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FACIL:50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
AUTH.NAME AUTHOR AFFILIATION
UHRIG,R.E. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
VARGA,S.A. Operating Reactors Branch 1

SUBJECT: Forwards response to NRC 810608 request for addl info re auxiliary feedwater automatic initiation & flow indication. Preliminary diagrams provided.

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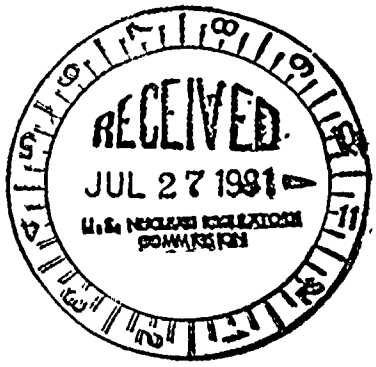
FLORIDA POWER & LIGHT COMPANY

July 23, 1981
L-81-311

Office of Nuclear Reactor Regulation
Attention: Mr. S. A. Varga, Chief
Operating Reactors Branch #1
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555



Dear Mr. Varga:

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250 & 50-251
Auxiliary Feedwater Automatic
Initiation and Flow Indication

Florida Power & Light has reviewed the NRC letter dated June 8, 1981 concerning the Turkey Point Auxiliary Feedwater System. Our response is attached.

Very truly yours,

Robert E. Uhrig
Vice President
Advanced Systems & Technology

REU/PLP/ras

cc: Mr. J. P. O'Reilly, Region II
Harold F. Reis, Esquire

A001
S 1/1

REQUEST FOR ADDITIONAL INFORMATION

TURKEY POINT UNITS 3 & 4 AUXILIARY FEEDWATER (AFW)
AUTOMATIC INITIATION AND FLOW INDICATION

Question 1

By FP&L letter dated January 14, 1980 (L-80-22; Attachment 1, Page 3), it was stated that:

"In order to provide fully automatic flow initiation, one of the two alternatives listed below will be taken:

1) The system will be modified so that the auxiliary feedwater control valves will be automatically opened to a predetermined position after a short time delay sufficient to enable the turbine driven auxiliary feed pump to attain full speed, or

2) The normal lineup of the system will be changed so that the auxiliary feedwater control valves will be normally open a preset predetermined amount so that feed flow to the steam generators will be initiated with no operator action whenever the auxiliary feedwater pumps are started."

Which of these alternatives has been selected? Provide the new logic and electric schematic diagrams for these valves. If alternative 2 is selected, describe the periodic surveillance planned to provide the operator positive assurance that these valves are in their proper positions.

Response 1

Alternative 1, with slight modifications, has been selected. For a description of the system, see Enclosure 3 of FPL letter L-81-36, dated February 3, 1981, to Mr. Darrell Eisenhut. Preliminary, new logic and electrical schematic diagrams are attached to this letter, as follows:

5177-109-J305-16, Preliminary Block Diagram AFW Flow Control
5177-109-J305-17, Preliminary Block Diagram AFW Flow Control
5177-109-E-05 Sheets 1 and 2, Elementary Diagram AFW Flow Control and Indication

Final diagrams will be sent when available.

QUESTION 2

Are there any operating bypasses associated with the automatic initiation logic/circuitry during start-up or operation of the reactor? If so, how are these bypasses removed (automatically, procedurally, etc.)?

RESPONSE 2

No operating bypasses are provided. For more information, see Enclosure 2 of FPL letter L-81-36, dated February 3, 1981.

QUESTION 3

Indicate the frequency of tests for channel checks, functional tests and calibration of the:

a. Low low steam generator level instrumentation channels

b. loss of voltage on 4160 V buses instrumentation channels

RESPONSE 3

As indicated in Turkey Point Technical Specification 4.1, Table 4.1.1, the frequency of these tests is as follows:

Channel Description	Check	Calibrate	Test
4 KV Voltage & Frequency (Reactor Protection Circuits only)	NA	Each Refueling (frequency only)	Each Refueling
Steam Generator Level	Each shift (See note)	Each Refueling	Monthly (See note)

NOTE: These tests are not applicable during cold or refueling shutdowns. The specified tests however, shall be performed within one surveillance period prior to start up.

