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SUBJECT: Forwards licensee response to questions discussed during 891017-19 audit re resolution of station blackout issue.

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L-90-56

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Information to Resolve Station Blackout

On July 21, 1988 the Nuclear Regulatory Commission (NRC) amended its regulation to 10 CFR Part 50 by adding a new section, 10 CFR 50.63. This new regulation requires the Turkey Point nuclear site to withstand a total loss of all AC power on one unit (unit blackout), following loss of offsite power to the site. On April 17, 1989 Florida Power & Light Company (FPL) submitted information in letter L-89-144 pursuant to 10 CFR 50.63. FPL proposed to mitigate the effects of a unit blackout by implementing criteria provided in attachment C.1, Licensing Basis Criteria, to the letter.

During October 17-19, 1989, the NRC conducted an audit of FPL's response to resolve this issue. Nine (9) NRC questions were addressed by FPL at the audit, one of which was determined to be an industry generic unresolved issue regarding unit electrical interties. FPL's response to nine NRC specific questions discussed during the audit is attached to this letter.

In response to the unresolved issue, NUMARC representatives met with the NRC staff on November 8, 1989. During this meeting the NRC staff provided guidance that if followed would resolve the intertie issue. The proposed FPL design will use a class 1E, safety related, seismically and weather protected unit intertie to mitigate the effects of a unit blackout. The intertie is capable of supplying emergency power to any safety related bus on the affected unit from any emergency diesel generator bus from the non-affected unit. This proposed intertie, as described in L-89-144, complies with the NRC guidance and resolves this issue for Turkey Point Units 3 and 4.

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FPL requests that the NRC pre-approve the proposed safety grade design changes at the Turkey Point facility pursuant to 10 CFR 50.63. This request is based on criteria provided in attachment C.1 to FPL letter L-89-144. As demonstrated during the audit, this document meets 10 CFR 50.63 criteria and encompasses guidance provided in Regulatory Guide 1.155 and NUMARC 87-00.

If there are any questions please contact us.

Very truly yours,

K. N. Harris
Site Vice President
Turkey Point Plant - Nuclear

KNH/RWG/rh

Enclosures

cc: Stewart D. Ebneter, Regional Administrator, Region II, USNRC (2 copies)
Senior Resident Inspector, USNRC, Turkey Point Plant

9004090145

1. NRC Question:

Discuss why the plants should not be classified as P3 sites in accordance with NUMARC 87-00 Section 3.2.1 Part 1.A.

FPL Response:

FPL's bases for determining the offsite power design characteristic group was analyzed using guidance provided in Regulatory Guide 1.155.

During the October 17-19 station blackout audit FPL presented, in detail, the results of FPL's analysis to confirm a P2 characterization from the results obtained using Table 2 through 8 in Regulatory Guide 1.155.

The results of that presentation are provided below:

A) Table 8 of R. G. 1.155, "DEFINITION OF EXTREMELY SEVERE WEATHER (ESW) GROUPS":

In FPL's submittal for Turkey Point (L-89-144), dated April 17, 1989, the site was characterized as ESW Group 4 (i.e. $3.3 \times 10^{-3} < e < 1 \times 10^{-2}$).

Hurricane frequency for the Turkey Point nuclear site was studied for the NRC by Sandia National Laboratory (i.e. NUREG GR-4762/SAND 86-2377) and for FPL by Dames and Moore (Draft # 4598-144-09). The mean value of wind speed frequencies for 125 mph as reported by Sandia and Dames and Moore is 6.25×10^{-3}/yr. and 4.9×10^{-3}/yr. respectively. Both studies have used data from the U. S. Weather Bureau. The results define the extremely severe weather groups for the Turkey Point site as ESW Group 4 (i.e., $3.3 \times 10^{-3} < e < 1 \times 10^{-2}$). These numbers were determined by linear extrapolation of the data provided to the NRC auditors. The data is provided in enclosure (1) to this response.

B) Table 7 of R. G. 1.155, "DEFINITION OF SEVERE WEATHER RECOVERY (SWR) GROUP":

Pursuant to FPL submittal of April 17, 1989 the Turkey Point site was characterized as SWR Group 1.

FPL reviewed a number of system restoration procedures with NRC auditors during the Oct 17-19 review. These procedures encompassed the following:

- o System Restoration
- o Restoration of off-site power to nuclear plants-Turkey Point
- o Restoration of off-site power to nuclear plants-St. Lucie
- o Black start-general
- o FPL's real time analysis for single contingency loss of a transmission line or generator.

In addition, FPL demonstrated the effectiveness of these procedures by review of real system disturbances which occurred on the FPL grid in May 17, 1985 (recovery made in 44 minutes) and August 20, 1989 (recovery made in 20 seconds). Excerpts from these reports have been provided to the NRC auditors and are provided in Enclosure (1) to this response.

C) TABLE 6 OF R.G. 1.155, "DEFINITION OF SEVERE WEATHER (SW) GROUP":

Regulatory Guide 1.155, Revision 1, changed the frequency numbers for determining Severe Weather (SW) group. This change necessitated a re-characterization of the SW group for both sites to SW group 1. This change did not effect the results of FPL's analysis.

Using the R. G. 1.155 table 6 formula and NUMARC 87-00 data (table 3-3), Severe Weather (SW) group frequencies, as reported in FPL's April 17, 1989 submittal, have been recalculated to be approximately 2.3×10^{-3} (as amended during the audit) for Turkey Point site.

The SW group determination does not impact the classification of the Turkey Point site. Thus, the validity of the NUMARC 87-00 data was not challenged.

D) TABLE 5 R.G. 1.155, "DEFINITION OF INDEPENDENCE OF OFFSITE POWER (I) GROUP":

Turkey Point was evaluated as an I1 or I2 site. (see response to NRC question 2).

E) TABLE 4, R.G. 1.155, "OFFSITE POWER DESIGN CHARACTERISTIC (P) GROUP":

Pursuant to FPL's submittal of April 17, 1989 and discussed during the October 17 audit FPL characterized the Turkey Point site as P2.

The basis for the "Offsite Power Design Characteristic Group" for Turkey Point is summarized by depicting the results of FPL's analysis of Regulatory Guide 1.155 tables 8 through 4:

Extremely Severe Weather (ESW) Group	4
Severe Weather Recovery (SWR) Group	1
Severe Weather (SW) Group	1
Independence of Offsite Power Group	I 1 or 2

Beginning from Table 4, P3 Group, the site has experienced a total loss of offsite power caused by grid failures at a frequency equal to or greater than once in 20 site years. However, FPL has demonstrated, by procedures, that the site can recover AC power from reliable alternate (non emergency) AC power sources within approximately one-half hour following a grid failure.

Thus, a P3 characterization is possible only with "any combination of" the factors provided in table 4. Regulatory Guide 1.155, Table 4, depicts six (6) different site combinations to qualify as P3. Power Group (I 1 or 2) eliminates the sixth combination for the Turkey Point site.

Power Group (I 1 or 2) and Severe Weather (SW) group (1) eliminates all, but, the second combination for the Turkey Point site.

Power Group (I 1 or 2), Severe Weather (SW) group (1), Severe Weather Recovery (SWR) group (1) and Extremely Severe Weather (ESW) group (4) eliminates all combinations for the Turkey Point nuclear site.

Turkey Point site does not meet the combinations of P1 in accordance with the procedure in Regulatory Guide 1.155, therefore P2 was selected.

2) **NRC QUESTION:**

Discuss how the plants meet (will meet) the offsite power system Group II criteria by referring to NUMARC 87-00 page 3 11 or Regulatory Guide 1.155 Table 5, p.12.

FPL RESPONSE:

FPL has concluded that the existing configuration of the Turkey Point Units 3 and 4 offsite power sources places Turkey Point into an I1 or I2 category of Regulatory Guide 1.155, Table 5. An I1 or I2 category does not affect the final categorization of Turkey Point Units 3 and 4. This determination is based on the following Regulatory Guide criteria:

CRITERIA UNDER I (1):

"All offsite power sources are connected to the plant through two or more switchyards OR separate incoming transmission lines, but at least one of the AC sources is electrically independent of the others."

The following design consideration was used to evaluate Turkey Point to the above Regulatory Guidance:

- Turkey Point has eight separate 240KV incoming transmission lines on two different right of ways. These lines come from five different substations.

- The Turkey Point switchyards have four independent buses; southwest, northwest, southeast and northeast. Existing breakers provide the required isolation and independence between these buses to electrically separate the incoming lines.

The northwest bus contains the following circuits which are electrically independent from the circuits on the southwest bus:

1- Line # 1 to Davis substation
2- Line # 1 to Flagami substation
3- Line # 2 to Davis substation

The southwest bus contains the following circuits which are electrically independent from the circuits on the northwest bus:

1- Line # 3 to Davis substation
2- Line # 2 to Doral substation
3- Line # 1 to Levee substation
4- Line # 2 to Flagami substation
5- Line to Florida city substation

In addition to the Turkey Point switchyard being electrically separated, the design satisfies Regulatory Guide 1.155 table 5 criteria for I (1) by providing separate incoming transmission AC sources which are electrically independent of each other.

CRITERIA UNDER I (2) 2.A

"After loss of the normal AC power source, there is an automatic transfer of all safe-shutdown buses to one preferred alternate power source. If this source fails, there may be one or more manual transfers of power source to the remaining preferred or alternate offsite power sources."

For the Turkey Point design, upon loss of the normal AC source (ie. main generator and its associated circuit), two (2) sources of a separate preferred alternate power supply are provided to all safe shutdown buses.

1. One source is an automatic transfer of all safe shutdown busses of the affected unit to that unit's startup transformer, and

2. The other source is a manual transfer of one safe shutdown bus (3A or 4A) of the affected unit to the unaffected unit's startup transformer. The remaining safe shutdown bus (3B or 4B) can be energized by additional manual breaker actions.

These separate preferred alternate power sources are redundant to each other due to the unique design of the Turkey Point site.

Further, as discussed during the audit, the addition of the safety grade 10 minute intertie will provide an additional method of supplying AC power. Any one of eight offsite transmission circuits from the Florida Grid provides AC power source for the two separate preferred alternate power sources.

Enclosure (2) to this response provides copies of Section 8.2 of the Turkey Point FSAR and diagrams depicting the above information.

3) NRC QUESTION:

Confirm that the plants' procedures have been reviewed, and have been (or will be) modified to meet the station blackout response guidelines per NUMARC 87-00, Section 4.2.1, the AC power restoration guidelines per Section 4.2.2 and the severe weather guidelines of Section 4.2.3. Identify and discuss any exceptions to the guidelines.

FPL RESPONSE:

Turkey Point currently has procedures to mitigate effects of hurricanes and tornados. FPL procedures meet or exceed NUMARC 87-00 guidelines. However, as committed in FPL's station blackout (SBO) submittal of April 17, 1989, site procedures will be modified and revised to:

a) electrically cross-connect units in 10 minutes from the control room to mitigate the effects of a unit blackout and

b) commence unit shutdown 2 hours prior to the projected onset of hurricane force winds at the site.

Procedure modifications will be completed as part of implementing SBO modifications at FPL sites. Turkey Point's Emergency Plan Implementing Procedure (EPIP) 20106 "Natural Emergencies" (enclosure (3) to this response) is currently in use to address hurricanes and tornados.

4) NRC QUESTION:

Provide the number of gallons of water required for decay heat removal during the four-hour coping duration and the minimum permissible condensate storage tank level per Technical Specifications. If additional water sources are necessary for decay heat removal, identify these, list the number of gallons provided by each source and identify any plant modifications and/or procedure changes needed to utilize these water sources.

FPL RESPONSE:

A detailed discussion is presented on condensate storage tank capacity in FSAR section 9.11.3 for Turkey Point. This FSAR section addresses technical specification permissible volumes and capacities (the minimum allowed volume is 185,000 gal). Both units have condensate volumes well in excess of twenty hours. Turkey Point nuclear units require 52,300 gallons per unit for the first four hours.

Enclosure (4) to this response provides copies of the above FSAR sections for your information.

5) NRC QUESTION:

Confirm that the alternate AC (AAC) source will meet the criteria provided in Section 2.3.1, Appendix B, of NUMARC 87-00. Identify and discuss any exceptions to these criteria. In particular, discuss the single failure of 4160V Bus 3D or 4D. Also discuss single failure of 480V Load Center Bus 3H or 4H, in particular with respect to the battery chargers.

FPL RESPONSE:

Turkey Point nuclear site will provide a safety grade, class 1E, weather and seismically protected intertie between units. The intertie will allow each unit to be crossed-connected in 10 minutes from the control room. No single failure of any emergency bus or emergency diesel or battery in the non-blacked out unit will preclude mitigating the effects of loss of all AC power on the blacked out unit. The proposed intertie (associated switchgear, cable, breakers), as described in FPL letter L-89-144, dated, April 17, 1989 complies with NRC guidance and resolves this item for Turkey Point Units 3 and 4.

The criteria used to address SBO modifications shall conform to safety grade criteria applicable to the unit's current licensed design bases.

As discussed during the NRC audit, criteria applied to implement this design will meet or exceed the guidelines in Appendix B NUMARC 87-00. Enclosure (5) provides a line by line review of NUMARC 87-00, Appendix B criteria, with the FPL proposed modification.

6) NRC QUESTIONS:

Confirm that the QA guidance contained in Regulatory Guide 1.155, Appendix A will be implemented for the AAC facilities.

FPL RESPONSE:

Quality Assurance (QA) guidance for Station Blackout Modifications will be dictated by 10CFR50 Appendix B requirements under the current QA program at Turkey Point.

7) NRC QUESTION:

Discuss the proposed training program associated with station blackout scenario.

FPL RESPONSE:

FPL's training program for SBO includes:

1. providing training on current procedures that have been upgraded to reflect system modifications to recovery from a unit blackout, and

2. implementing Turkey Point's current training program when plant changes are performed to safety systems.

Currently, procedures and training are provided at both sites for mitigating the effects of loss of all AC power on one unit. The new 10 minute intertie will enhance and facilitate existing recovery actions. As required by the rule, FPL has committed to demonstrate the capability to intertie the units in 10 minutes.

Enclosure (6) to this response contains Turkey Point's site procedures which are currently in use to address loss of all AC power.

8) NRC QUESTION:

Discuss the features of the proposed EDG reliability program, noting in particular the similarities and differences with respect to Appendix D of NUMARC 87-00.

FPL RESPONSE:

As presented during the Oct 17-19, 1989 SBO audit, the current FPL EDG reliability program is based on quality improvements achieved from statistical quality control methods. The basic elements of FPL's program consist of the following:

a) problem identification and Pareto analysis

b) root cause analysis to include cause and effect diagrams

c) monitoring parameters using statistical quality control techniques, and

d) initiating corrective actions and countermeasures to improve EDG performance.

FPL is currently following industry and NRC initiatives for resolving B-56 EDG reliability. Based on our achievements on the Turkey Point Diesel Generator reliability program (Table 1), we believe that our statistical systems reliability approach provides the required high reliability without the need for accelerated testing. Following closure of the industry initiative on B-56, we will review the new guidance and, if appropriate, make enhancements to our current program. Table 1 provides the emergency diesel generator failures for the last 20, 50, and 100 demands as requested by NRC auditors.

