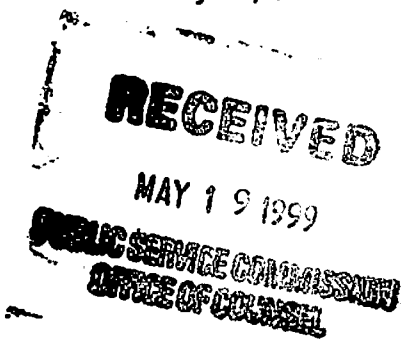
ORANGE AND ROCKLAND One Blue Hill Plaza, Pearl River, New York 10965

JOHN L. CARLEY
SENIOR COUNSEL
(914) 577-2426
(914) 577-2959 (FAX)

May 17, 1999




Honorable Debra Renner
Acting Secretary
State of New York
Department of Public Service
Three Empire State Plaza
Albany, NY 12223-1350

**Re: Case 96-E-0900 - In the Matter of Orange and Rockland Utilities, Inc.'s Plans for Electric Rate/Restructuring Pursuant to Opinion 96-12**

**Case 96-E-0897 - In the Matter of Consolidated Edison Company of New York, Inc.'s Plans for (1) Electric Rate/Restructuring Pursuant to Opinion No. 96-12; and (2) the Formation of a Holding Company Pursuant to PSL, Sections 70, 108 and 110, and Certain Related Transactions.**

Dear Secretary Renner:

On February 26, 1999, pursuant to Section 70 of the Public Service Law and Part 31 of the Rules and Regulations of the Public Service Commission, 16 NYCRR § 31.1, Orange and Rockland Utilities, Inc. ("Orange and Rockland"), Consolidated Edison Company of New York, Inc. ("Con Edison") and Southern Energy, Inc. ("Southern Energy"), submitted a petition to the Commission for an Order authorizing the transfer of all of Orange and Rockland's electric generating assets as well as Con Edison's interest in the Bowline Point Generating Station to certain affiliates of Southern Energy.

The Petitioners envisioned that in the time period prior to closing, they would cooperate in the development of a Separation Document for each of the three assets packages (i.e., Lovett, Bowline, gas turbines and hydroelectric facilities). These Separation Documents would delineate with greater specificity those assets which would be retained by Orange and

Rockland and Con Edison and those which would be transferred to Southern Energy. (See, for example, Section 3.5.2 of the Continuing Site/Interconnection Agreement ("CSIA") by and between Orange and Rockland and Southern Energy Bowline). Upon further reflection, the Petitioners have decided to amend the existing Asset Sales Agreements ("ASAs") and CSIAs rather than to develop such Separation Documents. Accordingly, the Petitioners hereby submit the following:

- First Amendment to Bowline Point Generating Station Sales Agreement among Orange and Rockland, Con Edison and Southern Energy Bowline;
- First Amendment to Lovett Station Sales Agreement between Orange and Rockland and Southern Energy Lovett;
- First Amendment to Gas Turbine and Hydroelectric Generating Station Sales Agreement between Orange and Rockland and Southern Energy NY-Gen;
- First Amendment to CSIA between Orange and Rockland and Southern Energy Bowline;
- First Amendment to CSIA between Orange and Rockland and Southern Energy Lovett; and
- First Amendment to CSIA between Orange and Rockland and Southern Energy NY-Gen.

I enclose an original and 15 copies of each of these amendments. Orange and Rockland, Con Edison and Southern Energy renew their request that this Petition be approved expeditiously in order that the electric generating assets may be transferred as soon as possible.

Please call me at the number above if you have any questions regarding this matter.

Very truly yours,

John L. Carley

John L. Carley
Senior Counsel

Enclosures
cc: Service Lists

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| First Amendment to Lovett Generating Station Sales Agreement between Orange and Rockland Utilities, Inc. and Southern Energy Lovett, L.L.C. dated May 10, 1999 | 2 |
| First Amendment to Gas Turbine and Hydroelectric Generating Stations Sales Agreement between Orange and Rockland Utilities, Inc. and Southern Energy NY-Gen, L.L.C. dated May 10, 1999 | 3 |
| First Amendment to Continuing Site/Interconnection Agreement by and between Orange and Rockland Utilities, Inc. and Southern Energy Bowline, L.L.C. dated May 10, 1999 | 4 |
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1

# FIRST AMENDMENT

# TO

# BOWLINE POINT GENERATING STATION SALES AGREEMENT

# AMONG

# ORANGE AND ROCKLAND UTILTIES, INC.,

# CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

# AND

# SOUTHERN ENERGY BOWLINE, L.L.C.

May 10, 1999

# FIRST AMENDMENT TO
# BOWLINE POINT GENERATING STATION SALES AGREEMENT

THIS FIRST AMENDMENT TO BOWLINE POINT GENERATING STATION SALES AGREEMENT ("Amendment"), dated as of May 10, 1999, among Orange and Rockland Utilities, Inc., a New York Corporation ("O&R"), Consolidated Edison Company of New York, Inc., a New York corporation ("Con Edison") (each of O&R and Con Edison individually may be referred to as "Seller" and collectively as "Sellers" herein) and Southern Energy Bowline, L.L.C., a Delaware limited liability company ("Buyer").

WHEREAS, Sellers and Buyer entered into the Bowline Point Generating Station Sales Agreement on November 24, 1998 (the "Agreement"), whereby Buyer agreed to purchase certain generation assets located at the Bowline Point Generating Station; and

WHEREAS, Seller and Buyer desire to amend certain provisions of the Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and agreement hereinafter set forth, and intending to be legally bound hereby, the parties hereto agree as follows:

## ARTICLE I

## AMENDMENT TO AGREEMENT

1.1. Allocation of Purchase Price. Section 3.3 of the Agreement is revised by deleting "one hundred eighty (180) days of the date of this Agreement but in no event less than forty-five (45) days prior to" and inserting "ninety (90) days following" in lieu thereof.

1.2. Purchased Assets. Schedule 1.1(a)(39) to the Agreement is deleted in its entirety and Schedule 1.1(a)(39) to this Amendment is inserted in lieu hereof.

1.3. Excluded Assets. Schedule 2.2(d) to the Agreement is deleted in its entirety and Schedule 2.2(d) to this Amendment is inserted in lieu thereof.

1.4. Real Property Leases. Schedule 5.9(a) is deleted in its entirety and Schedule 5.9(a) to this Amendment is inserted in lieu thereof.

1.5. Notifications. Schedule 5.12(a)(i) to the Agreement is deleted in its entirety and Schedule 5.12(a)(i) to this Amendment is inserted in lieu thereof.

1.6. Environmental Operating Permits. Schedule 5.12(a)(ii) to the Agreement is deleted in its entirety and Schedule 5.12(a)(ii) to this Amendment is inserted in lieu thereof.

1.7. Non-Environmental Operating Permits. Schedule 5.19(a) to the Agreement is deleted in its entirety and Schedule 5.19(a) to this Amendment is inserted in lieu thereof.

1.8. Continued Employment. Schedule 7.10(b) to this Agreement is deleted in its entirety and Schedule 7.10(b) to this Amendment is inserted in lieu thereof.

1.9. Points of Interconnection. Exhibit C to the Agreement is deleted in its entirety and Exhibit C to this Amendment is inserted in lieu thereof.

## ARTICLE II

## MISCELLANEOUS

2.1. Severability. Should any article, section or provision of this Amendment be decided to be illegal, unenforceable or in conflict with any law by a court of competent jurisdiction or arbitration tribunal, such article, section or provision shall be deemed severed from this Amendment and the validity of the remainder of the Amendment shall not be affected thereby.

2.2. Governing Law. This Amendment shall be governed by and construed in accordance with the laws of the State of New York.

2.3. Counterparts. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers the as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: _____
Name: D. L. Peoples
Title: Chief Executive Officer

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

By: _____
Name: _____
Title: _____

SOUTHERN ENERGY BOWLINE, L.L.C.

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers the as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: _____
Name: _____
Title: _____

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

By: _____
Name: Stephen Bram
Title: Senior Vice President

SOUTHERN ENERGY BOWLINE, L.L.C.

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers the as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: _____
Name: _____
Title: _____

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

By: _____
Name: _____
Title: _____

SOUTHERN ENERGY BOWLINE, L.L.C.

By: James A. Ward
Name: James A. WARD
Title: Vice President

## Schedule 1.1(a)(39)

### Bowline Point Generating Station

Bowline Point Generating Station ("Bowline") is located in the Town of Haverstraw, New York. Bowline station has two fossil-fueled electric generating units having a combined nominal capacity of 1200 MW. The following table shows the primary fuel and the Summer Dependable Maximum Net Capability as reported to the New York Power Pool for the 1997 Summer Capability Period on 09/26/97.

| UNIT | NET CAPABILITY (MW) | PRIMARY FUEL |
|---|---|---|
| Unit 1 | 610.0 | Oil/Gas |
| Unit 2 | 605.0 | Oil/Gas |
| Total | 1,215.0 | |

Bowline contains unit-specific and common equipment, systems and auxiliaries used to operate the two electric generating units. A listing of the major equipment is provided in the following table.

| | BOILERS | | | STEAM TURBINE GENERATORS | | |
|---|---|---|---|---|---|---|
| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS | TYPE | MANUFACTURER | SERIAL NUMBERS |
| 1 | Drum Type, Controlled Circulation Radiant Heat (CCRR) Tangentially-Fired, Balanced Draft Furnace with 20 Burners | Combustion Engineering | 2369 | 3600-rpm Tandem- Compound, Four-Flow, Three-Casing, Reheat | General Electric | Turbine: 170X508<br>Generator: 180X508<br>Exciter: 8384474(X508) |
| 2 | El Paso Drum Type, Natural Circulation, Front and Rear Wall Fired, Balanced Draft Furnace with 32 Burners | Babcock & Wilcox | Contract: 334-0488<br>RB488 | 3600-rpm Tandem- Compound, Four-Flow, Three-Casing, Reheat | General Electric | Turbine: 170X575<br>Generator: 180X575<br>Exciter: 161X475(X575) |

The following table lists major plant systems at Bowline. These systems may be common to both units, or they may be unit specific for one or both units.

| LIST OF MAJOR SYSTEMS - BOWLINE |
|---|
| Mechanical Equipment |
| Steam Generator and Auxiliaries |
| Turbine-Generator and Auxiliaries |
| Fuel Oil System |
| Boiler Feedpump Turbine |
| Lube Oil System |
| Condenser and Auxiliaries |
| Condensate and Feedwater System |
| Circulating Water System |
| Service Water System |
| Bearing-Cooling Water System |
| Fire System |
| Demineralizer |
| Electrodialysis Reversal Water Treatment System |
| Chemical-Feed System |
| Compressed Air |
| Auxiliary Steam System |
| Sampling Equipment |
| Instrument and Control System |
| Heating, Ventilation and Air Conditioning |
| Wastewater Treatment Plant |
| |
| Electrical Equipment |
| Main Transformer |
| Unit Auxiliary Transformer |
| Start Up Transformer |
| Unit Substation Transformers |
| Isolated Phase Bus |
| 13.8 kV Switchgear Buses |
| 4.16 kV Switchgear Buses |
| 480 V Load Centers |
| 277/480 V Motor Control Centers |

120/240 V Inst AC Switchgear w/ Inverter
DC Switchgear w/ Battery Chargers
Station Batteries
Emergency Engine Generator Unit
Rigid and Strain Bus Facilities
Ancillary Equipment (e.g. Lightning arrestors and potential transformers)

The main power house includes the plant maintenance shops. The plant site includes the following ancillary facilities: two concrete stacks with individual steel flues, intake pond, cooling water intake structure, sub-surface and surface cooling water discharges to the Hudson River, fresh water storage tank and fire protection pump house, railroad siding, natural gas metering station, six fuel oil storage tanks, dock and oil unloading facilities, three wastewater storage tanks, process waste water treatment facility, administration and service building, sewerage pump station, service garage, warehouse facilities and switchyard relay room.

The following are the critical spares for equipment at Bowline:

| DESCRIPTION | STORAGE LOCATION ON SITE |
|---|---|
| Unit 1 or 2, (1) GE High Pressure Boiler Feed Pump Turbine Rotor | Back Warehouse |
| Unit 1, (1) set each type: Motor windings for ID and FD Fans | Back Warehouse |
| Unit 2, (1) set each type: Motor windings for ID and FD Fans | Back Warehouse |
| Unit 1, (1) ID Fan Shaft | Rear yard, Outside Main Warehouse |
| Unit 1, (1) ID or FD Fan Shaft Billet | Rear yard, Outside Main Warehouse |
| Unit 1, (1) High Pressure Boiler Feed Pump Internals | Main Warehouse |
| Unit 2, (1) High Pressure Boiler Feed Pump Internals | Main Warehouse |
| Unit 1, (1) Low Pressure Boiler Feed Pump Internals | Main Warehouse |
| Unit 2, (1) Low Pressure Boiler Feed Pump Internals | Main Warehouse |
| Unit 1, (1) Boiler Circulating Water Pump Internals | Main Warehouse |
| Unit 1, (2) Boiler Circulating Water Pump Motors, (1250 HP) | Main Warehouse |
| Unit 1, (1) set Burner Buckets to replace one burner level | Main Warehouse |
| Unit 1 or 2, (1) Complete Traveling Screen Frame Section | Rear yard, Outside Main Warehouse |
| Unit 1 or 2, (4) Generator Stator Bars | Turbine Deck |
| Unit 1 or 2, (1) set HP Turbine Packing | Main Warehouse |

The warehouse contains sufficient inventory to repair all major pumps and smaller pumps located throughout the plant, and rebuild all turbine valves including stop valves, combined reheat valves and control valves.

The following is a list of Generating Step Up ("GSU") transformers at Bowline:

| UNIT ID | SIZE | DATE OF MANUFACTURE |
|---|---|---|
| Unit 1 - Bk. 155<br>H409150 | 672 MVA | GE - 1972 |
| Unit 2 - BK. 255<br>H409546 | 672 MVA | GE - 1974 |

The following is a list of other electrical equipment at Bowline:

Bowline #1 - Other Electrical Equipment

- Bank 155G
- PCB T155-67
- Disconnects T155-3, T67-3, 155-A, 67-55-3Y, 155-55-3X
- Line 67 - Underground Cable

Bowline #2 - Other Electrical Equipment

- Bank 255G
- PCB T255-68
- Disconnects T255-3, T68-3, 255-A, 68-55-3X, 255-55-3X
- Line 68 - Underground Cable

Bowline Start-Up Yard Other Electrical Equipment

- OCB 56-55-2Y, 56-55-2X, 561-55-2X, 561-55-2Y
- Disconnects 56-55-1Y, 56-55-3Y, 56-55-3X, 56-55-1X, 56-X, 561-55-1X, 561-55-3X, 561-55-3Y, 561-55-1Y, 561-Y
- Line 56 - Underground Cable to Minisceongo Switch
- Line 561 - Underground Cable to Minisceongo Switch

*Note: These devices will become the property of the Buyer but Seller will maintain sole control and operational responsibility of the Bowline Start-up.*

- Bank 555
- Bank 655

*Note: These devices will become the property of the Buyer and the Buyer will maintain sole control and operational responsibility of the transformers.*

Minisceongo Switch Other Electrical Equipment

- Disconnects 56-57-4, 561-57-4, T-56-561
- Line 56 - Underground to Bowline Start-up Yard
- Line 561 - Underground to Bowline Start-up Yard

*Note: These devices will become the property of the Buyer but Seller will maintain sole control and operational responsibility of the Minisceongo Switch Station.*

Bowline Point - General

- 16" Gas Main from West Haverstraw

West Haverstraw Substation Other Electrical Equipment

- Line 67 Potheads
- Line 67 Pothead Structure
- Line 68 Potheads
- Line 68 Pothead Structure
- Line 67 and 68 Oil Pumping Plant
- Line 67 and 68 Underground Cable

The following is a list of major vehicles at Bowline:

| ITEM | MANUFACTURER | MODEL NUMBER | SERIAL NUMBER | ORU ID NUMBER | OWN / LEASE |
|---|---|---|---|---|---|
| Pick-up Truck | Ford 1992 | F350 | VIN 2FTJW35H7 NCA84594 | 311 | Own |
| Pick-up Truck | Ford 1989 | F250 | VIN 1FTHF25H XKNB4718 4 | 354 | Own |
| Pick-up Truck | Ford 1990 | F250 | VIN 1FTEF25NX | 441 | Own |

| | | | | | |
|---|---|---|---|---|---|
| | | | LNB04295 | | |
| Pick-up Truck | Ford 1987 | F250 | VIN FTEF255HN B16307 | 481 | Own |
| Cherry Picker | Case | 3330B - Carry Deck Crane | 6225663 | | Own |
| Fork Lift | Caterpillar | 510P - Tow Motor | 24L912 | | Own |
| Fork Lift | Clark | GPS-25 AV1537 | Engine: HB7946;<br><br>Trans.: 183601;<br><br>Steering Axle: 356992 | | Own |

<u>West Haverstraw Substation</u>

The following is a list of the major electrical equipment at the West Haverstraw Substation to be sold at the West Haverstraw Substation:

Line 67 Potheads

Line 67 Pothead Structure

Line 68 Potheads

Line 68 Pothead Structure

Line 67 & 68 Oil Pumping Plant

Line 67 & 68 Underground Cable

## Schedule 2.2(d)

## BOWLINE -- EXCLUDED ASSETS

- PRIMARY EQUIPMENT - 345KV YARD
  None

- PRIMARY EQUIPMENT - 138KV YARD
  None

- PROTECTIVE RELAY SYSTEMS
  None

- SCADA EQUIPMENT
  One (1) Westinghouse Redac 70h System

- TELECOMMUNICATION EQUIPMENT
  32HCGL225564

- NATURAL GAS SUPPLY EQUIPMENT
  (Located at Eackman Drive, Garnerville)
  Inlet Piping
  Separator
  Orifice Meter runs
  Instrumentation
  Overpressure Protection/Isolation Valves
  Regulatory Bypass Piping
  Remote Terminal Unit (Gas)
  Flow Computer
  Telephone

## Schedule 5.9(a)

## BOWLINE LEASES/AGREEMENTS

| AGREEMENT/ LEASE | TENANT | DATE | RECORDED DATE | NOTES |
|---|---|---|---|---|
| Lease | Village of Haverstraw | 02/29/96 | Unrecorded | Greenway Lease |
| Permission Letter | Town of Haverstraw | 12/01/86 | Unrecorded | Gas Recover Grassy Pt. Rd. |
| Agreement | Town & Village of Haverstraw | 06/29/74 | Unrecorded | Park Agreement |
| Agreement | Town & Village of Haverstraw | 06/25/76 | Unrecorded | Revision to Park Agreement |
| Agreement | Town of Haverstraw | 04/16/85 | Unrecorded | Fishing Pier Bowline Pond |
| Lease | Village of Haverstraw & Town of Haverstraw | 06/25/76 | Unrecorded | Lease Around Bowline Pond |
| Agreement | Village of West Haverstraw | 04/30/85 | Unrecorded | Access Road Agreement Near Pecks Pond |
| Lease | Village of West Haverstraw | 06/21/76 | Unrecorded | Ballfield Lease |
| Lease | Village of West Haverstraw | 02/08/91 | Unrecorded | Grounds Ball Field Lease |
| Lease | Town of Haverstraw | 07/29/87 | Unrecorded | W/S Samsondale Ave. |
| Lease | Village of Haverstraw | 09/17/84 | Unrecorded | Jefferson Ave. Parking/Park |
| Lease | Village of Haverstraw | 09/04/85 | Unrecorded | Jefferson Ave. Fence |
| Lease/Agreement | Village of West Haverstraw | 03/26/98 | Unrecorded | Community Center Cul-de-sac |

## Schedule 5.9(a)

## BOWLINE LEASES/AGREEMENTS

| AGREEMENT/ LEASE | TENANT | DATE | RECORDED DATE | NOTES |
|---|---|---|---|---|
| Lease | Thiells-Roseville Fire District | 07/30/87 | Unrecorded | Railroad Ave. Parking |
| Agreement #54 | Conrail (Landlord) | 08/17/71 | Unrecorded | 345KV UG and16" gas line |
| Lease | Omnipoint Communications Inc. | 02/01/97 (master lease); SLA 5/29/98 | Unrecorded | Comm. Site Bowline Roof |
| Agreement | Town of Haverstraw | 04/12/85 | Unrecorded | Access across Railroad siding Westside Grassy Point Road |
| Agreement | Town of Haverstraw | 03/31/98 | Unrecorded | Access to permit Environmental monitoring and closure of adjacent landfill |

## Schedule 5.12(a)(i)

O&R has received the following notification of an alleged violation of a Permit:

By letter dated March 4, 1998, the Riverkeeper, Inc. alleged that Sellers have violated § 9(a)(1)(B) of the Endangered Species Act by taking a listed endangered species (i.e., shortnose sturgeon) without a permit.

In addition, on occasion, Seller experiences exceedances of SPDES discharge parameters, opacity and joint regional sewerage board requirements.

## Schedule 5.12(a)(ii)

## BOWLINE PERMITS

**BOWLINE**

| PERMIT | AGENCY | DATE ISSUED | EXPIRATION DATE |
|---|---|---|---|
| | | | |
| SPDES - Permit # NY - 0008010 | NYSDEC* | 10/1/87 | 10/1/92 |
| SPDES Renewal application filed on March 20, 1992; proceeding with SEQRA process as part of renewal procedure. Currently operating under original permit. | | | |
| | | | |
| Certificate to Operate Air Contamination Source<br>■ For Emission Points 00001 and 00002 (DEC ID 3-3922-00003/AIR ID 392201-0228) | NYSDEC | To be superseded by Title V. | 5/15/01 |
| | | | |
| Certificate to Operate an Air Contamination Source for emission source reference no. 00001 and 00002 | RHCD | 8/15/96 | 8/15/01 |
| | | | |
| Title V Permit Application #3-3922-0003-00001 | NYSDEC | Application submitted on June 13, 1997; permit issuance pending | 5 years after issuance |
| | | | |
| Major Onshore Facility License # 3-1680 | NYSDEC | 11/13/97 | 3/31/02 |
| - Petroleum Bulk storage | | | |
| - Chemical Bulk Storage (regulated under MOSF') 3-0000179 | | | 7/17/99 |
| Certificate of Representation NOx and $SO_2$, Allowance Accounts | USEPA/NYDEC (Note: NYDEC for NOx only) | | |
| Acid Rain Permit (3-3922-0003/00011) | USEPA | | |
| | | | |
| Joint Regional Sewer Discharge Permit # 87001 | JRSB | 3/13/97 | 3/13/02 |
| Lab Certification (Lab ID #10480) | NYSDOH | | |

*** Environmental Acronyms**

JRSB - Joint Regional Sewer Board (located in West Haverstraw, New York)
NYSDEC - New York State Department of Environmental Conservation
NYSDOH - New York State Department of Health
RCHD - Rockland County Health Department
SEQRA - State Environmental Quality Review Act
SPDES - State Pollutant Discharge Elimination System
USEPA - United States Environmental Protection Agency

Schedule 5.19(a)

## NON-ENVIRONMENTAL PERMITS/REGISTRATIONS

### BOWLINE GENERATING STATION

| PERMIT TYPE | PERMIT NUMBER | EXPIRATION | COMMENTS |
|---|---|---|---|
| BOWLINE HELIPORT | FAA SITE NO. 15391.11H | NA | MAINTENANCE OF STACK AND TOWER LIGHTS |
| RADIO LICENSE | 9705D082333 | | SAME LICENSE FOR BOWLINE AND LOVETT |
| ASBESTOS HANDLING LICENSE | 98-0108 | 12/31/99 | ISSUED FOR BOTH BOWLINE AND LOVETT |

# Orange and Rockland Employees
# Offered Positions With Southern Energy New York

| Name | Position Offered by Southern Energy New York |
|---|---|
| 1. Jo Ann Dagele | Executive Assistant-President |
| 2. Louis F. Friscoe | Environmental Manager |
| 3. Hans Hasnay | Gas Turbine & Hydro Manager |
| 4. Bill Saksen | Environmental Specialist |
| 5. Vince Devita | Environmental Specialist |
| 6. Karen Bell | Accounting Specialist |
| 7. Dottie Murphy | Accounting Specialist |
| 8. Ernst Bock | Procurement Specialist |
| 9. Lee Dowling | IR Resources Specialist |
| 10. Daniell Brinker | Clerical |
| 11. Jimmy Sutton | Safety/Training Specialist |
| 12. Vince Carbone | Safety/Training Specialist |
| 13. David Oomen | Document Controls Specialist |
| 14. Linda Hammond | Administrative Assistant- Gas Turbine & Hydro |
| 15. Frank Mancuso | Maintenance Supervisor-Gas Turbine & Hydro |
| 16. John Hawk | Contract Administrator- Gas Turbine & Hydro |
| 17. Joan Mitchell | Administrative Assistant- Bowline |
| 18. John Bubenko | Operations Group Leader-Bowline |
| 19. Mickey Heaphy | Maintenance Group Leader-Bowline |
| 20. William Whitington | Operations Shift Team Leader-Bowline |
| 21. John Lagomarsino | Operations Shift Team Leader-Bowline |
| 22. Andrea Spears | Operations Shift Team Leader-Bowline |
| 23. Alan Lent | Operations Shift Team Leader-Bowline |
| 24. William Dixon | Operations Shift Team Leader-Bowline |
| 25. Gary Decker | Performance Engineer-Bowline |
| 26. John Phillips | Performance Engineer-Bowline |
| 27. George Leonard | RCM Team Leader |
| 28. James Ellis | Contract Administrator- Bowline |
| 29. Leon Neathawk | Maintenance Team Leaders- Bowline |
| 30. Jim Donnery | Maintenance Team Leaders- Bowline |
| 31. Peggy Van Ness | Administrative Assistant- Lovett |
| 32. Charles Gress | Operation Group Leader- Lovett |
| 33. Jack McCarthy | Maintenance Group Leader- Lovett |
| 34. John Tavormina | Operations Shift Team Leader-Lovett |
| 35. Charles Preda | Operations Shift Team Leader-Lovett |
| 36. James Carregal | Operations Shift Team Leader-Lovett |
| 37. Robert Stuber | Operations Shift Team Leader-Lovett |
| 38. Peter Jones | Operations Shift Team Leader-Lovett |
| 39. Andy Reed | Performance Engineer- Lovett |
| 40. John Klos | Water Chemistry/Plant Chemist |
| 41. Bill Metzger | Contract Administrator- Lovett |
| 42. Al Backhaus | Maintenance Team Leaders- Lovett |
| 43. Royal Baisley | Maintenance Team Leaders- Lovett |
| 44. Javid Mian | Maintenance Team Leaders- Lovett |
| 45. James Lienhard | Maintenance Team Leaders- Lovett |

EXHIBIT C
BOWLINE POINT GENERATING STATION
SALES AGREEMENT
SEPARATION DOCUMENT SUMMARY

BOWLINE POINT START-UP
TRANSMISSION INTERCONNECTION

- The interconnection of the Bowline Point Start-Up Yard into the O&R Transmission System will be the Minisceongo switching station taps to the overhead transmission lines 56 and 561.

- The Bowline Point Start-Up Yard is integral to the O&R 138 kV transmission system. The operation and maintenance of the yard equipment, with the exception of the start-up banks (#555 and #655), will be the sole responsibility of O&R. This Demarcation Point will be the 138kv Bushing and Lightning Arrester taps on the transformers.

BOWLINE POINT UNIT #1
TRANSMISSION INTERCONNECTION

- The interconnection of Unit #1 into the O&R Transmission System will be at the West Haverstraw 345 kV pothead structure. O&R will own the overhead section of line 67/671 including the connector to the pothead terminal and the Purchaser will own the underground section of line 67. The Buyer will own the line 67 protection system at Bowline Point and will be responsible for its maintenance.

- The Ladentown Bus arrangement is that of a ring bus with four transmission lines. Two lines connect to Bowline Point and two lines connect to the 345 kV system.

- The 345 kV transmission lines Y88 & W72 connect the Ladentown Bus into the bulk power system between Buchannon and Ramapo.

BOWLINE POINT UNIT #2
TRANSMISSION INTERCONNECTION

- The interconnection of Unit #2 into the O&R Transmission System will be at the West Haverstraw 345 kV pothead structure. O&R will own the overhead section of line 68 including the connector to the pothead terminal and the Purchaser will own the underground section of line 68. The Buyer will own the line 68 protection system at Bowline and will be responsible for its maintenance.

- The Ladentown Bus arrangement is that of a ring bus with four transmission lines. Two lines connect to Bowline Point and two lines connect to the 345 kV system.

- The 345 kV transmission lines Y88 and W72 connect the Ladentown Bus into the bulk power system between Buchannon and Ramapo.

Bowline Generating Unit - Natural Gas Interconnection

Bowline is be interconnected with the O&R natural gas transmission system at the Metering and Regulating (M&R) Station located on Eackman Drive in Garnerville.

O&R will own, operate, and maintain the inlet piping, separator, orifice meter runs, instrumentation, and all interconnecting piping up to and including the overpressure protection/isolation valves ahead of the pressure regulators. O&R will own and maintain the regulator bypass piping up to the 16" flange upstream of the 8" bypass valve. O&R will own, operate, and maintain the Remote Terminal Unite (RTU), flow computers, and telephone located in the Control Room. O&R will own, operate, and maintain the instrumentation associated with the gas metering equipment and overpressure protection valves located in the Regulator Room.

The Buyer will own, operate, and maintain the building containing the Control Room and Regulator Room, pressure regulators, and all interconnecting piping from the outlet of the overpressure protection/isolation valves upstream of the pressure regulators to the plant. The Buyer will own, operate, and maintain the regulator bypass valve and piping from the 16" flange upstream of

the 8" bypass valve to the regulator outlet piping header. Electric power to O&R instrumentation and telemetry will be provided by the Buyer at no cost to O&R.

The Buyer will own and operate the cathodic protection equipment at the M&R station, including the 2 rectifiers.

2

# FIRST AMENDMENT

# TO

# LOVETT GENERATING STATION SALES AGREEMENT

# BETWEEN

# ORANGE AND ROCKLAND UTILTIES, INC.,

# AND

# SOUTHERN ENERGY LOVETT, L.L.C.

May 10, 1999

# FIRST AMENDMENT TO
# LOVETT GENERATING STATION SALES AGREEMENT

THIS FIRST AMENDMENT TO LOVETT GENERATING STATION SALES AGREEMENT ("Amendment"), dated as of May 10, 1999, between Orange and Rockland Utilities, Inc., a New York Corporation ("Seller") and Southern Energy Lovett, L.L.C., a Delaware limited liability company ("Buyer").

WHEREAS, Seller and Buyer entered into the Lovett Generating Station Sales Agreement on November 24, 1998 (the "Agreement"), whereby Buyer agreed to purchase certain generation assets located at the Lovett Generating Station; and

WHEREAS, Seller and Buyer desire to amend certain provisions of the Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and agreement hereinafter set forth, and intending to be legally bound hereby, the parties hereto agree as follows:

## ARTICLE I

## AMENDMENT TO AGREEMENT

1.1 Allocation of Purchase Price. Section 3.3 of the Agreement is revised by deleting "one hundred eighty (180) days of the date of this Agreement but in no event less than forty-five (45) days prior to" and inserting "ninety (90) days following" in lieu thereof.

1.2. Purchased Assets. Schedule 1.1(a)(40) to the Agreement is deleted in its entirety and Schedule 1.1(a)(40) to this Amendment is inserted in lieu hereof.

1.3. Excluded Assets. Schedule 2.2(c) to the Agreement is deleted in its entirety and Schedule 2.2(c) to this Amendment is inserted in lieu thereof.

1.4. Real Property Leases. Schedule 5.9(a) to the Agreement is deleted in its entirety and Schedule 5.9(a) to this Amendment is inserted in lieu thereof.

1.5. Environmental Operating Permits. Schedule 5.12(a)(ii) to the Agreement is deleted in its entirety and Schedule 5.12(a)(ii) to this Amendment is inserted in lieu thereof.

1.6. Non-Environmental Operating Permits. Schedule 5.19(a) to the Agreement is deleted in its entirety and Schedule 5.19(a) to this Amendment is inserted in lieu thereof.

1.7 Continued Employment. Schedule 7.10(b) to the Agreement is deleted in its entirety and Schedule 7.10(b) to this Amendment is inserted in lieu thereof.

1.8. Points of Interconnection. Exhibit C to the Agreement is deleted in its entirety and Exhibit C to this Amendment is inserted in lieu thereof.

## ARTICLE II

## MISCELLANEOUS

2.1. Severability. Should any article, section or provision of this Amendment be decided to be illegal, unenforceable or in conflict with any law by a court of competent jurisdiction or arbitration tribunal, such article, section or provision shall be deemed severed from this Amendment and the validity of the remainder of the Amendment shall not be affected thereby.

2.2. Governing Law. This Amendment shall be governed by and construed in accordance with the laws of the State of New York.

2.3. Counterparts. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers the as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: D L Peoples
Name: D. L. Peoples
Title: Chief Executive Officer

SOUTHERN ENERGY LOVETT, L.L.C.

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers the as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: _____
Name: _____
Title: _____

SOUTHERN ENERGY LOVETT, L.L.C.

By: James A. Ward
Name: JAMES A. WARD
Title: Vice President

## Schedule 1.1(a)(40)

### Lovett Generating Station

Lovett Generating Station ("Lovett") is located in Tomkins Cove, New York. Lovett has three active fossil-fueled electric generating units having a combined nominal capacity of 453 MW and two retired units. The following table shows the primary fuel and the Summer Dependable Maximum Net Capability as reported to the New York Power Pool for the 1997 Summer Capability Period on 09/26/97.

| UNIT | NET CAPABILITY (MW) | PRIMARY FUEL |
|---|---|---|
| Unit 1 | 0 | (Retired) |
| Unit 2 | 0 | (Retired) |
| Unit 3 | 69.3 | Oil/Gas |
| Unit 4 | 176.8 | Coal/Oil/Gas |
| Unit 5 | 197.3 | Coal/Oil/Gas |
| Total | 443.4 | |

Lovett contains unit-specific and common equipment, systems and auxiliaries used to operate the three active electric generating units. A listing of the major equipment for the units is provided in the following table.

| BOILERS | | | | STEAM TURBINE GENERATORS | | |
|---|---|---|---|---|---|---|
| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS | TYPE | MANUFACTURER | SERIAL NUMBERS |
| 1 | Integral Furnace<br><br>(Retired) | Babcock & Wilcox | Contract # F-1282<br><br>15543 | 3600-rpm 18-stage condens-ing | General Electric | Turbine: 80967<br><br>Generator: 5727980 |
| 2 | Integral Furnace<br><br>(Retired) | Babcock & Wilcox | Contract # F-1699<br><br>16787 | 3600-rpm 18-stage condens-ing | General Electric | Turbine: 83652<br><br>Generator: 675066T |
| 3 | Two pass, Tangential-fired, Balanced draft | Combustion Engineer-ing | Contract #: 6851<br><br>MFR # 17401 | 3600-rpm, 25 stage, Tandem-Com-pound Flow, Reheat | General Electric | Turbine: 99623<br><br>Generator: 6918105 |

| BOILERS | | | | STEAM TURBINE GENERATORS | | |
|---|---|---|---|---|---|---|
| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS | TYPE | MANUFACTURER | SERIAL NUMBERS |
| 4 | Reheat type, natural-circulation, Single steam Drum, Front wall-fired (Converted to balanced draft in 1987. | Foster Wheeler | Contract #: 2-79-2004 Waterwalls: 36-4122 Economizer: 28-76772 Reheater: 74-19869 Superheater: 75-19370 | 3600-rpm, 22 stage, Tandem-Compound, Double Flow, Reheat | General Electric | Turbine: 118323<br><br>Generator: 8245877 |
| 5 | Reheat type, Natural Circulation, Single Steam Drum, Front wall-fired, Pressurized Furnace | Babcock & Wilcox | RB444<br><br>BW 22477 | 3600-rpm, 21 stage, Tandem-Compound, Double Flow, Reheat | General Electric | Turbine: 170X386<br><br>Generator: 180X386 |

The following table lists major plant systems at Lovett. These systems may be common to each of the units, or may be unit specific for one or more units.

**LIST OF MAJOR SYSTEMS - LOVETT**

Mechanical Equipment

- Steam Generator and Auxiliaries, including Pulverizing Equipment, Fans, Air Heating Equipment., Sootblowers
- Coal Handling System
- Fuel Oil System
- Turbine-Generator and Auxiliaries
- Boiler Feed Pumps
- Lube Oil System
- Condenser and Auxiliaries
- Condensate and Feedwater System, including Feedwater Heaters and Deaerators
- Circulating Water System
- Service Water System
- Bearing-Cooling Water System
- Fire System

Demineralizer
Chemical-Feed System
Compressed Air
Sampling Equipment
Instrument and Control Systems
Heating, Ventilation, and Air Conditioning
Wastewater Treatment Plant

Electrical Equipment

Main Transformers
Unit Auxiliary Transformers
Start Up Transformers
Unit Substation Transformers
Isolated Phase Bus
13.8 kV Switchgear Buses
4.16 kV Switchgear Buses
480 V Load Centers
277/480 V Motor Control Centers
120/240 V Inst AC Switchgear w/ Inverter
DC Switchgear w/ Battery Chargers
Station Batteries
Emergency Engine Generator Unit
Rigid and Strain Bus Facilities
Ancillary Equipment (e.g. lightning arrestors and potential transformers)

The Lovett site includes the following ancillary facilities: a common concrete stack for Units 4 and 5 (with individual steel flues); cooling water intake structures for each unit; sub-surface and surface cooling to the Hudson River water discharges for each unit; two fresh water storage tanks and a fire protection pump house; coal pile, coal handling facilities, coal handling equipment and maintenance facility; railroad unloading facility, railroad siding and natural gas metering station; three fuel oil storage tanks; dock and oil unloading facilities; electrostatic precipitators (ESP's) on Units 4 and 5, fly ash handling systems, two flyash storage silos, fly ash unloading facilities and bottom ash handling facility; two waste water storage tanks, process waste water treatment facility, sanitary waste treatment facility, service building, air compressor building, flyash equipment maintenance building, coal ash management facility, leachate and runoff pump station and treatment pond and warehouse.

The following are the critical spares for equipment at Lovett:

| DESCRIPTION | STORAGE LOCATION ON SITE |
|---|---|
| Unit 4, (1) FD Fan Motor | Bowline Point Warehouse |
| Unit 4, (2) ID Fan Motors | Bowline Point Warehouse |
| Unit 4, (1) Circ. Water Pump Motor | Bowline Point Warehouse |
| Unit 4, (1) Pulverizer Motor | Bowline Point Warehouse |
| Unit 4, (1) Primary Air Fan Motor | Warehouse |
| Unit 5, (1) FD Fan Motor | Bowline Point Warehouse |
| Unit 4, (1) 200 MVA GSU 19kV - 138 kV | Substation Yard |
| Unit 5, (1) Boiler Feed Pump Motor | Bowline Point Warehouse |
| Unit 5, (1) Primary Air Fan Motor | Warehouse |
| Unit 3, (1) Boiler Feed Pump Internals | Warehouse |
| Unit 4, (1) Boiler Feed Pump Internals | Warehouse |
| Unit 5, (1) Boiler Feed Pump Internals | Warehouse |

The warehouse contains sufficient inventory to repair all major pumps and smaller pumps located throughout the plant, and rebuild all turbine valves including stop valves, combined reheat valves and control valves.

The following is a list of GSU transformers at Lovett:

| UNIT ID | SIZE | DATE OF MANUFACTURE |
|---|---|---|
| Unit 1 - Bank 133<br>8278606<br>(note: unit is retired) | Type HT, 25 MVA | GE |
| Unit 2 - Bank 233<br>B-202664<br>(note: unit is retired) | Type OA-T, 25 MVA | GE |
| Unit 3 - Bk. 333<br>B533850 | 84 MVA | GE - 1954 |
| Unit 4 - BK. 447<br>C-06039-5-1 | 200/224 MVA | McGraw-Edison - 1984 |
| Unit 5 - Bk 547<br>D590865 | 180 MVA | GE - 1969 |

The following is a list of other electrical equipment at Lovett:

Lovett #1 - Other Electrical Equipment
- Bank 133G
- OCB 133-2X, 133-2Y
- Disconnect 133-1Y, 133-3Y, 133-1X, 133-3X

Lovett #2 - Other Electrical Equipment
- Bank 233G
- OCB 233-2X, 233-2Y
- Disconnect 233-1Y, 233-3Y, 233-1X, 233-3X

Lovett #3 - Other Electrical Equipment
- Bank 333G
- OCB 333-2X, 333-2Y
- Disconnect 333-3Y, 333-3X
- Bank 733
- OCB 733-2X, 733-2Y
- Disconnect 733-3Y, 733-3X, 733-A
- Bank 533

Lovett #4 - Other Electrical Equipment

- Bank 447G
- OCB 447-2
- Disconnect 447-3

Lovett #5 - Other Electrical Equipment

- Bank 547G
- OCB 547-2, 647-2
- Disconnect 547-3, 647-3

The following is a list of major vehicles at Lovett:

| ITEM | MANUFACTURER | MODEL NUMBER | SERIAL NUMBER | ORU ID NUMBER | OWN / LEASE |
|---|---|---|---|---|---|
| Boat and Trailer | Duranautic | 22' Boat with 115 Hp Engine (Mercury) | DNV 36977 M80B | Boat and Trailer | Own |
| Pick-up Truck | Ford 1990 | F250 | VIN 1FTEF25N1 LNB04296 | 535 | Own |
| Pick-up Truck | Ford 1988 | F250 | VIN 1FTEF25N7J NB44525 | 477 | Own |
| Dump Truck | Caterpillar 1985 | 350C | 35DA-7315 | DJB-1 | Own |
| Dump Truck | Caterpillar 1985 | 350C | 35DA-7582 | DJB-2 | Own |
| Diesel Locomotive | GM | SW-8 | 53A-187-567B | Big Cam | Own |
| Diesel Locomotive | GM | SW-8 | 53A-188-567B | Little Cam | Own |

| ITEM | MANUFACTURER | MODEL NUMBER | SERIAL NUMBER | ORU ID NUMBER | OWN / LEASE |
|---|---|---|---|---|---|
| Roller | Caterpillar 1987 | CS553 | 7AD262 | Roller | Own |
| Dozer | Caterpillar | D-8K | 66V4228 | D-8K | Own |
| Water Truck | Caterpillar | DW 21, 8000 gal | | Water Truck | Own |
| Bucket Loader | Caterpillar 1987 | 980C | 70V23202 | 980C | Own |
| Dozer | Caterpillar 1987 | D-9N | 01JD00837 | D-9N | Own |
| Bucket Loader | Caterpillar 1987 | 920 | | 920 | Own |
| Vacuum Truck | Ford 1988 L9000 | Peabody and Myers Vactor Body | VIN 1FDZY90X4 KVA11439 | VACTOR | Own |
| Dozer | Case | 1150G | JJG0218242 | 1150G | Own |
| Dump Truck | GM 1995 | Top Kick | VIN GDM7H1J2S J500169 | Dump Truck | Own |
| Fork Lift | Hyster | 60 | 187043 | Fork Lift (Maintenance) | Own |
| Fork Lift | Yale | GLP050RB JUAT080 | P380515 | Fork Lift (Warehouse) | Own |
| Pallet Truck | Crown | 35RRTT | W29663 | Pallet Truck (Warehouse) | Own |
| Crane | Broderson | IC 8010 | 132026 | Crane | Own |
| Manlift | Genie Boom | Z-45/22 | | Manlift | Own |

## Schedule 2.2(c)

### *LOVETT – EXCLUDED ASSETS*

- PRIMARY EQUIPMENT - 69kV YARD

  *OCB'S* -- L-33-2X, L-33-2Y, 147-33-2X, 147-33-2Y, 55-33-2X, 55-33-2Y
  *DISCONNECTS* -- L-33-1X, L-33-3X, L-33-3Y, L-33-1Y, 147-33-lX, 147-33-3X, 147-33-3Y, 147-33-1Y, 55-33-1X, 55-33-3X, 55-33-3Y, 55-33-1Y, 633-A , 333-1X, 333-1Y, 733-1X, 733-1Y, 533-A
  69kV BUS X, BUS Y
  *BANK 633 & SWITCHGEAR*

- PRIMARY EQUIPMENT - 138kV YARD

  *OCB'S* -- 53-47-2, 54-47-2, 56-47-2, 147-2
  *DISCONNECTS* -- 147-1, 147-3, 56-47-1, 56-47-3, 53-47-1, 53-47-3, 54-47-1, 54-47-3, 147-5, 56-47-5, 53-47-5 138KV BUS A, BUS B, BUS C, 447-1, 547-1, 647-1
  *BANK 147* AND DELUGE SYSTEM
  138kV Control House

- PROTECTIVE RELAY SYSTEMS

  Line 55 Relay Protection
  Line 56 Relay Protection
  Line 53 Relay Protection
  Line 54 Relay Protection
  Bank 147 Relay Protection
  69kV Bus X & Bus Y Relay Protection
  138kV Bus A, B, & C Relay Protection

- SCADA EQUIPMENT
  One (1) Westinghouse Redac 70h System (138 kV Yard)
  One (1) Westinghouse Redac 70h System (Plant)

- TELECOMMUNICATION EQUIPMENT
  RTU Telephone Line # 32LGGL292227 (138 kV Yard)
  RTU Telephone Line # 32HCGL225566 (Plant)
  Station Voiceline Phone Number 786-3332

- DELUGE SYSTEM

Bank 147 Deluge System Piping from Control House to Bank 147 including Deluge Valve "C".

- 138kv YARD CONTROL HOUSE

- NATURAL GAS SUPPLY EQUIPMENT

Inlet Piping
Separators
Orifice Meter Runs
Instrumentation
Isolation Valves ahead of Gas Regulators
Station Bypass piping
Remote Terminal Unit (Gas System)
Flow Computer
Outside Telephone

## Schedule 5.9(a)

## LOVETT GENERATING STATION

### Leases/Agreements

| AGREEMENT/ LEASE | LICENSOR | DATE | RECORDED DATE | BOOK | PAGE | NOTES |
|---|---|---|---|---|---|---|
| Lease | Tilcon Minerals, Inc. | 7/14/86 | 12/23/86 | 195 | 2208 | RR Siding |
| License (#13) | Conrail (formerly NY Central) | 7/15/49 | N/A | | | 6" Water Line |
| License (#26) | Conrail (formerly NY Central) | 11/2/56 | N/A | | | 8" Carrier Pipe |
| License (#40) | Conrail (formerly NY Central) | 5/22/67 | N/A | | | 138KV OH |
| License (#51) | Conrail (formerly Penn Central) | 12/1/70 | N/A | | | 138KV UG |
| License (#43) | Conrail (formerly NY Central) | 10/18/65 | N/A | | | 69 KV OH |
| Lease | Conrail | 08/01/86 | N/A | | | Siding Lease |
| Agreement | Conrail | 07/25/86 | N/A | | | Side Track Agreement associated with Siding Lease dated 8/1/86 |
| License (#57) | Conrail | 9/11/86 | N/A | | | Unit 5 Start-up |

| AGREEMENT/ LEASE | LICENSEE | DATE | RECORDED DATE | BOOK | PAGE | NOTES |
|---|---|---|---|---|---|---|
| Agreement | S. & A. Palefsky | 11/1/89 | | | | Water Agreement |
| Agreement | L. Metti | 1971 | | | | Water Agreement |
| Agreement | M. Mangracasale | 1971 | | | | Water Agreement |
| Agreement | G. Hansen | 1971 | | | | Water Agreement |
| Agreement | F. & C. MacMillan | 10/6/93 | | | | Water Agreement |
| Agreement | P. Ferriter | 5/8/87 | | | | Water Agreement |
| Agreement | Town of Stony Point | 12/9/88 | | | | Fire Hydrant |
| Agreement | H. & K. Hansen | 4/15/81 | | | | Water Agreement |
| Agreement | Tomkins Memorial Church | 12/6/82 | | | | Water Agreement |
| Agreement | M. Marsh, L. & R. Babcock, W. Ireland, G. Hansen, H. Hansen, B. Hansen, L. Nemeth, K. Hansen, M. Ryder, W & T Felter | 11/23/73 | | | | Water Agreement |
| Agreement | E. & D. Fredenburg | 11/29/73 | | | | Water Agreement |
| Agreement | G. & G. McElroy | 11/16/73 | | | | Water Agreement |
| Agreement | Town of Stony Point | 03/08/74 | | | | Fire Hydrant - Gays Hill Rd. |

## Schedule 5.12(a)(ii)

## LOVETT PERMITS

**LOVETT**

| PERMIT | AGENCY | DATE ISSUED | EXPIRATION DATE |
|---|---|---|---|
| | | | |
| SPDES - Plant Permit # NY-0005711 | NYSDEC | 10/1/91 | 10/1/96 |
| SPDES Renewal application filed March 19, 1996, currently operating under original permit | | | |
| | | | |
| SPDES Permit # NY-0166456 CAMF | NYSDEC | 7/1/94 | 7/1/99 |
| Part 360 Permit 3-3928-00039-00001-0(CAMF) | NYSDEC | 6/30/94 | 6/30/99 |
| Certificate to Operate an Air Contamination Source - For Emission Points - 00001; 00002; 00003; 00004; 00005; 00007; 00041; 00042; 00043; 00044; 00051; 00052; 00053; 00054; 0006B | NYSDEC | To be superceded by Title V | 5/15/01 |
| | | | |
| Certificate to Operate an Air Contamination Source for emission source reference no. 00001, 00002, 00003, 00004, 00005, 0006B, 00007, 00041, 00042, 00043, 00044, 00051, 00052, 00053, 00054 | RHCD | 1/24/96<br>6/1/96<br>6/1/96<br>6/1/96<br>3/4/97<br>1/25/96<br>1/25/96<br>1/25/96<br>1/25/96<br>6/1/96<br>6/1/96<br>6/1/96<br>6/1/96 | 1/24/01<br>6/1/01<br>6/1/01<br>6/1/01<br>3/4/02<br>1/25/01<br>1/25/01<br>1/25/01<br>1/25/01<br>6/1/01<br>6/1/01<br>6/1/01<br>6/1/01 |
| | | | |
| Title V Permit Application 3-3928-00010/00001 | NYSDEC | Application submitted on June 13, 1997; permit issuance pending | 5 years after issuance |
| Major Onshore Facility License # 3-1620 | NYSDEC | 8/12/96 | 3/31/99 |
| Petroleum Bulk Storage | | | |
| Chemical Bulk Storage (regulated under MOSF) # 3-000178 | NYSDEC | | 7/17/99 |
| | | | |

| PERMIT | AGENCY | DATE ISSUED | EXPIRATION DATE |
|---|---|---|---|
| Radioactive Material Licence #1986-1218 | NYSDOL | | |
| | | | |
| Lab Certification (Lab ID # 10543) | NYSDOH | | |
| | | | |
| Certificate of Representation for $NO_x$ and $SO_2$ Allowance Account | USEPA/NYSDEC (Note: NYSDEC for $NO_x$ only) | | |
| | | | |
| Acid Rain Permit (3-3928-00010/00041) | USEPA | | |
| | | | |

## * Environmental Acronyms

CAMF - Coal Ash Management Facility
MOSF - Major Oil Storage Facility
NYSDEC - New York State Department of Environmental Conservation
NYSDOH - New York State Department of Health
NYSDOL - New York State Department of Labor
RCHD - Rockland County Health Department
SPDES - State Pollutant Discharge Elimination System
USEPA - United States Environmental Protection Agency

## Schedule 5.19(a)

## NON-ENVIRONMENTAL PERMITS/REGISTRATIONS

### LOVETT GENERATING STATION

| PERMIT TYPE | PERMIT NUMBER | EXPIRATION | COMMENTS |
|---|---|---|---|
| RADIO LICENSE | 9705D082333 | | SAME LICENSE FOR BOWLINE AND LOVETT |
| ASBESTOS HANDLING LICENSE | 98-0108 | 12/31/99 | ISSUED FOR BOTH BOWLINE AND LOVETT |

* In addition to the above Permits/Registrations, Seller is required to notify the local fire department prior to performing Hotwork

# Orange and Rockland Employees
# Offered Positions With Southern Energy New York

| Name | Position Offered by Southern Energy New York |
|---|---|
| 1. Jo Ann Dagele | Executive Assistant-President |
| 2. Louis F. Friscoe | Environmental Manager |
| 3. Hans Hasnay | Gas Turbine & Hydro Manager |
| 4. Bill Saksen | Environmental Specialist |
| 5. Vince Devita | Environmental Specialist |
| 6. Karen Bell | Accounting Specialist |
| 7. Dottie Murphy | Accounting Specialist |
| 8. Ernst Bock | Procurement Specialist |
| 9. Lee Dowling | IR Resources Specialist |
| 10. Daniell Brinker | Clerical |
| 11. Jimmy Sutton | Safety/Training Specialist |
| 12. Vince Carbone | Safety/Training Specialist |
| 13. David Oomen | Document Controls Specialist |
| 14. Linda Hammond | Administrative Assistant- Gas Turbine & Hydro |
| 15. Frank Mancuso | Maintenance Supervisor-Gas Turbine & Hydro |
| 16. John Hawk | Contract Administrator- Gas Turbine & Hydro |
| 17. Joan Mitchell | Administrative Assistant- Bowline |
| 18. John Bubenko | Operations Group Leader-Bowline |
| 19. Mickey Heaphy | Maintenance Group Leader-Bowline |
| 20. William Whitington | Operations Shift Team Leader-Bowline |
| 21. John Lagomarsino | Operations Shift Team Leader-Bowline |
| 22. Andrea Spears | Operations Shift Team Leader-Bowline |
| 23. Alan Lent | Operations Shift Team Leader-Bowline |
| 24. William Dixon | Operations Shift Team Leader-Bowline |
| 25. Gary Decker | Performance Engineer-Bowline |
| 26. John Phillips | Performance Engineer-Bowline |
| 27. George Leonard | RCM Team Leader |
| 28. James Ellis | Contract Administrator- Bowline |
| 29. Leon Neathawk | Maintenance Team Leaders- Bowline |
| 30. Jim Donnery | Maintenance Team Leaders- Bowline |
| 31. Peggy Van Ness | Administrative Assistant- Lovett |
| 32. Charles Gress | Operation Group Leader- Lovett |
| 33. Jack McCarthy | Maintenance Group Leader- Lovett |
| 34. John Tavormina | Operations Shift Team Leader-Lovett |
| 35. Charles Preda | Operations Shift Team Leader-Lovett |
| 36. James Carregal | Operations Shift Team Leader-Lovett |
| 37. Robert Stuber | Operations Shift Team Leader-Lovett |
| 38. Peter Jones | Operations Shift Team Leader-Lovett |
| 39. Andy Reed | Performance Engineer- Lovett |
| 40. John Klos | Water Chemistry/Plant Chemist |
| 41. Bill Metzger | Contract Administrator- Lovett |
| 42. Al Backhaus | Maintenance Team Leaders- Lovett |
| 43. Royal Baisley | Maintenance Team Leaders- Lovett |
| 44. Javid Mian | Maintenance Team Leaders- Lovett |
| 45. James Lienhard | Maintenance Team Leaders- Lovett |

EXHIBIT C

SEPARATION DOCUMENT SUMMARY

Lovett Unit #1
Transmission Interconnection

- Lovett Unit #1 will be interconnected with the O&R transmission system at the bus taps to the 69 kV Bus in O&R Substation #33. The Buyer will be responsible for the protection systems associated with the systems on the generator side of the interconnection. O&R shall be responsible for the 69 kV bus differential system.

- Presently the taps from the bus have been removed as the unit is retired.

- The Lovett 69 kV bus is connected to the O&R transmission system through the 85MW Bank 147 and Line 55 which is rated 91MW.

Lovett Unit #2
Transmission Interconnection

- Lovett Unit #2 will be interconnected with the O&R transmission system at the bus taps to the 69 kV Bus in O&R Substation #33. The Buyer will be responsible for the protection systems associated with the systems on the generator side of the interconnection. O&R shall be responsible for the 69 kV bus differential system.

- Presently the taps from the bus have been removed as the unit is retired.

- The Lovett 69 kV bus is connected to the O&R transmission system through the 85MW Bank 147 and Line 55 which is rated 91MW.

Lovett Unit #3
Transmission Interconnection

- Lovett Unit #3 will be interconnected with the O&R transmission system at the taps to the 333-1X, 333-1Y switches in O&R Substation #33. The Buyer will be responsible for the protection systems associated with the systems on the generator side of the interconnection. O&R shall be responsible for the 69 kV bus differential system.

- The Lovett Plant start-up transformer #733 shall be the responsibility of the Buyer and shall be connected to the O&R transmission system at the taps to the 733-1X, 733-1Y switches in O&R Substation #33.

- The Lovett Plant start-up transformer #533 shall be the responsibility of the Buyer and shall be connected to the O&R transmission system at the taps to the 533-A switch in O&R Substation #33. The 533-A switch will be the responsibility of O&R.

- The Lovett 69 kV Bus is connected to the O&R transmission system through the 85MW Bank 147 and Line 55 which is rated 91MW.

Lovett Unit #4
Transmission Interconnection

- Lovett Unit #4 will be interconnected with the O&R System at the taps to the 447-1 switch in O&R Substation #47. The Buyer will be responsible for the protection systems associated with the systems on the generator side of the interconnection. O&R shall be responsible for the 138 kV bus differential system.

- The Lovett Plant start-up transformer #647 shall be the responsibility of the Buyer and shall be connected to the O&R transmission system at the taps to the 647-1 switch in O&R Substation #47.

- The Lovett 138 kV bus is connected to the O&R transmission system through transmission lines 53, 54, and 56. Each line is rated 224MW.

Lovett Unit #5
Transmission Interconnection

- Lovett Unit #5 will be interconnected with the O&R transmission system at the taps to the 547-1 switch in O&R Substation #47. The Buyer will be responsible for the protection systems associated with the systems on the generator side of the interconnection. O&R shall be responsible for the 138 kV bus differential system.

- The Lovett 138 kV bus is connected to the O&R transmission system through transmission lines 53, 54, and 56. Each line is rated 224MW.

- The Lovett #5 generator leads are underground cables that share the oil pumping plant with Line 53 & 54.

Lovett Generating Unit - Natural Gas Interconnection

Lovett is interconnected with the O&R natural gas transmission system at the Metering and Regulating (M&R) Station adjacent to the plant entrance.

O&R will own, operate, and maintain the inlet piping, separators, orifice meter runs, instrumentation,, and all interconnecting piping up to and including the isolation valves ahead of the pressure regulators. O&R will own and maintain the station bypass piping up to the above ground bypass regulator. O&R will own, operate, and maintain the Remote Terminal Unit (RTU), flow computer, and telephone located outside the M&R building.

The Buyer will own, operate, and maintain the M&R building, pressure regulators, and all interconnecting piping from the outlet of the isolation valves upstream of the pressure regulators to the plant. The Buyer will own, operate, and maintain the station bypass regulator and all piping downstream of the bypass regulator. Electric power to O&R instrumentation and telemetry will be provided by the Buyer at no cost to O&R.

3

FIRST AMENDMENT

TO

GAS TURBINE AND HYDROELECTRIC GENERATING STATION SALES AGREEMENT

BETWEEN

ORANGE AND ROCKLAND UTILTIES, INC.,

AND

SOUTHERN ENERGY NY-GEN, L.L.C.

May 10, 1999

# FIRST AMENDMENT TO
# GAS TURBINE AND HYDROELECTRIC GENERATING STATION SALES AGREEMENT

THIS FIRST AMENDMENT TO GAS TURBINE AND HYDROELECTRIC GENERATING STATION SALES AGREEMENT ("Amendment"), dated as of May 10, 1999, between Orange and Rockland Utilities, Inc., a New York Corporation ("Seller") and Southern Energy NY-Gen, L.L.C., a Delaware limited liability company ("Buyer").

WHEREAS, Seller and Buyer entered into the Gas Turbine and Hydroelectric Generating Station Sales Agreement on November 24, 1998 (the "Agreement"), whereby Buyer agreed to purchase certain gas turbine and hydroelectric generation assets from Seller; and

WHEREAS, Seller and Buyer desire to amend certain provisions of the Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and agreement hereinafter set forth, and intending to be legally bound hereby, the parties hereto agree as follows:

## ARTICLE I

## AMENDMENT TO AGREEMENT

1.1 Allocation of Purchase Price. Section 3.3 of the Agreement is revised by deleting "one hundred eighty (180) days of the date of this Agreement but in no event less than forty-five (45) days prior to" and inserting "ninety (90) days following" in lieu thereof.

1.2. Purchased Assets. Schedules 1.1(a)(22), (25) and (51) to the Agreement are deleted in their entirety and Schedules 1.1(a)(22), (25) and (51) to this Amendment are inserted in lieu hereof.

1.3. Excluded Assets. Schedule 2.2(c) to the Agreement is deleted in its entirety and Schedule 2.2(c) to this Amendment is inserted in lieu thereof.

1.4. Environmental Operating Permits. The first page of Schedule 5.12(a)(ii) to the Agreement, entitled "Gas Turbine Permits", is deleted in its entirety and Schedule 5.12(a)(ii) to this Amendment is inserted in lieu thereof.

1.5. Continued Employment. Schedule 7.10(b) to the Agreement is deleted in its entirety and Schedule 7.10(b) to this Amendment is inserted in lieu thereof.

1.6. Points of Interconnection. Exhibit C to the Agreement is deleted in its entirety and Exhibit C to this Amendment is inserted in lieu thereof.

## ARTICLE II

## MISCELLANEOUS

2.1. Severability. Should any article, section or provision of this Amendment be decided to be illegal, unenforceable or in conflict with any law by a court of competent jurisdiction or arbitration tribunal, such article, section or provision shall be deemed severed from this Amendment and the validity of the remainder of the Amendment shall not be affected thereby.

2.2. Governing Law. This Amendment shall be governed by and construed in accordance with the laws of the State of New York.

2.3. Counterparts. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers the as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: _____
Name: D. L. Peoples
Title: Chief Executive Officer

SOUTHERN ENERGY NY-GEN, L.L.C.

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers the as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: _____
Name: _____
Title: _____

SOUTHERN ENERGY NY-GEN, L.L.C.

By: James A. Wahl
Name: James A. Wahl
Title: Vice President

## Schedule 1.1(a)(22)

**Hillburn Gas Turbine Generating Station**

Seller's Hillburn Generating Station is located in Hillburn, New York. This station consists of two aircraft engines used as gas generators, one double flow power turbine and an electric generator. The Hillburn Generating Station has a nominal capacity of 40 MW.