Question 4

Describe the steam generator level instrumentation at the Turkey Point Plant. This description should include:

a. Type and number of level channels per steam generator including the range of each channel.

b. The specific source (vital bus) from which each of these channels is powered.

c. Capability for testing and calibration, including the interval between tests.

d. The specific indication available in the control room for each channel (indicator, recorder, etc.)

Response 4

(a) The steam generator level instrumentation for Turkey Point Units 3 & 4 is comprised of three safety related protective channels designated I, II and III. Each steam generator has three level transmitters representing three protective channels.

Protective channels are narrow range type and are primarily used to initiate reactor trip, turbine trip, feedwater pump trip and automatic initiation of the AFW system. The logic is such that the coincidence of two out of three low-low level signals (15% level) in any steam generator will generate reactor trip and auto initiation of the AFW system.

A high-high signal in any steam generator will generate a turbine trip and a feedwater pumps trip. All the components of the protective channels are Class 1E powered from the Vital Instrumentation power system (Inverter/Battery). Each protective channel is independent and separate from the others. Cables of the same parameter run in separate raceway systems.

Channel III of each steam generator protective channel is also used for control of the main feedwater valves thru an isolation device. An alternate non-safety related channel will be provided with a selector switch. This new level channel is also used for control of the feedwater valves as an alternate to Channel III of each steam generator.

Transmitter ranges are as follows:

S.G.	Tag. No.	Channel	Transmitter Range
1	LT-474	I	30.13" - 138.22'W
1	LT-475	II	30.13" - 138.22'W
1	LT-476	III	30.13" - 138.22'W
2	LT-484	I	30.13" - 138.22'W
2	LT-485	II	30.13" - 138.22'W
2	LT-486	III	30.13" - 138.22'W
3	LT-494	I	30.13" - 138.22'W

S.G.	Tag. No.	Channel	Transmitter Range
3	LT-495	II	30.13" - 138.22" W
3	LT-496	III	30.13" - 138.22" W
1	LT-478	Non-Safety Related (NSR)	0 - 143" W
2	LT-488	NSR	0 - 143" W
3	LT-498	NSR	0 - 143" W

In addition to the three protective channels, each steam generator is equipped with a wide range, non-safety related channel for indication and recording, as follows:

S.G.	Tag. No.	Channel	Transmitter Range
1	LT-477	NSR	0 - 513" W.
2	LT-487	NSR	0 - 513" W.
3	LT-497	NSR	0 - 513" W.