TABLE 1
FLORIDA POWER & LIGHT
EMERGENCY DIESEL GENERATOR FAILURES

	TURKEY POINT
20 DEMANDS:	A - 0
	B - 0
50 DEMANDS:	A - 0
	B - 1
100 DEMANDS:	A - 0
	B - 2

9) **NRC QUESTION:**

Verify HVAC capability to ventilate electrical equipment at Turkey Point. (i.e. batteries, chargers, inverters, switchgear and charging pump rooms).

FPL RESPONSE:

a) The split a/c unit for the control building annex is included as a load in the SBO evaluation. This unit will provide heat removal from batteries, battery chargers and inverters.

b) The current load center and switchgear rooms (LC-SWGR) air conditioning system is being enhanced as part of the Emergency Power System (EPS) upgrade. As part of the design process, adequate ventilation during station blackout will be verified. The design will allow for the re-energizing of the air conditioning units upon restoration of power to the applicable busses following a station blackout event.

c) The current plant design allows for manually re-energizing auxiliary building fans upon restoration of power. Heat-up from the charging pump rooms or any electrical equipment in the auxiliary buildings, from a unit blackout, will be avoided by loading these fans on the EDG's after power is restored to the emergency buses.

ENCLOSURE 1

FOR FPL RESPONSE
TO NRC QUESTION (1)

NUREG/CR-4762
SAND86-2377

Shutdown Decay Heat Removal Analysis of a Westinghouse 3-Loop Pressurized Water Reactor

Case Study

Prepared by G. A. Sanders, D. M. Ericson, Jr., W. R. Cramond

Sandia National Laboratories

Prepared for
U.S. Nuclear Regulatory
Commission

Wind Hazard: Turkey Point is located near the south end of Florida on the Atlantic side of the Peninsula. The site is located in Region I of the USNRC tornado risk regionalization scheme given in WASH-1300. This is the region which has the highest hazard of the three USNRC regions. The mean values of wind speed frequencies are as follows:

Tornado		Straight Wind	
Wind Speed (mph)	Mean Value	Wind Speed (mph)	Mean Value
66	1.70E-4	80	2.18E-1
93	9.37E-5	90	1.01E-1
134	3.31E-5	111	2.00E-2
165	1.59E-5	120	1.00E-2
182	6.65E-6	128	5.00E-3
239	1.24E-6	138	2.00E-3
290	2.03E-7	144	1.00E-3
349	2.50E-8	150	5.52E-4
		160	2.65E-4
		165	2.06E-4
		174	1.00E-4
		197	2.00E-5
		207	1.00E-5
		230	2.00E-6
		240	1.00E-6

DRAFT

UPDATED REPORT
PROBABILISTIC HURRICANE ANALYSES METHODOLOGY DEVELOPMENT ST. LUCIE AND TURKEY POINT NUCLEAR POWER PLANTS FOR FLORIDA POWER & LIGHT COMPANY

JANUARY 1989

Dames & Moore
A PROFESSIONAL LIMITED PARTNERSHIP

Job No. 4598-144-09
Atlanta, Georgia

TABLE 1

SUMMARY OF HURRICANE WIND SPEEDS AND ASSOCIATED RETURN PERIODS FOR TURKEY POINT AND ST. LUCIE AS CALCULATED BY VARIOUS METHODS

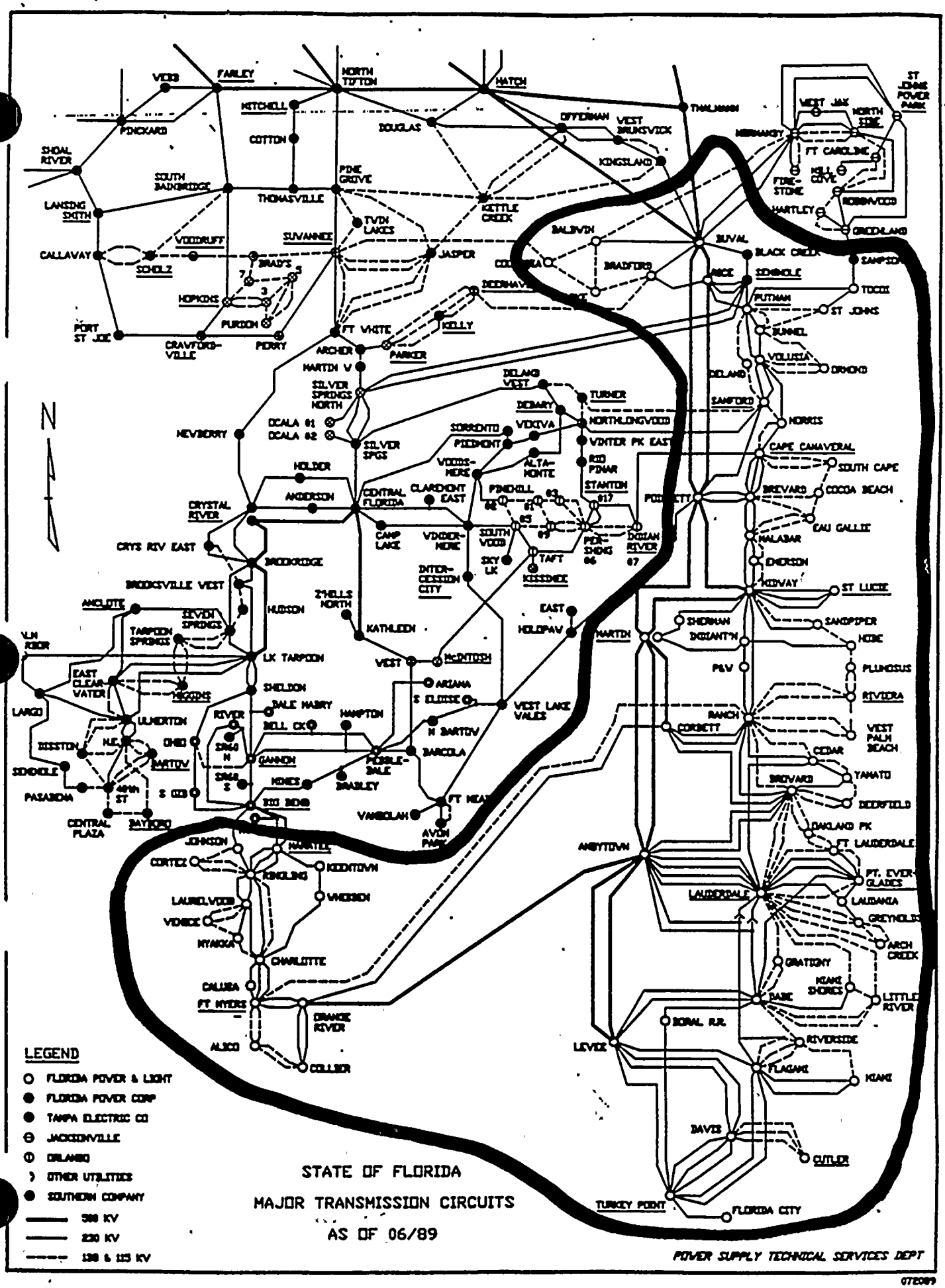
Return Period (years)	National Hurricane Center/Neumann Tropical Cyclones >33 knots		Weibull		National Bureau of Standards		University of Western Ontario		Federal Emergency Management Agency/ Dames & Moore	
	Turkey Point	St. Lucie	Turkey Point	St. Lucie	Turkey Point	St. Lucie	Turkey Point	St. Lucie	Turkey Point	St. Lucie
100	94	91	73	70	82	80	119	115	87	79
200	110	103	78	75	--	--	130	129	--	--
300	117	111	80	77	--	--	--	--	--	--
400	122	116	82	78	--	--	--	--	--	--
500	126	120	83	80	--	--	--	--	100	89
800	133	127	85	82	--	--	--	--	--	--
1,000	136	130	86	83	--	--	157	156	117	111
2,000	144	140	89	86	103	100	166	163	--	--
4,000	149	147	92	89	--	--	--	--	--	--
6,000	152	150	93	90	--	--	--	--	--	--
8,000	153	151	94	91	--	--	--	--	--	--
10,000	153	153	95	92	--	--	--	--	133	134
20,000	155	154	97	95	--	--	--	--	--	--
40,000	156	156	100	97	--	--	--	--	--	--
80,000	157	157	102	99	--	--	--	--	--	--
100,000	157	157	102	99	--	--	--	--	144	144
1,000,000	157	157	108	105	--	--	--	--	152	153

DRAFT

Wind speeds in knots representing 10-meter, 10-minute values.
All wind speeds include the translational wind speeds.

GRID CAPABILITY RELATED TO SBO

- DESCRIPTION OF FPL'S TRANSMISSION SYSTEM
- FPL PROCEDURES
- ACTIONS TO INSURE OFFSITE POWER
  - SECURITY ANALYSIS
  - 5/17/85 SOUTH FLORIDA BLACKOUT
  - 8/20/89 SEPERATION FROM INTERCONNECTION
- SUMMARY OF COMPANY ACTIONS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HARTLEY
GREENLAND
SHOAL RIVER
PINCKARD
SOUTH BAINBRIDGE
THOMASVILLE
PINE GROVE
KETTLE CREEK
LANSING SMITH
TVDN LAKES
SUWANNEE
JASPER
VOODRUFF
CALLAWAY
SCHOLZ
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HOPKINS
PURDOM
PORT ST JOE
CRAWFORD-VILLE
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DELAND
DELAND VEST
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DEMARY
TURNER
SANFORD
NORRIS
OCALA 01
OCALA 02
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PINEHILL
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INDIAN RIVER
PINE CITY
BREVARD
COCOA BEACH
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ST LUCIE
KIDWAY
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PLMBSUS
RIVIERA
LX TARPON
SHELDON
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S ELOISE
VEST LAKE VALES
EAST CLEAR WATER
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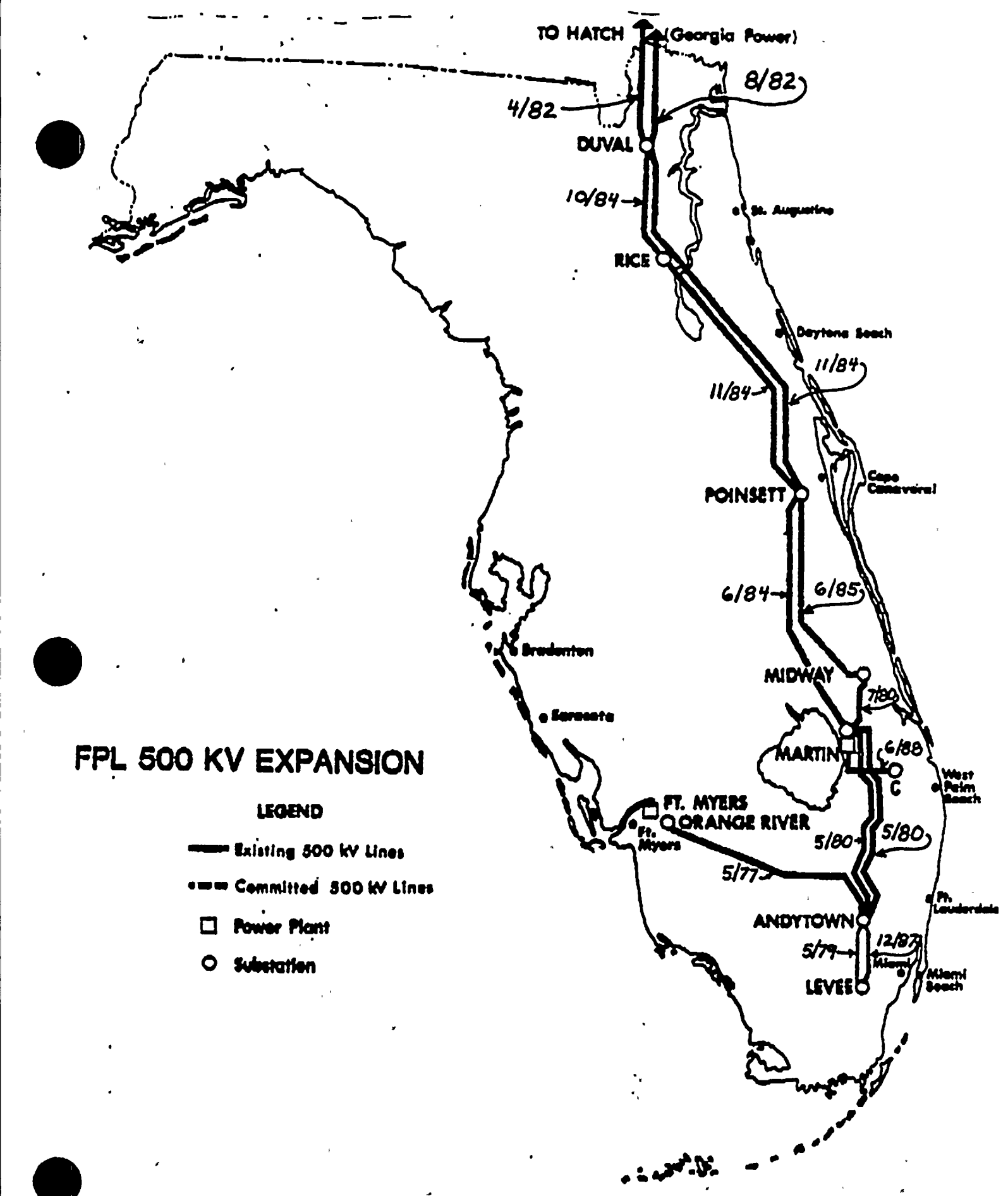
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MARTIN
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C
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FT. MYERS
ORANGE RIVER
Ft. Myers
5/80
5/80
5/77
Ft. Lauderdale
ANDYTOWN
12/87
5/79
Miami
Miami Beach
LEVEE
FPL 500 KV EXPANSION
LEGEND
Existing 500 kV Lines
Committed 500 kV Lines
Power Plant
Substation

SUBJECT: System Restoration

SECTION: System Restoration

Scope

To provide guidelines for system restoration from a blackout where a portion of the power system is still connected to the interconnected system.

Definitions

Blackout - A condition where a major portion, perhaps all, of an electrical utility system is de-energized with much of the system tied together through closed breaker.

Step by step ladder sequence - A controlled sectionalizing of the transmission grid and a sequential reenergization of the bulk stations starting from the energized system and moving through the blackout area.

REV

Surge impedance loading - The mW loading required to eliminate the capacitance effect off the line (on a line with no tapped load the mW loading where VARS in = VARS Out).

General Instructions

1. Inform the Division Load Dispatchers of blackout and instruct them not to close any lines until the boundaries of the blackout area have been determined.

