

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS):

ACCESSION NUMBER: 8305240372 DOC. DATE: 83/05/19 NOTARIZED: NO  
 FACIL: 50-335, Site, Lucie Plant, Unit 1, Florida Power & Light Co., DOCKET #: 05000335  
 AUTH. NAME: UHRIG, R. E., AUTHORITY AFFILIATION: Florida Power & Light Co.,  
 RECIP. NAME: CLARK, R. A., RECIPIENT AFFILIATION: Operating Reactors Branch 3.

SUBJECT: Forwards responses to NRC 830118 request for info re accident monitoring, to aid in post-implementation review of NUREG-0737, Items II.F.1.4, II.F.1.5 & II.F.1.6.

DISTRIBUTION CODE: A0465 COPIES RECEIVED: LITR. 1 ENCL 1 SIZE: 17  
 TITLE OR Submittals: TMI, Action Plan Rgmt: NUREG-0737 & NUREG-0660

NOTES:

	RECIPIENT ID. CODE/NAME	COPIES LITR. ENCL	RECIPIENT ID. CODE/NAME	COPIES LITR. ENCL
	NRR. ORB3. 3CI 01	7 7		
INTERNAL:	ELD/HDS2	1 0	IEV/DEPER. DIR: 33	1 1
	IEV/DEPER/EP6	3 3	IEV/DEPER/IR8	1 1
	NRR. PANLSON, W.	1 1	NRR/DHFS/DEPY29	1 1
	NRR/DL. DIR: 14	1 1	NRR/DL/AOL: 16	1 1
	NRR/DL/ORAB: 18	3 3	NRR/DSI/ADRS: 27	1 1
	NRR/DSI/AEB: 1	1 1	NRR/DSI/ASB: 1	1 1
	NRR/DST/RAB: 1	1 1	NRR/DST DIR: 30	1 1
	<u>REGI FILEI</u> 04	1 1	RGNE:	1 1
EXTERNAL:	ACRS 34	10 10	INPO, J. STARNES	1 1
	LPOR. 03	1 1	NRC POR. 02	1 1
	NSICI 05	1 1	NTIS	1 1

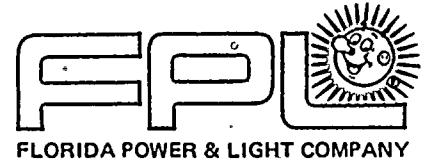
1950

THE UNIVERSITY OF CHICAGO  
DEPARTMENT OF CHEMISTRY  
530 SOUTH EAST ASIAN AVENUE  
CHICAGO, ILLINOIS 60607

TO THE DIRECTOR OF THE UNIVERSITY OF CHICAGO  
FROM THE DEPARTMENT OF CHEMISTRY

RE: [Illegible text]

DATE	DESCRIPTION	AMOUNT	CHECK NO.	BANK
1/15/50	...	...	...	...
1/20/50	...	...	...	...
1/25/50	...	...	...	...
2/1/50	...	...	...	...
2/15/50	...	...	...	...
2/20/50	...	...	...	...
2/25/50	...	...	...	...
3/1/50	...	...	...	...
3/15/50	...	...	...	...
3/20/50	...	...	...	...
3/25/50	...	...	...	...
4/1/50	...	...	...	...
4/15/50	...	...	...	...
4/20/50	...	...	...	...
4/25/50	...	...	...	...
5/1/50	...	...	...	...
5/15/50	...	...	...	...
5/20/50	...	...	...	...
5/25/50	...	...	...	...
6/1/50	...	...	...	...
6/15/50	...	...	...	...
6/20/50	...	...	...	...
6/25/50	...	...	...	...
7/1/50	...	...	...	...
7/15/50	...	...	...	...
7/20/50	...	...	...	...
7/25/50	...	...	...	...
8/1/50	...	...	...	...
8/15/50	...	...	...	...
8/20/50	...	...	...	...
8/25/50	...	...	...	...
9/1/50	...	...	...	...
9/15/50	...	...	...	...
9/20/50	...	...	...	...
9/25/50	...	...	...	...
10/1/50	...	...	...	...
10/15/50	...	...	...	...
10/20/50	...	...	...	...
10/25/50	...	...	...	...
11/1/50	...	...	...	...
11/15/50	...	...	...	...
11/20/50	...	...	...	...
11/25/50	...	...	...	...
12/1/50	...	...	...	...
12/15/50	...	...	...	...
12/20/50	...	...	...	...
12/25/50	...	...	...	...