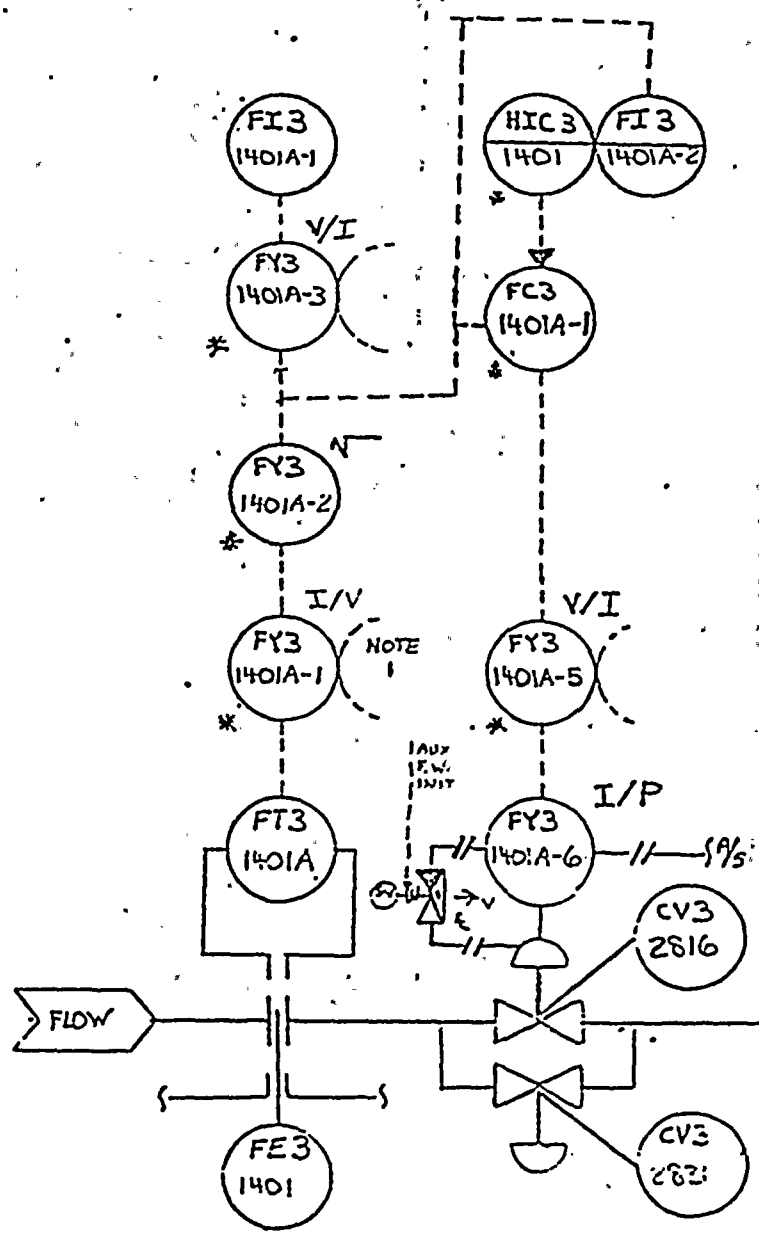
(b) Each protective channel is powered from the 120 VAC, Class IE, uninterruptible power supply of the same channel. The power supply is comprised of an inverter and a safety related battery. The Non-safety channel is powered from a normal 120 VAC non-class 1E service.

(c) Safety related instrumentation is tested every month under the periodic surveillance testing program. Calibration of the complete instrument loop is done during scheduled refueling outages or when a malfunction or other problem occurs in the loop. Each scheduled outage occurs at time intervals of twelve to eighteen months.

(d) For narrow range safety related instrumentation, three separate level indicators per steam generator are provided on the vertical Panel "A" in the control room. Each steam generator has a common three pen recorder. A three position selector switch is provided in the console for recording the steam generator level of the selected protective channel. This recorder is also used to monitor steam and feedwater flow. For wide range, non-safety related instrumentation, two local indicators per steam generator are provided at the AFW pump station and a three pen recorder is provided on the vertical panel in the control room.

From the same wide range channel, low and high level alarms are provided for each steam generator at the main annunciator.

PRELIMINARY



F.W. LINE	C.V. TAG NUMBER	S.V. TAG NUMBER
A	CV3-2816	SV3-2914
B	CV3-2817	SV3-2916
C	CV3-2818	SV3-2918
A	CV3-2831	SV3-2915
B	CV3-2832	SV3-2917
C	CV3-2833	SV3-2910

FEEDWATER LINE	INSTRUMENT LOOP
A	1401 A
B	1457 A
C	1458 A

ALL ELEMENTS ARE DUPLICATED FOR EACH AUXILIARY FEEDWATER CONTROL VALVE.

NOTE 1. - SPARE I/V CIRCUITRY IS USED FOR +24VDC PWR SUPPLY FOR CONTAINMENT PRESSURE TRANSMITTER. (FOR EX. FT3-6306A.)

