

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

W. L. STEWART
VICE PRESIDENT
NUCLEAR OPERATIONS

February 18, 1983

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. Darrel G. Eisenhut, Director
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Serial No: 076
PSE/RCC:Imf:0303C
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 & 2
ADDITIONAL INFORMATION CONCERNING NUREG-0737, ITEMS
II.F.1.4 CONTAINMENT PRESSURE MONITOR;
II.F.1.5 CONTAINMENT WATER LEVEL MONITOR;
II.F.1.6 CONTAINMENT HYDROGEN MONITOR

In response to your letter of January 11, 1983 requesting additional information concerning Items II.F.1.4, II.F.1.5 and II.F.1.6 of NUREG-0737, please find attached Vepco's submittal detailing the accuracies and time responses of our containment post-accident monitoring equipment, as well as the placement of our hydrogen monitor intake ports at Surry Power Station.

Should you require additional information, please contact us.

Very truly yours,

W. L. Stewart
for W. L. Stewart

Attachments

cc: Mr. James P. O'Reilly
Regional Administrator
Region II
U.S. Nuclear Regulatory Commission
Atlanta, Georgia 30303

Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

A046

ATTACHMENT

1. Exceptions being Taken to NUREG-0737 Requirements

Q.1. In the submittals received to date you have not indicated that you plan to take exception to any of the requirements of NUREG-0737. Are you planning any exceptions of which we are not aware?

A. Exceptions/clarifications to NUREG-0737 were previously provided to the NRC by Vepco letters Serial No. 358 dated June 18, 1981, Serial No. 655 dated December 9, 1981 and Serial No. 367 dated June 28, 1982.

2. II.F.1.4 - Pressure Monitoring System (PMS) - Accuracy & Time Response

Q.2A. Provide a diagram of the configuration of modules that make up your PMS.

A. Drawings are attached providing the configuration of components that make up the PMS.

Q.2B. What is the accuracy of your pressure monitor?

A. Indicating Loop

Transmitter (% of scale)	+ 0.25%
Indicator (% of scale)	+ 1.5 %

Recording Loop

Transmitter (% of scale)	+ .25%
Recorder (% of scale)	+ 0.5 %

Equipment accuracies are consistent with accuracies of similar equipment throughout the industry.

Total Loop accuracy using the sum of the squares method.

Indicating Loop:	+ 1.6%
Recording Loop:	+ .7%

Q.2D. What is the time response of your pressure monitor?

A. Indicating Loop

Transmitter:	0.1 second for 0%-100% of span
Indicator:	2.5 seconds for 0%-100% response

Recording Loop

Transmitter:	0.1 second for 0%-100% span
Recorder:	1.0 second for 100% step change

The response of the indicating loop as a worst case is essentially equal to the sum of the response of the indicator and the transmitter, the same logic holds true for the recording loop, in that the response of the recorder summed with the transmitter response is the response of the loop. Time responses are inherent to equipment based on vendor supplied information.

The accuracy of the indicating and recording loops is not effected by the power supply at Surry as this power supply does not convert or manipulate the loop signal as is the case at North Anna.

Q.4. (II.F.1.5) What is the accuracy of your water level monitor? State this for both the wide range and narrow range instruments.

See attached sheets, titled "II.F.1. Attachment 5, Containment Water Level Monitor - Surry."

Q.5. (II.F.1.6) Where are hydrogen sample ports placed?

Unit 1 & 2 - The sample is taken from containment penetrations within the annulus area at elevation 10'-9". The penetrations are utilized by the Hydrogen Analyzers and the Containment Vacuum System.

Q.6. (II.F.1.6) Is there any obstruction which would prevent hydrogen from the core from reaching the hydrogen sample ports quickly?

Unit 1 & 2 - The sample ports are in the area of the annulus containment which has a substantial amount of piping in close proximity. However, this does not impede the hydrogen from reaching the sample ports since the containment sprays provide the mechanism for diffusion and mixing of the containment atmosphere enabling a representative sample of containment atmosphere to be sampled by the Hydrogen analyzers.

Q.7. (II.F.1.6) What is the accuracy of the hydrogen monitor?