May 19, 1983  
L-83-310

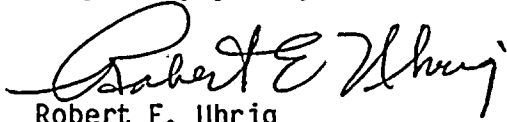
Office of Nuclear Reactor Regulation  
Attention: Mr. Robert A. Clark, Chief  
Operating Reactors Branch #3  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Clark:

Re: St. Lucie Unit 1  
Docket No. 50-335  
Post TMI Requirements  
Additional Accident Monitoring Information

In your letter which we received on January 18, 1983, you indicated that the NRC staff was conducting a post-implementation review of NUREG-0737 Items II.F.1.4., II.F.1.5 and II.F.1.6. Our letter of February 17, 1983 provided you with a date by which time our response would be submitted and a brief summary of the approach we would take. Please find enclosed our response to the staff's request for information. We trust that this information will aid the NRC staff in completing their review.

Very truly yours,

  
Robert E. Uhrig  
Vice President  
Advanced System and Technology

REU/PKG/js

Enclosure

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

8305240372 830519  
PDR ADOCK 05000335  
P PDR

*Asst  
1/1*

ENCLOSURE

RE: ST. LUCIE UNIT 1  
DOCKET NO. 50-335  
POST-TMI REQUIREMENTS  
ADDITIONAL ACCIDENT MONITORING INFORMATION

Response to Item 1 Exceptions Being Taken to NUREG-0737 Requirements

The requirements of NUREG-0737 for Items II.F.1.4, Containment Pressure Monitor; II.F.1.5, Containment Water Level Monitor; and II.F.1.6, Containment Hydrogen Monitor have been met. No exceptions are requested for St. Lucie Unit 1.

BACKGROUND INFORMATION FOR ITEM 1

The Containment Pressure Monitors and Containment Water Level Monitors are redundant safety grade channels. All major components are qualified to IEEE 323-71 and IEEE 344-71 or IEEE 323-74 and IEEE 344-75.

The Containment Hydrogen Analyzer System consists of two hydrogen analyzers that meet the following Reg. Guide 1.97 and NUREG-0737 requirements.

- 1) A continuous indication of hydrogen concentration in the containment atmosphere shall be provided in the Control Room within 30 minutes of the initiation of safety injection under design basis accident conditions.
- 2) Measurement and read-out capability shall be provided over the range of 0-10% by volume of hydrogen with operating capability from 10 psia to maximum containment design pressure.
- 3) Class IE qualification to Reg. Guide 1.89 and Seismic Category I qualification to Reg. Guide 1.100 is required.

Response to Item 2

Pressure Monitoring System

- 2a) The Containment Pressure Monitor System block diagram with the equipment number for each module noted is provided in Figure 1. The manufacturer and model number of each module are listed in Attachment 1.
- 2b) Attachment 1 provides the range, accuracy, and time response for each module of the Containment Pressure Data Sheet.
- 2c) The individual parameters were used to calculate (using the square root of the sum of the squares) the overall loop indicating and recording accuracies for the Pressure Monitoring System. These accuracies are listed in Attachment 1.
- 2d) The 63% time response for each module is provided in Attachment 1. Since these loops only provide indication and they do not actuate any equipment, rapid time response is not a problem. The longest 63% time response for any module is 0.5 sec. This is more than an order of magnitude shorter than the time for an operator to read the indication and use the information to assess the present conditions.

Response to Item 3

Water Level Monitoring System

- 3a) The Containment Level (wide range) Monitoring System block diagram is shown in Figure 2 and the Containment Sump Level (narrow range) Monitoring System block diagram is shown in Figure 3. The manufacturer and model number of each module are listed in Attachments 2 and 3.
- 3b) Attachments 2 and 3 provide the range and accuracy for each module of the two level monitoring systems.
- 3c) The individual module parameters were used to calculate (using the square root of the sum of the squares) the overall loop indicating and recording accuracies for both the wide range and narrow range level monitoring systems. These accuracies are listed in Attachments 2 and 3.

Response to Item 4

Hydrogen Monitoring System

- 4a) The Hydrogen Analyzer Monitoring System block diagram is shown in Figure 4.
- 4b & 4c)

Accuracy of each block module is not available since the manufacturer specifies only an overall instrument accuracy of +2% of the full scale of 0-10% hydrogen. In addition, overall system accuracy can be affected by conditions in the inlet sample lines from the containment sample points.