The following table shows the primary fuel and the Summer Dependable Maximum Net Capability as reported to the New York Power Pool for the 1997 Summer Capability Period on 09/26/97.

| UNIT | NET CAPABILITY (MW) | PRIMARY FUEL |
|---|---|---|
| Hillburn | 37.9 | Oil/Gas |

The station contains unit-specific and common equipment, systems and auxiliaries used to operate the electric generating unit. A listing of the major equipment for the unit is provided in the following table.

| ENGINES | | | |
|---|---|---|---|
| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS |
| Hillburn "A" | GG-4A-12DF | Pratt & Whitney | 675261 |
| Hillburn "B" | GG-4A-7DF | Pratt & Whitney | 675445 |

| EXPANDERS | | | |
|---|---|---|---|
| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS |
| Hillburn | ER-224 Double Flow Power Turbine | Worthington | SN# 28653<br>Shop Order #16689 |

| GENERATORS | | | |
|---|---|---|---|
| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS |
| Hillburn | Turbo-Type<br>46,500 KVA | Electric Machinery Mfg. Co. | 1-70146810<br>Rotor: 170152311<br>Stator: 169198711<br>Exciter: 70146870<br>Assembly & Test Production: 169198711 |

The following table lists major plant systems:

| LIST OF MAJOR SYSTEMS - Gas Turbines |
|---|
| Hillburn |
| Mechanical Equipment |
| Gas Generators |
| Gas Generators Lubrication System |
| Gas Generators Fuel Systems |
| Gas Generators Air Storage System |
| Power Turbine |
| Power Turbine and Electric Generator Lubrication System |
| Instrument and Control System |
| Heating, Ventilation, and Air Conditioning |
| Fire Extinguishing System |
| Electrical Equipment |
| Electric Generator and Exciter |
| Main Transformer |
| Station Service Auxiliary Transformer |
| Grounding Transformer |
| Switchgear |
| AC and DC Motor Control Centers |
| DC Storage Batteries and Charger |
| Emergency Engine Generator Unit |
| Rigid and Strain Bus Facilities |
| Ancillary Equipment (e.g. lightning arrestors and potential transformers) |

The following is a description of the Generating Step Up ("GSU") transformer at the Hillburn Gas Turbine Generating Station:

| UNIT ID | SIZE | DATE OF MANUFACTURE |
|---|---|---|
| Hillburn - Bank 617<br>SN: 2-8225-52481-1 | Class: FOA; 50,000 KVA | Allis - Chalmers 1970 |

The following is list of other equipment at the Hillburn Gas Turbine facility:

Hillburn Gas Turbine Other Electrical Equipment

- OCB 617-2Y, GT-17-2X
- Disconnects 617-3Y, T617-3, T-GT-3, GT-17-3X

## Schedule 1.1(a)(25)

### Hydroelectric Generating Stations

The four Hydroelectric Generating Stations (i.e., Mongaup, Swinging Bridge, Rio and Grahamsville) operated by- Seller are located in Sullivan and Orange Counties in the southeastern section of New York State. The four stations have a combined nominal capacity of 44 MW. The following table shows the primary fuel (water) and the Summer Dependable Maximum Net Capability as reported to the New York Power Pool for the 1997 Summer Capability Period on 09/26/97.

| UNIT | NET CAPABILITY (MW) | PRIMARY FUEL |
|---|---|---|
| Mongaup 1 | 0.9 | Water |
| Mongaup 2 | 1.0 | Water |
| Mongaup 3 | 1.0 | Water |
| Mongaup 4 | 1.0 | Water |
| Swinging Bridge 1 | 4.7 | Water |
| Swinging Bridge 2 | 7.8 | Water |
| Rio 1 | 5.1 | Water |
| Rio 2 | 5.1 | Water |
| Grahamsville | 18.0 | Water |

Each station contains unit-specific and common equipment, systems and auxiliaries used to operate the electric generating units. A listing of the major equipment for the units is provided in the following table.

**HYDRAULIC TURBINES**

| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS |
|---|---|---|---|
| Mongaup 1 | Francis Vertical Shaft 1645 Hp @ 110 ft Head | S. Morgan Smith | 3940227 |
| Mongaup 2 | Francis Vertical Shaft 1645 Hp @ 110 ft Head | S. Morgan Smith | 3940226 |
| Mongaup 3 | Francis Vertical | S. Morgan Smith | 3940225 |

## HYDRAULIC TURBINES

| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS |
|---|---|---|---|
| | Shaft<br>1645 Hp @ 110 ft<br>Head | | |
| Mongaup 4 | Francis Vertical<br>Shaft<br>1645 Hp @ 110 ft<br>Head | S. Morgan Smith | 3940224 |
| Swinging<br>Bridge 1 | Francis Vertical<br>Shaft<br>5980 Hp @ 110 ft<br>Head | S. Morgan Smith | 8466 |
| Swinging<br>Bridge 2 | Francis Vertical<br>Shaft<br>9500 Hp @ 110 ft<br>Head | S. Morgan Smith | 8926 |
| Rio 1 | Francis Vertical<br>Shaft<br>7000 Hp @ 170 ft<br>Head | S. Morgan Smith | 8321 |
| Rio 2 | Francis Vertical<br>Shaft<br>7000 Hp @ 170 ft<br>Head | S. Morgan Smith | 8322 |
| Grahamsville | Francis Vertical<br>Shaft<br>28,000 HP @ 330 ft<br>Head | Newport News | |

## TURBINE GOVERNOR

| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS |
|---|---|---|---|
| Mongaup 1 | H.R.<br>Size: 7.74 X 12 | Woodward Governor<br>Co. | 4864 |
| Mongaup 2 | H.R.<br>Size: 7.74 X 12 | Woodward Governor<br>Co. | 4865 |
| Mongaup 3 | H.R. | Woodward Governor | 4866 |

## TURBINE GOVERNOR

| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS |
|---|---|---|---|
| | Size: 7.74 X 12 | Co. | |
| Mongaup 4 | H.R.<br>Size: 7.74 X 12 | Woodward Governor Co. | 5574 |
| Swinging Bridge 1 | G.S.<br>Size: 27 | Woodward Governor Co. | |
| Swinging Bridge 2 | H.P.<br>Size: 15 X 16 | Woodward Governor Co. | 9967 |
| Rio 1 | H.R.<br>Size: 12.5 X 16 | Woodward Governor Co. | 174151 |
| Rio 2 | H.R.<br>Size: 12.5 X 16 | Woodward Governor Co. | 174152 |
| Grahamsville | Cabinet | Woodward Governor Co. | 307606 |

## GENERATOR

| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS |
|---|---|---|---|
| Mongaup 1 | A.T.B.<br>Vertical | General Electric Co. | 3940227 |
| Mongaup 2 | A.T.B.<br>Vertical | General Electric Co. | 3940226 |
| Mongaup 3 | A.T.B.<br>Vertical | General Electric Co. | 3940225 |
| Mongaup 4 | A.T.B.<br>Vertical | General Electric Co. | 4097784 |
| Swinging Bridge 1 | Vertical | Allis-Chalmers | |
| Swinging Bridge 2 | Vertical | Westinghouse | 158P250 |
| Rio 1 | A.T.B.<br>Vertical | General Electric Co. | 4731153 |
| Rio 2 | A.T.B.<br>Vertical | General Electric Co. | 4731152 |
| Grahamsville | Vertical | Westinghouse | 1S46P706 |

The following is a list of the main transformers at the Hydroelectric Generating Facilities:

| UNIT ID | SIZE | DATE OF MANUFACTURE |
|---|---|---|
| Mongaup- Bank 52<br>C 160184 | 5000 KVA | General Electric - 1987 |
| Swinging Bridge - Bank 11<br>714571 | 6000 KVA | Allis - Chalmers Mfg. Co. - 1925 |
| Swinging Bridge - Bank 21<br>1643194 | 7500 KVA | Allis - Chalmers Mfg. Co. - 1939 |
| Rio - Bank 13<br>3510858 | 12000 MVA | Allis - Chalmers - 1986 |
| Grahamsville - Bank 14<br>5069693 | 20000 KVA | Westinghouse - 1953 |

The following is a list of other equipment at the Hydroelectric Generating Facilities:

Rio Hydro Other Electrical Equipment
- OCB 13-2
- Disconnects 13-3

Mongaup Hydro Other Electrical Equipment
- OCB 52-2
- Disconnects 52-3

Swinging Bridge Hydro Other Electrical Equipment
- OCB 11-2
- OCB 21-2

Grahamsville Hydro Other Electrical Equipment
- OCB HG-1291
- Disconnects HG-1294, HG-1293, HG-1290, 14-4, HG-1292

The following table lists major plant systems. These systems may be common to each of the units, or may be unit specific for one or more units.

| LIST OF MAJOR SYSTEMS - HYDROELECTRIC GENERATING STATIONS |
|---|

Mongaup Falls

Mechanical Equipment

- Hydraulic Turbines
- Turbine Governors
- Governor Oil Pressure Pump Motor
- Generator and Auxiliaries
- Exciters
- Lube Oil Systems
- Compressed Air Systems
- Powerhouse Crane
- Head Gates and Hoists
- Instrument and Control Systems
- Penstock Stop Valves and Motors
- Penstock
  - Dam
  - Spillway
  - By-Pass Works
  - Water Quality Monitoring Systems

Electrical Equipment

- Main Transformers
- Unit Auxiliary Transformers
- Gate House Power & Lighting Transformers
- Oil Circuit Breaker
- Emergency Engine Generator Unit
- Rigid and Strain Bus Facilities
- Ancillary Equipment (e.g. lightning arrestors and potential transformers)

Rio

Mechanical Equipment

Hydraulic Turbines
Turbine Governors
Governor Oil Pressure Pump Motor
Generator and Auxiliaries
Exciters
Lube Oil Systems
Compressed Air Systems
Powerhouse Crane
Head Gates and Hoists
Filler Gate
Instrument and Control Systems
Penstock Butterfly Valves and Motors
Penstock
Dam
Spillway
By-Pass Works
Water Quality Monitoring Systems

Electrical Equipment
Main Transformers
Unit Auxiliary Transformers
Gate House Power & Lighting Transformers
Oil Circuit Breaker
Rigid and Strain Bus Facilities
Ancillary Equipment (e.g. lightning arrestors and potential transformers)

Swinging Bridge
Mechanical Equipment
Hydraulic Turbines
Turbine Governors
Governor Oil Pressure Pump Motor
Generator and Auxiliaries
Exciters
Lube Oil Systems
Compressed Air Systems

Powerhouse Cranes
Fire System
Head Gates and Hoists
Instrument and Control Systems
Penstock Stop Valves and Motors
Swinging Bridge Penstocks
Toronto, Cliff Lake, and Swinging Bridge Dams
Toronto, Cliff Lake, and Swinging Bridge Spillways
Toronto Gate House with Upper and Lower Slide Gates and Power Generator
Cliff Lake to Swinging Bridge Interconnecting Tunnel with Shutoff Gate
Swinging Bridge #2 By-Pass Works
Water Quality Monitoring Systems

Electrical Equipment
Main Transformers
Unit Auxiliary Transformers
Gate House Power & Lighting Transformers
Oil Circuit Breaker
Rigid and Strain Bus Facilities
Ancillary Equipment (e.g. lightning arrestors and potential transformers)

Grahamsville
Mechanical Equipment
Hydraulic Turbine
Turbine Governor
Governor Oil Pressure Pump Motor
Generator and Auxiliaries
Exciter
Lube Oil System
Compressed Air System
Powerhouse Crane
Head Gate and Hoist

Instrument and Control Systems

Electrical Equipment

Main Transformers

Unit Auxiliary Transformers

Oil Circuit Breaker

Rigid and Strain Bus Facilities

Ancillary Equipment (e.g. lightning arrestors and potential transformers)

The following are the critical spares for equipment at the Hydroelectric Generating Facilities

| DESCRIPTION | STORAGE LOCATION ON SITE |
|---|---|
| Grahamsville, (1) Main Turbine Bearing | Grahamsville Warehouse |

The hydroelectric warehouses contain sufficient inventory to repair all major equipment located throughout the plants.

The following is a list of major vehicles at the hydroelectric generating facilities:

| ITEM | MANUFACTURER | MODEL NUMBER | SERIAL NUMBER | ORU ID NUMBER | OWN / LEASE |
|---|---|---|---|---|---|
| Pick-up Truck | GMC (Pontiac) | Sierra | | 318 | Own |
| Pick-up Truck | Ford 1990 | E250 | | 356 | Own |
| Pick-up Truck | Ford 1993 | F150 | | 361 | Own |
| Pick-up Truck | Ford 1989 | F350 | | 312 | Own |
| Pick-up Truck | Ford 1997 | Ranger | | 344 | Own |
| Rackbody Truck | Ford 1993 | F800 | | 738 | Own |
| Dump Truck | Ford 1993 | F800 | | 831 | Own |
| Backhoe-Bucket Loader | Case - 1989 | 480E | | 861 | Own |
| Boat, Motor & Trailer | | | | | Own |

## Schedule 1.1(a)(51)

**Shoemaker Gas Turbine Generating Station**

Seller's Shoemaker Generating Station is located in Middletown, New York. The station consists of two aircraft engines used as gas generators, one double flow power turbine and an electric generator. This Station is equipped with a natural gas compressor which is used to raise its gas supply to the required pressure level. The Generating Station has a nominal capacity of 40 MW.

The following table shows the primary fuel and the Summer Dependable Maximum Net Capability as reported to the New York Power Pool for the 1997 Summer Capability Period on 09/26/97.

| UNIT | NET CAPABILITY (MW) | PRIMARY FUEL |
|---|---|---|
| Shoemaker | 36.3 | Oil/Gas |

The station contains unit-specific and common equipment, systems and auxiliaries used to operate the electric generating unit. A listing of the major equipment for the units is provided in the following table.

| ENGINES | | | |
|---|---|---|---|
| **UNIT** | **TYPE** | **MANUFACTURER** | **SERIAL NUMBERS** |
| Shoemaker "A" | GG-4A-7DF | Pratt & Whitney | 675444 |
| Shoemaker "B" | GG-4A-7DF | Pratt & Whitney | 675443 |

| EXPANDERS | | | |
|---|---|---|---|
| **UNIT** | **TYPE** | **MANUFACTURER** | **SERIAL NUMBERS** |
| Shoemaker | ER-224 Double Flow Power Turbine | Worthington | SN# 28654<br>Shop Order # 16691 |

| GENERATORS | | | |
|---|---|---|---|
| UNIT | TYPE | MANUFACTURER | SERIAL NUMBERS |
| Shoemaker | Turbo-Type<br>46,500 KVA | Electric Machinery<br>Mfg. Co. | 2-70146810<br>Rotor: 370154911<br>Stator: 269198711<br><br>Assembly & Test Production: 269198711 |

The following table lists major plant systems:

**LIST OF MAJOR SYSTEMS - Gas Turbines**

Shoemaker

Mechanical Equipment

- Gas Generators
- Gas Generators Lubrication System
- Gas Generators Fuel Systems, including Gas Compressor
- Gas Generators Air Storage System
- Power Turbine
- Power Turbine and Electric Generator Lubrication System
- Instrument and Control System
- Heating, Ventilation, and Air Conditioning
- Fire Extinguishing System

Electrical Equipment

- Electric Generator and Exciter
- Main Transformer
- Station Service Auxiliary Transformer
- Grounding Transformer
- Switchgear
- AC and DC Motor Control Centers
- DC Storage Batteries and Charger
- Emergency Engine Generator Unit
- Rigid and Strain Bus Facilities
- Ancillary Equipment (e.g. lightning arrestors and potential transformers)

The following is a description of the Generating Step Up ("GSU") transformer at the Shoemaker Gas Turbine Generating Station:

| UNIT ID | SIZE | DATE OF MANUFACTURE |
|---|---|---|
| Shoemaker - Bank 511<br>SN: 2-8225-52481-2 | Class: FOA; 50,000 KVA | Allis - Chalmers 1970 |

The following is a list of other equipment at the Shoemaker Gas Turbine facility:

Shoemaker Gas Turbine Other Electrical Equipment

- OCB 511-2

**Schedule 2.2(c)**

## HILLBURN -- EXCLUDED ASSETS

- PRIMARY EQUIPMENT - 69KV YARD

  *OCB'S* -- 89-17-2Y, T-89-59, 59-17-2X, 317-2Y, T317-65, 65-17-2X, 31-17-2Y, 31-17-2X, 23-17-2Y, T917-23, 917-2X
  *DISCONNECTS* -- 89-17-1Y, 89-17-3Y, T-89-3, T-59-3, 59-17-3X, 59-17-1X, 317-1Y, 317-3Y, T317-3, T65-3, 65-17-3X, 65-17-1X, 31-17-1Y, 31-17-3Y, T-31-3, 31-17-3X, 31-17-1X, 23-17-1Y, 23-17-3Y, T23-3, T917-3, 917-3X, 917-1X, 52-17-4 617-1Y, GT-17-1X
  *BANK 317, BANK 917*

- PROTECTIVE RELAY SYSTEMS
  Line 52 Relay Protection
  Line 89 Relay Protection
  Line 31 Relay Protection
  Line 65 Relay Protection
  Line 59 Relay Protection
  Bank 317 Relay Protection
  Bank 917 Relay Protection
  Bus X & Bus Y Relay Protection

- SCADA EQUIPMENT
  One (1) Westinghouse Redac 70 H System

- TELECOMMUNICATION EQUIPMENT
  RTU Telephone Circuit #88QLV3550
  Station Voiceline Phone Number 357-0097

- BRICK CONTROL BUILDING

- TRANSMISSION LINES & TOWERS (in addition to lines connected to station)
  345KV Line 69
  345KV Line 70
  138 KV Line 26

138 KV Line 51

- STORED EQUIPMENT
  All Stored Equipment

- NATURAL GAS SUPPLY EQUIPMENT

Metering and Regulating Station (including Building)
Indirect Fired Natural Gas Heater
Inlet Piping
Pressure Regulator
Orifice Meter Run
Instrumentation
Remote Terminal Unit (Gas)
Interconnecting Piping up to the Separator
Separator
ORU Distribution System Regulator

## Schedule 2.2(c)

## SHOEMAKER -- EXCLUDED ASSETS

- PRIMARY EQUIPMENT - 35KV YARD
  All Equipment Is Excluded

- PRIMARY EQUIPMENT - 69KV YARD

  *OCB'S* -- 12-11-2, 13-11-2, 24-11-2, 25-11-2, 120-11-2, 119-11-2, C1-11-2, 811-2
  *DISCONNECTS* -- 311-A, T-11-1, 311-X, 311-Y, C1-11-1, S111-4, 511-X, 511-Y, 12-X, 24-Y, 12-11-3, 12-11-1, 12-11-5, 13-11-1, 13-11-3, 13-11-5, 24-11-1, 24-11-3, 24-11-5, 25-11-1, 25-11-3, 25-11-5, 13-X, 25-Y, 119-X, 119-Y, 120-Y, 120-3, 119-3, 811-1, 511-1
  *BANK 311, CAP BANK C1*

- PRIMARY EQUIPMENT - 138KV YARD
  All Equipment Is Excluded

- PROTECTIVE RELAY SYSTEMS
  All 35kv Yard Relay Protection
  Line 12 Relay Protection
  Line 13 Relay Protection
  Line 24 Relay Protection
  Line 25 Relay Protection
  Line 119 Relay Protection
  Line 120 Relay Protection
  Cap Bank C1 Relay Protection
  Bus X & Bus Y Relay Protection
  All 138kv Yard Relay Protection

- SCADA EQUIPMENT
  None

- TELECOMMUNICATION EQUIPMENT
  None

- NATURAL GAS SUPPLY EQUIPMENT
  Metering and Regulating Station
  Inlet Piping from Dolson Avenue to the Orifice Meter
  Remote Terminal Unit (gas)

**Schedule 2.2(c)**

## SWINGING BRIDGE- EXCLUDED ASSETS

- PRIMARY EQUIPMENT - 69KV YARD

  *DISCONNECTS* -- 9-1-4, 41-A, 9-1-6, 11-3, 31-A
  *BANK 41*

- PROTECTIVE RELAY SYSTEMS
  Line 9 Relay Protection

- SCADA EQUIPMENT
  One (1) Westinghouse Redac 70 H System

- TELECOMMUNICATION EQUIPMENT
  RTU Telephone Circuit # 97PLNA004072C
  Station Voiceline # 856-2612

## Schedule 2.2(c)

## MONGAUP -- EXCLUDED ASSETS

- PRIMARY EQUIPMENT - 69KV YARD

  *OCB* -- 9-2-2, 12-2-2, 131-2-2, 15-2-2
  *DISCONNECTS* -- 12-A, 12-2-1, 12-2-3, 12-2-4, 131-2-1, 131-2-3, 131-2-4, 15-2-1, 15-2-3, 15-2-4, 9-2-1, 9-2-3, 9-2-4, 52-1
  *BANK 12*

- PROTECTIVE RELAY SYSTEMS
  Line 9 Relay Protection
  Line 12 Relay Protection
  Line 131 Relay Protection
  Line 15 Relay Protection

- SCADA EQUIPMENT
  One (1) Westinghouse Redac 70 H System

- TELECOMMUNICATION EQUIPMENT
  RTU Telephone Circuit # 97PLNA004074C
  Station Voiceline Phone # 856-2109

## Schedule 2.2(c)

## RIO - EXCLUDED ASSETS

- PRIMARY EQUIPMENT - 69KV YARD

  *OCB* -- 15-3-2, 53-2, 3-1D-2, 18-3-2
  *DISCONNECTS* -- 15-3-1, 15-3-3, 15-3-4, 53-1, 53-3, 53-A, 18-3-1, 18-3-3, 18-3-5, 3-1D-1, 3-1D-3, 3-1D-5, S-3-1, 13-1, 83-A
  *BANK 53*
  *BANK 83*

- PROTECTIVE RELAY SYSTEMS
  Line 15 Relay Protection
  Line 18 Relay Protection
  Line 3-1-34 Relay Protection
  Bank 53 Relay Protection

- SCADA EQUIPMENT
  One (1) Westinghouse Redac 70 H System

- TELECOMMUNICATION EQUIPMENT
  RTU Telephone Circuit # 97PLNA004073C
  Station Voice Phone # 856-5711

## Schedule 2.2(c)

## GRAHAMSVILLE -- EXCLUDED ASSETS

- PRIMARY EQUIPMENT - 69KV YARD
  None

- PROTECTIVE RELAY SYSTEMS
  None

- REVENUE METER EQUIPMENT
  None

- SCADA EQUIPMENT
  None

- TELECOMMUNICATION EQUIPMENT
  None

## Schedule 5.12(a)(ii)

## GAS TURBINES PERMITS

### Shoemaker

| PERMIT | AGENCY | DATE ISSUED | EXPIRATION DATE |
|---|---|---|---|
| | | | |
| Certificate to Operate an Air Contamination Source, Emission reference point 00001, 00002. | NYSDEC | Application submitted on 2/16/96. Permit issuance superseded by Title V application. This permit will not be issued but will instead be covered under the Title V Permit when issued. | |
| | | | |
| TITLE V Permit Application 3-3309-00040/00001 | NYSDEC | Application submitted on June 13, 1997; permit issuance pending | 5 years after issuance |
| Certificate of Representation for $No_x$ Allowances Accounts | USEPA/NYSDEC | | |
| Petroleum Bulk Storage #3-412643 | NYSDEC | 4/28/98 | 4/19/03 |

### Hillburn

| PERMIT | AGENCY | DATE ISSUED | EXPIRATION DATE |
|---|---|---|---|
| | | | |
| Certificate to Operate an Air Contamination Source, Emission reference point 00001. | NYSDEC | Application submitted on 2/16/96. Permit will not be issued but will instead be covered under Title V Permit when issued. | |
| | | | |
| TITLE V Permit Appilication 3-3926-00059/0001 | NYSDEC | Application submitted on June 13, 1997; permit issuance pending | 5 years after issuance |
| Certificate of Representation for $No_x$ Allowances Accounts | USEPA/NYSDEC | | |
| Petroleum Bulk Storage #3-990437 | NYSDEC | 6/27/97 | 12/27/01 |

### * Environmental Acronyms

NYSDEC - New York State Department of Environmental Conservation
USEPA - United States Enviromental Protection Agency

# Orange and Rockland Employees
# Offered Positions With Southern Energy New York

| Name | Position Offered by Southern Energy New York |
|---|---|
| 1. Jo Ann Dagele | Executive Assistant-President |
| 2. Louis F. Friscoe | Environmental Manager |
| 3. Hans Hasnay | Gas Turbine & Hydro Manager |
| 4. Bill Saksen | Environmental Specialist |
| 5. Vince Devita | Environmental Specialist |
| 6. Karen Bell | Accounting Specialist |
| 7. Dottie Murphy | Accounting Specialist |
| 8. Ernst Bock | Procurement Specialist |
| 9. Lee Dowling | IR Resources Specialist |
| 10. Daniell Brinker | Clerical |
| 11. Jimmy Sutton | Safety/Training Specialist |
| 12. Vince Carbone | Safety/Training Specialist |
| 13. David Oomen | Document Controls Specialist |
| 14. Linda Hammond | Administrative Assistant- Gas Turbine & Hydro |
| 15. Frank Mancuso | Maintenance Supervisor-Gas Turbine & Hydro |
| 16. John Hawk | Contract Administrator- Gas Turbine & Hydro |
| 17. Joan Mitchell | Administrative Assistant- Bowline |
| 18. John Bubenko | Operations Group Leader-Bowline |
| 19. Mickey Heaphy | Maintenance Group Leader-Bowline |
| 20. William Whitington | Operations Shift Team Leader-Bowline |
| 21. John Lagomarsino | Operations Shift Team Leader-Bowline |
| 22. Andrea Spears | Operations Shift Team Leader-Bowline |
| 23. Alan Lent | Operations Shift Team Leader-Bowline |
| 24. William Dixon | Operations Shift Team Leader-Bowline |
| 25. Gary Decker | Performance Engineer-Bowline |
| 26. John Phillips | Performance Engineer-Bowline |
| 27. George Leonard | RCM Team Leader |
| 28. James Ellis | Contract Administrator- Bowline |
| 29. Leon Neathawk | Maintenance Team Leaders- Bowline |
| 30. Jim Donnery | Maintenance Team Leaders- Bowline |
| 31. Peggy Van Ness | Administrative Assistant- Lovett |
| 32. Charles Gress | Operation Group Leader- Lovett |
| 33. Jack McCarthy | Maintenance Group Leader- Lovett |
| 34. John Tavormina | Operations Shift Team Leader-Lovett |
| 35. Charles Preda | Operations Shift Team Leader-Lovett |
| 36. James Carregal | Operations Shift Team Leader-Lovett |
| 37. Robert Stuber | Operations Shift Team Leader-Lovett |
| 38. Peter Jones | Operations Shift Team Leader-Lovett |
| 39. Andy Reed | Performance Engineer- Lovett |
| 40. John Klos | Water Chemistry/Plant Chemist |
| 41. Bill Metzger | Contract Administrator- Lovett |
| 42. Al Backhaus | Maintenance Team Leaders- Lovett |
| 43. Royal Baisley | Maintenance Team Leaders- Lovett |
| 44. Javid Mian | Maintenance Team Leaders- Lovett |
| 45. James Lienhard | Maintenance Team Leaders- Lovett |

EXHIBIT C
TO
GAS TURBINE AND HYDROELECTRIC
GENERATING STATIONS
SALES AGREEMENT

SEPARATION DOCUMENT SUMMARY

EXHIBIT C

HILLBURN GT TRANSMISSION
INTERCONNECTION

- The Hillburn GT will be interconnected with the O&R transmission system at the taps to the 617-1Y, GT-17-1X switches in O&R Substation #17. The Buyer will be responsible for the protection systems associated with the system on the generator side of the interconnection. O&R shall be responsible for the 69 kV bus differential system.

- The Hillburn 69 kV bus is connected to the O&R transmission system through transmission lines 31, 52, 59, 65 & 89. The combined rating of these lines is 473MW.

Hillburn Peaking Unit - Natural Gas Interconnection

Hillburn is interconnected with the O&R natural gas transmission system at the outlet of the separator outside the gas turbine building.

O&R will own, operate, and maintain the M&R station located on the plant property. This station includes the indirect-fired natural gas heater, building, inlet piping, pressure regulator, orifice meter run, instrumentation, RTU, and all interconnecting piping up to and including the separator outside the turbine building. The second regulator station located within the building serves O&R gas distribution system and will remain O&R property.

The Buyer will own, operate, and maintain the piping from the outlet flange of the separator to the plant. Electric power to O&R instrumentation and telemetry will be provided by the Buyer at no cost to O&R.

Shoemaker GT Transmission
Interconnection

- The Shoemaker GT will be interconnected with the O&R transmission system at the taps to the 511-1 switch in O&R Substation #11. The Buyer will be responsible for the protection systems associated with the

system on the generator side of the interconnection. O&R shall be responsible for the 69 kV bus differential system.

- The Shoemaker 69 kV bus is connected to the O&R transmission system through transmission lines 24, 25, & 27. The combined rating of these lines is 246MW. The additional transmission lines 12, 13, 119,120 serve load off the bus.

Shoemaker Peaking Unit - Natural Gas Interconnection

Shoemaker is interconnected with the O&R natural transmission system at the outlet of the 10" orifice meter run along the southern perimeter fence.

O&R will own, operate, and maintain the regulator station and inlet piping from the transmission main on Dolson Avenue to the orifice meter, the orifice meter run, instrumentation associated with the orifice meter run, and the RTU located on the Compressor Building.

The Buyer will own, operate, and maintain the piping from the outlet flange of the downstream meter tube section to the plant. Electric power to O&R instrumentation and telemetry will be provided by the Buyer at no cost to O&R.

Rio Hydro
Transmission Interconnection

- The Rio Hydro will be interconnected with the O&R transmission system at the taps to the 13-1 switch in O&R Substation #3. The Buyer will be responsible for the protection systems associated with the system on the generator side of the interconnection.

- The Rio Gate House Circuit will be interconnected with the O&R distribution system at the 4.16kv taps from the Gate House Circuit adjacent to the Rio substation fence. The fuse disconnects, 4.16kv underground cable and Bank 83 will be owned by O&R.

- The Rio 69 kV Bus is connected to the O&R Transmission System through two transmission lines, lines 15 & 18. The combined rating of these lines is 53MW.

Mongaup Hydro
Transmission Interconnection

- The Mongaup Hydro will be interconnected with the O&R System at the taps to the 52-1 switch in O&R Substation #2. The Buyer will be responsible for the protection systems associated with the system on the generator side of the interconnection.

- The Mongaup 69 kV bus is connected to the O&R Transmission System through transmission lines 12, 131. The combined rating of these lines is 105MW. The additional transmission line 9 serves load off the bus.

Swinging Bridge Hydro
Transmission Interconnection

- The Swinging Bridge #1 Hydro will be interconnected with the O&R Transmission System at the taps to Switch 11-3 in O&R Substation #3. The plant station service transformer Bank #31 will be interconnected to the O&R system at the taps to switch #31-A in O&R Substation #3. The Buyer will be responsible for the protection systems associated with the system on the generator side of the interconnection.

- The Swinging Bridge #1A Hydro will be interconnected with the O&R Transmission System at the taps to switch 9-1-6 in the O&R Substation #3. The Buyer will be responsible for the protection systems associated with the system on the generator side of the interconnection.

- The Swinging Bridge 69 kV bus is connected to the O&R Transmission System through transmission line 9. The rating of this line is 22MW.

Grahamsville Hydro
Transmission Interconnection

- The Grahamsville Hydro will be interconnected with the Central Hudson Transmission System at the bus taps to the 69 kV Central Hudson HG lines in O&R Substation #4. The Buyer will be responsible for

the protection systems associated with the generator and the substation, including the protection systems associated with the Central Hudson transmission lines.

- The existing Orange and Rockland Wheeling Agreement with Central Hudson will be assigned to the Buyer.

# 4

# FIRST AMENDMENT

# TO

# CONTINUING SITE/INTERCONNECTION AGREEMENT

# BY AND BETWEEN

# ORANGE AND ROCKLAND UTILTIES, INC.,

# AND

# SOUTHERN ENERGY BOWLINE, L.L.C.

May 10, 1999

# FIRST AMENDMENT TO CONTINUING SITE/INTERCONNECTION AGREEMENT

THIS FIRST AMENDMENT TO CONTINUING SITE/INTERCONNECTION AGREEMENT ("Amendment"), dated as of May 10, 1999, by and between Orange and Rockland Utilities, Inc., a New York corporation ("Seller") and Southern Energy Bowline, L.L.C., a Delaware limited liability company ("Buyer").

WHEREAS, Seller and Buyer entered into the Continuing Site/Interconnection Agreement (the "Agreement") on November 24, 1998, whereby Seller agreed to provide Buyer with certain interconnection services associated with the generation assets located at the Bowline Point Generating Station, and Buyer agreed to provide Seller access to certain parts of those generation assets;

WHEREAS, the Agreement contemplates the development of a "Separation Document" which would further delineate Seller's and Buyer's rights and responsibilities under the Agreement; and

WHEREAS, Seller and Buyer desire to amend certain provisions of the Agreement in lieu of developing a "Separation Document".

NOW, THEREFORE, in consideration of the premises and agreement hereinafter set forth, and intending to be legally bound hereby, the parties hereto agree as follows:

## ARTICLE I

## AMENDMENT TO AGREEMENT

1.1. One-Line Drawings and Secondary System Ownership. Schedule A to the Agreement is revised by deleting the first page to Schedule A, entitled "Schedule A to Continuing Site/Interconnection Agreement", and inserting the first page of Schedule A to this Amendment,

entitled "Schedule A (Part I) to Continuing Site/Interconnection Agreement", in lieu thereof. Schedule A to the Agreement is further revised by inserting Schedule A (Part II) to this Amendment at the end thereof.

1.2. Black Start & System Restoration Plan. Schedule D to the Agreement is deleted in its entirety and Schedule D to this Amendment is inserted in lieu thereof.

1.3. Revenue Meters. Section 1.28 of the Agreement is revised by inserting the words ", the current locations of which are set forth in Schedule F (Part I) hereto, and the anticipated meter locations of which are set forth in Schedule F (Part II) hereto" at the end of the sentence. The Agreement is further revised by inserting Schedule F to this Amendment as Schedule F (Parts I and II) to the Agreement.

1.4. Operating, Metering and Equipment Protection Requirements. Section 3.1.2 of the Agreement is revised by deleting the third and fourth sentences therefrom.

1.5. Metering for Retail Accounts. Section 3.1.3 of the Agreement is revised by inserting ", and Schedule G hereto identifies the electric and gas meters which Seller will use to measure the services which Seller itself will provide to Buyer under this Section 3.1.3" at the end of the second sentence thereof. The Agreement is further revised by inserting Schedule G to this Amendment as Schedule G to the Agreement.

1.6. Low Voltage Substation Service. Section 3.8.1 and Section 3.9.1 of the Agreement are each revised by deleting "as will be set forth in the Separation Document" therein.

1.7. Line Operations Information. Section 3.8.9 of the Agreement is revised by deleting "as set forth more fully in the Separation Document" at the end of the first sentence thereof.

1.8. Energy Management System Information. Section 3.8.10 of the Agreement is deleted in its entirety.

1.9. Dispatch Service Protocols. Section 3.8.11 of the Agreement is deleted in its entirety.

1.10. Line Operation Information. Section 3.9.3 of the Agreement is revised by deleting "as set forth more fully in the Separation Agreement" at the end of the first sentence thereof.

1.11. Substation Operations and Maintenance. Section 3.9.5 of the Agreement is deleted in its entirety.

1.12. Switching, Tagging and Grounding Rules. Section 3.14.2 of the Agreement is revised by deleting "mutually agreed by the Parties" and inserting "set forth in Schedule H hereto" in lieu thereof. The Agreement is further revised by inserting Schedule H to this Amendment as Schedule H to the Agreement.

## ARTICLE II

## MISCELLANEOUS

2.1. Severability. Should any article, section or provision of this Amendment be decided to be illegal, unenforceable or in conflict with any law by a court of competent jurisdiction or arbitration tribunal, such article, section or provision shall be deemed severed from this Amendment and the validity of the remainder of the Amendment shall not be affected thereby.

2.2. Governing Law. This Amendment shall be governed by and construed in accordance with the laws of the State of New York.

2.3. Counterparts. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: D L Peoples
Name: D. L. Peoples
Title: Chief Executive Officer

SOUTHERN ENERGY BOWLINE, L.L.C.

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: _____
Name: _____
Title: _____

SOUTHERN ENERGY BOWLINE, L.L.C.

By: James A. Ward
Name: JAMES A. WARD
Title: Vice President

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

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

# ORANGE AND ROCKLAND UTILITIES, INC.

## PLANT DIVESTITURE - RELAY SYSTEM

| PLANT: BOWLINE 138 | | | | |
|---|---|---|---|---|
| | | | OWNER ** | |
| TRIPS BREAKER | RELAY TYPE | DEVICE # | ORU | SC |
| 86BF1 | KC-4 | 50BF1 | X | |
| 86BF1 | TD-5 | 2BF1 | X | |
| 86BF2 | KC-4 | 50BF2 | X | |
| 86BF2 | TD-5 | 2BF2 | X | |
| 86BF4 | KC-4 | 50BF4 | X | |
| 86BF4 | TD-5 | 2BF4 | X | |
| 86BF5 | KC-4 | 50BF5 | X | |
| 86BF5 | TD-5 | 2BF5 | X | |
| 94P | HU | 87T-1 | | X |
| 94P | HU | 87T-2 | | X |
| 94P | HU | 87T-3 | | X |
| 94P | C0-7 | 51-G | | X |
| 94S | C0-7 | 51-N | | X |
| 87T-LOCK | AR | 94P | | X |
| 87T-LOCK | AR | 94S | | X |
| 86P | HU | 87T-1 | | X |
| 86P | HU | 87T-2 | | X |
| 86P | HU | 87T-3 | | X |
| 86P | C0-7 | 51NL | | X |
| 86S | C0-7 | 51NH | | X |
| 86BX LOCKOUT | 12PDD11C | 87BX1 | X | |
| 86BX LOCKOUT | 12PDD11C | 87BX2 | X | |
| 86BX LOCKOUT | 12PDD11C | 87BX3 | X | |
| 86BY LOCKOUT | 12PVD11C | 87BY1 | X | |
| 86BY LOCKOUT | 12PVD11C | 87BY2 | X | |
| 86BY LOCKOUT | 12PVD11C | 87BY3 | X | |
| 56-55-2Y/56-55-2X | KD-4 | 21SZ1 | X | |
| 56-55-2Y/56-55-2X | KD-4 | 21SZ2 | X | |
| 56-55-2Y/56-55-2X | KRT | 21NSX | X | |
| 56-55-2Y/56-55-2X | AR | 94S | X | |
| 56-55-2Y/56-55-2X | TD-4 | 21SX | X | |
| 56-55-2Y/56-55-2X | KDXG | 21NS1 | X | |
| 56-55-2Y/56-55-2X | KDXG | 21NS2 | X | |
| 56-55-2Y/56-55-2X | KDXG | 21NS3 | X | |
| 56-55-2Y/56-55-2X | SV-1 | 27B4-5 | X | |
| 56-55-2Y/56-55-2X | SC | 50S | X | |
| 56-55-2Y/56-55-2X | KD-4 | 21PZ1 | X | |

The parties acknowledge that the designation of ownership of the various relays listed in Schedule A, Part II is based upon the functionality of the relays. Relays with the primary purpose of protecting transmission facilities have been designated as Seller's relays and relays with the primary purpose of protecting generation facilities have been designated as Buyer's relays. The parties agree to revise this list from time to time to the extent the ownership designation does not reflect such functionality.

**BOWLINE 138 (CONTINUED)**

| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
|---|---|---|---|---|
| | | | ORU | SC |
| 56-55-2Y/56-55-2X | KD-4 | 21Z2 | X | |
| 56-55-2Y/56-55-2X | KD-41 | 21PZ3 | X | |
| 56-55-2Y/56-55-2X | HKB | 85P | X | |
| 56-55-2Y/56-55-2X | SC | 50P | X | |
| 56-55-2Y/56-55-2X | TD-4 | 21PX | X | |
| 56-55-2Y/56-55-2X | AR | 94P | X | |
| 56-55-2Y/56-55-2X | SX | 79X-2X | X | |
| 56-55-2Y/56-55-2X | SX | 79X-2Y | X | |
| 56-55-2Y/56-55-2X | SGR-52 | 79-2X | X | |
| 56-55-2Y/56-55-2X | SGR-52 | 79-2Y | X | |
| 56-55-2Y/56-55-2X | AR | TTX | X | |
| 56-55-2Y/56-55-2X | AGASTAT | 50PX | X | |
| 561-55-2Y/561-55-2X | KD-4 | 21SZ1 | X | |
| 561-55-2Y/561-55-2X | KD-4 | 21SZ2 | X | |
| 561-55-2Y/561-55-2X | SC | 50S | X | |
| 561-55-2Y/561-55-2X | KDXG | 21NS1 | X | |
| 561-55-2Y/561-55-2X | KDXG | 21NS2 | X | |
| 561-55-2Y/561-55-2X | KDXG | 21NS3 | X | |
| 561-55-2Y/561-55-2X | KRT | 21NSX | X | |
| 561-55-2Y/561-55-2X | SV-1 | 27B1-2 | X | |
| 561-55-2Y/561-55-2X | KS | 78S | X | |
| 561-55-2Y/561-55-2X | TD-4 | 21SX | X | |
| 561-55-2Y/561-55-2X | AR | 94S | X | |
| 561-55-2Y/561-55-2X | KD-4 | 21PZ1 | X | |
| 561-55-2Y/561-55-2X | KD-4 | 21PZ2 | X | |
| 561-55-2Y/561-55-2X | KD-41 | 21PZ3 | X | |
| 561-55-2Y/561-55-2X | HKB | 85P | X | |
| 561-55-2Y/561-55-2X | SC | 50P | X | |
| 561-55-2Y/561-55-2X | TD-4 | 21PX | X | |
| 561-55-2Y/561-55-2X | AR | 94P | X | |
| 561-55-2Y/561-55-2X | SX | 79X-2Y | X | |
| 561-55-2Y/561-55-2X | SX | 79X-2X | X | |
| 561-55-2Y/561-55-2X | SGR-52 | 79-2Y | X | |
| 561-55-2Y/561-55-2X | SGR-52 | 79-2X | X | |
| 561-55-2Y/561-55-2X | KS | 78P | X | |
| 561-55-2Y/561-55-2X | AGASTAT | 50X | X | |
| 561-55-2Y/561-55-2X | AR | TTX | X | |

** NOTE: SEI - Bowline is the owner of all the Bowline 138KV protection. ORU will maintain and operate the relays indicated at SEI - Bowline costs.

| PLANT: BOWLINE #1 - LINE 67 | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| T-155-67 | KD-4 | 21P | | X |
| T-155-67 | KD-41 | 21S | | X |
| T-155-67 | KC-4 | 50L-50G | | X |
| T-155-67 | KRD | 67N | | X |
| T-155-67 | KA-4 | 85 | | X |
| T-155-67 | KS | 68 | | X |
| T-155-67 | SC | 50 | | X |
| T-155-67 | SGR-12 | 79 | | X |
| T-155-67 | SX | 79X | | X |
| T-155-67 | SC | 50N1 | | X |
| T-155-67 | SC | 50N2 | | X |
| T-155-67 | SC | 50N3 | | X |
| T-155-67 | PVD | 87B1 | | X |
| T-155-67 | PVD | 87B2 | | X |
| T-155-67 | PVD | 87B3 | | X |
| T-155-67 | SV-1 | 27-1 | | X |
| T-155-67 | AGASTAT | DTP | | X |
| T-155-67 | AGASTAT | PTP | | X |
| T-155-67 | AGASTAT | 62X | | X |
| 152-106 | IAC | 150/151-1 | | X |
| 152-106 | IAC | 150/151-3 | | X |
| 152-106 | ITH | 150N | | X |
| 152-107 | IAC | 150/151-1 | | X |
| 152-107 | IAC | 150/151-3 | | X |
| 152-107 | ITH | 150N | | X |
| 152-108 | IAC | 150/151-1 | | X |
| 152-108 | IAC | 150/151-3 | | X |
| 152-108 | ITH | 150N | | X |
| 152-109 | IAC | 150/151-1 | | X |
| 152-109 | IAC | 150/151-3 | | X |
| 152-109 | ITH | 150N | | X |
| 152-110 | IAC | 150/151-1 | | X |
| 152-110 | IAC | 150/151-3 | | X |
| 152-110 | ITH | 150N | | X |
| 152-111 | IAC | 150/151-1 | | X |
| 152-111 | IAC | 150/151-3 | | X |
| 152-111 | ITH | 150N | | X |
| 152-112 | IAC | 150/151-1 | | X |
| 152-112 | IAC | 150/151-3 | | X |
| 152-112 | ITH | 150N | | X |
| 152-113 | IAC | 150/151-1 | | X |
| 152-113 | IAC | 150/151-3 | | X |
| 152-113 | ITH | 150N | | X |

| BOWLINE #1 LINE 67 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-114 | IAC | 150/151-1 | | X |
| 152-114 | IAC | 150/151-3 | | X |
| 152-114 | ITH | 150N | | X |
| B0-1 | IAV | 27-1 | | X |
| B0-2 | IAV | 27-2 | | X |
| B0-3 | IAV | 27-3 | | X |
| B0-4 | IAV | 27-4 | | X |
| B0-5 | IAV | 27-5 | | X |
| B0-6 | IAV | 27-6 | | X |
| B0-7 | IAV | 27-7 | | X |
| B0-9 | IAV | 27-9 | | X |
| 152-201 | IAC | 151-1 | | X |
| 152-201 | IAC | 151-2 | | X |
| 152-201 | IAC | 151-3 | | X |
| 152-201 | IAC | 151-N | | X |
| 152-201 | NGV | 127-2 | | X |
| 152-201 | IAV | 127-X | | X |
| 152-202 | IAC | 151-1 | | X |
| 152-202 | IAC | 151-2 | | X |
| 152-202 | IAC | 151-3 | | X |
| 152-202 | IAC | 151-N | | X |
| 152-203 | IAC | 150/151-1 | | X |
| 152-203 | IAC | 150/151-3 | | X |
| 152-203 | ITH | 150N | | X |
| 152-204 | IAC | 150/151-1 | | X |
| 152-204 | IAC | 150/151-3 | | X |
| 152-204 | ITH | 150N | | X |
| 152-205 | IAC | 150/151-1 | | X |
| 152-205 | IAC | 150/151-3 | | X |
| 152-205 | ITH | 150N | | X |
| 152-206 | IAC | 150/151-1 | | X |
| 152-206 | IAC | 150/151-3 | | X |
| 152-206 | ITH | 150N | | X |
| 152-207 | IAC | 150/151-1 | | X |
| 152-207 | IAC | 150/151-3 | | X |
| 152-207 | ITH | 150N | | X |
| 152-208 | IAC | 150/151-1 | | X |
| 152-208 | IAC | 150/151-3 | | X |
| 152-208 | ITH | 150N | | X |
| 152-209 | IAC | 150/151-1 | | X |
| 152-209 | IAC | 150/151-3 | | X |
| 152-209 | ITH | 150N | | X |

| BOWLINE #1 LINE 67 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-210 | IAC | 150/151-1 | | X |
| 152-210 | IAC | 150/151-3 | | X |
| 152-210 | ITH | 150N | | X |
| 152-211 | IAC | 150/151-1 | | X |
| 152-211 | IAC | 150/151-3 | | X |
| 152-211 | ITH | 150N | | X |
| 152-212 | IAC | 150/151-1 | | X |
| 152-212 | IAC | 150/151-3 | | X |
| 152-212 | ITH | 150N | | X |
| 152-213 | IAC | 150/151-1 | | X |
| 152-213 | IAC | 150/151-3 | | X |
| 152-213 | ITH | 150N | | X |
| 152-213 | S0M-5A | 350/351-1 | | X |
| 152-213 | S0M-5A | 350/351-3 | | X |
| 152-214 | IAC | 150/151-1 | | X |
| 152-214 | IAC | 150/151-3 | | X |
| 152-214 | ITH | 150N | | X |
| 386P | BDD-16 | 587U-1 | | X |
| 386P | BDD-16 | 587U-2 | | X |
| 386P | BDD-16 | 587U-3 | | X |
| 386P | BDD-15 | 587T-1 | | X |
| 386P | BDD-15 | 587T-2 | | X |
| 386P | BDD-15 | 587T-3 | | X |
| 386P | BDD-15 | 287T-1 | | X |
| 386P | BDD-15 | 287T-2 | | X |
| 386P | BDD-15 | 287T-3 | | X |
| 386P | CFD-12 | 387-1 | | X |
| 386P | CFD-12 | 387-2 | | X |
| 386P | CFD-12 | 387-3 | | X |
| 386B | CEB-13 | 321 | | X |
| 386B | RPM-14 | 321T | | X |
| 386B | CEH-11 | 340 | | X |
| FUSE ALARM | CFVB | 360-1 | | X |
| GEN. SPEED | CFF-12 | 381 | | X |
| 386B | GGP-53P | 332 | | X |
| 386P | INC-77 | 346 | | X |
| 386B | PJC-32 | 350G | | X |
| 386P | IAV-51 | 359N | | X |
| 386B | IAC | 551N | | X |
| 386B | IAC | 251-G | | X |
| 386P | CFD-12 | 387E-1 | | X |
| 386P | CFD-12 | 387E-2 | | X |
| 386P | CFD-12 | 387E-3 | | X |

| BOWLINE #1 LINE 67 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| RUNBACK | IAC | 337-C1 | | X |
| RUNBACK | IAC | 337-C2 | | X |
| GND.DET. MAIN FIELD | PJG | 364 | | X |
| GND. DET. EXCITOR FIELD | PJG | 364E | | X |
| GEN. FIELD O.V. ALARM | 12IAV | 359V | | X |
| GEN. VOLTAGE TRIP EXCITOR | STV | 327 | | X |
| GEN. BKR. PERMISSIVE | GGP | 332P | | X |

**PLANT: BOWLINE #2 - LINE 68**

| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
|---|---|---|---|---|
| | | | ORU | SC |
| T-255-68 | 12PVD11C | 87B1 | | X |
| T-255-68 | 12PVD11C | 87B2 | | X |
| T-255-68 | 12PVD11C | 87B3 | | X |
| T-255-68 | AR | 94P | | X |
| T-255-68 | CEX | 21B | | X |
| T-255-68 | KA-4 | 85P | | X |
| T-255-68 | KC-4 | 50L/50G | | X |
| T-255-68 | KD-4 | 21P | | X |
| T-255-68 | KD-41 | 21S | | X |
| T-255-68 | KRD | 67N | | X |
| T-255-68 | KS | 68 | | X |
| T-255-68 | SC | 50 | | X |
| T-255-68 | SC | 50-N2 | | X |
| T-255-68 | SC | 50-N1 | | X |
| T-255-68 | SC | 50-N3 | | X |
| T-255-68 | SGR-12 | 79 | | X |
| T-255-68 | SV-1 | 27 | | X |
| T-255-68 | SX | 79X | | X |
| 152-2101 | IAC | 151/1, 2, 3 | | X |
| 152-2101 | IAC | 151N | | X |
| 152-2101 | NGV | 127-21 | | X |
| 152-2101 | IAV | 27T | | X |
| 152-2102 | IAC | 151/1, 2, 3 | | X |
| 152-2102 | IAC | 151N | | X |
| 152-2103 | IAC | 150/1, 2, 3 | | X |
| 152-2103 | PJC | 150N | | X |
| 152-2104 | IAC | 150/1, 2, 3 | | X |
| 152-2104 | PJC | 150N | | X |
| 152-2105 | IAC | 150/1, 2, 3 | | X |
| 152-2105 | PJC | 150N | | X |
| 152-2106 | IAC | 150/1, 2, 3 | | X |
| 152-2106 | PJC | 150N | | X |
| 152-2107 | IAC | 150/1, 2, 3 | | X |
| 152-2107 | PJC | 150N | | X |
| 152-2108 | IAC | 150/1, 2, 3 | | X |
| 152-2108 | PJC | 150N | | X |
| 152-2109 | IAC | 150/1, 2, 3 | | X |
| 152-2109 | PJC | 150N | | X |
| 152-2110 | IAC | 150/1, 2, 3 | | X |
| 152-2110 | PJC | 150N | | X |
| 152-2111 | IAC | 150/1, 2, 3 | | X |
| 152-2111 | PJC | 150N | | X |

| PLANT: BOWLINE #2 - LINE 68 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-2112 | IAC | 150/1, 2, 3 | | X |
| 152-2112 | PJC | 150N | | X |
| 2B01 | IAV | 27-21 | | X |
| 2B02 | IAV | 27-22 | | X |
| 2B03 | IAV | 27-23 | | X |
| 2B04 | IAV | 27-24 | | X |
| 2B05 | IAV | 27-25A | | X |
| 2B05 | IAV | 27-25B | | X |
| 2B06 | IAV | 27-26 | | X |
| 2B07 | IAV | 27-27 | | X |
| EXCITER FOR GEN. | IAV | 235-9 | | X |
| FIELD | STV | 2327-1 | | X |
| OVERVOLTAGE | STV | 2327-2 | | X |
| 152-2201 | IAC | 151-1 | | X |
| 152-2201 | IAC | 151-2 | | X |
| 152-2201 | IAC | 151-3 | | X |
| 152-2201 | IAC | 151-N | | X |
| 152-2202 | IAC | 151-1 | | X |
| 152-2202 | IAC | 151-2 | | X |
| 152-2202 | IAC | 151-3 | | X |
| 152-2202 | IAC | 151-N | | X |
| 152-2202 | NGV | 127/22 | | X |
| 152-2202 | IAV | 27T | | X |
| 152-2203 | IAC | 150/151-1 | | X |
| 152-2203 | IAC | 150/151-3 | | X |
| 152-2203 | PJC | 150N | | X |
| 152-2204 | IAC | 150/151-1 | | X |
| 152-2204 | IAC | 150/151-3 | | X |
| 152-2204 | PJC | 150N | | X |
| 152-2205 | IAC "A" | 150/151-1 | | X |
| 152-2205 | IAC "A" | 150/151-3 | | X |
| 152-2205 | PJC "A" | 150N | | X |
| 152-2205 | IAC "B" | 150/151-1 | | X |
| 152-2205 | IAC "B" | 150/151-3 | | X |
| 152-2205 | PJC "B" | 150N | | X |
| 152-2206 | IAC | 150/151-1 | | X |
| 152-2206 | IAC | 150/151-3 | | X |
| 152-2206 | PJC | 150N | | X |
| 152-2207 | IAC | 150/151-1 | | X |
| 152-2207 | IAC | 150/151-3 | | X |
| 152-2207 | PJC | 150N | | X |
| 152-2207 | SOM-5 | 350/351-1 | | X |
| 152-2207 | SOM-5 | 350/351-3 | | X |

| PLANT: BOWLINE #2 - LINE 68 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-2208 | IAC | 150/151-1 | | X |
| 152-2208 | IAC | 150/151-3 | | X |
| 152-2208 | PJC | 150N | | X |
| 152-2209 | IAC | 150/151-1 | | X |
| 152-2209 | IAC | 150/151-3 | | X |
| 152-2209 | PJC | 150N | | X |
| 152-2210 | IAC | 150/151-1 | | X |
| 152-2210 | IAC | 150/151-3 | | X |
| 152-2210 | PJC | 150N | | X |
| 152-2211 | IAC | 150/151-1 | | X |
| 152-2211 | IAC | 150/151-3 | | X |
| 152-2211 | PJC | 150N | | X |
| 152-2212 | IAC | 150/151-1 | | X |
| 152-2212 | IAC | 150/151-3 | | X |
| 152-2212 | PJC | 150N | | X |
| 152-2213 | IAC | 150/151-1 | | X |
| 152-2213 | IAC | 150/151-3 | | X |
| 152-2213 | PJC | 150N | | X |
| 2386-P | CFD | 2387-1 | | X |
| 2386-P | CFD | 2387-2 | | X |
| 2386-P | CFD | 2387-3 | | X |
| 2386-P | CFD | 2387-E1 | | X |
| 2386-P | CFD | 2387-E2 | | X |
| 2386-P | CFD | 2387-E3 | | X |
| 2386-P | BDD | 2587-U1 | | X |
| 2386-P | BDD | 2587-U2 | | X |
| 2386-P | BDD | 2587-U3 | | X |
| 2386-P | BDD | 2287-1 | | X |
| 2386-P | BDD | 2287-2 | | X |
| 2386-P | BDD | 2287-3 | | X |
| 2386-P | BDD | 25/87T-1 | | X |
| 2386-P | BDD | 25/87T-2 | | X |
| 2386-P | BDD | 25/87T-3 | | X |
| ALARM | PJG | 2364E | | X |
| 2386-B | CEH | 2340 | | X |
| 2386-B | GGP | 2332B | | X |
| 2386-P | INC | 2346 | | X |
| GEN. SPEED | CFF | 2381 | | X |
| 2386-P | IAV | 2359N | | X |
| 2386-B | PJC | 2350G | | X |

| PLANT: BOWLINE #2 - LINE 68 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 2386-B | CEB | 2321 | | X |
| 2386-B | RPM | 2321T | | X |
| 2386-B | IAC | 2551N | | X |
| 2386-B | IAC | 2251G | | X |
| 2386-B | CFVB | 2360-1 | | X |
| 2386-B | IAC | 2337-C1 | | X |
| 2386-B | IAC | 2337-C2 | | X |
| 2386-B | PJG | 2364-G | | X |
| 2386-B | GGP | 2332-P | | X |
| 2386-B | IAV | 2359 | | X |
| 2386-B | STV | 2327-1 | | X |
| 2386-B | STV | 2327-2 | | X |

**PLANT - BOWLINE 138KV YARD**

**DIVESTED ASSET - OCB 56-55-2X**

| | | OWNER * * | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| FCT2/L | RELAY/CONTROL | X | |
| FCT7/M | RELAY/CONTROL | X | |
| FCT7/C | RELAY/CONTROL | X | |
| FCT7/B | RELAY/CONTROL | X | |
| FCB5/C | RELAY/CONTROL | X | |
| FK23/A | RELAY/CONTROL | X | |
| FCB5/C | RELAY/CONTROL | X | |
| FCB5/B | RELAY/CONTROL | X | |
| FCB5/K | RELAY/CONTROL | X | |
| FAC5/A | RELAY/CONTROL | X | |
| FPC2/H | RELAY/CONTROL | X | |
| FDC2/F | RELAY/CONTROL | X | |
| FK2C/B | RELAY/CONTROL | X | |
| FDC21/A | RELAY/CONTROL | X | |
| FDC21/C | RELAY/CONTROL | X | |
| FDC21/D | RELAY/CONTROL | X | |
| FDC21/B | RELAY/CONTROL | X | |
| FPDC2/D | RELAY/CONTROL | X | |
| FCB5/D | RELAY/CONTROL | X | |
| FPAC3/G | RELAY/CONTROL | X | |
| FPAC14/A | RELAY/CONTROL | X | |
| FPDC1-K | RELAY/CONTROL | X | |
| FCB5-A | RELAY/CONTROL | X | |

* * **NOTE** - SEI - Bowline owns all the equipment in the 138KV yard. ORU will maintain and operate the equipment listed above at SEI - Bowline cost.

**PLANT - BOWLINE 138KV YARD**

**DIVESTED ASSET - OCB 561-55-2Y**

| | | OWNER * * | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| FCT5/A | RELAY/CONTROL | X | |
| FCT5/C | RELAY/CONTROL | X | |
| FCT5/E | RELAY/CONTROL | X | |
| FCT5/F | RELAY/CONTROL | X | |
| FDC5-H | RELAY/CONTROL | X | |
| FDC3-A | RELAY/CONTROL | X | |
| FDC3-B | RELAY/CONTROL | X | |
| FK21/B | RELAY/CONTROL | X | |
| FCB3/C | RELAY/CONTROL | X | |
| FK21/A | RELAY/CONTROL | X | |
| FCB3/E | RELAY/CONTROL | X | |
| FCB3/B | RELAY/CONTROL | X | |
| FCB3/K | RELAY/CONTROL | X | |
| FDC5-J | RELAY/CONTROL | X | |
| FAC3/A | RELAY/CONTROL | X | |
| FCE1/A | RELAY/CONTROL | X | |
| FPAC13/A | RELAY/CONTROL | X | |
| FCB1/D | RELAY/CONTROL | X | |

* * NOTE - SEI - Bowline owns all the equipment in the 138KV yard. ORU will maintain and operate the equipment listed above at SEI - Bowline cost.

**PLANT - BOWLINE 138KV YARD**

**DIVESTED ASSET - OCB 561-55-2X**

| | | OWNER * * | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| FCT1/B | RELAY/CONTROL | X | |
| FCT1/C | RELAY/CONTROL | X | |
| FCT1/C | RELAY/CONTROL | X | |
| FCT1/A | RELAY/CONTROL | X | |
| FDC5/H | RELAY/CONTROL | X | |
| FDC5/F | RELAY/CONTROL | X | |
| FDC3/A | RELAY/CONTROL | X | |
| FDC3/C | RELAY/CONTROL | X | |
| FDC3/B | RELAY/CONTROL | X | |
| FDC3/D | RELAY/CONTROL | X | |
| FK1/B | RELAY/CONTROL | X | |
| FCB1/C | RELAY/CONTROL | X | |
| FK1/A | RELAY/CONTROL | X | |
| FCB1/E | RELAY/CONTROL | X | |
| FCB1/B | RELAY/CONTROL | X | |
| FCB1/A | RELAY/CONTROL | X | |
| FCB1/K | RELAY/CONTROL | X | |
| K05/G | RELAY/CONTROL | X | |
| FAC2/A | RELAY/CONTROL | X | |
| FCB1/A | RELAY/CONTROL | X | |
| FPAC13/A | RELAY/CONTROL | X | |
| FPDC1/C | RELAY/CONTROL | X | |
| FPAC4/A | RELAY/CONTROL | X | |
| FCB1/D | RELAY/CONTROL | X | |
| FPDC2/A | RELAY/CONTROL | X | |

* * NOTE - SEI - Bowline owns all the equipment in the 138KV yard. ORU will maintain and operate the equipment listed above at SEI - Bowline cost.

**PLANT - BOWLINE 138KV YARD**

**DIVESTED ASSET - OCB 56-55-2Y**

| | | OWNER * * | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| FCT6/A | RELAY/CONTROL | X | |
| FCT6/D | RELAY/CONTROL | X | |
| FCT6/G | RELAY/CONTROL | X | |
| FCT6/F | RELAY/CONTROL | X | |
| FD62-H | RELAY/CONTROL | X | |
| FD21-A | RELAY/CONTROL | X | |
| FK22-B | RELAY/CONTROL | X | |
| FDC21-B | RELAY/CONTROL | X | |
| FCB4/C | RELAY/CONTROL | X | |
| FK22/A | RELAY/CONTROL | X | |
| FCB4/E | RELAY/CONTROL | X | |
| FCB4/B | RELAY/CONTROL | X | |
| FCB4/K | RELAY/CONTROL | X | |

* * NOTE - SEI - Bowline owns all the equipment in the 138KV yard. ORU will maintain and operate the equipment listed above at SEI - Bowline cost.