2. Decide on a plan of restoration bearing in mind the following major priorities:

   a. Maintain off-site power to the nuclear plants if at all possible. If the nuclear plants have lost off-site power, restore it as quickly as possible. A restoration of 10 minutes or less is considered a prompt recovery.

   b. Restore start-up power to all available generating units. Units still running, but carrying only their own auxiliary load, can be resynchronized as soon as the plant has stabilized and is ready.

   c. In restoring start-up power to a unit in a black out condition (unit did not stay on it's own auxiliary transformer), the restoration must be done in such a way that the plant auxiliary buses are not energized without plant operating personnel assuring that no equipment is unduly connected to the auxiliary bus. Failure to do this may result in equipment damage.

   d. Oil filled transmission pipe cables can be re-energized at once if they have not gone over 30 minutes without the pumps running or without being energized.

COMPLETE PROCEDURE AVAILABLE UPON REQUEST.

SUBJECT: Restoration of Off-Site Power to Nuclear Plants

SECTION: System Restoration

Scope

To provide instructions for restoring off site power to Nuclear Plants when all off site power has been interrupted.

General

The highest priority is assigned to minimize the time that any Nuclear Plant is without adequate off site power. A prompt recovery (10 minutes or less) is a desirable goal.

Restoration of Off-Site Power

1. Prepare the Nuclear Plant for restoration of off site power without back feeding out of the plant.
2. Determine the most available energized bus.
3. Clear the necessary circuits between the energized bus and the Nuclear Plant.
4. As much as possible the switching for clearing is to be carried on concurrently.
5. Once there is an energized bus at the Nuclear Plant verify that the voltage is within emergency limits before energizing the start up transformer.
6. As soon as possible provide at least two feeds to the start up transformer.

SUBJECT: Restoration of Off Site Power to Nuclear Plants - Turkey Point Plant

SECTION: System Restoration

Scope

To provide guidelines for restoring off site power to Turkey Point Plant.

General

REVISED THROUGHOUT

Four general plans are developed using each of the three 240kV lines and the 500kV line feeding into Dade County from the North, plus three of the 240kV lines feeding into Turkey Point Plant, with back feed of the Turkey Point-Flagami #1 240kV circuit.

Restoring Power to Turkey Point - General

System Operator

1. Determine the available energized busses which could supply off site power to Turkey Point Plant. The most likely are:
   - Levee 500kV
   - Port Everglades 230kV
   - Lauderdale 230kV
2. If these busses are de-energized, determine the available energized busses that are further north and determine the plan to follow to energize one of the above busses from the interconnected system (**SO Procedure #16600**) and notify the appropriate Division Dispatcher. As soon as the minimum necessary clearing switching has been completed, give instructions to the Division Dispatcher to energize circuits to restore off site power.
3. If energized busses are not readily available, order Black Start - **Lauderdale Gas Turbines (SO Procedure #16610.1)** and Black Start - **Port Everglades Gas Turbine (SO Procedure #16610.2).**

   When using Black Start to provide off site power it is desirable to have approximately six gas turbines on line before starting to energize 230kV circuits into Dade County.

   In supplying off site power to Turkey Point Plant preference is to be given to a bus energized from the interconnected system, otherwise the busses are to be considered in the following order:
   - Port Everglades North 230kV
   - Lauderdale East 230kV
   - Andytown South 500kV
4. As soon as the minimum necessary clearing switching has been completed, give instructions to energize circuits to restore off site power to Turkey Point Plant.

COMPLETE PROCEDURE AVAILABLE UPON REQUEST. ALTERNATE RESOURCE

SUBJECT: Restoration of Off Site Power - St. Lucie Plant

SECTION: System Restoration

Scope

To provide guidelines to restore off site power to St. Lucie Plant.

Restoring Off-Site Power to St Lucie - General

REVISED THROUGHOUT

System Operator

1. Determine the available energized busses which could supply off site power. The most likely are:

   - Midway 230kV
   - Poinsett 230kV
   - Corbett 230kV

2. Determine the appropriate plan to follow and notify the Eastern Division Dispatcher and if appropriate the Northern Division Dispatcher.

   If necessary more than one plan can be in operation at the same time.

3. As soon as the minimum necessary switching for clearing has been completed give the instructions to energize circuits to restore off site power to St. Lucie Plant.

Eastern Division Dispatcher

4. Upon receipt of instructions from the System Operator or without instructions if it is known that all off site power has been lost at St. Lucie Plant and Midway, prepare St. Lucie Plant for restoring off site power without back feeding out of the plant.

   COMPLETE PROCEDURE AVAILABLE UPON REQUEST.

   At St. Lucie Plant (Station 403) open all 230kV breakers.

   Open or check to be open the following breakers:

   8W26, 8W30 — Unit No. 1
   8W33 — Line No. 1
   8W23, 8W40 — Start up 1A & 2A
   8W43 — Line No. 2
   8W49, 8W52 — Unit No. 2
   8W55 — Line No. 3
   8W61, 8W64 — Start up 1B & 2B
   8W67 — Hutchinson Island Mid Breaker

SUBJECT	SECTION
Black Start - General	System Restoration

Scope

To provide guidelines for re-energizing portions of the area of blackout from plants which have "Black Start" capability.

General Considerations

- Energize transmission circuits with few substations to minimize load pick up.
- Pick up radial load areas while maintaining the ability to synchronize the "generator area" to energized high voltage transmission system across a breaker at the generation plant.
- Do not try to maintain a close tolerance on 60 Hz operation. Operation between 59.0 and 61.0 Hz should be satisfactory.
- In reenergizing portions of the blacked out system from isolated generation try to limit the frequency dip to a maximum of 0.2Hz on each step of load pick up (a step load pick up of approximately 6.5% of generation capacity of units on line in the isolated area).
- When possible, tie generation areas together to increase the amount of generation available to pick up load and thus minimize frequency variations.

Procedures

Lauderdale Gas Turbines Procedure #16610.1

Port Everglades Gas Turbines Procedure #16610.2.

PROCEDURES AVAILABLE UPON REQUEST.

ALTERNATIVE TO BULK SYSTEM

SECURITY ANALYSIS

- PURPOSE: TO EVALUATE FPL'S TRANSMISSION SYSTEM FOR THE SINGLE CONTINGENCY LOSS OF A TRANSMISSION LINE OR GENERATOR
- IDENTIFIES OVERLOAD CONDITIONS
- GUIDES THE OPERATOR IN RELIEVING OVERLOAD CONDITIONS
- USED TO SIMULATE HYPOTHETICAL CONDITIONS TO EVALUATE FUTURE GRANTING OF CLEARANCES
- TIME FRAME: RUNS EVERY 15 MINUTES

REPORT

ON

SYSTEM DISTURBANCE

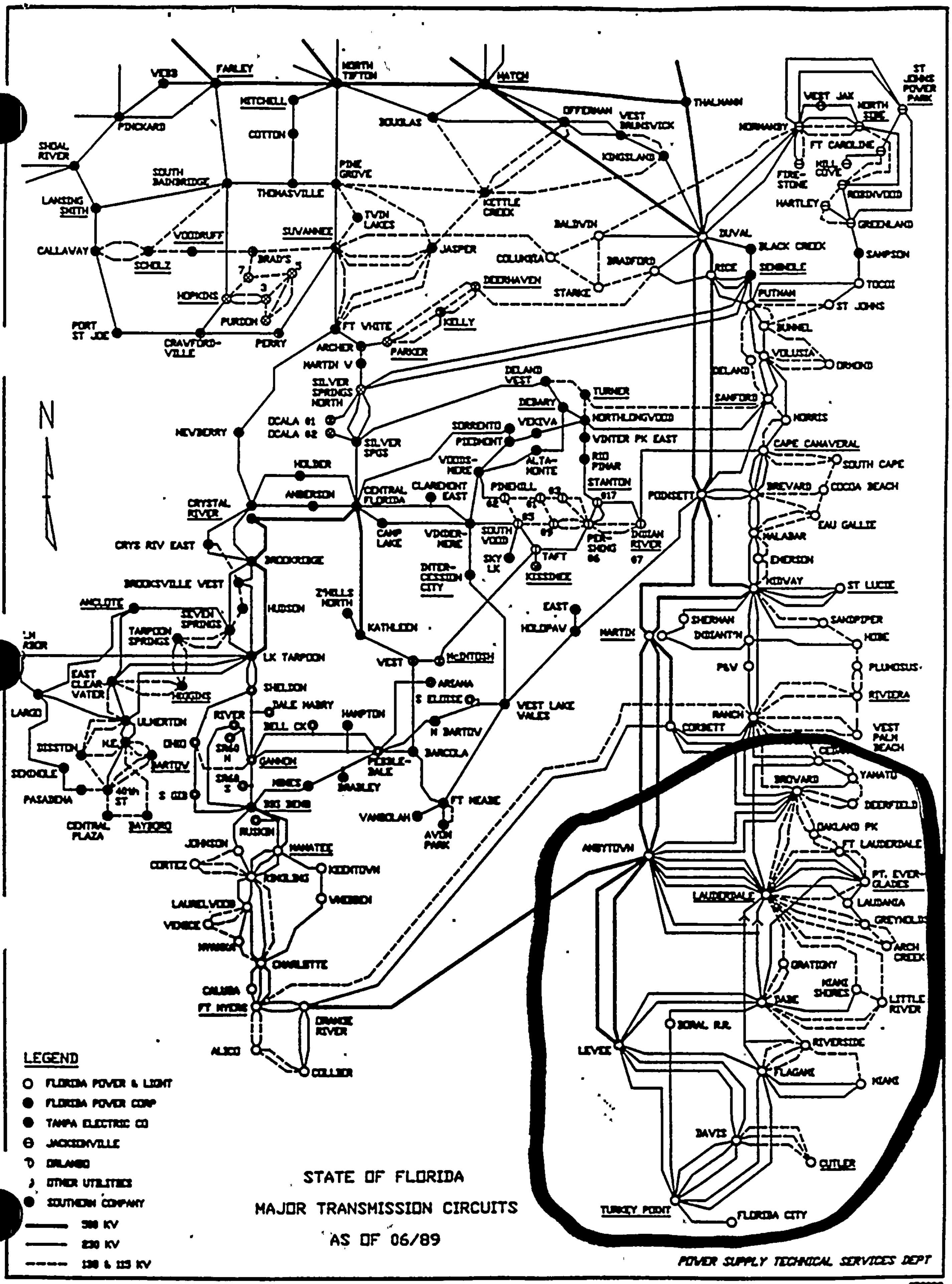
MAY 17, 1985

POWER SUPPLY TECHNICAL SERVICES

FLORIDA POWER & LIGHT COMPANY

JUNE, 1985

COMPLETE REPORT AVAILABLE UPON REQUEST.



STATE OF FLORIDA
MAJOR TRANSMISSION CIRCUITS
AS OF 06/89

EXECUTIVE SUMMARY

On Friday, May 17, 1985, at approximately 11:47AM an area extending from South of West Palm Beach to Florida City along the east coast experienced a power outage. A fire raging out of control in the transmission corridor North of Andytown substation took out of service the three 500kV transmission lines feeding power into the South Florida area. The remaining transmission into the area was disconnected South of Ranch substation by protective relays. Available generation, unable to supply the load in the area, was removed from service by its protective equipment. The Northern and Western areas of the FPL system were not affected.

With the realization that a blackout condition existed, the System Operators began preparing for restoration. A connection between the energized system to the North and the affected area was established through the Lauderdale switchyard. Off-site power was then made available to the Turkey Point site according to designated restoration guidelines. This process took approximately forty-four minutes. During this same time, a systematic process of restoring power to other plants in the affected area, Port Everglades and Lauderdale, was undertaken. Customer restoration proceeded as rapidly as possible.

With the 500kV lines still out of service, due to the fire, load pickup was limited by the thermal capability of the underlying transmission system and available gas turbine generation in the affected area. The two Andytown-Martin 500kV lines were reenergized at 2:56PM after the fire had died out and customer restoration proceeded rapidly from that point. By 3:20PM the system load had reached its pre-disturbance value of approximately 8000MW with only isolated customers still to be restored.

There was no identified equipment damage resulting from this incident.

RESTORATION OF SERVICE

With the realization that a blackout condition existed, the System Operators began preparing for service restoration. The process, as detailed in Appendix F, can be divided into three parts: A - Restoration of start-up power to the power plants in the affected area; B - Restoration of the bulk transmission system; C - Restoration of the load-serving lines.

A.- Restoration of Start- up Power to the Plants

Priority was placed on restoring the off-site power to Turkey Point Plant. To accomplish this, a connection between the energized system to the North was established through the Lauderdale switchyard. Next, the Port Everglades bus was energized, followed by the Flagami bus. The Turkey Point bus was energized at 12:24:01 using the Flagami-Turkey Point #2, 230kV line. Power to the start-up transformer was delayed for 7½ minutes by an inoperable mid-breaker. At approximately 12:31:27, off-site power was restored to Turkey Point Unit No. 4 Start-up transformer, about forty-four minutes after initiation of the blackout condition. Simultaneously, start-up power was being restored to Port Everglades and Lauderdale plants. The Lauderdale Gas Turbine Site No. 2 was energized at 12:01:50. Port Everglades Gas Turbine Site was energized at 12:04:58. Port Everglades Start-up transformer was energized at 12:06:36. Lauderdale Gas Turbine Site No. 1 was energized at 12:17:07 and the Start-up transformer was energized at 12:24:35. Start-up power to Units No. 1 and No. 2 at Turkey Point was restored at 12:32:40. Start-up power to Unit No. 3, down for refueling, was restored at 13:53:28.

FLORIDA POWER & LIGHT COMPANY

INTER-OFFICE CORRESPONDENCE

SYSTEM OPERATIONS MEMORANDUMS
TRANSMISSION
OPERATING PROCEDURES
2.1.3A

TO: Division Transmission Supervisors — LOCATION: TDO - General Office

FROM: W. H. Cole — DATE: July 18, 1986

SUBJECT: FIRES NEAR TRANSMISSION RIGHT-OF-WAYS

COPIES TO: J. W. Hart
A. J. Olivera
T. Urspruch
Division T&D Managers

As we discussed at our recent Transmission Supervisors Meeting, the recording of information relative to fires near our Transmission Right-of-Ways is quite important and especially so for our 500 kV Circuits.

The following consideratins are offered for a Guideline should the occassion arise of a fire near our Transmission Right-of-Ways:

I. Foremost in our planning should be a proper response when notified of a fire on or near our Transmission Right-of-Ways.

II. The first employee on the scene should make a rapid assessment of the possible degree of jeapordy to the Transmission Ciruit(s).

a) The Division Dispatcher needs to know immediately if the circuit is in danger and if not in immediate danger, an estimation of future concern. How long? Be sure to report Line Name, Structure # and Location of fire with respect to circuits i.e. E, W, N, S, etc.

b) To determine how long, several important facts are required:

1) Is fire moving toward Right-of-Way or along Right-of-Way?
2) What is between Fire and Right-of-Way? What type vegetation? Will it burn fast or slow?
3) Are there any canals, roads or other obstructions between Fire and Right-of-Way?
4) Make an estimate of time fire might reach Right-of-Way.

c) Is there a possibility of the Right-of-Way itself burning?

d) SHould additional help be required? If so, request that appropriate crews be sent to scene.

e) Stay near vehicle or at least keep in communication with the Division Dispatcher.