4b & 4c)

Accuracy of the Hydrogen Analyzer from the sample inlet of the analyzer to and including the local indicating meter and the control room indicating meter and recorder is determined from site calibration records. Since an improved calibration procedure is used, the original manufacturer's data is no longer applicable. Calibration of both Hydrogen Analyzer units is performed quarterly using Chemistry Operating Procedure No. 1-C-80 Revision 6.

Calibration gases are:

- a) 4.5% H<sub>2</sub>, 3.0% O<sub>2</sub>, Bal N<sub>2</sub>
- b) 2.9% H<sub>2</sub>, 2.0% O<sub>2</sub>, Bal N<sub>2</sub>
- c) 100% N<sub>2</sub> (Zero gas)

The calibration gases are piped directly into the sample inlet line. The calibration is performed at the Control Room panel by first adjusting the zero potentiometer using gas c) to zero the meter. Gas a) is then introduced and the span potentiometer adjusted. Linearity is checked by introducing gas b).

Calibration records show that meters and recorder read within  $\pm 0.1\%$  hydrogen after calibration at span gas concentrations a) and b). This meets the calibration tolerance requirements as well as the Hydrogen Analyzer specification requirement of  $\pm 0.2\%$  Hydrogen (2% of full scale).

4d) The placement of the seven (7) hydrogen monitor intake ports are listed in Attachment 5.

4e) An in-containment inspection of the sample ports was performed on April 19, 1983 as part of a system walk down. Site support engineers (I&C) visually inspected the sample ports and verified the absence of any physical barriers that would obstruct the hydrogen flow path to the sample ports.