# Schedule D to Continuing Site/Interconnection Agreement

Schedule D

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

BLACK START AND SYSTEM RESTORATION PLAN

OI 6-E-11

SHEET 1 of 32

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 PCC. 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

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) 352-0096 |
| 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 | |

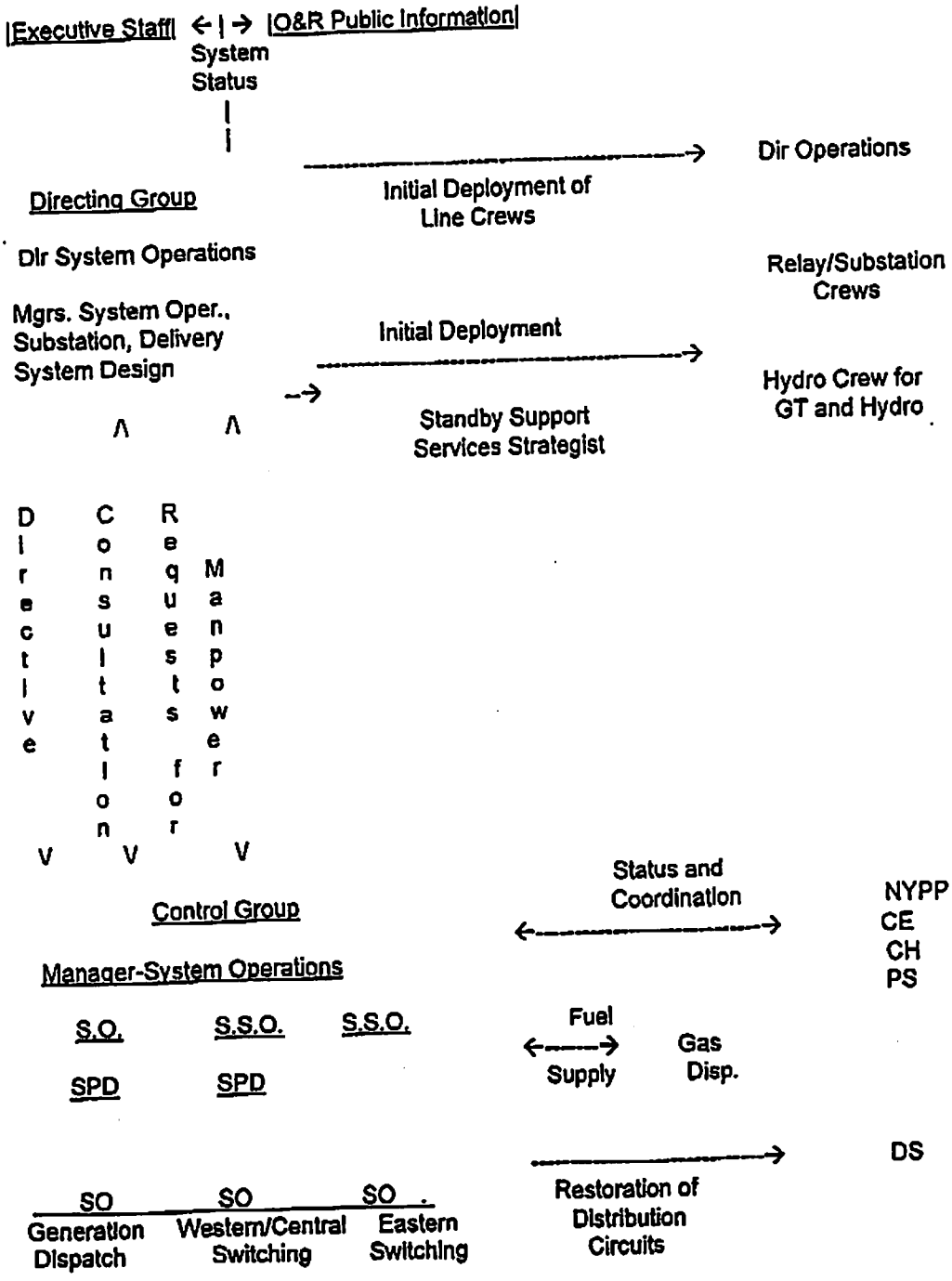
ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

BLACK START AND SYSTEM RESTORATION PLAN

OI 6-E-11

SHEET 3 of 32



ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

BLACK START AND SYSTEM RESTORATION PLAN

OI 6-E-11

SHEET 4 of 32

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

I. 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.

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. 2644 Home (914) 928-2688
Alternate - J. M. Koza
Ext. 2672 Home (914) 429-0946

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT OI 6-E-11

BLACK START AND SYSTEM RESTORATION PLAN SHEET 6 of 32

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) 354-9550 |

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 personnel.

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 )<br>West Nyack )<br>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 )<br>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 )<br>Harriman ) | 1 Substation Crew | 1 Relay Crew |
| Montvale )<br>Pearl River ) | 1 Substation Crew | 1 Relay Crew |

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 | 11-6-2 |
| | | 6-8-2K | |
| | | 6-9-2K | |
| | | Line 7 distribution 7-6-2K | |
| | | 10-6-2 | |
| Shoemaker | 11-1-2K | | 6-11-2 |
| | 11-2-2K | | 20-11-2 |
| | 11-3-2K | | 19-11-2 |
| | 11-4-2K | | 11-11-2 |
| | 11-5-2K | | 120-11-2 |
| | 4-11-2 | | |
| Sliver 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 | | 15-4-2K |
| | 15-2-2B | | 15-5-2K |
| | 15-3-2B | | 15-6-2K |

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Central Division

| | | | |
|---|---|---|---|
| Sterling Forest | | 67-1-2K<br>67-2-2K | |
| Harriman | 71-3-2B<br>71-4-2B<br>71-5-2B<br>71-6-2B | | 71-1-2B<br>71-2-2B<br>71-7-2B<br>71-8-2B |
| South Goshen | | 89-1-2K<br>89-2-2K<br>89-3-2K<br>89-10-2K<br>89-11-2K | |
| Ringwood | | 78-1-2K<br>78-2-2K | |
| West Milford | 79-4-2K<br>79-5-2K<br>79-6-2K | 79-1-2B<br>79-2-2B<br>79-3-2B | 79-7-2B<br>79-8-2B |
| Wisner | | 80-1-2K<br>80-2-2K<br>80-3-2K<br>80-4-2K<br>80-5-2K | |
| Monroe | | 82-61-2<br>83-61-2<br>61-1-2K<br>61-2-2K<br>61-3-2K<br>61-4-2K | |
| Hunt | | 84-1-2K<br>84-2-2K | |
| Lake Road | | 82-1-2B<br>82-2-2B | |

| | |
|---|---|
| Blooming Grove | 76-1-2K<br>76-3-2K<br>76-4-2K |
| Highland Falls | 73-1-2K<br>73-5-2K<br>73-6-2K |

Eastern Division

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

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| | |
|---|---|
| Grand Avenue | 60-1-2B<br>60-2-2B<br>60-3-2B<br>60-4-2K<br>60-5-2K |
| Upper Saddle River | 49-1-2B<br>49-2-2B<br>49-3-2B<br>49-4-2B |
| Sparkill | 50-1-2B<br>50-2-2B<br>50-3-2B<br>50-4-2B |
| South Mahwah | 52-1-2B<br>52-2-2B<br>52-3-2B<br>52-4-2B<br>58-1-2K<br>58-2-2K<br>58-3-2K |
| Franklin Lakes | 35-5-2B<br>35-6-2B<br>35-7-2B<br>35-8-2B<br>35-9-2B<br>35-10-2B |
| Oakland | 36-1-2K<br>36-2-2K<br>36-3-2K<br>36-4-2K |
| Cresskill | 37-1-2B<br>37-2-2B<br>37-3-2B |
| Harings Corner | 30-1-2B<br>30-2-2B<br>30-3-2B<br>30-4-2K<br>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 (ECC 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 656.

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

| | |
|---|---|
| Burns | Banks 819 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 263 |
| 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

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 56-47-2
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

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-89-59
8. Open or check open switch GT-17-2X
9. Open or check open switch 59-17-2X
10. Open or check open switch 65-17-2X
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 Lederle 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 50-31-2
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 T1-53-2

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 819-2
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 25-11-2
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 911 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 Wallkill 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 15-2-2
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 providing 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 Haverstraw
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 55MVA 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 T62-26-2

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

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT OI 6-E-11

BLACK START AND SYSTEM RESTORATION PLAN SHEET 24 of 32

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 Harings 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 562-22-2
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

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT OI 6-E-11

BLACK START AND SYSTEM RESTORATION PLAN SHEET 25 of 32

At Burns
1. Close or check closed switch 60-19-2X
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 49.0MVA 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

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT OI 6-E-11

BLACK START AND SYSTEM RESTORATION PLAN SHEET 26 of 32

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 656-29-2
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 917-2X

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 T51-585
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 57-35-2
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 Harings Corner by closing 658-30-2, from Hillburn 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 | 146 and 246 |
| Grand Avenue | 160 and 260 |
| Upper Saddle River | 149 |
| South Mahwah | 452 |
| Franklin Lakes | 335 and 435 |
| Montvale | 429 |
| Oakland | 136 |

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.

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT OI 6-E-11

BLACK START AND SYSTEM RESTORATION PLAN SHEET 28 of 32

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 2.6 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 Closter
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

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT OI 6-E-11

BLACK START AND SYSTEM RESTORATION PLAN SHEET 29 of 32

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 46-30-2. 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 89-78-2
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

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT OI 6-E-11

BLACK START AND SYSTEM RESTORATION PLAN SHEET 31 of 32

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

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT OI 6-E-11

BLACK START AND SYSTEM RESTORATION PLAN SHEET 32 of 32

APPENDIX 1
February 1991

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<br>T111-27<br>6-11-2 | 13-11-2<br>111-11-2Y<br>11-11-2 | 24-11-2<br>211-11-2Y<br>211-2 | 25-11-2<br>T211-5<br>111-2 | 27-11-2X<br>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 OCBs | | | | |
| West Haverstraw | All breakers | | | | |
| Hillburn | 89-17-2Y<br>T-89-59<br>65-17-2X | 317-2Y<br>T317-65<br>417-2X | 31-17-2Y<br>T417-31<br>917-2X | 23-17-2Y<br>T917-23 | 59-17-2X |
| South Mahwah | T258-J3410<br>587-58-2Y | | 258-58-2X<br>T2-52-2 | | T258-587<br>585-58-2Y |
| Bowline | T255-68 | T155-67 | | | |
| Burns | 50-19-2 | | | | |
| Harings Corner | 45-30-2 | | | | |

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

# PRODUCTION METER LOCATIONS - BOWLINE

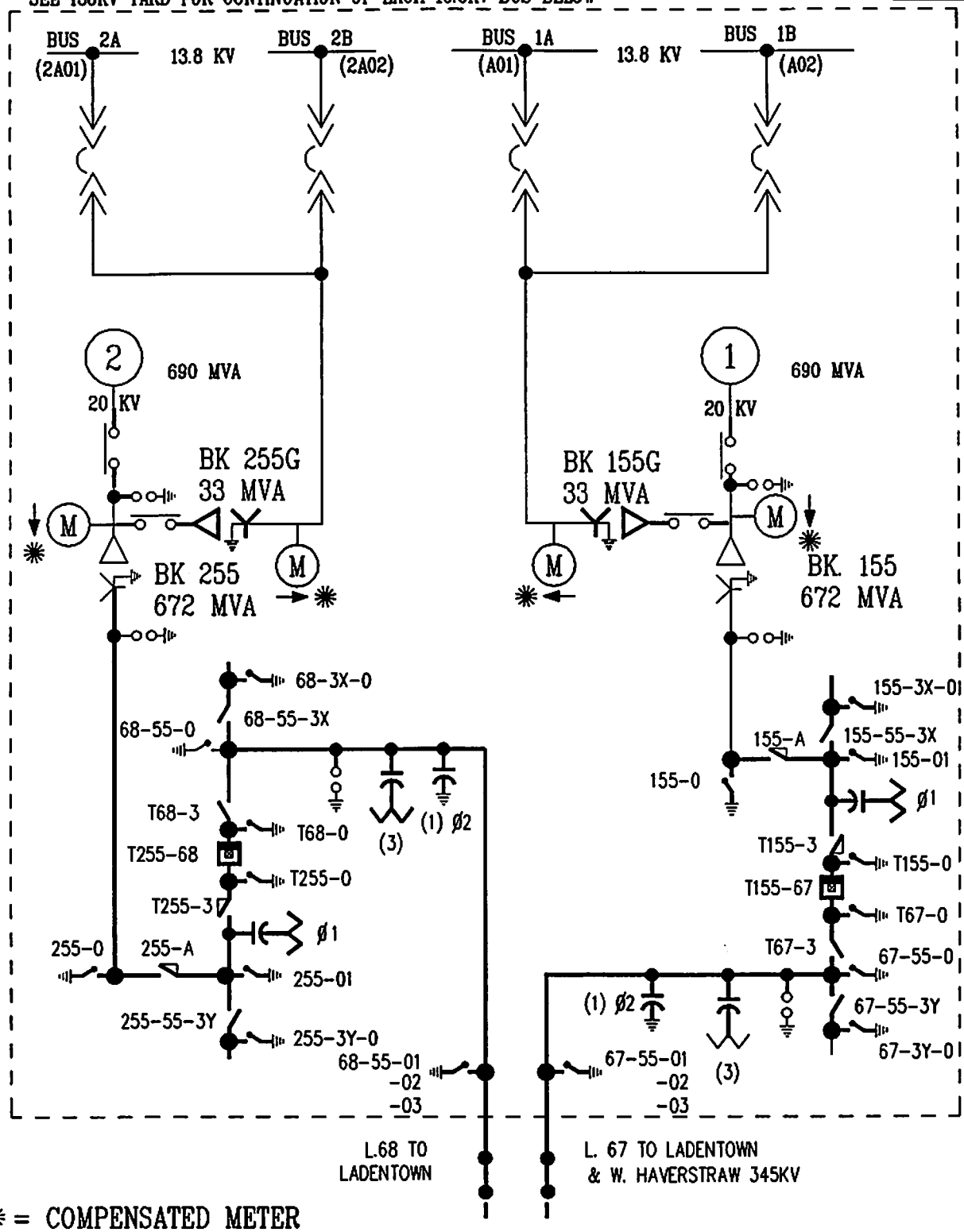
| DESCRIPTION | COMPANY USE | PURPOSE | ACCT/METER # | LOCATION | COMPENSATION REQUIRED |
|---|---|---|---|---|---|
| Bowline Plant | Electric | Unit #1 Main | S/N 090089202 | 20KV System | Bank 155 & 345 U/G |
| Bowline Plant | Electric | Unit #2 Main | S/N 090089201 | 20KV System | Bank 255 & 345 U/G |
| Bowline Plant | Electric | Unit #1 Start-up | | 13.8KV System | Bank 555 |
| Bowline Plant | Electric | Unit #2 Start-up | | 13.8KV System | Bank 655 |

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

# ANTICIPATED METER POINTS FOR PRODUCTION METERS

| STATION NAME | STATION NO. | DATE |
|---|---|---|
| BOWLINE POINT | GDM55-A | 5-6-99 |
| WEST HAVERSTRAW | GDM94-A | 5-6-99 |
| BOWLINE POINT | GDM55-B | 5-6-99 |
| MINISCEONGO SWITCH | GDM57-A | 5-6-99 |

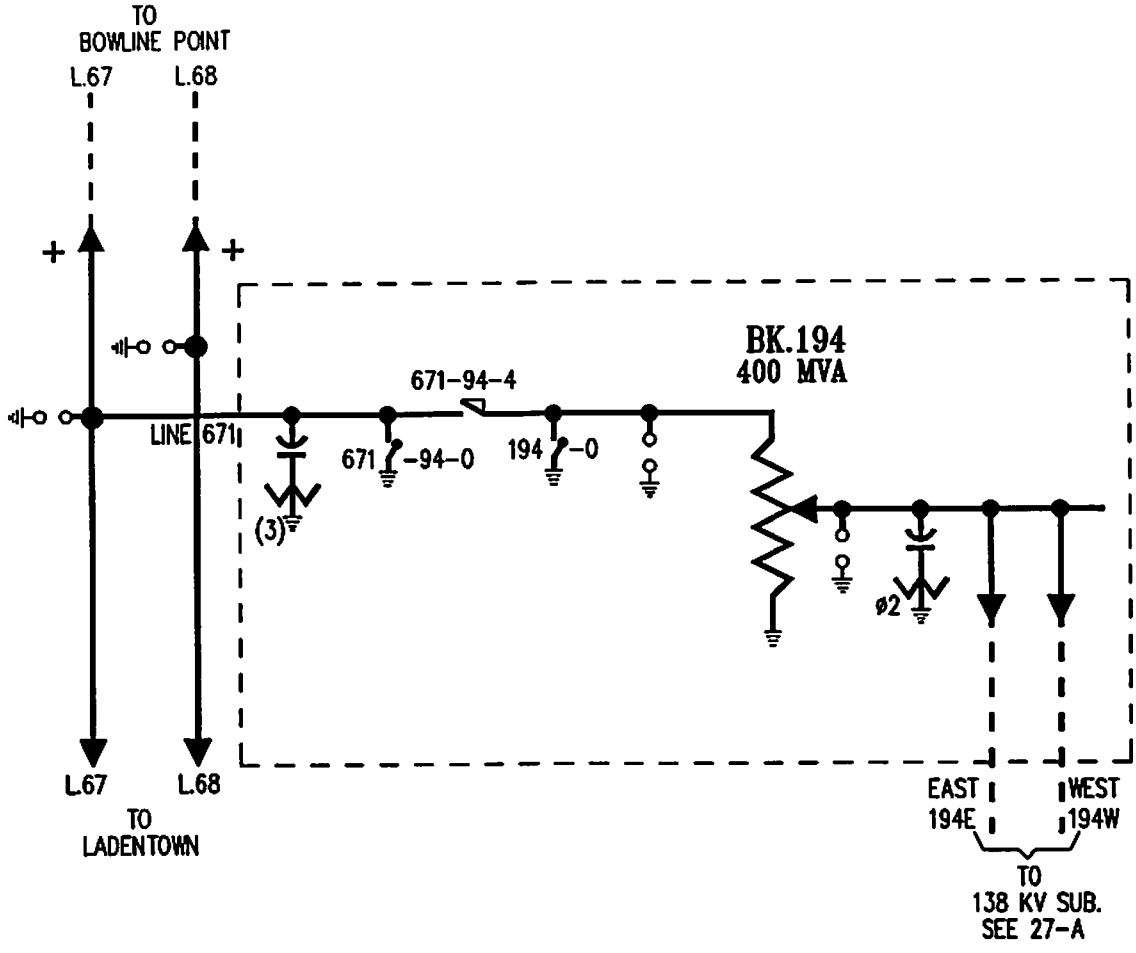
GDM55-A




✳ = COMPENSATED METER

| | | |
|---|---|---|
| OR | BOWLINE POINT 345 KV<br>ANTICIPATED METER POINTS | 55 |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN F.B. | GENERATION DIVESTITURE | DATE 5-6-99 |

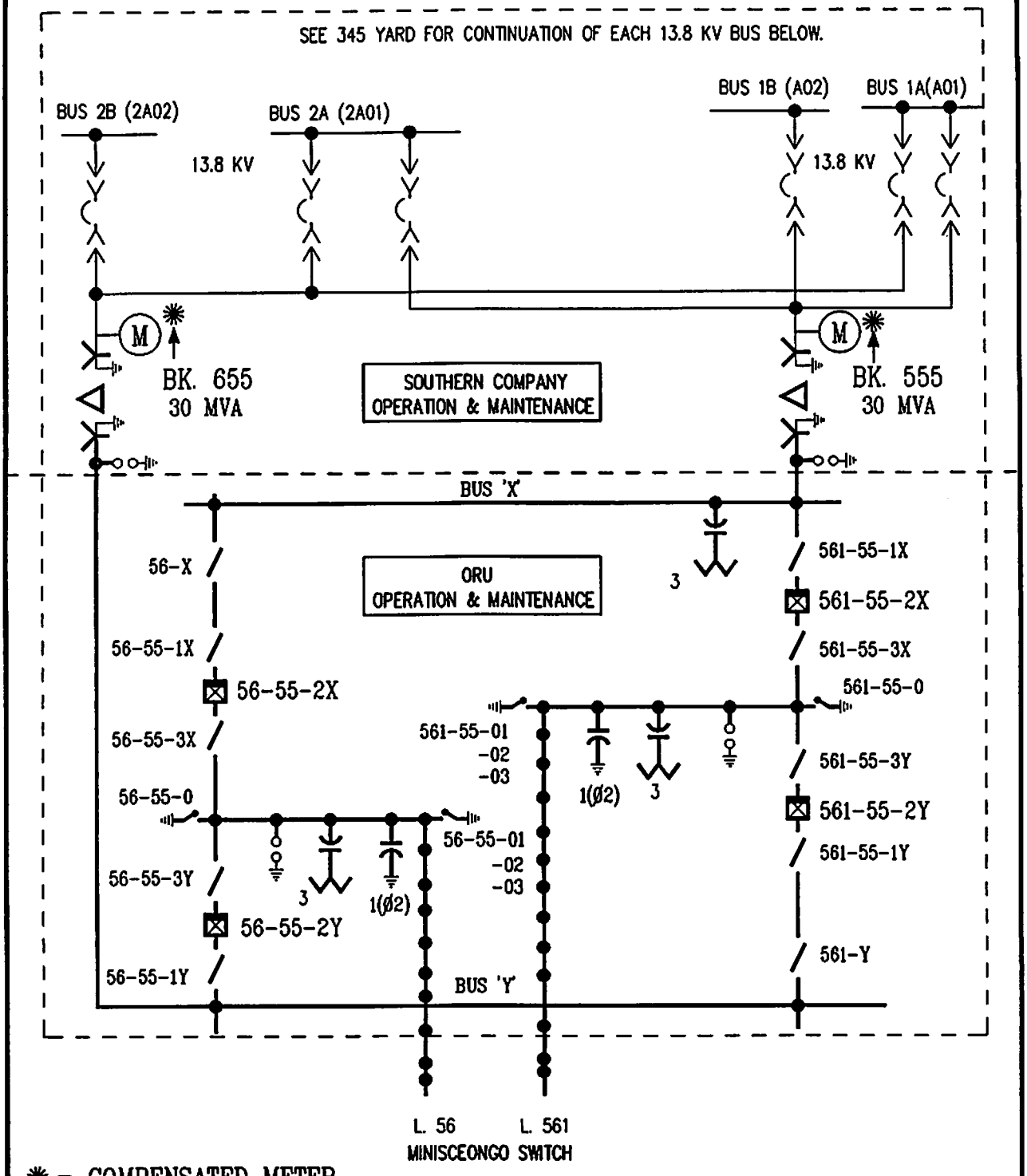
GDM94-A




+ OWNERSHIP POINT OF DEMARCATION

| | | |
|---|---|---|
| | WEST HAVERSTRAW<br>ANTICIPATED METER POINTS | 345 KV 94 |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN ATOMETRICS INC. F.B. | GENERATION DIVESTITURE | DATE 5-6-99 |

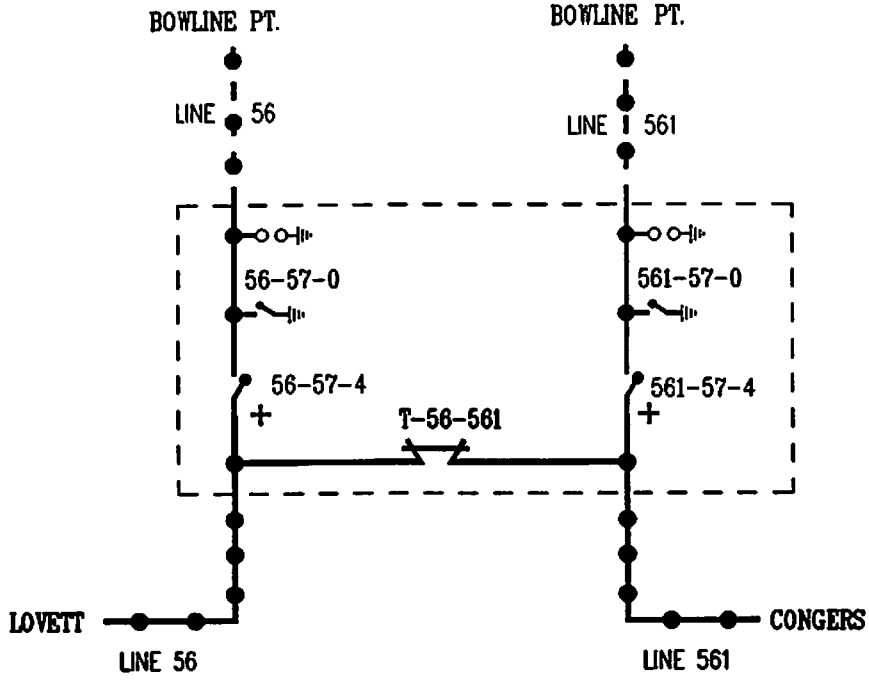
GDM55-B




✳ = COMPENSATED METER

| | | |
|---|---|---|
| | BOWLINE POINT 138 KV<br>ANTICIPATED METER POINTS | 55 |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA | GENERATION DIVESTITURE | DATE 5-6-99 |

GDM57-A




+ OWNERSHIP POINT OF DEMARCATION

| | | |
|---|---|---|
| | MINISCEONGO SWITCH 138 KV 57<br>ANTICIPATED METER POINTS | |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

Schedule G to Continuing Site/Interconnection Agreement

# METERING FOR RETAIL ACCOUNTS - BOWLINE

| DESCRIPTION | COMPANY USE | PURPOSE | ACCT/METER # | OWNER | | COMMENTS |
|---|---|---|---|---|---|---|
| | | | | ORU | SEI | |
| Bowline Plant | Electric | | 044140531 | | X | Secondary Service |
| Bowline Plant | Electric | Lighting, Heat, Tracing Lines | 046194653 | | X | Secondary Metered |
| Bowline Plant | Electric | Gas Regulator Station - Gamerville | 049912661 | | X | Secondary Metered |
| Bowline Plant | Electric | Street Lights | 48 Lights<br>Flat Rate - No Meter | | X | Flat Rate |
| Bowline Plant | Gas | Auxiliary Gas Boiler | FT-59 | | X | |

Schedule H to Continuing Site/Interconnection Agreement

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

ECC SWITCHING PRACTICES

OI 1-S-4

SHEET 1 of 10

This Operating Instruction defines the responsibility of the System Operations Department in directing and performing transmission switching.

1. Be knowledgeable in, and observe all safety rules and practices as set forth in the Orange and Rockland Safety Manual.

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

a) Only necessary switching should be performed to provide for complete safety clearance required; any unnecessary switching should be eliminated.
b) Always interrupt load with a breaker where one is available; a load break device would be a second choice if no breaker is available.
c) Switching should be written such that it will minimize unnecessary travel; assume only one crew will be available to switch.
d) Disable relaying only when necessary, such as for breaker failure relays during trip tests.
e) Telephones should be used for switching whenever available, keeping radio use to a minimum.
f) 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.

3. When removing lines or equipment from service, the System Operator shall adhere to the following procedures:

a) Perform the necessary control functions to open the breaker or switch. Supervisory control will always be used to open or close breakers, air breaks, or any remotely controlled switch to verify supervisory capability.
b) Place a control inhibit tag and verify a blue "C" on the CRT screen.
c) Have the supervisory control turned off at the station for the device(s) that are included in the area of switching.
d) Have the switchman turn the recloser off if breaker is so equipped. Reclosers should be left on during relay trip testing and underfrequency trip testing to verify lockout feature.
e) 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.
f) In the case of a motor operated air break 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.
g) After being certain that all possible safety precautions have been taken where operation by supervisory is concerned, proceed with the manual portion of the switch order as detailed in the Orange and Rockland Safety Manual (see attachment).
h) Observe proper use of the word clearance by always specifying what the purpose of the clearance is; e.g., "Clearance to (name) to test and ground" on a specific facility or work area; "Clearance to (name) to doble test" on specific equipment, or "Clearance to (name) to trip test" a specific breaker.
i) Always adhere to the testing and grounding procedures as detailed in the Orange and Rockland Safety Manual, Section 1.3.3. K, L, M.

Revised by: System Operations Dept. - October 1998

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

Approved by:

Supersedes: 1-S-3

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

ECC SWITCHING PRACTICES

OI 1-S-4

SHEET 1 of 10

This Operating Instruction defines the responsibility of the System Operations Department in directing and performing transmission switching.

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**Revised by:** System Operations Dept. - October 1998

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Distribution List

**Approved by:**

**Supersedes:** 1-S-3

4. When returning a facility to service complete the restoration process in the reverse order as above with the following exception:

a) When a line has been removed for maintenance and when one end of the line is equipped with a circuit breaker and the other a 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.

5. When turning a recloser off and installing a white caution tag:

a) Perform necessary steps to change recloser to off position
b) Verify change on screen
c) Perform necessary steps to install white caution tag
d) Verify "control inhibit C" on screen
e) Give clearance making certain person receiving same is aware he has white caution tag and recloser protection only.

1.3 SYSTEM OPERATIONS TAGGING PROCEDURE

1.3.1 BASIC PRINCIPLE FOR TAGGING EQUIPMENT UNDER THE JURISDICTION OF THE SYSTEM OPERATOR

A. 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.)

B. The standard safety tags are approximately three by six inches containing eyelets for tying with twine to operating and control handles of the apparatus. The tags used under the System Operator's supervision are in three colors (red, green and white) each color having a distinct purpose and in no case will any tag be used for any purpose other than that for which it is intended. (See Section 1.3.8 for description of green tag.)

C. The Red Tag with black lettering (System Operator's Safety Tag) is used only under the supervision of the System Operator and or Distribution Supervisor. Its use is for high voltage equipment and associated control mechanisms together with any low voltage equipment that the System Operator may designate.

Facilities which have had red tags applied may not be operated under any conditions until the qualified employee whose name is on the tags releases them.

D. The White Caution Tag is used when work is to be done on or near a live circuit or device where contact with the facility is a possibility. Should a white tagged circuit or device trip for any cause it shall not be restored until clearance is received from the person at the job site whose name is on the tag. Where the System Operator possesses supervisory control of the necessary reclosers and the breakers he may issue white caution tag clearance after inhibiting and tagging the appropriate control devices on his computer screen.

E. Each Department Manager, Superintendent or Supervisor shall designate the qualified employees who may have equipment tagged out. Each Manager, Superintendent or Supervisor shall provide System Operations with a quarterly updated list of qualified employees. Equipment shall be tagged only for the persons on these lists. It shall be the responsibility of the Manager, Superintendent, or Supervisor to determine which employees are qualified.

F. 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 TAG ON THE JOB SITE. THE PERSON IN CHARGE MUST BE AVAILABLE AT THE JOB SITE TO CLEAR PEOPLE OFF EQUIPMENT AND/OR LINES IN ORDER TO RESTORE THEM IN AN EMERGENCY.

G. In filling out tags, care should be taken that all the required information is complete, correct and legible.

H. Tags shall be tied securely to the control handle of equipment with stout twine. Where the control handle does not exist, such as on single phase disconnect switches, the tag shall be fastened in an approved manner such as by using the hotstick tag holder.

I. When the person in charge of a job is scheduled to be absent and the job is expected to be continued he should arrange with the System Operator and their Department Manager, Superintendent and/or Supervisor to have his tags released and/or replaced. (The new tags shall be put on when the original tags are removed.) In the event of an unforeseen absence, the Plant, Line or Substation Supervisor can assume the responsibility of the tag and appoint a new person in charge.

J. Qualified Engineering Department personnel may parallel tag apparatus with electrical Distribution, Transmission, Substation, Generating Plant personnel or System Operators. This tagging is subject to the approval of the System Operator. The tags are to be placed and removed by the qualified Substation employees.

K. 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.

L. 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 own tags by the method given above.

1.3.2 SCHEDULING WORK ON EQUIPMENT UNDER THE SYSTEM OPERATOR'S JURISDICTION

A. The appropriate Line or Substation Department Manager, Superintendent, Supervisor or their designated representatives may request the System Operator to release equipment under his jurisdiction for work as follows:

1. All non-emergency work requiring the removal of equipment or lines from service must be requested at least 72 hours in advance of the performance of such work by use of the Transmission/Distribution Clearance Request Form. This request shall be filled out in its entirety and shall be made to the System Operations Switching Manager or, in his absence, the System Operator directly, by the person in whose name the circuit or equipment is to be tagged or by his supervisor.

2. During the construction of new equipment where installation or construction work has progressed to where any piece of transmission or distribution equipment within the substation fence may be energized from any station or other external source, the System Operator SHALL be so informed by the Engineering Department as follows:

a) This information SHALL be in writing and SHALL indicate by sketch its location with respect to the then existing System Diagram and Substation one lines and SHALL specify the Qualified Engineering Department representative in whose name protective tagging should be issued.

b) The System Operator will immediately order the qualified employees to tag out of service with two (2) Red Tags, all switches and control equipment that could energize the new equipment.

c) These tags will be made out in the name of the qualified substation or relay employee. All requests for placing or removal of tags for energizing equipment for test purposes will be made to the System Operator through the qualified substation or relay employee.

d) Revisions or additions to the System Diagram Substation One Line diagrams and Energy Management System located in the Energy Control Center MUST be made before any new equipment or line is placed in service.

3. FOR EMERGENCY WORK THE PERSON WHO IS TO BE IN CHARGE OF THE JOB WILL CONSULT WITH THE SYSTEM OPERATOR AS TO WHAT EQUIPMENT SHOULD BE CLEARED AND TAGGED OUT IN ORDER TO MAKE THE JOB SAFE.

1.3.3 BASIC PRINCIPLES OF SWITCHING

A. All persons entering Substations or switching stations SHALL notify the System Operator upon arrival.

B. The System Operator will direct all switching steps to the employee PERFORMING the switching who in turn will repeat these steps acknowledging their correctness or calling attention to any discrepancies. If the conversation is interrupted contact shall be re-established and all steps repeated to insure accuracy.

C. After completing the switching steps ordered by the System Operator the employee performing the switching will report the time each step was accomplished. The System Operator will record all times on a System Operations Department Switch Order and will repeat these steps acknowledging their correctness or calling attention to discrepancies. Again, if the conversation is interrupted, contact shall be re-established and all steps repeated to insure accuracy.

D. Great care must be taken that the conversation involved in these switching procedures are accurately given and fully understood. Lines and equipment designation shall be given in full. Slang terms shall not be used.

E. Upon opening any motor or manually operated air break or disconnect switch, it is the responsibility of the employee performing the switching to visually check open all three phases.

F. After having been opened for safety clearance, a motor operated disconnect and/or air break must be operationally disabled.

G. Switching for safety clearance will not be considered complete unless one or more devices provide a visible air break which will separate the equipment requested out of service from all sources which can energize the equipment.

H. Upon opening any circuit breaker, it is the responsibility of the employee PERFORMING the switching to "check that the breaker is open." When issued this order, the employee will proceed to the circuit breaker of the line which has just been opened and check that the breaker is open either by inspection of the operating rods on an open type breaker or by inspection of the position indicator on a totally enclosed breaker.

I. Where disconnecting switches and any of the various type circuit breakers are connected in series, the disconnecting switches SHALL be used only for isolating the circuit breakers and for no other purpose. The disconnecting switches MUST be closed before the circuit breakers are closed and opened only after the circuit breaker has been opened and the position of the breaker operating mechanism observed to be in the open position.

J. Disconnecting switches SHALL never be used to open a load on a high voltage line or power transformer. A switch designed for interrupting duty MUST always be used, even though it means interrupting service. If possible, the magnetizing current of a power transformer SHALL be broken with a load interrupt type switch. If none is provided, the gang-operated disconnecting switch on the high side of the transformer shall be used.

K. Upon completion of the required switching to isolate a piece of equipment or facility for field work, the System Operator will issue "Clearance to (name) to test and ground on" that piece of equipment or facility. Field personnel will notify the System Operator when testing procedures have been carried out and portable field grounds have been applied. At that point, the System Operator will give "Clearance to (name) to" perform the specified work on the isolated area as arranged. The System Operator will be specific as to what clearance is being given for.

L. If the isolated area being switched out does not require testing and grounding procedures to be implemented (as determined by the field personnel), the individual for whom the area is being tagged will indicate this to the System Operator at which point clearance to perform the assigned work will be given.

M. When work has been completed on the equipment or facility, the tag holder will notify the System Operator of same, at which point the System Operator will instruct the field personnel to remove all field grounds. System Operator will then be notified when all field grounds have been removed and switching to restore the equipment or facility can then begin.

1.3.4 GENERAL PROCEDURE REMOVING A LINE FROM SERVICE WHICH IS UNDER THE JURISDICTION
OF THE SYSTEM OPERATOR

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.

1. The System Operator will then open the breaker via supervisory control and tag the breaker on CRT 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.

2. The switchman will be directed to confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled, unless ordered otherwise. 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.
3. Check open the by-pass switch where one exists.
4. Open the appropriate disconnects and if gang operated, secure with lock or fastening device. Manually operated disconnect switches shall be locked as designated.
5. 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.
6. 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:

1. Confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled unless otherwise ordered. On switches which are remotely controlled by supervisory equipment, place the switch in the "local" position.
2. Check open the by-pass switch where one exists.
3. Open the appropriate disconnects and, if gang operated, secure with lock or fastening device.
4. 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.
5. Close the ground switch and lock. Check that all ground switch blades are in correct positions.
6. 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:

1. Close the ground switch and lock.
2. 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.

F. The System Operator will then release the line to the person or persons in charge of the work specifically designating the location at which the circuit has been opened and tagged.

1.3.5 RECEIVING CLEARANCE FROM THE SYSTEM OPERATOR

Line Clearances will be given as outlined in section 1.3.3 for substation personnel.

Clearance is issued when the System Operator contacts the tagholder and indicates that "Clearance is given to test and ground on" a facility. Upon completion of the testing for potential and after having installed field grounds, the tagholder will notify the System Operator of same. The System Operator will then communicate and record the following information:

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

1.3.6 TRANSFERRING TAGS

A. When the employee for whom the line or equipment has been tagged (hereinafter called John Doe) desires to release his tag so that the line or equipment may be tagged in the name of another person (hereinafter referred to as Richard Roe) he SHALL proceed as follows:

1. Make sure that Richard Roe is available, has examined the field grounds, if any, and is prepared to assume responsibility for the work in progress on the line or equipment which is to be tagged in his name.

2. Request the System Operator to place Richard Roe's tag on the line or equipment, giving its complete designation, the reason for the transfer and pertinent data as to the status of the work.

B. The System Operator will repeat the message and after its correctness is acknowledged by John Doe, will have Richard Roe's tag applied and notify Richard Roe that the line or equipment is tagged in his name. The System Operator will repeat, in detail, all information covered in Part A above. The transaction shall not be considered complete until Richard Roe has repeated the message back to the System Operator, in detail, and the System Operator has acknowledged the repetition as correct. If this conversation is interrupted, contact SHALL be re-established and the conversation finished before the transaction is considered complete. John Doe SHALL then release his tag by the same method given.

C. The person named on the tag or, in his absence, his supervisor, are the only ones who may request the transfer of the tagging to another.

1.3.7 RETURNING A LINE TO SERVICE WHICH IS UNDER THE JURISDICTION OF THE SYSTEM OPERATOR

A. After work has been completed on a line or piece of equipment, the tagholder will report this to the System Operator who, in turn, will instruct the tagholder to remove all field grounds. After the tagholder is completely clear and has returned the line to the System Operator, the System Operator will then instruct the operator at the first (sending) switch station (A) to:

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

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

1. Remove all tags.
2. Open the ground switches and lock them open. Visually check that all switch blades are open.

3. 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.
4. 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.
5. Report to the System Operator.

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

1. Remove all remaining tags.
2. 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.
3. 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.
4. Report to the System Operator.

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

1. 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.
2. Report to the System Operator.

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

1. 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.
2. Note the reading of the voltmeters and ammeters on the line.
3. Report to the System Operator.

1.3.8 USE OF GREEN TAGS

A. Green Tags

THE GREEN TAG IS NEVER PLACED TO PROVIDE CLEARANCE. The Green Tag is placed on equipment solely to indicate an abnormal equipment condition or status, which necessitates that such information be readily available to any employees involved in the operation or maintenance of the equipment.

1. A Green Tagged device shall only be operated upon approval from the System Operator.
2. Arrangements for placing Green Tags shall be made with the System Operator.
3. The reason(s) for placement of a Green Tag shall be clearly stated on the tag, including any specific operating limits.
4. Requests to remove Green Tags shall be made to the System Operator who, with assurance that the abnormality or restriction has been corrected, will authorize removal of a Green Tag.

5. Requests to operate Green Tagged equipment within the stated restriction shall be made to the System Operator.

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

7. More than one abnormality or restriction may be included on one Green Tag if done during initial arrangements with the System Operator.

NOTE: A Red or White Tag may be applied to a Green Tagged switching device provided the abnormality or restriction does not prevent the switching device from serving the purpose for which the Red or White Tag is being applied.

B. Examples of Green Tag Use

Examples of conditions which would require a Green Tag are listed here. This is not intended to be a complete listing.

- Circuits removed from service; breakers racked out but available for service.
- Control Power removed from breaker. Breaker is available for service.
- Switching device is bolted closed.

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

OI 2-S-8

SWITCHING AND JURISDICTIONAL AUTHORITIES AT GENERATING SITES



The purpose of this instruction is to define the jurisdictional authorities of O&R and Southern Energy New York (SENY) personnel involved in switching at generating sites. O&R controlled facilities are indicated in black on the one line diagrams. O&R personnel will maintain, record and report relays under its control. All switching will be performed in accordance with Section 1.3 of the current O&R Safety Manual.

I. Lovett 138KV and 69KV Switching

If switching is to be performed at the Lovett steam electric plant the following will be adhered to:

1. Team Leaders/Group Leaders (SENY) will supervise Plant personnel in the performance of all emergency and non-emergency switching involving generator OCBs and associated "3" switches, start up OCBs and associated "3" switches.

2. In all cases, the Team Leaders/Group Leaders should be notified of any switching activity at the plant.

3. Substation Electricians will perform all other emergency and non-emergency switching in both yards.

4. Relay Technicians are permitted to do any switching required in the performance of their duties (trip testing, calibration, etc.) under the same guidelines as the Substation Electricians.

II. Bowline 345KV and 138KV Switching

If switching is to be performed at the Bowline steam electric plant the following will be adhered to:

1. In all cases, the SENY Team Leader/Group Leader should be notified of any switching activity at the plant.

2. O&R Substation Electricians or SENY employees qualified under a mutually agreed on training program and identified in the quarterly qualified switchman list provided to the SO will perform all emergency and non-emergency switching in the 345KV yards.

3. O&R Substation Electricians will perform all emergency and non-emergency switching in the 138KV yard.

4. O&R Relay Technicians are permitted to do any switching required in the performance of their duties (trip testing, calibration, etc.) under the same guidelines as the O&R Substation Electricians.

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SUBJECT

SWITCHING AND JURISDICTIONAL AUTHORITIES
AT GENERATING SITES



III. Gas Turbine/Hydro Switching

If switching is to be performed at either the Shoemaker or Hillburn Gas Turbine sites, the following will be adhered to:

1. O&R Substation Electricians will perform all emergency and non-emergency yard switching on O&R controlled facilities.

2. Relay Technicians are permitted to do any switching required in the performance of their duties (trip testing, calibration, etc.) under the same guidelines as the O&R Substation Electricians.

3. If a supervisory alarm is received at the ECC, the System Operator will notify the appropriate SENY employee.

IV. Except that in cases of risk to life, limb and equipment, operations will be taken to mitigate the situation immediately.

As soon as possible after the event, all parties will be notified of the incident and subsequent action taken.

SUBJECT

SWITCH ORDER PREPARATION AND EXECUTION

OI 3-S-8

SHEET 1 of 3

The following procedure is to be used in preparing and executing a System Operations Switch Order.

Normal Operation

I. Receipt of Transmission/Distribution Clearance Requests

The System Operations Manager-Switching, 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 Scheduling Supervisor will then notify any other Orange and Rockland department that may have necessary work on the facilities to ensure maximum coordination of activities for this particular outage.

The Scheduling Supervisor must ensure that new equipment is shown on the system diagram and ECC computer changes have been made before it is to be placed in service.

In all cases it is mandatory that 72 hours written notice be given on all clearance requests so that the optimum efficiency on the system is maintained. 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.

II. Switch Order Preparation

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

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

2. Check the one-line diagrams of stations and lines to ascertain continuity will be maintained and that no 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 lines for special Instructions which apply to a particular station, line or piece of equipment.

5. When preparing the switch order, print neatly or type each part in its proper location on the sheet:

a. Switch Order Number
b. Date (used as a reference)
c. Location and telephone number (used by System Operator while directing the job)
d. Switches Tagged To: ___ and Vehicle ___ (used to assure all persons have proper tags for clearance.
e. The next 20 lines are for step by step direction of the switching, tagging, or remarks, etc.
f. Clearance To: ___ To Test and Ground On: ___

NOTE: Under this category clearance is to be given by System Operator or Senior System Operator to all individuals who have requested same. Clearance is given in a point to point method (i.e., "System Operator to John Doe at 0915 - You have clearance on Line 60 between Ramapo and Burns to test and ground").

g. _____ Reports test for potential completed and field grounds attached OR
_____ reports testing and field grounds not required.
h. Clearance To: _____ To do (specific work) on (Specific device or facility).
i. The "Return-to-Normal" page of the switch order begins when the tagholder reports that his work is completed. At this point the System Operator will instruct the tagholder to remove all portable grounds (if any) from the work area to be restored. After it is reported that all portable grounds have been removed, the remainder of the switch order is similar and all steps to return the line or equipment to service are printed or typed in their proper sequence.
j. All breakers or devices with counters should be listed at the bottom and counters recorded when switching is complete. (Equipment is maintained based on both the number of operations and time considerations.)

6. Finally, the System Operator who prepares the switch order will enter his initials on the line indicated with "prepared by...". Only one entry should be made on this line.

III. Switch Order Review and Approval

Before the switch order is executed, another System Operator or Senior System Operator will review the switch order for accuracy and enter his initials on the line "checked and approved by....". Only one entry is needed on this line.

Switch order preparation and/or review may also be assigned to extra System Operators on the day shift as time allows.

The Senior System Operator on the evening shift will also review all switch orders for system security the day previous to their execution. He will run the Power Network Application (PNA) package with the next day's forecasted load, scheduled outages and selected contingencies to determine if the system could withstand the loss of the next single critical facility. He will make copies of these security runs for review by the Senior System Operator on the day shift. These security runs will be discussed at the morning strategy meeting with the Manager - System Operations.

IV. Execution of the Switch Order

The System Operator who executes a switch order will review the Clearance request and switching steps as a final check for accuracy prior to implementation of those steps and he will assume complete responsibility for all switching he executes on that order. He will enter his initials on the line indicated with "Supervised by....". He will also confirm that the person scheduled to receive clearance will still do so. The Senior System Operator will then make the final security review and determine whether the switch order will be executed or not.

Any time it becomes necessary to change the content or sequence of a previously written and approved switch order, the System Operator initiating such changes shall not implement them until discussing them with and receiving approval from the Senior System Operator on duty.

When the switch order has been completed in accordance with above, the System Operator will give the clearance to the necessary field personnel as scheduled. The field personnel requesting clearance shall have the responsibility to contact the System Operator when he is ready to begin his work as well as when he is complete.

The System Operator will return the completed switch order to the Switching Manager.

Emergency Operations

In emergency situations the necessary switching will normally be prepared by the System Operator and reviewed and approved by the Senior System Operator.

All switches should be tagged for the System Operator when it is not known who will work on an emergency job at the time the switching is done.

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

ORANGE AND ROCKLAND JOINT SWITCHING PRACTICES

OI 4-S-5

SHEET 1 of 2

I. INTRODUCTION

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

It is the intent of this Operating Instruction to clarify the responsibilities of Consolidated Edison, Orange and Rockland, and Southern Energy New York (SENY) regarding each facility with respect to initiating requests for clearance, responsibility for authorizing work on equipment and the preparation and direction of switching. (Reference Con Ed System Operation Department Orders SO 17-3-6 and SO 17-4-0, Appendix A.)

II. 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 Power Pool, describing the work and clearances required. Approval of all parties having a termination involved, Consolidated Edison, Public Service, Orange and Rockland, SENY and New York Power Pool, is required prior to the scheduling of the outage.

III. JURISDICTIONS

Orange and Rockland system operators will direct company O&R substation/relay crews and qualified SENY personnel in switching and tagging the following facilities:

- At the SENY owned facilities of Bowline 345KV, Lovett, Mongaup, Hillburn, Rio, Swinging Bridge and Shoemaker as indicated in black on the one line diagrams of the stations.
- At Bowline:
  All 138 KV facilities
- At Ladentown:
  All 345 KV facilities
- At West Haverstraw:
  All facilities 345 KV to 13.2 KV
- At Ramapo:
  All facilities from and including the 345 KV 1300-4 and 2300-4 switch and the entire 138 KV yard. (See Appendix B for specific delineation.)
- At 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.

Distribution List

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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, and all SENY owned facilities 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 SENY, need to 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, that tags for O&R personnel have been installed, and that clearance to begin work may be issued. The O&R system operator will issue clearance "to test and ground."

IV. RELAY MAINTENANCE (IN SERVICE)

Request for routine in-service relay maintenance will be initiated by the Orange and Rockland switching supervisor or senior power dispatcher to the Consolidated Edison senior system operator a minimum of 24 hours in advance. Orange and Rockland will also be responsible for notifying the New York Power Pool Scheduling Department and any other affected parties as required.

SENY will coordinate their in service relay maintenance with the O&R Switching Supervisor.

On the morning of the scheduled maintenance the Orange and Rockland system operator will confirm the clearance for the job with the Consolidated Edison Westchester D.O. sometime soon after 0700. Upon confirmation or rejection of the job, the Relay Department supervisor will be so notified. (This will permit reassignment of work crew if necessary.)

Emergency relay work will be coordinated directly between the Orange and Rockland senior power dispatcher and the Consolidated Edison system operator.

## 1.3 SYSTEM OPERATIONS TAGGING PROCEDURE

### 1.3.1 Basic Principles For Tagging Equipment Under The Jurisdiction Of The System Operator

A. 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.)

B. The standard safety tags are approximately three by six inches containing eyelets for tying with twine to operating and control handles of the apparatus. The tags used under the System Operator's supervision are in two colors (red and white) each color having a distinct purpose and in no case will either tag be used for any purpose. other than that for which it is intended.

C. The Red Tag with Black Lettering (System Operator's Safety Tag) is used only under the supervision of the System Operator and/ or Distribution Supervisor. Its use is for

high voltage equipment and associated control mechanisms together with any low voltage equipment that the System Operator may designate.

Facilities which have had red tags applied may not be operated under any conditions until the qualified employee whose name is on the tags releases them.

D. The White Caution Tag is used when work is to be done on or near a live circuit or device where contact with the facility is a possibility. Should the circuit or device trip for any cause, it shall not be restored until clearance is received from the person at the job site whose name is on the tag. Where the System Operator possesses supervisory control of the necessary reclosers and the breakers he may issue white caution tag clearance after tagging and inhibiting the appropriate control devices on his computer screen.

E. Each Department Manager, Superintendent or Supervisor shall designate the qualified employees that may have equipment tagged out. Each Manager, Superintendent or Supervisor shall provide System Operations with a quarterly updated list of qualified employees. 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.

F. 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 TAG ON THE JOB SITE. THE PERSON IN CHARGE MUST BE AVAILABLE AT THE JOB SITE TO CLEAR PEOPLE OFF EQUIPMENT AND/OR LINES IN ORDER TO RESTORE THEM IN AN EMERGENCY.

G. In filling out tags, care should be taken that all the required information is complete, correct and legible.

H. Tags shall be tied securely to the control handle of equipment with stout twine. Where the control handle does not exist (i.e., a single phase disconnect switch or cutout) the tag shall be fastened in an approved manner such as by using the hotstick tag holder.

I. 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 System Operator, Department Manager, Superintendent and/or Supervisor to have his/her tags released and/or replaced. In the event of an unforeseen absence, the Plant, Line or Substation Supervisor can assume the responsibility of the tag and appoint a new person in charge.

The new tags shall be put on when the original tags are removed.

J. Qualified Engineering Department personnel may parallel tag apparatus with Electrical

Distribution, Transmission, Substation, Generating Plant personnel or System Operators. This tagging is subject to the approval of the System Operator. The tags are to be placed and removed by the qualified employees.

K. 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.

L. 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 own tags by the method given above.

1.3.2 Scheduling Work on Equipment Under The System Operator's Jurisdiction

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

1. All non-emergency work requiring the removal of equipment or lines from service must be requested at least 72 hours in advance of the performance of such work by use of the Transmission/ Distribution Clearance Request Form. This request shall be filled out in its entirety and shall be made to the System Operations Scheduling Supervisor or, in

his/her absence, the System Operator directly, by the person in whose name the circuit or equipment is to be tagged or by their supervisor.

2. During the construction of new equipment where installation or construction work has progressed to where any piece of transmission or distribution equipment within the substation fence may be energized from any any station or other external source, the System Operator SHALL be so informed by the Engineering Department as follows:

   a. This information SHALL be in writing and SHALL indicate by sketch, its location with respect to the then existing System Diagram and SHALL specify the Qualified Engineering Department representative in whose name protective tagging should be issued.

   b. The System Operator will immediately order the qualified employees to tag out of service with two (2) Red Tags, all switches and control equipment that could energize the new equipment.

   c. These tags will be made out in the name of the qualified substation or relay employee and qualified Engineering Department representative. All requests for placing or removal

of tags for energizing equipment for test purposes will be made to the System Operator through the qualified substation or relay employee.

d. 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.

3. FOR EMERGENCY WORK THE PERSON WHO IS TO BE IN CHARGE OF THE JOB WILL CONSULT WITH THE SYSTEM OPERATOR AS TO WHAT EQUIPMENT SHOULD BE CLEARED AND TAGGED OUT IN ORDER TO MAKE THE JOB SAFE.

1.3.3 Basic Principles of Switching
(Substation/Switching Stations)

A. All persons entering Substations or switching stations SHALL notify the System Operator upon arrival.

B. The System Operator will direct all switching steps to the employee PERFORMING the switching, who in turn, will repeat these steps acknowledging their correctness or calling attention to any discrepancies. If the conversation is interrupted, contact shall be reestablished and all steps repeated to insure accuracy.

C. After completing the switching steps ordered by the System Operator the employee performing the switching will report the time each

step was accomplished. The System Operator will repeat these steps acknowledging their correctness or calling attention to discrepancies. Again, if the conversation is interrupted contact shall be reestablished and all steps repeated to insure accuracy.

D. Great care must be taken that the conversation involved in these switching procedures are accurately given and fully understood. Lines and equipment designation shall be given in full. Slang terms shall not be used.

E. Upon opening any motor or manually operated air break or disconnect switch, it is the responsibility of the employee performing the switching to visually check that all three phases are open.

F. After having been opened for safety clearance, a motor operated disconnect and/or air break must be operationally disabled.

G. Switching for safety clearance will not be considered complete unless one or more devices provide a visible break which will separate the equipment requested out of service from all sources which can energize the equipment.

H. Upon opening any circuit breaker, it is the responsibility of the employee performing the switching to "confirm the breaker open." When issued this order, the employee will proceed to the circuit breaker for the line

which has just been opened and check that the breaker is open, either by inspection of the operating rods on an open type breaker or by inspection of the position indicator on a totally enclosed breaker.

I. Where disconnecting switches and any of the various circuit breakers are connected in series, the disconnecting switches SHALL be used only for isolating the circuit breakers and for no other purpose. The disconnecting switches MUST be closed before the circuit breakers are closed and opened only after the circuit breaker has been opened and the position of the breaker operating mechanism observed to be in the open position.

J. Disconnecting switches SHALL NEVER be used to open a load on a high voltage line or power transformer. A switch designed for interrupting duty MUST always be used, even though it means interrupting service. If possible, the magnetizing current of a power transformer SHALL be broken with a load interrupt type switch. If none is provided, the gang operated disconnecting switch on the high side of the transformer shall be used.

1.3.4 General Procedure Removing A Line From Service Which Is Under The Jurisdiction of the System Operator

A. The employee performing the switching at the first (sending) station (A) will be instructed by the System Operator to open the

circuit breaker on the line and report back. Circuit breakers under supervisory control may be operated remotely by the System Operator via the computer system.

B. After the employee in station A has reported that the procedure above has been completed, the System Operator will instruct the operator in the second (receiving) switching station (B) to:

1. Open the circuit breaker or the System Operator will open it themself, if supervisory control is available. When there is no circuit breaker in the line but a disconnect switch is available the disconnect will be opened.

2. Confirm the breaker open, and, on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled, unless ordered otherwise. On switches which are remotely controlled by supervisory equipment, place the proper switch in the "local" position.

3. Check open the by-pass switch.

4. Open the appropriate disconnects and if gang operated, secure with lock or fastening device. Manually operated disconnect switches shall be locked as designated.

5. 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.

6. Upon completion of these steps the employee will report to the System Operator.

C. After the employee 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:

1. Confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled unless otherwise ordered. On switches which are remotely controlled by supervisory equipment, place the switch in the "local" position.

2. Check open the by-pass switch.

3. Open the appropriate disconnects and, if gang operated, secure with lock or fastening device.

4. 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.

5. Close the ground switch and lock. Check that all ground switch blades are in the

correct positions.

6. Apply the necessary red tags and report to the System Operator.

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

1. Close the ground switch and lock.

2. 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.

F. The System Operator will then release the line to the person or persons in charge of the work specifically designating the location at which the circuit has been opened and tagged.

1.3.5 Receiving Clearance From the System Operator

A. ALL LINES ARE CONSIDERED TO BE ENERGIZED UNTIL:

1. THE SYSTEM OPERATOR ISSUES CLEARANCE.

2. THE DESIGNATED TESTS TO PROVE ABSENCE OF

POTENTIAL HAVE BEEN PERFORMED AT THE WORK LOCATION.

B. Clearance is issued when the System Operator contacts the employee, for whom the line or equipment has been tagged, and communicates the following information:

1. The time clearance is being given.

2. The line or equipment that has been tagged.

3. Locations at which the line has been opened, grounded and tagged.

Example: "As of 9:00 you have clearance on Line 702 between Burns and Harings Corner to test and ground."

C. The employee for whom the line or equipment has been tagged will then repeat this message in full to the System Operator who will acknowledge its correctness or call attention to discrepancies. If this conversation is interrupted, contact shall be reestablished and the conversation finished before clearance is considered issued.

1.3.6 Transferring Tags

A. When the employee for whom the line or equipment has been tagged (hereinafter called John Doe) desires to release the tag so that the line or equipment may be tagged in the name of another person (hereinafter

referred to as Richard Roe) he SHALL proceed as follows:

1. Make sure that Richard Roe is available, has examined the field grounds, if any, and is prepared to assume responsibility for the work in progress on the line or equipment which is to be tagged in his name.

2. Request the System Operator to place Richard Roe's tag on the line or equipment, giving its complete designation, the reason for the transfer and pertinent data as to the status of the work.

B. The System Operator will repeat the message and after its correctness is acknowledged by John Doe, will have Richard Roe's tag applied and notify Richard Roe that the line or equipment is tagged in his name. The System Operator will repeat, in detail, all information covered in Part A above. The transaction shall not be considered complete until Richard Roe has repeated the message back to the System Operator, in detail, and the System Operator has acknowledged the repetition as correct.

If this conversation is interrupted, contact SHALL be reestablished and the conversation finished before the transaction is considered complete. John Doe SHALL then release his tag by the same method given.

C. The person named on the tag or, in his

absence, his supervisor, are the only ones who may request the transfer of the tagging to another.

1.3.7 General Procedure For Returning A Line To Service Which Is Under The Jurisdiction Of The System Operator

A. After the person or persons in charge of the work on a line have reported all clear and returned the line to the System Operator, the System Operator will then instruct the operator at the first (sending) switching station to:

1. Remove the tag from the ground switch.

2. Open the ground switch and lock it open. Visually check that all switch blades are open.

3. Report to the System Operator.

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

1. Remove all tags.

2. Open the ground switches and lock them open. Visually check that all switch blades are open.

3. 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 conditions.

4. 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 AND VISUALLY CHECKED THAT ALL SWITCH BLADES ARE CLOSED.

5. Report to the System Operator.

C. The operator at the first switching station will then be instructed to:

1. Remove all remaining tags.

2. 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.

3. 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 AND VISUALLY CHECKED THAT ALL SWITCH BLADES ARE

CLOSED.

4. Report to the System Operator.

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

1. 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.

2. Report to the System Operator.

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

1. 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.

2. Note the reading of the voltmeters and ampmeters on the line.

3. Report to the System Operator.

### 1.3.8 Use of Green Tags

A. Green Tags

THE GREEN TAG IS NEVER PLACED TO PROVIDE CLEARANCE. The Green Tag is placed on equipment solely to indicate an abnormal equipment condition or status, which necessitates that such information be readily available to any employees involved in the operation or maintenance of the equipment.

1. A Green Tagged device shall only be operated upon approval from the System Operator.

2. Arrangements for placing Green Tags shall be made with the System Operator.

3. The reason(s) for placement of a Green Tag shall be clearly stated on the tag, including any specific operating limits.

4. Requests to remove Green Tags shall be made to the System Operator who, with assurance that the abnormality or restriction has been corrected, will authorize removal of a Green Tag.

5. Requests to operate Green Tagged equipment within the stated restriction shall be made to the System Operator.

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

7. More than one abnormality or restriction may be included on one Green Tag if done during initial arrangements with the System Operator.

Note: A Red or White Tag may be applied to a Green Tagged switching device provided the abnormality or restriction does not prevent the switching device from serving the purpose for which the Red or White Tag is being applied.

B. Examples of Green Tag Use

Examples of conditions which would require a Green Tag are listed here. This is not intended to be a complete listing.

- Circuits removed from service; breakers racked out but available for service.
- Control Power removed from breaker. Breaker is available for service.
- Switching device is bolted closed.

## 1.4 SUBSTATION

### 1.4.1 Substation Rules

ALL PERSONS ENTERING SUBSTATIONS OR SWITCHING STATIONS SHALL NOTIFY THE SYSTEM OPERATOR UPON ARRIVAL.

A. Past experience has proven that the best qualified workman can forget while working in energized substations even though the work is being done de-energized. It is always possible to get in the wrong elevations, or to enter a similar bay that is energized, or contact the energized side of a disconnect. For these and many other reasons, it pays to discuss the work and work methods with the Supervisor. It may save your life.

B. The Substation Supervisor SHALL be responsible for the enforcement of all rules affecting the operation of the substation and equipment under the supervisor's jurisdiction and all employees MUST recognize this authority. NO person shall be permitted to do work of any kind in the substation without the full knowledge and consent of the Substation Supervisor who SHALL check with the System Operator, if necessary.

C. If any work is to be done on any apparatus, switching and tagging for protection of people and service shall be arranged.

D. While working on or near live equipment,

employees SHALL keep their sleeves down and SHALL NOT wear loose or flapping clothing. Metal articles such as wristwatches, key chains and finger rings should be removed prior to starting work. Small tools such as screwdrivers, pliers, etc. should be carried in suitable holsters or cases.

1.4.2 Switching

A. While operating any type of disconnecting switch (except by remote electrical or mechanical control) or when handling a switch stick, fuse tongs, operating handle, etc., rubber gloves with protectors and hard hat MUST be worn, sleeves MUST be rolled down, all parts of the operator's body SHALL be kept at the maximum possible distance from the live part, and safety glasses or shields MUST be used for flash protection.

B. If disconnecting switches and any of the various type circuit breakers are connected in series, the disconnecting switches SHALL be used only for isolating the circuit breakers and for no other purpose. The disconnecting switches MUST be closed before the circuit breakers are closed and opened only after the circuit breaker has been opened and the position of the breaker operating mechanism observed to be in the open position.

C. Disconnecting switches SHALL NEVER be used to open a load on a high voltage line or

power transformer. A switch designed for interrupting duty MUST always be used, even though it means interrupting service. Disconnecting switches may be used to break the parallel of lines or transformers. If possible, the magnetizing current of a power transformer SHALL be broken with a load interrupt type switch. If none is provided, the gang-operated disconnecting switch on the high side of the transformer shall be used.

D. When opening disconnecting or air break switches, all three blades of the switch MUST be checked to be sure that they are fully open. When closing disconnecting or air break switches, each blade of the switch MUST be checked to be sure that each is driven fully "home" in the contact clip.

E. When opening switches of the double throw type, the blade MUST be brought to a position which is at right angles to the closed position of the switch.

F. When opening a single throw switch, the blade SHALL be opened 180 degrees or to the stop if one is provided.

G. On direct current apparatus, when a knife switch and a circuit breaker are connected in series, THE CIRCUIT BREAKER MUST BE OPENED FIRST AND CLOSED LAST.

1.4.3 Construction and Maintenance

A. When work MUST be performed on or near live distribution equipment, proper Rubber Protective Equipment) MUST always be used.

B. Lines, circuits, feeders and apparatus MUST be considered energized at all times unless properly tagged out. (See Section 3)

C. Before starting work the substation employee in charge of the construction or maintenance work SHALL check the position of all switches involved in the clearance. The equipment to be worked MUST be isolated and when practicable MUST also be grounded. Then the circuit or equipment SHALL be tested with a "glow" stick or other approved testing device and, if found de-energized, SHALL attach an approved grounding device on each side of the working zone.

D. The ground side of the grounding device SHALL be attached first and removed last.

E. Each phase of the circuit or equipment SHALL be grounded where it is impracticable to ground on both sides of the working zone.