III. Remain on the scene until released by the Division Dispatcher

SYSTEM OPERATIONS MEMORANDUM
TRANSMISSION
OPERATING PROCEDURES
2.1.4C

INTER-OFFICE CORRESPONDENCE

TO: Memo Book Holders

LOCATION: PSO/LFO

FROM: C. M. Mennes

DATE: July 5, 1988

SUBJECT: ST. LUCIE/MIDWAY TRANSMISSION CAPACITY

COPIES TO:

I With two St. Lucie Units on line and total plant output in excess of 1000MW:

A. Two St. Lucie/Midway circuits in service

- Notify the plant personnel that the transmission is in a state of alert. The plant is to be advised of the requirements of having only one line.

B. One St. Lucie/Midway circuit in service

1. West Palm Beach temperature is 80°F or higher. Reduce plant output below 1000MW within 4 minutes. (This may require tripping one unit off line)

2. West Palm Beach temperature is below 80°F. Reduce plant output below 1100MW within 8 minutes. (This may require tripping one unit off line)

II With one St. Lucie Unit on line:

A. Two St. Lucie/Midway circuits in service

- Notify plant personnel that there is one line out of service.

B. One St. Lucie/Midway circuit in service

- Notify plant personnel that the transmission is in a state of alert. There is sufficient transmission capacity to get the power out of the plant. The plant personnel will have to decide if this line provides adequate off site power to keep the one unit on line.

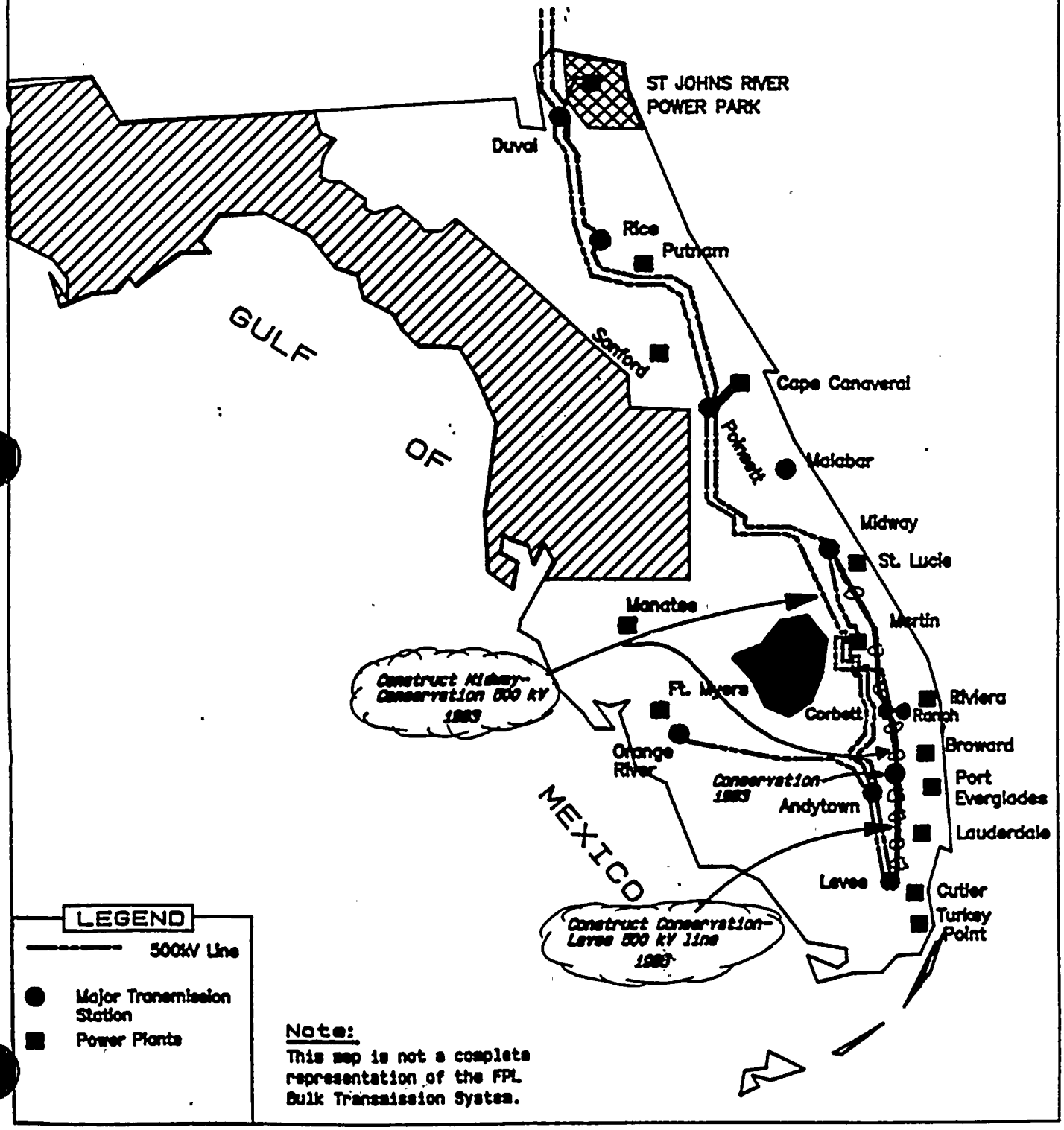
C. M. Mennes

C. M. Mennes

CMM:be

BULK TRANSMISSION EXPANSION

Diagram 1



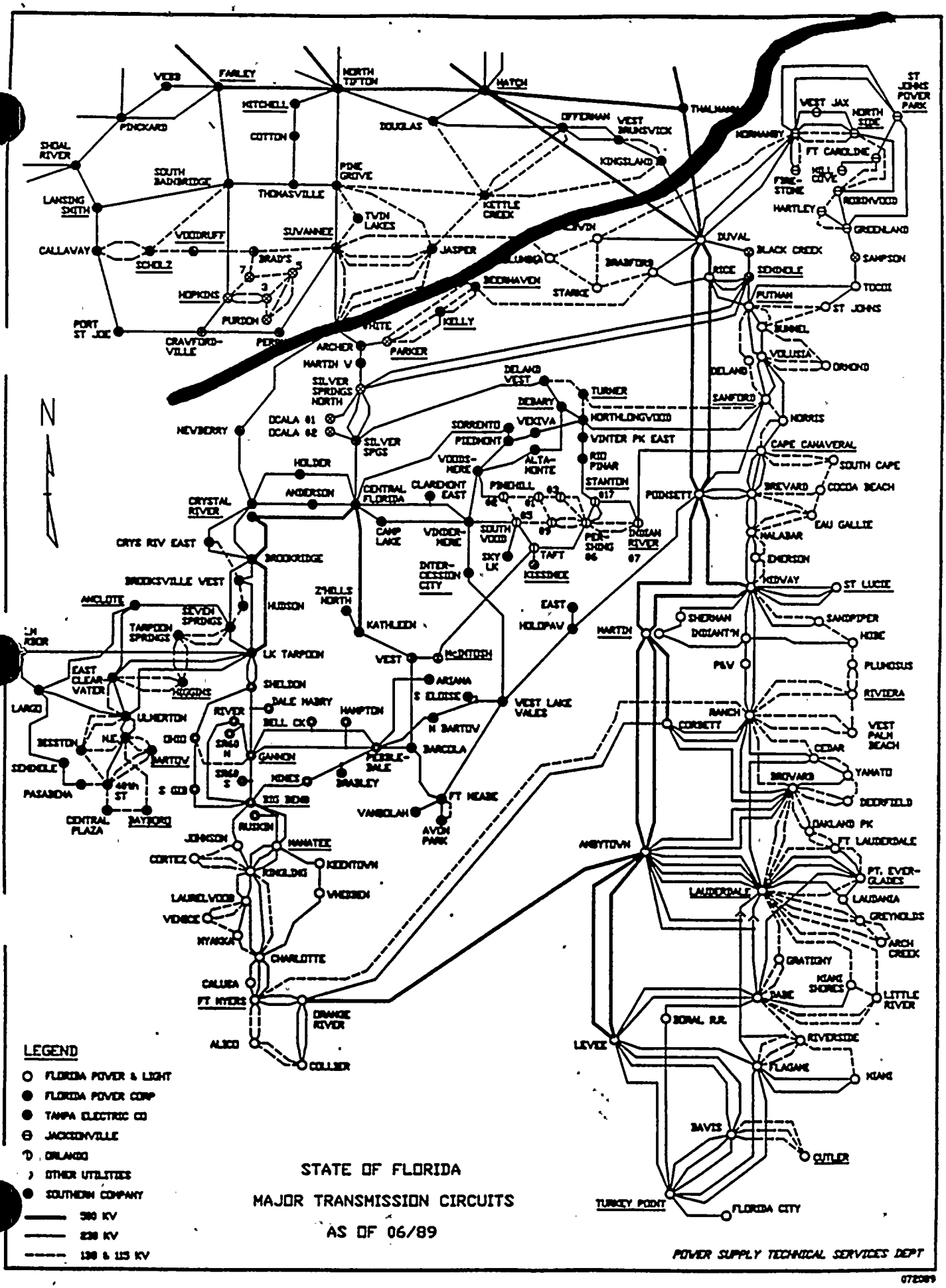
Disturbance Report
Separation and Electrical Islanding of Peninsular Florida

August 20, 1989

Prepared by

Power Supply Technical Services

COMPLETE REPORT AVAILABLE UPON REQUEST.


N
LEGEND
FLORIDA POWER & LIGHT
FLORIDA POWER CORP
TAMPA ELECTRIC CO
JACKSONVILLE
ORLANDO
OTHER UTILITIES
SOUTHERN COMPANY
500 KV
230 KV
138 & 115 KV
STATE OF FLORIDA
MAJOR TRANSMISSION CIRCUITS
AS OF 06/89
POWER SUPPLY TECHNICAL SERVICES DEPT
07E089

Summary:

On Sunday, August 20, 1989, at approximately 4:11 p.m., peninsular Florida separated from Georgia. Following the separation, underfrequency load shedding took place. Approximately 2,970 MW were shed within the isolated area, including 1,576 MW in FPL's service territory. At the time of the disturbance, FPL load and generation were 10,421 and 7,243 MW respectively. Net interchange was -3,725 MW including Seminole load replacement schedule. Southern Co. imports were 3,136 MW into the state.

The sequence of events leading to the separation started with the failure of Georgia Power (GAP) switch No. 766, utilized to connect shunt reactors to the Duval-Hatch 500 kV line, at Hatch Plant (GAP), Figure 1. A phase to phase (A-B) fault occurred after the switch was opened. As a result of the fault, the Duval-Hatch 500kV line tripped, followed by an incorrect trip of the Duval-Thalman 500kV terminal at Duval, which reclosed 27 cycles later. By then the Kingsland end of the Duval-Kingsland 230kV line had sensed an out-of-step condition and tripped at Kingsland. Approximately 62 cycles after the Duval-Thalman 500kV line tripped-reclosed at Duval, the line tripped at Thalman on zone 2 of the backup distance relay. Subsequent to this action protective relay action at Columbia and Ft. White isolated peninsular Florida. The cause of the relay misoperation on the Duval-Thalman 500kV line at Duval is under investigation.

Following the separation, the frequency dropped to 59.37 Hz, initiating underfrequency load shedding throughout the islanded area. The following load shedding was reported by FPL and other utilities.

Company	Load Loss
FPL	1576 MW
FMP	119 MW
FPC	500 MW
GVL	28 MW
HST	7 MW
JEA	275 MW
KIS	7 MW
LAK	30 MW
LWV	7 MW
OUC	60 MW
SEB	5 MW
SEC	79 MW
STC	9 MW
STK	2 MW
TEC	260 MW
VER	6 MW
	2970 MW

Other than load shedding, no significant problems were encountered on the electrical system. FPL did experience some high voltages, on the order of 10% but automatic controllers switched reactive devices to maintain the voltage. Approximately 746 MVAR of reactive compensation was obtained from static var sources, both transmission and distribution and 1330 from synchronous sources (generators), a total of 2076 MVAR.

Approximately twenty (20) seconds after the fault, Ft. White reclosed, re-connecting peninsular Florida. At around 4:14 p.m., Georgia Power closed the Duval 500kV line at Thalman. FPL then instructed other utilities to proceed with the restoration of customer load. Combustion turbines were dispatched and FPL proceeded with load restoration (4:21 p.m.). All load was restored by 5:17 p.m. At 7:51 p.m., the Duval-Hatch 500kV line was returned to service.

ENCLOSURE 2

FOR FPL RESPONSE
TO NRC QUESTION (2)

8.2 ELECTRICAL SYSTEM DESIGN

8.2.1 NETWORK INTERCONNECTIONS

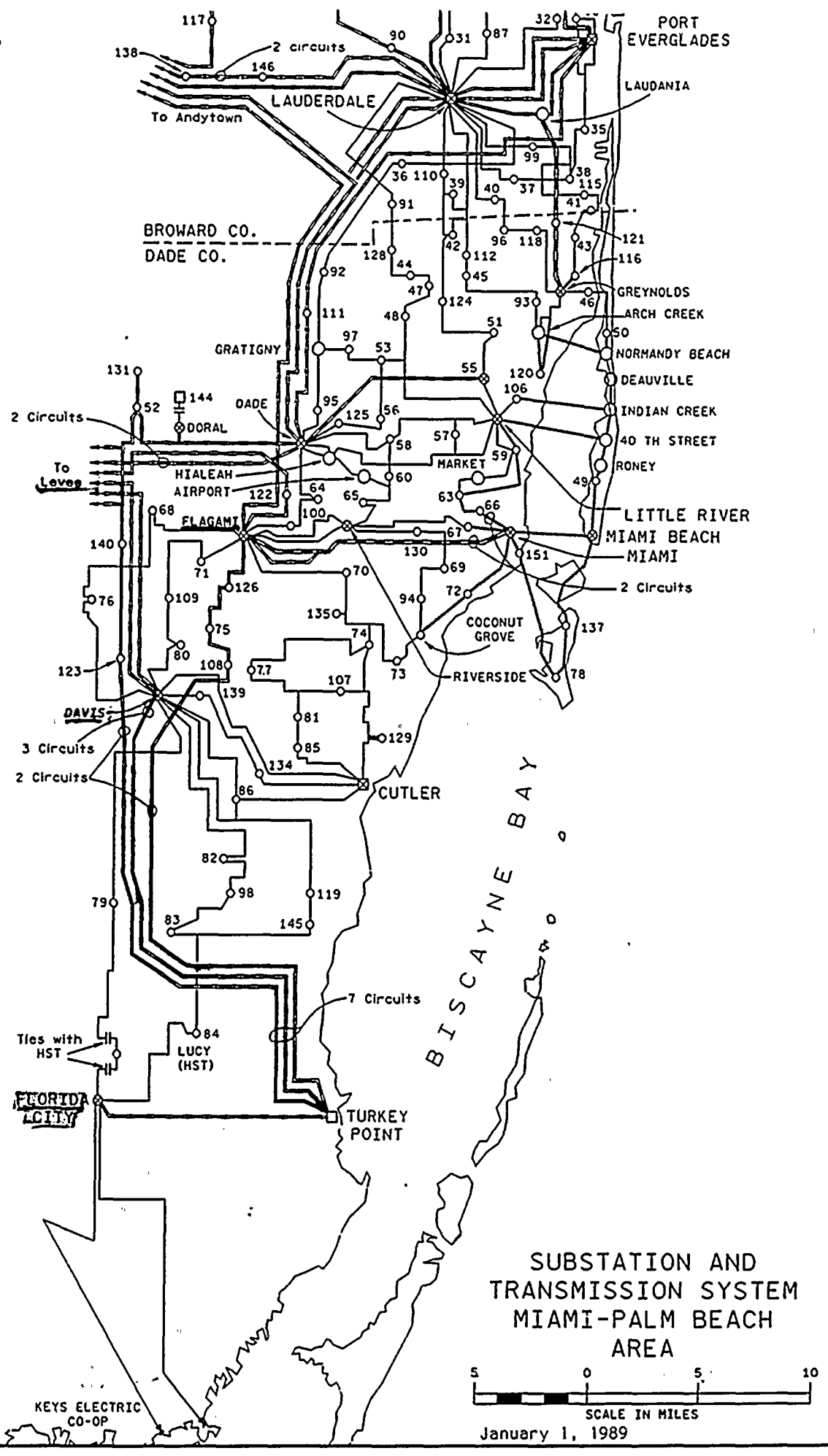
The main generators are rated a 894 mva at 0.85 power factor, 3 phase, 60 Hz, and generate power at 22 kV. Each is connected to its step up transformer through an isolated phase bus rated at 24,000 amps. The main generator step up transformer is rated at 758/850 mva, 50/65C FOA. It transforms the voltage to 240 kV and is connected to the 240 kV switchyard through a 590 foot long transmission line on steel towers with 2 x 1691 MCM AAAC cables per phase.