EBASCO SERVICES INCORPORATED

BY A. Chin DATE 4-22-83

FIGURE 1

SHEET 1 OF 1

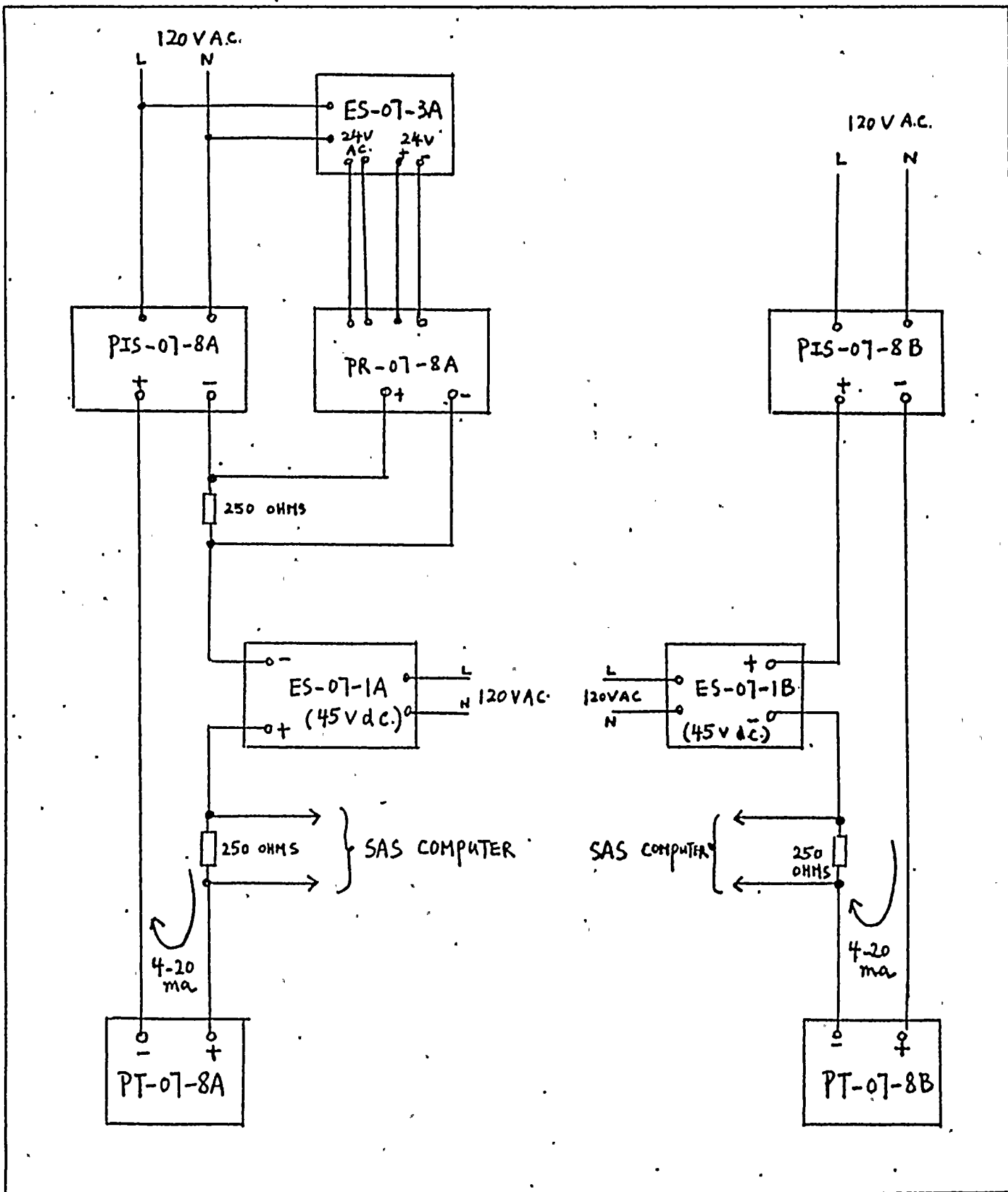
CHKD. BY R. Kozlowski DATE 4-22-83

OFFS NO. 3000.654 DEPT. NO. 251

CLIENT FLORIDA POWER & LIGHT COMPANY

PROJECT ST. LUCIE UNIT NO. 1

SUBJECT CONTAINMENT PRESSURE BLOCK DIAGRAM





ATTACHMENT 1

Containment Pressure Data

Tag No.	Description	Mfr	Mod No.	Range	% Accuracy	63% Time Response In sec
PT-07-8A, 8B	Cont Pressure Transmitter	Rsmnt	1153GA7	-5 to 175 PSIG (4-20 MADC)	1.89	.2
ES-07-1A, 1B	Cont Pressure Power Supply	Lambda	LM-229	30 -60VDC Adjustable Set 45VDC	.51	negligible
PIS-07-8A, 8B	Cont Pressure Indicator	Sigma	9262X	-5 to 175 PSIG (4-20 MADC)	1.166	.5
ES-07-3A	Contr Pressure Rec Power Supply	Bailey	7000 AC/DC 8080BOC	25VDC/24VAC	.5	negligible
PR-07-8A, 8B	Cont Pressure Recorder	Bailey	771 C/N #762 Shelf	-5 to 175 PSIG (4-20 MADC)	.685	.25
	Overall Loop Accuracy - Indication				2.22	
	Overall Loop Accuracy - Recording				2.01	



ATTACHMENT 2

Containment Level (wide range) Data

Tag No.	Description	Mfr	Mod No.	Range	% Accuracy	63% Time Response In Sec
LT-07-13A,13B	Cont Level transmitter	ITT Barton	764	-1 to 26 ft (4-20 MADC)	1.58 (1)	NA
ES-07-1A,1B	Cont Level Power Supply	Lambda	LM-229	30-60VDC Adjustable Set 45VDC	.51	NA
LIS-07-1A,1B	Cont Level Indicator	Sigma	9262X	-1 to 26 ft (4-20 MADC)	1.166	NA
ES-07-2A	Cont Level Power Supply	Bailey	7000 AC/DC 8080BOC	25VDC/24VAC	.5	NA
LR-07-13/14A	Cont Level Recorder	Bailey	771 C/N #762 Shelf	-1 to 26 ft (4-20 MADC)	.685	NA
Overall Loop Accuracy - Indication					1.96 (2)	
Overall Loop Accuracy - Recording					1.72 (2)	

Notes:

- (1) Accuracy without LOCA
- Accuracy within 5 min after LOCA is 5%
- Accuracy after 5 min of LOCA is 10%

ATTACHMENT 2

Containment Level (wide range) Data  
(Cont'd)

(2) Overall accuracy within 5 min  
after LOCA is: a. indication 5.13%  
b. recording 5.05%

Overall accuracy after 5 min  
of LOCA is: a. indication 10.06%  
b. recording 10.02%

NA - Not Applicable

EBASCO SERVICES INCORPORATED

BY A. Chen DATE 4-22-83

FIGURE 3

SHEET 2 OF 2

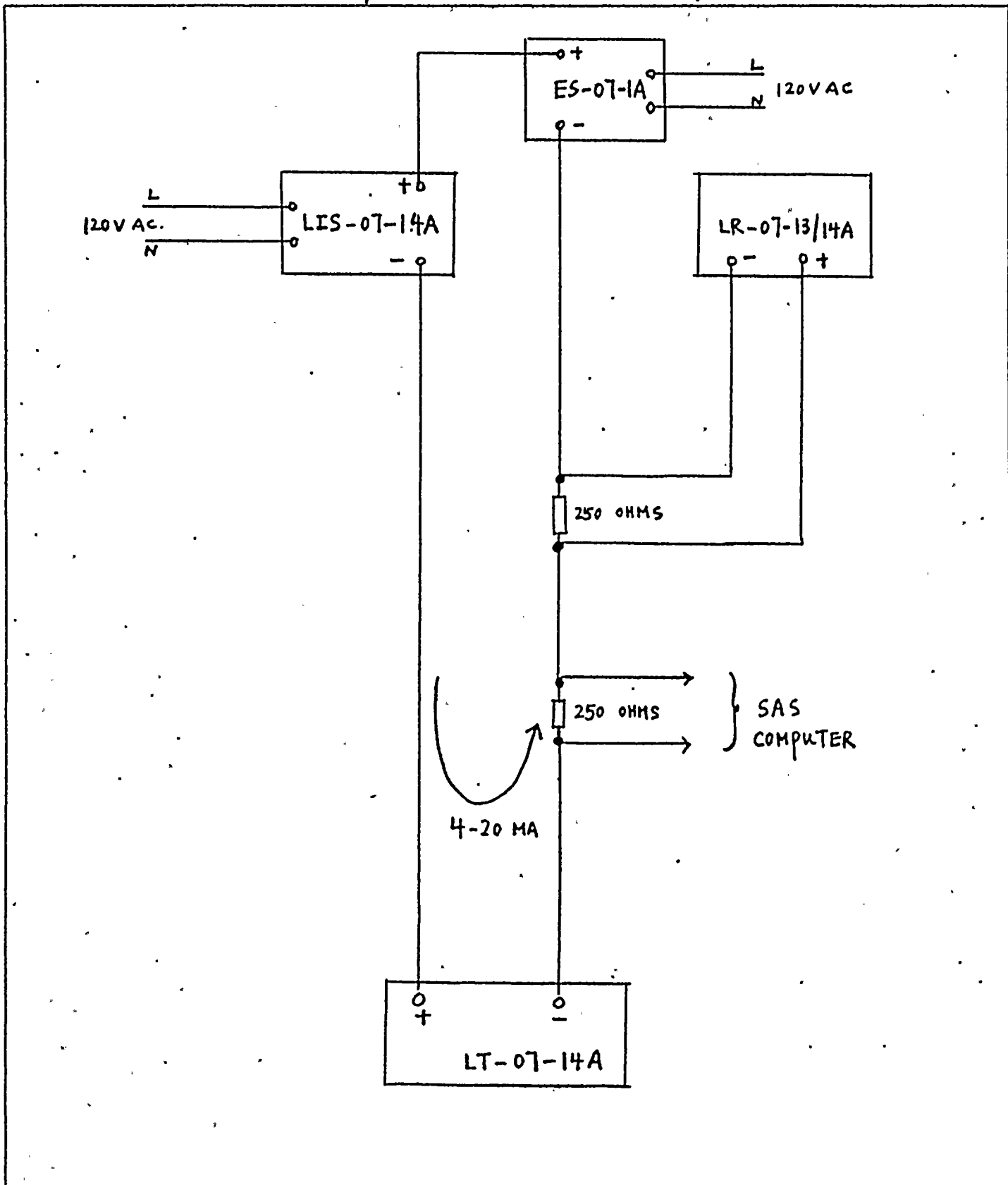
CHKD. BY R. Kozlowski DATE 4-22-83

OFS NO. 3000.654 DEPT. NO. 251

CLIENT FLORIDA POWER & LIGHT COMPANY

PROJECT ST. LUCIE UNIT NO. 1

SUBJECT CONTAINMENT SUMP LEVEL (NARROW RANGE) BLOCK DIAGRAM





ATTACHMENT 3

Containment Sump Level (narrow range) Data

Tag No.	Description	Mfr	Mod No.	Range	% Accuracy	63% Time Response In Sec
LT-07-14A	Cont Sump Level transmitter	ITT Barton	764	0-7 ft (4-20 MADC)	1.58 (2)	NA
ES-07-1A	Cont Sump Level Power Supply	Lambda	LM-229	30-60 VDC Adjustable Set 45VDC	.51	NA
LIS-07-14A	Cont Sump Level Indicator	Sigma	9262X	0-7 ft (4-20 MADC)	1.166	NA
ES-07-2A	Cont Level Rec Power Supply	Bailey	7000 AC/DC 8080BOC	25VDC/24VAC	.5	NA
LR-07-13/14A	Cont Sump Level Recorder	Bailey	771 C/N #762 Shelf	0-7 ft (4-20 MADC)	.685	NA
Overall Loop Accuracy - Indication					1.96 (3)	
Overall Loop Accuracy - Recording					1.72 (3)	

ATTACHMENT 3

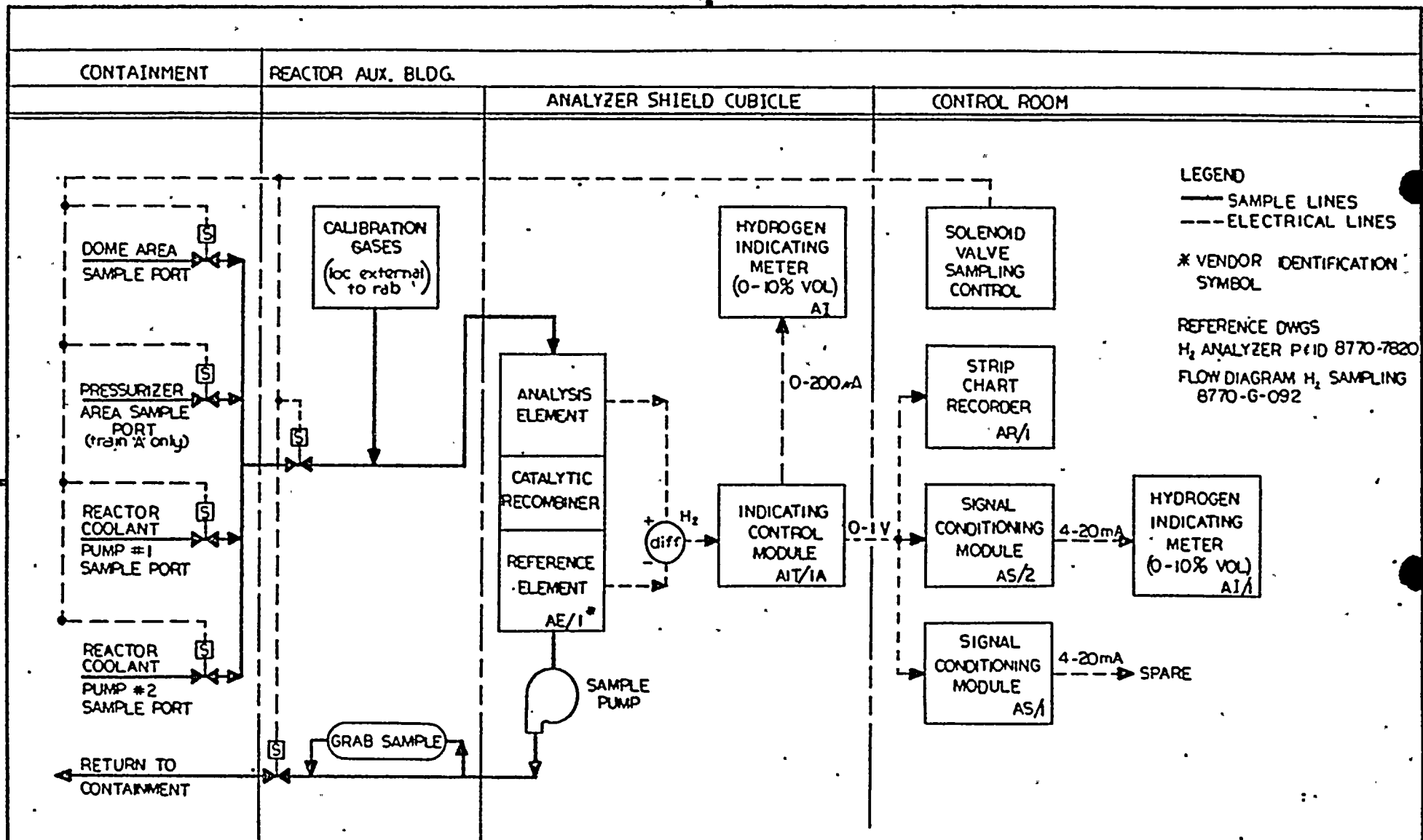
Containment Sump Level (narrow range) Data  
(Cont'd)

