manholes or vaults, metallic-sheath continuity shall be maintained.

17.20.2 UGL Work Area Protection

A. When loading or unloading cable reels, care should be taken so that reels are under control at all times. Cable ends shall be tacked or tied down to prevent unravelling.

B. Ropes and cables laid temporarily across sidewalks during pulling operations shall be properly protected to avoid possible injury to pedestrians. Cables laid out temporarily to restore power shall be protected in the same manner.

C. Do not use cables or cable racks to support chain falls, lifting tackle, weights or planks.

D. Equipment and cable shall not be left on the jobsite after the completion of work. Good housekeeping shall be maintained at all times around the work area.

E. Care shall be taken when pulling cables to protect employees and the public from possible injury. This requires a study of the vehicular and pedestrian traffic for the particular location, to enable the equipment to be set up in the safest possible manner that will cause the public the least inconvenience. All persons, including employees, should be warned to keep away from taut ropes or cables. If necessary, barricades shall be installed to divert pedestrians and vehicles away from the pull-site.

F. Workers who are in a roadside work zone, exposed to vehicular traffic on a roadway or exposed to construction equipment within a work zone will be required to wear Class 2 safety garments at all times.

17.20.3 UGL Manhole Operations

A. Load-breaking devices in the manhole must be operated from outside the manhole. No one is to be inside the manhole when such devices are operated.

B. For O&R employees, work shall only proceed in a manhole if all circuits are de-energized, grounded and tagged. If necessary, the cable to be worked on shall be spiked to ensure that it is de-energized.

C. Employees shall not remain in a hole while installing or removing cable if the pulling system is operating and/or under tension.

D. Prior to opening a manhole, tests for oxygen deficiency and combustible atmosphere must be made. Manhole-lifting equipment shall be used to open the manhole. No entry into a manhole shall be made in an "Immediately Dangerous to Life and Health" or "IDLH" atmosphere unless in the pursuit of life or limb. The atmosphere shall be made safe prior to entry. All sources of combustible gas, smoking, vehicle exhaust and any source of ignition shall be kept at a distance while testing.

E. A visual inspection for unusual and/or hazardous conditions shall be made prior to entering a manhole. Heavy mud and waste should be cleared away prior to entry.

F. Cable and cable racks shall not be used as ladders or to support tools and equipment.

G. Equipment used to lower or raise materials into a manhole shall be inspected for defects prior to use. Workers shall be clear of the area directly beneath the opening of a manhole when equipment or materials are being lowered or raised.

H. In case of manhole fires, the workers shall evacuate the manhole before using the fire extinguisher and shall not re-enter the manhole until the fire has been extinguished and the manhole has been properly ventilated and tested (see Permit-Required Confined Space Entry).

18.0 Emergency Response/Evacuation

18.1 Emergency Action Plan

Each location shall have a written Emergency Action Plan that covers the following:

- Applicability to all types of emergencies
- General site information
- Evacuation Plan and procedures
- Emergency notifications
- Fire alarm systems
- Training and drill requirements
- Records management

Employees are required to familiarize themselves and keep up to date with the Emergency Action Plan for each facility in which they work.

18.2 Mutual Assistance at Other Utilities

When O&R employees are assisting in the restoration of service at another utility, all employees will follow the safety practices outlined in this manual. Additional safety practices and procedures required by the host company will also be followed.

18.3 Mayday Procedures

The following shall be the procedures for a distress call signal:

A. When faced with an emergency situation (i.e. an aggressive customer, a serious accident or injury, electrical contact, an incident that causes harm to the public, or a situation that has the potential to cause one of these conditions), field personnel with a radio-equipped vehicle should, as soon as possible, issue a MAYDAY.

B. The field person, if able, shall initiate a MAYDAY over the radio. The distress call shall consist of the clearly-spoken word **MAYDAY** repeated three (3) times, followed by the vehicle number. The distress call shall be repeated until the call is acknowledged by either the Dispatcher or the Distribution Supervisor in the ECC/GAS DCC.

C. If the field person is unable to initiate a verbal MAYDAY, the MAN DOWN button should be depressed. Depressing the MAN DOWN button will generate an audible and visual alert for the Dispatcher or Distribution Supervisor to notify him/her to the existence of an emergency event. The alert will also indicate the vehicle number to Control Center personnel. The MAN DOWN button WILL NOT provide the location of the vehicle (see Note below).

D. The driver/occupants of any radio-equipped vehicle who become aware of another vehicle in distress that cannot make radio contact with the ECC/GAS DCC may directly transmit the message and/or relay the location information to the ECC/GAS DCC.

E. Upon receiving and verifying a distress call from any vehicle, the Distribution Supervisor shall direct the Dispatchers to immediately clear all airways on all frequencies by issuing the MAYDAY tones and stating "To all vehicles: There is a MAYDAY in progress at this time....Clear this frequency until further notice."

F. After clearing the airways, the dispatcher should contact the distressed vehicle and request his/her MAYDAY message. In the event that the vehicle cannot be reached or located, the ECC/GAS DCC shall initiate all efforts to locate the vehicle.