The accuracy of the hydrogen monitor is based on the following variables:

- + 1% Sample air due to flow
- + 1% Analyzer Electronics (sample cell)
- + 2% Calibration gases
- + 0.5% Transducer (4-20 MA)
- + 0.5% Recorder (customer supplied)
- + 2% Consip supplied indicator
- + 1.5% Main board meter (customer supplied remote indicator)

Total Indication Loop accuracy using square root of the sum of the squares method:

(Result in % full scale)

$$\% = \pm \sqrt{1^2 + 1^2 + 2^2 + .5^2 + 1.5^2}$$
$$\% = \pm 2.9$$

Total recording loop accuracy using square root of the sum of the squares method:

(Result in % full scale)

$$\% = \pm \sqrt{1^2 + 1^2 + 2^2 + .5^2 + .5^2}$$
$$\% = \pm 2.5$$

II.F.1, ATTACHMENT 5, CONTAINMENT WATER LEVEL MONITOR - SURRY

At Surry, the narrow range indication is provided by redundant level transmitters which have a 22 inch range. The wide range indication will be provided by redundant level transmitters with a range of 9 ft. above the containment floor which is equivalent to about 600,000 gallons. Indication from all four transmitters is continuously displayed in the control room.

1. Upon successful completion of testing item (1) will be satisfied. Wide and narrow range transmitters are in the process of being qualified to IEEE 323-1974 and IEEE 344-1975. The power supplies for all four transmitters are to be fed by Class 1E vital power.
2. Wide range transmitters can measure level which is equivalent to about a 600,000 gallon capacity.
3. Redundant narrow range transmitters are provided.
4. This item is not applicable to North Anna and Surry.
5. Inherent in the transmitter design is that any inaccuracy in the transmitter is limited to $\frac{1}{4}$ inch.

Wide Range

Transmitter (% of scale):	$\pm .48\%$
System power supply:	$\pm .5\%$
Indicator (% of scale):	$\pm 1.5\%$
Total:	$\pm 2.48\%$

Narrow Range

Transmitter (% of scale):	$\pm 2.3\%$
System power supply:	$\pm .5\%$
Indicator (% of scale):	$\pm 1.5\%$
Total:	$\pm 4.3\%$

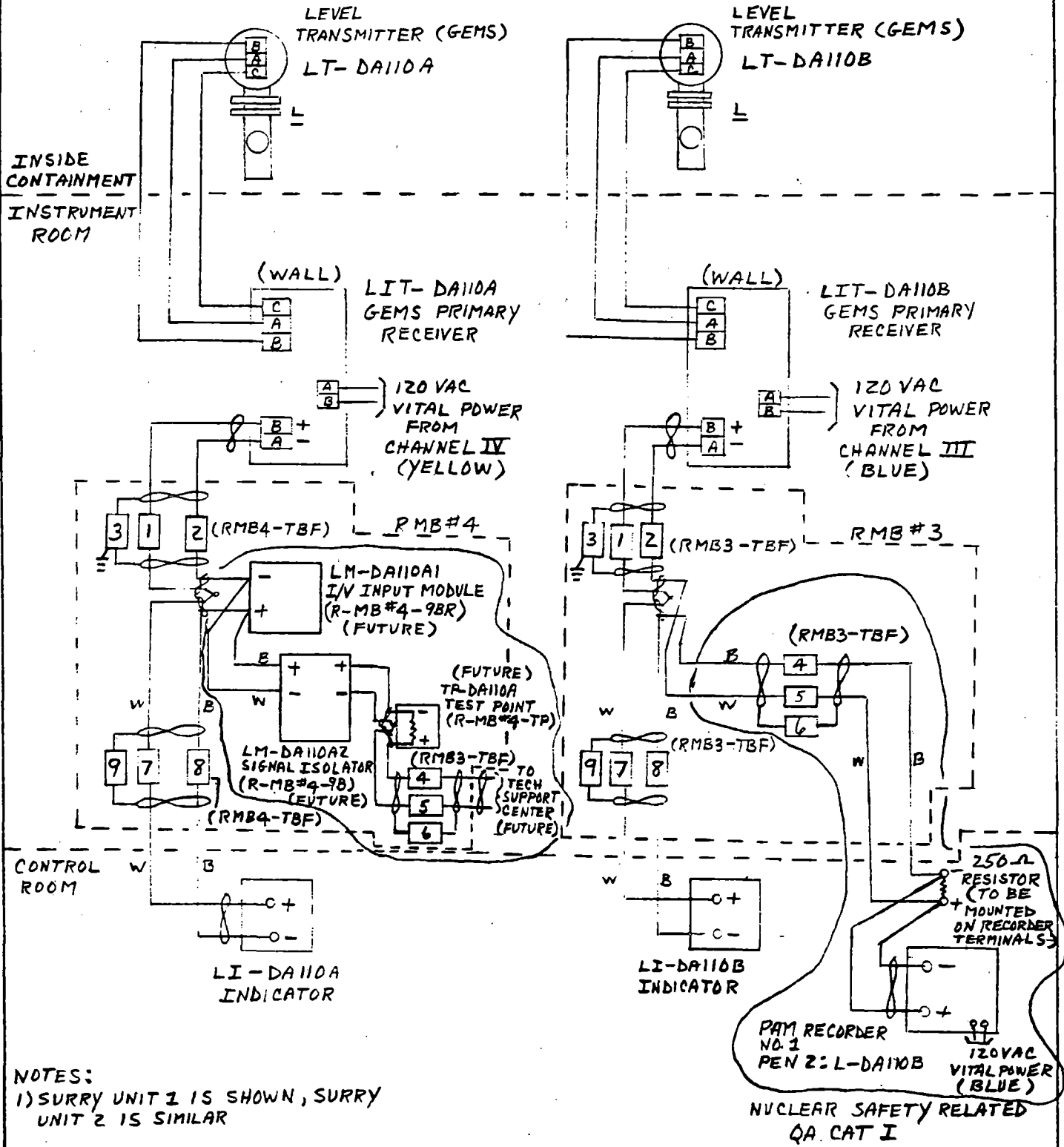
Equipment accuracies are consistent with accuracies of similar equipment throughout the industry.