The existing east and west 240 kV switchyard buses are extended through four new bays to accommodate the additional circuit breakers and isolating switches arranged in a breaker and a half configuration. Even when both nuclear Units 3 and 4 are inoperative, power will be available at the 240 kV switchyard from Turkey Point Units 1 and 2 or from one of the 240 kV circuits.

The switchyard will be conected to Florida Power and Light Company's transmission network through eight 240 kV circuits with a capacity of 540 mva each, as shown in Fig. 8.2-1.

Seven of the eight 240 kV circuits out of Turkey Point are on a common right of way that follows a route roughly north-west in direction from the site. These 240 kV circuits are carried on four transmission line structures each consisting of two concrete poles with steel cross arms. Three of the structures carry two outgoing 240 kV circuits each, and the fourth carries a single 240 kV circuit. The structures are designed to carry two 240 kV circuits and to withstand hurricane winds up to 187 MPH. They have successfully withstood without any damage the severe hurricane Betsy in 1965.

81. KENDALL
82. PERRINE
83. PRINCETON
84. HOMESTEAD
85. SUNILAND
86. CORAL GABLES
87. ROHAN
[redacted]LY
[redacted]C ARTHUR
[redacted]DAVIE
91. PERRY
92. COUNTRY CLUB
93. ULETA
94. DOUGLAS
95. ROSELAWN
96. IVES
97. RED ROAD
98. GOULDS
99. RAVENSWOOD
100. MERCHANDISE
101. NORTON
102. HILLSBORO
103. PALMAIRE
104. WOODLANDS
105. CRYSTAL
106. LEMON CITY
107. DADELAND
108. KILLIAN
109. VILLAGE GREEN
110. RESERVATION
111. MIAMI LAKES
112. WESTON VILLAGE
113. MALLARD
114. MOTOROLA
115. MOFFETT
116. DUMFOUNDLING
117. IMAGINATION
118. HIGHLANDS
119. WHISPERING PINES
120. BOULEVARD
[redacted]AVENTURA
[redacted]ILAM
[redacted]INDGREN
124. BRANDON
125. SEMINOLA
126. OLYMPIA HEIGHTS
127. GERMANTOWN
128. SNAKE CREEK
129. SNAPPER CREEK
130. TAMIAMI
131. MAULE
132. SANDALFOOT
133. FASHION
134. MITCHELL
135. BIRD
136. ACME
137. VA. KEY
138. STONEBRIDGE
139. COURT
140. SWEETWATER
141. JACARANDA
142. LAKEVIEW
143. FOUNTAIN
144. RESOURCE RECOVERY, DADE COUNTY
145. SAGA
146. TIMBERLAKE
147. SOUTHSIDE
148. REMSBURG
149. COPANS
150. OSBORNE
151. SIMPSON

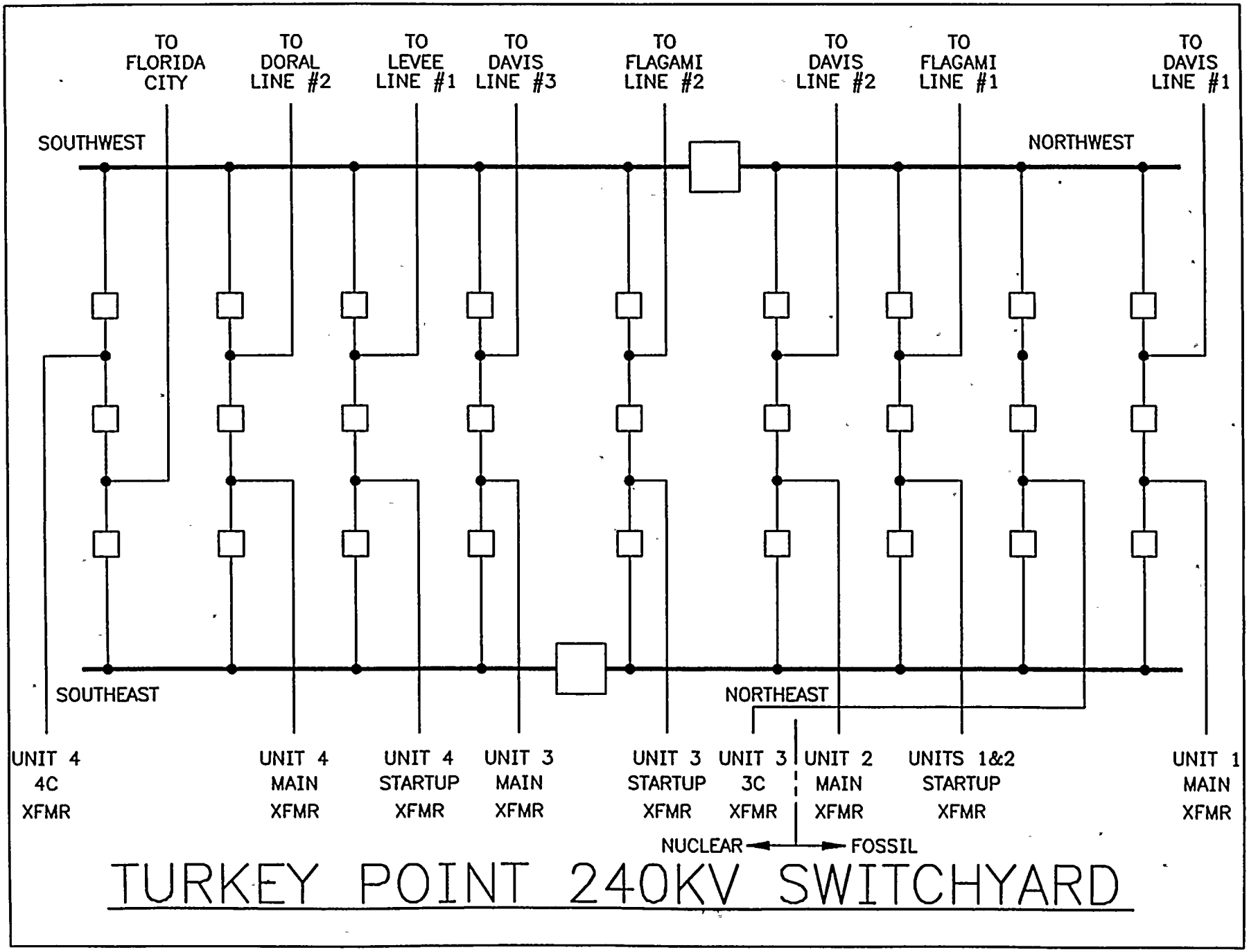


SUBSTATION AND TRANSMISSION SYSTEM MIAMI-PALM BEACH AREA

5 0 5 10

SCALE IN MILES

January 1, 1989

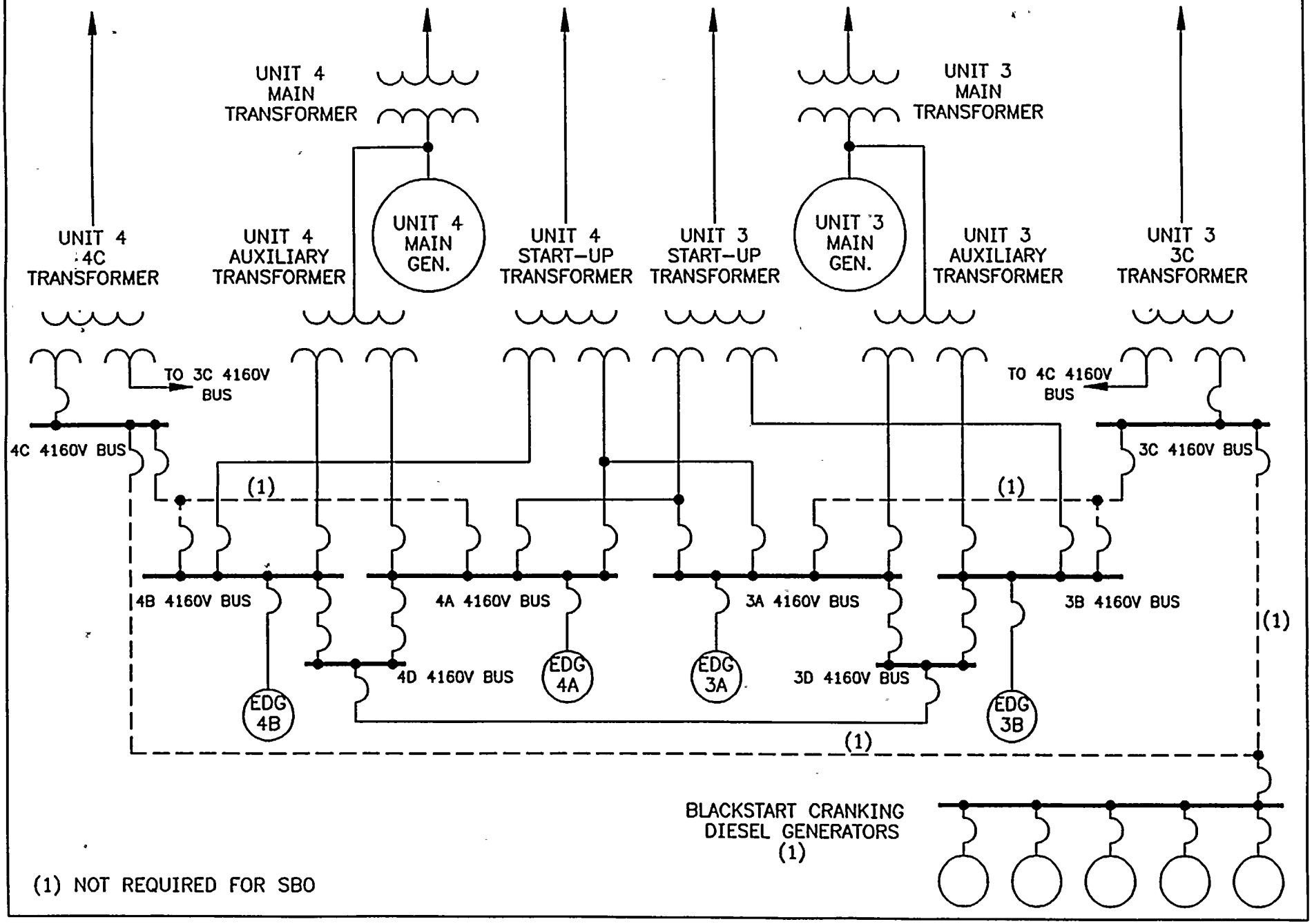


TURKEY POINT 240KV SWITCHYARD

JPNA9150

TURKEY POINT UNITS 3 & 4

SOURCES OF OFFSITE AND EMERGENCY A.C. POWER



(1) NOT REQUIRED FOR SBO

JPNA9151

ENCLOSURE 3

FOR FPL RESPONSE
TO NRC QUESTION (3)

FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT UNITS 3 AND 4
EMERGENCY PLAN IMPLEMENTING PROCEDURE 20106
May 25, 1989

CONTROLLED DOCUMENT
NO. # 4

1.0 Title:

NATURAL EMERGENCIES

2.0 Approval and List of Effective Pages:

2.1 Approval:

Change dated 5/25/89 Reviewed by PNSC 89-219

Approved by [signature] Plant Mgr-N, May 30 1989

Approved by [signature] for Senior Vice Pres-N June 5, 1989

Periodic Review: 3/24/89

Page	Date	Page	Date	Page	Date	Page	Date
1	05/25/89	6	10/15/88	11	10/15/88	16	10/15/88
2	03/24/89	7	05/25/89	12	10/15/88	17	05/25/89
3	10/15/88	8	12/06/88	13	10/15/88	18	05/25/89
4	05/25/89	9	12/06/88	14	12/06/88		
5	10/15/88	10	10/15/88	15	10/15/88		

3.0 Scope:

3.1 Purpose:

This procedure provides instructions for preparing the plant following activation of the Emergency Plan for a natural emergency.

3.2 Discussion:

3.2.1 The natural emergencies considered in this procedure are those associated with weather disturbances such as hurricanes or tornadoes. The geographical location of the area is such that the occurrence of other types of natural emergencies is highly improbable. However, flooding of the low lying areas surrounding the plant site could occur due to the torrential rains and flood tides that accompany a hurricane.

3.2.2 Warnings of impending natural emergencies are issued by the U. S. Government National Oceanic and Atmospheric Administration (NOAA) (National Weather Service) based on various weather surveillance means such as radar, satellite photographs and meteorological reporting stations. These warnings provide adequate information of the approach of most natural emergency conditions.

RTSs 2037, 86-488P, 88-1614, 88-2709P, 89-1028, 89-2126 OTSC 6497
PC/M 89-124

This procedure may be affected by an O T.S.C (On The Spot Change) verify information prior to use
Date verified _____ Initials _____

8906300177
1PP

★/em/sw/ms

3.2.3 The warnings issued by NOAA (National Weather Service) are received at the FPL System Operations Power Coordinator's Office on the Weather teletype network.

The information received at the FPL System Operations Power Coordinator's Office is then relayed to the Turkey Point Plant, Units 3 and 4 Control Room through one of the various normal or emergency communication channels described in EPIP-20112, Communications Network.