F. NO ONE shall work on or near exposed live or moving parts unless authorized to do so.

G. Servicing and cleaning of energized apparatus which cannot be taken out of service SHALL NEVER be undertaken unless another employee is present.

## 1.4.4 Transformer Safe Work Practices

A. When it is necessary to remove a manhole cover from a transformer for inspection and work, the employee shall remove all articles from his apparel to prevent them from falling into the transformer and short circuiting the winding. PRESSURE MUST BE VENTED PRIOR TO REMOVING ALL THE BOLTS IN THE COVER.

B. All tools shall be tied to strings so if they are accidentally dropped, they can be easily recovered.

C. If an employee should accidentally drop anything into the open transformer and is unable to recover it, it shall be the employee's duty to notify their Supervisor immediately.

D. Before entering a transformer that has been sealed in nitrogen, ventilate with forced air for three to five minutes. Have two ports or plates open when possible. When only a single port is open, use baffle board to assist in exhausting air. Sample to check air quality. For further information refer to Confined Space Entry.

E. When operating automatic tap changer or when other work is being done on control circuits, all men are to be in the clear of the transformer to guard against any backfeed situation.

F. Before beginning work on any equipment or structure, the senior qualified person shall see that the crew is familiar with the status of the equipment, what part is energized, location of grounds, what the limits of the working space are, and what switches disconnect the equipment from the source of supply. If for any reason there is an interruption in the work where the employees leave the job, such as stopping for lunch, before work is resumed the same formality of checking and making the employees familiar with conditions shall be followed as at the beginning of the job.

G. No one shall work on a substation structure that is in the vicinity of energized equipment without permission from the supervisor in charge or qualified person appointed by the supervisor. At all times that a workman is working on a substation structure on which inadvertent contact with energized equipment could be made, there shall be a qualified person to guide the worker to insure that the work is done safely.

### 1.4.5 Elevated Positions

Employees shall use approved safety belts and straps and other adequate protection, as required, when working in elevated positions. It shall be the duty of the employee to inspect such safety device.

1.4.6 Switching In Substations

When it is necessary to do any disconnect switching either associated with or adjacent to an energized structure where men are working, the operator will check with the foreman or employee holding clearances on equipment in the structure, who, in turn, will call the employees down out of the structure until the switching has been completed. After the switching has been done, all employees will recheck the status of the structure, lines and equipment before resuming work.

1.4.7 Backfeed Situations

EMPLOYEES ARE CAUTIONED THAT SEVERAL STATIONS HAVE AUXILIARY GENERATORS WHICH MIGHT BACKFEED POWER IN CASE THE PRIMARY SOURCE IS DISCONNECTED FOR ANY REASON. EXTREME CAUTION IS TO BE TAKEN THROUGH WHATEVER TESTING IS REQUIRED TO BE SURE THIS BACKFEED SITUATION IS KNOWN BY THOSE WORKING THE CIRCUITS.

1.4.8 Safe Work Clearances

A. Safe working distance shall be maintained between workmen and all exposed energized parts.

1. When required to perform work near energized high voltage equipment, suitable approved warning devices shall be placed between the space occupied by workmen and the nearest energized equipment, as a protection and a reminder as to the

limits of safe working space.

2. When lifting or handling loads in proximity to energized conductors and/or equipment in substations, electrically grounded trucks or cranes being used. When erecting steel while lightning storms are in the vicinity, the erected steel shall be kept grounded.

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

1.4.9 Mobile Substations

A. When mobile substations are in a parked position, the chock blocks are to be placed blocking the wheels of the unit (front and rear). When the unit is energized, proper "Danger-High Voltage" signs and barricading ropes are to be in position.

The cables are to be properly protected and barricaded so that no vehicles can be driven over them. Employees shall not walk on these cables.

B. Before working on capacitors they shall be de-energized, discharged and grounded. In addition the capacitor bank support framework shall be grounded.

## 1.5 TRANSMISSION OPERATIONS

### 1.5.1 Transmission

A. In addition to the hazards peculiar 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.

B. Definition of Transmission Circuits

Any circuit, apparatus or equipment normally energized at 34.5 K.V. (Delta connected) or above shall be classified as transmission.

### 1.5.2 Live Line Tools and Equipment

A. Only tools having proper voltage rating and of sufficient length to secure proper clearance for safety SHALL be used. THERE IS A POSSIBILITY OF PUTTING TOO MUCH DEPENDENCE ON THE VOLTAGE RATING OF THE TOOLS AND NOT ENOUGH ON CLEARANCE BETWEEN THE EMPLOYEE AND ANY POSSIBLE CONTACT WITH 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.

1.5.3 Live Line Maintenance

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

B. Before any work is undertaken on energized equipment, workers should 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 replacing worker or supervisor has been fully informed of existing conditions.

D. Lines should always be de-energized if this 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 the lines are energized; providing that hotline tools designed and tested for this character of work are used.

F. ROUTINE LIVE LINE WORK SHALL BE DONE ONLY DURING FAVORABLE WEATHER CONDITIONS. RAIN, SNOW, SLEET, DAMPNESS, ETC., PRODUCE CONDITIONS UNDER WHICH THIS WORK SHOULD NOT BE PERMITTED.

G. TO OBTAIN PROPER CLEARANCE FROM THE SYSTEM OPERATOR, REFER TO SECTION 3, SYSTEM OPERATIONS.

H. When it is necessary to do any work on transmission lines having more than one circuit, and where there is not sufficient working clearance between circuits for live line work, the circuits not being worked on SHALL either be de-energized and grounded, or shifted by hotline tools, so as 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 worked on.

1.5.4 Protective Grounds and Protective Grounding Circuits

A. Except where the work is being carried out under the Company's approved Live Line Procedure, all conductors and line equipment in the transmission classification SHALL be de-energized when work is to be done upon or dangerously near them, and all conductors of the circuit SHALL be temporarily grounded with an approved grounding device on each side of, and within sight of, the area or work. Whenever there is more than one crew working on the same de-energized transmission line, each crew SHALL be required to

work between its own grounds unless the crews are working on the same section of line. No current carrying parts of lines or equipment SHALL be touched until they are positively known to be de-energized and grounded.

B. THE PROTECTIVE GROUNDS SHALL be applied under the direct supervision of the person in charge in the following manner:

1. After a clearance has been obtained and the position of all switches checked, tests SHALL be made for voltages by means of a glow stick, or other approved device to see that all phases are de-energized.

2. When an indication has been obtained that the line is de-energized, it MUST then be effectively grounded as close as convenient on both sides of the working location. Grounds SHALL NOT be connected to a bus or structure over paint.

3. IN ALL CASES CLAMPS SHALL BE APPLIED TO CONDUCTORS ONLY BY MEANS OF AN APPROVED INSULATED HOT STICK . . . MINIMUM LENGTH 8'. These sticks SHALL be equipped with a long throat screw clamp or equivalent on one end and shall be carefully maintained and kept clean and dry.

4. If a line is to be worked on, it is to be considered live until tested and proper grounds are applied.

Proper grounds are:

a. Grounds are to be installed at both ends of the worksite. (Could be placed on both sides of structure.)

b. At each grounding point, jumpers should go from Phase 2 to Phase 1, Phase 2 to Phase 3, and Phase 2 to the Neutral. (Note: if there is no neutral available, such as a delta system, a driven ground will be used.)

c. If the worker is working on or around a pole less than 300' from the nearest set of grounds, a jumper from the neutral to a ground cluster bar, below the working position, will be installed.

d. If the worker is working on or around a pole more than 300' from the nearest set of grounds, a jumper from the neutral to a ground cluster bar, below the working position, and a jumper from the cluster bar to the phase being worked on, will be installed.

e. The personal grounds (grounding cluster bar and jumpers) will be moved to each pole location.

5. If grounds are not used, all necessary rubber goods must be worn and the lines

...treated as if they were energized.

1.5.5 Wood Pole Lines (No Overhead Ground Wire or Vertical Grounding Wire)

A. Ground rods or auger screw type rods SHALL be installed at proper depth into as damp ground as can be found near the base of the pole where grounds are to be applied. ANCHORS SHALL NOT BE USED IN PLACE OF SYSTEM GROUNDS. The grounding clamp SHALL first be attached to the rod and the grounding device SHALL then be attached to each conductor starting with the lowest conductor on the pole, keeping below the conductor being grounded and being sure that the man's body does not come in contact with the ground wire or conductor. If the pole also carries medium voltage circuits, the grounding tail SHALL be lashed to the crossarm or fished through the arm braces to prevent its slipping and/or blowing into distribution lines.

B. The grounding equipment SHALL be removed in the reverse order.

1.5.6 Wood Pole Lines (With Overhead Ground Wire and Vertical Grounding Wire)

A. Where climbing clearance exists, the grounding clamp SHALL first be attached to the shield wire and the grounding device shall then be attached to each conductor starting at the highest and working downward.

Where climbing clearance does not exist, the

grounding clamp SHALL first be attached to the vertical grounding wire which extends down the pole and the grounding device SHALL then be attached to each conductor starting with the lowest conductor on the pole, keeping below the conductor being grounded and being sure that the man's body does not come in con-tact with the ground wire or conductor.

B. If the pole also carries medium voltage circuits, the grounding clamp is to be first attached to the vertical grounding wire at a level above the medium voltage arm, and the grounding tail SHALL be lashed to prevent its slipping or blowing into medium voltage lines.

C. The grounding equipment SHALL be removed in the reverse order.

D. PROTECTIVE GROUNDS SHALL also be used whenever it is necessary to work on de-energized lines of any voltage (including telephone lines) which run parallel to and are within 50 feet of another line of more than 15,000 volts for a distance greater than 500 feet.

E. Whenever any work is done on a transmission line above live distribution lines or equipment, rubber gloves MUST be worn and any other additional rubber protective equipment necessary to protect fully against the energizing of the transmission line or against personal contact with the distribution circuits MUST be used.

F. Where poles carry both transmission and distribution circuits, linemen MUST apply hose, hoods, shields, or blankets to the pole pin primary BEFORE doing any work on the transmission circuit.

G. Whenever any work is done on a tagged and grounded transmission line that crosses live medium voltage lines between the two points of grounding, rubber gloves MUST be worn unless additional grounds are placed between the working position and the crossing.

1.5.7 Steel Towers and Structures

The grounding clamps SHALL then be securely attached to the tower leg below the crossarm and the grounding device SHALL then be attached to each conductor, being sure that the lineman's body does not come in contact with the ground wire or conductor. Grounding SHALL start at the lowest conductor and proceed upwards. THE GROUNDING SHALL BE REMOVED IN THE REVERSE ORDER. A screw type auger ground shall be installed and the ground wire shall be connected to the tower leg clamp.

1.5.8 Working on Towers or Structures

A. When work is to be done on the lower section of structures carrying a single live circuit or on structures carrying two live circuits, a red flag SHALL be placed on the stepped leg on each structure at a safe distance below the crossarm carrying the lowest live wire. All employees working on each

structure SHALL be specifically instructed by the supervisor in charge of the work not to permit any part of the body above the red flag.

B. When work is to be done on structures carrying one energized and one de-energized circuit, a red flag SHALL be placed on each crossarm carrying a live wire at a safe distance from the nearest live wire. All employees SHALL be specifically instructed by the supervisor in charge of the work not to permit any part of the body to extend beyond the red flags.

C. When work is to be done on a group of structures carrying energized and de-energized circuits, and when one tower in the group is being worked with its circuit(s) dead and the circuit(s) on the adjoining towers are energized, red flags SHALL be placed on the stepped leg of each adjoining tower or towers carrying live circuits.

D. When work is being done on towers carrying one or more energized circuits, the person in charge of the work SHALL be within hailing distance at all times.

## 1.6 TREE TRIMMING

### 1.6.1 General

A. Tree trimming operations present many common hazards. Injuries to workmen may be caused by the following hazards:

1. Improper climbing and work methods including work from bucket trucks.
2. Falling trees and falling limbs.
3. Contact with energized wires.
4. High speed moving parts on such power equipment as chipper units, power saws, etc.

B. HARD HATS AND EYE PROTECTION MUST BE USED AT ALL TIMES WHILE ON THE JOB SITE.

C. HEARING PROTECTORS MUST BE WORN WHEN OPERATORS ARE EXPOSED TO NOISE LEVELS ABOVE 85 DECIBELS. (EXAMPLES: CHAINSAWS, AND CHIPPERS)

D. When handling or working on any wire or equipment that is energized or may become energized at medium voltage, rubber protective equipment SHALL be used in accordance with work and safety procedures.

E. Pole climbers shall not be used to climb trees. If climbers are required, use tree climbers.

F. Ladders should be used only as a last resort. Positioning must be such that the work to be done will not jeopardize the worker (ie: falling limbs).

G. Safety straps or safety ropes MUST always be used. Climbing or safety ropes should be tied through both "D" rings of the safety belt and passed over a higher limb of sufficient strength and tied securely. Workman, MUST always belt in to boom when working from aerial basket.

H. Tools that can not be carried up the tree should be sent up on a hand line.

I. The specie of tree being worked, and its physical condition, MUST be kept in mind if it is to be climbed safely. Fast growing trees are apt to be weak, old trees may be rotted and frozen limbs are always brittle.

J. A sharp V fork tree trunk is generally weak. Split forks sometimes show themselves by a break in the bark or by bleeding. Limbs should be examined where they join the trunk of the tree as that is where most breaks occur. Limbs themselves should be checked for dead bark and dead streaks on the top side. If there is any doubt as to the strength of a limb, a hand line should be thrown over it and the limb's strength tested. Often it is advisable to tie up weak limbs with hand lines not only for safety, but to preserve the limb for shaping up the tree.

K. Limbs should be cut as the workman progresses upward. Large limbs should not be cut off until guide lines and, if necessary, a lowering line have been attached, and then only after the workman has placed himself in a safe, suitable and comfortable position to make the cut.

L. Limbs should be kept under control at all times by using as many lines as necessary to guide them while falling or being lowered.

M. When brush or wood is to be stacked, extra care MUST be taken to prevent injury or damage to passing vehicles and pedestrians.

Twigs, limbs or sticks MUST NOT be left projecting beyond curb or sidewalk lines or from the brush or wood pile, particularly in such positions as would cause tripping or eye hazards both to children and adults. Brush piles MUST be left flat and solid to prevent wind rolling or accidental pushing.

1.6.2 Brush Chipping

A. When brush is disposed of by mechanical chipper, the following precautions will be strictly observed:

1. Vehicle shall be stopped before feeding chipper.

2. Adequate precaution shall be taken prior to starting the chipper. Make certain no one is standing in line with the feed

or discharge chute.

3. Goggles should be used in addition to glasses with side shields. Approved hearing protection MUST be worn.

4. Chipper shall be fed by only one person at a time.

5. Place the chipper so that the person feeding it will be in the clear of traffic or overhead hazards.

6. Be sure chipper is well blocked (chocked) to prevent any movement while it is being operated. Trailer chippers which have been detached from a truck shall be chocked or otherwise secured.

7. Brush should be fed into chipper butt first.

8. Do not put hands any closer than edge of the hopper. Use a stick to feed limbs after they pass edge of hopper.

9. Chipper shall not be left unattended while running. Necessary precautions (remove key) shall be taken so that chipper cannot be started if unattended.

10. REMOVE THE KEY BEFORE REPAIRS OR ADJUSTMENTS ARE MADE. REPAIRS OR ADJUSTMENTS SHALL NOT BE MADE TO THE CHIPPING UNIT WHILE IT IS RUNNING.

11. SWEEPINGS SHALL NOT BE FED INTO CHIPPER.

B. Chainsaws shall be regularly inspected to see that they are clean, sharp and properly tensioned.

C. Handle fuel safely. Use approved safety container with flame arrestor. After refueling, wipe down before starting, and make sure cap is in good repair and properly replaced.

D. When starting a chainsaw, it shall be placed on or against something solid to support and steady it.

E. When using a chainsaw aloft, the following procedure shall be used:

1. Start and test-operate the power saw engine on ground.

2. Under no conditions shall the power saw be raised from the ground or lowered to the ground with the engine running.

3. Except when not practicable, such as when making a final topping cut, tree trimmer shall select a crotch for the saw work rope above his working position so that the saw will swing away from him.

F. Repairs or adjustments shall not be made on the chain or cutting bar while engine is running.

G. Chain guard shall be in place on the chain when saw is not in use.

1.6.3 Work Near Live Electric Lines

A. Care must be taken to avoid contact of persons, tools or limbs when trimming near energized lines. Proper supervision, the use of rubber protective equipment and special tools will avoid accidents and service interruptions in this area.

B. Some tools are conductors, and serious injury might result if they are allowed to contact energized wires. Constant alertness MUST be exercised to keep them clear of energized conductors.

C. Limbs SHALL never be cut completely off the tree until the top of the tree is clear of all energized wires. If necessary to accomplish this, the cut should be started and the limb then broken down or around until clear when the cut may be finished. Limbs which are attached to trees provide a path to ground.

D. Insulated pole pruners SHALL be used to clear the wires and to remove any small limbs that may be touching the conductor(s).

E. When trimming a tree in close proximity to energized lines, personal rubber protective equipment shall be used.

## 1.7 POLE TOP RESCUE

### 1.7.1 Immediate Care

A. In cases of electric shock there MUST be NO DELAY in the application of resuscitation as every moment lost decreases the possibility of restoring breathing.

B. Call or have someone call for help immediately.

C. There are many possible conditions which may make the proper positioning of a victim of electric shock on a pole or elevated structure a difficult matter.

D. The flexibility of mouth to mouth resuscitation makes it particularly suitable to 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. This would open the airway. IN ANY CASE WHERE NECK INJURY IS A POSSIBILITY, THE HEAD TILT IS ABSENT OR MINIMAL TO AVOID AGGRAVATING THE NECK INJURY.

F. Mouth to mouth resuscitation may then be performed.

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

1.7.2 Emergency Lowering Procedure

A. This method has been devised to lower an injured person from a pole or structure quickly and safely. It can also be used to raise an individual from a trench or manhole, and can be utilized in cases where the victim is not wearing a body belt. A half-inch diameter line or larger must be used to execute this rescue.

B. Pass the line twice around the crossarm or other suitable object used for lowering (or lifting), allowing at least 8 feet of rope to tie the rescue hitch.

1. Pass the end of the rope under the victim's right arm.

2. Across victim's back and forward through the left "D" ring.

3. Across the victim's stomach through the right "D" ring.

4. Across the back, forming an X.

5. Pass the line under the left arm and finish off by tying a bowline at about the victim's eye level.

6. Take up slack in rope.

7. Cut safety strap and let the victim swing clear.

8. Lower the victim to ground.

9. Resuscitation efforts should be restarted as soon as the victim is on the ground.

1.7.3 Alternate Emergency Lowering Procedure

A. When the victim starts breathing (or as soon as he can be made ready), he should be lowered to the ground by means of a one-half inch diameter or larger handline.

1. This line should pass through a block suspended from an arm or the top of the pole.

2. While the lower end is held by someone on the ground, the upper end should be taken by the lineman on the pole and passed through both "D" rings on the victim's body belt.

3. Then tied with a bowline so that the knot will be at the level of his

armpits.

4. With a person on the ground taking a strain on the line, the first snap of the victim's safety strap should be unfastened and placed on the rope above the knot.

5. The safety strap should be taken from around the pole, passed between the victim's legs, and the second strap placed on the rope above the first.

6. In some cases it may be necessary to tie the victim's legs together before lowering due to uncontrollable muscular reaction caused by the electric contact.

7. After the lineman gets in the clear, the victim can be safely lowered to the ground and further first aid administered.

## 1.8 ELECTRIC METER TESTING

### 1.8.1 General

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 the customer and the employee.

B. The following rules apply specifically to conditions encountered in the checking and testing of electric services and meters in the field. However, all applicable Rules set forth in other sections of this Manual must also be observed by all persons doing service, meter or relay work.

C. When installing meters use a test lamp or volt meter. This must be done on each and every installation to test for short circuit condition.

D. The proper testing devices provided by the Company MUST be used for testing for potential.

E. Extreme care must be taken when blown main line or circuit fuses are being replaced as a wiring short may exist. Cartridge-type fuses SHALL NEVER be replaced by hand but always with a fuse puller.

F. Whenever any employee is called upon to operate a live switch the employee SHALL wear approved rubber gloves and safety

glasses (flash).

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

H. NEVER leave an energized meter socket unless it is covered and sealed.

I. When making the wires of a grounded installation live, the ground wire SHALL always be connected first.

1.8.2 Testing

A. When applicable in testing, repairing, installing and changing meter equipment, personal protective safety equipment such as hard hats, eye protection, leather gloves, rubber gloves and sleeves shall be used.

B. Electric meter and control wiring SHALL be treated as energized at all times. The handling of 120 and 240 volt circuits, as well as higher voltages, requires reasonable precautions to prevent personal injuries.

C. Before working on an ungrounded meter, use test lamp or volt meter to assure that the case of the meter is not energized.

D. Wires and jumpers SHALL be so handled that short circuits or accidental contact with ground wires and grounded metallic systems are avoided.

E. The secondary of a current transformer SHALL NEVER be opened while it is in service as the open circuit voltage on the secondary could build up to a high voltage condition.

F. When connecting standards and load boxes, the test leads SHALL first be connected to the standards and load boxes and then connected to the apparatus under test. When disconnecting standards and load boxes, the leads SHALL first be disconnected from the live apparatus.

G. All connections should be securely made so that they will not readily drop or pull off. The tester should be careful to see that all wires, jumpers' test leads, instruments or other testing equipment are so placed that no one passing will bump into or trip over them.

H. The use of test blocks is recommended. However, when they cannot be used, a test SHALL be made before installing each jumper, to insure that the points to be connected are of the same polarity. Only one jumper shall be connected at a time and each SHALL be checked to make certain that the free end is clear.

I. Before removing jumpers, a careful inspection SHALL be made to insure that all connections have been returned to their normal condition and are tight, otherwise the jumpers may be disconnected under load, causing a serious flash. When disconnecting

jumpers, the free end SHALL be guarded in the same manner as when it is being connected.

J. Whenever possible, demand meters should be disconnected before any adjustments are attempted. Because of the small clearances between binding screws, contacts and other live parts of such meters, short circuits are easily caused by slipping or misdirected tools, All single phase or polyphase straight and demand meters must not have current flowing through the coils when making adjustments.

K. When installing, changing, or testing a socket type transformer rated meter which has a meter pan with a 7 or 10 pole test switch wired ahead of the meter, the TEST SWITCH MUST BE OPENED FIRST to shunt (short) the current leads and open the potential leads. This procedure is to be followed even if the meter block is equipped with an automatic by-pass mechanism. (The reason: by pulling the meter, should the by-pass not operate properly, an open CT circuit will be established creating the same condition as in paragraph E above.)

# SECTION 2.0

## UNDERGROUND ELECTRIC OPERATIONS

### 2.1 GENERAL

2.1.1 ALL CONDUCTORS, TERMINATIONS AND RELATED EQUIPMENT SHALL BE CONSIDERED ENERGIZED UNTIL DE-ENERGIZED, TESTED AND GROUNDED.

2.1.2 When working with equipment, switches, cutouts and grounding devices, the worker SHALL place himself in a safe position with all components clearly in view.

2.1.3 RUBBER GLOVES SHALL BE USED ON ALL ENERGIZED CABLES AND EQUIPMENT. HOTLINE TOOLS SHALL ALSO BE USED WHILE WORKING ON PRIMARY CIRCUITS FOR SWITCHING, LOADBREAKNG AND GROUNDING OPERATIONS.

2.1.4 Test points when provided SHALL be used.

2.1.5 A PRIMARY OR SECONDARY SYSTEM NEUTRAL SHALL NEVER BE OPENED FOR ANY REASON WHILE SYSTEH IS ENERGIZED.

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

A. A visible open break shall be provided if possible.

B. A voltage test shall be made.

C. The equipment shall be grounded.

2.1.7 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.

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

2.1.9 Faulted cables SHALL be grounded before repair work is begun. Approved tester/equipment SHALL be used to assure the cable is de-energized before grounding.

2.1.10 When unattended, pad mounted equipment shall be secured with approved Company locks and special keyed bolts at all locking points supplied by manufacturer. Missing bolts shall be replaced.

## 2.2 CONSTRUCTION

2.2.1 Operators SHALL NOT allow unauthorized riding on Company vehicles, NOR SHALL front-end loaders be used to transport men on the job site.

2.2.2 The sides of all trenches SHALL be carefully trimmed to prevent paving or stones projecting into the trench. All excavated material, equipment and tools SHALL be kept back at least 24 inches from the edge of excavation.

2.2.3 When excavating or tunneling to depths greater than five (5) feet or when there is a suspected danger of cave-in, the trench or tunnel SHALL be adequately shored. In such cases, a ladder SHALL extend from the bottom of the trench to at least three (3) feet above ground level.

2.2.4 Workers SHALL NEVER enter the working area of excavating equipment, in any location, where they cannot be clearly seen by the equipment operator.

2.2.5 Extreme care SHALL be used when digging to locate cable faults within proximity to other utilities.

2.2.6 When a backhoe is used to excavate an existing combination trench, the pavement may be removed with the machine, but subsequent digging shall be done by hand until the depth of the utilities has been determined.

2.2.7 When the depth of utilities has been determined the backhoe may be used with caution to enlarge the hole to provide adequate room for work. Final digging to expose utilities shall be done by hand.

2.2.8 When working on below grade electric facilities, suitable guards or barricades shall be used to protect other utilities in the trench from physical/electrical damage.

2.2.9 Make sure handhole cover is secured by approved method whenever the handhole is unattended.

2.2.10 Care shall be taken when pulling cables to protect employees and the public from possible injury. This will require a study of the vehicular and pedestrian traffic for the particular location so as to enable the equipment to be set up in the safest possible manner which will cause the public the least inconvenience. All persons, including employees, should be warned to keep away from ropes or cables which are under tension.

2.2.11 Employees SHALL NOT remain in a hole while installing or removing cable if the pulling system is operating and/or under tension.

## 2.3 SITE CONTROL

2.3.1 When loading or unloading cable reels, care should be taken so that reels are under control at all times.

2.3.2 Ropes and cables laid temporarily across sidewalks during pulling operations SHALL be properly protected to avoid possibility of injury to pedestrians.

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

2.3.4 In case of manhole fires, the workman SHALL get out of 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 Confined Space Entry.)

2.3.5 Equipment and cable SHALL NOT be left on the job site after completion of work. Good Housekeeping should be maintained at all times around the work area.

# SECTION 3.0 GAS OPERATIONS

## 3.1 DISTRIBUTION

### 3.1.1 General Rules

A. All employees MUST use extreme care at all times to avoid the three inherent dangers associated with the handling of a combustible gas:

- FIRE
- EXPLOSION
- ASPHYXIATION

3.1.2 To this end, all precautions aimed at the prevention of these hazards MUST be scrupulously observed. The following rules are listed to indicate the degree of caution necessary, although they by no means limit the care to be taken.

3.1.3 The creation or use of any kind of spark or open flame in any area where "No Smoking" signs are posted, or where combustible gases may be present IS STRICTLY PROHIBITED.

3.1.4 When a combustible gas is present in the atmosphere, all combustible engines, welding equipment, lanterns, flares, etc. MUST be kept a safe distance from the escaping gas. Remember that escaping gas moves with the wind, and can be ignited if any suitable source of ignition is located in its path.

3.1.5 When the presence of gas is suspected in a confined space NO ONE SHALL work in such an area without first testing the atmosphere with a Combustible Gas Indicator and then ventilating if necessary.

3.1.6 Various types of personal protective equipment are furnished by the Company. The use of the protection is either recommended or required depending on the equipment being used and/or the job being performed.

## 3.2 CONSTRUCTION

3.2.1 Before starting any work in or along highways or streets, standard signs and warning devices must be used. Refer to the Work Area Protection Manual.

3.2.2 Before starting an excavation or barring for leaks, the employee in charge should secure information on existing subsurface structures or lines. Work in the vicinity of all such interferences must be done with great care. The area SHALL be carefully designated to show the limits of excavation or barring and workmen SHALL keep their work within these limits.

3.2.3 When excavating or tunneling at depths of five feet or or greater, or less if there is a suspected danger of cave-in, the trench or tunnel SHALL be adequately shored. In such cases, an exit ladder SHALL be installed and extend from the bottom of the trench to at least three feet above ground level.

3.2.4 The sides of all trenches SHALL be carefully trimmed to prevent paving or stones projecting into the trench. All excavated material, equipment and tools SHALL be kept back at least 24 inches from the edge of the excavation.

3.2.5 When it is necessary for workmen to work in a ditch under suspended pipe, be sure that the supports are of ample strength and so placed that the pipe cannot fall.

3.2.6 When gas is to be shut off in a main or ser-

vice, all affected customers SHALL be notified, and all meters SHALL be turned off.

3.2.7 Before a gas steel or cast iron main is to be cut, or pipelines disconnected, the section to be cut or disconnected should be bonded over with a stranded copper cable (preferably Number 0,B & S gage.) In order to make the proper electrical contact, the gas main should be filed to bright metal and the copper cable clamped securely to it.

Before a pressurized plastic gasline is to be squeezed off or cut in a gaseous atmosphere the gas line must be wet down with a water/soap solution or water/glycol solution and grounded with a solution-wetted cloth to prevent static electrical charges.

3.2.8 Have an approved type fire extinguisher at the bell hole or trench during welding operations.

3.2.9 NO live tie-ins SHALL be made on intermediate or high pressure mains except with the special tools and equipment constructed for the purpose, and all personnel directly involved in such operations SHALL wear appropriate eye protection.

3.2.10 NO live tie-ins larger than two inches SHALL be made on low pressure mains until the section has been valved or bagged off.

## 3.3 TESTING

3.3.1 Test heads used to seal the ends of the pipe being tested must be in good condition and approved for this purpose. While pressure is on the line, NO ONE SHALL be allowed to stand in front of, or beside, the test heads. When testing is completed, the air pressure SHALL be slowly released and the test head left in place until all pressure has been removed. If test heads are left in place overnight, they shall be locked out.

3.3.2 All mains and services shall be thoroughly purged or cleared of air before being put into service. In congested areas or other special instances, the method of purging will be determined by the existing conditions and SHALL be under the direct supervision of an engineer, superintendent or supervisor.

3.3.3 When gas is to be turned on in a main or service, all meters shall be turned off before gas is turned on in the main and service. After gas is turned on, individual restoration of services will be made. Make certain that all services have been restored. All lines must be purged or cleared of air and the burners correctly adjusted before leaving the customer's premises.

3.3.4 When a service or main is abandoned or discontinued, the ends MUST always be capped or plugged to avoid accidental flow of gas into a building.

3.3.5 All excavations SHALL be properly back-filled and left in as near their original condition as possible. Governing regulations SHALL be adhered to in determining the suitability of backfill material and method of backfilling.

## 3.4 CUSTOMER INSTALLATION AND SERVICE

### 3.4.1 General Information

A. A large part of this work is performed on the customer's premises. Specific rules and hazards involved are covered in another section of the manual.

B. Customer Installation personnel SHALL immediately report to the supervisor any installed gas appliance that does not meet the safety requirements of ASA Code Z21.30 and/or NFPA 54, "Installation of Gas Appliances and Gas Piping".

### 3.4.2 Basic Precautions

A. One employee alone SHALL NOT open or tap a pipe containing gas unless there is a control valve or cock on the pipe that can first be shut off. If there is no cock or valve to stop the flow of gas, there SHALL be at least two men on the job.

B. Leak detection fluid, or a combustible gas indicator, SHALL be used for locating gas leaks. Matches or open flames SHALL NOT be used for this purpose. When tracing a gas leak within a building, employees SHALL NOT ring the door bell to gain admittance or operate electrical equipment that may generate a spark within the affected area.

C. The employees SHALL promptly and adequately ventilate the area involved in a gas leak.

They shall also consider having the building evacuated if there is possible danger to life and limb.

### 3.4.3 Testing

A. When gas is turned on into house piping, a five-minute observation of the meter test hand SHALL be made to determine if any leaks exist in the piping or appliances.

B. Air MUST be eliminated from piping and appliances before an attempt is made to ignite gas and restore service.

### 3.4.4 Gas Leaks

A. All reports of gas leaks SHALL be investigated as promptly as possible.

B. When a major outside leak is discovered, all buildings and manholes in the vicinity of the leak SHALL be checked for the presence of gas by a combustible gas indicator. Use extreme care when working in any place where there is enough gas to show on the indicator.

C. All manholes showing an indication of gas shall be reported to the gas radio dispatcher for further action.

D. All open flames, including warning lanterns and torches, SHALL be kept away from the vicinity of gas leaks, and smoking is STRICTLY PROHIBITED.

E. Leaks traced into any house SHALL be followed by an inspection of houses on either side to insure that all places of danger are located and vented.

F. Where combustible gases are found, other than those distributed by the Company, an attempt SHALL be made to determine the source and type of gas.

## 3.5 PROPANE GAS PLANT OPERATIONS

### 3.5.1 Handling Propane

A general Safety Manual embodying all the instructions which are necessary for the safe operation of any and all gas peaking plants would be too bulky for practical use. It is the intention, therefore, to include in this section only a few major rules applying specifically to the handling of liquid propane. Each gas peaking plant shall be provided with any additional safety instructions or amplification of these general instructions, which may be required, as well as instructions on the proper methods and sequences of plant operation and maintenance.

### 3.5.2 Unloading Tank Cars or Trucks of Liquid Propane

Tank cars or trucks shall be unloaded in strict compliance with the regulations of the Department of Transportation.

### 3.5.3 Basic Precautions

A. Block wheels of tank car or truck with approved chocks.

B. Install derailer and warning sign on track at least 75 feet from the car being unloaded.

C. Electrically bond tank car or truck to unloading line with the equipment provided.

D. Whenever possible, truck engines and any associated systems shall be shut off during unloading operations.

E. Test unloading lines and hoses for tightness with propane vapor before starting unloading.

F. Various types of personal protective equipment are furnished by the Company. The use of the protection is either recommended or required depending on the equipment being used and/or the job being performed.

3.5.4 Construction

A. Before starting any work in or along highways or streets, standard signs and warning devices must be used. Refer to the Work Area Protection Manual.

B. Before starting an excavation or barring for leaks, the employee in charge should secure information on existing subsurface structures or lines. Work in the vicinity of all such interefences must be done with great care. The area SHALL be carefully designated to show the limits of excavation or barring and workmen SHALL keep their work within these limits.

C. When excavating or tunneling at depths of five (5) feet or greater, or less if there is a suspected danger of cave-in, the trench or tunnel shall be adequately shored. In such cases, an exit ladder SHALL be

installed and extend from the bottom of the trench to at least three (3) feet above ground level.

5

FIRST AMENDMENT

TO

CONTINUING SITE/INTERCONNECTION AGREEMENT

BY AND BETWEEN

ORANGE AND ROCKLAND UTILTIES, INC.,

AND

SOUTHERN ENERGY LOVETT, L.L.C.

May 10, 1999

# FIRST AMENDMENT TO CONTINUING SITE/INTERCONNECTION AGREEMENT

THIS FIRST AMENDMENT TO CONTINUING SITE/INTERCONNECTION AGREEMENT ("Amendment"), dated as of May 10, 1999, by and between Orange and Rockland Utilities, Inc., a New York corporation ("Seller") and Southern Energy Lovett, L.L.C., a Delaware limited liability company ("Buyer").

WHEREAS, Seller and Buyer entered into the Continuing Site/Interconnection Agreement (the "Agreement") on November 24, 1998, whereby Seller agreed to provide Buyer with certain interconnection services associated with the generation assets located at the Lovett Generating Station, and Buyer agreed to provide Seller access to certain parts of those generation assets;

WHEREAS, the Agreement contemplates the development of a "Separation Document" which would further delineate Seller's and Buyer's rights and responsibilities under the Agreement; and

WHEREAS, Seller and Buyer desire to amend certain provisions of the Agreement in lieu of developing a "Separation Document".

NOW, THEREFORE, in consideration of the premises and agreement hereinafter set forth, and intending to be legally bound hereby, the parties hereto agree as follows:

## ARTICLE I

## AMENDMENT TO AGREEMENT

1.1. One-Line Drawings and Secondary System Ownership. Schedule A to the Agreement is revised by deleting the first page to Schedule A, entitled "Schedule A to Continuing Site/Interconnection Agreement", and inserting the first page of Schedule A to this Amendment,

entitled "Schedule A (Part I) to Continuing Site/Interconnection Agreement", in lieu thereof. Schedule A to the Agreement is further revised by inserting Schedule A (Part II) to this Amendment at the end thereof.

1.2. Black Start & System Restoration Plan. Schedule D to the Agreement is deleted in its entirety and Schedule D to this Amendment is inserted in lieu thereof.

1.3. Revenue Meters. Section 1.28 of the Agreement is revised by inserting the words ", the current locations of which are set forth in Schedule F (Part I) hereto, and the anticipated meter locations of which are set forth in Schedule F (Part II) hereto" at the end of the sentence. The Agreement is further revised by inserting Schedule F to this Amendment as Schedule F (Parts I and II) to the Agreement.

1.4. Operating, Metering and Equipment Protection Requirements. Section 3.1.2 of the Agreement is revised by deleting the third and fourth sentences therefrom.

1.5. Metering for Retail Accounts. Section 3.1.3 of the Agreement is revised by inserting ", and Schedule G hereto identifies the electric and gas meters which Seller will use to measure the services which Seller itself will provide to Buyer under this Section 3.1.3" at the end of the second sentence thereof. The Agreement is further revised by inserting Schedule G to this Amendment as Schedule G to the Agreement.

1.6. Low Voltage Substation Service. Section 3.8.1 and Section 3.9.1 of the Agreement are each revised by deleting "as will be set forth in the Separation Document" therein.

1.7. Line Operations Information. Section 3.8.9 of the Agreement is revised by deleting "as set forth more fully in the Separation Document" at the end of the first sentence thereof.

1.8. Energy Management System Information. Section 3.8.10 of the Agreement is deleted in its entirety.

1.9. Dispatch Service Protocols. Section 3.8.11 of the Agreement is deleted in its entirety.

1.10. Line Operation Information. Section 3.9.3 of the Agreement is revised by deleting "as set forth more fully in the Separation Agreement" at the end of the first sentence thereof.

1.11. Substation Operation and Maintenance. Section 3.9.5 of the Agreement is deleted in its entirety.

1.12. Switching, Tagging and Grounding Rules. Section 3.14.2 of the Agreement is revised by deleting "mutually agreed to by the Parties" and inserting "set forth in Schedule H hereto" in lieu thereof. The Agreement is further revised by inserting Schedule H to this Amendment as Schedule H to the Agreement.

## ARTICLE II

## MISCELLANEOUS

2.1. Severability. Should any article, section or provision of this Amendment be decided to be illegal, unenforceable or in conflict with any law by a court of competent jurisdiction or arbitration tribunal, such article, section or provision shall be deemed severed from this Amendment and the validity of the remainder of the Amendment shall not be affected thereby.

2.2. Governing Law. This Amendment shall be governed by and construed in accordance with the laws of the State of New York.

2.3. Counterparts. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: D L Peoples
Name: D. L. Peoples
Title: Chief Executive Officer

SOUTHERN ENERGY LOVETT, L.L.C.

By: _____
Name: _____
Title: _____

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: _____
Name: _____
Title: _____

SOUTHERN ENERGY LOVETT, L.L.C.

By: James A. Ward
Name: James A. Ward
Title: Vice President

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

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

| PLANT: LOVETT 69 YARD | | | | |
|---|---|---|---|---|
| | | | OWNER | |
| TRIPS BREAKER | RELAY TYPE | DEVICE # | ORU | SC |
| LOCKOUT 86Y | CA-6 | L871Y | X | |
| TRIPS BOTH "Y" BUS | CA-6 | L872Y | X | |
| LOCKOUTS | CA-6 | L873Y | X | |
| 133-2Y, 233-2Y, | CA-6 | R871Y | X | |
| 333-2Y, L33-2Y | CA-6 | R872Y | X | |
| 733-2Y, 147-33-2Y, | CA-6 | R873Y | X | |
| 55-33-2Y, 540-33-2Y | | | | |
| LOCKOUT 86X | CA-6 | L871Y | X | |
| TRIPS BOTH "X" BUS | CA-6 | L872Y | X | |
| LOCKOUTS | CA-6 | L873Y | X | |
| 133-2Y, 233-2Y, | CA-6 | R871Y | X | |
| 333-2Y, L33-2Y | CA-6 | R872Y | X | |
| 733-2Y, 147-33-2Y, | CA-6 | R873Y | X | |
| 55-33-2Y, 540-33-2Y | | | | |

The parties acknowledge that the designation of ownership of the various relays listed in Schedule A, Part II is based upon the functionality of the relays. Relays with the primary purpose of protecting transmission facilities have been designated as Seller's relays and relays with the primary purpose of protecting generation facilities have been designated as Buyer's relays. The parties agree to revise this list from time to time to the extent the ownership designation does not reflect such functionality.

| PLANT: LOVETT LINE 55 | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 55-33-2X, 55-33-2Y | HZ | 21-1 | X | |
| 55-33-2X, 55-33-2Y | HZ | 21-2 | X | |
| 55-33-2X, 55-33-2Y | HZ | 21-3 | X | |
| 55-33-2X, 55-33-2Y | RSN | 85 | X | |
| 55-33-2X, 55-33-2Y | KRQ | 67NC | X | |
| 55-33-2X, 55-33-2Y | SX | 79X | X | |
| 55-33-2X, 55-33-2Y | SGR12 | 79 | X | |
| 55-33-2X, 55-33-2Y | HO | CS | X | |
| 55-33-2X, 55-33-2Y | IRD | 67NB | X | |

| PLANT: LOVETT 138 YARD | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER ORU | OWNER SC |
| 53-47-2 | KD-10 | 21Z1 | X | |
| 53-47-2 | KD-4 | 21Z2 | X | |
| 53-47-2 | KD-41 | 21Z3 | X | |
| 53-47-2 | KDXG | 21N1 | X | |
| 53-47-2 | KDXG | 21N2 | X | |
| 53-47-2 | KDXG | 21N3 | X | |
| 53-47-2 | TD52 | 21X | X | |
| 53-47-2 | SC | 50P | X | |
| 53-47-2 | SGR-52 | 79 | X | |
| 53-47-2 | KRT | 21NX | X | |
| 86BB LOCK | KC-4 | 50-8 | X | |
| 86BB LOCK | TD-5 | 62 | X | |
| 53-47-2 | AR | 94B | X | |
| 53-47-2 | IJS | 25/27 | X | |
| 53-47-2 | SIU | 50 | X | |
| 53-47-2 | SKDU-3 | 21P | X | |
| 53-47-2 | SKDU-3 | 21S | X | |
| 53-47-2 | SKBU-11 | 78 | X | |
| 53-47-2 | SRU | 85 | X | |
| 53-47-2 | MG6 | 69 | X | |
| 53-47-2 | NAA | 94 | X | |
| 54-47-2 | KD-4 | 21Z1 | X | |
| 54-47-2 | KD-4 | 21Z2 | X | |
| 54-47-2 | KD-41 | 21Z3 | X | |
| 54-47-2 | KDXG | 21N1 | X | |
| 54-47-2 | KDXG | 21N2 | X | |
| 54-47-2 | KDXG | 21N3 | X | |
| 54-47-2 | KRT | 21NX | X | |
| 54-47-2 | TD-4 | 21X | X | |
| 54-47-2 | SC | 50P | X | |
| 54-47-2 | SGR52 | 79 | X | |
| LOCKOUT 86BC | KC-4 | 50-7 | X | |
| LOCKOUT 86BC | TD-5 | 62-7 | X | |
| LOCKOUT 86BC | 12IJS | 25/27 | X | |
| 54-47-2 | SIU | 50 | X | |
| 54-47-2 | SKDU-3 | 21P | X | |
| 54-47-2 | SKDU-3 | 21S | X | |
| 54-47-2 | SKBU-11 | 78 | X | |
| 54-47-2 | SRU-85 | 85 | X | |
| 54-47-2 | NAA | 94 | X | |

| PLANT: LOVETT 138 YARD (CONTINUED) | | | | |
|---|---|---|---|---|
| | | | OWNER | |
| TRIPS BREAKER | RELAY TYPE | DEVICE # | ORU | SC |
| 56-47-2 | KD-4 | 21-Z1 | X | |
| 56-47-2 | KD-4 | 21-Z2 | X | |
| 56-47-2 | KD-41 | 21-Z3 | X | |
| 56-47-2 | TD-4 | 21-X | X | |
| 56-47-2 | KDXG | 21-N1 | X | |
| 56-47-2 | KDXG | 21-N2 | X | |
| 56-47-2 | KDXG | 21-N3 | X | |
| 56-47-2 | KRT | 21-NX | X | |
| 56-47-2 | SC | 50 | X | |
| 56-47-2 | SX | 79Z | X | |
| 56-47-2 | HKB | 85 | X | |
| 56-47-2 | SGR-52 | 79 | X | |
| 86BA | KC/4 | 50/1 | X | |
| 86BA | TD/5 | 62/1 | X | |
| 56-47-2 | 12IJS | 25/27 | X | |
| 86BA | PVD | 87A1 | X | |
| 86BA | PVD | 87A2 | X | |
| 86BA | PVD | 87A3 | X | |
| 86T-147 | BDD | 87T-1 | X | |
| 86T-147 | BDD | 87T-2 | X | |
| 86T-147 | BDD | 7T-3 | X | |
| 147-2 | C0-11 | 50/51ø1 | X | |
| 147-2 | C0-11 | 50/51ø2 | X | |
| 147-2 | C0-11 | 50/51ø3 | X | |
| 147-2 | C0-11 | 51N | X | |
| 86BA | KC-4 | 50-3 147-2 BF | X | |
| 86BA | TD-5 | 62-3 | X | |
| 86BA | KC-4 | 50-2 447-2 BF | X | |
| 86BA | TD-5 | 62-2 | X | |

| PLANT: LOVETT GEN. #1 | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 133-2X, 133-2Y | CEH | 40 | | X |
| 1332X, 133-2Y | CV | 64GN | | X |
| TURBINE MAIN FIELD CLOSES 1A18 | | | | |
| DIFF LOCKOUT | CA | 87G-1 | | X |
| DIFF LOCKOUT | CA | 87G-2 | | X |
| DIFF LOCKOUT | CA | 87G-3 | | X |
| DIFF LOCKOUT | CA-4 | 87T-1 | | X |
| DIFF LOCKOUT | CA-4 | 87T-2 | | X |
| DIFF LOCKOUT | CA-4 | 87T-3 | | X |
| DIFF LOCKOUT | CA | 87T-1 | | X |
| DIFF LOCKOUT | CA | 87T-2 | | X |
| DIFF LOCKOUT | CA | 87T-3 | | X |
| 1A17 | C0 | 50/51-1 | | X |
| 1A17 | C0 | 50/51-2 | | X |
| 1A17 | C0 | 50/51-3 | | X |
| 1A18 | C0 | 50/51-1 | | X |
| 1A18 | C0 | 50/51-2 | | X |
| 1A18 | C0 | 50/51-3 | | X |

| PLANT: LOVETT GEN. #2 | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 2A-1 | C0 | 50/51 1, 3 | | X |
| 2A-3 | C0 | 50/51 1, 3 | | X |
| 2A-5 | C0 | 50/51 1, 3 | | X |
| 2A-6 | C0 | 50/51 1, 3 | | X |
| 2A-7 | C0 | 50/51 1, 3 | | X |
| 2A-8 | C0 | 50/51 1, 3 | | X |
| 2A-9 | C0 | 50/51 1, 3 | | X |
| 2A-10 | C0 | 50/51 1, 3 | | X |
| 2A-11 | C0 | 50/51 1, 3 | | X |
| 2A-12 | C0 | 50/51 1, 3 | | X |
| 2A-13 | C0 | 50/51 1, 3 | | X |
| 2A-14 | C0 | 50/51 1, 3 | | X |
| 2A-15 | C0 | 50/51 1, 3 | | X |
| 2A-16 | C0 | 50/51 1, 3 | | X |
| GEN. #2 LOCKOUT | CA | 87G 1, 2, 3 | | X |
| GEN. #2 LOCKOUT | CA | 87T 1, 2, 3 | | X |
| LOCKOUT | CA-4 | 87T 1, 2, 3 | | X |
| LOCKOUT | CEH | 40 | | X |
| 2A-4 | SPARE BREAKER | NO RELAYS | | X |
| LOCKOUT | CV | 64GN | | X |

| PLANT: LOVETT GEN. #3 | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 3-1 | IAC | 50/51/1&3 | | X |
| 3-1 | PJC | 50-2 | | X |
| 3-1 | PJC | 50/1&3 | | X |
| 3-2 | IAC | 50/51/1&3 | | X |
| 3-2 | PJC | 50-2 | | X |
| 3-2 | PJC | 50/1&3 | | X |
| 3-2 | CA | 87M-1 | | X |
| 3-2 | CA | 87M-2 | | X |
| 3-2 | CA | 87M-3 | | X |
| 3-4 | IAC | 51/1, 2, 3 | | X |
| 3-6 | IAC | 50/51/1, 2, 3 | | X |
| 3-7 | IAC | 50/51/1&3 | | X |
| 3-7 | PJC | 50-2 | | X |
| 3-7 | PJC | 50/1&3 | | X |
| 3-8 | IAC | 50/51/1&3 | | X |
| 3-8 | PJC | 50-2 | | X |
| 3-8 | PJC | 50/1&3 | | X |
| 3-9 | IAC | 50/51/1&3 | | X |
| 3-9 | PJC | 50-2 | | X |
| 3-9 | PJC | 50/1&3 | | X |
| 3-10 | IAC | 50/51/1&3 | | X |
| 3-10 | PJC | 50-2 | | X |
| 3-10 | PJC | 50/1&3 | | X |
| 3-11 | IAC | 50/51/1&3 | | X |
| 3-11 | PJC | 50-2 | | X |
| 3-11 | PJC | 50/1&3 | | X |
| 3-12 | IAC | 50/51/1&3 | | X |
| 3-12 | PJC | 50-2 | | X |
| 3-12 | PJC | 50/1&3 | | X |
| 3-13 | IAC | 50/51/1&3 | | X |
| 3-13 | PJC | 50-2 | | X |
| 3-13 | PJC | 50-1/1, 3 | | X |
| 3-14B | IAV | 27A | | X |
| 3-14B | IAV | 27B | | X |
| 3-15 | IAC | 50/51/1, 3 | | X |
| 3-15 | PJC | 50-2 | | X |
| 3-15 | PJC | 50-1/1, 3 | | X |
| 3-15 | CA | 87M-1 | | X |
| 3-15 | CA | 87M-2 | | X |
| 3-15 | CA | 87M-3 | | X |
| 3-17 | IAC | 50/51/1, 3 | | X |
| 3-17 | PJC | 50-2 | | X |
| 3-17 | PJC | 50-1/1, 3 | | X |

| PLANT: LOVETT GEN. #3 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 3-18 | IAC | 50/51/1, 3 | | X |
| 3-18 | PJC | 50-2 | | X |
| 3-18 | PJC | 50-1/1, 3 | | X |
| 3-19 | IAC | 50/51/1, 3 | | X |
| 3-19 | PJC | 50-2 | | X |
| 3-19 | PJC | 50-1/1, 3 | | X |
| 3-20 | IAC | 50/51/1, 3 | | X |
| 3-20 | PJC | 50-2 | | X |
| 3-20 | PJC | 50-1/1, 3 | | X |
| 3-21 | IAC | 50/51/1, 3 | | X |
| 3-21 | PJC | 50-2 | | X |
| 3-21 | PJC | 50-1/1, 3 | | X |
| 3-22 | IAC | 50/51/1, 3 | | X |
| 3-22 | PJC | 50-2 | | X |
| 3-22 | PJC | 50-1/1, 3 | | X |
| 3-23 | IAC | 50/51/1, 3 | | X |
| 3-23 | PJC | 50-2 | | X |
| 3-23 | PJC | 50-1/1, 3 | | X |
| 2 | IAC | 50/51/1, 2, 3 | | X |
| 3 | IAC | 50/51/1, 2, 3 | | X |
| 4 | IAC | 50/51/1, 2, 3 | | X |
| 5 | IAC | 50/51/1, 2, 3 | | X |
| 6 | IAC | 50-1/1, 3 | | X |
| 6 | PJC | 50-2 | | X |
| 6 | PJC | 50-1/1, 3 | | X |
| 7 | IAC | 50/51/1, 3 | | X |
| 7 | PJC | 50-2 | | X |
| 7 | PJC | 50-1/1, 3 | | X |
| 8 | IAC | 50/51/1, 3 | | X |
| 8 | PJC | 50-2 | | X |
| 8 | PJC | 50-1/1, 3 | | X |
| 3-55 | IAC | 511, 3 | | X |
| 3-55 | PJC | 50/1, 3 | | X |

| PLANT: LOVETT GEN. #4 | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-1L | C0-9 | 151-1/ST4-1 | | X |
| BUS 45A | C0-9 | 151-1/ST4-2 | | X |
| START UP #4 MAIN BREAKER | C0-9 | 151-1/ST4-3 | | X |
| X WINDING 45 AIL | C0-9 | 151-G/S45A | | X |
| START UP #4 X WINDING 45 AIL | CV-2 | 127/ST-4 | | X |
| 152-2U | C0-9 | 151-1 | | X |
| BUS TIE 45A TO 4A | C0-9 | 151-2 | | X |
| X WINDING | C0-9 | 151-3 | | X |
| 45A2U | C0-9 | 151-G | | X |
| 152-3U | C0-9 | 151-1 | | X |
| BUS TIE 45A TO 4D | C0-9 | 151-2 | | X |
| START UP #4 X WINDING | C0-9 | 151-3 | | X |
| 45A3U | C0-9 | 151-G | | X |
| SYNC. CHECK 45A3L | SLJ-21A | 125/2/4A | | X |
| START UP #4 X WINDING 45A3L | CV-2 | 127/45A | | X |
| 152-4U | C0-9 | 151-1 | | X |
| BUS TIE 45A TO 54A | C0-9 | 151-2 | | X |
| START UP #4 X WINDING | C0-9 | 151-3 | | X |
| 45A4U | BBC-GR-5 | 151-G | | X |
| 152-4L | C0-11 | 150/151/1 | | X |
| BUS 45A START UP #4 X WINDING | C0-11 | 150/151/2 | | X |
| COAL HANDLING | C0-11 | 150/151/3 | | X |
| 45A4L | ITH | 150G | | X |
| 45ASL | CV-2 | 127/45A | | X |
| 152-1L | C0-9 | 151-2-1/ST4 | | X |
| BUS 45B | C0-9 | 151-2-2/ST4 | | X |
| START UP #4 X WINDING | C0-9 | 151-2-3/ST4 | | X |
| | | 151G/545B | | X |
| MAIN BREAKER 45BIL | C0-9 | 151-1 | | X |
| 152-2U | C0-9 | 151-2 | | X |
| BUS TIE 45B TO 4B | C0-9 | 151-3 | | X |
| X WINDING | C0-9 | 151-G | | X |
| 45B2U | C0-9 | 125/12-4B | | X |
| SYNC. CHECK 45B3U | 12SLJ21A | 127/45B | | X |
| START UP #4 45B3U | CV-2 | 127/45B | | |

| PLANT: LOVETT GEN. #4 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-4L | C0-9 | 151-1 | | X |
| BUS TIE 45B TO 4C | C0-9 | 151-2 | | X |
| X WINDING | C0-9 | 151-3 | | X |
| 45B4U | C0-9 | 151-G | | X |
| 152-16 | IAC | 150/151-1 | | X |
| 152-16 | IAC | 150/151-3 | | X |
| 152-16 | PJC | 150GS | | X |
| 152-17 | IAC | 150/151-1 | | X |
| 152-17 | IAC | 150/151-3 | | X |
| 152-17 | PJC | 150GS | | X |
| 152-18 | IAC | 151-1 | | X |
| 152-18 | IAC | 151-2 | | X |
| 152-18 | IAC | 151-3 | | X |
| 152-18 | IAC | 151-GS | | X |
| 152-1 | IAC | 150/151-1 | | X |
| 152-1 | IAC | 150/151-2 | | X |
| 152-1 | IAC | 150/151-3 | | X |
| 152-1 | PJC | 150-N | | X |
| 152-2 | IAC | 150/151-1 | | X |
| 152-2 | IAC | 150/151-2 | | X |
| 152-2 | IAC | 150/151-3 | | X |
| 152-2 | IAC | 151GS | | X |
| 152-3 | IAC | 150/151-1 | | X |
| 152-3 | IAC | 150/151-3 | | X |
| 152-3 | PJC | 150GS | | X |
| 152-4 | IAC | 150/151-1 | | X |
| 152-4 | IAC | 150/151-3 | | X |
| 152-4 | PJC | 150GS | | X |
| 152-5 | IAC | 150/151-1 | | X |
| 152-5 | IAC | 150/151-3 | | X |
| 152-5 | PJC | 150GS | | X |
| 152-6 | IAC | 150/151-1 | | X |
| 152-6 | IAC | 150/151-3 | | X |
| 152-6 | PJC | 150GS | | X |
| 152-7 | IAC | 150/151-1 | | X |
| 152-7 | IAC | 150/151-3 | | X |
| 152-7 | PJC | 150GS | | X |
| 152-8 | IAC | 151-1 | | X |
| 152-8 | IAC | 151-2 | | X |
| 152-8 | IAC | 151-3 | | X |
| 152-8 | IAC | 150GS | | X |

| PLANT: LOVETT GEN. #4 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-11 | IAC | 150/151-1 | | X |
| 152-11 | IAC | 150/151-2 | | X |
| 152-11 | IAC | 150/151-3 | | X |
| 152-11 | PJC | 150-N | | X |
| 152-12 | IAC | 151-1 | | X |
| 152-12 | IAC | 151-2 | | X |
| 152-12 | IAC | 151-3 | | X |
| 152-12 | IAC | 150-N | | X |
| 152-13 | IAC | 150/151-1 | | X |
| 152-13 | IAC | 150/151-3 | | X |
| 152-13 | PJC | 150GS | | X |
| 152-14 | IAC | 150/151-1 | | X |
| 152-14 | IAC | 150/151-3 | | X |
| 152-14 | PJC | 150GS | | X |
| 152-15 | IAC | 150/151-1 | | X |
| 152-15 | IAC | 150/151-3 | | X |
| 152-15 | PJC | 150GS | | X |
| 152-1U | C0-9 | 151-2/UA4Y-1 | | X |
| Y-WINDING UNIT AUX. | C0-9 | 151-2/UA4Y-2 | | X |
| TRANS. | C0-9 | 151-2/UA4Y-3 | | X |
| 4C1U | C0-9 | 151G/US4C | | X |
| SYNC. CHECK 4C 2L | SLJ21A | 125/5U/4C | | X |
| BUS 4C 4CLL | CV-2 | 127/4C | | X |
| Y WINDING | | | | |
| 152-3L | C0-11 | 150/151/1 | | X |
| FLY ASH | C0-11 | 150/151/2 | | X |
| TRANS. | C0-11 | 150/151/3 | | X |
| 4C3L | ITH | 150G | | X |
| 152-4L | C0-11 | 150/151/1 | | X |
| PRECIPITATOR | C0-11 | 150/151/2 | | X |
| TRANS. | C0-11 | 150/151/3 | | X |
| 4C41 | ITH | 150G | | X |
| 1524U | C0-5 | 150/151/1 | | X |
| ID FAN | C0-5 | 150/151/2 | | X |
| 4B | C0-5 | 150/151/3 | | X |
| 4C4U | ITH | 150G | | X |
| 152-5U | C0-9 | 150/151/1 | | X |
| BUS TIE | C0-9 | 150/151/2 | | X |
| 4C TO 45B | C0-9 | 150/151/3 | | X |
| 4C5U | C0-9 | 150G | | X |
| 4BIDFAN BUS 4C | CV-2 | 127 | | X |

| PLANT: LOVETT GEN. #4 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| X WINDING BUS 4D | CV-2 | 127/4D | | X |
| SYNCH. CHECK 4D21 | SLJ-21A | 125/544D | | X |
| 152-1U | C0-9 | 151-2/UA4X-1 | | X |
| X WINDING UNIT AUX. | C0-9 | 151-2/UA4X-2 | | X |
| TRANS. | C0-9 | 151-2/UA4X-3 | | X |
| 4D1U | C0-9 | 151G/UA4D | | X |
| 152-2U | C0-11 | 150/151-1 | | X |
| BOTTOM ASH | C0-11 | 150/151-2 | | X |
| TRANS. | C0-11 | 150/151-3 | | X |
| 4D2U | ITH | 150G | | X |
| 152-3L | C0-11 | 150/151-1 | | X |
| PRECIPITATOR | C0-11 | 150/151-2 | | X |
| TRANS. | C0-11 | 150/151-3 | | X |
| 4D3L | ITH | 150G | | X |
| 152-4L | C0-5 | 150/151-1 | | X |
| ID FAN | C0-5 | 150/151-2 | | X |
| 4A | C0-5 | 150/151-3 | | X |
| 4D4L | ITH | 150G | | X |
| 152-5U | C0-9 | 151-1 | | X |
| BUS TIE | C0-9 | 151-2 | | X |
| 4D TO 45A | C0-9 | 151-3 | | X |
| 4D5U | C0-9 | 151-G | | X |
| 4DIDFAN BUS 4D | CV-2 | 127 | | X |
| 187SX | IAC | 151NS | | X |
| 447-2 | IJCV | 251G | | X |
| 187-UX | BDD-15 | 187U-1 | | X |
| 187-UX | BDD-15 | 187U-2 | | X |
| 187-UX | BDD-15 | 187U-3 | | X |
| 287-UX | BDD-15 | 287U-1 | | X |
| 287-UX | BDD-15 | 287U-2 | | X |
| 287-UX | BDD-15 | 287U-3 | | X |
| 187-SX | BDD-15 | 187S-1 | | X |
| 187-SX | BDD-15 | 187S-2 | | X |
| 187-SX | BDD-15 | 187S-3 | | X |
| LEAD DIFF. 387 | PVD-11 | 387-1 | | X |
| LEAD DIFF. 387 | PVD-11 | 387-2 | | X |
| LEAD DIFF. 387 | PVD-11 | 387-3 | | X |
| 287GX | CFD-12 | 287G-1 | | X |
| 287GX | CFD-12 | 287G-2 | | X |
| 287GX | CFD-12 | 287G-3 | | X |

| PLANT: LOVETT GEN. #4 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 287GX | IAV | 127A | | X |
| 287GX | IAV | 127B | | X |
| LOCKOUT 259X | IAV | 259 | | X |
| LOCKOUT 259X | GGP | 232 | | X |
| LOCKOUT 259X | SLJ-21 | 125 | | X |
| LOCKOUT 259X | NGV | 127U | | X |
| LOCKOUT 259X | NGV | 127S | | X |
| 447-2 | INC | 246 | | X |
| 447-2 | CFVB | 260 | | X |
| 447-2 | CEH | 240 | | X |
| 447-2 | PJG | 264G | | X |
| 447-2 | GGP | 232P | | X |
| 447-2 | IJS | 25/27 | | X |
| 447-2 | STV | STV-1 | | X |
| 447-2 | STV | STV-2 | | X |
| 187UX | IFC-53 | 151-3/UA4X-1 | | X |
| 187UX | IFC-53 | 151-3/UA4X-2 | | X |
| 187UX | IFC-53 | 151-3/UA4X-3 | | X |
| 187UX | IFC-53 | 151-N/UA4X | | X |
| 187UX | IFC-53 | 151-3/UA4Y-1 | | X |
| 187UX | IFC-53 | 151-3/UA4Y-2 | | X |
| 187UX | IFC-53 | 151-3/UA4Y-3 | | X |
| 187UX | IFC-53 | 151/UA4Y | | X |
| 187UX | IFC-53 | 151/UA4-1 | | X |
| 187UX | IFC-53 | 151/UA4-2 | | X |
| 187UX | IFC-53 | 151/UA4-3 | | X |
| 187UX | SC | 250UA4 | | X |