Total loop accuracy using the sum of the squares method:

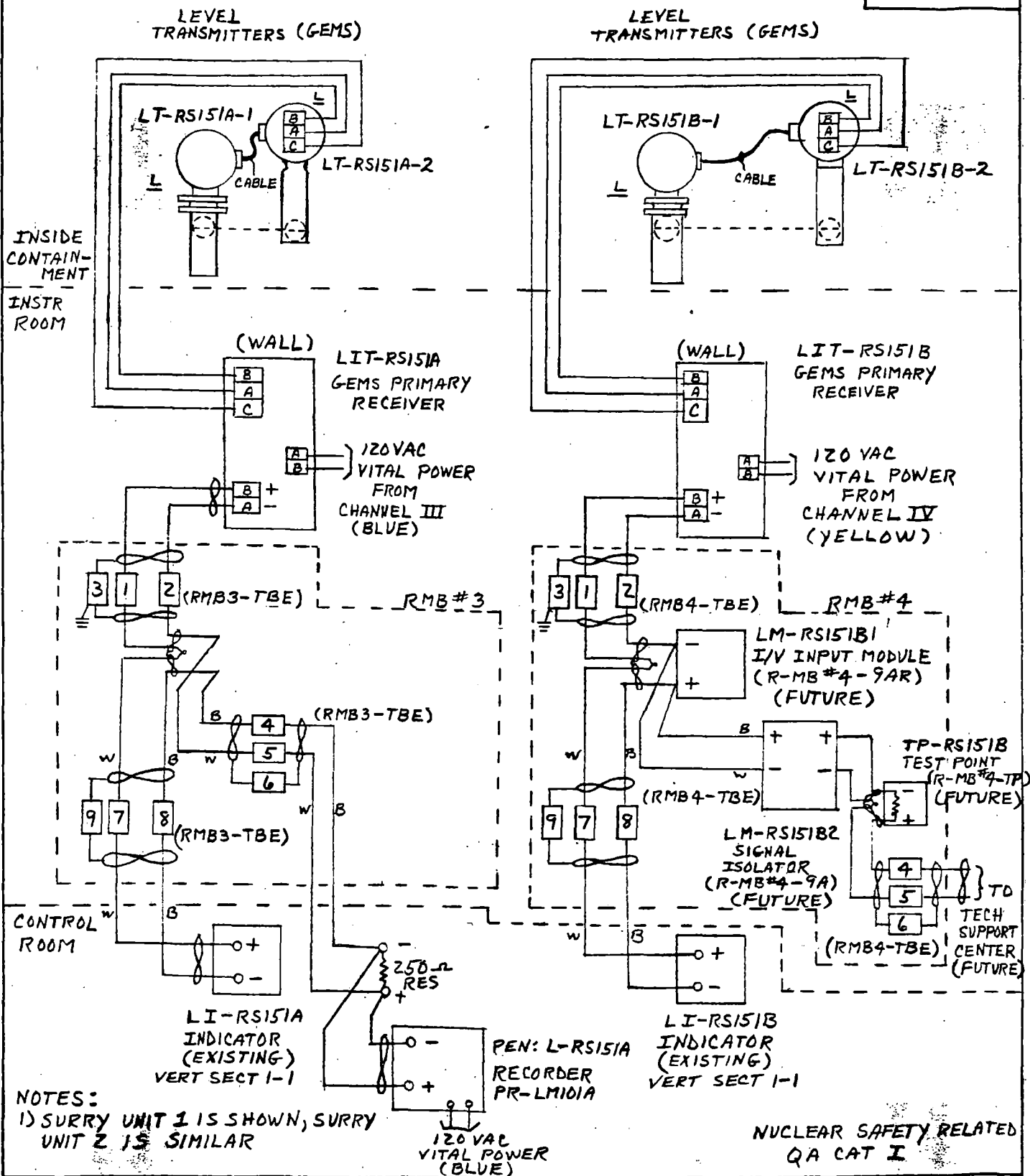
Wide Range:	$\pm 1.65\%$
Narrow Range:	$\pm 2.79\%$

Draft 2 NUREG 0660 dated January 23, 1980 stated that narrow and wide range containment water level instruments shall have a measurement accuracy of $\pm 5.0\%$. This requirement is met with present instrumentation.

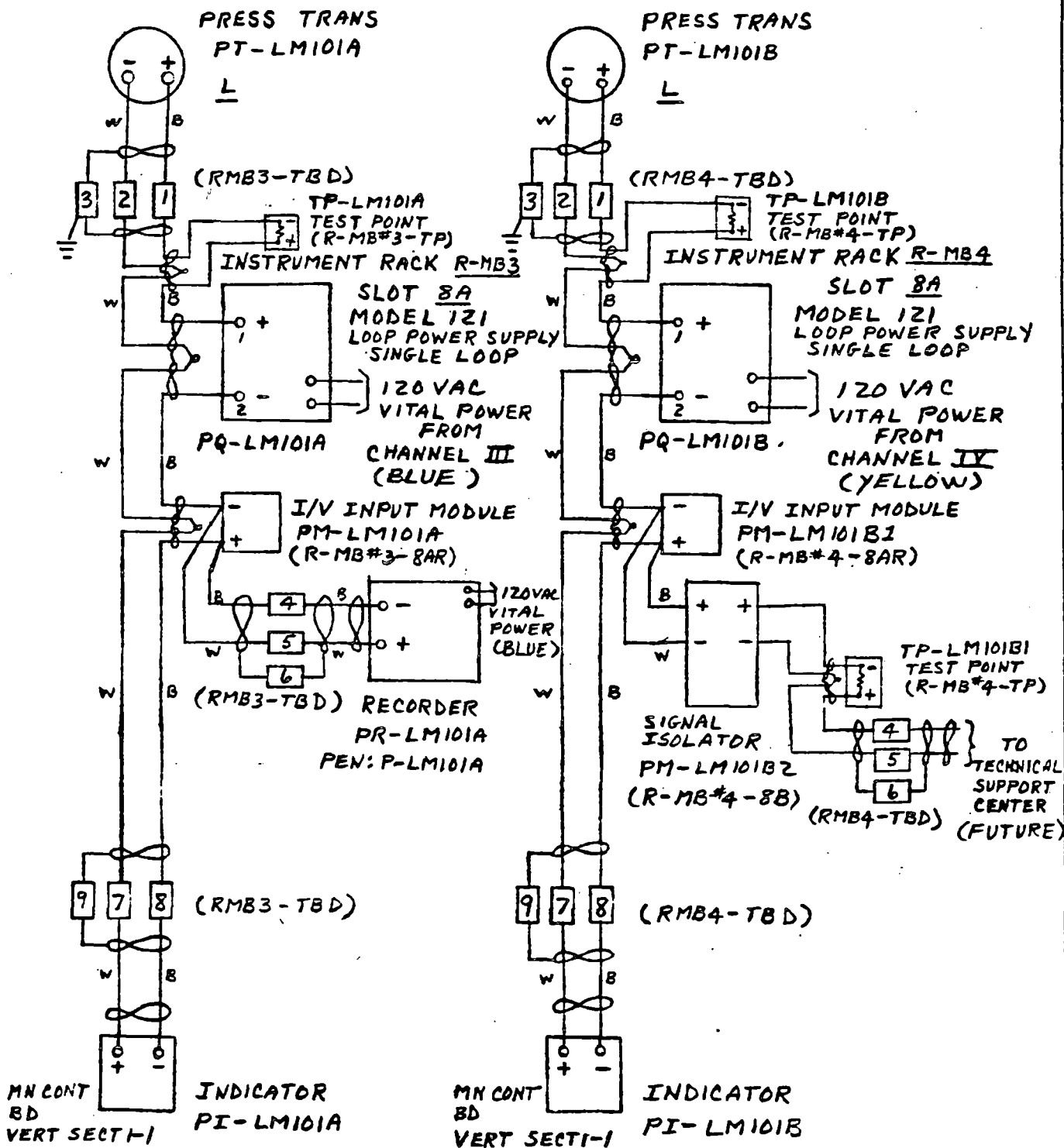
The stated leakage sensitivity as stated in the Surry FSAR is 5 gpm in less than an hour. Present instrumentation is adequate to detect this leakage for containment sump level.