3.3 Authority:

Turkey Point Plant Emergency Plans

3.4 Definitions:

The following terms, as used by NOAA, are used throughout this procedure:

3.4.1 TORNADO WATCH: Meteorological conditions in the area described as favorable to the formation of tornadoes.

3.4.2 TORNADO WARNING: This condition is declared once the surveillance means have shown that a tornado has been sighted. The area for which this warning is issued is usually smaller than that for which a watch is declared.

3.4.3 TROPICAL STORM: A weather disturbance of large size with winds of 39 to 73 mph, rotating in a counterclockwise direction, accompanied by torrential rains and an area of low barometric pressure.

3.4.4 HURRICANE: Same as a tropical storm, but the winds are over 73 mph and a well defined low barometric pressure center, called the EYE of the storm, is present.

3.4.5 EYE: The center of a hurricane where calm prevails, with winds of no more than 20 - 30 mph and little or no rain.

3.4.6 HURRICANE ADVISORY: This is an information release put out every six hours, usually at 12 o'clock and 6 o'clock both day and night whenever a hurricane exists; the advisory is continually updated and this information is issued in the form of HURRICANE BULLETINS which are issued every 3 hours, day and night.

3.4.7 HURRICANE WATCH: This is a communication from NOAA, issued whenever a hurricane is between 24 and 48 hours from, and approaching, the U.S. coast and comprises an area approximately 100 miles either side of the expected place where it could come inland. It also gives the size, maximum winds, direction and speed of travel.

NOTE: Appendix B should be consulted for instructions to be performed during a Hurricane Watch.

3.4.8 HURRICANE WARNING: This is a communication from NOAA, issue whenever a hurricane is between 12 and 24 hours from, ar approaching, the U. S. coast and comprises an area approximately ! miles either side of the expected place where the hurricane wil strike the coastal areas. The size of the area comprised by th warning will be determined by the area over which hurricane forc winds can be expected. This warning also gives the expected time ar location where the hurricane will strike the coast, as well as th size, maximum winds, direction and speed of travel. The warning ma also describe the coastal areas where high water, floods or hig waves may be expected.

3.4.9 TROPICAL STORM WARNING: This is a communication from NOAA issue whenever a tropical storm is 12 to 24 hours from, and approching th U.S. coast.

NOTE: Appendix C should be consulted for activities to be performe during a Tropical Storm Warning.

4.0 Precautions:

4.1 All unnecessary personnel in the Protected Area and all visitors in th Owner Controlled Area shall be required to leave when a hurricane warning i issued for the area. Flooding of the low-lying portions of the area, fro heavy rains and high tides may make later evacuation impossible.

4.2 If a hurricane passes directly over the plant area, do not assume th hurricane has passed when the winds subside and rain stops. This only mean. that the EYE of the hurricane is over the area, and in approximately 1 hou. the winds will begin blowing again from the opposite direction as the secon half of the hurricane goes over the area.

4.3 When the hurricane is near the area and high winds are occurring, or i there is significant likelihood that a tornado will strike the immediat plant site keep all activities outside of the plant buildings to a minimum.

4.4 Do not assume the emergency to be over until the receipt of official wor from NOAA through the System Operations Power Coordinator that there is n longer a threat to the area.

5.0 Responsibilities:

5.1 It shall be the responsibility of the, Plant Manager - Nuclear, Maintenance Superintendent - Nuclear, Operations Superintendent - Nuclear, to comply with the steps outlined in Section 8 of this procedure to protect the plant and personnel from the effects of the emergency.

6.0 References/Commitment Documents:

6.1 References:

6.1.1 Turkey Point Plant Radiological Emergency Plan

6.1.2 Turkey Point Plant, Units 1 and 2 Hurricane Plans

6.1.3 National Oceanic and Atmospheric Administration Information - information on area tornado and hurricane reports

6.1.4 FSAR, Section 2, and Figures 1.2-3 and 1.2-4

6.1.5 | Plant Procedures

1. EPIP-20101, Duties of Emergency Coordinator

2. O-OSP-102.1, Flood Protection Stoplog Inspection

3. O-OSP-104.1, Record of Meteorological Forecasts

6.1.6 JPN-PTN-SECJ-88-079, Safety Evaluation Temporary External Flood Protection Barriers

6.1.7 PC/M 87-212, EDG Enhancement Site Preparation

6.1.8 PC/M 89-124, Repair/Replace Stoplogs On East Side of Auxiliary Building

6.1.9 5610-C-1695, Network of Barriers for Main Plant External Flood Protection |

6.2 Commitment Documents:

6.2.1 None

7.0 Records and Notifications:

7.1 The Plant Supervisor - Nuclear shall perform notifications per EPIP-20101.

7.2 Plant Supervisors shall notify personnel as deemed necessary in Section 8 of this procedure.

8.0 Instructions:

NOTE: Plant conditions that are altered in preparation for a natural emergency may be restored to their normal configuraton in accordance with applicable plant procedures upon discontinuation of the emergency condition.

CAUTION: Personnel actions should not be performed outside plant buildings until the tornado has left the site.

8.1 When information is received that:

A tornado has been sighted inside the Owner Controlled Area:

or

A tornado has stricken any plant structures

The following personnel, when contacted, shall be responsible for listed actions below:

8.1.1 The Plant Supervisor - Nuclear shall consult EPIP-20101 for direction.

8.1.2 Maintenance Suprintendent - Nuclear, or designee shall:

1. Survey plant site area and direct clean up or tie down operations as deemed necessary.

8.1.3 Security Shift Supervisor shall:

1. Notify all visitors in the Owner Controlled Area to vacate the site boundary.

8.1.4 Auxiliary Equipment Operator shall:

1. Clean the intake trash barrier

2. Start intake traveling screens

NOTE: Appendix B shall be consulted for activities to be performed during a Hurricane Watch or when other severe weather conditions are expected.

NOTE: Appendix C should be consulted for activities to be performed during a Tropical Storm Warning.

8.2 When information is received that a Hurricane Warning has been issued for the area occupied by the plant, the following personnel, when contacted, shall be responsible for listed actions below:

8.2.1. The Plant Supervisor - Nuclear or his designee shall:

1. Consult EPIP-20101, Duties of Emergency Coordinator, for direction.

2. Initiate O-OSP-102.1, Flood Protection Stoplog Inspection.

3. Initiate O-OSP-104.1, Record of Meteorological Forecasts.

8.2.2 Maintenance Superintendent - Nuclear, or designee, shall ensure that the following is performed:

1. Contact additional Maintenance Department personnel that are necessary to prepare and maintain the plant in safe condition.

2. Close the following outside doors and roof hatches and inflate door seals where applicable.

(1) Outside Doors:

Cable Spreading Room to roof (through CRDM room)
New Fuel Storage Rooms -
Spent Fuel Pits
Comp. Cooling Water Surge Tank Room
Door from Auxiliary Building to Turbine Area
480V L.C. Rooms
4160V Switchgear Rooms
Doors to Holdup Tank enclosures
Emergency Diesel Room doors
Doors from Aux. Building to No. 4 Comp. Cool Water Equip. Area
Elevator vestibules
Containment Purge Supply Fan Room
Inlet to No. 3 Charging Pump Room from Boric Acid Tank Area
Intake Chlorinator Equipment House
Reactor Control Rod Equipment Rooms (3B and 4B MCC Rooms)
Electrical Penetration Rooms and Enclosures
Generator Exciter Switchgear Rooms
Radwaste Building Doors (East, North, and Loading Ramp)
Condensate Polisher Building Doors
Computer Room Doors
Battery Room Doors
Boric Acid Storage Tank Room Outside Door
Safety Injection Pump Room Doors

(2) Roof hatches:

Stairwell to Aux. Building 10 Foot Elevation
RHR pump removal hatches
Evaporator Condensate Demineralizers
Monitor Tanks
Radwaste Building

3. Install stoplogs on plant flood protection walls as follows or construct temporary sandbag dikes in accordance with Appendix D for the specific area(s) without the required stoplogs:

   Around the EDG Fuel Oil Transfer Pumps (temporary sandbag dike)
   | Between Unit 3 4160 Volt Switchgear Room and EDG Building (Stoplogs 14 and 15)
   East of Unit 3 Main Transformer (Stoplogs 12 and 13)
   Entrance to Unit 3 Condenser Pit (Stoplog 11)
   South Wall of Unit 3 Condenser Pit (Stoplogs 9 and 10)
   Southeast of Unit 3 Lube Oil Reservoir (Stoplog 8)
   East of Unit 4 Main Transformer (Stoplogs 6 and 7)
   Entrance to Unit 4 Condenser Pit (Stoplog 5)
   South Wall of Unit 4 Condenser Pit (Stoplog 4)
   Southeast of Unit 4 Lube Oil Reservoir (Stoplog 3)
   South of Unit 4 Steam Generator Feed Pump Room (Stoplogs 1 and 2)
   Entrance to Unit 4 Spent Fuel Pit Heat Exchanger Room (Stoplog 22)
   Entrance to Unit 4 New Fuel Storage Area (Stoplog 21)
   Entrance to Unit 4 Component Cooling Water Pump Area (Stoplog 20)
   Entrance to Unit 3 Component Cooling Water Pump Area (Stoplog 19)
   Entrance to Auxiliary Building Chemical Storage Area (East door to BAST Room) (Stoplog 18)
   Entrance to Unit 3 New Fuel Storage Area (Stoplog 17)
   Entrance to Unit 3 Spent Fuel Pit Heat Exchanger Room (Stoplog 16 and sand bags as required at both lower corners). |

4. Tie down, remove, or otherwise secure all loose equipment, such as ladders, fire extinguishers and hose reels, waste containers, life rings, etc.

5. Empty tanks may require additional preparation (installation of temporary tie down anchors). Power Plant Engineering will provide such additional criteria on a case by case basis. Manways should be left open where practicable. Empty tanks under construction are the responsibility of the tank manufacturer/contractor and should be secured by same.

6. Check and clean Fuel Oil Tank roof vents to assure adequate pressure relief if necessary.

7. Store all chemical drums in the chemical warehouse, and oil drums in the oil house and/or chemical warehouse.

8. Verify that the gas cylinders in both gas cylinder storage houses are properly secured.

9. Remove vortex eliminators from the intake area and clean the trash pit.

10. Dog the intake area gantry crane, the cask crane and the turbine deck gantry crane.

11. Install life lines between important operating areas of the plant in case personnel must be sent to these areas during high winds.

12. Provide tarpaulins and ropes at various locations throughout th auxiliary building; also have on hand in the control center ar cable spreading room an ample supply of plastic film (pliofilm)

13. Ensure that maintenance personnel will be available at the plar during the emergency.

14. Provide portable dewatering pumps at Condensate Pump Areas Units 3 and 4.

15. Close doors and vent openings on the elevator machinery room.

16. Wire shut all doors on outdoor MCC's with insulated wire.

17. Take spare sump pumps to the Auxiliary Building.

18. Tie down intake trash rakes and hoists in such a manner tha they are secure, yet readily available if needed.

19. Inspect outside areas for radioactive material that needs to b stored or protected from severe weather.

20. When the vent fans listed in 8.2.3.6 are stopped, the followin air intake, exhaust, or vent openings should be closed off Verify that the dampers of those openings equipped with damper are locked in the closed position. Install protective cover where required, as follows:

    Spent Fuel Pit Inlet Air Vents
    New Fuel Storage Room Fan Inlet Vent
    Spent Fuel Pit Heat Exchanger Room Fan Inlet Vent
    Spent Fuel Pit Heat Exchanger Room Exhaust Vent
    Containment Purge Supply Fan Air Intake
    Auxiliary Building Supply Fans Air Intake Vent
    Control Room HVAC Outside Air Intakes
    Control Room HVAC Post MHA Emergency Fan Outside Air Intake

8.2.3 The Operations Superintendent - Nuclear shall verify that th following preparations are made:

1. Make arrangements for sufficient operating personnel to be a the plant during the hurricane in order to provide the necessar coverage for several days during which the plant may b inaccessible.

2. Bolt or otherwise secure the hatches on the chemical feed tanks.

3. Fill condensate tanks, primary water tanks and refueling wate storage tanks. Ensure that the minimum level in either fuel o water tank, is maintained at least two feet above surroundin retention dike elevations.

4. When hurricane is less than 6 hours from the plant have portabl bedding equipment brought to the control room and/or cabl spreading room and other suitable locations.

5. Open and tag outdoor 480V receptacle circuit breakers. (attached breaker list, Appendix A). Issue clearance to Pl Supervisor - Nuclear on all breakers opened.

6. As the hurricane approaches the site, and high winds begin, s the vent fans listed below:

   NOTE: Fans may be operated on a selected basis as operat conditions dictate.

   Spent fuel pit ventilation fan
   New fuel storage room vent fan
   Spent fuel pit heat exchanger room vent fan
   Containment purge supply and exhaust fans
   Auxiliary building supply vent fans
   Containment penetration cooling fans if not required
   Diesel generator room vent fans

7. Shutdown Amertap Systems, open and tag power supply breakers all pumps and valves, clearance to the Plant Supervisor Nuclear.

8. Inspect any outside radioactive material storage areas ensure containers are safely stored or secured.

8.2.4 The Plant Manager - Nuclear, or his designee, shall ensure that necessary personnel are available to report to the plant, if needed

8.3 When other natural emergency situations occur:

8.3.1 The Plant Supervisor - Nuclear shall consult EPIP-20101 f direction.

8.3.2 Other plant personnel shall perform actions as directed by Emergency Coordinator, if Emergency Plan is activated.

1. Clean sumps and sump pump suction strainers on the auxili building and electrical cable manholes. Test run all su pumps.

2. Survey the plant site, removing trash and debris and securi loose equipment.

8.3.3 The Operations Superintendent - Nuclear shall verify that t following preparations are made:

1. Inventory supply of laboratory chemicals and reagents and obta those that are necessary.

2. Check diesel oil storage tank and turbine lube oil stora tanks. Diesel oil storage tank should be topped off and turbi lube oil storage tank should be at least half full.

3. Make arrangements with the diesel oil suppliers for possib emergency deliveries.

4. Bolt or tie down all hatches on water plant tanks.

8.3.4 The Instrument and Control Supervisor shall check all instruments located outdoors to be in weather proof condition, inspect cases, gaskets, etc. and weatherproof those that are not with plastic film and tape.

8.3.5 The Land Management Site Manager shall make arrangements with the Air Force Sea Survival School for removal of their boats and loose gear from the area; and also with any outside contractor working within the plant property to remove, tie down, or otherwise secure his equipment and material to keep it from blowing away.

8.3.6 The Administrative Supervisor shall have all food storage facilities inventoried, a grocery list prepared and the necessary food purchased and properly stored. Enough food shall be purchased for all operators, maintenance and guard personnel staying on site during the storm for several days. The Administrative Supervisor shall also make arrangements for purchases of portable bedding as required by the Maintenance Superintendent.

APPENDIX A

480 VOLT RECEPTACLE LIST

To be verified tagged and opened per step 8.2.3.5 of this procedure. Operations Superintendent - Nuclear has responsibiltiy to ensure this is completed.