| PLANT: LOVETT GEN. #5 | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-1 | IAC | 150/151-1 | | X |
| LOAD CENTER TRANS. | IAC | 150/151-2 | | X |
| BUS "A" | IAC | 150/151-3 | | X |
| BUS "A" | PJC | 150N | | X |
| 152-2 | IAC | 150/151-1 | | X |
| F.D. FANS | IAC | 150/151-3 | | X |
| F.D. FANS | PJC | 150-GS | | X |
| 152-3 | IAC | 150/151-1 | | X |
| BOILER FEED | IAC | 150/151-3 | | X |
| PUMP 5-A | PJC | 150-GS | | X |
| 152-5 | IAC | 151-5-5A-1 | | X |
| BUS TIE 5A-54A | IAC | 151-5-5A-2 | | X |
| BUS TIE 5A-54A | IAC | 151-5-5A-3 | | X |
| BUS TIE 5A-54A | IAC | 151N-5A | | X |
| 152-6 | IAC | 150/151-1 | | X |
| CONDENSATE PUMP | IAC | 150/151-3 | | X |
| 5A | PJC | 150-GS | | X |
| 152-7 | IAC | 150/151-1 | | X |
| CIRC WATER | IAC | 150/151-3 | | X |
| PUMP 5A | PJC | 150-GS | | X |
| 5A | IAV | 127-A | | X |
| 5A | | | | X |
| 152-11 | IAC | 150/151-1 | | X |
| 152-11 | IAC | 150/151-2 | | X |
| 152-11 | IAC | 150/151-3 | | X |
| 152-11 | PJC | 150-N | | X |
| 152-12 | IAC | 150/151-1 | | X |
| F.D. FAN 152-12 | IAC | 150/151-3 | | X |
| F.D. FAN 152-12 | PJC | 150-GS | | X |
| 5B BUS VOLTAGE | IAV | 127-B | | X |
| 152-13 | IAC | 150/151-1 | | X |
| BOILER FEED | IAC | 150/151-3 | | X |
| PUMP | PJC | 150-GS | | X |
| 152-14 | IAC | 151-14-1 | | X |
| BUS TIE 5B-54B | IAC | 151-14-2 | | X |
| BUS TIE 5B-54B | IAC | 151-14-3 | | X |
| BUS TIE 5B-54B | IAC | 151-GS-14 | | X |
| 5B BUS VOLTS AUX. | NGV | 127-S | | X |
| TRANS. WINDING | | | | X |

| PLANT: LOVETT GEN. #5 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-15 COND. PUMP | IAC | 150/151-1 | | X |
| 152-15 COND. PUMP | IAC | 150/151-3 | | X |
| 152-15 COND. PUMP | PJC | 150-GS | | X |
| 152-16 | IAC | 150/151-1 | | X |
| CIRC. WATER PUMP | IAC | 150/151-3 | | X |
| CIRC. WATER PUMP | PJC | 150-GS | | X |
| 152-1U | | | | |
| UNIT #5 | C0-9 | 151-2-1 | | X |
| AUX TX | C0-9 | 151-2-2 | | X |
| Y WINDING | C0-9 | 151-1-3 | | X |
| 5C1U | C0-9 | 151FUA5C | | X |
| 152-2U | C0-11 | 150/151/1 | | X |
| BOTTOM ASH TRANS. | C0-11 | 150/151/2 | | X |
| 5C2U | C0-11 | 150/151/3 | | X |
| 5C2U | ITH | 150G | | X |
| SYNC. CHECK 5C2L | SLJ21 | 125/6N/5C | | X |
| AUX. H5TX Y WINDING | CV2 | 127/5C | | X |
| 152-3U | C0-11 | 150/151/1 | | X |
| TANK FXRM | C0-11 | 150/151/2 | | X |
| AUX | C0-11 | 150/151/3 | | X |
| 5C3U | ITH | 150G | | X |
| 152-3L | C0-5 | 150/151M-1 | | X |
| ID FAN | C0-5 | 150/151M-2 | | X |
| MOTOR | C0-5 | 150/151M-3 | | X |
| 5C3L | ITH | 150G | | X |
| 152-5L | C0-11 | 150/151/1 | | X |
| PRECIPITATOR | C0-11 | 150/151/2 | | X |
| IC5C TRANS. | C0-11 | 150/151/3 | | X |
| 152-1U | C0-9 | 151-2/UA5X-1 | | X |
| X WINDING AUX. | C0-9 | 151-2/UA5X-2 | | X |
| TRANS. | | | | |
| BUS 5D | C0-9 | 151-2/UA5X-3 | | X |
| 5D1U | C0-9 | 151G/UA5X | | X |
| SYNC CHECK 5D2L | SLJ-21 | 125/5U5D | | X |
| AUX TRANS | CV-2 | 127/5D | | X |
| X WINDING 5D2L | | | | |
| 152-3U | C0-5 | 150/151-M-1 | | X |
| TD FAN | C0-5 | 150/151-M-2 | | X |
| MOTOR | C0-5 | 150/151-M-3 | | X |
| 5D34 | ITH | 150G | | X |

| PLANT: LOVETT GEN. #5 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-3L | C0-11 | 150/151-1 | | X |
| FLY ASH | C0-11 | 150/151-2 | | X |
| TRANS | C0-11 | 150/151-3 | | X |
| 5D3L | ITH | 150-G | | X |
| 152-4L | C0-11 | 150/151-1 | | X |
| PRECIPITATOR | C0-11 | 150/151-2 | | X |
| TRANS | C0-11 | 150/151-3 | | X |
| 5D4L | ITH | 150/151-G | | X |
| 152-5U | C0-9 | 151-1 | | X |
| TIE BREAKER | C0-9 | 151-2 | | X |
| TO 54A | C0-9 | 151-3 | | X |
| 5D5U | C0-9 | 151-G | | X |
| SYNC. CHECK 54A1U | SLJ21 | 125/5/5A | | X |
| START UP #5 | CV-2 | 127/54A | | X |
| "X" WINDING | | | | |
| START UP #5 | CV-2 | 127/ST5X | | X |
| "X" WINDING | | | | |
| 152-2U | C0-9 | 151-1 | | X |
| BUS TIE 54A TO 5A | C0-9 | 151-2 | | X |
| "X" WINDING | C0-9 | 151-3 | | X |
| 54A2U | C0-9 | 151-G | | X |
| 152-3U | C0-9 | 151-1 | | X |
| BUS TIE 54A TO 5D | C0-9 | 151-2 | | X |
| "X" WINDING | C0-9 | 151-3 | | X |
| 54A3U | C0-9 | 151-G | | X |
| 1524U | C0-9 | 151-1/ST5X | | X |
| "X" WINDING | C0-9 | 151-2/ST5X | | X |
| START UP #5 | | | | |
| BUS 54U 54A4U/4L | C0-9 | 151-3/ST5X | | X |
| MAIN BREAKER | C0-9 | 151-G/S54A | | X |
| 152-1U | C0-9 | 151-1 | | X |
| "Y" WINDING BUS TIE | C0-9 | 151-2 | | X |
| 54B TO 45B | C0-9 | 151-3 | | X |
| 54B-1U | C0-9 | 151-G | | X |
| 152-1L | C0-11 | 150/151-1 | | X |
| "Y" WINDING BUS 54B | C0-11 | 150/151-2 | | X |
| COAL HANDLING | C0-11 | 150/151-3 | | X |
| TRANSFORMER | | | | |
| 54R-1L | ITH | 150G | | X |
| 152-2U | C0-9 | 151-1 | | X |
| "Y" WINDING BUS TIE | C0-9 | 151-2 | | X |
| 54B TO 5B | C0-9 | 151-3 | | X |
| 54B-2U | C0-9 | 151-G | | X |

| PLANT: LOVETT GEN. #5 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 152-3U | C0-9 | 151-1 | | X |
| "Y" WINDING BUS TIE | C0-9 | 151-2 | | X |
| 54B TO 5C | C0-9 | 151-3 | | X |
| 54B-3U | C0-9 | 151-G | | X |
| SYNC. CHECK 54B-2L | SIJ-21 | 125/1U/5B | | X |
| "Y" WINDING #5 STARTUP | CV-2 | 127/54B | | X |
| STARTUP #5 "Y" WINDING | CV-2 | 127/ST5Y | | X |
| 152-4U "Y" WINDING | C0-9 | 151-1/ST5Y | | X |
| START UP #5 BUS 54B3L | C0-9 | 151-2/ST5Y | | X |
| MAIN BREAKER 54B-4U | C0-9 | 151-3/ST5Y | | X |
| | C0-9 | 151-G/ST5Y | | X |
| UNIT #5 AUX. TRANS. | 12BDD15B11A | 187U-1 | | X |
| BANK 547G TRIPS LOCKOUT | 12BDD15B11A | 187U-2 | | X |
| 286X-2 | 12BDD15B11A | 187U-3 | | X |
| UNIT #5 DIFF. | 12BDD15B11A | 287U-1 | | X |
| TRIPS LOCKOUT 286X-2 | 12BDD15B11A | 287U-2 | | X |
| TRIPS LOCKOUT 286X-2 | 12BDD15B11A | 287U-3 | | X |
| 138KV DIFF. | 12PVD11C3A | 387-1 | | X |
| TRIPS LOCKOUT 387X | 12PVD11C3A | 387-2 | | X |
| TRIPS LOCKOUT 387X | 12PVD11C3A | 387-3 | | X |
| UNIT #5 START UP TRANS. | 12BDD16B11A | 187/ST5-1 | | X |
| TRIPS LOCKOUT 586/ST5 | 12BDD16B11A | 187/ST5-2 | | X |
| TRIPS LOCKOUT 586/ST5 | 12BDD16B11A | 187/ST5-3 | | X |
| UNIT #5 BUS DIFF. | 12PVD21B1A | 187/SWYD/1 | | X |
| FOR 138KV TRIPS LOCKOUT | 12PVD21B1A | 187/SWYD/2 | | X |
| 586/ST5 | 12PVD21B1A | 187/SWYD/3 | | X |
| UNIT #5 DIFF. GEN. | 12CFD12B1A | 287G-1 | | X |
| TRIPS LOCKOUT 286X-1 | 12CFD12B1A | 287G-2 | | X |
| TRIPS LOCKOUT 286X-1 | 12CFD12B1A | 287G-3 | | X |

| PLANT: LOVETT GEN. #5 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| GEN. VOLTAGE BAL. ALARM | 12CFVB11A3A | 260 | | X |
| GEN. INST. OVERCURRENT | 12PJC31C67A | 250G | | X |
| GEN. NEUTRAL OVERVOLTAGE TRIP LOCKOUT 286X-2 | 12TAV51D2A | 259 | | X |
| TIMER | 12RPM14D32A | 221T | | X |
| GEN. UNDER-FREQ. | 12CFF12A63A | 281 | | X |
| GEN. FIELD GRO. DETECTOR | 12PJG11FGA | 264-G | | X |
| GEN. OFFSET MHO BLOCKING | 12CEB13C12A | 221 | | X |
| GEN OCB SYNC. CHECK | 121JS51A1A | 325 | | X |
| LOSS OF FIELD TRIPS LOCKOUT 240X | 12CEH11A3A | 240 | | X |
| 138KV BUS UNDERVOLTAGE | SG | 327 | | X |
| GEN. NEG. PHASE SEQ. | 12INC77B3A | 246 | | X |
| GEN. #5 ANTI-MOTOR | 12G6P53B1A | 232 | | X |
| TURBINE RUNBACK | 12IAC59C | 37C1 | | X |
| TURBINE RUNBACK | 12IAC59C | 37C2 | | X |
| VOLTAGE BAL. ALARM | 12CFW11E30A | 237 | | X |
| GEN. OCB TRIP PERMISSIVE | 12G6P53C1A | 232P | | X |
| UNIT #5 START-UP FEEDER | IFC-53B3A | 150/151/Sø1 | | X |
| 138YD TRIPS LOCKOUT | IFC-53B3A | 150/151/Sø2 | | X |
| 586/ST5 | IFC-53B3A | 150/151/Sø3 | | X |
| UNIT #5 START-UP TRANS. | 121FC-53A1A | 151-2/5TSXø1 | | X |
| "X" WINDING | 121FC-53A1A | 151-2/5TSXø2 | | X |
| TRIPS LOCKOUT 586/ST5 | 121FC-53A1A | 151-2/5TSXø3 | | X |
| TRIPS LOCKOUT 586/ST5 | 121FC-53A2A | 151N/ST5X | | X |

| PLANT: LOVETT GEN. #5 (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| #5 SYNC. CHECK | 12SLJ21A1A | 25SLJ | | X |
| UNIT #5 START UP TRANS. | 12IFC53A1A | 152-2/ST5Yø1 | | X |
| "Y" WINDING | 12IFC53A1A | 152-2/ST5Yø2 | | X |
| TRIPS LOCKOUT 586/ST-5 | 12IFC53A1A | 152-2/ST5Yø3 | | X |
| TRIPS LOCKOUT 586/ST-5 | 12IFC53A2A | 151N/ST5Y | | X |
| UNIT #5 AUX. TRANS. | 12IFC53A1A | 151-3/UA5Xø1 | | X |
| "X" WINDING | 12IFC53A1A | 151-3/UA5Xø2 | | X |
| "X" WINDING | 12IFC53A1A | 151-3/UA5Xø3 | | X |
| "X" WINDING | 12IFC53AD2A | 151N/UA5X | | X |
| UNIT #5 AUX. TRANS. | 12IFC53A1A | 151-3/UA5Y/ø1 | | X |
| "Y" WINDING | 12IFC53A1A | 151-3/UA5Y/ø2 | | X |
| "Y" WINDING | 12IFC53A1A | 151-3/UA5Y/ø3 | | X |
| "Y" WINDING | 12IFC53AD2A | 151N-UA5Y | | X |
| UNIT #5 AUX. | SC | 250/UA5 | | X |
| UNIT AUX. #5 TRANS. | 12IFC53A2A | 151-1/UA5 | | X |
| UNIT AUX. #5 TRANS. | 12IFC53A2A | 151-2/UA5 | | X |
| UNIT AUX. #5 TRANS. | 12IFC53A2A | 151-3/UA5 | | X |

**PLANT - LOVETT 69KV YARD**

**DIVESTED ASSET - OCB 133-2X (DISCONNECTED)**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| | AC CONTROL POWER | | X |
| 62-104 | CONTROL | | X |
| 41 | CONTROL | | X |
| 22 | CONTROL | | X |
| 34 | SPARE | | X |
| 37 | SPARE | | X |
| 35 | SPARE | | X |
| 33 | SPARE | | X |
| 36-104 | 69KV BUS DIFFERENTIAL | X | |

**PLANT - LOVETT 69KV YARD**

**DIVESTED ASSET - OCB 133-2Y (DISCONNECTED)**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| | AC CONTROL POWER | | X |
| 62-103 | CONTROL | | X |
| 22 | CONTROL | | X |
| 37 | SPARE | | X |
| 31 | SPARE | | X |
| 36 | SPARE | | X |
| 35 | SPARE | | X |
| 21-202K | CONTROL | | X |
| 21-202L | CONTROL | | X |
| 36-103 | 69KV BUS DIFFERENTIAL | X | |

**PLANT - LOVETT 69KV YARD**

**DIVESTED ASSET - OCB 233-2X**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 21-202F | CONTROL | | X |
| 21-202E | CONTROL | | X |
| 62-2022 | CONTROL | | X |
| 36-202 | 69KV BUS DIFFERENTIAL | X | |

| PLANT - LOVETT 69KV YARD | | | |
|---|---|---|---|
| **DIVESTED ASSET - OCB 233-2Y** | | | |
| | | OWNER | |
| CABLE # | FUNCTION | ORU | SEI |
| 62-2011 | CONTROL | | X |
| 21-202A | CONTROL | | X |
| 21-202A | CONTROL | | X |
| 36-201 | 69KV BUS DIFFERENTIAL | X | |

**PLANT - LOVETT 69KV YARD**

**DIVESTED ASSET - OCB 333-2X**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 26 | CONTROL | | X |
| 62-305 | CONTROL | | X |
| 62-318 | CONTROL | | X |
| 37-1 | 69KV BUS DIFFERENTIAL | X | |

| PLANT - LOVETT 69KV YARD | | | |
|---|---|---|---|
| **DIVESTED ASSET - OCB 333-2Y** | | | |
| | | OWNER | |
| CABLE # | FUNCTION | ORU | SEI |
| 27 | CONTROL | | X |
| 62-306 | CONTROL | | X |
| 62-319 | CONTROL | | X |
| 37-2 | 69KV BUS DIFFERENTIAL | X | |

**PLANT - LOVETT 69KV YARD**

**DIVESTED ASSET - OCB 733-2X**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 29 | SPARE | | X |
| | AC CONTROL POWER | | X |
| 62-105 | CONTROL | | X |
| 41 | CONTROL | | X |
| 23 | CONTROL | | X |
| 30 | SPARE | | X |
| 38 | SPARE | | X |
| 32 | SPARE | | X |
| 34 | SPARE | | X |
| 36-105 | 69KV BUS DIFFERENTIAL | X | |
| 42 | BANK 733 DIFFERENTIAL | | X |

**PLANT - LOVETT 69KV YARD**

**DIVESTED ASSET - OCB 733-2Y**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 36-106 | CONTROL | | X |
| 23 | CONTROL | | X |
| 21-202J | CONTROL | | X |
| 21-202K | CONTROL | | X |
| 36-208 | 69KV BUS DIFFERENTIAL | X | |
| 42 | BANK 733 DIFFERENTIAL | | X |
| 189 | BANK 733 DIFFERENTIAL | | X |

**PLANT - LOVETT 138KV YARD**

**DIVESTED ASSET - 447-2**
**BZ0-138-10,000-2-P (1600AMP)**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 394 | BREAKER FAILURE | | X |
| 299 | GENERATOR LEADS DIFFERENTIAL | | X |
| 298 | 138KV BUS DIFFERENTIAL | X | |
| 302 | CONTROL | | X |
| 300 | AC CONTROL POWER | | X |
| 303 | CONTROL | | X |
| 301 | CONTROL | | X |

**PLANT - LOVETT 138KV YARD**

**DIVESTED ASSET - 547-2**
**BZ0-138-10,000-2-P (1600AMP)**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 367 | BREAKER FAILURE | | X |
| 354 | LEADS DIFFERENTIAL | | X |
| 350 | 138KV BUS DIFFERENTIAL | X | |
| 368 | CONTROL | | X |
| 357 | CONTROL | | X |
| 356 | CONTROL | | X |
| 355 | CONTROL | | X |
| 366 | AC CONTROL POWER | | X |

**PLANT - LOVETT 138KV YARD**

**DIVESTED ASSET - 647-2**
**BZ0-138-10,000 (2000AMP)**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 217 | BANK 647 RELAYING/OSCI | | X |
| 462 | SPARE | | X |
| 461 | BANK 647 DIFFERENTIAL | | X |
| 218 | 138KV BUS DIFFERENTIAL | X | |
| 242 | SPARE | X | |
| 201 | SPARE | X | |
| 220 | CONTROL | | X |
| 464 | CONTROL | | X |
| 465 | CONTROL | | X |
| 219 | CONTROL | | X |
| 221 | AC CONTROL POWER | | X |

Schedule D to Continuing Site/Interconnection Agreement

Schedule D

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

BLACK START AND SYSTEM RESTORATION PLAN

OI 6-E-11

SHEET 1 of 32

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 PCC. 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.

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) 352-0096 |
| 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 | |

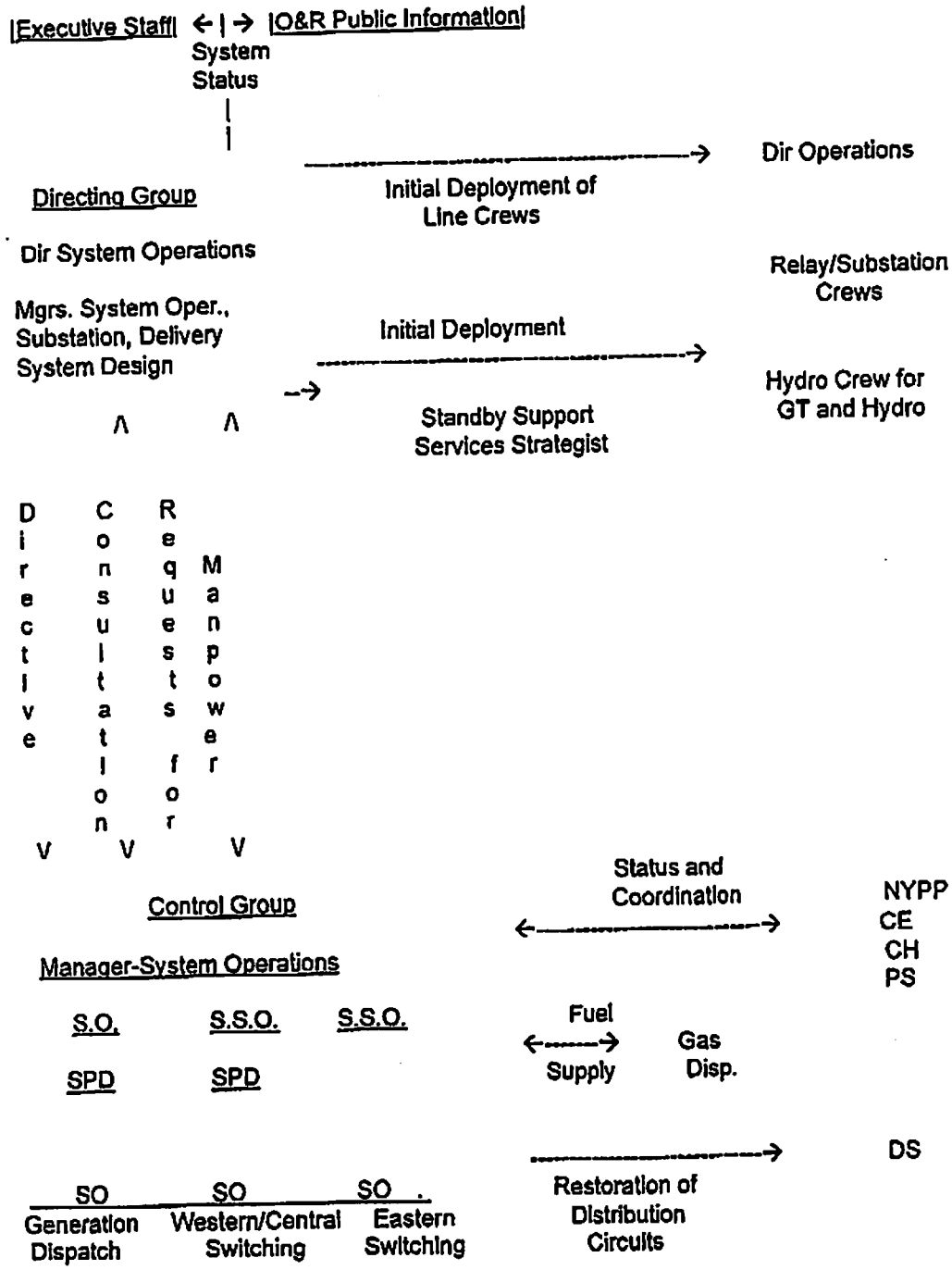
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Procedural Outline

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

I. 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. 2644 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) 354-9550 |

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 personnel.

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 )<br>West Nyack )<br>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 )<br>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 )<br>Harriman ) | 1 Substation Crew | 1 Relay Crew |
| Montvale )<br>Pearl River ) | 1 Substation Crew | 1 Relay Crew |

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<br>6-8-2K<br>6-9-2K<br>Line 7 distribution<br>10-6-2 | 11-6-2<br>7-6-2K |
| Shoemaker | 11-1-2K<br>11-2-2K<br>11-3-2K<br>11-4-2K<br>11-5-2K<br>4-11-2 | | 6-11-2<br>20-11-2<br>19-11-2<br>11-11-2<br>120-11-2 |
| Silver Lake | | 122-113-2<br>113-1-2K<br>113-2-2K<br>113-3-2K | |
| Cuddebackville | | 10-5-2<br>4-5-2<br>3-5-2 | |
| Mongaup | | 2-1-2K | |
| East Wallkill | 15-1-2B<br>15-2-2B<br>15-3-2B | | 15-4-2K<br>15-5-2K<br>15-6-2K |

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Central Division

| | | | |
|---|---|---|---|
| Sterling Forest | | 67-1-2K<br>67-2-2K | |
| Harriman | 71-3-2B<br>71-4-2B<br>71-5-2B<br>71-6-2B | | 71-1-2B<br>71-2-2B<br>71-7-2B<br>71-8-2B |
| South Goshen | | 89-1-2K<br>89-2-2K<br>89-3-2K<br>89-10-2K<br>89-11-2K | |
| Ringwood | | 78-1-2K<br>78-2-2K | |
| West Milford | 79-4-2K<br>79-5-2K<br>79-6-2K | 79-1-2B<br>79-2-2B<br>79-3-2B | 79-7-2B<br>79-8-2B |
| Wisner | | 80-1-2K<br>80-2-2K<br>80-3-2K<br>80-4-2K<br>80-5-2K | |
| Monroe | | 82-61-2<br>83-61-2<br>61-1-2K<br>61-2-2K<br>61-3-2K<br>61-4-2K | |
| Hunt | | 84-1-2K<br>84-2-2K | |
| Lake Road | | 82-1-2B<br>82-2-2B | |

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| | |
|---|---|
| Blooming Grove | 76-1-2K<br>76-3-2K<br>76-4-2K |
| Highland Falls | 73-1-2K<br>73-5-2K<br>73-6-2K |
| Eastern Division | |
| Hillburn | 17-1-2K<br>17-2-2K |
| Montvale | 29-1-2B<br>29-2-2B<br>29-3-2B<br>29-4-2B<br>43-29-4<br>44-29-4 |
| Allendale | 39-1-2B<br>39-2-2B<br>39-3-2B<br>39-4-2B<br>39-5-2B<br>39-6-2B<br>39-7-2B<br>39-8-2B |
| Nanuet | 53-1-2B<br>53-2-2B<br>53-3-2B<br>53-4-2B<br>53-5-2B<br>53-6-2B<br>53-7-2B<br>53-8-2B |
| Orangeburg | 54-1-2B<br>54-2-2B<br>54-3-2B<br>54-5-2B<br>54-6-2B |

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| | |
|---|---|
| Grand Avenue | 60-1-2B<br>60-2-2B<br>60-3-2B<br>60-4-2K<br>60-5-2K |
| Upper Saddle River | 49-1-2B<br>49-2-2B<br>49-3-2B<br>49-4-2B |
| Sparkill | 50-1-2B<br>50-2-2B<br>50-3-2B<br>50-4-2B |
| South Mahwah | 52-1-2B<br>52-2-2B<br>62-3-2B<br>62-4-2B<br>58-1-2K<br>58-2-2K<br>58-3-2K |
| Franklin Lakes | 35-5-2B<br>35-6-2B<br>35-7-2B<br>35-8-2B<br>35-9-2B<br>35-10-2B |
| Oakland | 36-1-2K<br>36-2-2K<br>36-3-2K<br>36-4-2K |
| Cresskill | 37-1-2B<br>37-2-2B<br>37-3-2B |
| Harings Corner | 30-1-2B<br>30-2-2B<br>30-3-2B<br>30-4-2K<br>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 | |

| | |
|---|---|
| Burns | 19-8-2B<br>19-9-2B<br>19-12-2B<br>19-13-2B<br>19-10-2B<br>19-11-2B<br>19-14-2B (ECC Feed)<br>19-15-2B |
| West Nyack | 21-9-2B<br>21-10-2B<br>21-11-2B<br>21-12-2B<br>21-13-2B<br>21-14-2B<br>21-15-2B<br>21-16-2B<br>21-17-2B |
| Ford | 38-1-2B<br>38-2-2B<br>38-3-2K<br>38-4-2K |
| Sloatsburg | 42-1-2B<br>42-2-2B<br>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 819 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 263 |
| 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 56-47-2
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-89-59
8. Open or check open switch GT-17-2X
9. Open or check open switch 59-17-2X
10. Open or check open switch 65-17-2X
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

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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 Lederle 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 50-31-2
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 T1-53-2

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 819-2
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 25-11-2
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 911 station service.) This also energizes Cuddebackville substation.
8. Close or check closed switch T211-5

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BLACK START AND SYSTEM RESTORATION PLAN SHEET 20 of 32

Should excess generation be available at this point in the restoration, switch 119-11-2 should be closed and the East Wallkill 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 15-2-2
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 auxillary 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 providing 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 Haverstraw
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 55MVA 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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ELECTRIC SYSTEM OPERATIONS

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BLACK START AND SYSTEM RESTORATION PLAN SHEET 23 of 32

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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ELECTRIC SYSTEM OPERATIONS

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BLACK START AND SYSTEM RESTORATION PLAN SHEET 24 of 32

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 Harings 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 562-22-2
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

At Burns
1. Close or check closed switch 60-19-2X
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 49.0MVA 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

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BLACK START AND SYSTEM RESTORATION PLAN SHEET 26 of 32

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 656-29-2
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 917-2X

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 T51-585
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 57-35-2
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 Harings Corner by closing 658-30-2, from Hillburn 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 | 146 and 246 |
| Grand Avenue | 160 and 260 |
| Upper Saddle River | 149 |
| South Mahwah | 452 |
| Franklin Lakes | 335 and 435 |
| Montvale | 429 |
| Oakland | 136 |

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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BLACK START AND SYSTEM RESTORATION PLAN SHEET 28 of 32

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 2.6 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 Closter
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

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

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BLACK START AND SYSTEM RESTORATION PLAN SHEET 29 of 32

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 46-30-2. 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 89-78-2
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

ORANGE AND ROCKLAND UTILITIES, INC.
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BLACK START AND SYSTEM RESTORATION PLAN SHEET 31 of 32

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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BLACK START AND SYSTEM RESTORATION PLAN SHEET 32 of 32

APPENDIX 1
February 1991

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<br>T111-27<br>6-11-2 | 13-11-2<br>111-11-2Y<br>11-11-2 | 24-11-2<br>211-11-2Y<br>211-2 | 25-11-2<br>T211-5<br>111-2 | 27-11-2X<br>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 OCBs | | | | |
| West Haverstraw | All breakers | | | | |
| Hillburn | 89-17-2Y<br>T-89-59<br>65-17-2X | 317-2Y<br>T317-65<br>417-2X | 31-17-2Y<br>T417-31<br>917-2X | 23-17-2Y<br>T917-23 | 59-17-2X |
| South Mahwah | T258-J3410<br>587-58-2Y | | 258-58-2X<br>T2-52-2 | | T258-587<br>585-58-2Y |
| Bowline | T255-68 | T155-67 | | | |
| Burns | 50-19-2 | | | | |
| Harings Corner | 45-30-2 | | | | |

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

# PRODUCTION METER LOCATIONS - LOVETT

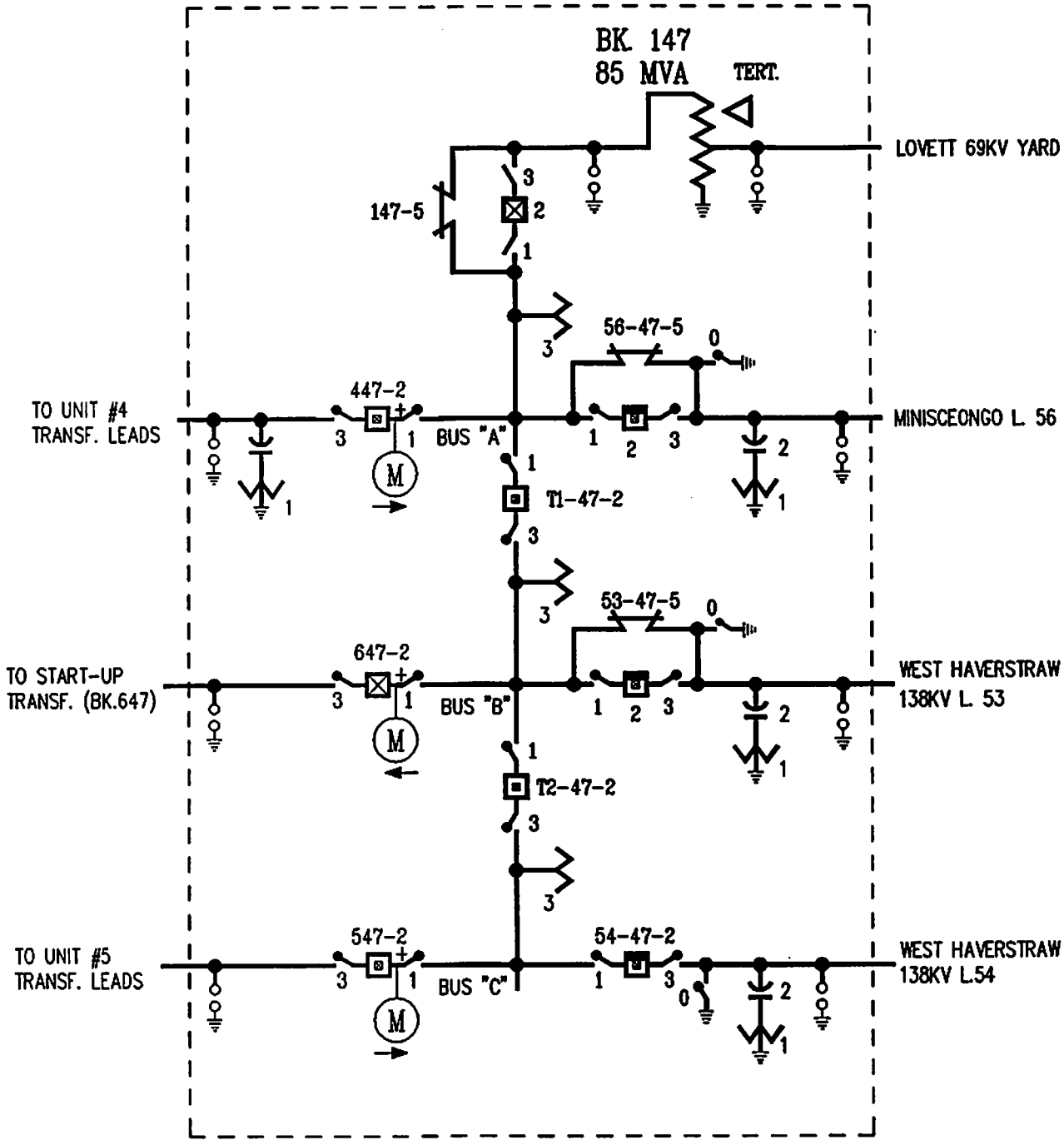
| DESCRIPTION | COMPANY USE | PURPOSE | ACCT/METER # | LOCATION | COMPENSATION REQUIRED |
|---|---|---|---|---|---|
| Lovett Plant | Electric | Unit #1 Main<br>Unit #1 Aux | S/N 030925388<br>S/N 030925343 | Out of Service | Out of Service |
| Lovett Plant | Electric | Unit #2 Main<br>Unit #2 Aux | S/N 030925346<br>S/N 030925389 | Out of Service | Out of Service |
| Lovett Plant | Electric | Unit #3 Main<br>Unit #3 Aux | S/N 030925344<br>S/N 030968140 | 13.8KV System<br>2.4KV System | Bank 333<br>Bank 333G |
| Lovett Plant | Electric | Unit #3 - Bank 533 | S/N 030925304 | 2.4KV System | Bank 533 |
| Lovett Plant | Electric | Unit #4 Main<br>Unit #4 Aux | S/N 030944267<br>S/N 030944222 | 20KV System<br>4.16KV System | Bank 447<br>Bank 447G |
| Lovett Plant | Electric | Unit #5 Main<br>Unit #5 Aux<br>Unit #5 Start-up | S/N 030852175<br>S/N 030944265 | 20KV System<br>4.16KV System<br>4.16KV System | Bank 547<br>Bank 547G<br>Bank 647 |

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

# ANTICIPATED METER POINTS FOR PRODUCTION METERS

| STATION NAME | STATION NO. | DATE |
|---|---|---|
| LOVETT | GDM47-A | 5-6-99 |
| LOVETT | GDM33-A | 5-6-99 |
| LOVETT | GDM33-C | 5-6-99 |

GDM47-A




+ OWNERSHIP POINT OF DEMARCATION

| | | |
|---|---|---|
| OR | LOVETT 138KV<br>ANTICIPATED METER POINTS | 47 |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

GDM33-A



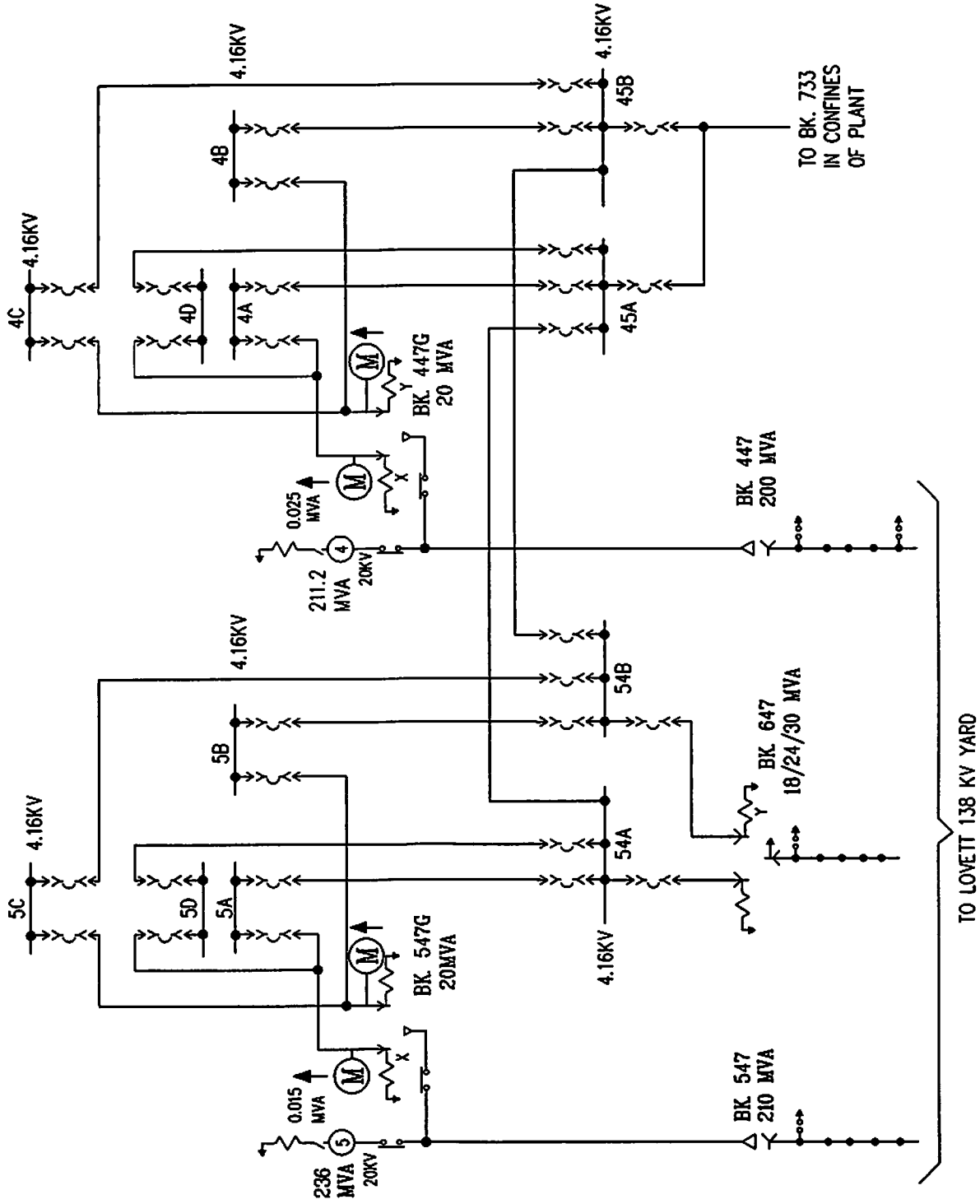

* = COMPENSATED METER
+ OWNERSHIP POINT OF DEMARCATION

# LOVETT
## ANTICIPATED METER POINTS

33

| | | |
|---|---|---|
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

GDM33-C




| | | |
|---|---|---|
| | LOVETT 4.16 KV<br>ANTICIPATED METER POINTS | 33 |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

Schedule G to Continuing Site/Interconnection Agreement

# METERING FOR RETAIL ACCOUNTS - LOVETT

| DESCRIPTION | COMPANY USE | PURPOSE | ACCT/METER # | OWNER | | COMMENTS |
|---|---|---|---|---|---|---|
| | | | | ORU | SEI | |
| Lovett Plant | Electric | Gas Regulator Building | 054256791 | | X | Secondary Service |
| Lovett Plant | Electric | | 062067973 | | X | Secondary Service |
| Lovett Plant | Electric | Telephone Room | 076972762 | | X | Secondary Service |
| Lovett Plant | Electric | Oil Pump House Service | 082678705 | | X | Secondary Service |
| Lovett Plant | Electric | Fly Ash Site Service | 082776284 | | X | Secondary Service |
| Lovett Plant | Gas | Warehouse Heat | 167005365 | | X | |
| Lovett Plant | Gas | Car Thawing | 5810000028 | | X | |

Schedule H to Continuing Site/Interconnection Agreement

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

ECC SWITCHING PRACTICES

OI 1-S-4

SHEET 1 of 10

This Operating Instruction defines the responsibility of the System Operations Department in directing and performing transmission switching.

1. Be knowledgeable in, and observe all safety rules and practices as set forth in the Orange and Rockland Safety Manual.

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

a) Only necessary switching should be performed to provide for complete safety clearance required; any unnecessary switching should be eliminated.
b) Always interrupt load with a breaker where one is available; a load break device would be a second choice if no breaker is available.
c) Switching should be written such that it will minimize unnecessary travel; assume only one crew will be available to switch.
d) Disable relaying only when necessary, such as for breaker failure relays during trip tests.
e) Telephones should be used for switching whenever available, keeping radio use to a minimum.
f) 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.

3. When removing lines or equipment from service, the System Operator shall adhere to the following procedures:

a) Perform the necessary control functions to open the breaker or switch. Supervisory control will always be used to open or close breakers, air breaks, or any remotely controlled switch to verify supervisory capability.
b) Place a control inhibit tag and verify a blue "C" on the CRT screen.
c) Have the supervisory control turned off at the station for the device(s) that are included in the area of switching.
d) Have the switchman turn the recloser off if breaker is so equipped. Reclosers should be left on during relay trip testing and underfrequency trip testing to verify lockout feature.
e) 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.
f) In the case of a motor operated air break 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.
g) After being certain that all possible safety precautions have been taken where operation by supervisory is concerned, proceed with the manual portion of the switch order as detailed in the Orange and Rockland Safety Manual (see attachment).
h) Observe proper use of the word clearance by always specifying what the purpose of the clearance is; e.g., "Clearance to (name) to test and ground" on a specific facility or work area; "Clearance to (name) to doble test" on specific equipment, or "Clearance to (name) to trip test" a specific breaker.
i) Always adhere to the testing and grounding procedures as detailed in the Orange and Rockland Safety Manual, Section 1.3.3. K, L, M.

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ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

ECC SWITCHING PRACTICES

OI 1-S-4

SHEET 1 of 10

This Operating Instruction defines the responsibility of the System Operations Department in directing and performing transmission switching.

1. Be knowledgeable in, and observe all safety rules and practices as set forth in the Orange and Rockland Safety Manual.

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

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c) Switching should be written such that it will minimize unnecessary travel; assume only one crew will be available to switch.
d) Disable relaying only when necessary, such as for breaker failure relays during trip tests.
e) Telephones should be used for switching whenever available, keeping radio use to a minimum.
f) 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.

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c) Have the supervisory control turned off at the station for the device(s) that are included in the area of switching.
d) Have the switchman turn the recloser off if breaker is so equipped. Reclosers should be left on during relay trip testing and underfrequency trip testing to verify lockout feature.
e) 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.
f) In the case of a motor operated air break 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.
g) After being certain that all possible safety precautions have been taken where operation by supervisory is concerned, proceed with the manual portion of the switch order as detailed in the Orange and Rockland Safety Manual (see attachment).
h) Observe proper use of the word clearance by always specifying what the purpose of the clearance is; e.g., "Clearance to (name) to test and ground" on a specific facility or work area; "Clearance to (name) to doble test" on specific equipment, or "Clearance to (name) to trip test" a specific breaker.
i) Always adhere to the testing and grounding procedures as detailed in the Orange and Rockland Safety Manual, Section 1.3.3. K, L, M.

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4. When returning a facility to service complete the restoration process in the reverse order as above with the following exception:

a) When a line has been removed for maintenance and when one end of the line is equipped with a circuit breaker and the other a 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.

5. When turning a recloser off and installing a white caution tag:

a) Perform necessary steps to change recloser to off position
b) Verify change on screen
c) Perform necessary steps to install white caution tag
d) Verify "control inhibit C" on screen
e) Give clearance making certain person receiving same is aware he has white caution tag and recloser protection only.

1.3 SYSTEM OPERATIONS TAGGING PROCEDURE

1.3.1 BASIC PRINCIPLE FOR TAGGING EQUIPMENT UNDER THE JURISDICTION OF THE SYSTEM OPERATOR

A. 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.)

B. The standard safety tags are approximately three by six inches containing eyelets for tying with twine to operating and control handles of the apparatus. The tags used under the System Operator's supervision are in three colors (red, green and white) each color having a distinct purpose and in no case will any tag be used for any purpose other than that for which it is intended. (See Section 1.3.8 for description of green tag.)

C. The Red Tag with black lettering (System Operator's Safety Tag) is used only under the supervision of the System Operator and or Distribution Supervisor. Its use is for high voltage equipment and associated control mechanisms together with any low voltage equipment that the System Operator may designate.

Facilities which have had red tags applied may not be operated under any conditions until the qualified employee whose name is on the tags releases them.

D. The White Caution Tag is used when work is to be done on or near a live circuit or device where contact with the facility is a possibility. Should a white tagged circuit or device trip for any cause it shall not be restored until clearance is received from the person at the job site whose name is on the tag. Where the System Operator possesses supervisory control of the necessary reclosers and the breakers he may issue white caution tag clearance after inhibiting and tagging the appropriate control devices on his computer screen.

E. Each Department Manager, Superintendent or Supervisor shall designate the qualified employees who may have equipment tagged out. Each Manager, Superintendent or Supervisor shall provide System Operations with a quarterly updated list of qualified employees. Equipment shall be tagged only for the persons on these lists. It shall be the responsibility of the Manager, Superintendent, or Supervisor to determine which employees are qualified.

F. 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 TAG ON THE JOB SITE. THE PERSON IN CHARGE MUST BE AVAILABLE AT THE JOB SITE TO CLEAR PEOPLE OFF EQUIPMENT AND/OR LINES IN ORDER TO RESTORE THEM IN AN EMERGENCY.

G. In filling out tags, care should be taken that all the required information is complete, correct and legible.

H. Tags shall be tied securely to the control handle of equipment with stout twine. Where the control handle does not exist, such as on single phase disconnect switches, the tag shall be fastened in an approved manner such as by using the hotstick tag holder.

I. When the person in charge of a job is scheduled to be absent and the job is expected to be continued he should arrange with the System Operator and their Department Manager, Superintendent and/or Supervisor to have his tags released and/or replaced. (The new tags shall be put on when the original tags are removed.) In the event of an unforeseen absence, the Plant, Line or Substation Supervisor can assume the responsibility of the tag and appoint a new person in charge.

J. Qualified Engineering Department personnel may parallel tag apparatus with electrical Distribution, Transmission, Substation, Generating Plant personnel or System Operators. This tagging is subject to the approval of the System Operator. The tags are to be placed and removed by the qualified Substation employees.

K. 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.

L. 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 own tags by the method given above.

## 1.3.2 SCHEDULING WORK ON EQUIPMENT UNDER THE SYSTEM OPERATOR'S JURISDICTION

A. The appropriate Line or Substation Department Manager, Superintendent, Supervisor or their designated representatives may request the System Operator to release equipment under his jurisdiction for work as follows:

1. All non-emergency work requiring the removal of equipment or lines from service must be requested at least 72 hours in advance of the performance of such work by use of the Transmission/Distribution Clearance Request Form. This request shall be filled out in its entirety and shall be made to the System Operations Switching Manager or, in his absence, the System Operator directly, by the person in whose name the circuit or equipment is to be tagged or by his supervisor.

2. During the construction of new equipment where installation or construction work has progressed to where any piece of transmission or distribution equipment within the substation fence may be energized from any station or other external source, the System Operator SHALL be so informed by the Engineering Department as follows:

a) This information SHALL be in writing and SHALL indicate by sketch its location with respect to the then existing System Diagram and Substation one lines and SHALL specify the Qualified Engineering Department representative in whose name protective tagging should be issued.

b) The System Operator will immediately order the qualified employees to tag out of service with two (2) Red Tags, all switches and control equipment that could energize the new equipment.

c) These tags will be made out in the name of the qualified substation or relay employee. All requests for placing or removal of tags for energizing equipment for test purposes will be made to the System Operator through the qualified substation or relay employee.

d) Revisions or additions to the System Diagram Substation One Line diagrams and Energy Management System located in the Energy Control Center MUST be made before any new equipment or line is placed in service.

3. FOR EMERGENCY WORK THE PERSON WHO IS TO BE IN CHARGE OF THE JOB WILL CONSULT WITH THE SYSTEM OPERATOR AS TO WHAT EQUIPMENT SHOULD BE CLEARED AND TAGGED OUT IN ORDER TO MAKE THE JOB SAFE.

1.3.3 BASIC PRINCIPLES OF SWITCHING

A. All persons entering Substations or switching stations SHALL notify the System Operator upon arrival.

B. The System Operator will direct all switching steps to the employee PERFORMING the switching who in turn will repeat these steps acknowledging their correctness or calling attention to any discrepancies. If the conversation is interrupted contact shall be re-established and all steps repeated to insure accuracy.

C. After completing the switching steps ordered by the System Operator the employee performing the switching will report the time each step was accomplished. The System Operator will record all times on a System Operations Department Switch Order and will repeat these steps acknowledging their correctness or calling attention to discrepancies. Again, if the conversation is interrupted, contact shall be re-established and all steps repeated to insure accuracy.

D. Great care must be taken that the conversation involved in these switching procedures are accurately given and fully understood. Lines and equipment designation shall be given in full. Slang terms shall not be used.

E. Upon opening any motor or manually operated air break or disconnect switch, it is the responsibility of the employee performing the switching to visually check open all three phases.

F. After having been opened for safety clearance, a motor operated disconnect and/or air break must be operationally disabled.

G. Switching for safety clearance will not be considered complete unless one or more devices provide a visible air break which will separate the equipment requested out of service from all sources which can energize the equipment.

H. Upon opening any circuit breaker, it is the responsibility of the employee PERFORMING the switching to "check that the breaker is open." When issued this order, the employee will proceed to the circuit breaker of the line which has just been opened and check that the breaker is open either by inspection of the operating rods on an open type breaker or by inspection of the position indicator on a totally enclosed breaker.

I. Where disconnecting switches and any of the various type circuit breakers are connected in series, the disconnecting switches SHALL be used only for isolating the circuit breakers and for no other purpose. The disconnecting switches MUST be closed before the circuit breakers are closed and opened only after the circuit breaker has been opened and the position of the breaker operating mechanism observed to be in the open position.

J. Disconnecting switches SHALL never be used to open a load on a high voltage line or power transformer. A switch designed for interrupting duty MUST always be used, even though it means interrupting service. If possible, the magnetizing current of a power transformer SHALL be broken with a load interrupt type switch. If none is provided, the gang-operated disconnecting switch on the high side of the transformer shall be used.

K. Upon completion of the required switching to isolate a piece of equipment or facility for field work, the System Operator will issue "Clearance to (name) to test and ground on" that piece of equipment or facility. Field personnel will notify the System Operator when testing procedures have been carried out and portable field grounds have been applied. At that point, the System Operator will give "Clearance to (name) to" perform the specified work on the isolated area as arranged. The System Operator will be specific as to what clearance is being given for.

L. If the isolated area being switched out does not require testing and grounding procedures to be implemented (as determined by the field personnel), the individual for whom the area is being tagged will indicate this to the System Operator at which point clearance to perform the assigned work will be given.

M. When work has been completed on the equipment or facility, the tag holder will notify the System Operator of same, at which point the System Operator will instruct the field personnel to remove all field grounds. System Operator will then be notified when all field grounds have been removed and switching to restore the equipment or facility can then begin.

1.3.4 GENERAL PROCEDURE REMOVING A LINE FROM SERVICE WHICH IS UNDER THE JURISDICTION
OF THE SYSTEM OPERATOR

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.

1. The System Operator will then open the breaker via supervisory control and tag the breaker on CRT 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.

2. The switchman will be directed to confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled, unless ordered otherwise. 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.
3. Check open the by-pass switch where one exists.
4. Open the appropriate disconnects and if gang operated, secure with lock or fastening device. Manually operated disconnect switches shall be locked as designated.
5. 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.
6. 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:

1. Confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled unless otherwise ordered. On switches which are remotely controlled by supervisory equipment, place the switch in the "local" position.
2. Check open the by-pass switch where one exists.
3. Open the appropriate disconnects and, if gang operated, secure with lock or fastening device.
4. 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.
5. Close the ground switch and lock. Check that all ground switch blades are in correct positions.
6. 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:

1. Close the ground switch and lock.
2. 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.

F. The System Operator will then release the line to the person or persons in charge of the work specifically designating the location at which the circuit has been opened and tagged.

1.3.5 RECEIVING CLEARANCE FROM THE SYSTEM OPERATOR

Line Clearances will be given as outlined in section 1.3.3 for substation personnel.

Clearance is issued when the System Operator contacts the tagholder and indicates that "Clearance is given to test and ground on" a facility. Upon completion of the testing for potential and after having installed field grounds, the tagholder will notify the System Operator of same. The System Operator will then communicate and record the following information:

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

1.3.6 TRANSFERRING TAGS

A. When the employee for whom the line or equipment has been tagged (hereinafter called John Doe) desires to release his tag so that the line or equipment may be tagged in the name of another person (hereinafter referred to as Richard Roe) he SHALL proceed as follows:

1. Make sure that Richard Roe is available, has examined the field grounds, if any, and is prepared to assume responsibility for the work in progress on the line or equipment which is to be tagged in his name.

2. Request the System Operator to place Richard Roe's tag on the line or equipment, giving its complete designation, the reason for the transfer and pertinent data as to the status of the work.

B. The System Operator will repeat the message and after its correctness is acknowledged by John Doe, will have Richard Roe's tag applied and notify Richard Roe that the line or equipment is tagged in his name. The System Operator will repeat, in detail, all information covered in Part A above. The transaction shall not be considered complete until Richard Roe has repeated the message back to the System Operator, in detail, and the System Operator has acknowledged the repetition as correct. If this conversation is interrupted, contact SHALL be re-established and the conversation finished before the transaction is considered complete. John Doe SHALL then release his tag by the same method given.

C. The person named on the tag or, in his absence, his supervisor, are the only ones who may request the transfer of the tagging to another.

1.3.7 RETURNING A LINE TO SERVICE WHICH IS UNDER THE JURISDICTION OF THE SYSTEM OPERATOR

A. After work has been completed on a line or piece of equipment, the tagholder will report this to the System Operator who, in turn, will instruct the tagholder to remove all field grounds. After the tagholder is completely clear and has returned the line to the System Operator, the System Operator will then instruct the operator at the first (sending) switch station (A) to:

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

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

1. Remove all tags.
2. Open the ground switches and lock them open. Visually check that all switch blades are open.

3. 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.
4. 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.
5. Report to the System Operator.

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

1. Remove all remaining tags.
2. 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.
3. 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.
4. Report to the System Operator.

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

1. 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.
2. Report to the System Operator.

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

1. 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.
2. Note the reading of the voltmeters and ammeters on the line.
3. Report to the System Operator.

## 1.3.8 USE OF GREEN TAGS

A. Green Tags

THE GREEN TAG IS NEVER PLACED TO PROVIDE CLEARANCE. The Green Tag is placed on equipment solely to indicate an abnormal equipment condition or status, which necessitates that such information be readily available to any employees involved in the operation or maintenance of the equipment.

1. A Green Tagged device shall only be operated upon approval from the System Operator.
2. Arrangements for placing Green Tags shall be made with the System Operator.
3. The reason(s) for placement of a Green Tag shall be clearly stated on the tag, including any specific operating limits.
4. Requests to remove Green Tags shall be made to the System Operator who, with assurance that the abnormality or restriction has been corrected, will authorize removal of a Green Tag.

5. Requests to operate Green Tagged equipment within the stated restriction shall be made to the System Operator.

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

7. More than one abnormality or restriction may be included on one Green Tag if done during initial arrangements with the System Operator.

NOTE: A Red or White Tag may be applied to a Green Tagged switching device provided the abnormality or restriction does not prevent the switching device from serving the purpose for which the Red or White Tag is being applied.

B. Examples of Green Tag Use

Examples of conditions which would require a Green Tag are listed here. This is not intended to be a complete listing.

- Circuits removed from service; breakers racked out but available for service.
- Control Power removed from breaker. Breaker is available for service.
- Switching device is bolted closed.

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

OI 2-S-8

SWITCHING AND JURISDICTIONAL AUTHORITIES AT GENERATING SITES



The purpose of this instruction is to define the jurisdictional authorities of O&R and Southern Energy New York (SENY) personnel involved in switching at generating sites. O&R controlled facilities are indicated in black on the one line diagrams. O&R personnel will maintain, record and report relays under its control. All switching will be performed in accordance with Section 1.3 of the current O&R Safety Manual.

I. Lovett 138KV and 69KV Switching

If switching is to be performed at the Lovett steam electric plant the following will be adhered to:

1. Team Leaders/Group Leaders (SENY) will supervise Plant personnel in the performance of all emergency and non-emergency switching involving generator OCBs and associated "3" switches, start up OCBs and associated "3" switches.

2. In all cases, the Team Leaders/Group Leaders should be notified of any switching activity at the plant.

3. Substation Electricians will perform all other emergency and non-emergency switching in both yards.

4. Relay Technicians are permitted to do any switching required in the performance of their duties (trip testing, calibration, etc.) under the same guidelines as the Substation Electricians.

II. Bowline 345KV and 138KV Switching

If switching is to be performed at the Bowline steam electric plant the following will be adhered to:

1. In all cases, the SENY Team Leader/Group Leader should be notified of any switching activity at the plant.

2. O&R Substation Electricians or SENY employees qualified under a mutually agreed on training program and identified in the quarterly qualified switchman list provided to the SO will perform all emergency and non-emergency switching in the 345KV yards.

3. O&R Substation Electricians will perform all emergency and non-emergency switching in the 138KV yard.

4. O&R Relay Technicians are permitted to do any switching required in the performance of their duties (trip testing, calibration, etc.) under the same guidelines as the O&R Substation Electricians.

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SUBJECT

SWITCHING AND JURISDICTIONAL AUTHORITIES AT GENERATING SITES



III. Gas Turbine/Hydro Switching

If switching is to be performed at either the Shoemaker or Hillburn Gas Turbine sites, the following will be adhered to:

1. O&R Substation Electricians will perform all emergency and non-emergency yard switching on O&R controlled facilities.

2. Relay Technicians are permitted to do any switching required in the performance of their duties (trip testing, calibration, etc.) under the same guidelines as the O&R Substation Electricians.

3. If a supervisory alarm is received at the ECC, the System Operator will notify the appropriate SENY employee.

IV. Except that in cases of risk to life, limb and equipment, operations will be taken to mitigate the situation immediately.

As soon as possible after the event, all parties will be notified of the incident and subsequent action taken.

SUBJECT

SWITCH ORDER PREPARATION AND EXECUTION



The following procedure is to be used in preparing and executing a System Operations Switch Order.

Normal Operation

I. Receipt of Transmission/Distribution Clearance Requests

The System Operations Manager-Switching, 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 Scheduling Supervisor will then notify any other Orange and Rockland department that may have necessary work on the facilities to ensure maximum coordination of activities for this particular outage.

The Scheduling Supervisor must ensure that new equipment is shown on the system diagram and ECC computer changes have been made before it is to be placed in service.

In all cases it is mandatory that 72 hours written notice be given on all clearance requests so that the optimum efficiency on the system is maintained. 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.

II. Switch Order Preparation

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

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

2. Check the one-line diagrams of stations and lines to ascertain continuity will be maintained and that no 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 lines for special instructions which apply to a particular station, line or piece of equipment.

5. When preparing the switch order, print neatly or type each part in its proper location on the sheet:

a. Switch Order Number
b. Date (used as a reference)
c. Location and telephone number (used by System Operator while directing the job)
d. Switches Tagged To: ___ and Vehicle ___ (used to assure all persons have proper tags for clearance.
e. The next 20 lines are for step by step direction of the switching, tagging, or remarks, etc.
f. Clearance To: ___ To Test and Ground On: ___

NOTE: Under this category clearance is to be given by System Operator or Senior System Operator to all individuals who have requested same. Clearance is given in a point to point method (i.e., "System Operator to John Doe at 0915 - You have clearance on Line 60 between Ramapo and Burns to test and ground").

g. _____ Reports test for potential completed and field grounds attached OR _____ reports testing and field grounds not required.
h. Clearance To: _____ To do (specific work) on (Specific device or facility).
i. The "Return-to-Normal" page of the switch order begins when the tagholder reports that his work is completed. At this point the System Operator will instruct the tagholder to remove all portable grounds (if any) from the work area to be restored. After it is reported that all portable grounds have been removed, the remainder of the switch order is similar and all steps to return the line or equipment to service are printed or typed in their proper sequence.
j. All breakers or devices with counters should be listed at the bottom and counters recorded when switching is complete. (Equipment is maintained based on both the number of operations and time considerations.)

6. Finally, the System Operator who prepares the switch order will enter his initials on the line indicated with "prepared by...". Only one entry should be made on this line.

III. Switch Order Review and Approval

Before the switch order is executed, another System Operator or Senior System Operator will review the switch order for accuracy and enter his initials on the line "checked and approved by....". Only one entry is needed on this line.

Switch order preparation and/or review may also be assigned to extra System Operators on the day shift as time allows.

The Senior System Operator on the evening shift will also review all switch orders for system security the day previous to their execution. He will run the Power Network Application (PNA) package with the next day's forecasted load, scheduled outages and selected contingencies to determine if the system could withstand the loss of the next single critical facility. He will make copies of these security runs for review by the Senior System Operator on the day shift. These security runs will be discussed at the morning strategy meeting with the Manager - System Operations.

IV. Execution of the Switch Order

The System Operator who executes a switch order will review the Clearance request and switching steps as a final check for accuracy prior to Implementation of those steps and he will assume complete responsibility for all switching he executes on that order. He will enter his initials on the line indicated with "Supervised by....". He will also confirm that the person scheduled to receive clearance will still do so. The Senior System Operator will then make the final security review and determine whether the switch order will be executed or not.

Any time it becomes necessary to change the content or sequence of a previously written and approved switch order, the System Operator Initiating such changes shall not implement them until discussing them with and receiving approval from the Senior System Operator on duty.

When the switch order has been completed in accordance with above, the System Operator will give the clearance to the necessary field personnel as scheduled. The field personnel requesting clearance shall have the responsibility to contact the System Operator when he is ready to begin his work as well as when he is complete.

The System Operator will return the completed switch order to the Switching Manager.

Emergency Operations

In emergency situations the necessary switching will normally be prepared by the System Operator and reviewed and approved by the Senior System Operator.

All switches should be tagged for the System Operator when it is not known who will work on an emergency job at the time the switching is done.