UNIT 3 PREFIX "3-" IS REPLACED BY "4-" FOR UNIT 4 *: SUPPLIED BY J305 VENDOR

No.	DATE	REVISIONS	BY	CH'K	DESIGN SUPV	ENG'R.	PROJ ENGR	APPR.
1	10-29-80	ISSUED FOR PURCHASE	KK	A.K.	—	[illegible]	[illegible]	
0	6-20-80	ISSUED FOR BID	C/S	A.P.	—	[illegible]	[illegible]	

SCALE NONE | DESIGNED — | DRAWN — | CHIEF ENG'R —

GAITHERSBURG POWER DIVISION

FLORIDA POWER & LIGHT COMPANY
TURKEY POINT PLANT

PRELIMINARY BLOCK DIAGRAM
AUXILIARY FEEDWATER FLOW CONTROL

JOB NO. 5177-109

DRAWING NO.	REV.
5177-109-J305-16	1

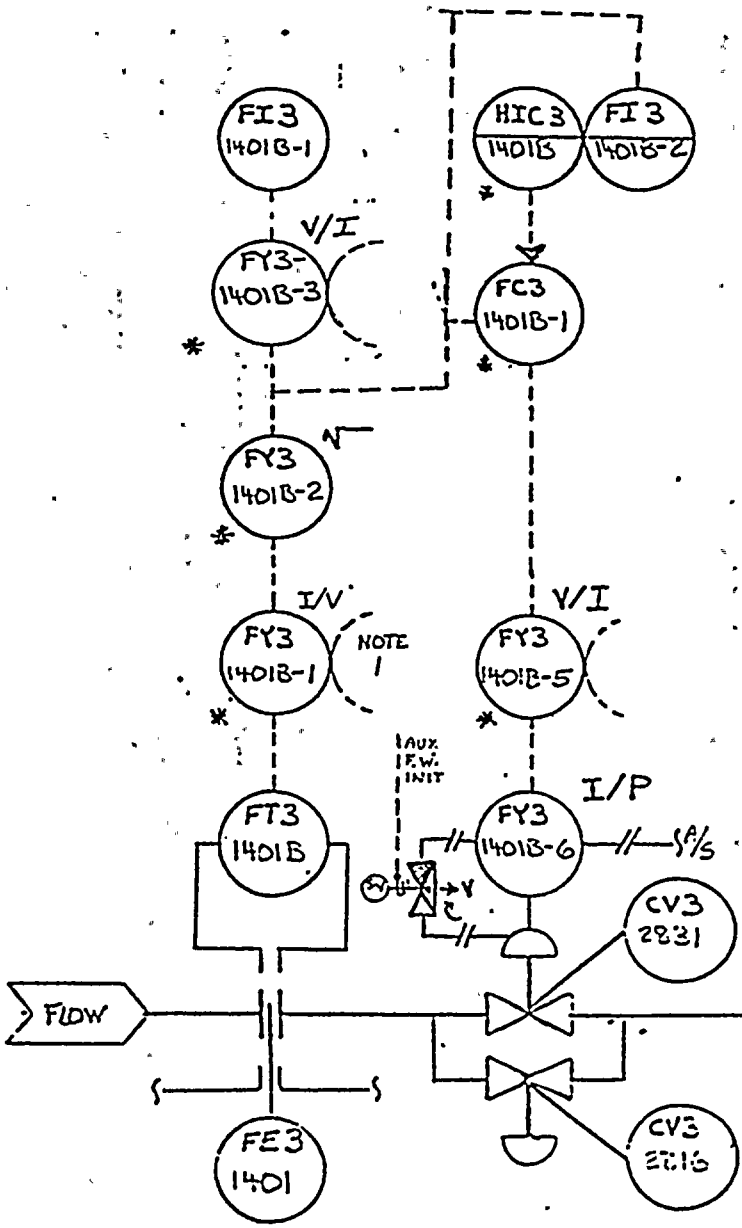
SHEET 1 OF 1

UNIT 1 2 3 4 5 6 7 8

G-231-E 01-23-74

3½ x 11 "A" SIZE

PRELIMINARY



F.W. LINE	C.V. TAG NUMBER	S.V. TAG NUMBER
A	CV3-2816	SV3-2914
B	CV3-2817	SV3-2916
C	CV3-2818	SV3-2918
A	CV3-2831	SV3-2915
B	CV3-2832	SV3-2917
C	CV3-2833	SV3-2919