BREAKER NO.	RECEPTACLE NO./LOCATION
30513	4 and 4A, Turbine Area East
30653	17 and 17a, Unit 3 Containment
30661	5, West End, Aux. Building E/W Passageway
30674	6, 6A and 6B East End and Exterior East Wall of Aux. Building (See Note 1)
30736	7, North End, Aux. Building N/S Passageway
30905	11 and 12, North End of Intake Area
30760	8, Unit 3 Cask Wash Area (See Note 2)
34341	U3 Condensate Polisher Area Receptacles
40653	17 and 17a, Unit 4 Containment
40903	15 and 16, Intake Area (at Traveling Screens
44341	U4 Condensate Polisher Area Receptacles
0870	9, South End of Aux. Building N/S Passageway
0871	10, Unit 4 Cask Wash Area (See Note 2)
1023	13, Water Treatment Plant Area
B1605	01 and 02 Radwaste Control Area, West Wall
B1704	03, Radwaste N/S Passageway, North End
B2028	Radwaste N/S Passageway, South End and Outside Receptacles
Panel 3P14, Bkr 1	Two Receptacles outside North Wall and two outside East Wall of No. 3 4160 Switchgear Room
Panel 3P14, Bkr 2	One Receptacle at SE Corner No. 3 Aux. Trans.
Panel 3P14, Bkr 3	One Receptacle at No. 3 Bowser Filter One Receptacle at West of 3A MSRH One Receptacle at SW Corner of Cond. Retubing Pit, Ground Level (See Note 3)
Panel 3P14, Bkr 4	One Receptacle in Aux. Feedwater Pump Area One Receptacle East of 3D MSRH
Panel 3P14, Bkr 5	One Receptacle, Turbine Deck, West Side between Units 3 and 4 One Receptacle under South End of Steam Platform
Panel 3P14, Bkr 6	One Receptacle on Mezz. Level at Panel 3P14 One Receptacle at NE Corner of Turbine Deck
Panel 3P14, Bkr 7	One Receptacle at NW Corner of Turbine Deck
Panel 4P14, Bkr 1	One Receptacle at East Wall No. 4 4160 Room
Panel 4P14, Bkr 2	One Receptacle at SE Corner No. 4 Aux. Transformer
Panel 4P14, Bkr 3	One Receptacle at South Side of Cond. Retubing Pit, Ground Level (See Note 4) One Receptacle East of Bowser Filter One Receptacle West of 4A MSRH
Panel 4P14, Bkr 4	One Receptacle East of 4D MSRH One Receptacle East of No. 4 S/G Feedwater Pump Room
Panel 4P14, Bkr 5	One Receptacle at SW Corner of Turbine Deck One Receptacle under South edge of Steam Platform
Panel 4P14, Bkr 6	One Receptacle on Mezz. Level at Panel 4P14 One Receptacle on Turbine Deck, South of Control Room Door

APPENDIX A (cont'd)

DP10-5	Fan Room Area Receptacles
DP10-6	Fan Room Area Receptacles

Apprentice Training Building - Local breakers on seven welding receptacles on exterior North wall.

NOTE 1: Also provides power to B.A.E. temporary pumps.

NOTE 2: Power supply to Emergency Spent Fuel Pit Cooling Water Pumps

NOTE 3: Power supply to L.O. Reservoir Oil Renovators (DeLaval)

APPENDIX B

A Hurricane Watch condition DOES NOT result in Emergency Plan activation; however, certain actions shall be performed in preparation for the likelihood that a Hurricane Warning may be issued. At the discretion of plant management, some of these activities may be performed prior to the issuance of a Hurricane Watch in order to ensure that the site is prepared for severe weather conditions. The following personnel are responsible for the performance of the actions listed below:

NOTE: The following steps may be performed in any desired sequence.

The Security Supervisor, or his designee shall:

1. Ensure that all visitors leave the Owner Controlled Area, and are informed of the Hurricane Watch.

The Operations Superintendent - Nuclear, or his designee shall ensure that the following has been performed:

1. Check operation of the NAWAS and LGR equipment, base radio and portable radio equipment.
2. Test run both A and B emergency diesel generators, top off day and skid fuel tanks and verify that starting air is at 240 psi.
3. Test run the turbine DC oil pumps.
4. Check fire system and test run the fire pumps.
5. Test run the intake trash rakes and traveling screens.
6. Inventory supply of laboratory chemicals and reagents and obtain those that are necessary.
7. Check diesel oil storage tank and turbine lube oil storage tanks. Diesel oil storage tank should be topped off and turbine lube oil storage tank should be at least half full.
8. Make arrangements with the diesel oil suppliers for possible emergency deliveries.
9. Bolt or tie down all hatches on water plant tanks.

The Maintenance Superintendent - Nuclear or his designee shall ensure that the following has been preformed:

1. Check supply of emergency items and materials such as:

Wire	Wooden wedges	Flashlights and Batteries
Lumber	Buckets	Portable bedding equipment
Rope	Caulking	Portable Fans and Air Movers
Nails	Plastic Film Cloth (pliofilm)	

2. Provide a truck and driver to obtain foodstuffs and other required items.

APPENDIX B (Cont'd)

3. Clean sumps and sump pump suction strainers on the auxiliary building and electrical cable manholes. Test run all sump pumps.

4. Survey the plant site removing trash and debris and securing loose equipment.

5. Check all instruments located outdoors to be in weather proof condition, inspect cases, gaskets, etc. and weatherproof those that are not with plastic film and tape.

6. Check O-SMM-102.1, Flood Protection Stoplog Inspection, to determine temporary flood protection requirements (i.e., sandbag dikes).

7. If temporary sandbag dike(s) are required, begin preparation to fill bags and have available at affected area for installation if/when a Hurricane Warning is issued for the plant site.

The Land Management Site Manager, or his designee, shall ensure that the following has been performed:

1. Make arrangements with the Air Force Sea Survival School for removal of their boats and loose gear from the area; and also with any outside contractor working within the plant property to remove, tie down, or otherwise secure his equipment and material to keep it from blowing away.

The Administrative Supervisor, or his designee shall ensure that the following has been performed:

1. Have all food storage facilities inventoried, a grocery list prepared and the necessary food purchased and properly stored. Enough food shall be purchased for all operators, maintenance and guard personnel staying on site during the storm for several days.

The Health Physics Supervisor, or his designee shall ensure that all radioactive material containers are properly stored and secured.

APPENDIX C

A Tropical Storm Warning condition does not result in Emergency Plan activation, however, certain actions should be performed in preparation for a Tropical Storm or more severe weather condition. The following personnel are responsible for the actions listed below:

1. The Security Supervisor or his designee should inspect areas surrounding plant security barriers for any loose objects or other conditions that may reduce security barrier effectiveness under severe weather conditions.

2. The Operations Superintendent or his designee should perform the following:

   2.1 Inventory laboratory reagents and supplies and restock as necessary.

   2.2 Check diesel oil storage tank and turbine lube oil storage tank levels. Make arrangments to fill tanks as necessary to ensure diesel oil storage tanks are topped off and turbine lube oil storage tank is half full.

   2.3 Make arrangements with diesel oil suppliers for emergency deliveries.

   2.4 Begin filling condensate, primary water, and refueling water storage tanks.

   2.5 Inspect areas surrounding operating equipment for loose objects or other conditions that may damage operating equipment.

3. The Maintenance Superintendent or his designee should perform the following:

   3.1 Check emergency supplies including flashlights, batteries, lumber, rope, nails, portable bedding and ventilation equipment. Make arrangements for augmenting supplies as necessary.

   3.2 Survey the plant site for loose objects and ensure all weather barriers, such as doors and stoplogs, are in operable condition.

   3.3 Inspect all trailer and portable building tie downs and make repairs as necessary.

   3.4 Provide support to other departments in making severe weather preparations.

   3.5 Inspect outdoor instrumentation and controls for weather proof conditions.

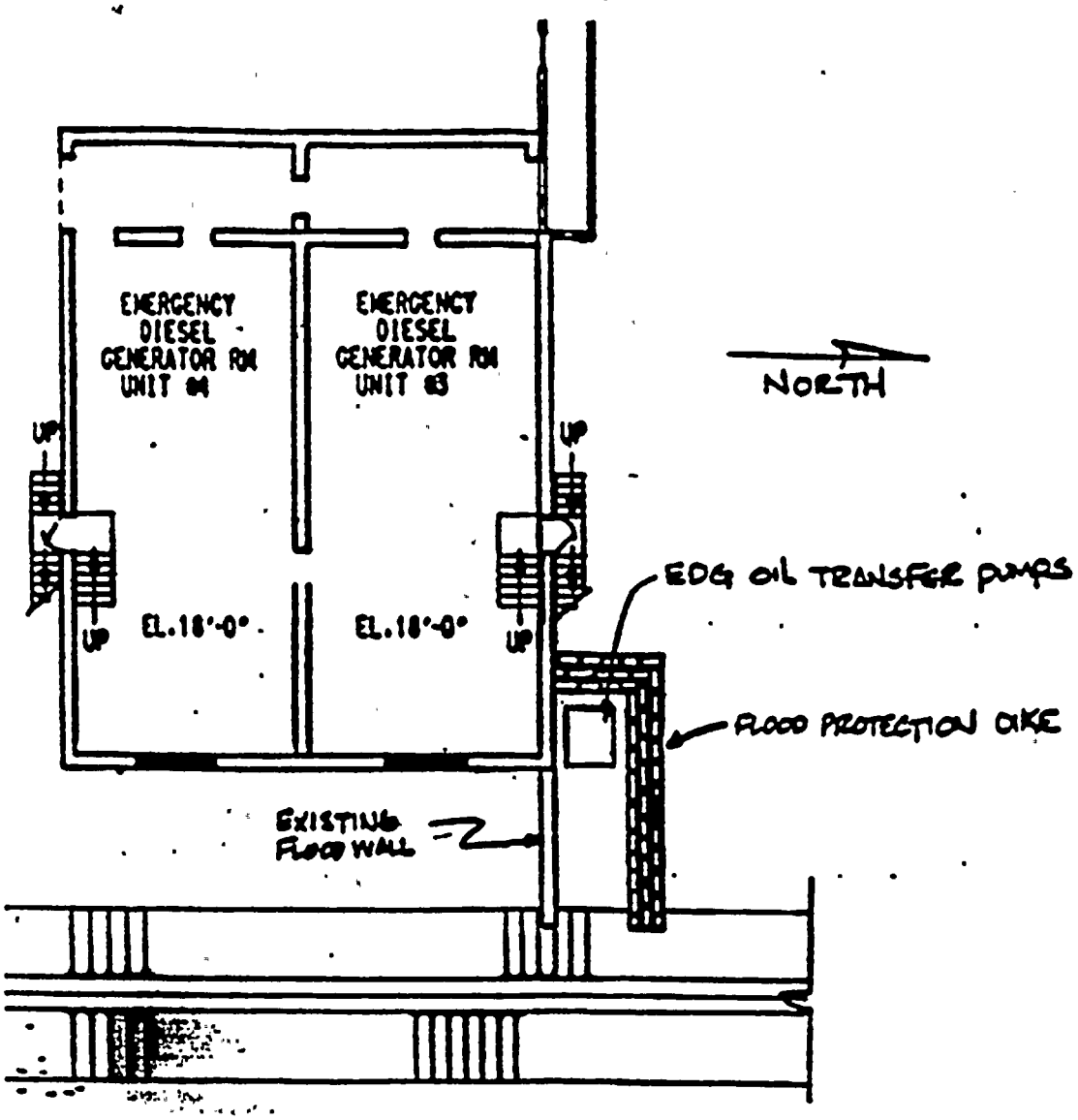
APPENDIX C (Cont'd)

4. The Administrative Supervisor or his designee should provide support to other departments in obtaining necessary supplies and equipment.

5. The Health Physics Supervisor or his designee shall ensure that all radioactive material containers are properly stored and secured.

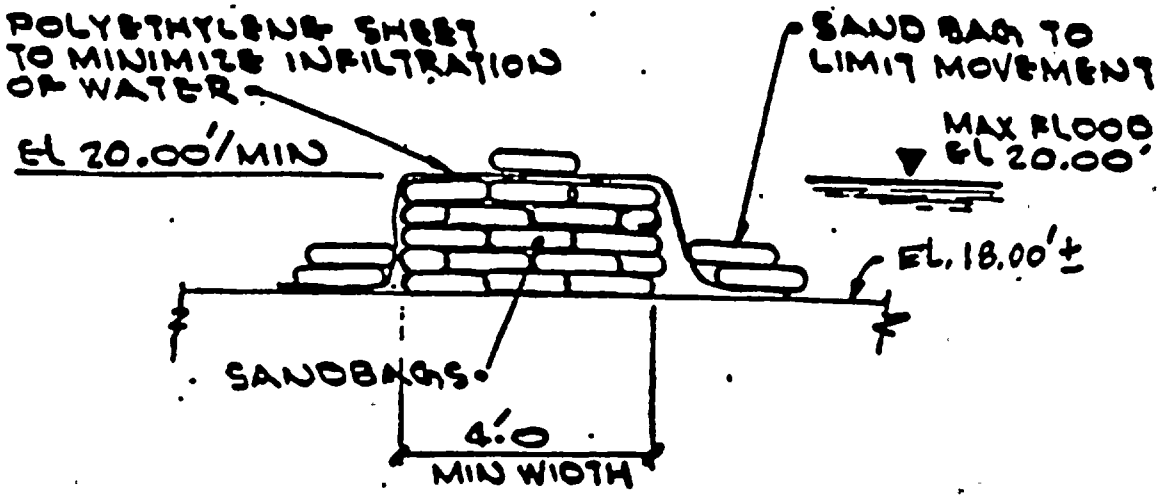
APPENDIX D
(Page 1 of 2)

SKETCH 1



APPENDIX D
(Page 2 of 2)

Details for Flood Protection Dike Shown on Sketch 1 of this Appendix.



TYPICAL SECTION THROUGH SANDBAG DIKE NTS

NOTES:

1. Actual length of dike by field. Location of dike along walls shall be chosen to limit obstructions with the items mounted to walls. Care shall be used when placing dike to insure equipment/components are not obstructed.

2. Polyethylene sheet shall be Griffolyn T-25 or equal and shall have a minimum thickness of 4 mils.

3. Sandbags shall be cotton cloth, size shall be determined by field based on availabilty and shall be placed to provide the dike dimensions shown.

4. Polyethylene sheet – M and S Number 008-51807-6 QL3 minimum.
Cloth Bags – M and S Number 027-69400-3 QL3 minimum.
Quantities shall be by field.

FINAL PAGE

ENCLOSURE 4

FOR FPL RESPONSE
TO NRC QUESTION (4)

9.11.3 CONDENSATE STORAGE TANKS

Normal water supply to all the pumps is from the two 250,000 gallon condensate storage tanks, through locked open gate valves and check valves. Each tank has a minimum reserved storage capacity of 185,000 gallons of demineralized water for the auxiliary feedwater pumps.