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

ORANGE AND ROCKLAND JOINT SWITCHING PRACTICES

OI 4-S-5

SHEET 1 of 2

## I. INTRODUCTION

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

It is the intent of this Operating Instruction to clarify the responsibilities of Consolidated Edison, Orange and Rockland, and Southern Energy New York (SENY) regarding each facility with respect to initiating requests for clearance, responsibility for authorizing work on equipment and the preparation and direction of switching. (Reference Con Ed System Operation Department Orders SO 17-3-6 and SO 17-4-0, Appendix A.)

## II. 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 Power Pool, describing the work and clearances required. Approval of all parties having a termination involved, Consolidated Edison, Public Service, Orange and Rockland, SENY and New York Power Pool, is required prior to the scheduling of the outage.

## III. JURISDICTIONS

Orange and Rockland system operators will direct company O&R substation/relay crews and qualified SENY personnel in switching and tagging the following facilities:

- At the SENY owned facilities of Bowline 345KV, Lovett, Mongaup, Hillburn, Rio, Swinging Bridge and Shoemaker as indicated in black on the one line diagrams of the stations.
- At Bowline:
  All 138 KV facilities
- At Ladentown:
  All 345 KV facilities
- At West Haverstraw:
  All facilities 345 KV to 13.2 KV
- At Ramapo:
  All facilities from and including the 345 KV 1300-4 and 2300-4 switch and the entire 138 KV yard. (See Appendix B for specific delineation.)
- At 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.

Approved by:

Supersedes: 4-S-4

Distribution List

SUBJECT

ORANGE AND ROCKLAND JOINT SWITCHING PRACTICES



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, and all SENY owned facilities 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 SENY, need to 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, that tags for O&R personnel have been installed, and that clearance to begin work may be issued. The O&R system operator will issue clearance "to test and ground."

## IV. RELAY MAINTENANCE (IN SERVICE)

Request for routine in-service relay maintenance will be initiated by the Orange and Rockland switching supervisor or senior power dispatcher to the Consolidated Edison senior system operator a minimum of 24 hours in advance. Orange and Rockland will also be responsible for notifying the New York Power Pool Scheduling Department and any other affected parties as required.

SENY will coordinate their in service relay maintenance with the O&R Switching Supervisor.

On the morning of the scheduled maintenance the Orange and Rockland system operator will confirm the clearance for the job with the Consolidated Edison Westchester D.O. sometime soon after 0700. Upon confirmation or rejection of the job, the Relay Department supervisor will be so notified. (This will permit reassignment of work crew if necessary.)

Emergency relay work will be coordinated directly between the Orange and Rockland senior power dispatcher and the Consolidated Edison system operator.

## 1.3 SYSTEM OPERATIONS TAGGING PROCEDURE

### 1.3.1 Basic Principles For Tagging Equipment Under The Jurisdiction Of The System Operator

A. 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.)

B. The standard safety tags are approximately three by six inches containing eyelets for tying with twine to operating and control handles of the apparatus. The tags used under the System Operator's supervision are in two colors (red and white) each color having a distinct purpose and in no case will either tag be used for any purpose other than that for which it is intended.

C. The Red Tag with Black Lettering (System Operator's Safety Tag) is used only under the supervision of the System Operator and/or Distribution Supervisor. Its use is for

high voltage equipment and associated control mechanisms together with any low voltage equipment that the System Operator may designate.

Facilities which have had red tags applied may not be operated under any conditions until the qualified employee whose name is on the tags releases them.

D. The White Caution Tag is used when work is to be done on or near a live circuit or device where contact with the facility is a possibility. Should the circuit or device trip for any cause, it shall not be restored until clearance is received from the person at the job site whose name is on the tag. Where the System Operator possesses supervisory control of the necessary reclosers and the breakers he may issue white caution tag clearance after tagging and inhibiting the appropriate control devices on his computer screen.

E. Each Department Manager, Superintendent or Supervisor shall designate the qualified employees that may have equipment tagged out. Each Manager, Superintendent or Supervisor shall provide System Operations with a quarterly updated list of qualified employees. 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.

F. 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 TAG ON THE JOB SITE. THE PERSON IN CHARGE MUST BE AVAILABLE AT THE JOB SITE TO CLEAR PEOPLE OFF EQUIPMENT AND/OR LINES IN ORDER TO RESTORE THEM IN AN EMERGENCY.

G. In filling out tags, care should be taken that all the required information is complete, correct and legible.

H. Tags shall be tied securely to the control handle of equipment with stout twine. Where the control handle does not exist (i.e., a single phase disconnect switch or cutout) the tag shall be fastened in an approved manner such as by using the hotstick tag holder.

I. 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 System Operator, Department Manager, Superintendent and/or Supervisor to have his/her tags released and/or replaced. In the event of an unforeseen absence, the Plant, Line or Substation Supervisor can assume the responsibility of the tag and appoint a new person in charge.

   The new tags shall be put on when the original tags are removed.

J. Qualified Engineering Department personnel may parallel tag apparatus with Electrical

Distribution, Transmission, Substation, Generating Plant personnel or System Operators. This tagging is subject to the approval of the System Operator. The tags are to be placed and removed by the qualified employees.

K. 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.

L. 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 own tags by the method given above.

1.3.2 Scheduling Work on Equipment Under The System Operator's Jurisdiction

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

1. All non-emergency work requiring the removal of equipment or lines from service must be requested at least 72 hours in advance of the performance of such work by use of the Transmission/ Distribution Clearance Request Form. This request shall be filled out in its entirety and shall be made to the System Operations Scheduling Supervisor or, in

his/her absence, the System Operator directly, by the person in whose name the circuit or equipment is to be tagged or by their supervisor.

2. During the construction of new equipment where installation or construction work has progressed to where any piece of transmission or distribution equipment within the substation fence may be energized from any any station or other external source, the System Operator SHALL be so informed by the Engineering Department as follows:

   a. This information SHALL be in writing and SHALL indicate by sketch, its location with respect to the then existing System Diagram and SHALL specify the Qualified Engineering Department representative in whose name protective tagging should be issued.

   b. The System Operator will immediately order the qualified employees to tag out of service with two (2) Red Tags, all switches and control equipment that could energize the new equipment.

   c. These tags will be made out in the name of the qualified substation or relay employee and qualified Engineering Department representative. All requests for placing or removal

of tags for energizing equipment for test purposes will be made to the System Operator through the qualified substation or relay employee.

d. 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.

3. FOR EMERGENCY WORK THE PERSON WHO IS TO BE IN CHARGE OF THE JOB WILL CONSULT WITH THE SYSTEM OPERATOR AS TO WHAT EQUIPMENT SHOULD BE CLEARED AND TAGGED OUT IN ORDER TO MAKE THE JOB SAFE.

1.3.3 Basic Principles of Switching
(Substation/Switching Stations)

A. All persons entering Substations or switching stations SHALL notify the System Operator upon arrival.

B. The System Operator will direct all switching steps to the employee PERFORMING the switching, who in turn, will repeat these steps acknowledging their correctness or calling attention to any discrepancies. If the conversation is interrupted, contact shall be reestablished and all steps repeated to insure accuracy.

C. After completing the switching steps ordered by the System Operator the employee performing the switching will report the time each

step was accomplished. The System Operator will repeat these steps acknowledging their correctness or calling attention to discrepancies. Again, if the conversation is interrupted contact shall be reestablished and all steps repeated to insure accuracy.

D. Great care must be taken that the conversation involved in these switching procedures are accurately given and fully understood. Lines and equipment designation shall be given in full. Slang terms shall not be used.

E. Upon opening any motor or manually operated air break or disconnect switch, it is the responsibility of the employee performing the switching to visually check that all three phases are open.

F. After having been opened for safety clearance, a motor operated disconnect and/or air break must be operationally disabled.

G. Switching for safety clearance will not be considered complete unless one or more devices provide a visible break which will separate the equipment requested out of service from all sources which can energize the equipment.

H. Upon opening any circuit breaker, it is the responsibility of the employee performing the switching to "confirm the breaker open." When issued this order, the employee will proceed to the circuit breaker for the line

which has just been opened and check that the breaker is open, either by inspection of the operating rods on an open type breaker or by inspection of the position indicator on a totally enclosed breaker.

I. Where disconnecting switches and any of the various circuit breakers are connected in series, the disconnecting switches SHALL be used only for isolating the circuit breakers and for no other purpose. The disconnecting switches MUST be closed before the circuit breakers are closed and opened only after the circuit breaker has been opened and the position of the breaker operating mechanism observed to be in the open position.

J. Disconnecting switches SHALL NEVER be used to open a load on a high voltage line or power transformer. A switch designed for interrupting duty MUST always be used, even though it means interrupting service. If possible, the magnetizing current of a power transformer SHALL be broken with a load interrupt type switch. If none is provided, the gang operated disconnecting switch on the high side of the transformer shall be used.

1.3.4 General Procedure Removing A Line From Service Which Is Under The Jurisdiction of the System Operator

A. The employee performing the switching at the first (sending) station (A) will be instructed by the System Operator to open the

circuit breaker on the line and report back. Circuit breakers under supervisory control may be operated remotely by the System Operator via the computer system.

B. After the employee in station A has reported that the procedure above has been completed, the System Operator will instruct the operator in the second (receiving) switching station (B) to:

1. Open the circuit breaker or the System Operator will open it themself, if supervisory control is available. When there is no circuit breaker in the line but a disconnect switch is available the disconnect will be opened.

2. Confirm the breaker open, and, on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled, unless ordered otherwise. On switches which are remotely controlled by supervisory equipment, place the proper switch in the "local" position.

3. Check open the by-pass switch.

4. Open the appropriate disconnects and if gang operated, secure with lock or fastening device. Manually operated disconnect switches shall be locked as designated.

5. 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.

6. Upon completion of these steps the employee will report to the System Operator.

C. After the employee 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:

1. Confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled unless otherwise ordered. On switches which are remotely controlled by supervisory equipment, place the switch in the "local" position.

2. Check open the by-pass switch.

3. Open the appropriate disconnects and, if gang operated, secure with lock or fastening device.

4. 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.

5. Close the ground switch and lock. Check that all ground switch blades are in the

correct positions.

6. Apply the necessary red tags and report to the System Operator.

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

1. Close the ground switch and lock.

2. 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.

F. The System Operator will then release the line to the person or persons in charge of the work specifically designating the location at which the circuit has been opened and tagged.

1.3.5 Receiving Clearance From the System Operator

A. ALL LINES ARE CONSIDERED TO BE ENERGIZED UNTIL:

1. THE SYSTEM OPERATOR ISSUES CLEARANCE.

2. THE DESIGNATED TESTS TO PROVE ABSENCE OF

POTENTIAL HAVE BEEN PERFORMED AT THE WORK LOCATION.

B. Clearance is issued when the System Operator contacts the employee, for whom the line or equipment has been tagged, and communicates the following information:

1. The time clearance is being given.

2. The line or equipment that has been tagged.

3. Locations at which the line has been opened, grounded and tagged.

Example: "As of 9:00 you have clearance on Line 702 between Burns and Harings Corner to test and ground."

C. The employee for whom the line or equipment has been tagged will then repeat this message in full to the System Operator who will acknowledge its correctness or call attention to discrepancies. If this conversation is interrupted, contact shall be reestablished and the conversation finished before clearance is considered issued.

1.3.6 Transferring Tags

A. When the employee for whom the line or equipment has been tagged (hereinafter called John Doe) desires to release the tag so that the line or equipment may be tagged in the name of another person (hereinafter

referred to as Richard Roe) he SHALL proceed as follows:

1. Make sure that Richard Roe is available, has examined the field grounds, if any, and is prepared to assume responsibility for the work in progress on the line or equipment which is to be tagged in his name.

2. Request the System Operator to place Richard Roe's tag on the line or equipment, giving its complete designation, the reason for the transfer and pertinent data as to the status of the work.

B. The System Operator will repeat the message and after its correctness is acknowledged by John Doe, will have Richard Roe's tag applied and notify Richard Roe that the line or equipment is tagged in his name. The System Operator will repeat, in detail, all information covered in Part A above. The transaction shall not be considered complete until Richard Roe has repeated the message back to the System Operator, in detail; and the System Operator has acknowledged the repetition as correct.

If this conversation is interrupted, contact SHALL be reestablished and the conversation finished before the transaction is considered complete. John Doe SHALL then release his tag by the same method given.

C. The person named on the tag or, in his

absence, his supervisor, are the only ones who may request the transfer of the tagging to another.

### 1.3.7 General Procedure For Returning A Line To Service Which Is Under The Jurisdiction Of The System Operator

A. After the person or persons in charge of the work on a line have reported all clear and returned the line to the System Operator, the System Operator will then instruct the operator at the first (sending) switching station to:

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

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

1. Remove all tags.
2. Open the ground switches and lock them open. Visually check that all switch blades are open.
3. 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 conditions.

4. 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 AND VISUALLY CHECKED THAT ALL SWITCH BLADES ARE CLOSED.

5. Report to the System Operator.

C. The operator at the first switching station will then be instructed to:

1. Remove all remaining tags.

2. 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.

3. 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 AND VISUALLY CHECKED THAT ALL SWITCH BLADES ARE

CLOSED.

4. Report to the System Operator.

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

1. 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.

2. Report to the System Operator.

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

1. 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.

2. Note the reading of the voltmeters and ampmeters on the line.

3. Report to the System Operator.

## 1.3.8 Use of Green Tags

### A. Green Tags

THE GREEN TAG IS NEVER PLACED TO PROVIDE CLEARANCE. The Green Tag is placed on equipment solely to indicate an abnormal equipment condition or status, which necessitates that such information be readily available to any employees involved in the operation or maintenance of the equipment.

1. A Green Tagged device shall only be operated upon approval from the System Operator.

2. Arrangements for placing Green Tags shall be made with the System Operator.

3. The reason(s) for placement of a Green Tag shall be clearly stated on the tag, including any specific operating limits.

4. Requests to remove Green Tags shall be made to the System Operator who, with assurance that the abnormality or restriction has been corrected, will authorize removal of a Green Tag.

5. Requests to operate Green Tagged equipment within the stated restriction shall be made to the System Operator.

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

7. More than one abnormality or restriction may be included on one Green Tag if done during initial arrangements with the System Operator.

Note: A Red or White Tag may be applied to a Green Tagged switching device provided the abnormality or restriction does not prevent the switching device from serving the purpose for which the Red or White Tag is being applied.

B. Examples of Green Tag Use

Examples of conditions which would require a Green Tag are listed here. This is not intended to be a complete listing.

- Circuits removed from service; breakers racked out but available for service.
- Control Power removed from breaker. Breaker is available for service.
- Switching device is bolted closed.

## 1.4 SUBSTATION

### 1.4.1 Substation Rules

ALL PERSONS ENTERING SUBSTATIONS OR SWITCHING STATIONS SHALL NOTIFY THE SYSTEM OPERATOR UPON ARRIVAL.

A. Past experience has proven that the best qualified workman can forget while working in energized substations even though the work is being done de-energized. It is always possible to get in the wrong elevations, or to enter a similar bay that is energized, or contact the energized side of a disconnect. For these and many other reasons, it pays to discuss the work and work methods with the Supervisor. It may save your life.

B. The Substation Supervisor SHALL be responsible for the enforcement of all rules affecting the operation of the substation and equipment under the supervisor's jurisdiction and all employees MUST recognize this authority. NO person shall be permitted to do work of any kind in the substation without the full knowledge and consent of the Substation Supervisor who SHALL check with the System Operator, if necessary.

C. If any work is to be done on any apparatus, switching and tagging for protection of people and service shall be arranged.

D. While working on or near live equipment,

employees SHALL keep their sleeves down and SHALL NOT wear loose or flapping clothing. Metal articles such as wristwatches, key chains and finger rings should be removed prior to starting work. Small tools such as screwdrivers, pliers, etc. should be carried in suitable holsters or cases.

1.4.2 Switching

A. While operating any type of disconnecting switch (except by remote electrical or mechanical control) or when handling a switch stick, fuse tongs, operating handle, etc., rubber gloves with protectors and hard hat MUST be worn, sleeves MUST be rolled down, all parts of the operator's body SHALL be kept at the maximum possible distance from the live part, and safety glasses or shields MUST be used for flash protection.

B. If disconnecting switches and any of the various type circuit breakers are connected in series, the disconnecting switches SHALL be used only for isolating the circuit breakers and for no other purpose. The disconnecting switches MUST be closed before the circuit breakers are closed and opened only after the circuit breaker has been opened and the position of the breaker operating mechanism observed to be in the open position.

C. Disconnecting switches SHALL NEVER be used to open a load on a high voltage line or

power transformer. A switch designed for interrupting duty MUST always be used, even though it means interrupting service. Disconnecting switches may be used to break the parallel of lines or transformers. If possible, the magnetizing current of a power transformer SHALL be broken with a load interrupt type switch. If none is provided, the gang-operated disconnecting switch on the high side of the transformer shall be used.

D. When opening disconnecting or air break switches, all three blades of the switch MUST be checked to be sure that they are fully open. When closing disconnecting or air break switches, each blade of the switch MUST be checked to be sure that each is driven fully "home" in the contact clip.

E. When opening switches of the double throw type, the blade MUST be brought to a position which is at right angles to the closed position of the switch.

F. When opening a single throw switch, the blade SHALL be opened 180 degrees or to the stop if one is provided.

G. On direct current apparatus, when a knife switch and a circuit breaker are connected in series, THE CIRCUIT BREAKER MUST BE OPENED FIRST AND CLOSED LAST.

### 1.4.3 Construction and Maintenance

A. When work MUST be performed on or near live distribution equipment, proper Rubber Protective Equipment) MUST always be used.

B. Lines, circuits, feeders and apparatus MUST be considered energized at all times unless properly tagged out. (See Section 3)

C. Before starting work the substation employee in charge of the construction or maintenance work SHALL check the position of all switches involved in the clearance. The equipment to be worked MUST be isolated and when practicable MUST also be grounded. Then the circuit or equipment SHALL be tested with a "glow" stick or other approved testing device and, if found de-energized, SHALL attach an approved grounding device on each side of the working zone.

D. The ground side of the grounding device SHALL be attached first and removed last.

E. Each phase of the circuit or equipment SHALL be grounded where it is impracticable to ground on both sides of the working zone.

F. NO ONE shall work on or near exposed live or moving parts unless authorized to do so.

G. Servicing and cleaning of energized apparatus which cannot be taken out of service SHALL NEVER be undertaken unless another employee is present.

## 1.4.4 Transformer Safe Work Practices

A. When it is necessary to remove a manhole cover from a transformer for inspection and work, the employee shall remove all articles from his apparel to prevent them from falling into the transformer and short circuiting the winding. PRESSURE MUST BE VENTED PRIOR TO REMOVING ALL THE BOLTS IN THE COVER.

B. All tools shall be tied to strings so if they are accidentally dropped, they can be easily recovered.

C. If an employee should accidentally drop anything into the open transformer and is unable to recover it, it shall be the employee's duty to notify their Supervisor immediately.

D. Before entering a transformer that has been sealed in nitrogen, ventilate with forced air for three to five minutes. Have two ports or plates open when possible. When only a single port is open, use baffle board to assist in exhausting air. Sample to check air quality. For further information refer to Confined Space Entry.

E. When operating automatic tap changer or when other work is being done on control circuits, all men are to be in the clear of the transformer to guard against any backfeed situation.

F. Before beginning work on any equipment or structure, the senior qualified person shall see that the crew is familiar with the status of the equipment, what part is energized, location of grounds, what the limits of the working space are, and what switches disconnect the equipment from the source of supply. If for any reason there is an interruption in the work where the employees leave the job, such as stopping for lunch, before work is resumed the same formality of checking and making the employees familiar with conditions shall be followed as at the beginning of the job.

G. No one shall work on a substation structure that is in the vicinity of energized equipment without permission from the supervisor in charge or qualified person appointed by the supervisor. At all times that a workman is working on a substation structure on which inadvertent contact with energized equipment could be made, there shall be a qualified person to guide the worker to insure that the work is done safely.

1.4.5 Elevated Positions

Employees shall use approved safety belts and straps and other adequate protection, as required, when working in elevated positions. It shall be the duty of the employee to inspect such safety device.

1.4.6 Switching In Substations

When it is necessary to do any disconnect switching either associated with or adjacent to an energized structure where men are working, the operator will check with the foreman or employee holding clearances on equipment in the structure, who, in turn, will call the employees down out of the structure until the switching has been completed. After the switching has been done, all employees will recheck the status of the structure, lines and equipment before resuming work.

1.4.7 Backfeed Situations

EMPLOYEES ARE CAUTIONED THAT SEVERAL STATIONS HAVE AUXILIARY GENERATORS WHICH MIGHT BACKFEED POWER IN CASE THE PRIMARY SOURCE IS DISCONNECTED FOR ANY REASON. EXTREME CAUTION IS TO BE TAKEN THROUGH WHATEVER TESTING IS REQUIRED TO BE SURE THIS BACKFEED SITUATION IS KNOWN BY THOSE WORKING THE CIRCUITS.

1.4.8 Safe Work Clearances

A. Safe working distance shall be maintained between workmen and all exposed energized parts.

1. When required to perform work near energized high voltage equipment, suitable approved warning devices shall be placed between the space occupied by workmen and the nearest energized equipment, as a protection and a reminder as to the

limits of safe working space.

2. When lifting or handling loads in proximity to energized conductors and/or equipment in substations, electrically grounded trucks or cranes being used. When erecting steel while lightning storms are in the vicinity, the erected steel shall be kept grounded.

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

1.4.9 Mobile Substations

A. When mobile substations are in a parked position, the chock blocks are to be placed blocking the wheels of the unit (front and rear). When the unit is energized, proper "Danger-High Voltage" signs and barricading ropes are to be in position.

The cables are to be properly protected and barricaded so that no vehicles can be driven over them. Employees shall not walk on these cables.

B. Before working on capacitors they shall be de-energized, discharged and grounded. In addition the capacitor bank support framework shall be grounded.

## 1.5 TRANSMISSION OPERATIONS

### 1.5.1 Transmission

A. In addition to the hazards peculiar 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.

B. Definition of Transmission Circuits

Any circuit, apparatus or equipment normally energized at 34.5 K.V. (Delta connected) or above shall be classified as transmission.

### 1.5.2 Live Line Tools and Equipment

A. Only tools having proper voltage rating and of sufficient length to secure proper clearance for safety SHALL be used. THERE IS A POSSIBILITY OF PUTTING TOO MUCH DEPENDENCE ON THE VOLTAGE RATING OF THE TOOLS AND NOT ENOUGH ON CLEARANCE BETWEEN THE EMPLOYEE AND ANY POSSIBLE CONTACT WITH 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.

## 1.5.3 Live Line Maintenance

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

B. Before any work is undertaken on energized equipment, workers should 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 replacing worker or supervisor has been fully informed of existing conditions.

D. Lines should always be de-energized if this 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 the lines are energized; providing that hotline tools designed and tested for this character of work are used.

F. ROUTINE LIVE LINE WORK SHALL BE DONE ONLY DURING FAVORABLE WEATHER CONDITIONS. RAIN, SNOW, SLEET, DAMPNESS, ETC., PRODUCE CONDITIONS UNDER WHICH THIS WORK SHOULD NOT BE PERMITTED.

G. TO OBTAIN PROPER CLEARANCE FROM THE SYSTEM OPERATOR, REFER TO SECTION 3, SYSTEM OPERATIONS.

H. When it is necessary to do any work on transmission lines having more than one circuit, and where there is not sufficient working clearance between circuits for live line work, the circuits not being worked on SHALL either be de-energized and grounded, or shifted by hotline tools, so as 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 worked on.

1.5.4 Protective Grounds and Protective Grounding Circuits

A. Except where the work is being carried out under the Company's approved Live Line Procedure, all conductors and line equipment in the transmission classification SHALL be de-energized when work is to be done upon or dangerously near them, and all conductors of the circuit SHALL be temporarily grounded with an approved grounding device on each side of, and within sight of, the area or work. Whenever there is more than one crew working on the same de-energized transmission line, each crew SHALL be required to

work between its own grounds unless the crews are working on the same section of line. No current carrying parts of lines or equipment SHALL be touched until they are positively known to be de-energized and grounded.

B. THE PROTECTIVE GROUNDS SHALL be applied under the direct supervision of the person in charge in the following manner:

1. After a clearance has been obtained and the position of all switches checked, tests SHALL be made for voltages by means of a glow stick, or other approved device to see that all phases are de-energized.

2. When an indication has been obtained that the line is de-energized, it MUST then be effectively grounded as close as convenient on both sides of the working location. Grounds SHALL NOT be connected to a bus or structure over paint.

3. IN ALL CASES CLAMPS SHALL BE APPLIED TO CONDUCTORS ONLY BY MEANS OF AN APPROVED INSULATED HOT STICK . . . MINIMUM LENGTH 8'. These sticks SHALL be equipped with a long throat screw clamp or equivalent on one end and shall be carefully maintained and kept clean and dry.

4. If a line is to be worked on, it is to be considered live until tested and proper grounds are applied.

Proper grounds are:

a. Grounds are to be installed at both ends of the worksite. (Could be placed on both sides of structure.)

b. At each grounding point, jumpers should go from Phase 2 to Phase 1, Phase 2 to Phase 3, and Phase 2 to the Neutral. (Note: if there is no neutral available, such as a delta system, a driven ground will be used.)

c. If the worker is working on or around a pole less than 300' from the nearest set of grounds, a jumper from the neutral to a ground cluster bar, below the working position, will be installed.

d. If the worker is working on or around a pole more than 300' from the nearest set of grounds, a jumper from the neutral to a ground cluster bar, below the working position, and a jumper from the cluster bar to the phase being worked on, will be installed.

e. The personal grounds (grounding cluster bar and jumpers) will be moved to each pole location.

5. If grounds are not used, all necessary rubber goods must be worn and the lines

treated as if they were energized.

1.5.5 Wood Pole Lines (No Overhead Ground Wire or Vertical Grounding Wire)

A. Ground rods or auger screw type rods SHALL be installed at proper depth into as damp ground as can be found near the base of the pole where grounds are to be applied. ANCHORS SHALL NOT BE USED IN PLACE OF SYSTEM GROUNDS. The grounding clamp SHALL first be attached to the rod and the grounding device SHALL then be attached to each conductor starting with the lowest conductor on the pole, keeping below the conductor being grounded and being sure that the man's body does not come in contact with the ground wire or conductor. If the pole also carries medium voltage circuits, the grounding tail SHALL be lashed to the crossarm or fished through the arm braces to prevent its slipping and/or blowing into distribution lines.

B. The grounding equipment SHALL be removed in the reverse order.

1.5.6 Wood Pole Lines (With Overhead Ground Wire and Vertical Grounding Wire)

A. Where climbing clearance exists, the grounding clamp SHALL first be attached to the shield wire and the grounding device shall then be attached to each conductor starting at the highest and working downward.

Where climbing clearance does not exist, the

grounding clamp SHALL first be attached to the vertical grounding wire which extends down the pole and the grounding device SHALL then be attached to each conductor starting with the lowest conductor on the pole, keeping below the conductor being grounded and being sure that the man's body does not come in con-tact with the ground wire or conductor.

B. If the pole also carries medium voltage circuits, the grounding clamp is to be first attached to the vertical grounding wire at a level above the medium voltage arm, and the grounding tail SHALL be lashed to prevent its slipping or blowing into medium voltage lines.

C. The grounding equipment SHALL be removed in the reverse order.

D. PROTECTIVE GROUNDS SHALL also be used whenever it is necessary to work on de-energized lines of any voltage (including telephone lines) which run parallel to and are within 50 feet of another line of more than 15,000 volts for a distance greater than 500 feet.

E. Whenever any work is done on a transmission line above live distribution lines or equipment, rubber gloves MUST be worn and any other additional rubber protective equipment necessary to protect fully against the energizing of the transmission line or against personal contact with the distribution circuits MUST be used.

F. Where poles carry both transmission and distribution circuits, linemen MUST apply hose, hoods, shields, or blankets to the pole pin primary BEFORE doing any work on the transmission circuit.

G. Whenever any work is done on a tagged and grounded transmission line that crosses live medium voltage lines between the two points of grounding, rubber gloves MUST be worn unless additional grounds are placed between the working position and the crossing.

1.5.7 Steel Towers and Structures

The grounding clamps SHALL then be securely attached to the tower leg below the crossarm and the grounding device SHALL then be attached to each conductor, being sure that the lineman's body does not come in contact with the ground wire or conductor. Grounding SHALL start at the lowest conductor and proceed upwards. THE GROUNDING SHALL BE REMOVED IN THE REVERSE ORDER. A screw type auger ground shall be installed and the ground wire shall be connected to the tower leg clamp.

1.5.8 Working on Towers or Structures

A. When work is to be done on the lower section of structures carrying a single live circuit or on structures carrying two live circuits, a red flag SHALL be placed on the stepped leg on each structure at a safe distance below the crossarm carrying the lowest live wire. All employees working on each

structure SHALL be specifically instructed by the supervisor in charge of the work not to permit any part of the body above the red flag.

B. When work is to be done on structures carrying one energized and one de-energized circuit, a red flag SHALL be placed on each crossarm carrying a live wire at a safe distance from the nearest live wire. All employees SHALL be specifically instructed by the supervisor in charge of the work not to permit any part of the body to extend beyond the red flags.

C. When work is to be done on a group of structures carrying energized and de-energized circuits, and when one tower in the group is being worked with its circuit(s) dead and the circuit(s) on the adjoining towers are energized, red flags SHALL be placed on the stepped leg of each adjoining tower or towers carrying live circuits.

D. When work is being done on towers carrying one or more energized circuits, the person in charge of the work SHALL be within hailing distance at all times.

## 1.6 TREE TRIMMING

### 1.6.1 General

A. Tree trimming operations present many common hazards. Injuries to workmen may be caused by the following hazards:

1. Improper climbing and work methods including work from bucket trucks.
2. Falling trees and falling limbs.
3. Contact with energized wires.
4. High speed moving parts on such power equipment as chipper units, power saws, etc.

B. HARD HATS AND EYE PROTECTION MUST BE USED AT ALL TIMES WHILE ON THE JOB SITE.

C. HEARING PROTECTORS MUST BE WORN WHEN OPERATORS ARE EXPOSED TO NOISE LEVELS ABOVE 85 DECIBELS. (EXAMPLES: CHAINSAWS, AND CHIPPERS)

D. When handling or working on any wire or equipment that is energized or may become energized at medium voltage, rubber protective equipment SHALL be used in accordance with work and safety procedures.

E. Pole climbers shall not be used to climb trees. If climbers are required, use tree climbers.

F. Ladders should be used only as a last resort. Positioning must be such that the work to be done will not jeopardize the worker (ie: falling limbs).

G. Safety straps or safety ropes MUST always be used. Climbing or safety ropes should be tied through both "D" rings of the safety belt and passed over a higher limb of sufficient strength and tied securely. Workman, MUST always belt in to boom when working from aerial basket.

H. Tools that can not be carried up the tree should be sent up on a hand line.

I. The specie of tree being worked, and its physical condition, MUST be kept in mind if it is to be climbed safely. Fast growing trees are apt to be weak, old trees may be rotted and frozen limbs are always brittle.

J. A sharp V fork tree trunk is generally weak. Split forks sometimes show themselves by a break in the bark or by bleeding. Limbs should be examined where they join the trunk of the tree as that is where most breaks occur. Limbs themselves should be checked for dead bark and dead streaks on the top side. If there is any doubt as to the strength of a limb, a hand line should be thrown over it and the limb's strength tested. Often it is advisable to tie up weak limbs with hand lines not only for safety, but to preserve the limb for shaping up the tree.

K. Limbs should be cut as the workman progresses upward. Large limbs should not be cut off until guide lines and, if necessary, a lowering line have been attached, and then only after the workman has placed himself in a safe, suitable and comfortable position to make the cut.

L. Limbs should be kept under control at all times by using as many lines as necessary to guide them while falling or being lowered.

M. When brush or wood is to be stacked, extra care MUST be taken to prevent injury or damage to passing vehicles and pedestrians.

Twigs, limbs or sticks MUST NOT be left projecting beyond curb or sidewalk lines or from the brush or wood pile, particularly in such positions as would cause tripping or eye hazards both to children and adults. Brush piles MUST be left flat and solid to prevent wind rolling or accidental pushing.

1.6.2 Brush Chipping

A. When brush is disposed of by mechanical chipper, the following precautions will be strictly observed:

1. Vehicle shall be stopped before feeding chipper.

2. Adequate precaution shall be taken prior to starting the chipper. Make certain no one is standing in line with the feed

or discharge chute.

3. Goggles should be used in addition to glasses with side shields. Approved hearing protection MUST be worn.

4. Chipper shall be fed by only one person at a time.

5. Place the chipper so that the person feeding it will be in the clear of traffic or overhead hazards.

6. Be sure chipper is well blocked (chocked) to prevent any movement while it is being operated. Trailer chippers which have been detached from a truck shall be chocked or otherwise secured.

7. Brush should be fed into chipper butt first.

8. Do not put hands any closer than edge of the hopper. Use a stick to feed limbs after they pass edge of hopper.

9. Chipper shall not be left unattended while running. Necessary precautions (remove key) shall be taken so that chipper cannot be started if unattended.

10. REMOVE THE KEY BEFORE REPAIRS OR ADJUSTMENTS ARE MADE. REPAIRS OR ADJUSTMENTS SHALL NOT BE MADE TO THE CHIPPING UNIT WHILE IT IS RUNNING.

11. SWEEPINGS SHALL NOT BE FED INTO CHIPPER.

B. Chainsaws shall be regularly inspected to see that they are clean, sharp and properly tensioned.

C. Handle fuel safely. Use approved safety container with flame arrestor. After refueling, wipe down before starting, and make sure cap is in good repair and properly replaced.

D. When starting a chainsaw, it shall be placed on or against something solid to support and steady it.

E. When using a chainsaw aloft, the following procedure shall be used:

1. Start and test-operate the power saw engine on ground.

2. Under no conditions shall the power saw be raised from the ground or lowered to the ground with the engine running.

3. Except when not practicable, such as when making a final topping cut, tree trimmer shall select a crotch for the saw work rope above his working position so that the saw will swing away from him.

F. Repairs or adjustments shall not be made on the chain or cutting bar while engine is running.

G. Chain guard shall be in place on the chain when saw is not in use.

1.6.3 Work Near Live Electric Lines

A. Care must be taken to avoid contact of persons, tools or limbs when trimming near energized lines. Proper supervision, the use of rubber protective equipment and special tools will avoid accidents and service interruptions in this area.

B. Some tools are conductors, and serious injury might result if they are allowed to contact energized wires. Constant alertness MUST be exercised to keep them clear of energized conductors.

C. Limbs SHALL never be cut completely off the tree until the top of the tree is clear of all energized wires. If necessary to accomplish this, the cut should be started and the limb then broken down or around until clear when the cut may be finished. Limbs which are attached to trees provide a path to ground.

D. Insulated pole pruners SHALL be used to clear the wires and to remove any small limbs that may be touching the conductor(s).

E. When trimming a tree in close proximity to energized lines, personal rubber protective equipment shall be used.

## 1.7 POLE TOP RESCUE

### 1.7.1 Immediate Care

A. In cases of electric shock there MUST be NO DELAY in the application of resuscitation as every moment lost decreases the possibility of restoring breathing.

B. Call or have someone call for help immediately.

C. There are many possible conditions which may make the proper positioning of a victim of electric shock on a pole or elevated structure a difficult matter.

D. The flexibility of mouth to mouth resuscitation makes it particularly suitable to 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. This would open the airway. IN ANY CASE WHERE NECK INJURY IS A POSSIBILITY, THE HEAD TILT IS ABSENT OR MINIMAL TO AVOID AGGRAVATING THE NECK INJURY.

F. Mouth to mouth resuscitation may then be performed.

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

1.7.2 Emergency Lowering Procedure

A. This method has been devised to lower an injured person from a pole or structure quickly and safely. It can also be used to raise an individual from a trench or manhole, and can be utilized in cases where the victim is not wearing a body belt. A half-inch diameter line or larger must be used to execute this rescue.

B. Pass the line twice around the crossarm or other suitable object used for lowering (or lifting), allowing at least 8 feet of rope to tie the rescue hitch.

1. Pass the end of the rope under the victim's right arm.

2. Across victim's back and forward through the left "D" ring.

3. Across the victim's stomach through the right "D" ring.

4. Across the back, forming an X.

5. Pass the line under the left arm and finish off by tying a bowline at about the victim's eye level.

6. Take up slack in rope.

7. Cut safety strap and let the victim swing clear.

8. Lower the victim to ground.

9. Resuscitation efforts should be restarted as soon as the victim is on the ground.

1.7.3 Alternate Emergency Lowering Procedure

A. When the victim starts breathing (or as soon as he can be made ready), he should be lowered to the ground by means of a one-half inch diameter or larger handline.

1. This line should pass through a block suspended from an arm or the top of the pole.

2. While the lower end is held by someone on the ground, the upper end should be taken by the lineman on the pole and passed through both "D" rings on the victim's body belt.

3. Then tied with a bowline so that the knot will be at the level of his

armpits.

4. With a person on the ground taking a strain on the line, the first snap of the victim's safety strap should be unfastened and placed on the rope above the knot.

5. The safety strap should be taken from around the pole, passed between the victim's legs, and the second strap placed on the rope above the first.

6. In some cases it may be necessary to tie the victim's legs together before lowering due to uncontrollable muscular reaction caused by the electric contact.

7. After the lineman gets in the clear, the victim can be safely lowered to the ground and further first aid administered.

## 1.8 ELECTRIC METER TESTING

### 1.8.1 General

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 the customer and the employee.

B. The following rules apply specifically to conditions encountered in the checking and testing of electric services and meters in the field. However, all applicable Rules set forth in other sections of this Manual must also be observed by all persons doing service, meter or relay work.

C. When installing meters use a test lamp or volt meter. This must be done on each and every installation to test for short circuit condition.

D. The proper testing devices provided by the Company MUST be used for testing for potential.

E. Extreme care must be taken when blown main line or circuit fuses are being replaced as a wiring short may exist. Cartridge-type fuses SHALL NEVER be replaced by hand but always with a fuse puller.

F. Whenever any employee is called upon to operate a live switch the employee SHALL wear approved rubber gloves and safety

glasses (flash).

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

H. NEVER leave an energized meter socket unless it is covered and sealed.

I. When making the wires of a grounded installation live, the ground wire SHALL always be connected first.

1.8.2 Testing

A. When applicable in testing, repairing, installing and changing meter equipment, personal protective safety equipment such as hard hats, eye protection, leather gloves, rubber gloves and sleeves shall be used.

B. Electric meter and control wiring SHALL be treated as energized at all times. The handling of 120 and 240 volt circuits, as well as higher voltages, requires reasonable precautions to prevent personal injuries.

C. Before working on an ungrounded meter, use test lamp or volt meter to assure that the case of the meter is not energized.

D. Wires and jumpers SHALL be so handled that short circuits or accidental contact with ground wires and grounded metallic systems are avoided.

E. The secondary of a current transformer SHALL NEVER be opened while it is in service as the open circuit voltage on the secondary could build up to a high voltage condition.

F. When connecting standards and load boxes, the test leads SHALL first be connected to the standards and load boxes and then connected to the apparatus under test. When disconnecting standards and load boxes, the leads SHALL first be disconnected from the live apparatus.

G. All connections should be securely made so that they will not readily drop or pull off. The tester should be careful to see that all wires, jumpers' test leads, instruments or other testing equipment are so placed that no one passing will bump into or trip over them.

H. The use of test blocks is recommended. However, when they cannot be used, a test SHALL be made before installing each jumper, to insure that the points to be connected are of the same polarity. Only one jumper shall be connected at a time and each SHALL be checked to make certain that the free end is clear.

I. Before removing jumpers, a careful inspection SHALL be made to insure that all connections have been returned to their normal condition and are tight, otherwise the jumpers may be disconnected under load, causing a serious flash. When disconnecting

jumpers, the free end SHALL be guarded in the same manner as when it is being connected.

J. Whenever possible, demand meters should be disconnected before any adjustments are attempted. Because of the small clearances between binding screws, contacts and other live parts of such meters, short circuits are easily caused by slipping or misdirected tools, All single phase or polyphase straight and demand meters must not have current flowing through the coils when making adjustments.

K. When installing, changing, or testing a socket type transformer rated meter which has a meter pan with a 7 or 10 pole test switch wired ahead of the meter, the TEST SWITCH MUST BE OPENED FIRST to shunt (short) the current leads and open the potential leads. This procedure is to be followed even if the meter block is equipped with an automatic by-pass mechanism. (The reason: by pulling the meter, should the by-pass not operate properly, an open CT circuit will be established creating the same condition as in paragraph E above.)

# SECTION 2.0

## UNDERGROUND ELECTRIC OPERATIONS

### 2.1 GENERAL

2.1.1 ALL CONDUCTORS, TERMINATIONS AND RELATED EQUIPMENT SHALL BE CONSIDERED ENERGIZED UNTIL DE-ENERGIZED, TESTED AND GROUNDED.

2.1.2 When working with equipment, switches, cutouts and grounding devices, the worker SHALL place himself in a safe position with all components clearly in view.

2.1.3 RUBBER GLOVES SHALL BE USED ON ALL ENERGIZED CABLES AND EQUIPMENT. HOTLINE TOOLS SHALL ALSO BE USED WHILE WORKING ON PRIMARY CIRCUITS FOR SWITCHING, LOADBREAKNG AND GROUNDING OPERATIONS.

2.1.4 Test points when provided SHALL be used.

2.1.5 A PRIMARY OR SECONDARY SYSTEM NEUTRAL SHALL NEVER BE OPENED FOR ANY REASON WHILE SYSTEM IS ENERGIZED.

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

A. A visible open break shall be provided if possible.

B. A voltage test shall be made.

C. The equipment shall be grounded.

2.1.7 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.

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

2.1.9 Faulted cables SHALL be grounded before repair work is begun. Approved tester/equipment SHALL be used to assure the cable is de-energized before grounding.

2.1.10 When unattended, pad mounted equipment shall be secured with approved Company locks and special keyed bolts at all locking points supplied by manufacturer. Missing bolts shall be replaced.

## 2.2 CONSTRUCTION

2.2.1 Operators SHALL NOT allow unauthorized riding on Company vehicles, NOR SHALL front-end loaders be used to transport men on the job site.

2.2.2 The sides of all trenches SHALL be carefully trimmed to prevent paving or stones projecting into the trench. All excavated material, equipment and tools SHALL be kept back at least 24 inches from the edge of excavation.

2.2.3 When excavating or tunneling to depths greater than five (5) feet or when there is a suspected danger of cave-in, the trench or tunnel SHALL be adequately shored. In such cases, a ladder SHALL extend from the bottom of the trench to at least three (3) feet above ground level.

2.2.4 Workers SHALL NEVER enter the working area of excavating equipment, in any location, where they cannot be clearly seen by the equipment operator.

2.2.5 Extreme care SHALL be used when digging to locate cable faults within proximity to other utilities.

2.2.6 When a backhoe is used to excavate an existing combination trench, the pavement may be removed with the machine, but subsequent digging shall be done by hand until the depth of the utilities has been determined.

2.2.7 When the depth of utilities has been determined the backhoe may be used with caution to enlarge the hole to provide adequate room for work. Final digging to expose utilities shall be done by hand.

2.2.8 When working on below grade electric facilities, suitable guards or barricades shall be used to protect other utilities in the trench from physical/electrical damage.

2.2.9 Make sure handhole cover is secured by approved method whenever the handhole is unattended.

2.2.10 Care shall be taken when pulling cables to protect employees and the public from possible injury. This will require a study of the vehicular and pedestrian traffic for the particular location so as to enable the equipment to be set up in the safest possible manner which will cause the public the least inconvenience. All persons, including employees, should be warned to keep away from ropes or cables which are under tension.

2.2.11 Employees SHALL NOT remain in a hole while installing or removing cable if the pulling system is operating and/or under tension.

## 2.3 SITE CONTROL

2.3.1 When loading or unloading cable reels, care should be taken so that reels are under control at all times.

2.3.2 Ropes and cables laid temporarily across sidewalks during pulling operations SHALL be properly protected to avoid possibility of injury to pedestrians.

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

2.3.4 In case of manhole fires, the workman SHALL get out of 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 Confined Space Entry.)

2.3.5 Equipment and cable SHALL NOT be left on the job site after completion of work. Good Housekeeping should be maintained at all times around the work area.

# SECTION 3.0 GAS OPERATIONS

## 3.1 DISTRIBUTION

### 3.1.1 General Rules

A. All employees MUST use extreme care at all times to avoid the three inherent dangers associated with the handling of a combustible gas:

- FIRE
- EXPLOSION
- ASPHYXIATION

3.1.2 To this end, all precautions aimed at the prevention of these hazards MUST be scrupulously observed. The following rules are listed to indicate the degree of caution necessary, although they by no means limit the care to be taken.

3.1.3 The creation or use of any kind of spark or open flame in any area where "No Smoking" signs are posted, or where combustible gases may be present IS STRICTLY PROHIBITED.

3.1.4 When a combustible gas is present in the atmosphere, all combustible engines, welding equipment, lanterns, flares, etc. MUST be kept a safe distance from the escaping gas. Remember that escaping gas moves with the wind, and can be ignited if any suitable source of ignition is located in its path.

3.1.5 When the presence of gas is suspected in a confined space NO ONE SHALL work in such an area without first testing the atmosphere with a Combustible Gas Indicator and then ventilating if necessary.

3.1.6 Various types of personal protective equipment are furnished by the Company. The use of the protection is either recommended or required depending on the equipment being used and/or the job being performed.

## 3.2 CONSTRUCTION

3.2.1 Before starting any work in or along highways or streets, standard signs and warning devices must be used. Refer to the Work Area Protection Manual.

3.2.2 Before starting an excavation or barring for leaks, the employee in charge should secure information on existing subsurface structures or lines. Work in the vicinity of all such interferences must be done with great care. The area SHALL be carefully designated to show the limits of excavation or barring and workmen SHALL keep their work within these limits.

3.2.3 When excavating or tunneling at depths of five feet or or greater, or less if there is a suspected danger of cave-in, the trench or tunnel SHALL be adequately shored. In such cases, an exit ladder SHALL be installed and extend from the bottom of the trench to at least three feet above ground level.

3.2.4 The sides of all trenches SHALL be carefully trimmed to prevent paving or stones projecting into the trench. All excavated material, equipment and tools SHALL be kept back at least 24 inches from the edge of the excavation.

3.2.5 When it is necessary for workmen to work in a ditch under suspended pipe, be sure that the supports are of ample strength and so placed that the pipe cannot fall.

3.2.6 When gas is to be shut off in a main or ser-

vice, all affected customers SHALL be notified, and all meters SHALL be turned off.

3.2.7 Before a gas steel or cast iron main is to be cut, or pipelines disconnected, the section to be cut or disconnected should be bonded over with a stranded copper cable (preferably Number 0,B & S gage.) In order to make the proper electrical contact, the gas main should be filed to bright metal and the copper cable clamped securely to it.

Before a pressurized plastic gasline is to be squeezed off or cut in a gaseous atmosphere the gas line must be wet down with a water/soap solution or water/glycol solution and grounded with a solution-wetted cloth to prevent static electrical charges.

3.2.8 Have an approved type fire extinguisher at the bell hole or trench during welding operations.

3.2.9 NO live tie-ins SHALL be made on intermediate or high pressure mains except with the special tools and equipment constructed for the purpose, and all personnel directly involved in such operations SHALL wear appropriate eye protection.

3.2.10 NO live tie-ins larger than two inches SHALL be made on low pressure mains until the section has been valved or bagged off.

## 3.3 TESTING

3.3.1 Test heads used to seal the ends of the pipe being tested must be in good condition and approved for this purpose. While pressure is on the line, NO ONE SHALL be allowed to stand in front of, or beside, the test heads. When testing is completed, the air pressure SHALL be slowly released and the test head left in place until all pressure has been removed. If test heads are left in place overnight, they shall be locked out.

3.3.2 All mains and services shall be thoroughly purged or cleared of air before being put into service. In congested areas or other special instances, the method of purging will be determined by the existing conditions and SHALL be under the direct supervision of an engineer, superintendent or supervisor.

3.3.3 When gas is to be turned on in a main or service, all meters shall be turned off before gas is turned on in the main and service. After gas is turned on, individual restoration of services will be made. Make certain that all services have been restored. All lines must be purged or cleared of air and the burners correctly adjusted before leaving the customer's premises.

3.3.4 When a service or main is abandoned or discontinued, the ends MUST always be capped or plugged to avoid accidental flow of gas into a building.

3.3.5 All excavations SHALL be properly back-filled and left in as near their original condition as possible. Governing regulations SHALL be adhered to in determining the suitability of backfill material and method of backfilling.

## 3.4 CUSTOMER INSTALLATION AND SERVICE

### 3.4.1 General Information

A. A large part of this work is performed on the customer's premises. Specific rules and hazards involved are covered in another section of the manual.

B. Customer Installation personnel SHALL immediately report to the supervisor any installed gas appliance that does not meet the safety requirements of ASA Code Z21.30 and/or NFPA 54, "Installation of Gas Appliances and Gas Piping".

### 3.4.2 Basic Precautions

A. One employee alone SHALL NOT open or tap a pipe containing gas unless there is a control valve or cock on the pipe that can first be shut off. If there is no cock or valve to stop the flow of gas, there SHALL be at least two men on the job.

B. Leak detection fluid, or a combustible gas indicator, SHALL be used for locating gas leaks. Matches or open flames SHALL NOT be used for this purpose. When tracing a gas leak within a building, employees SHALL NOT ring the door bell to gain admittance or operate electrical equipment that may generate a spark within the affected area.

C. The employees SHALL promptly and adequately ventilate the area involved in a gas leak.

They shall also consider having the building evacuated if there is possible danger to life and limb.

3.4.3 Testing

A. When gas is turned on into house piping, a five-minute observation of the meter test hand SHALL be made to determine if any leaks exist in the piping or appliances.

B. Air MUST be eliminated from piping and appliances before an attempt is made to ignite gas and restore service.

3.4.4 Gas Leaks

A. All reports of gas leaks SHALL be investigated as promptly as possible.

B. When a major outside leak is discovered, all buildings and manholes in the vicinity of the leak SHALL be checked for the presence of gas by a combustible gas indicator. Use extreme care when working in any place where there is enough gas to show on the indicator.

C. All manholes showing an indication of gas shall be reported to the gas radio dispatcher for further action.

D. All open flames, including warning lanterns and torches, SHALL be kept away from the vicinity of gas leaks, and smoking is STRICTLY PROHIBITED.

E. Leaks traced into any house SHALL be followed by an inspection of houses on either side to insure that all places of danger are located and vented.

F. Where combustible gases are found, other than those distributed by the Company, an attempt SHALL be made to determine the source and type of gas.

## 3.5 PROPANE GAS PLANT OPERATIONS

### 3.5.1 Handling Propane

A general Safety Manual embodying all the instructions which are necessary for the safe operation of any and all gas peaking plants would be too bulky for practical use. It is the intention, therefore, to include in this section only a few major rules applying specifically to the handling of liquid propane. Each gas peaking plant shall be provided with any additional safety instructions or amplification of these general instructions, which may be required, as well as instructions on the proper methods and sequences of plant operation and maintenance.

### 3.5.2 Unloading Tank Cars or Trucks of Liquid Propane

Tank cars or trucks shall be unloaded in strict compliance with the regulations of the Department of Transportation.

### 3.5.3 Basic Precautions

A. Block wheels of tank car or truck with approved chocks.

B. Install derailer and warning sign on track at least 75 feet from the car being unloaded.

C. Electrically bond tank car or truck to unloading line with the equipment provided.

D. Whenever possible, truck engines and any associated systems shall be shut off during unloading operations.

E. Test unloading lines and hoses for tightness with propane vapor before starting unloading.

F. Various types of personal protective equipment are furnished by the Company. The use of the protection is either recommended or required depending on the equipment being used and/or the job being performed.

3.5.4 Construction

A. Before starting any work in or along highways or streets, standard signs and warning devices must be used. Refer to the Work Area Protection Manual.

B. Before starting an excavation or barring for leaks, the employee in charge should secure information on existing subsurface structures or lines. Work in the vicinity of all such interefences must be done with great care. The area SHALL be carefully designated to show the limits of excavation or barring and workmen SHALL keep their work within these limits.

C. When excavating or tunneling at depths of five (5) feet or greater, or less if there is a suspected danger of cave-in, the trench or tunnel shall be adequately shored. In such cases, an exit ladder SHALL be

installed and extend from the bottom of the trench to at least three (3) feet above ground level.

6

FIRST AMENDMENT

TO

CONTINUING SITE/INTERCONNECTION AGREEMENT

BY AND BETWEEN

ORANGE AND ROCKLAND UTILTIES, INC.,

AND

SOUTHERN ENERGY NY-GEN, L.L.C.

May 10, 1999

# FIRST AMENDMENT TO CONTINUING SITE/INTERCONNECTION AGREEMENT

THIS FIRST AMENDMENT TO CONTINUING SITE/INTERCONNECTION AGREEMENT ("Amendment"), dated as of May 10, 1999, by and between Orange and Rockland Utilities, Inc., a New York corporation ("Seller") and Southern Energy NY-Gen, L.L.C., a Delaware limited liability company ("Buyer").

WHEREAS, Seller and Buyer entered into the Continuing Site/Interconnection Agreement (the "Agreement") on November 24, 1998, whereby Seller agreed to provide Buyer with certain interconnection services associated with Buyer's purchase of certain gas turbine and hydroelectric generation assets from Seller, and Buyer agreed to provide Seller access to certain parts of those generation assets;

WHEREAS, the Agreement contemplates the development of a "Separation Document" which would further delineate Seller's and Buyer's rights and responsibilities under the Agreement; and

WHEREAS, Seller and Buyer desire to amend certain provisions of the Agreement in lieu of developing a "Separation Document".

NOW, THEREFORE, in consideration of the premises and agreement hereinafter set forth, and intending to be legally bound hereby, the parties hereto agree as follows:

## ARTICLE I

## AMENDMENT TO AGREEMENT

1.1. One-Line Drawings and Secondary System Ownership. Schedule A to the Agreement is revised by deleting the first page to Schedule A, entitled "Schedule A to Continuing Site/Interconnection Agreement", and inserting the first page of Schedule A to this Amendment,

entitled "Schedule A (Part I) to Continuing Site/Interconnection Agreement", in lieu thereof. Schedule A to the Agreement is further revised by deleting the one-line drawings in Schedule A labeled Hillburn and Shoemaker and inserting the one-line drawings in Schedule A Part I to this Amendment labeled "Hillburn Gas Regulator Plant" and "Shoemaker" in lieu thereof. Schedule A to the Agreement is revised by inserting Schedule A (Part II) to this Amendment at the end thereof.

1.2. Black Start & System Restoration Plan. Schedule D to the Agreement is deleted in its entirety and Schedule D to this Amendment is inserted in lieu thereof.

1.3. Revenue Meters. Section 1.28 of the Agreement is revised by inserting the words ", the current locations of which are set forth in Schedule F (Part I) hereto, and the anticipated meter locations of which are set forth in Schedule F (Part II) hereto" at the end of the sentence. The Agreement is further revised by inserting Schedule F to this Amendment as Schedule F (Parts I and II) to the Agreement.

1.4. Operating, Metering and Equipment Protection Requirements. Section 3.1.2 of the Agreement is revised by deleting the third and fourth sentences therefrom.

1.5. Metering for Retail Accounts. Section 3.1.3 of the Agreement is revised by inserting ", and Schedule G hereto identifies the electric and gas meters which Seller will use to measure the services which Seller itself will provide to Buyer under this Section 3.1.3" at the end of the second sentence thereof. The Agreement is further revised by inserting Schedule G to this Amendment as Schedule G to the Agreement.

1.6. Low Voltage Substation Service. Section 3.8.1 and Section 3.9.1 of the Agreement are each revised by deleting "as will be set forth in the Separation Document" therein.

1.7. Line Operations Information. Section 3.8.9 of the Agreement is revised by deleting "as set forth more fully in the Separation Document" at the end of the first sentence thereof.

1.8. Energy Management System Information. Section 3.8.10 of the Agreement is deleted in its entirety.

1.9. Dispatch Service Protocols. Section 3.8.11 of the Agreement is deleted in its entirety.

1.10. Line Operation Information. Section 3.9.3 of the Agreement is revised by deleting "as set forth more fully in the Separation Agreement" at the end of the first sentence thereof.

1.11. Substation Operations and Maintenance. Section 3.9.5 of the Agreement is deleted in its entirety.

1.12. Switching, Tagging and Grounding Rules. Section 3.14.2 of the Agreement is revised by deleting "mutually agreed to by the Parties" and inserting "set forth in Schedule H hereto" in lieu thereof. The Agreement is further revised by inserting Schedule H to this Amendment as Schedule H to the Agreement.

## ARTICLE II

## MISCELLANEOUS

2.1. Severability. Should any article, section or provision of this Amendment be decided to be illegal, unenforceable or in conflict with any law by a court of competent jurisdiction or arbitration tribunal, such article, section or provision shall be deemed severed from this Amendment and the validity of the remainder of the Amendment shall not be affected thereby.

2.2. Governing Law. This Amendment shall be governed by and construed in accordance with the laws of the State of New York.

2.3. Counterparts. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

By: D L Peoples
Name: D. L. Peoples
Title: Chief Executive Officer

SOUTHERN ENERGY NY-GEN, L.L.C.

By: _____
Name: _____
Title: _____

2.3. Counterparts. This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be signed by their respective duly authorized officers as of the date first above written.

ORANGE AND ROCKLAND UTILITIES, INC.

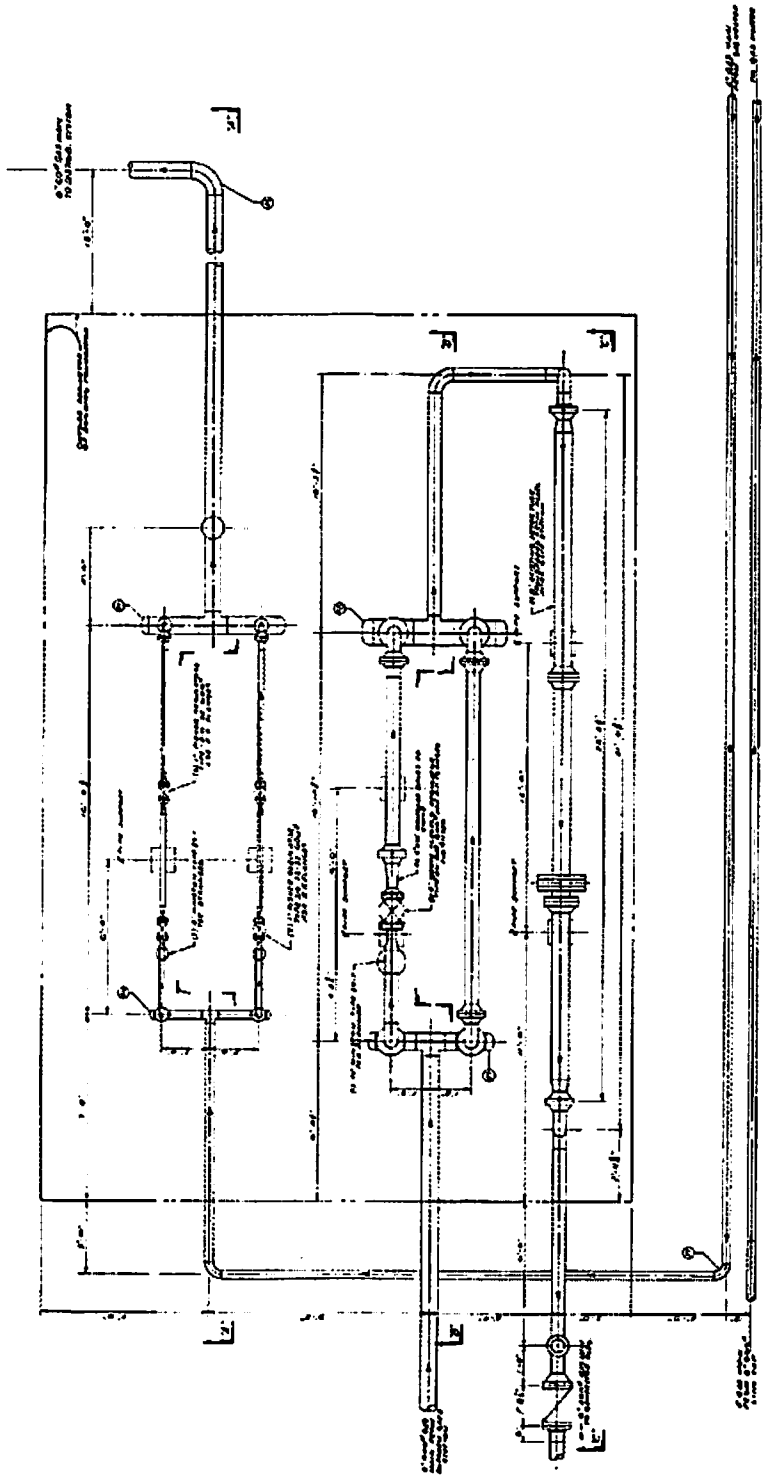
By: _____
Name: _____
Title: _____

SOUTHERN ENERGY NY-GEN, L.L.C.

By: James A. Ward
Name: James A. Ward
Title: Vice President

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

GD17-C



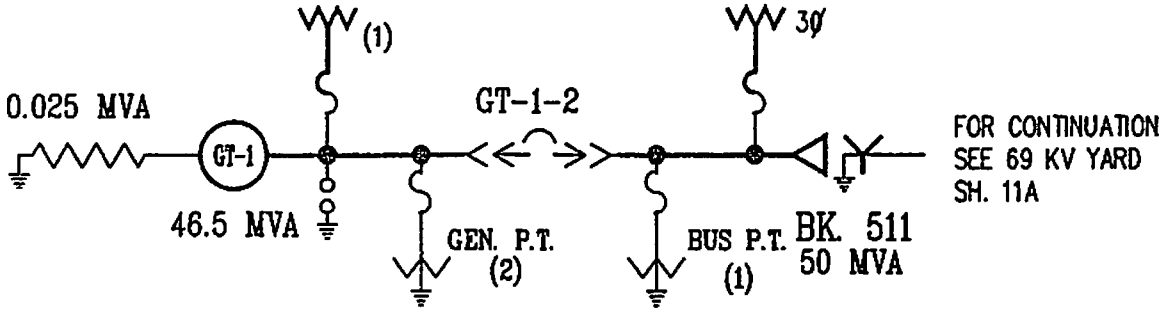
PLAN

# HILLBURN GAS REGULATOR PLANT

ORANGE AND ROCKLAND UTILITIES,INC.

| DRAWN F.B. | GENERATION DIVESTITURE | DATE 04-21-99 |
|---|---|---|

PLOT RATIO: 0.. ) = 1




| | | |
|---|---|---|
| | SHOEMAKER GT-1 | 11 |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 04-21-99 |

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

| PLANT: HILLBURN G.T. | | | | |
|---|---|---|---|---|
| | | | OWNER | |
| TRIPS BREAKER | RELAY TYPE | DEVICE # | ORU | SC |
| 86T | HU | 87T-1 | | X |
| 86T | HU | 87T-2 | | X |
| 86T | HU | 87T-3 | | X |
| 86G-1 | KLF | 40L | | X |
| 86G-1 | CV-8 | 64G | | X |
| 86G-1 | CV-5 | 59G | | X |
| 86G-1 | PT-3 | 49G-1 | | X |
| 86G-1 | CW | 32 | | X |
| 86G-1 | SA-1 | 87G | | X |
| 86G-1 | DT-3 | 49G-2 | | X |
| GT1-2 | COQ | 46 | | X |
| GT1-2 | CEB | 21 | | X |
| GT1-2 | RPM | 21GX/TX | | X |
| GAS SHUT OFF | SC | UNIT-A IJ | | X |
| GAS SHUT OFF | SC | UNIT-A IK | | X |
| GAS SHUT OFF | SC | UNIT-B IL | | X |
| GAS SHUT OFF | SC | UNIT-B IM | | X |
| LIQUID SHUT OFF | SC | UNIT-A IN | | X |
| LIQUID SHUT OFF | SC | UNIT-A IP | | X |
| LIQUID SHUT OFF | SC | IQ | | X |
| LIQUID SHUT OFF | SC | IR | | X |

The parties acknowledge that the designation of ownership of the various relays listed in Schedule A, Part II is based upon the functionality of the relays. Relays with the primary purpose of protecting transmission facilities have been designated as Seller's relays and relays with the primary purpose of protecting generation facilities have been designated as Buyer's relays. The parties agree to revise this list from time to time to the extent the ownership designation does not reflect such functionality.

| PLANT: SHOEMAKER GT | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 511-2 | HU | 87T-1 | | X |
| LOWSIDE (GE) | HU | 87T-2 | | X |
| BREAKER 86T LOCKOUT | HU | 87T-3 | | X |
| 86G-1 | KLF | 40L | | X |
| 86G-1 | CV-8 | 64G | | X |
| 86G-1 | CW | 32 | | X |
| 86G-1 | SA-1 | 87G | | X |
| 86G-1 | DT-3 | 49G-1 | | X |
| ALARM | DT-3 | 49G-2 | | X |
| GEN. | C0Q | 46 | | X |
| LOWSIDE BREAKER | CEB | 21 | | X |
| LOWSIDE BREAKER | RPM | 21GXTX | | X |
| 86G-2 LOCKOUT | SC-1 | IJ | | X |
| 86G-2 LOCKOUT | SC-1 | IK | | X |
| 86G-2 LOCKOUT | SC-1 | IL | | X |
| 86G-2 LOCKOUT | SC-1 | IM | | X |
| 86G-2 LOCKOUT | SC-1 | IN | | X |
| 86G-2 LOCKOUT | SC-1 | IP | | X |
| 86G-2 LOCKOUT | SC-1 | IQ | | X |
| 86G-2 LOCKOUT | SC-1 | IR | | X |
| CLOSES BKR. GT1-2 | DSM | 25 | | X |
| TRIPS 86G-1, 511-2, 86G-2 | CV-5 | 59G | | X |

| 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: 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 | C0-9 | 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 | 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 (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: GRAHAMSVILLE**

| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
|---|---|---|---|---|
| | | | ORU | SC |
| HG1291 | HZ | 121-1 | | X |
| HG1291 | HZ | 121-2 | | X |
| HG1291 | HZ | 121-3 | | X |
| HG1291 | CWC | 167N | | X |
| HG1291 | COD | 51 | | X |
| HG1291 | SG | 51X | | X |
| HG1291 | TD-52 | 62-1&2 | | X |
| HG1291 | AR | 94 | | X |
| TT T0 WEST DELAWARE | TCF10B | 85 | | X |
| HG 1291 14-1 & 24A | HZ | 21-1 | | X |
| HG 1291 14-1 & 24A | HZ | 21-2 | | X |
| HG 1291 14-1 & 24A | HZ | 21-3 | | X |
| HG 1291 14-1 & 24A | CWC | 67NB | | X |
| HG 1291 14-1 & 24A | KD-10 | 21P | | X |
| HG 1291 14-1 & 24A | KD-11 | 21S | | X |
| HG 1291 14-1 & 24A | KRD-4 | 67N | | X |
| HG 1291 14-1 & 24A | KC-2 | 50FD | | X |
| HG 1291 14-1 & 24A | AR | 94T | | X |
| BLOCKING CARRIER | KA-4 | 85 | | X |
| NEVERSINK & WEST DELAWARE | TC10B | 85 | | X |
| 86T LOCKOUT HG1291 | CA | 87T-1 | | X |
| 86T LOCKOUT HG1291 | CA | 87T-2 | | X |
| 86T LOCKOUT HG1291 | CA | 87T-3 | | X |
| 86T LOCKOUT HG1291 | TS-1 | 87TX | | X |
| BACK UP TRANS 14-1 | SC-D | 51N | | X |
| 86T LOCKOUT | JD | TIMER JD-A | | X |
| 86E LOCKOUT C0-2 | CA | 87G-1 | | X |
| 86E LOCKOUT C0-2 | CA | 87G-2 | | X |
| 86E LOCKOUT C0-2 | CA | 87G-3 | | X |
| 86E LOCKOUT | CA | 87GS-1 | | X |
| 86E LOCKOUT | CA | 87GS-2 | | X |
| 86E LOCKOUT | CA | 87GS-3 | | X |
| 86E LOCKOUT GEN. BACKUP | SC | 51G | | X |
| 86E LOCKOUT GEN. BACKUP | JD | TIMER JD-B | | X |
| 86N LOCKOUT 14-1 | C0V | 51GV-1 | | X |
| 86N LOCKOUT 14-1 | C0V | 51GV-2 | | X |
| 86N LOCKOUT 14-1 | C0V | 51GV-3 | | X |
| 86N LOCKOUT 14-1 | CV | 64GN | | X |

| PLANT: GRAHAMSVILLE (CONTINUED) | | | | |
|---|---|---|---|---|
| TRIPS BREAKER | RELAY TYPE | DEVICE # | OWNER | |
| | | | ORU | SC |
| 151X LOCKOUT | C0-10 | 50/51-1 | | X |
| 24A & 24B | C0-10 | 50/51-2 | | X |
| STATION SERVICE | C0-10 | 50/51-3 | | X |
| 24-B | CV | 27G | | X |
| 24-A | CV | 27L | | X |
| | CV | 27S | | X |
| NORMAL SHUTDOWN | BL | 49 | | X |
| 86N | D-3 | 64F | | X |
| CLOSE 14-1 | XTF | 25 | | X |

**PLANT - HILLBURN 69KV YARD**

**DIVESTED ASSET - OCB GT-17-2X**
**FK72.5-38000-3**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 217 | CONTROL | | X |
| 216 | BANK 617 DIFFERENTIAL | | X |
| 214 | 69KV BUS DIFFERENTIAL | X | |
| 225 | CONTROL | | X |
| 226 | CONTROL | | X |
| 211 | DC CONTROL POWER | X | |
| 215 | CONTROL | | X |
| 218 | SPARE | | X |
| 219 | SPARE | | X |
| 220 | CONTROL | | X |
| 205 | AC CONTROL POWER | X | |

**PLANT - HILLBURN 69KV YARD**

**DIVESTED ASSET - OCB 617-2Y**
**FK72.5-38000-3**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 213 | 69KV BUS DIFFERENTIAL | X | |
| 216 | BANK 617 DIFFERENTIAL | | X |
| 226 | CONTROL | | X |
| 221 | SPARE | | X |
| 222 | SPARE | | X |
| 212 | DC CONTROL POWER | X | |
| 224 | CONTROL | | X |
| 223 | CONTROL | | X |
| 206 | AC CONTROL POWER | X | |

**PLANT - SHOEMAKER 69KV YARD**

**DIVESTED ASSET - OCB 511-2**
**FK-72.5, 69KV, 5000MVA, 2000AMP**

| | | OWNER | |
|---|---|---|---|
| CABLE # | FUNCTION | ORU | SEI |
| 809 | DC POWER | X | |
| 238 | CONTROL | | X |
| 807 | CONTROL | X | |
| 810 | AC CONTROL POWER | X | |
| 239 | SPARE | | X |
| 244 | RELAY CURRENTS | | X |
| 808 | 69KV BUS DIFFERENTIAL | X | |
| 240 | SPARE | | X |

| PLANT - MONGAUP 69KV YARD | | | |
|---|---|---|---|
| DIVESTED ASSET - OCB 52-2 | | | |
| | | OWNER | |
| CABLE # | FUNCTION | ORU | SEI |
| 75<br>195<br>26 | CONTROL<br>DC CONTROL POWER<br>BANK 52 RELAYS | | X<br>X<br>X |

| PLANT - MONGAUP 69KV YARD | | | |
|---|---|---|---|
| DIVESTED ASSET - BANK 52 | | | |
| | | OWNER | |
| CABLE # | FUNCTION | ORU | SEI |
| 44<br>87 | LINE POLARIZING CURRENT<br>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 |

Schedule D to Continuing Site/Interconnection Agreement

Schedule D

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

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 PCC. 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.

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) 352-0096 |
| 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 | |

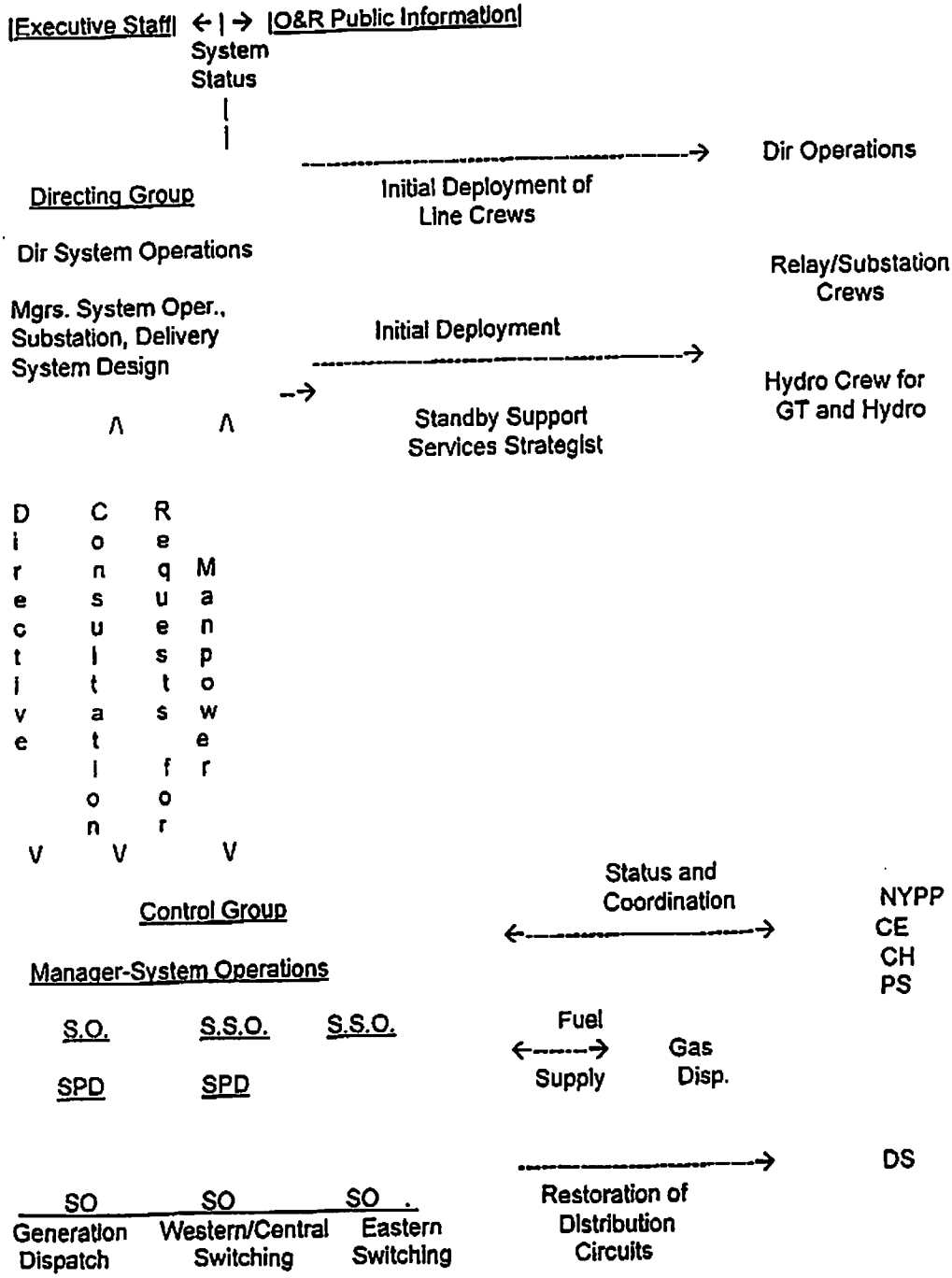
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BLACK START AND SYSTEM RESTORATION PLAN

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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

I. 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.

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. 2644 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) 354-9550 |

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 personnel.

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 )<br>West Nyack )<br>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 )<br>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 )<br>Harriman ) | 1 Substation Crew | 1 Relay Crew |
| Montvale )<br>Pearl River ) | 1 Substation Crew | 1 Relay Crew |

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 354-8550) 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.

<u>Western Division</u>

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

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BLACK START AND SYSTEM RESTORATION PLAN SHEET 8 of 32

Central Division

| | | | |
|---|---|---|---|
| Sterling Forest | | 67-1-2K<br>67-2-2K | |
| Harriman | 71-3-2B<br>71-4-2B<br>71-5-2B<br>71-6-2B | | 71-1-2B<br>71-2-2B<br>71-7-2B<br>71-8-2B |
| South Goshen | | 89-1-2K<br>89-2-2K<br>89-3-2K<br>89-10-2K<br>89-11-2K | |
| Ringwood | | 78-1-2K<br>78-2-2K | |
| West Milford | 79-4-2K<br>79-5-2K<br>79-6-2K | 79-1-2B<br>79-2-2B<br>79-3-2B | 79-7-2B<br>79-8-2B |
| Wisner | | 80-1-2K<br>80-2-2K<br>80-3-2K<br>80-4-2K<br>80-5-2K | |
| Monroe | | 82-61-2<br>83-61-2<br>61-1-2K<br>61-2-2K<br>61-3-2K<br>61-4-2K | |
| Hunt | | 84-1-2K<br>84-2-2K | |
| Lake Road | | 82-1-2B<br>82-2-2B | |

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| | |
|---|---|
| Blooming Grove | 76-1-2K<br>76-3-2K<br>76-4-2K |
| Highland Falls | 73-1-2K<br>73-5-2K<br>73-6-2K |

Eastern Division

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

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| | |
|---|---|
| Grand Avenue | 60-1-2B<br>60-2-2B<br>60-3-2B<br>60-4-2K<br>60-5-2K |
| Upper Saddle River | 49-1-2B<br>49-2-2B<br>49-3-2B<br>49-4-2B |
| Sparkill | 50-1-2B<br>50-2-2B<br>50-3-2B<br>50-4-2B |
| South Mahwah | 52-1-2B<br>52-2-2B<br>52-3-2B<br>52-4-2B<br>58-1-2K<br>58-2-2K<br>58-3-2K |
| Franklin Lakes | 35-5-2B<br>35-6-2B<br>35-7-2B<br>35-8-2B<br>35-9-2B<br>35-10-2B |
| Oakland | 36-1-2K<br>36-2-2K<br>36-3-2K<br>36-4-2K |
| Cresskill | 37-1-2B<br>37-2-2B<br>37-3-2B |
| Harings Corner | 30-1-2B<br>30-2-2B<br>30-3-2B<br>30-4-2K<br>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 (ECC 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 819 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 263 |
| 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

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 56-47-2
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 51, 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-89-59
8. Open or check open switch GT-17-2X
9. Open or check open switch 59-17-2X
10. Open or check open switch 65-17-2X
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 Lederle 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 50-31-2
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 T1-53-2

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 819-2
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 25-11-2
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 911 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 Wallkill 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 15-2-2
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 providing 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.

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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 Haverstraw
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 55MVA 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

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 Harings 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 562-22-2
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 60-19-2X
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 49.0MVA 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

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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 656-29-2
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 917-2X

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 T51-585
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 57-35-2
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 Harings Corner by closing 658-30-2, from Hillburn 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 | 146 and 246 |
| Grand Avenue | 160 and 260 |
| Upper Saddle River | 149 |
| South Mahwah | 452 |
| Franklin Lakes | 335 and 435 |
| Montvale | 429 |
| Oakland | 136 |

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.

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 2.6 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 Closter
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 46-30-2. 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 89-78-2
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<br>T111-27<br>6-11-2 | 13-11-2<br>111-11-2Y<br>11-11-2 | 24-11-2<br>211-11-2Y<br>211-2 | 25-11-2<br>T211-5<br>111-2 | 27-11-2X<br>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 OCBs | | | | |
| West Haverstraw | All breakers | | | | |
| Hillburn | 89-17-2Y<br>T-89-59<br>65-17-2X | 317-2Y<br>T317-65<br>417-2X | 31-17-2Y<br>T417-31<br>917-2X | 23-17-2Y<br>T917-23 | 59-17-2X |
| South Mahwah | T258-J3410<br>587-58-2Y | | 258-58-2X<br>T2-52-2 | | T258-587<br>585-58-2Y |
| Bowline | T255-68 | T155-67 | | | |
| Burns | 50-19-2 | | | | |
| Harings Corner | 45-30-2 | | | | |

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

# PRODUCTION METER LOCATIONS - GT/HYDRO

| DESCRIPTION | COMPANY USE | PURPOSE | ACCT/METER # | LOCATION | COMPENSATION REQUIRED |
|---|---|---|---|---|---|
| Shoemaker GT | Electric | Unit Generation<br>Station Service | | 13.2KV System<br>13.2KV System | Bank 511<br>Bank 511 |
| Hillburn GT | Electric | Unit Generation<br>Station Service | | 13.2KV System<br>13.2KV System | Bank 617, 69KV U/G<br>Bank 617, 69KV U/G |
| Rio Hydro | Electric | Unit 1 Generation<br>Unit 1 Condensing<br>Unit 2 Generation<br>Unit 2 Condensing<br>Station Service | | 4KV System<br>4KV System<br>4KV System<br>4KV System<br>4KV System | Bank 13<br>Bank 13<br>Bank 13<br>Bank 13<br>Bank 63 |
| Mongaup Hydro | Electric | Unit 1 Generation<br>Unit 1 Condensing<br>Unit 2 Generation<br>Unit 2 Condensing<br>Unit 3 Generation<br>Unit 3 Condensing<br>Unit 4 Generation<br>Unit 4 Condensing<br>Station Service | | 2.4KV System<br>2.4KV System<br>2.4KV System<br>2.4KV System<br>2.4KV System<br>2.4KV System<br>2.4KV System<br>2.4KV System<br>2.4KV System | Bank 52<br>Bank 52<br>Bank 52<br>Bank 52<br>Bank 52<br>Bank 52<br>Bank 52<br>Bank 52<br>Bank 52 |

Schedule F
(Part I)

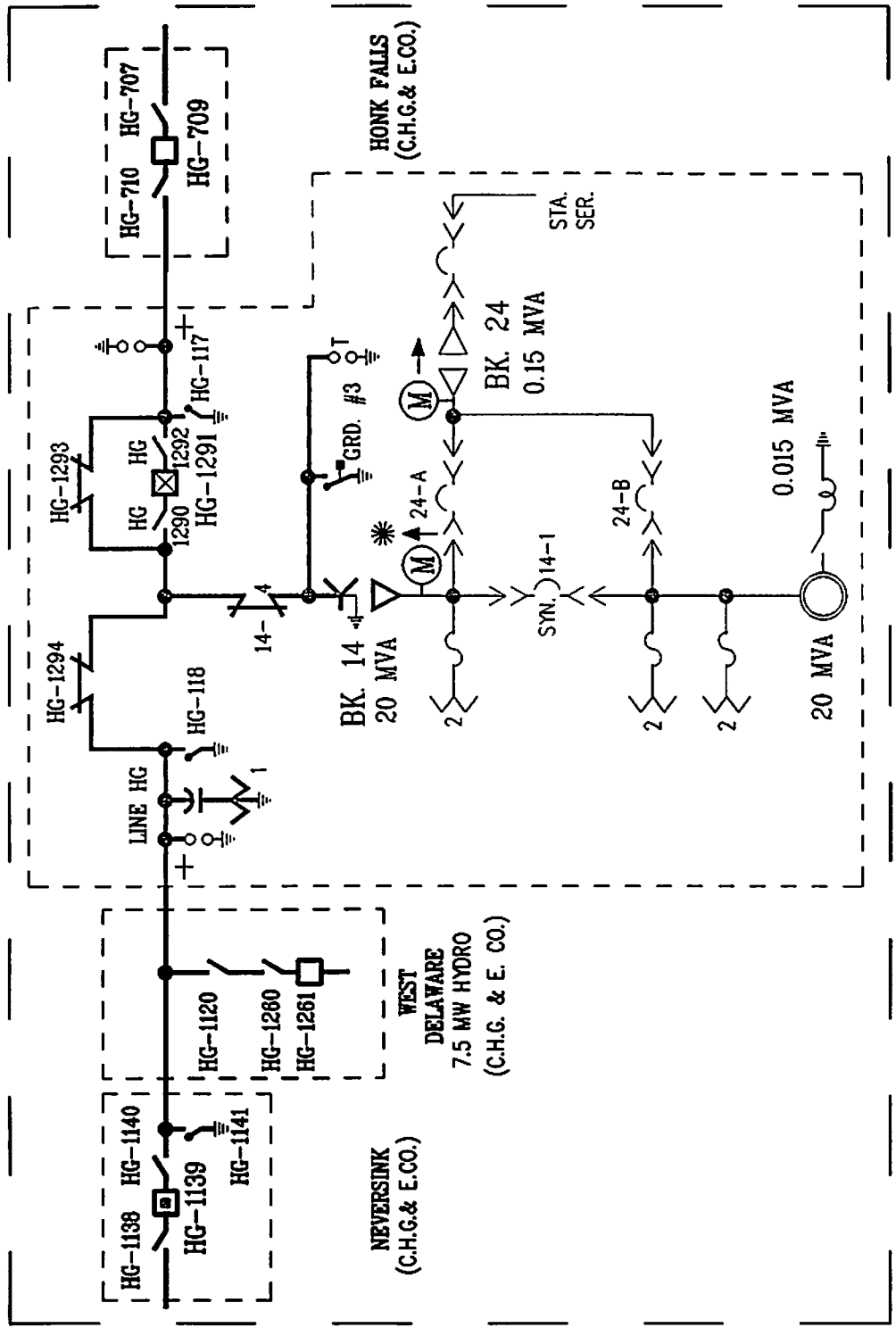
| DESCRIPTION | COMPANY USE | PURPOSE | ACCT/METER # | LOCATION | COMPENSATION REQUIRED |
|---|---|---|---|---|---|
| Swinging Bridge Hydro | Electric | Unit 1 Generation<br>Unit 1 Condensing<br>Unit 1A Generation<br>Unit 1A Condensing<br>Station Service | | 13.2KV System<br>13.2KV System<br>13.2KV System<br>13.2KV System<br>2.4KV System | Bank 11<br>Bank 11<br>Bank 21<br>Bank 21<br>Bank 31 |
| Grahamsville Hydro | Electric | Unit Generation<br>Unit Condensing<br>Station Service<br>Station Service | | 13.2KV System<br>13.2KV System<br>13.2KV System<br>Distribution - CHG&E | CHG&E Requirements<br>CHG&E Requirements<br>CHG&E Requirements<br>CHG&E Requirements |

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

# ANTICIPATED METER POINTS FOR PRODUCTION METERS

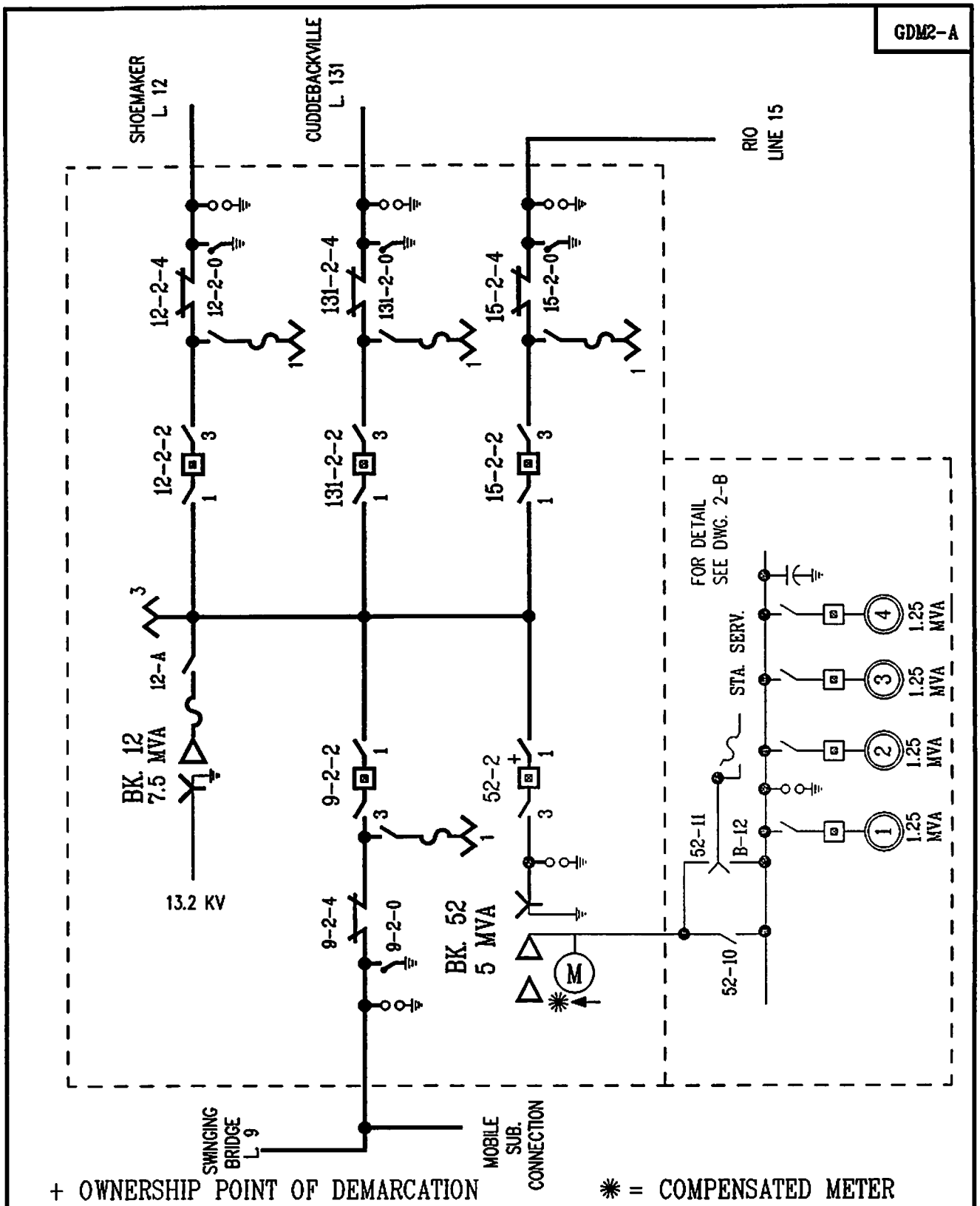
| STATION NAME | STATION NO. | DATE |
|---|---|---|
| GRAHAMSVILLE | GDM4-A | 5-6-99 |
| MONGAUP | GDM2-A | 5-6-99 |
| MONGAUP | GDM2-B | 5-6-99 |
| RIO | GDM3-A | 5-6-99 |
| RIO | GDM3-B | 5-6-99 |
| SWINGING BRIDGE | GDM1-A | 5-6-99 |
| HILLBURN | GDM17-A | 5-6-99 |
| SHOEMAKER | GDM11-A | 5-6-99 |
| SHOEMAKER | GDM11-B | 5-6-99 |

GDM4-A




+ OWNERSHIP POINT OF DEMARCATION ✳ = COMPENSATED METER

| | | |
|---|---|---|
| | GRAHAMSVILLE<br>ANTICIPATED METER POINTS<br>69 KV | 4 |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |



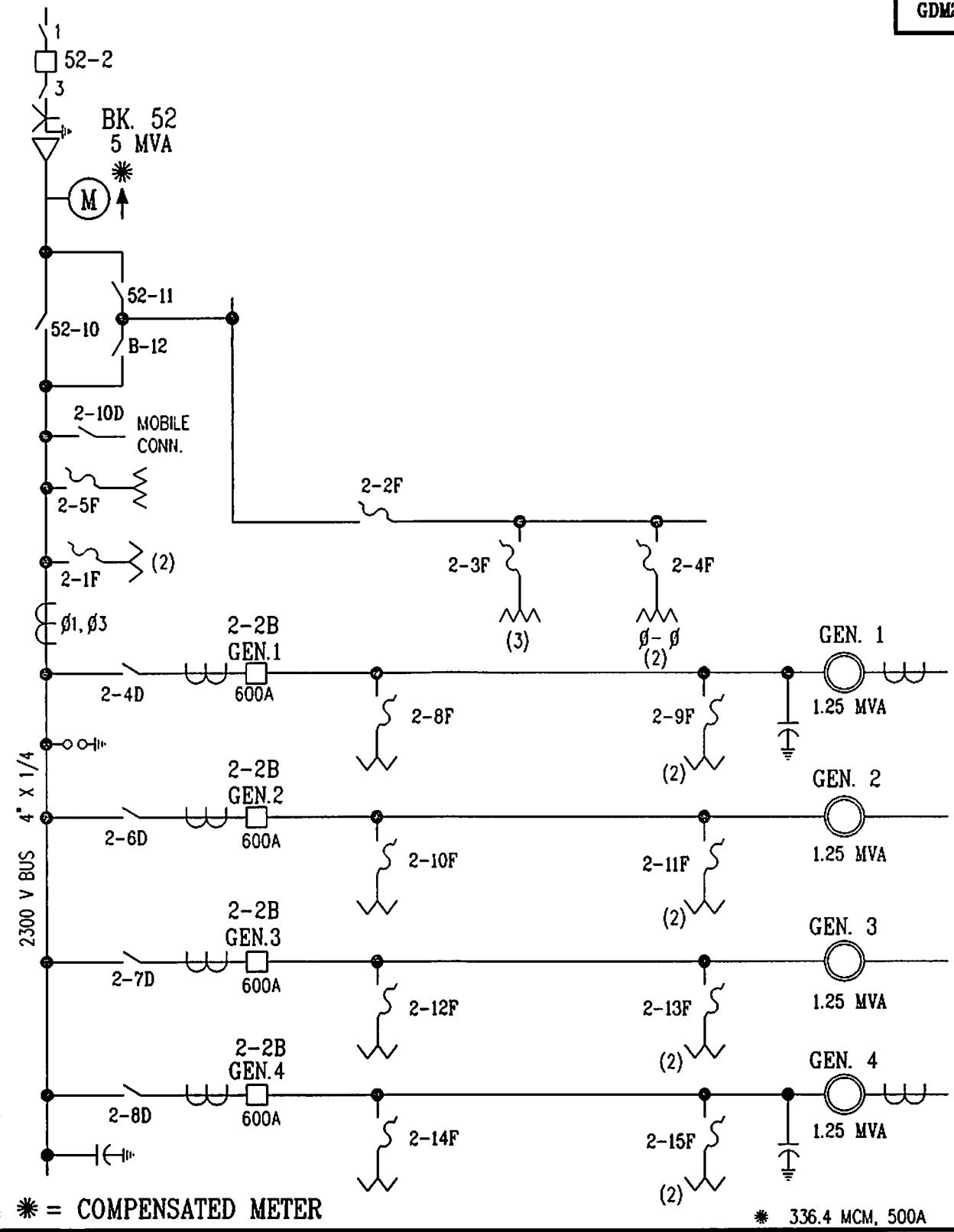

# MONGAUP 69KV

## ANTICIPATED METER POINTS

2

| | | |
|---|---|---|
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

GDM2-B



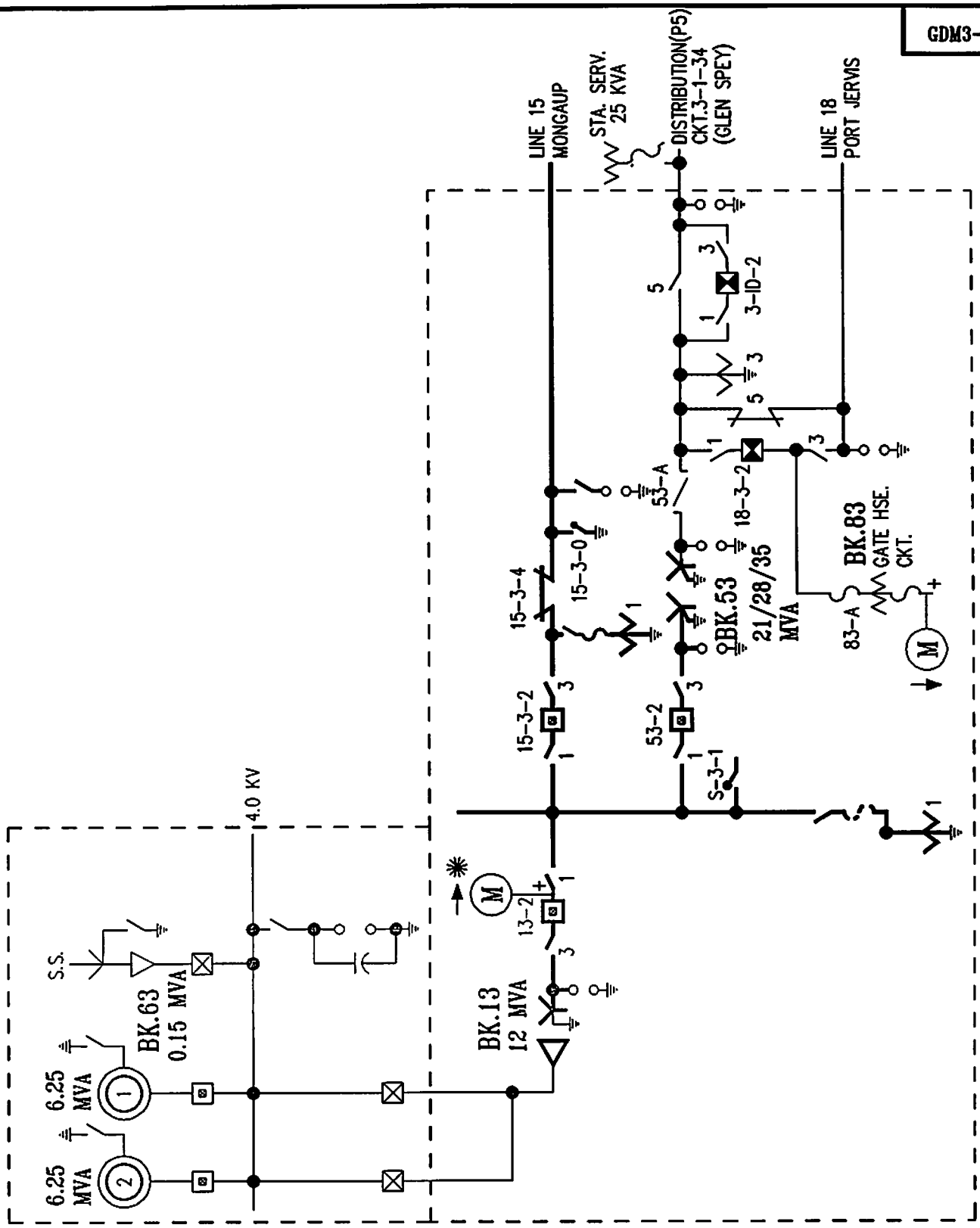

# MONGAUP
## ANTICIPATED METER POINTS

2.4 KV
POWER HOUSE &
TAKE-OFF STRUCTURE

2

| | | |
|---|---|---|
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

GDM3-A




+ OWNERSHIP POINT OF DEMARCATION ✳ = COMPENSATED METER

# RIO

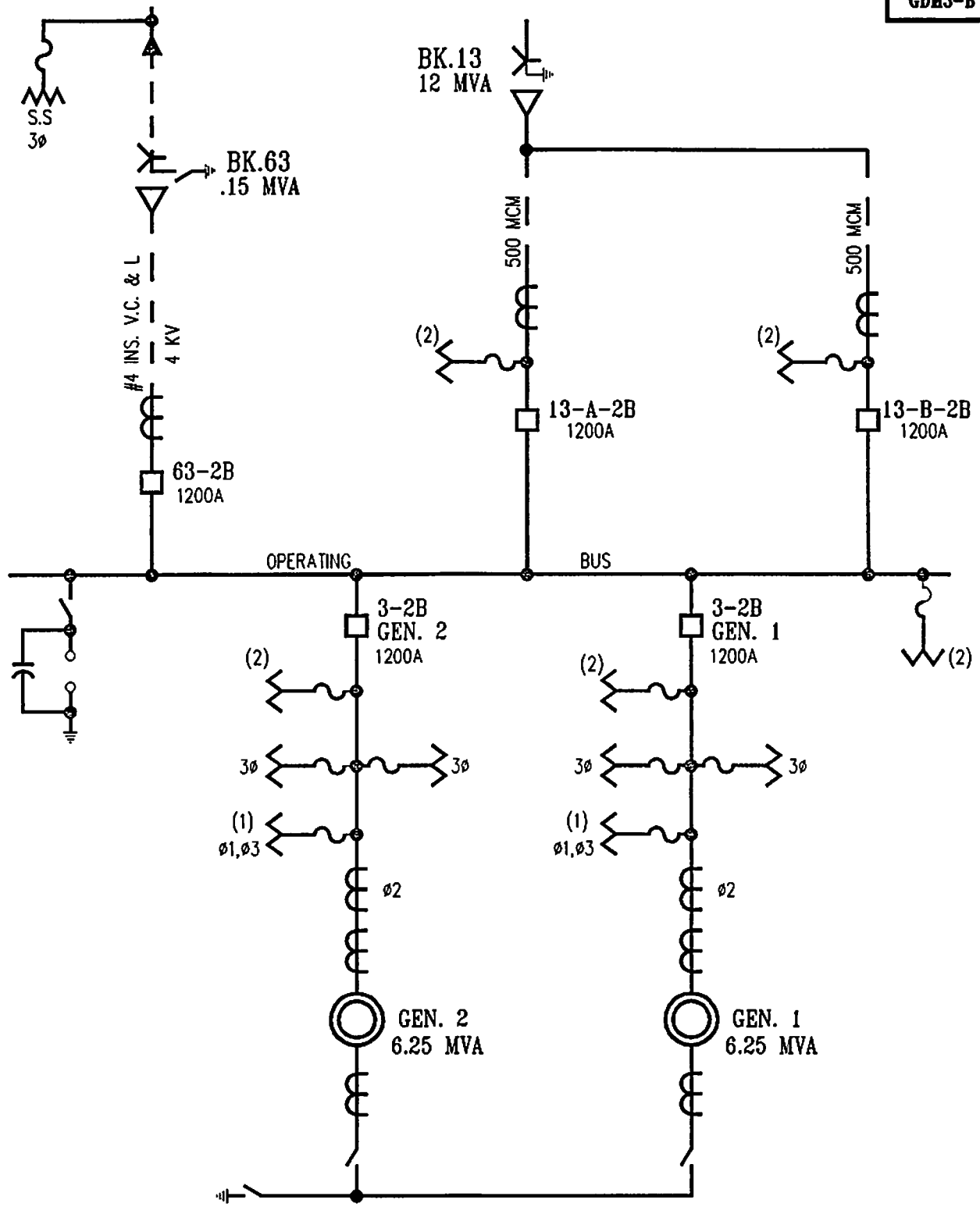
69KV

## ANTICIPATED METER POINTS

3

| | | |
|---|---|---|
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

GDM3-B



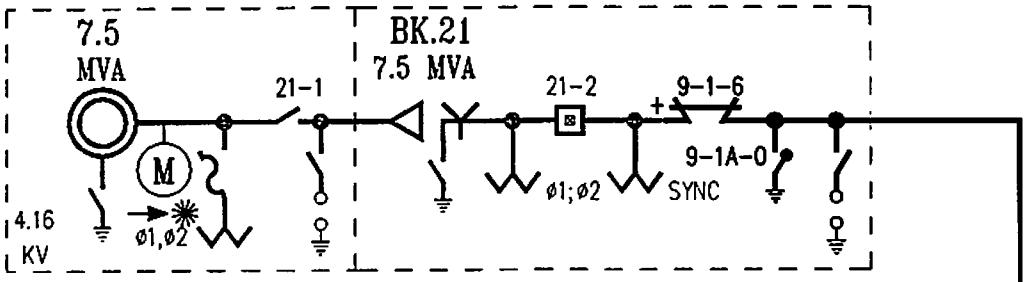

# RIO
## ANTICIPATED METER POINTS

4 KV
POWER HOUSE
OPERATING BUS

3

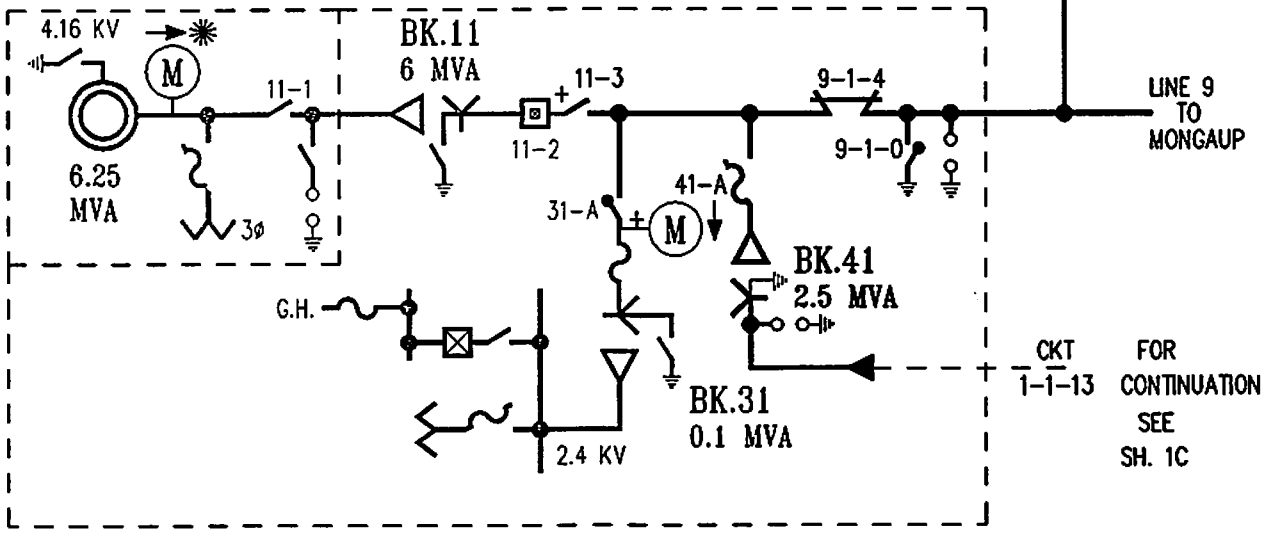
| | | |
|---|---|---|
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

GDM1-A




SWINGING BRIDGE (1A)

LINE 9

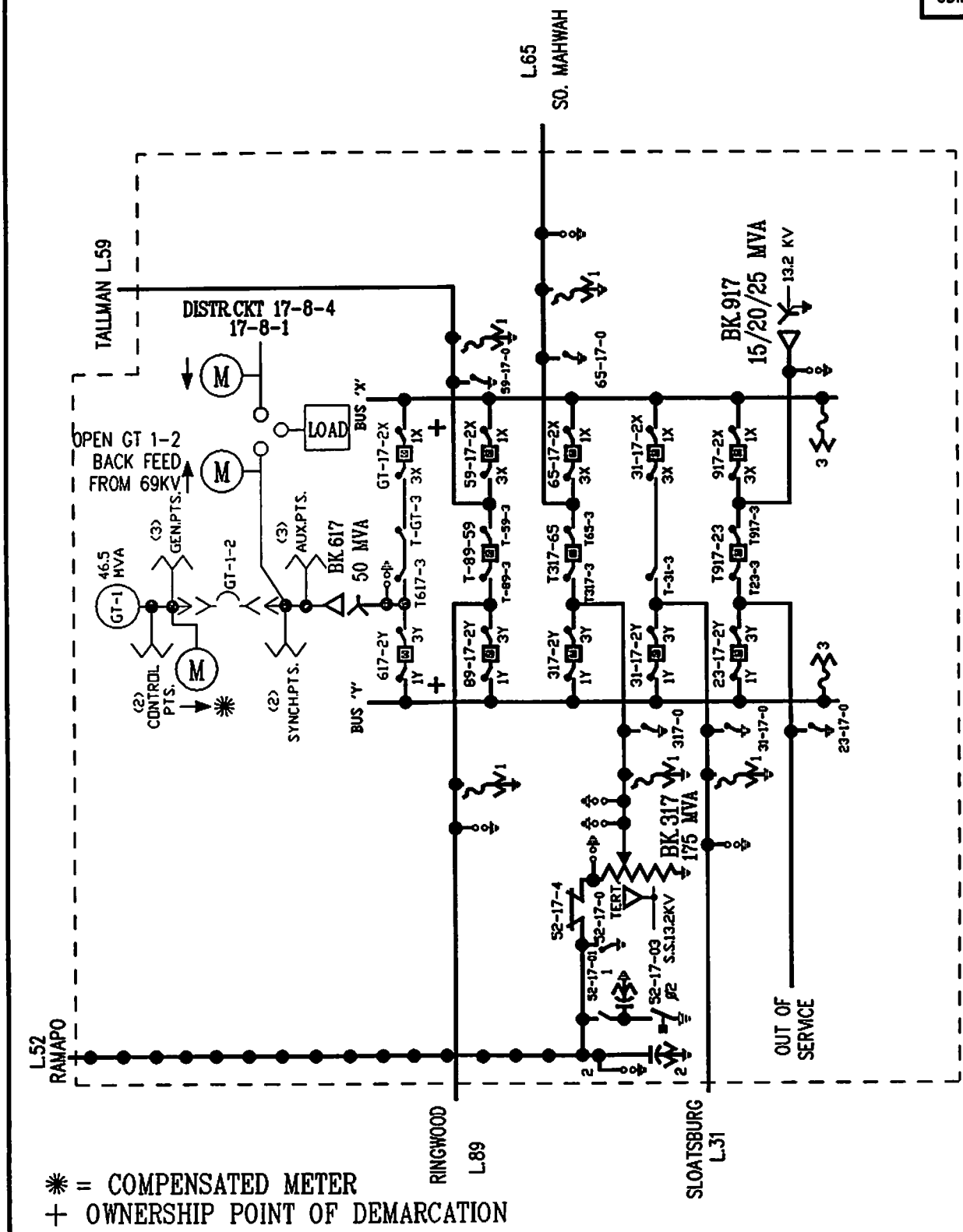



SWINGING BRIDGE (1)

+ OWNERSHIP POINT OF DEMARCATION ✳ = COMPENSATED METER

| | | |
|---|---|---|
| | SWINGING BRIDGE ANTICIPATED METER POINTS (1) (1A) | |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

GDM17-A



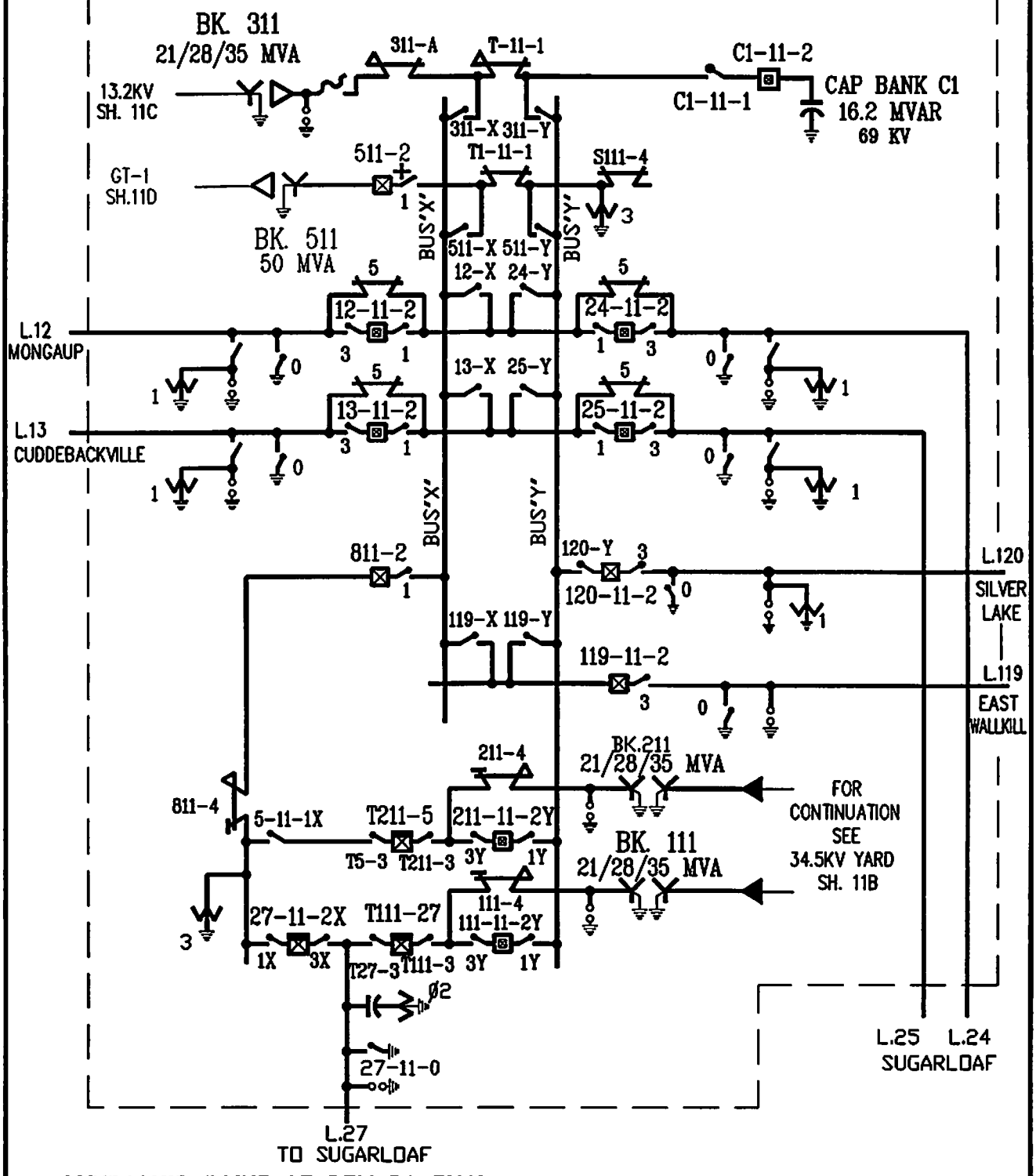

# HILLBURN 69KV

## ANTICIPATED METER POINTS

17

| | | |
|---|---|---|
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

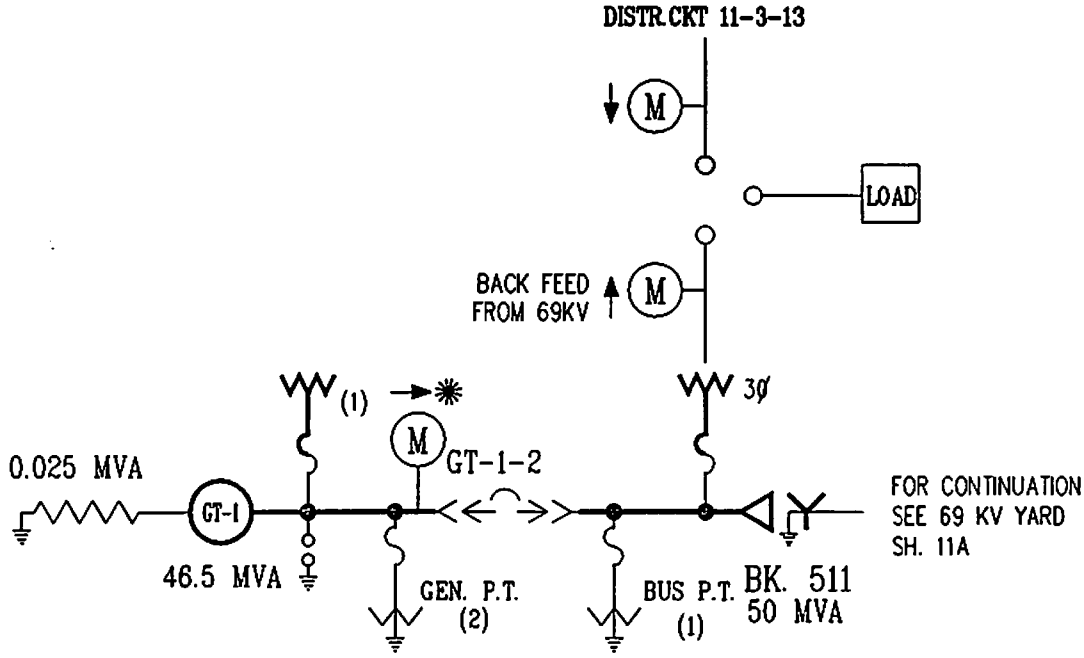
GDM11-A




— OWNERSHIP POINT OF DEMARCATION

| | | |
|---|---|---|
| | SHOEMAKER 69 KV<br>ANTICIPATED METER POINTS | 11 |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

GDM11-B




✳ = COMPENSATED METER

| | | |
|---|---|---|
| OR | SHOEMAKER GT-1 11<br>ANTICIPATED METER POINTS | |
| ISSUE APPROVAL | ORANGE AND ROCKLAND UTILITIES,INC. | ISSUE NO. |
| DRAWN CA. | GENERATION DIVESTITURE | DATE 5-6-99 |

Schedule G to Continuing Site/Interconnection Agreement

# 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

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

ECC SWITCHING PRACTICES

OI 1-S-4

SHEET 1 of 10

This Operating Instruction defines the responsibility of the System Operations Department in directing and performing transmission switching.

1. Be knowledgeable in, and observe all safety rules and practices as set forth in the Orange and Rockland Safety Manual.

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

a) Only necessary switching should be performed to provide for complete safety clearance required; any unnecessary switching should be eliminated.
b) Always interrupt load with a breaker where one is available; a load break device would be a second choice if no breaker is available.
c) Switching should be written such that it will minimize unnecessary travel; assume only one crew will be available to switch.
d) Disable relaying only when necessary, such as for breaker failure relays during trip tests.
e) Telephones should be used for switching whenever available, keeping radio use to a minimum.
f) 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.

3. When removing lines or equipment from service, the System Operator shall adhere to the following procedures:

a) Perform the necessary control functions to open the breaker or switch. Supervisory control will always be used to open or close breakers, air breaks, or any remotely controlled switch to verify supervisory capability.
b) Place a control inhibit tag and verify a blue "C" on the CRT screen.
c) Have the supervisory control turned off at the station for the device(s) that are included in the area of switching.
d) Have the switchman turn the recloser off if breaker is so equipped. Reclosers should be left on during relay trip testing and underfrequency trip testing to verify lockout feature.
e) 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.
f) In the case of a motor operated air break 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.
g) After being certain that all possible safety precautions have been taken where operation by supervisory is concerned, proceed with the manual portion of the switch order as detailed in the Orange and Rockland Safety Manual (see attachment).
h) Observe proper use of the word clearance by always specifying what the purpose of the clearance is; e.g., "Clearance to (name) to test and ground" on a specific facility or work area; "Clearance to (name) to doble test" on specific equipment, or "Clearance to (name) to trip test" a specific breaker.
i) Always adhere to the testing and grounding procedures as detailed in the Orange and Rockland Safety Manual, Section 1.3.3. K, L, M.

Revised by: System Operations Dept. - October 1998

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

Approved by:

Supersedes: 1-S-3

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

ECC SWITCHING PRACTICES

OI 1-S-4

SHEET 1 of 10

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h) Observe proper use of the word clearance by always specifying what the purpose of the clearance is; e.g., "Clearance to (name) to test and ground" on a specific facility or work area; "Clearance to (name) to doble test" on specific equipment, or "Clearance to (name) to trip test" a specific breaker.
i) Always adhere to the testing and grounding procedures as detailed in the Orange and Rockland Safety Manual, Section 1.3.3. K, L, M.

**Revised by:** System Operations Dept. - October 1998

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

**Approved by:**

**Supersedes:** 1-S-3

4. When returning a facility to service complete the restoration process in the reverse order as above with the following exception:

a) When a line has been removed for maintenance and when one end of the line is equipped with a circuit breaker and the other a 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.

5. When turning a recloser off and installing a white caution tag:

a) Perform necessary steps to change recloser to off position
b) Verify change on screen
c) Perform necessary steps to install white caution tag
d) Verify "control inhibit C" on screen
e) Give clearance making certain person receiving same is aware he has white caution tag and recloser protection only.

1.3 SYSTEM OPERATIONS TAGGING PROCEDURE

1.3.1 BASIC PRINCIPLE FOR TAGGING EQUIPMENT UNDER THE JURISDICTION OF THE SYSTEM OPERATOR

A. 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.)

B. The standard safety tags are approximately three by six inches containing eyelets for tying with twine to operating and control handles of the apparatus. The tags used under the System Operator's supervision are in three colors (red, green and white) each color having a distinct purpose and in no case will any tag be used for any purpose other than that for which it is intended. (See Section 1.3.8 for description of green tag.)

C. The Red Tag with black lettering (System Operator's Safety Tag) is used only under the supervision of the System Operator and or Distribution Supervisor. Its use is for high voltage equipment and associated control mechanisms together with any low voltage equipment that the System Operator may designate.

Facilities which have had red tags applied may not be operated under any conditions until the qualified employee whose name is on the tags releases them.

D. The White Caution Tag is used when work is to be done on or near a live circuit or device where contact with the facility is a possibility. Should a white tagged circuit or device trip for any cause it shall not be restored until clearance is received from the person at the job site whose name is on the tag. Where the System Operator possesses supervisory control of the necessary reclosers and the breakers he may issue white caution tag clearance after inhibiting and tagging the appropriate control devices on his computer screen.

E. Each Department Manager, Superintendent or Supervisor shall designate the qualified employees who may have equipment tagged out. Each Manager, Superintendent or Supervisor shall provide System Operations with a quarterly updated list of qualified employees. Equipment shall be tagged only for the persons on these lists. It shall be the responsibility of the Manager, Superintendent, or Supervisor to determine which employees are qualified.

F. 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 TAG ON THE JOB SITE. THE PERSON IN CHARGE MUST BE AVAILABLE AT THE JOB SITE TO CLEAR PEOPLE OFF EQUIPMENT AND/OR LINES IN ORDER TO RESTORE THEM IN AN EMERGENCY.

G. In filling out tags, care should be taken that all the required information is complete, correct and legible.

H. Tags shall be tied securely to the control handle of equipment with stout twine. Where the control handle does not exist, such as on single phase disconnect switches, the tag shall be fastened in an approved manner such as by using the hotstick tag holder.

I. When the person in charge of a job is scheduled to be absent and the job is expected to be continued he should arrange with the System Operator and their Department Manager, Superintendent and/or Supervisor to have his tags released and/or replaced. (The new tags shall be put on when the original tags are removed.) In the event of an unforeseen absence, the Plant, Line or Substation Supervisor can assume the responsibility of the tag and appoint a new person in charge.

J. Qualified Engineering Department personnel may parallel tag apparatus with electrical Distribution, Transmission, Substation, Generating Plant personnel or System Operators. This tagging is subject to the approval of the System Operator. The tags are to be placed and removed by the qualified Substation employees.

K. 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.

L. 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 own tags by the method given above.

1.3.2 SCHEDULING WORK ON EQUIPMENT UNDER THE SYSTEM OPERATOR'S JURISDICTION

A. The appropriate Line or Substation Department Manager, Superintendent, Supervisor or their designated representatives may request the System Operator to release equipment under his jurisdiction for work as follows:

1. All non-emergency work requiring the removal of equipment or lines from service must be requested at least 72 hours in advance of the performance of such work by use of the Transmission/Distribution Clearance Request Form. This request shall be filled out in its entirety and shall be made to the System Operations Switching Manager or, in his absence, the System Operator directly, by the person in whose name the circuit or equipment is to be tagged or by his supervisor.

2. During the construction of new equipment where installation or construction work has progressed to where any piece of transmission or distribution equipment within the substation fence may be energized from any station or other external source, the System Operator SHALL be so informed by the Engineering Department as follows:

a) This information SHALL be in writing and SHALL indicate by sketch its location with respect to the then existing System Diagram and Substation one lines and SHALL specify the Qualified Engineering Department representative in whose name protective tagging should be issued.

b) The System Operator will immediately order the qualified employees to tag out of service with two (2) Red Tags, all switches and control equipment that could energize the new equipment.

c) These tags will be made out in the name of the qualified substation or relay employee. All requests for placing or removal of tags for energizing equipment for test purposes will be made to the System Operator through the qualified substation or relay employee.

d) Revisions or additions to the System Diagram Substation One Line diagrams and Energy Management System located in the Energy Control Center MUST be made before any new equipment or line is placed in service.

3. FOR EMERGENCY WORK THE PERSON WHO IS TO BE IN CHARGE OF THE JOB WILL CONSULT WITH THE SYSTEM OPERATOR AS TO WHAT EQUIPMENT SHOULD BE CLEARED AND TAGGED OUT IN ORDER TO MAKE THE JOB SAFE.

1.3.3 BASIC PRINCIPLES OF SWITCHING

A. All persons entering Substations or switching stations SHALL notify the System Operator upon arrival.

B. The System Operator will direct all switching steps to the employee PERFORMING the switching who in turn will repeat these steps acknowledging their correctness or calling attention to any discrepancies. If the conversation is interrupted contact shall be re-established and all steps repeated to insure accuracy.

C. After completing the switching steps ordered by the System Operator the employee performing the switching will report the time each step was accomplished. The System Operator will record all times on a System Operations Department Switch Order and will repeat these steps acknowledging their correctness or calling attention to discrepancies. Again, if the conversation is interrupted, contact shall be re-established and all steps repeated to insure accuracy.

D. Great care must be taken that the conversation involved in these switching procedures are accurately given and fully understood. Lines and equipment designation shall be given in full. Slang terms shall not be used.

E. Upon opening any motor or manually operated air break or disconnect switch, it is the responsibility of the employee performing the switching to visually check open all three phases.

F. After having been opened for safety clearance, a motor operated disconnect and/or air break must be operationally disabled.

G. Switching for safety clearance will not be considered complete unless one or more devices provide a visible air break which will separate the equipment requested out of service from all sources which can energize the equipment.

H. Upon opening any circuit breaker, it is the responsibility of the employee PERFORMING the switching to "check that the breaker is open." When issued this order, the employee will proceed to the circuit breaker of the line which has just been opened and check that the breaker is open either by inspection of the operating rods on an open type breaker or by inspection of the position indicator on a totally enclosed breaker.

I. Where disconnecting switches and any of the various type circuit breakers are connected in series, the disconnecting switches SHALL be used only for isolating the circuit breakers and for no other purpose. The disconnecting switches MUST be closed before the circuit breakers are closed and opened only after the circuit breaker has been opened and the position of the breaker operating mechanism observed to be in the open position.

J. Disconnecting switches SHALL never be used to open a load on a high voltage line or power transformer. A switch designed for interrupting duty MUST always be used, even though it means interrupting service. If possible, the magnetizing current of a power transformer SHALL be broken with a load interrupt type switch. If none is provided, the gang-operated disconnecting switch on the high side of the transformer shall be used.

K. Upon completion of the required switching to isolate a piece of equipment or facility for field work, the System Operator will issue "Clearance to (name) to test and ground on" that piece of equipment or facility. Field personnel will notify the System Operator when testing procedures have been carried out and portable field grounds have been applied. At that point, the System Operator will give "Clearance to (name) to" perform the specified work on the isolated area as arranged. The System Operator will be specific as to what clearance is being given for.

L. If the isolated area being switched out does not require testing and grounding procedures to be implemented (as determined by the field personnel), the individual for whom the area is being tagged will indicate this to the System Operator at which point clearance to perform the assigned work will be given.

M. When work has been completed on the equipment or facility, the tag holder will notify the System Operator of same, at which point the System Operator will instruct the field personnel to remove all field grounds. System Operator will then be notified when all field grounds have been removed and switching to restore the equipment or facility can then begin.

1.3.4 GENERAL PROCEDURE REMOVING A LINE FROM SERVICE WHICH IS UNDER THE JURISDICTION OF THE SYSTEM OPERATOR

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.

1. The System Operator will then open the breaker via supervisory control and tag the breaker on CRT 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.

2. The switchman will be directed to confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled, unless ordered otherwise. On switches which are remotely controlled by supervisory equipment, the control power will be tumed off, and the proper switch will be placed in the "local" position.

3. Check open the by-pass switch where one exists.

4. Open the appropriate disconnects and if gang operated, secure with lock or fastening device. Manually operated disconnect switches shall be locked as designated.

5. 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.

6. 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:

1. Confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled unless otherwise ordered. On switches which are remotely controlled by supervisory equipment, place the switch in the "local" position.

2. Check open the by-pass switch where one exists.

3. Open the appropriate disconnects and, if gang operated, secure with lock or fastening device.

4. 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.

5. Close the ground switch and lock. Check that all ground switch blades are in correct positions.

6. 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:

1. Close the ground switch and lock.

2. 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.

F. The System Operator will then release the line to the person or persons in charge of the work specifically designating the location at which the circuit has been opened and tagged.

1.3.5 RECEIVING CLEARANCE FROM THE SYSTEM OPERATOR

Line Clearances will be given as outlined in section 1.3.3 for substation personnel.

Clearance is issued when the System Operator contacts the tagholder and indicates that "Clearance is given to test and ground on" a facility. Upon completion of the testing for potential and after having installed field grounds, the tagholder will notify the System Operator of same. The System Operator will then communicate and record the following information:

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

1.3.6 TRANSFERRING TAGS

A. When the employee for whom the line or equipment has been tagged (hereinafter called John Doe) desires to release his tag so that the line or equipment may be tagged in the name of another person (hereinafter referred to as Richard Roe) he SHALL proceed as follows:

1. Make sure that Richard Roe is available, has examined the field grounds, if any, and is prepared to assume responsibility for the work in progress on the line or equipment which is to be tagged in his name.

2. Request the System Operator to place Richard Roe's tag on the line or equipment, giving its complete designation, the reason for the transfer and pertinent data as to the status of the work.

B. The System Operator will repeat the message and after its correctness is acknowledged by John Doe, will have Richard Roe's tag applied and notify Richard Roe that the line or equipment is tagged in his name. The System Operator will repeat, in detail, all information covered in Part A above. The transaction shall not be considered complete until Richard Roe has repeated the message back to the System Operator, in detail, and the System Operator has acknowledged the repetition as correct. If this conversation is interrupted, contact SHALL be re-established and the conversation finished before the transaction is considered complete. John Doe SHALL then release his tag by the same method given.

C. The person named on the tag or, in his absence, his supervisor, are the only ones who may request the transfer of the tagging to another.

1.3.7 RETURNING A LINE TO SERVICE WHICH IS UNDER THE JURISDICTION OF THE SYSTEM OPERATOR

A. After work has been completed on a line or piece of equipment, the tagholder will report this to the System Operator who, in turn, will instruct the tagholder to remove all field grounds. After the tagholder is completely clear and has returned the line to the System Operator, the System Operator will then instruct the operator at the first (sending) switch station (A) to:

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

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

1. Remove all tags.
2. Open the ground switches and lock them open. Visually check that all switch blades are open.

3. 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.
4. 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.
5. Report to the System Operator.

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

1. Remove all remaining tags.
2. 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.
3. 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.
4. Report to the System Operator.

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

1. 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.
2. Report to the System Operator.

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

1. 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.
2. Note the reading of the voltmeters and ammeters on the line.
3. Report to the System Operator.

1.3.8 USE OF GREEN TAGS

A. <u>Green Tags</u>

THE GREEN TAG IS NEVER PLACED TO PROVIDE CLEARANCE. The Green Tag is placed on equipment solely to indicate an abnormal equipment condition or status, which necessitates that such information be readily available to any employees involved in the operation or maintenance of the equipment.

1. A Green Tagged device shall only be operated upon approval from the System Operator.
2. Arrangements for placing Green Tags shall be made with the System Operator.
3. The reason(s) for placement of a Green Tag shall be clearly stated on the tag, including any specific operating limits.
4. Requests to remove Green Tags shall be made to the System Operator who, with assurance that the abnormality or restriction has been corrected, will authorize removal of a Green Tag.

5. Requests to operate Green Tagged equipment within the stated restriction shall be made to the System Operator.

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

7. More than one abnormality or restriction may be included on one Green Tag if done during initial arrangements with the System Operator.

NOTE: A Red or White Tag may be applied to a Green Tagged switching device provided the abnormality or restriction does not prevent the switching device from serving the purpose for which the Red or White Tag is being applied.

B. Examples of Green Tag Use

Examples of conditions which would require a Green Tag are listed here. This is not intended to be a complete listing.

- Circuits removed from service; breakers racked out but available for service.
- Control Power removed from breaker. Breaker is available for service.
- Switching device is bolted closed.

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

SWITCHING AND JURISDICTIONAL AUTHORITIES AT GENERATING SITES

OI 2-S-8



The purpose of this instruction is to define the jurisdictional authorities of O&R and Southern Energy New York (SENY) personnel involved in switching at generating sites. O&R controlled facilities are indicated in black on the one line diagrams. O&R personnel will maintain, record and report relays under its control. All switching will be performed in accordance with Section 1.3 of the current O&R Safety Manual.

I. Lovett 138KV and 69KV Switching

If switching is to be performed at the Lovett steam electric plant the following will be adhered to:

1. Team Leaders/Group Leaders (SENY) will supervise Plant personnel in the performance of all emergency and non-emergency switching involving generator OCBs and associated "3" switches, start up OCBs and associated "3" switches.

2. In all cases, the Team Leaders/Group Leaders should be notified of any switching activity at the plant.

3. Substation Electricians will perform all other emergency and non-emergency switching in both yards.

4. Relay Technicians are permitted to do any switching required in the performance of their duties (trip testing, calibration, etc.) under the same guidelines as the Substation Electricians.

II. Bowline 345KV and 138KV Switching

If switching is to be performed at the Bowline steam electric plant the following will be adhered to:

1. In all cases, the SENY Team Leader/Group Leader should be notified of any switching activity at the plant.

2. O&R Substation Electricians or SENY employees qualified under a mutually agreed on training program and identified in the quarterly qualified switchman list provided to the SO will perform all emergency and non-emergency switching in the 345KV yards.

3. O&R Substation Electricians will perform all emergency and non-emergency switching in the 138KV yard.

4. O&R Relay Technicians are permitted to do any switching required in the performance of their duties (trip testing, calibration, etc.) under the same guidelines as the O&R Substation Electricians.

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SUBJECT

SWITCHING AND JURISDICTIONAL AUTHORITIES AT GENERATING SITES

OI 2-S-8



III. Gas Turbine/Hydro Switching

If switching is to be performed at either the Shoemaker or Hillburn Gas Turbine sites, the following will be adhered to:

1. O&R Substation Electricians will perform all emergency and non-emergency yard switching on O&R controlled facilities.

2. Relay Technicians are permitted to do any switching required in the performance of their duties (trip testing, calibration, etc.) under the same guidelines as the O&R Substation Electricians.

3. If a supervisory alarm is received at the ECC, the System Operator will notify the appropriate SENY employee.

IV. Except that in cases of risk to life, limb and equipment, operations will be taken to mitigate the situation immediately.

As soon as possible after the event, all parties will be notified of the incident and subsequent action taken.

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

SWITCH ORDER PREPARATION AND EXECUTION

OI 3-S-8

SHEET 1 of 3

The following procedure is to be used in preparing and executing a System Operations Switch Order.

Normal Operation

I. Receipt of Transmission/Distribution Clearance Requests

The System Operations Manager-Switching, 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 Scheduling Supervisor will then notify any other Orange and Rockland department that may have necessary work on the facilities to ensure maximum coordination of activities for this particular outage.

The Scheduling Supervisor must ensure that new equipment is shown on the system diagram and ECC computer changes have been made before it is to be placed in service.

In all cases it is mandatory that 72 hours written notice be given on all clearance requests so that the optimum efficiency on the system is maintained. 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.

II. Switch Order Preparation

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

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

2. Check the one-line diagrams of stations and lines to ascertain continuity will be maintained and that no 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 lines for special instructions which apply to a particular station, line or piece of equipment.

5. When preparing the switch order, print neatly or type each part in its proper location on the sheet:

a. Switch Order Number
b. Date (used as a reference)
c. Location and telephone number (used by System Operator while directing the job)
d. Switches Tagged To: ___ and Vehicle ___ (used to assure all persons have proper tags for clearance.
e. The next 20 lines are for step by step direction of the switching, tagging, or remarks, etc.
f. Clearance To: ___ To Test and Ground On: ___

NOTE: Under this category clearance is to be given by System Operator or Senior System Operator to all individuals who have requested same. Clearance is given in a point to point method (i.e., "System Operator to John Doe at 0915 - You have clearance on Line 60 between Ramapo and Burns to test and ground").

g. _____ Reports test for potential completed and field grounds attached OR _____ reports testing and field grounds not required.
h. Clearance To: _____ To do (specific work) on (Specific device or facility).
i. The "Return-to-Normal" page of the switch order begins when the tagholder reports that his work is completed. At this point the System Operator will instruct the tagholder to remove all portable grounds (if any) from the work area to be restored. After it is reported that all portable grounds have been removed, the remainder of the switch order is similar and all steps to return the line or equipment to service are printed or typed in their proper sequence.
j. All breakers or devices with counters should be listed at the bottom and counters recorded when switching is complete. (Equipment is maintained based on both the number of operations and time considerations.)

6. Finally, the System Operator who prepares the switch order will enter his initials on the line indicated with "prepared by...". Only one entry should be made on this line.

III. Switch Order Review and Approval

Before the switch order is executed, another System Operator or Senior System Operator will review the switch order for accuracy and enter his initials on the line "checked and approved by....". Only one entry is needed on this line.

Switch order preparation and/or review may also be assigned to extra System Operators on the day shift as time allows.

The Senior System Operator on the evening shift will also review all switch orders for system security the day previous to their execution. He will run the Power Network Application (PNA) package with the next day's forecasted load, scheduled outages and selected contingencies to determine if the system could withstand the loss of the next single critical facility. He will make copies of these security runs for review by the Senior System Operator on the day shift. These security runs will be discussed at the morning strategy meeting with the Manager - System Operations.

IV. Execution of the Switch Order

The System Operator who executes a switch order will review the Clearance request and switching steps as a final check for accuracy prior to implementation of those steps and he will assume complete responsibility for all switching he executes on that order. He will enter his initials on the line indicated with "Supervised by....". He will also confirm that the person scheduled to receive clearance will still do so. The Senior System Operator will then make the final security review and determine whether the switch order will be executed or not.

Any time it becomes necessary to change the content or sequence of a previously written and approved switch order, the System Operator initiating such changes shall not implement them until discussing them with and receiving approval from the Senior System Operator on duty.

When the switch order has been completed in accordance with above, the System Operator will give the clearance to the necessary field personnel as scheduled. The field personnel requesting clearance shall have the responsibility to contact the System Operator when he is ready to begin his work as well as when he is complete.

The System Operator will return the completed switch order to the Switching Manager.

Emergency Operations

In emergency situations the necessary switching will normally be prepared by the System Operator and reviewed and approved by the Senior System Operator.

All switches should be tagged for the System Operator when it is not known who will work on an emergency job at the time the switching is done.

ORANGE AND ROCKLAND UTILITIES, INC.
ELECTRIC SYSTEM OPERATIONS

SUBJECT

ORANGE AND ROCKLAND JOINT SWITCHING PRACTICES

OI 4-S-5

SHEET 1 of 2

I. INTRODUCTION

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

It is the intent of this Operating Instruction to clarify the responsibilities of Consolidated Edison, Orange and Rockland, and Southern Energy New York (SENY) regarding each facility with respect to initiating requests for clearance, responsibility for authorizing work on equipment and the preparation and direction of switching. (Reference Con Ed System Operation Department Orders SO 17-3-6 and SO 17-4-0, Appendix A.)

II. 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 Power Pool, describing the work and clearances required. Approval of all parties having a termination involved, Consolidated Edison, Public Service, Orange and Rockland, SENY and New York Power Pool, is required prior to the scheduling of the outage.

III. JURISDICTIONS

Orange and Rockland system operators will direct company O&R substation/relay crews and qualified SENY personnel in switching and tagging the following facilities:

- At the SENY owned facilities of Bowline 345KV, Lovett, Mongaup, Hillburn, Rio, Swinging Bridge and Shoemaker as indicated in black on the one line diagrams of the stations.
- At Bowline:
  All 138 KV facilities
- At Ladentown:
  All 345 KV facilities
- At West Haverstraw:
  All facilities 345 KV to 13.2 KV
- At Ramapo:
  All facilities from and including the 345 KV 1300-4 and 2300-4 switch and the entire 138 KV yard. (See Appendix B for specific delineation.)
- At 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.

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Distribution List

SUBJECT

ORANGE AND ROCKLAND JOINT SWITCHING PRACTICES



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, and all SENY owned facilities 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 SENY, need to 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, that tags for O&R personnel have been installed, and that clearance to begin work may be issued. The O&R system operator will issue clearance "to test and ground."

IV. RELAY MAINTENANCE (IN SERVICE)

Request for routine in-service relay maintenance will be initiated by the Orange and Rockland switching supervisor or senior power dispatcher to the Consolidated Edison senior system operator a minimum of 24 hours in advance. Orange and Rockland will also be responsible for notifying the New York Power Pool Scheduling Department and any other affected parties as required.

SENY will coordinate their in service relay maintenance with the O&R Switching Supervisor.

On the morning of the scheduled maintenance the Orange and Rockland system operator will confirm the clearance for the job with the Consolidated Edison Westchester D.O. sometime soon after 0700. Upon confirmation or rejection of the job, the Relay Department supervisor will be so notified. (This will permit reassignment of work crew if necessary.)

Emergency relay work will be coordinated directly between the Orange and Rockland senior power dispatcher and the Consolidated Edison system operator.

## 1.3 SYSTEM OPERATIONS TAGGING PROCEDURE

### 1.3.1 Basic Principles For Tagging Equipment Under The Jurisdiction Of The System Operator

A. 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.)

B. The standard safety tags are approximately three by six inches containing eyelets for tying with twine to operating and control handles of the apparatus. The tags used under the System Operator's supervision are in two colors (red and white) each color having a distinct purpose and in no case will either tag be used for any purpose other than that for which it is intended.

C. The Red Tag with Black Lettering (System Operator's Safety Tag) is used only under the supervision of the System Operator and/or Distribution Supervisor. Its use is for

high voltage equipment and associated control mechanisms together with any low voltage equipment that the System Operator may designate.

Facilities which have had red tags applied may not be operated under any conditions until the qualified employee whose name is on the tags releases them.

D. The White Caution Tag is used when work is to be done on or near a live circuit or device where contact with the facility is a possibility. Should the circuit or device trip for any cause, it shall not be restored until clearance is received from the person at the job site whose name is on the tag. Where the System Operator possesses supervisory control of the necessary reclosers and the breakers he may issue white caution tag clearance after tagging and inhibiting the appropriate control devices on his computer screen.

E. Each Department Manager, Superintendent or Supervisor shall designate the qualified employees that may have equipment tagged out. Each Manager, Superintendent or Supervisor shall provide System Operations with a quarterly updated list of qualified employees. 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.

F. 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 TAG ON THE JOB SITE. THE PERSON IN CHARGE MUST BE AVAILABLE AT THE JOB SITE TO CLEAR PEOPLE OFF EQUIPMENT AND/OR LINES IN ORDER TO RESTORE THEM IN AN EMERGENCY.

G. In filling out tags, care should be taken that all the required information is complete, correct and legible.

H. Tags shall be tied securely to the control handle of equipment with stout twine. Where the control handle does not exist (i.e., a single phase disconnect switch or cutout) the tag shall be fastened in an approved manner such as by using the hotstick tag holder.

I. 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 System Operator, Department Manager, Superintendent and/or Supervisor to have his/her tags released and/or replaced. In the event of an unforeseen absence, the Plant, Line or Substation Supervisor can assume the responsibility of the tag and appoint a new person in charge.

   The new tags shall be put on when the original tags are removed.

J. Qualified Engineering Department personnel may parallel tag apparatus with Electrical

Distribution, Transmission, Substation, Generating Plant personnel or System Operators. This tagging is subject to the approval of the System Operator. The tags are to be placed and removed by the qualified employees.

K. 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.

L. 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 own tags by the method given above.

1.3.2 Scheduling Work on Equipment Under The System Operator's Jurisdiction

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

1. All non-emergency work requiring the removal of equipment or lines from service must be requested at least 72 hours in advance of the performance of such work by use of the Transmission/ Distribution Clearance Request Form. This request shall be filled out in its entirety and shall be made to the System Operations Scheduling Supervisor or, in

his/her absence, the System Operator directly, by the person in whose name the circuit or equipment is to be tagged or by their supervisor.

2. During the construction of new equipment where installation or construction work has progressed to where any piece of transmission or distribution equipment within the substation fence may be energized from any any station or other external source, the System Operator SHALL be so informed by the Engineering Department as follows:

   a. This information SHALL be in writing and SHALL indicate by sketch, its location with respect to the then existing System Diagram and SHALL specify the Qualified Engineering Department representative in whose name protective tagging should be issued.

   b. The System Operator will immediately order the qualified employees to tag out of service with two (2) Red Tags, all switches and control equipment that could energize the new equipment.

   c. These tags will be made out in the name of the qualified substation or relay employee and qualified Engineering Department representative. All requests for placing or removal

of tags for energizing equipment for test purposes will be made to the System Operator through the qualified substation or relay employee.

d. 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.

3. FOR EMERGENCY WORK THE PERSON WHO IS TO BE IN CHARGE OF THE JOB WILL CONSULT WITH THE SYSTEM OPERATOR AS TO WHAT EQUIPMENT SHOULD BE CLEARED AND TAGGED OUT IN ORDER TO MAKE THE JOB SAFE.

1.3.3 Basic Principles of Switching
(Substation/Switching Stations)

A. All persons entering Substations or switching stations SHALL notify the System Operator upon arrival.

B. The System Operator will direct all switching steps to the employee PERFORMING the switching, who in turn, will repeat these steps acknowledging their correctness or calling attention to any discrepancies. If the conversation is interrupted, contact shall be reestablished and all steps repeated to insure accuracy.

C. After completing the switching steps ordered by the System Operator the employee performing the switching will report the time each

step was accomplished. The System Operator will repeat these steps acknowledging their correctness or calling attention to discrepancies. Again, if the conversation is interrupted contact shall be reestablished and all steps repeated to insure accuracy.

D. Great care must be taken that the conversation involved in these switching procedures are accurately given and fully understood. Lines and equipment designation shall be given in full. Slang terms shall not be used.

E. Upon opening any motor or manually operated air break or disconnect switch, it is the responsibility of the employee performing the switching to visually check that all three phases are open.

F. After having been opened for safety clearance, a motor operated disconnect and/or air break must be operationally disabled.

G. Switching for safety clearance will not be considered complete unless one or more devices provide a visible break which will separate the equipment requested out of service from all sources which can energize the equipment.

H. Upon opening any circuit breaker, it is the responsibility of the employee performing the switching to "confirm the breaker open." When issued this order, the employee will proceed to the circuit breaker for the line

which has just been opened and check that the breaker is open, either by inspection of the operating rods on an open type breaker or by inspection of the position indicator on a totally enclosed breaker.

I. Where disconnecting switches and any of the various circuit breakers are connected in series, the disconnecting switches SHALL be used only for isolating the circuit breakers and for no other purpose. The disconnecting switches MUST be closed before the circuit breakers are closed and opened only after the circuit breaker has been opened and the position of the breaker operating mechanism observed to be in the open position.

J. Disconnecting switches SHALL NEVER be used to open a load on a high voltage line or power transformer. A switch designed for interrupting duty MUST always be used, even though it means interrupting service. If possible, the magnetizing current of a power transformer SHALL be broken with a load interrupt type switch. If none is provided, the gang operated disconnecting switch on the high side of the transformer shall be used.

1.3.4 General Procedure Removing A Line From Service Which Is Under The Jurisdiction of the System Operator

A. The employee performing the switching at the first (sending) station (A) will be instructed by the System Operator to open the

circuit breaker on the line and report back. Circuit breakers under supervisory control may be operated remotely by the System Operator via the computer system.

B. After the employee in station A has reported that the procedure above has been completed, the System Operator will instruct the operator in the second (receiving) switching station (B) to:

1. Open the circuit breaker or the System Operator will open it themself, if supervisory control is available. When there is no circuit breaker in the line but a disconnect switch is available the disconnect will be opened.

2. Confirm the breaker open, and, on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled, unless ordered otherwise. On switches which are remotely controlled by supervisory equipment, place the proper switch in the "local" position.

3. Check open the by-pass switch.

4. Open the appropriate disconnects and if gang operated, secure with lock or fastening device. Manually operated disconnect switches shall be locked as designated.

5. 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.

6. Upon completion of these steps the employee will report to the System Operator.

C. After the employee 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:

1. Confirm the breaker open and on all breakers equipped with automatic reclosing equipment, the reclosing will be disabled unless otherwise ordered. On switches which are remotely controlled by supervisory equipment, place the switch in the "local" position.

2. Check open the by-pass switch.

3. Open the appropriate disconnects and, if gang operated, secure with lock or fastening device.

4. 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.

5. Close the ground switch and lock. Check that all ground switch blades are in the

correct positions.

6. Apply the necessary red tags and report to the System Operator.

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

1. Close the ground switch and lock.

2. 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.

F. The System Operator will then release the line to the person or persons in charge of the work specifically designating the location at which the circuit has been opened and tagged.

1.3.5 Receiving Clearance From the System Operator

A. ALL LINES ARE CONSIDERED TO BE ENERGIZED UNTIL:

1. THE SYSTEM OPERATOR ISSUES CLEARANCE.

2. THE DESIGNATED TESTS TO PROVE ABSENCE OF

POTENTIAL HAVE BEEN PERFORMED AT THE WORK LOCATION.

B. Clearance is issued when the System Operator contacts the employee, for whom the line or equipment has been tagged, and communicates the following information:

1. The time clearance is being given.

2. The line or equipment that has been tagged.

3. Locations at which the line has been opened, grounded and tagged.

Example: "As of 9:00 you have clearance on Line 702 between Burns and Harings Corner to test and ground."

C. The employee for whom the line or equipment has been tagged will then repeat this message in full to the System Operator who will acknowledge its correctness or call attention to discrepancies. If this conversation is interrupted, contact shall be reestablished and the conversation finished before clearance is considered issued.

1.3.6 Transferring Tags

A. When the employee for whom the line or equipment has been tagged (hereinafter called John Doe) desires to release the tag so that the line or equipment may be tagged in the name of another person (hereinafter

referred to as Richard Roe) he SHALL proceed as follows:

1. Make sure that Richard Roe is available, has examined the field grounds, if any, and is prepared to assume responsibility for the work in progress on the line or equipment which is to be tagged in his name.

2. Request the System Operator to place Richard Roe's tag on the line or equipment, giving its complete designation, the reason for the transfer and pertinent data as to the status of the work.

B. The System Operator will repeat the message and after its correctness is acknowledged by John Doe, will have Richard Roe's tag applied and notify Richard Roe that the line or equipment is tagged in his name. The System Operator will repeat, in detail, all information covered in Part A above. The transaction shall not be considered complete until Richard Roe has repeated the message back to the System Operator, in detail; and the System Operator has acknowledged the repetition as correct.

If this conversation is interrupted, contact SHALL be reestablished and the conversation finished before the transaction is considered complete. John Doe SHALL then release his tag by the same method given.

C. The person named on the tag or, in his

absence, his supervisor, are the only ones who may request the transfer of the tagging to another.

### 1.3.7 General Procedure For Returning A Line To Service Which Is Under The Jurisdiction Of The System Operator

A. After the person or persons in charge of the work on a line have reported all clear and returned the line to the System Operator, the System Operator will then instruct the operator at the first (sending) switching station to:

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

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

1. Remove all tags.
2. Open the ground switches and lock them open. Visually check that all switch blades are open.
3. 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 conditions.

4. 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 AND VISUALLY CHECKED THAT ALL SWITCH BLADES ARE CLOSED.

5. Report to the System Operator.

C. The operator at the first switching station will then be instructed to:

1. Remove all remaining tags.

2. 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.

3. 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 AND VISUALLY CHECKED THAT ALL SWITCH BLADES ARE

CLOSED.

4. Report to the System Operator.

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

1. 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.

2. Report to the System Operator.

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

1. 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.

2. Note the reading of the voltmeters and ampmeters on the line.

3. Report to the System Operator.

### 1.3.8 Use of Green Tags

#### A. Green Tags

THE GREEN TAG IS NEVER PLACED TO PROVIDE CLEARANCE. The Green Tag is placed on equipment solely to indicate an abnormal equipment condition or status, which necessitates that such information be readily available to any employees involved in the operation or maintenance of the equipment.

1. A Green Tagged device shall only be operated upon approval from the System Operator.

2. Arrangements for placing Green Tags shall be made with the System Operator.

3. The reason(s) for placement of a Green Tag shall be clearly stated on the tag, including any specific operating limits.

4. Requests to remove Green Tags shall be made to the System Operator who, with assurance that the abnormality or restriction has been corrected, will authorize removal of a Green Tag.

5. Requests to operate Green Tagged equipment within the stated restriction shall be made to the System Operator.

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

7. More than one abnormality or restriction may be included on one Green Tag if done during initial arrangements with the System Operator.

Note: A Red or White Tag may be applied to a Green Tagged switching device provided the abnormality or restriction does not prevent the switching device from serving the purpose for which the Red or White Tag is being applied.

B. Examples of Green Tag Use

Examples of conditions which would require a Green Tag are listed here. This is not intended to be a complete listing.

- Circuits removed from service; breakers racked out but available for service.
- Control Power removed from breaker. Breaker is available for service.
- Switching device is bolted closed.

## 1.4 SUBSTATION

### 1.4.1 Substation Rules

ALL PERSONS ENTERING SUBSTATIONS OR SWITCHING STATIONS SHALL NOTIFY THE SYSTEM OPERATOR UPON ARRIVAL.

A. Past experience has proven that the best qualified workman can forget while working in energized substations even though the work is being done de-energized. It is always possible to get in the wrong elevations, or to enter a similar bay that is energized, or contact the energized side of a disconnect. For these and many other reasons, it pays to discuss the work and work methods with the Supervisor. It may save your life.

B. The Substation Supervisor SHALL be responsible for the enforcement of all rules affecting the operation of the substation and equipment under the supervisor's jurisdiction and all employees MUST recognize this authority. NO person shall be permitted to do work of any kind in the substation without the full knowledge and consent of the Substation Supervisor who SHALL check with the System Operator, if necessary.

C. If any work is to be done on any apparatus, switching and tagging for protection of people and service shall be arranged.

D. While working on or near live equipment,

employees SHALL keep their sleeves down and SHALL NOT wear loose or flapping clothing. Metal articles such as wristwatches, key chains and finger rings should be removed prior to starting work. Small tools such as screwdrivers, pliers, etc. should be carried in suitable holsters or cases.

1.4.2 Switching

A. While operating any type of disconnecting switch (except by remote electrical or mechanical control) or when handling a switch stick, fuse tongs, operating handle, etc., rubber gloves with protectors and hard hat MUST be worn, sleeves MUST be rolled down, all parts of the operator's body SHALL be kept at the maximum possible distance from the live part, and safety glasses or shields MUST be used for flash protection.

B. If disconnecting switches and any of the various type circuit breakers are connected in series, the disconnecting switches SHALL be used only for isolating the circuit breakers and for no other purpose. The disconnecting switches MUST be closed before the circuit breakers are closed and opened only after the circuit breaker has been opened and the position of the breaker operating mechanism observed to be in the open position.

C. Disconnecting switches SHALL NEVER be used to open a load on a high voltage line or

power transformer. A switch designed for interrupting duty MUST always be used, even though it means interrupting service. Disconnecting switches may be used to break the parallel of lines or transformers. If possible, the magnetizing current of a power transformer SHALL be broken with a load interrupt type switch. If none is provided, the gang-operated disconnecting switch on the high side of the transformer shall be used.

D. When opening disconnecting or air break switches, all three blades of the switch MUST be checked to be sure that they are fully open. When closing disconnecting or air break switches, each blade of the switch MUST be checked to be sure that each is driven fully "home" in the contact clip.

E. When opening switches of the double throw type, the blade MUST be brought to a position which is at right angles to the closed position of the switch.

F. When opening a single throw switch, the blade SHALL be opened 180 degrees or to the stop if one is provided.

G. On direct current apparatus, when a knife switch and a circuit breaker are connected in series, THE CIRCUIT BREAKER MUST BE OPENED FIRST AND CLOSED LAST.

1.4.3 Construction and Maintenance

A. When work MUST be performed on or near live distribution equipment, proper Rubber Protective Equipment) MUST always be used.

B. Lines, circuits, feeders and apparatus MUST be considered energized at all times unless properly tagged out. (See Section 3)

C. Before starting work the substation employee in charge of the construction or maintenance work SHALL check the position of all switches involved in the clearance. The equipment to be worked MUST be isolated and when practicable MUST also be grounded. Then the circuit or equipment SHALL be tested with a "glow" stick or other approved testing device and, if found de-energized, SHALL attach an approved grounding device on each side of the working zone.

D. The ground side of the grounding device SHALL be attached first and removed last.

E. Each phase of the circuit or equipment SHALL be grounded where it is impracticable to ground on both sides of the working zone.

F. NO ONE shall work on or near exposed live or moving parts unless authorized to do so.

G. Servicing and cleaning of energized apparatus which cannot be taken out of service SHALL NEVER be undertaken unless another employee is present.

## 1.4.4 Transformer Safe Work Practices

A. When it is necessary to remove a manhole cover from a transformer for inspection and work, the employee shall remove all articles from his apparel to prevent them from falling into the transformer and short circuiting the winding. PRESSURE MUST BE VENTED PRIOR TO REMOVING ALL THE BOLTS IN THE COVER.

B. All tools shall be tied to strings so if they are accidentally dropped, they can be easily recovered.

C. If an employee should accidentally drop anything into the open transformer and is unable to recover it, it shall be the employee's duty to notify their Supervisor immediately.

D. Before entering a transformer that has been sealed in nitrogen, ventilate with forced air for three to five minutes. Have two ports or plates open when possible. When only a single port is open, use baffle board to assist in exhausting air. Sample to check air quality. For further information refer to Confined Space Entry.

E. When operating automatic tap changer or when other work is being done on control circuits, all men are to be in the clear of the transformer to guard against any backfeed situation.

F. Before beginning work on any equipment or structure, the senior qualified person shall see that the crew is familiar with the status of the equipment, what part is energized, location of grounds, what the limits of the working space are, and what switches disconnect the equipment from the source of supply. If for any reason there is an interruption in the work where the employees leave the job, such as stopping for lunch, before work is resumed the same formality of checking and making the employees familiar with conditions shall be followed as at the beginning of the job.

G. No one shall work on a substation structure that is in the vicinity of energized equipment without permission from the supervisor in charge or qualified person appointed by the supervisor. At all times that a workman is working on a substation structure on which inadvertent contact with energized equipment could be made, there shall be a qualified person to guide the worker to insure that the work is done safely.

1.4.5 Elevated Positions

Employees shall use approved safety belts and straps and other adequate protection, as required, when working in elevated positions. It shall be the duty of the employee to inspect such safety device.

1.4.6 Switching In Substations

When it is necessary to do any disconnect switching either associated with or adjacent to an energized structure where men are working, the operator will check with the foreman or employee holding clearances on equipment in the structure, who, in turn, will call the employees down out of the structure until the switching has been completed. After the switching has been done, all employees will recheck the status of the structure, lines and equipment before resuming work.

1.4.7 Backfeed Situations

EMPLOYEES ARE CAUTIONED THAT SEVERAL STATIONS HAVE AUXILIARY GENERATORS WHICH MIGHT BACKFEED POWER IN CASE THE PRIMARY SOURCE IS DISCONNECTED FOR ANY REASON. EXTREME CAUTION IS TO BE TAKEN THROUGH WHATEVER TESTING IS REQUIRED TO BE SURE THIS BACKFEED SITUATION IS KNOWN BY THOSE WORKING THE CIRCUITS.

1.4.8 Safe Work Clearances

A. Safe working distance shall be maintained between workmen and all exposed energized parts.

1. When required to perform work near energized high voltage equipment, suitable approved warning devices shall be placed between the space occupied by workmen and the nearest energized equipment, as a protection and a reminder as to the

limits of safe working space.

2. When lifting or handling loads in proximity to energized conductors and/or equipment in substations, electrically grounded trucks or cranes being used. When erecting steel while lightning storms are in the vicinity, the erected steel shall be kept grounded.

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

1.4.9 Mobile Substations

A. When mobile substations are in a parked position, the chock blocks are to be placed blocking the wheels of the unit (front and rear). When the unit is energized, proper "Danger-High Voltage" signs and barricading ropes are to be in position.

The cables are to be properly protected and barricaded so that no vehicles can be driven over them. Employees shall not walk on these cables.

B. Before working on capacitors they shall be de-energized, discharged and grounded. In addition the capacitor bank support framework shall be grounded.

## 1.5 TRANSMISSION OPERATIONS

### 1.5.1 Transmission

A. In addition to the hazards peculiar 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.

B. Definition of Transmission Circuits

Any circuit, apparatus or equipment normally energized at 34.5 K.V. (Delta connected) or above shall be classified as transmission.

### 1.5.2 Live Line Tools and Equipment

A. Only tools having proper voltage rating and of sufficient length to secure proper clearance for safety SHALL be used. THERE IS A POSSIBILITY OF PUTTING TOO MUCH DEPENDENCE ON THE VOLTAGE RATING OF THE TOOLS AND NOT ENOUGH ON CLEARANCE BETWEEN THE EMPLOYEE AND ANY POSSIBLE CONTACT WITH 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.

1.5.3 Live Line Maintenance

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

B. Before any work is undertaken on energized equipment, workers should 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 replacing worker or supervisor has been fully informed of existing conditions.

D. Lines should always be de-energized if this 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 the lines are energized; providing that hotline tools designed and tested for this character of work are used.

F. ROUTINE LIVE LINE WORK SHALL BE DONE ONLY DURING FAVORABLE WEATHER CONDITIONS. RAIN, SNOW, SLEET, DAMPNESS, ETC., PRODUCE CONDITIONS UNDER WHICH THIS WORK SHOULD NOT BE PERMITTED.

G. TO OBTAIN PROPER CLEARANCE FROM THE SYSTEM OPERATOR, REFER TO SECTION 3, SYSTEM OPERATIONS.

H. When it is necessary to do any work on transmission lines having more than one circuit, and where there is not sufficient working clearance between circuits for live line work, the circuits not being worked on SHALL either be de-energized and grounded, or shifted by hotline tools, so as 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 worked on.

1.5.4 Protective Grounds and Protective Grounding Circuits

A. Except where the work is being carried out under the Company's approved Live Line Procedure, all conductors and line equipment in the transmission classification SHALL be de-energized when work is to be done upon or dangerously near them, and all conductors of the circuit SHALL be temporarily grounded with an approved grounding device on each side of, and within sight of, the area or work. Whenever there is more than one crew working on the same de-energized transmission line, each crew SHALL be required to

work between its own grounds unless the crews are working on the same section of line. No current carrying parts of lines or equipment SHALL be touched until they are positively known to be de-energized and grounded.

B. THE PROTECTIVE GROUNDS SHALL be applied under the direct supervision of the person in charge in the following manner:

1. After a clearance has been obtained and the position of all switches checked, tests SHALL be made for voltages by means of a glow stick, or other approved device to see that all phases are de-energized.

2. When an indication has been obtained that the line is de-energized, it MUST then be effectively grounded as close as convenient on both sides of the working location. Grounds SHALL NOT be connected to a bus or structure over paint.

3. IN ALL CASES CLAMPS SHALL BE APPLIED TO CONDUCTORS ONLY BY MEANS OF AN APPROVED INSULATED HOT STICK . . . MINIMUM LENGTH 8'. These sticks SHALL be equipped with a long throat screw clamp or equivalent on one end and shall be carefully maintained and kept clean and dry.

4. If a line is to be worked on, it is to be considered live until tested and proper grounds are applied.

Proper grounds are:

a. Grounds are to be installed at both ends of the worksite. (Could be placed on both sides of structure.)

b. At each grounding point, jumpers should go from Phase 2 to Phase 1, Phase 2 to Phase 3, and Phase 2 to the Neutral. (Note: if there is no neutral available, such as a delta system, a driven ground will be used.)

c. If the worker is working on or around a pole less than 300' from the nearest set of grounds, a jumper from the neutral to a ground cluster bar, below the working position, will be installed.

d. If the worker is working on or around a pole more than 300' from the nearest set of grounds, a jumper from the neutral to a ground cluster bar, below the working position, and a jumper from the cluster bar to the phase being worked on, will be installed.

e. The personal grounds (grounding cluster bar and jumpers) will be moved to each pole location.

5. If grounds are not used, all necessary rubber goods must be worn and the lines

treated as if they were energized.

1.5.5 Wood Pole Lines (No Overhead Ground Wire or Vertical Grounding Wire)

A. Ground rods or auger screw type rods SHALL be installed at proper depth into as damp ground as can be found near the base of the pole where grounds are to be applied. ANCHORS SHALL NOT BE USED IN PLACE OF SYSTEM GROUNDS. The grounding clamp SHALL first be attached to the rod and the grounding device SHALL then be attached to each conductor starting with the lowest conductor on the pole, keeping below the conductor being grounded and being sure that the man's body does not come in contact with the ground wire or conductor. If the pole also carries medium voltage circuits, the grounding tail SHALL be lashed to the crossarm or fished through the arm braces to prevent its slipping and/or blowing into distribution lines.

B. The grounding equipment SHALL be removed in the reverse order.

1.5.6 Wood Pole Lines (With Overhead Ground Wire and Vertical Grounding Wire)

A. Where climbing clearance exists, the grounding clamp SHALL first be attached to the shield wire and the grounding device shall then be attached to each conductor starting at the highest and working downward.

Where climbing clearance does not exist, the

grounding clamp SHALL first be attached to the vertical grounding wire which extends down the pole and the grounding device SHALL then be attached to each conductor starting with the lowest conductor on the pole, keeping below the conductor being grounded and being sure that the man's body does not come in con-tact with the ground wire or conductor.

B. If the pole also carries medium voltage circuits, the grounding clamp is to be first attached to the vertical grounding wire at a level above the medium voltage arm, and the grounding tail SHALL be lashed to prevent its slipping or blowing into medium voltage lines.

C. The grounding equipment SHALL be removed in the reverse order.

D. PROTECTIVE GROUNDS SHALL also be used whenever it is necessary to work on de-energized lines of any voltage (including telephone lines) which run parallel to and are within 50 feet of another line of more than 15,000 volts for a distance greater than 500 feet.

E. Whenever any work is done on a transmission line above live distribution lines or equipment, rubber gloves MUST be worn and any other additional rubber protective equipment necessary to protect fully against the energizing of the transmission line or against personal contact with the distribution circuits MUST be used.

F. Where poles carry both transmission and distribution circuits, linemen MUST apply hose, hoods, shields, or blankets to the pole pin primary BEFORE doing any work on the transmission circuit.

G. Whenever any work is done on a tagged and grounded transmission line that crosses live medium voltage lines between the two points of grounding, rubber gloves MUST be worn unless additional grounds are placed between the working position and the crossing.

1.5.7 Steel Towers and Structures

The grounding clamps SHALL then be securely attached to the tower leg below the crossarm and the grounding device SHALL then be attached to each conductor, being sure that the lineman's body does not come in contact with the ground wire or conductor. Grounding SHALL start at the lowest conductor and proceed upwards. THE GROUNDING SHALL BE REMOVED IN THE REVERSE ORDER. A screw type auger ground shall be installed and the ground wire shall be connected to the tower leg clamp.

1.5.8 Working on Towers or Structures

A. When work is to be done on the lower section of structures carrying a single live circuit or on structures carrying two live circuits, a red flag SHALL be placed on the stepped leg on each structure at a safe distance below the crossarm carrying the lowest live wire. All employees working on each

structure SHALL be specifically instructed by the supervisor in charge of the work not to permit any part of the body above the red flag.

B. When work is to be done on structures carrying one energized and one de-energized circuit, a red flag SHALL be placed on each crossarm carrying a live wire at a safe distance from the nearest live wire. All employees SHALL be specifically instructed by the supervisor in charge of the work not to permit any part of the body to extend beyond the red flags.

C. When work is to be done on a group of structures carrying energized and de-energized circuits, and when one tower in the group is being worked with its circuit(s) dead and the circuit(s) on the adjoining towers are energized, red flags SHALL be placed on the stepped leg of each adjoining tower or towers carrying live circuits.

D. When work is being done on towers carrying one or more energized circuits, the person in charge of the work SHALL be within hailing distance at all times.

## 1.6 TREE TRIMMING

### 1.6.1 General

A. Tree trimming operations present many common hazards. Injuries to workmen may be caused by the following hazards:

1. Improper climbing and work methods including work from bucket trucks.
2. Falling trees and falling limbs.
3. Contact with energized wires.
4. High speed moving parts on such power equipment as chipper units, power saws, etc.

B. HARD HATS AND EYE PROTECTION MUST BE USED AT ALL TIMES WHILE ON THE JOB SITE.

C. HEARING PROTECTORS MUST BE WORN WHEN OPERATORS ARE EXPOSED TO NOISE LEVELS ABOVE 85 DECIBELS. (EXAMPLES: CHAINSAWS, AND CHIPPERS)

D. When handling or working on any wire or equipment that is energized or may become energized at medium voltage, rubber protective equipment SHALL be used in accordance with work and safety procedures.

E. Pole climbers shall not be used to climb trees. If climbers are required, use tree climbers.

F. Ladders should be used only as a last resort. Positioning must be such that the work to be done will not jeopardize the worker (ie: falling limbs).

G. Safety straps or safety ropes MUST always be used. Climbing or safety ropes should be tied through both "D" rings of the safety belt and passed over a higher limb of sufficient strength and tied securely. Workman, MUST always belt in to boom when working from aerial basket.

H. Tools that can not be carried up the tree should be sent up on a hand line.

I. The specie of tree being worked, and its physical condition, MUST be kept in mind if it is to be climbed safely. Fast growing trees are apt to be weak, old trees may be rotted and frozen limbs are always brittle.

J. A sharp V fork tree trunk is generally weak. Split forks sometimes show themselves by a break in the bark or by bleeding. Limbs should be examined where they join the trunk of the tree as that is where most breaks occur. Limbs themselves should be checked for dead bark and dead streaks on the top side. If there is any doubt as to the strength of a limb, a hand line should be thrown over it and the limb's strength tested. Often it is advisable to tie up weak limbs with hand lines not only for safety, but to preserve the limb for shaping up the tree.

K. Limbs should be cut as the workman progresses upward. Large limbs should not be cut off until guide lines and, if necessary, a lowering line have been attached, and then only after the workman has placed himself in a safe, suitable and comfortable position to make the cut.

L. Limbs should be kept under control at all times by using as many lines as necessary to guide them while falling or being lowered.

M. When brush or wood is to be stacked, extra care MUST be taken to prevent injury or damage to passing vehicles and pedestrians.

Twigs, limbs or sticks MUST NOT be left projecting beyond curb or sidewalk lines or from the brush or wood pile, particularly in such positions as would cause tripping or eye hazards both to children and adults. Brush piles MUST be left flat and solid to prevent wind rolling or accidental pushing.

1.6.2 Brush Chipping

A. When brush is disposed of by mechanical chipper, the following precautions will be strictly observed:

1. Vehicle shall be stopped before feeding chipper.

2. Adequate precaution shall be taken prior to starting the chipper. Make certain no one is standing in line with the feed

or discharge chute.

3. Goggles should be used in addition to glasses with side shields. Approved hearing protection MUST be worn.

4. Chipper shall be fed by only one person at a time.

5. Place the chipper so that the person feeding it will be in the clear of traffic or overhead hazards.

6. Be sure chipper is well blocked (chocked) to prevent any movement while it is being operated. Trailer chippers which have been detached from a truck shall be chocked or otherwise secured.

7. Brush should be fed into chipper butt first.

8. Do not put hands any closer than edge of the hopper. Use a stick to feed limbs after they pass edge of hopper.

9. Chipper shall not be left unattended while running. Necessary precautions (remove key) shall be taken so that chipper cannot be started if unattended.

10. REMOVE THE KEY BEFORE REPAIRS OR ADJUSTMENTS ARE MADE. REPAIRS OR ADJUSTMENTS SHALL NOT BE MADE TO THE CHIPPING UNIT WHILE IT IS RUNNING.

11. SWEEPINGS SHALL NOT BE FED INTO CHIPPER.

B. Chainsaws shall be regularly inspected to see that they are clean, sharp and properly tensioned.

C. Handle fuel safely. Use approved safety container with flame arrestor. After refueling, wipe down before starting, and make sure cap is in good repair and properly replaced.

D. When starting a chainsaw, it shall be placed on or against something solid to support and steady it.

E. When using a chainsaw aloft, the following procedure shall be used:

1. Start and test-operate the power saw engine on ground.

2. Under no conditions shall the power saw be raised from the ground or lowered to the ground with the engine running.

3. Except when not practicable, such as when making a final topping cut, tree trimmer shall select a crotch for the saw work rope above his working position so that the saw will swing away from him.

F. Repairs or adjustments shall not be made on the chain or cutting bar while engine is running.

G. Chain guard shall be in place on the chain when saw is not in use.

1.6.3 Work Near Live Electric Lines

A. Care must be taken to avoid contact of persons, tools or limbs when trimming near energized lines. Proper supervision, the use of rubber protective equipment and special tools will avoid accidents and service interruptions in this area.

B. Some tools are conductors, and serious injury might result if they are allowed to contact energized wires. Constant alertness MUST be exercised to keep them clear of energized conductors.

C. Limbs SHALL never be cut completely off the tree until the top of the tree is clear of all energized wires. If necessary to accomplish this, the cut should be started and the limb then broken down or around until clear when the cut may be finished. Limbs which are attached to trees provide a path to ground.

D. Insulated pole pruners SHALL be used to clear the wires and to remove any small limbs that may be touching the conductor(s).

E. When trimming a tree in close proximity to energized lines, personal rubber protective equipment shall be used.

## 1.7 POLE TOP RESCUE

### 1.7.1 Immediate Care

A. In cases of electric shock there MUST be NO DELAY in the application of resuscitation as every moment lost decreases the possibility of restoring breathing.

B. Call or have someone call for help immediately.

C. There are many possible conditions which may make the proper positioning of a victim of electric shock on a pole or elevated structure a difficult matter.

D. The flexibility of mouth to mouth resuscitation makes it particularly suitable to 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. This would open the airway. IN ANY CASE WHERE NECK INJURY IS A POSSIBILITY, THE HEAD TILT IS ABSENT OR MINIMAL TO AVOID AGGRAVATING THE NECK INJURY.

F. Mouth to mouth resuscitation may then be performed.

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

1.7.2 Emergency Lowering Procedure

A. This method has been devised to lower an injured person from a pole or structure quickly and safely. It can also be used to raise an individual from a trench or manhole, and can be utilized in cases where the victim is not wearing a body belt. A half-inch diameter line or larger must be used to execute this rescue.

B. Pass the line twice around the crossarm or other suitable object used for lowering (or lifting), allowing at least 8 feet of rope to tie the rescue hitch.

1. Pass the end of the rope under the victim's right arm.

2. Across victim's back and forward through the left "D" ring.

3. Across the victim's stomach through the right "D" ring.

4. Across the back, forming an X.

5. Pass the line under the left arm and finish off by tying a bowline at about the victim's eye level.

6. Take up slack in rope.

7. Cut safety strap and let the victim swing clear.

8. Lower the victim to ground.

9. Resuscitation efforts should be restarted as soon as the victim is on the ground.

1.7.3 Alternate Emergency Lowering Procedure

A. When the victim starts breathing (or as soon as he can be made ready), he should be lowered to the ground by means of a one-half inch diameter or larger handline.

1. This line should pass through a block suspended from an arm or the top of the pole.

2. While the lower end is held by someone on the ground, the upper end should be taken by the lineman on the pole and passed through both "D" rings on the victim's body belt.

3. Then tied with a bowline so that the knot will be at the level of his

armpits.

4. With a person on the ground taking a strain on the line, the first snap of the victim's safety strap should be unfastened and placed on the rope above the knot.

5. The safety strap should be taken from around the pole, passed between the victim's legs, and the second strap placed on the rope above the first.

6. In some cases it may be necessary to tie the victim's legs together before lowering due to uncontrollable muscular reaction caused by the electric contact.

7. After the lineman gets in the clear, the victim can be safely lowered to the ground and further first aid administered.

## 1.8 ELECTRIC METER TESTING

### 1.8.1 General

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 the customer and the employee.

B. The following rules apply specifically to conditions encountered in the checking and testing of electric services and meters in the field. However, all applicable Rules set forth in other sections of this Manual must also be observed by all persons doing service, meter or relay work.

C. When installing meters use a test lamp or volt meter. This must be done on each and every installation to test for short circuit condition.

D. The proper testing devices provided by the Company MUST be used for testing for potential.

E. Extreme care must be taken when blown main line or circuit fuses are being replaced as a wiring short may exist. Cartridge-type fuses SHALL NEVER be replaced by hand but always with a fuse puller.

F. Whenever any employee is called upon to operate a live switch the employee SHALL wear approved rubber gloves and safety

glasses (flash).

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

H. NEVER leave an energized meter socket unless it is covered and sealed.

I. When making the wires of a grounded installation live, the ground wire SHALL always be connected first.

1.8.2 Testing

A. When applicable in testing, repairing, installing and changing meter equipment, personal protective safety equipment such as hard hats, eye protection, leather gloves, rubber gloves and sleeves shall be used.

B. Electric meter and control wiring SHALL be treated as energized at all times. The handling of 120 and 240 volt circuits, as well as higher voltages, requires reasonable precautions to prevent personal injuries.

C. Before working on an ungrounded meter, use test lamp or volt meter to assure that the case of the meter is not energized.

D. Wires and jumpers SHALL be so handled that short circuits or accidental contact with ground wires and grounded metallic systems are avoided.

E. The secondary of a current transformer SHALL NEVER be opened while it is in service as the open circuit voltage on the secondary could build up to a high voltage condition.

F. When connecting standards and load boxes, the test leads SHALL first be connected to the standards and load boxes and then connected to the apparatus under test. When disconnecting standards and load boxes, the leads SHALL first be disconnected from the live apparatus.

G. All connections should be securely made so that they will not readily drop or pull off. The tester should be careful to see that all wires, jumpers' test leads, instruments or other testing equipment are so placed that no one passing will bump into or trip over them.

H. The use of test blocks is recommended. However, when they cannot be used, a test SHALL be made before installing each jumper, to insure that the points to be connected are of the same polarity. Only one jumper shall be connected at a time and each SHALL be checked to make certain that the free end is clear.

I. Before removing jumpers, a careful inspection SHALL be made to insure that all connections have been returned to their normal condition and are tight, otherwise the jumpers may be disconnected under load, causing a serious flash. When disconnecting

jumpers, the free end SHALL be guarded in the same manner as when it is being connected.

J. Whenever possible, demand meters should be disconnected before any adjustments are attempted. Because of the small clearances between binding screws, contacts and other live parts of such meters, short circuits are easily caused by slipping or misdirected tools, All single phase or polyphase straight and demand meters must not have current flowing through the coils when making adjustments.

K. When installing, changing, or testing a socket type transformer rated meter which has a meter pan with a 7 or 10 pole test switch wired ahead of the meter, the TEST SWITCH MUST BE OPENED FIRST to shunt (short) the current leads and open the potential leads. This procedure is to be followed even if the meter block is equipped with an automatic by-pass mechanism. (The reason: by pulling the meter, should the by-pass not operate properly, an open CT circuit will be established creating the same condition as in paragraph E above.)

# SECTION 2.0

## UNDERGROUND ELECTRIC OPERATIONS

### 2.1 GENERAL

2.1.1 ALL CONDUCTORS, TERMINATIONS AND RELATED EQUIPMENT SHALL BE CONSIDERED ENERGIZED UNTIL DE-ENERGIZED, TESTED AND GROUNDED.

2.1.2 When working with equipment, switches, cutouts and grounding devices, the worker SHALL place himself in a safe position with all components clearly in view.

2.1.3 RUBBER GLOVES SHALL BE USED ON ALL ENERGIZED CABLES AND EQUIPMENT. HOTLINE TOOLS SHALL ALSO BE USED WHILE WORKING ON PRIMARY CIRCUITS FOR SWITCHING, LOADBREAKNG AND GROUNDING OPERATIONS.

2.1.4 Test points when provided SHALL be used.

2.1.5 A PRIMARY OR SECONDARY SYSTEM NEUTRAL SHALL NEVER BE OPENED FOR ANY REASON WHILE SYSTEM IS ENERGIZED.

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

A. A visible open break shall be provided if possible.

B. A voltage test shall be made.

C. The equipment shall be grounded.

2.1.7 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.

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

2.1.9 Faulted cables SHALL be grounded before repair work is begun. Approved tester/equipment SHALL be used to assure the cable is de-energized before grounding.

2.1.10 When unattended, pad mounted equipment shall be secured with approved Company locks and special keyed bolts at all locking points supplied by manufacturer. Missing bolts shall be replaced.

## 2.2 CONSTRUCTION

2.2.1 Operators SHALL NOT allow unauthorized riding on Company vehicles, NOR SHALL front-end loaders be used to transport men on the job site.

2.2.2 The sides of all trenches SHALL be carefully trimmed to prevent paving or stones projecting into the trench. All excavated material, equipment and tools SHALL be kept back at least 24 inches from the edge of excavation.

2.2.3 When excavating or tunneling to depths greater than five (5) feet or when there is a suspected danger of cave-in, the trench or tunnel SHALL be adequately shored. In such cases, a ladder SHALL extend from the bottom of the trench to at least three (3) feet above ground level.

2.2.4 Workers SHALL NEVER enter the working area of excavating equipment, in any location, where they cannot be clearly seen by the equipment operator.

2.2.5 Extreme care SHALL be used when digging to locate cable faults within proximity to other utilities.

2.2.6 When a backhoe is used to excavate an existing combination trench, the pavement may be removed with the machine, but subsequent digging shall be done by hand until the depth of the utilities has been determined.

2.2.7 When the depth of utilities has been determined the backhoe may be used with caution to enlarge the hole to provide adequate room for work. Final digging to expose utilities shall be done by hand.

2.2.8 When working on below grade electric facilities, suitable guards or barricades shall be used to protect other utilities in the trench from physical/electrical damage.

2.2.9 Make sure handhole cover is secured by approved method whenever the handhole is unattended.

2.2.10 Care shall be taken when pulling cables to protect employees and the public from possible injury. This will require a study of the vehicular and pedestrian traffic for the particular location so as to enable the equipment to be set up in the safest possible manner which will cause the public the least inconvenience. All persons, including employees, should be warned to keep away from ropes or cables which are under tension.

2.2.11 Employees SHALL NOT remain in a hole while installing or removing cable if the pulling system is operating and/or under tension.

## 2.3 SITE CONTROL

2.3.1 When loading or unloading cable reels, care should be taken so that reels are under control at all times.

2.3.2 Ropes and cables laid temporarily across sidewalks during pulling operations SHALL be properly protected to avoid possibility of injury to pedestrians.

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

2.3.4 In case of manhole fires, the workman SHALL get out of 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 Confined Space Entry.)

2.3.5 Equipment and cable SHALL NOT be left on the job site after completion of work. Good Housekeeping should be maintained at all times around the work area.

# SECTION 3.0 GAS OPERATIONS

## 3.1 DISTRIBUTION

### 3.1.1 General Rules

A. All employees MUST use extreme care at all times to avoid the three inherent dangers associated with the handling of a combustible gas:

- FIRE
- EXPLOSION
- ASPHYXIATION

3.1.2 To this end, all precautions aimed at the prevention of these hazards MUST be scrupulously observed. The following rules are listed to indicate the degree of caution necessary, although they by no means limit the care to be taken.

3.1.3 The creation or use of any kind of spark or open flame in any area where "No Smoking" signs are posted, or where combustible gases may be present IS STRICTLY PROHIBITED.

3.1.4 When a combustible gas is present in the atmosphere, all combustible engines, welding equipment, lanterns, flares, etc. MUST be kept a safe distance from the escaping gas. Remember that escaping gas moves with the wind, and can be ignited if any suitable source of ignition is located in its path.

3.1.5 When the presence of gas is suspected in a confined space NO ONE SHALL work in such an area without first testing the atmosphere with a Combustible Gas Indicator and then ventilating if necessary.

3.1.6 Various types of personal protective equipment are furnished by the Company. The use of the protection is either recommended or required depending on the equipment being used and/or the job being performed.

## 3.2 CONSTRUCTION

3.2.1 Before starting any work in or along highways or streets, standard signs and warning devices must be used. Refer to the Work Area Protection Manual.

3.2.2 Before starting an excavation or barring for leaks, the employee in charge should secure information on existing subsurface structures or lines. Work in the vicinity of all such interferences must be done with great care. The area SHALL be carefully designated to show the limits of excavation or barring and workmen SHALL keep their work within these limits.

3.2.3 When excavating or tunneling at depths of five feet or or greater, or less if there is a suspected danger of cave-in, the trench or tunnel SHALL be adequately shored. In such cases, an exit ladder SHALL be installed and extend from the bottom of the trench to at least three feet above ground level.

3.2.4 The sides of all trenches SHALL be carefully trimmed to prevent paving or stones projecting into the trench. All excavated material, equipment and tools SHALL be kept back at least 24 inches from the edge of the excavation.

3.2.5 When it is necessary for workmen to work in a ditch under suspended pipe, be sure that the supports are of ample strength and so placed that the pipe cannot fall.

3.2.6 When gas is to be shut off in a main or ser-

vice, all affected customers SHALL be notified, and all meters SHALL be turned off.

3.2.7 Before a gas steel or cast iron main is to be cut, or pipelines disconnected, the section to be cut or disconnected should be bonded over with a stranded copper cable (preferably Number 0,B & S gage.) In order to make the proper electrical contact, the gas main should be filed to bright metal and the copper cable clamped securely to it.

Before a pressurized plastic gasline is to be squeezed off or cut in a gaseous atmosphere the gas line must be wet down with a water/soap solution or water/glycol solution and grounded with a solution-wetted cloth to prevent static electrical charges.

3.2.8 Have an approved type fire extinguisher at the bell hole or trench during welding operations.

3.2.9 NO live tie-ins SHALL be made on intermediate or high pressure mains except with the special tools and equipment constructed for the purpose, and all personnel directly involved in such operations SHALL wear appropriate eye protection.

3.2.10 NO live tie-ins larger than two inches SHALL be made on low pressure mains until the section has been valved or bagged off.

## 3.3 TESTING

3.3.1 Test heads used to seal the ends of the pipe being tested must be in good condition and approved for this purpose. While pressure is on the line, NO ONE SHALL be allowed to stand in front of, or beside, the test heads. When testing is completed, the air pressure SHALL be slowly released and the test head left in place until all pressure has been removed. If test heads are left in place overnight, they shall be locked out.

3.3.2 All mains and services shall be thoroughly purged or cleared of air before being put into service. In congested areas or other special instances, the method of purging will be determined by the existing conditions and SHALL be under the direct supervision of an engineer, superintendent or supervisor.

3.3.3 When gas is to be turned on in a main or service, all meters shall be turned off before gas is turned on in the main and service. After gas is turned on, individual restoration of services will be made. Make certain that all services have been restored. All lines must be purged or cleared of air and the burners correctly adjusted before leaving the customer's premises.

3.3.4 When a service or main is abandoned or discontinued, the ends MUST always be capped or plugged to avoid accidental flow of gas into a building.

3.3.5 All excavations SHALL be properly back-filled and left in as near their original condition as possible. Governing regulations SHALL be adhered to in determining the suitability of backfill material and method of backfilling.

## 3.4 CUSTOMER INSTALLATION AND SERVICE

### 3.4.1 General Information

A. A large part of this work is performed on the customer's premises. Specific rules and hazards involved are covered in another section of the manual.

B. Customer Installation personnel SHALL immediately report to the supervisor any installed gas appliance that does not meet the safety requirements of ASA Code Z21.30 and/or NFPA 54, "Installation of Gas Appliances and Gas Piping".

### 3.4.2 Basic Precautions

A. One employee alone SHALL NOT open or tap a pipe containing gas unless there is a control valve or cock on the pipe that can first be shut off. If there is no cock or valve to stop the flow of gas, there SHALL be at least two men on the job.

B. Leak detection fluid, or a combustible gas indicator, SHALL be used for locating gas leaks. Matches or open flames SHALL NOT be used for this purpose. When tracing a gas leak within a building, employees SHALL NOT ring the door bell to gain admittance or operate electrical equipment that may generate a spark within the affected area.

C. The employees SHALL promptly and adequately ventilate the area involved in a gas leak.

They shall also consider having the building evacuated if there is possible danger to life and limb.

3.4.3 Testing

A. When gas is turned on into house piping, a five-minute observation of the meter test hand SHALL be made to determine if any leaks exist in the piping or appliances.

B. Air MUST be eliminated from piping and appliances before an attempt is made to ignite gas and restore service.

3.4.4 Gas Leaks

A. All reports of gas leaks SHALL be investigated as promptly as possible.

B. When a major outside leak is discovered, all buildings and manholes in the vicinity of the leak SHALL be checked for the presence of gas by a combustible gas indicator. Use extreme care when working in any place where there is enough gas to show on the indicator.

C. All manholes showing an indication of gas shall be reported to the gas radio dispatcher for further action.

D. All open flames, including warning lanterns and torches, SHALL be kept away from the vicinity of gas leaks, and smoking is STRICTLY PROHIBITED.

E. Leaks traced into any house SHALL be followed by an inspection of houses on either side to insure that all places of danger are located and vented.

F. Where combustible gases are found, other than those distributed by the Company, an attempt SHALL be made to determine the source and type of gas.

## 3.5 PROPANE GAS PLANT OPERATIONS

### 3.5.1 Handling Propane

A general Safety Manual embodying all the instructions which are necessary for the safe operation of any and all gas peaking plants would be too bulky for practical use. It is the intention, therefore, to include in this section only a few major rules applying specifically to the handling of liquid propane. Each gas peaking plant shall be provided with any additional safety instructions or amplification of these general instructions, which may be required, as well as instructions on the proper methods and sequences of plant operation and maintenance.

### 3.5.2 Unloading Tank Cars or Trucks of Liquid Propane

Tank cars or trucks shall be unloaded in strict compliance with the regulations of the Department of Transportation.

### 3.5.3 Basic Precautions

A. Block wheels of tank car or truck with approved chocks.

B. Install derailer and warning sign on track at least 75 feet from the car being unloaded.

C. Electrically bond tank car or truck to unloading line with the equipment provided.

D. Whenever possible, truck engines and any associated systems shall be shut off during unloading operations.

E. Test unloading lines and hoses for tightness with propane vapor before starting unloading.

F. Various types of personal protective equipment are furnished by the Company. The use of the protection is either recommended or required depending on the equipment being used and/or the job being performed.

3.5.4 Construction

A. Before starting any work in or along highways or streets, standard signs and warning devices must be used. Refer to the Work Area Protection Manual.

B. Before starting an excavation or barring for leaks, the employee in charge should secure information on existing subsurface structures or lines. Work in the vicinity of all such interefences must be done with great care. The area SHALL be carefully designated to show the limits of excavation or barring and workmen SHALL keep their work within these limits.

C. When excavating or tunneling at depths of five (5) feet or greater, or less if there is a suspected danger of cave-in, the trench or tunnel shall be adequately shored. In such cases, an exit ladder SHALL be

installed and extend from the bottom of the trench to at least three (3) feet above ground level.