FEEDWATER LINE	INSTRUMENT LOOP
A	1401B
B	1457B
C	1458B

ALL ELEMENTS ARE DUPLICATED FOR EACH AUXILIARY FEEDWATER CONTROL VALVE.

NOTE 1. – SPARE I/V CIRCUITRY IS USED AS +24VDC PWR SUPPLY FOR CONTAINMENT PRESSURE TRANSMITTER. (EWEC PTS-6306C.)

UNIT 3 PREFIX "3-" IS REPLACED BY "4-" FOR UNIT 4

*: SUPPLIED BY J305 VENDOR

No.	DATE	REVISIONS	BY	CH'K	DESIGN SUPV	ENG'R.	PROJ ENGR	APPR.
1	10-24-74	ISSUED FOR PURCHASE	KK	u.f.	—			
0	6-20-74	ISSUED FOR BIDS	CE	a.p.	—			

SCALE NONE | DESIGNED — | DRAWN — | CHIEF ENG'R —

GAITHERSBURG POWER DIVISION

FLORIDA POWER & LIGHT COMPANY
TURKEY POINT PLANT

PRELIMINARY BLOCK DIAGRAM
AUXILIARY FEEDWATER FLOW CONTROL

JOB NO. 5177-109

DRAWING NO. 5177-109-J305-17 REV. 1

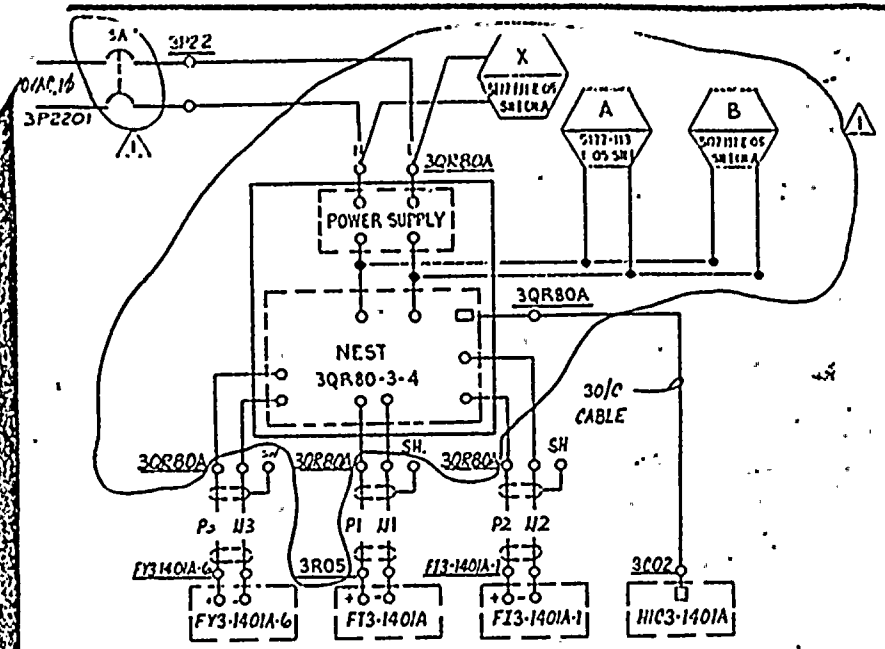
SHEET 1 OF 1

UNIT X 3 4 X

G-231-E 01-23-74

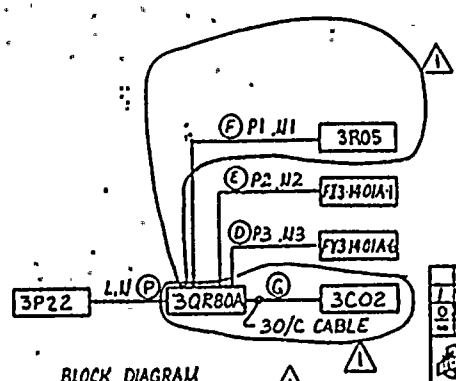
8½ x 11 "A" SIZE

PRELIMINARY



AUX. F.W. LINE A INSTRUMENT LOOP 1401A

SCHEME NO. 3AFWA1