POWER INDUSTRY GROUP		TITLE INSTRUMENT LOOP DIAGRAM CONTAINMENT WATER LEVEL INDICATION - NARROW RANGE (DC - 79 - 561)	CLIENT VEPCO		
BY	DATE		PROJECT SURRY 1#2		
PREPARED	RTV 8/25/80	J.O. NO. 12846-48			
CHECKED	CD 8/26/80	ISSUED BY R.T. VIBERT			
APPROVED	DAP 8/27/80	DATE 5-14-80			
REVISIONS BY	① RTV 8/27/80	②	③	④	NUMBER
DATE	12-16-80				12846-48-EKS-2



POWER INDUSTRY GROUP		TITLE INSTRUMENT LOOP DIAGRAM				CLIENT VEPCO	
BY	DATE	CONTAINMENT WATER LEVEL INDICATION - WIDE RANGE (DC-79-561)				PROJECT SURRY 1 & 2	
PREPARED	RTV 8/25/80					J.O. NO. 12846-48	
CHECKED	DP 8/26/80					ISSUED BY R-T VIBERT	
APPROVED	DP 8/27/80					DATE 5-14-80	
REVISIONS BY	②	③	④	⑤	⑥	NUMBER	
DATE						12846-48-EKS-1	



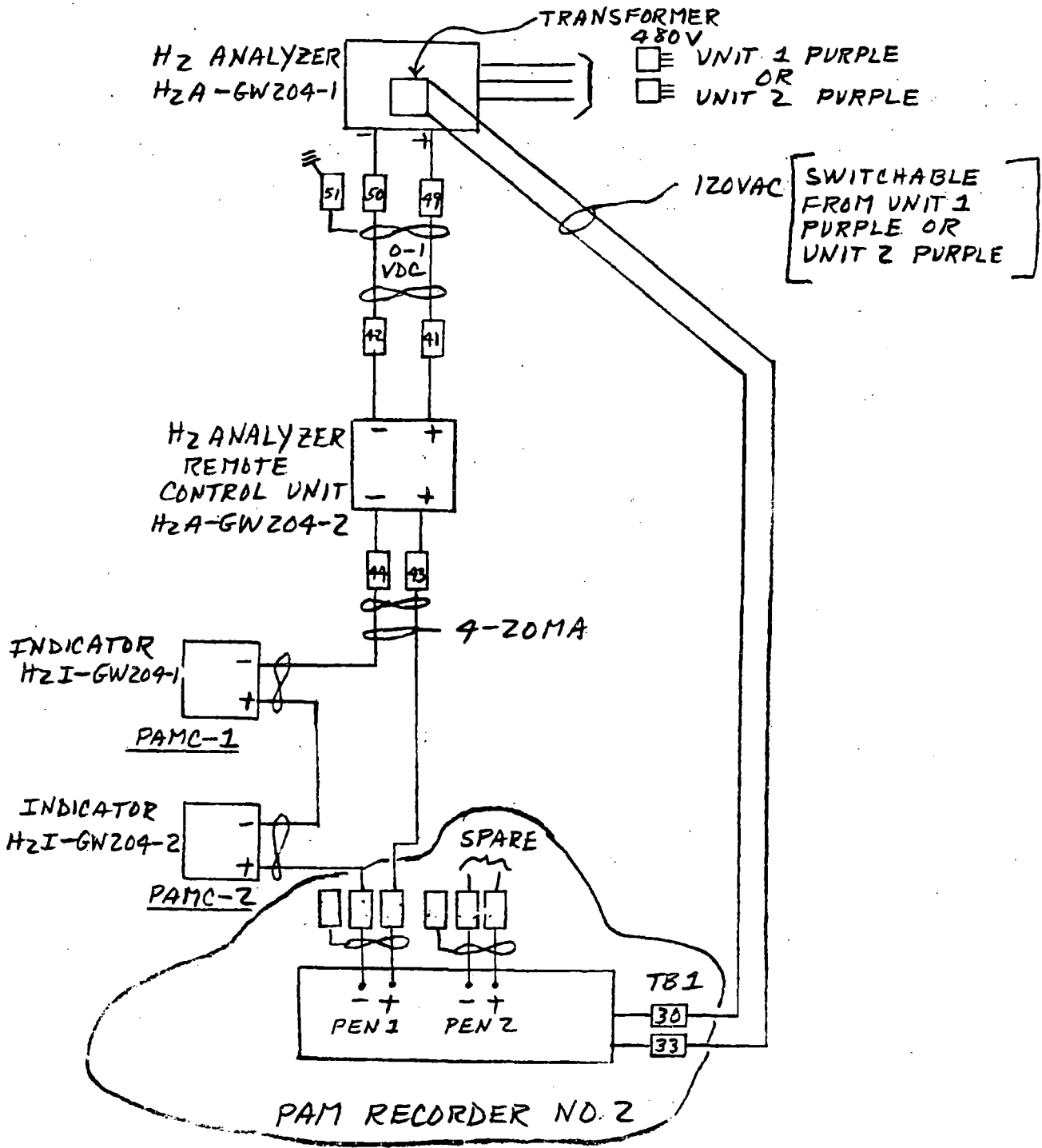
NOTES:
1) SURRY UNIT 1 IS SHOWN, SURRY UNIT 2 IS SIMILAR

NUCLEAR SAFETY RELATED
QA CAT I

2) THIS SKETCH WAS PREVIOUSLY NUMBERED 12846-38-EKS-71

POWER INDUSTRY GROUP		TITLE INSTRUMENT LOOP DIAGRAM				CLIENT VEPCO	
	BY	DATE	CONTAINMENT PRESSURE INDICATION				PROJECT SURRY 1 & 2
PREPARED	RTV	12/19/79	(DC-79-560)				J.O. NO. 12846-48
CHECKED	PLM	12/20/79					ISSUED BY R.T. VIBERT
APPROVED	DAP	12-20-79					DATE 12-19-79
REVISIONS BY	① RTV gkp	② RTV DAP	③	④	⑤	⑥	NUMBER
DATE	3/7/80	6/17/80					12846-48-EKS-3

HYDROGEN INDICATION



NUCLEAR SAFETY RELATED
QA CATEGORY I

POWER INDUSTRY GROUP			TITLE			CLIENT <u>VERCO</u>		
BY	DATE		HYDROGEN ANALYZER INDICATION (SURRY UNIT 2)			PROJECT <u>NORTH ANNA 2</u>		
PREPARED	<u>RTV</u>	<u>9/25/81</u>				J.O. NO. <u>13075-54</u>		
CHECKED	<u>CMP</u>	<u>11/29/81</u>				ISSUED BY <u>[Signature]</u>		
APPROVED	<u>[Signature]</u>	<u>4/24/81</u>				DATE <u>4-28-81</u>		
REVISIONS BY	②	③				④	⑤	⑥
DATE								