Notes:

- (2) Accuracy without LOCA  
Accuracy within 5 min after LOCA is 5%  
Accuracy after 5 min of LOCA is 10%
  
- (3) Overall accuracy within 5 min  
after LOCA is:
  - a. indication 5.13%
  - b. recording 5.05%
  
- Overall accuracy after 5 min  
of LOCA is:
  - a. indication 10.06%
  - b. recording 10.02%

NA - Not Applicable





8				4			
7				3			
6				2			
5				1			
REV	DATE	BY	CH	APPROVED	REV	DATE	BY

EBASCO SERVICES INCORPORATED  
 BY *E.H. Tancill*  
 ON *E.H. Tancill*  
 DATE *7-2-63*

APPROVED  
*JJ*

FP & L ST LUCIE UNIT 1  
 H<sub>2</sub> ANALYZER SYSTEM  
 BLOCK DIAGRAM  
 TRAIN "A" (TYP)

FIG. 4

ATTACHMENT 4

HYDROGEN ANALYZER SYSTEM DATA

<u>IDENTIFICATION</u>	<u>MFR</u>	<u>MODEL NO.</u>	<u>RANGE</u>	<u>% ACCURACY</u>
Hydrogen Analyzer	Comsip	K-III	0-10%	±2.0%
Local Analyzer	Delphi		H <sub>2</sub>	of Full
Cubiclé SA,SB			By Vol	Scale
+				
Control Panel SA,SB				

Prepared By: F R Tavon<sup>FRT.</sup> Dated: 4/25/83  
Reviewed By: *J. Jenin* Dated: 4/25/83

# H<sub>2</sub> ANALYZER SAMPLE PORT LOCATIONS

## TRAIN 'A' (PENETRATION #4B)

## TRAIN 'B' (PENETRATION #51)

### DOME AREA

EL. 213' COLUMN #6  
AZIMUTH ANGLE 195°

### DOME AREA

EL. 190' COLUMN #3  
AZIMUTH ANGLE 150°

### PRESSURIZER AREA

EL. 45' COLUMN #2  
AZIMUTH ANGLE 135°

### REACTOR COOLANT PUMP 1B1

EL. 31' COLUMN #3  
AZIMUTH ANGLE 155°

(see att'd detail)

### REACTOR COOLANT PUMP 1A1

EL. 31' COLUMN #19  
AZIMUTH ANGLE 40°

(see att'd detail)

### REACTOR COOLANT PUMP 1B2

EL. 31' COLUMN #8  
AZIMUTH ANGLE 220°

(see att'd detail)

### REACTOR COOLANT PUMP 1A2

EL. 31' COLUMN #15  
AZIMUTH ANGLE 330°

(see att'd detail)

INCHES  
CM  
0  
1  
2  
3  
4  
5

EBASCO SERVICES INCORPORATED

FLORIDA POWER & LIGHT COMPANY  
ST LUCIE UNIT 1  
HYDROGEN ANALYZER SYSTEM  
SAMPLE PORT LOCATIONS

DIV. RW DRES. I.  
DATE 2/25/63 CH 2  
SCALE N200

APPROVED



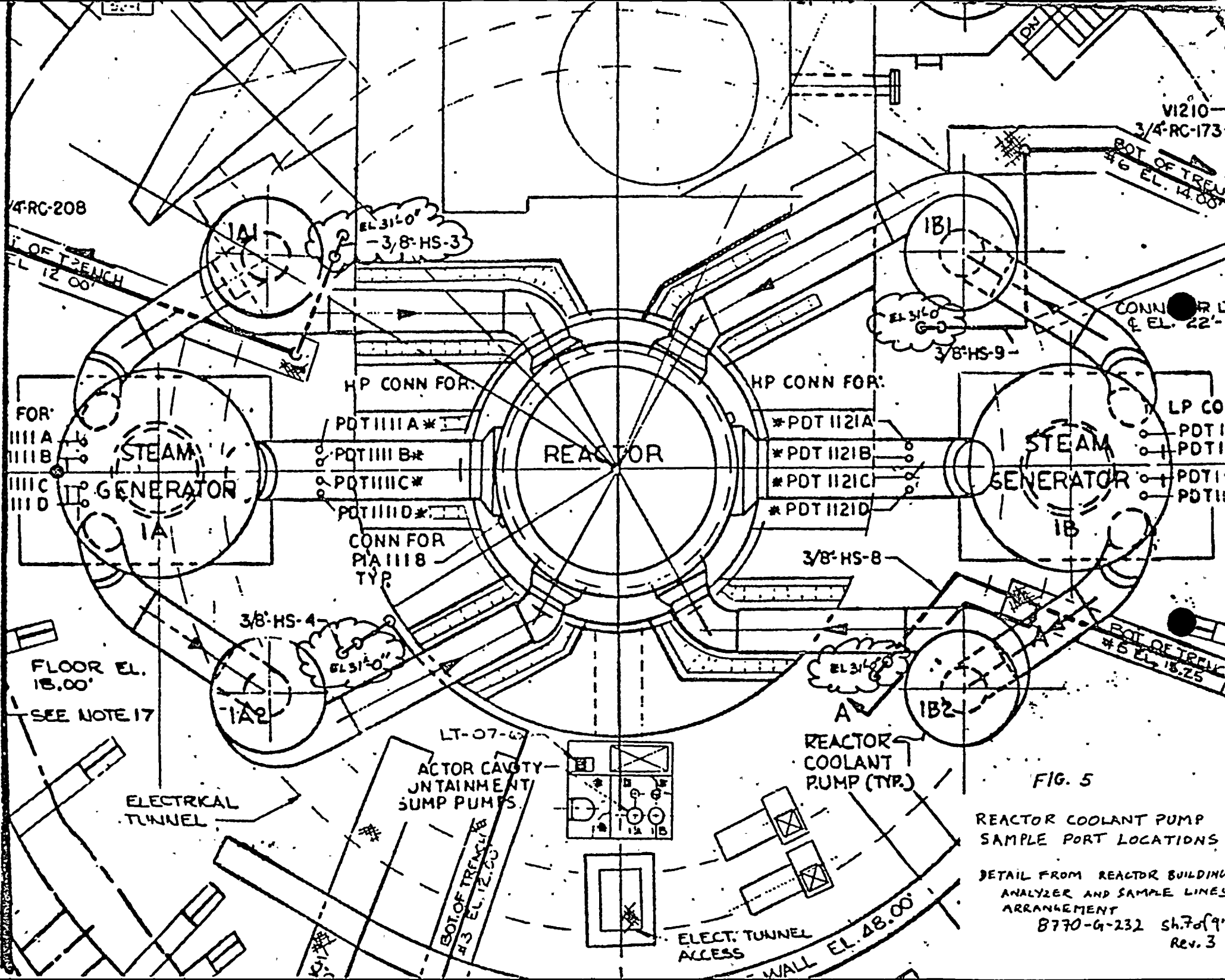


FIG. 5

REACTOR COOLANT PUMP  
SAMPLE PORT LOCATIONS

DETAIL FROM REACTOR BUILDING  
 ANALYZER AND SAMPLE LINES  
 ARRANGEMENT  
 8770-G-232 Sh. 7 of 9  
 Rev. 3



FLORIDA POWER & LIGHT COMPANY

INTER-OFFICE CORRESPONDENCE

RECEIVED

MAY 17 1983

Nuclear Licensing

TO R. E. Uhrig

FROM J. W. Williams, Jr.

SUBJECT: St. Lucie Unit 1  
 Post-TMI Requirements  
 Additional Accident  
Monitoring Information

LOCATION Nuclear Energy  
 DATE MAY 16 1983

COPIES TO  
 D. K. James  
 C. S. Kent  
 R. J. Acosta/910.13 SL  
 H. S. Ruff  
 C. M. Wethy  
 J. A. Yespica,  
 W. R. Klein  
 P. K. Green  
 REA-SLN-510  
 PNS-LI-83-344-1/2

The subject information is attached for your review and forwarding to the NRC. The attachment was prepared in accordance with the requirements of QP. 2.13 for a submittal not requiring an affidavit.

The information contained in the attachment to this letter was prepared by Power Plant Engineering.

Except for the following, the attachment is fully responsive to the NRC requirements or differences are clearly noted in the attached: None.

J. W. Williams, Jr.

JWW/PKG/js

Attachment