BLOCK DIAGRAM

NOTES

1. ALL SHIELDED CIRCUITS ARE 2/C # 16AWG
2. THIS DRAWING IS NUCLEAR SAFETY RELATED.

FPL - Pwr Plt Engr
PCM # 80-55
Approved For Implementation
Date

UIT	EQUIPMENT	SCHEME NO	BRKR NO.	LOCATION						CV	CHAN	NEST
1	AUX FW LINE A INSTRUMENT LOOP 1401A	3AFWA1	3P22201	3QR80A	3C02	3R05	FI3-1401A-1	3P22	FY3-1401A-6	2B16	A	3QR80-3-4
1	AUX FW LINE B INSTRUMENT LOOP 1457A	3AFWA2	3P22201	3QR80A	3C02	3R05	FI3-1457A-1	3P22	FY3-1457A-6	2B17	A'	3QR80-3-5
1	AUX FW LINE C INSTRUMENT LOOP 1458A	3AFWA3	3P22201	3QR80A	3C02	3R05	FI3-1458A-1	3P22	FY3-1458A-6	2B18	A''	3QR80-3-6
1	AUX FW LINE A INSTRUMENT LOOP 1401A	4AFWA1	4P22201	3QR80B	4C02	4R05	FI4-1401A-1	4P22	FY4-1401A-6	2B16	A	3QR80-4-4
1	AUX FW LINE B INSTRUMENT LOOP 1457A	4AFWA2	4P22201	3QR80B	4C02	4R05	FI4-1457A-1	4P22	FY4-1457A-6	2B17	A'	3QR80-4-5
1	AUX FW LINE C INSTRUMENT LOOP 1458A	4AFWA3	4P22201	3QR80B	4C02	4R05	FI4-1458A-1	4P22	FY4-1458A-6	2B18	A''	3QR80-4-6