G. The operating authority is responsible for ensuring that the MAN DOWN buttons function properly.

Note: Once the MAYDAY procedure has been initiated via the MAN DOWN button, the mobile radio will send out a series of alerts to the Control Center and will be muted for 10-15 seconds, after which time the radio will automatically un-mute. If the ECC/Gas DCC does not respond within 15 seconds, the individual initiating the MAYDAY will need to key the microphone one (1) time.

18.4 Pole-Top/Tower Rescue

Safe and timely pole-top/tower rescue is essential in assisting employees who may have been involved in an accident or incident. Rescue shall be attempted as soon as safely permitted. It is paramount that the safety of the rescuers is considered in every circumstance.

Pole-top rescue training will be provided annually and performed in accordance with applicable departmental procedures. For additional information, refer to departmental procedures.

18.4.1 General Precautions

A. In cases of electric shock, there must be no delay in providing resuscitation, as every moment lost decreases the possibility of restoring breathing.

B. Call or have someone call for help immediately. The Mayday procedure should be utilized in communications for assistance.

C. There are many possible conditions that may make it a difficult matter to properly position a victim of electric shock on a pole or elevated structure.

D. The flexibility of mouth-to-mouth resuscitation makes it particularly suitable for this type of rescue.

E. After freeing the victim from contact with the electrical apparatus and/or wire and taking such measures as may be necessary to protect both the victim and rescuer from further contact, the victim should be secured in any manner that will place the victim face up. The chin lift is used since it is the most effective method of opening the airway. The tongue is attached to the lower jaw. When you lift the chin, you lift the tongue from the back of the throat, which opens the airway. In cases where neck injury is a possibility, the head tilt should be absent or minimal to avoid aggravating the neck injury.

F. Mouth-to-mouth resuscitation with applicable protection may then be performed.

G. Resuscitation should continue on the pole and/or elevated position until all arrangements are completed for lowering, which should be done as quickly as possible. Resuscitation efforts should be resumed immediately when the victim is on the ground.

H. Care should be taken to avoid having a person who was suspended lie down, since he/she could be suffering from suspension trauma/orthostatic intolerance. He/she should instead stand with support of additional personnel to ensure circulation of the deoxygenated blood that may have gathered in the legs. Lying this person down immediately could send the deoxygenated blood to the heart, causing the individual to go into shock.

18.4.2 Bucket-Truck Bucket Rescue Training (Single and Double)

Rescue Bucket Training shall be provided annually.

All employees shall be trained on the operation and rescue procedures for each bucket truck type they may use. If an employee is not trained in either operation or rescue procedure, he/she shall not utilize such equipment.

18.5 Tower Rescue

Reference the Department Tower Rescue Procedure.

43.0 Safety Tagging – Lockout/Tagout

43.1 General Requirements

43.1.1 Gas Operations and Gas Customer Service Lockout/Tagout

Procedures covering gas operations and gas customer service that require any lockout/tagout can be found in the department procedures manual.

43.1.2 Substation Operations

For procedures covering tagging in substations, refer to the most recent version of Workplace Procedure SP-0105.

43.1.3 Distribution Switching and Tagging

For all distribution switching and tagging, please reference the most recent version of company/department Work Procedure C-3100 and revisions thereto.

43.2 Electric Distribution and Transmission Tags

The standard safety tags contain eyelets for attaching them with an electric tie to the operating and control handles of an apparatus. The tags used under the System Operator and Distribution Supervisor are in two colors (red and green), each of which has a distinct purpose. In no case will either tag be used for any purpose other than that for which it is intended.

A. The red tag with black lettering shall be used only under the supervision of the System Operator and/or Distribution Supervisor. It is used for high-voltage equipment and associated control mechanisms together with any low-voltage equipment that the System Operator may designate. Facilities that have had red tags applied shall not be operated under any conditions until the qualified employee whose name is on the tags releases them.

B. The green tag shall be placed on equipment solely to indicate an abnormal equipment condition or status and necessitates that such information be readily available to any employees involved in the operation or maintenance of the equipment. The green tag shall never be placed to provide clearance.

   1. Equipment with a green tag shall be operated only with the approval of the System Operator or the Distribution Supervisor, whoever has authority over that tag.

   2. The reason for placement of the green tag shall be clearly stated on the tag, including any specific operating limits.

   3. Requests to remove a green tag shall be made to the appropriate authority governing the tag to assure that the restriction or abnormality has been corrected.

4. Requests to operate green-tagged equipment within the stated restriction shall be made to the authority governing the tag.

5. Multiple green tags may be applied to the same switching device.

6. The green tag may indicate more than one abnormality or restriction, provided that the tagging was done during the initial arrangements with the authority governing the tag.

Green Tag Special Note: *A green tag shall never be placed for clearance protection. A red tag may be applied to green-tagged equipment, devices or switches, provided that the abnormality or restriction does not prevent the equipment, device or switch from serving the purpose for which the red tag is being applied.*

43.3 Scheduling Work on Equipment under the System Operator's Jurisdiction

The Department Manager, Superintendent, Supervisor or their designated representatives may ask the System Operator to release equipment under their jurisdiction for work as follows:

A. The removal of equipment or lines from service required for all non-emergency work must be requested on a Transmission/Distribution Clearance Request Form at least 72 hours in advance of when such work is scheduled to begin. This request shall be filled out in its entirety and shall be made to the System Operations Scheduling Supervisor or, in his/her absence, to the System Operator directly, by the employee in whose name the circuit or equipment is to be tagged or by that person's supervisor. This procedure also applies to Third-party interconnects and their O&R coordinators.

B. During the construction of new equipment, when the installation or construction work has progressed to the point of energization from any station or other external source of any piece of transmission equipment or distribution equipment within the substation fence, the System Operator shall be so informed by the Engineering Department as follows:

1. This information shall be in writing, shall indicate by sketch its location in relation to the then-existing System Diagram and shall specify the Qualified Engineering Department representative in whose name protective tagging should be issued.

2. The System Operator will immediately order the qualified employee(s) to tag out of service with red tags all switches and control equipment that could energize the new equipment.

3. The tags will be made out in the name of a qualified substation, relay or engineering employee, or other qualified personnel.

4. All requests for the placement or removal of tags on equipment to energize it for test purposes will be made to the System Operator through the qualified substation or relay employee.

5. Revisions or additions to the System Diagram and SCADA system located in the Energy Control Center must be made before any new equipment or line is placed in service.

6. For emergency work, the person in charge of the job shall consult with the system operator to determine which equipment should be cleared and tagged out in order to make the job safe.

43.4 Qualifications/Training

43.4.1 Definition of an Employee Qualified to Use Lockout/Tagout

A person who tags and/or locks out equipment in order to perform service or maintenance must be qualified. To be qualified, a person shall have received training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

The qualified person must understand the purpose and function of the Energy Control Program and have all the skills required for the safe application, usage and removal of energy controls. For further information on switching and tagging operations, reference Electric Systems Operations Operating Instructions 1-S-4.

43.5 Key Requirements

Lines, circuits, feeders and apparatus must be considered energized at all times unless they are properly tagged out.

43.5.1 Electric Distribution and Transmission Tagging Key Requirements

A. Only qualified employees may have equipment tagged out. Third-party interconnects shall also supply a list of qualified employees to perform switching/tagout. Equipment shall be tagged only for the persons appearing on these lists. It shall be the responsibility of the Manager, Superintendent or Supervisor to determine which employees are qualified.

B. All tags must be made out in the name of the person who is in charge of the job. This person shall be responsible for all others working under his tag on the jobsite. The person in charge must be available at the jobsite to clear people off of equipment and/or lines that may need to be restored in an emergency.

C. In filling out tags, care should be taken to ensure that all required information is complete, correct and legible.

D. Tags shall be tied securely to the control handle of equipment with electric ties. For equipment that does not have a control handle, including single-phase disconnect switches and cutouts, the tag shall be fastened in an approved manner (using the hot stick tag holder, for instance).

E. When the person in charge of a job is scheduled to be absent and the job is expected to be continued, he/she should arrange with the authority governing the tag – the Department Manager, Superintendent and/or Supervisor – to have his/her tags released and/or replaced. In the event of an unforeseen absence, the Line or Substation Supervisor can assume the responsibility of the tag and appoint a new person in charge.

F. Other qualified personnel may parallel tag apparatus with Electrical Distribution, Transmission and Substation personnel or System Operators. This tagging is subject to the approval of the authority governing the tag. The tags are to be placed and removed by the qualified employee(s).

G. When more than one group of persons is working on the same line or apparatus, each group may request protection by its own set of tags.

H. When work is performed at separate locations on one line or piece of equipment but under the jurisdiction of qualified employees, each qualified employee shall request his/her own tags using the above procedure.

43.5.2 Use of the Term "Clearance"

Upon completion of the steps within a Switch Order executed by the System Operator or Distribution Supervisor, the use of the term "clearance" will always be accompanied by a statement that defines the purpose for which the clearance is being issued. For example, upon completion of the required switching for a relay technician to perform his relay tests, the System Operator will issue "Clearance to (name of field person) on OCB (name) for testing." For example, the Distribution Supervisor would issue clearances as follows: "As of (time), (name of field person) has clearance to (specify work) between (ID Location points)." The employee who received the clearance shall repeat the clearance back to the SO or DS until both agree that the clearance is correct. For example: The field worker, after receiving clearance from the System Operator, will repeat the information: "I understand that as of (time), I have clearance to (specify work) between (ID location points)" and so on.

44.0 Safety Training

44.1 New Employee Orientation

Each new employee shall attend a New Employee Safety and Health Orientation prior to performing unescorted work activities at O&R. The orientation shall cover facility safety requirements and topics related to the job tasks the employee is to perform. Topics not covered in the orientation shall be communicated to the employee's supervisor or chief to ensure that the employee is not assigned tasks that he/she is not trained to perform.