With this quantity of water the unit can be:

(1) Kept at hot standby for 15 hours and then cooled to 350F at which point the Residual Heat Removal System will be put in service, or

(2) Kept at hot standby for about 23 hours.

This is shown graphically in Figure 9.11-1.

The residual heat removal system capacity matches the decay heat generation in the reactor at twelve and one half hours after reactor shutdown. This, therefore, is the earliest time when the residual heat removal system can be put into service. Under these conditions the unit will be kept at hot standby for at least eight and one half hours prior to initiating cooldown.

An additional auxiliary feedwater supply can be provided from the water treatment system. Demineralized water at a maximum rate of 200 gpm per unit will be available from the water treatment system. The auxiliary feedwater requirement after ten hours is less than 125 gpm. The condensate storage tanks are interconnected so that each of the pumps can take suction from either tank.

An alternate, non-safety source of water to either the AFW pumps or the condensate storage tanks is the 500,000 gal. demineralized water storage tank. Deaerated water is available from this tank at a maximum rate of 400 gpm.

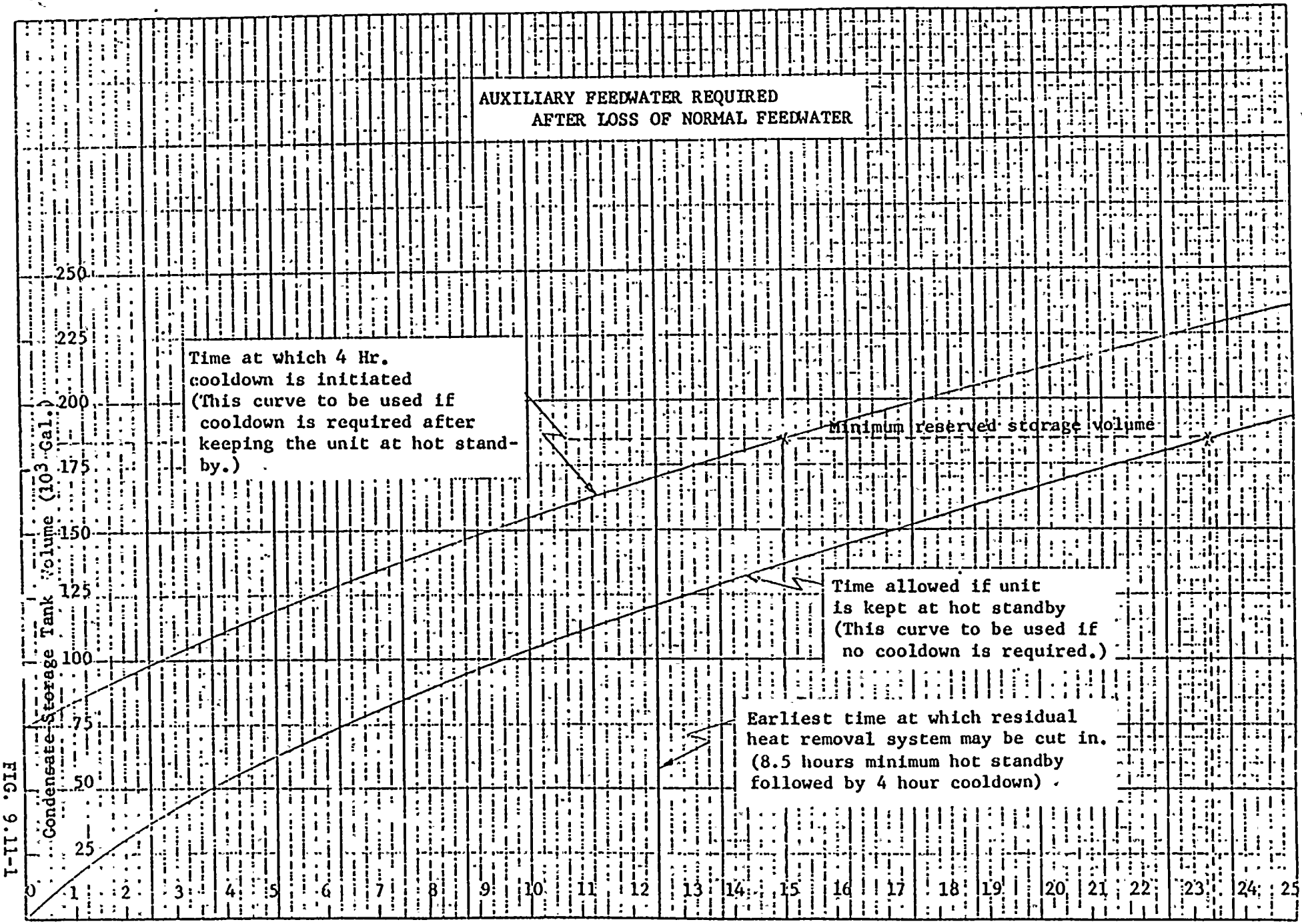
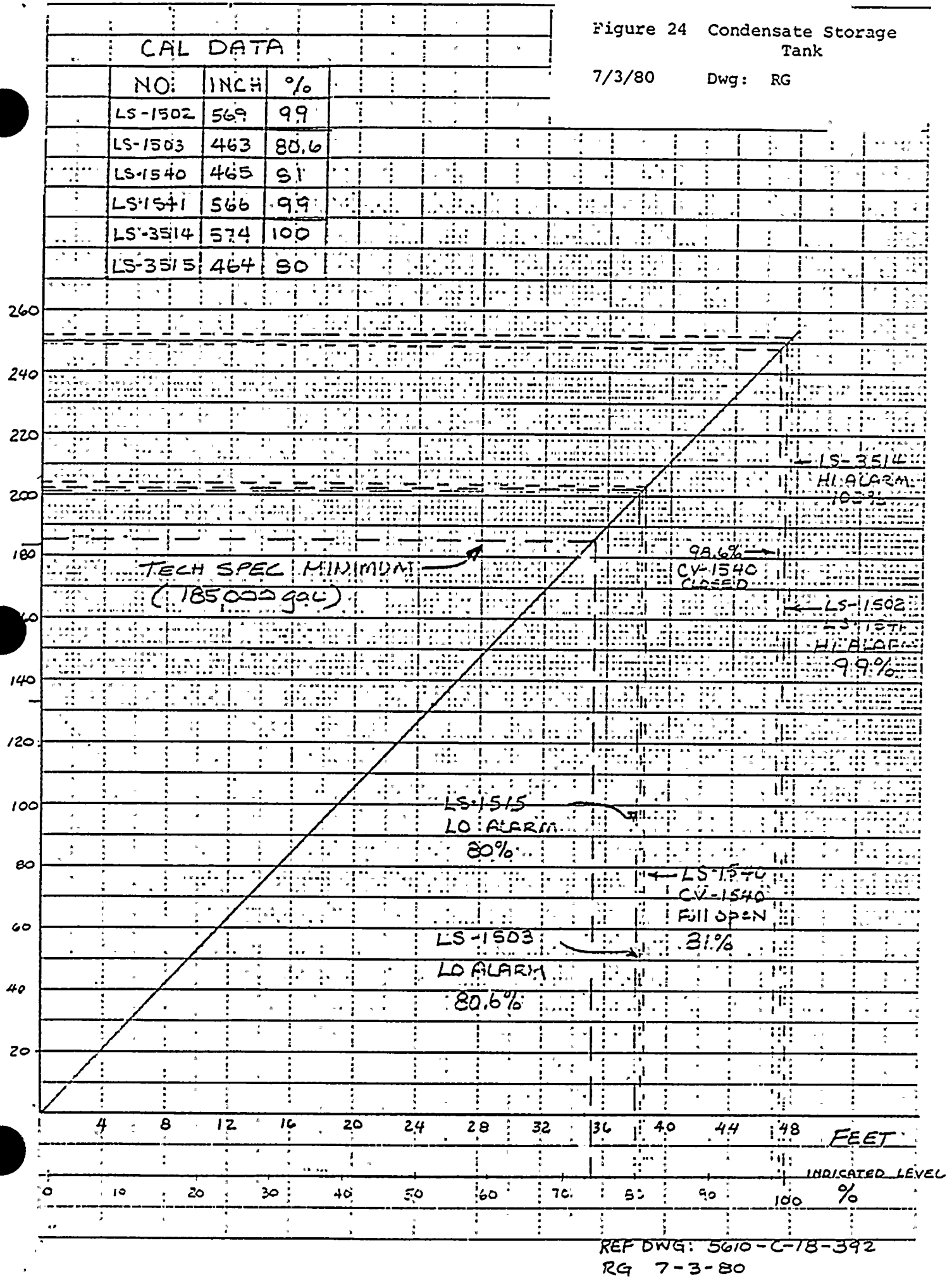

AUXILIARY FEEDWATER REQUIRED
AFTER LOSS OF NORMAL FEEDWATER
Time at which 4 Hr. cooldown is initiated (This curve to be used if cooldown is required after keeping the unit at hot stand-by.)
Minimum reserved storage volume
Time allowed if unit is kept at hot standby (This curve to be used if no cooldown is required.)
Earliest time at which residual heat removal system may be cut in. (8.5 hours minimum hot standby followed by 4 hour cooldown)
Condensate Storage Tank Volume (10³ Gal.)
250
225
200
175
150
125
100
75
50
25
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
Time (Hrs.)

FIG. 9.11-1

Figure 24 Condensate Storage Tank

7/3/80 Dwg: RG



REF DWG: 5610-C-18-392

RG 7-3-80

ENCLOSURE 5

FOR FPL RESPONSE
TO NRC QUESTION (5)

COMPARISON OF FPL

PROPOSE DESIGN CRITERIA

TO

APPENDIX B OF NUMARC 87-00

Y=Yes
N=No

APPENDIX B. ALTERNATE AC POWER CRITERIA

PT N

This appendix describes the criteria that must be met by a power supply in order to be classified as an Alternate AC power source. The criteria focus on ensuring that station blackout equipment is not unduly susceptible to dependent failure by establishing independence of the AAC system from the emergency and non-Class 1E AC power systems.

AAC Power Source Criteria

B.1 The AAC system and its components need not be designed to meet Class 1E or safety system requirements. If a Class 1E EDG is used as an Alternate AC power source, this existing Class 1E EDG must continue to meet all applicable safety-related criteria. — Y

B.2 Unless otherwise provided in this criteria, the AAC system need not be protected against the effects of:

(1) failure or misoperation of mechanical equipment, including (i) fire, (ii) pipe whip, (iii) jet impingement, (iv) water spray, (v) flooding from a pipe break, (vi) radiation, pressurization, elevated temperature or humidity caused by high or medium energy pipe break, and (vii) missiles resulting from the failure of rotating equipment or high energy systems; or — Y

(2) seismic events. — Y

B.3 Components and subsystems shall be protected against the effects of likely weather-related events that may initiate the loss of off-site power event. Protection may be provided by enclosing AAC components within structures that conform with the Uniform Building Code, and burying exposed electrical cable run between buildings (i.e., connections between the AAC power source and the shutdown busses). — Y

B.4 Physical separation of AAC components from safety related components or equipment shall conform with the separation criteria applicable for the unit's licensing basis. — Y

Connectability to AC Power Systems

B.5 Failure of AAC components shall not adversely affect Class 1E AC power systems. — Y

B.6 Electrical isolation of AAC power shall be provided through an appropriate isolation device. If the AAC source is connected to Class 1E buses, isolation shall be provided by two circuit breakers in series (one Class 1E breaker at the Class 1E bus and one non-Class 1E breaker to protect the source). — Y

	PTN
B.7 The AAC power source shall not normally be directly connected to the preferred or on-site emergency AC power system for the unit affected by the blackout. In addition, the AAC system shall not be capable of automatic loading of shutdown equipment from the blacked-out unit unless licensed with such capability.	Y
Minimal Potential for Common Cause Failure	
B.8 There shall be minimal potential for common cause failure of the AAC power source(s). The following system features provide assurance that the minimal potential for common cause failure has been adequately addressed.	
(a) The AAC power system shall be equipped with a DC power source that is electrically independent from the blacked-out unit's preferred and Class 1E power system.	Y
(b) The AAC power system shall be equipped with an air start system, as applicable, that is independent of the preferred and the blacked-out unit's preferred and Class 1E power supply.	Y
(c) The AAC power system shall be provided with a fuel oil supply, as applicable, that is separate from the fuel oil supply for the onsite emergency AC power system. A separate day tank supplied from a common storage tank is acceptable provided the fuel oil is sampled and analyzed consistent with applicable standards prior to transfer to the day tank.	Y
(d) If the AAC power source is an identical machine to the emergency onsite AC power source, active failures of the emergency AC power source shall be evaluated for applicability and corrective action taken to reduce subsequent failures.	Y
(e) No single point vulnerability shall exist whereby a likely weather-related event or single active failure could disable any portion of the onsite emergency AC power sources or the preferred power sources, and simultaneously fail the AAC power source(s).	Y
(f) The AAC power system shall be capable of operating during and after a station blackout without any support systems powered from the preferred power supply, or the blacked-out unit's Class 1E power sources affected by the event.	Y
(g) The portions of the AAC power system subjected to maintenance activities shall be tested prior to returning the AAC power system to service.	Y

	PTN
Availability After Onset of Station Blackout	
B.9 The AAC power system shall be sized to carry the required shutdown loads for the required coping duration determined in Section 3.2.5, and be capable of maintaining voltage and frequency within limits consistent with established industry standards that will not degrade the performance of any shutdown system or component. At a multi-unit site, except for 1/2 Shared or 2/3 emergency AC power configurations, an adjacent unit's Class 1E power source may be used as an AAC power source for the blacked-out unit if it is capable of powering the required loads at both units.	Y
Capacity and Reliability	
B.10 Unless otherwise governed by technical specifications, the AAC power source shall be started and brought to operating conditions that are consistent with its function as an AAC source at intervals not longer than three months, following manufacturer's recommendations or in accordance with plant-developed procedures. Once every refueling outage, a timed start (within the time period specified under blackout conditions) and rated load capacity test shall be performed.	Y
B.11 Unless otherwise governed by technical specifications, surveillance and maintenance procedures for the AAC system shall be implemented considering manufacturer's recommendations or in accordance with plant-developed procedures.	Y
B.12 Unless otherwise governed by technical specifications, the AAC system shall be demonstrated by initial test to be capable of powering required shutdown equipment within one hour of a station blackout event.	Y
B.13 The Non-Class 1E AAC system should attempt to meet the target reliability and availability goals specified below, depending on normal system state. In this context, reliability and availability goals apply to the overall AAC system rather than individual machines, where a system may comprise more than one AAC power source.	N/A
(a) <u>Systems Not Normally Operated (Standby Systems)</u> System reliability should be maintained at or above 0.95 per demand, as determined in accordance with NSAC-108 methodology (or equivalent).	Y
(b) <u>Systems Normally Operated (Online Systems)</u>	Y
Availability — AAC systems normally online should attempt to be available to its associated unit at least 95% of the time the reactor is operating.	
Reliability — No reliability targets or standards are established for online systems.	

ENCLOSURE 6

FOR FPL RESPONSE
TO NRC QUESTION (7)