PCM 80-55/56

1	REVISED AS SHOWN	
0	ISSUED FOR CONSTRUCTION	

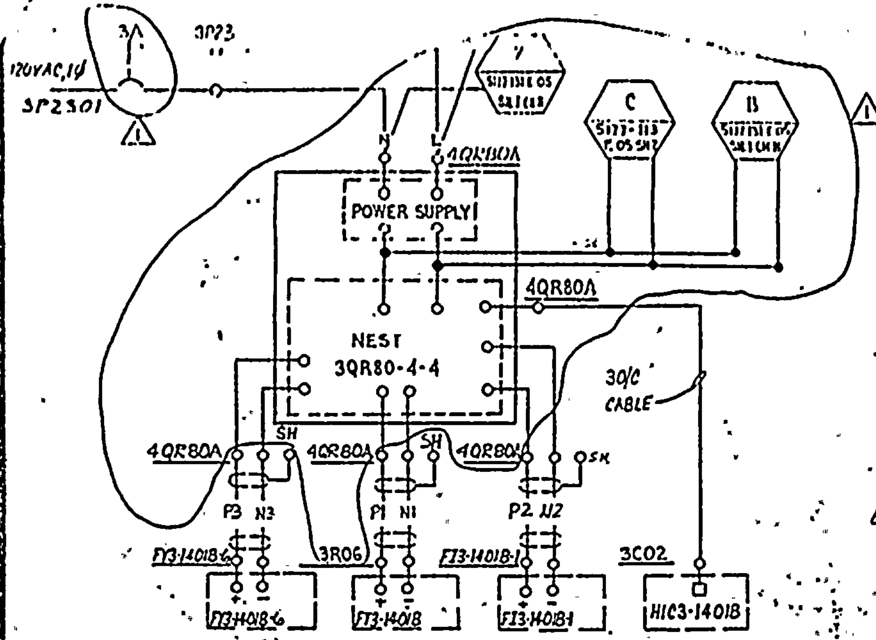
BECHTEL
GAITHERSBURG, MARYLAND

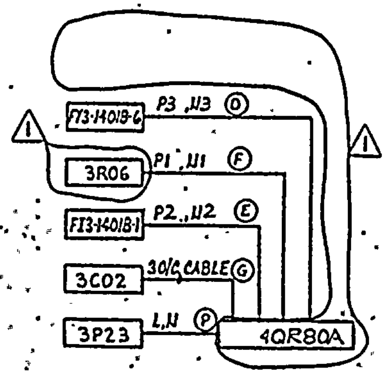
FLORIDA POWER & LIGHT COMPANY
TURKEY POINT NUCLEAR UNITS
UNIT NO 3 693MW INSTALLATION
UNIT NO 4 693MW INSTALLATION

ELEMENTARY DIAGRAM
AUX FEEDWATER FLOW CONTROL AND INDICATION

5177-109-E-05 SH.1 | 1

FILE NUMBER:





AUX. F.W. LINE A INSTRUMENT LOOP 1401B

SCHEME NO. 3AFWB1

PRELIMINARY

NOTES:

1. ALL SHIELDED CIRCUITS ARE 2C # 16 AWG
2. THIS DRAWING IS NUCLEAR SAFETY RELATED

FPL - Pwr Plt Engr
PCM # 80-55
Approved For Implementation

Date ________

UNIT	EQUIPMENT	SCHEME NO.	BRKR NO.	LOCATION						CV	CHAN	NEST
3	AUX. F.W. LINE A INSTRUMENT LOOP 1401B	3AFWB1	3P2301	4QR80A	3C02	3R06	FI3-1401B-1	FY3-1401B-6	3P23	2831	B	4QR80-3-4
3	AUX F.W. LINE B INSTRUMENT LOOP 1457B	3AFWB2	3P2301	4QR80A	3C02	3R06	FI3-1457B-1	FY3-1457B-6	3P23	2832	B	4QR80-3-5
3	AUX F.W. LINE C INSTRUMENT LOOP 1458B	3AFWB3	3P2301	4QR80A	3C02	3R06	FI3-1458B-1	FY3-1458B-6	3P23	2833	B	4QR80-3-6
4	AUX F.W. LINE A INSTRUMENT LOOP 1401B	4AFWB1	4P2301	4QR80B	4C02	4R06	FI4-1401B-1	FY4-1401B-6	4P23	2831	B	4QR80-4-4
4	AUX F.W. LINE B INSTRUMENT LOOP 1457B	4AFWB2	4P2301	4QR80B	4C02	4R06	FI4-1457B-1	FY4-1457B-6	4P23	2832	B	4QR80-4-5
4	AUX F.W. LINE C INSTRUMENT LOOP 1458B	4AFWB3	4P2301	4QR80B	4C02	4R06	FI4-1458B-1	FY4-1458B-6	4P23	2833	B	4QR80-4-6

PC/M 80-55/56

NO	DATE	REVISIONS
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0		ISSUED FOR CONSTRUCTION

BECHTEL
GAITHERSBURG, MARYLAND

FLORIDA POWER & LIGHT COMPANY
TURKEY POINT NUCLEAR UNITS

ELEMENTARY DIAGRAM
AUX FEEDWATER FLOW CONTROL AND INDICATION

LAH
ASG
DATE 6-16-80

5177-109-E-05 SH. 2 | 1

FILE NUMBER: