December 12, 2002

FACILITY: R. E. Ginna Nuclear Power Plant

LICENSEE: Rochester Gas and Electric Corporation

SUBJECT: SUMMARY OF MEETING HELD ON NOVEMBER 20, 2002, WITH ROCHESTER GAS AND ELECTRIC CORPORATION RE: PROPOSED LICENSE AMENDMENT REQUEST TO REVISE R. E. GINNA NUCLEAR POWER PLANT (GINNA) SAFETY LIMITS AND INSTRUMENTATION SETPOINTS (TAC NO. MB4789)

On November 20, 2002, representatives of the Rochester Gas and Electric Corporation (RG&E or licensee) met with the members of the Nuclear Regulatory Commission (NRC) staff in Rockville, Maryland. The purpose of the meeting was to discuss RG&E's proposed response to the NRC's request for additional information (RAI) dated September 27, 2002 (ADAMS Accession No. ML022200294). This RAI was related to RG&E's license amendment request dated April 9, 2002, to revise the Ginna Improved Technical Specifications (ITSs) to remove the Trip Setpoint column from Table 3.3.1-1, "Reactor Trip System Instrumentation," and replace it with a column designated "Allowable Values." The amendment also proposed that the Trip Setpoint column in Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation," be deleted. Meeting slides were used to address each RAI question for the purpose of gaining NRC staff feedback on the level of detail required, and to provide clarification. A list of attendees is given in Enclosure 1, a copy of the handout provided by RG&E is given in Enclosure 2, and a copy of the handout provided by the NRC staff is given in Enclosure 3. Following the meeting, RG&E requested and the staff agreed that the due date for a response to the above RAI be extended to January 10, 2003. The extension was requested to allow the licensee sufficient time to address NRC staff concerns regarding the methodology used to calculate "Allowable Values," which were documented in Question Number 9 of the September 27, 2002, RAI.

/RA/

Robert Clark, Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-244

Enclosures: As stated

cc w/encls: See next page

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R.E. Ginna Nuclear Power Plant

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MEETING BETWEEN NRC AND

ROCHESTER GAS AND ELECTRIC CORPORATION

ATTENDANCE LIST

NOVEMBER 20, 2002

NRC	**RG&E**
E. Marinos, NRR	T. Harding
P. Loeser, NRR	J. Pacher
R. Clark, NRR	P. Swift
H. Garg, NRR	J. Guider
P. Rebstock, NRR	T. Quinn
M. Mortensen, NRR	
C. Schulten, NRR	

Enclosure 1

RG&E
DOCUMENTS

Enclosure 2

RG&E GINNA STATION PRESENTATION TO NRC

November 20, 2002

Ginna License Amendment Request

Instrumentation Setpoint Methodology

Purpose of Briefing

- Provide the NRC staff with an overview of the proposed RG&E responses to the 11 NRC request for additional information (RAI) questions dated Sept 27, 2002, associated with the RG&E instrumentation setpoint methodology

Proposed RAI Responses

- For each of the 11 NRC questions from the Sept. 27th letter, responses have been developed. An overview of the proposed answers and description of any associated attachments is included here. The purpose is to gain NRC feedback on the level of detail and ensure the necessary documentation responds to the question.

Background

- Ginna licensed in September 1969

  RTS setpoints specified using inequalities

  No ESFAS or CVI setpoints specified, only channel requirements

  No Safeguard Bus UV requirements

  No Control Room isolation requirements

Background (Cont.)

- 1981 - Added Safeguards Bus requirements via a curve
- 1981 - ESFAS and CVI setpoints added:
  Trip setpoint equivalent to nominal setpoint
  Allowable value equivalent to accident analysis value
- 1985 - Added nominal setpoints for control room isolation

Background (Cont.)

- 1996 - ITS implemented

  LCOs with only Trip Setpoint (single column format):

  3.3.1, RTS
  3.3.5, CVI
  3.3.6, CREATS Instrumentation

  LCOs with both Trip Setpoint and Allowable Value (two column format):

  3.3.2, ESFAS
  3.3.4, DG Start Instrumentation

Background (Cont.)

- Various use of “trip setpoint”

  Two column format uses a nominal value as the Trip Setpoint

  Single column format uses the Trip Setpoint as an operability basis

- Inconsistent operability statements in Bases

- NUREG-1431 Revision 2 includes format agreed to by both the NRC and the Industry

Background (Cont.)

- Revise 4 LCOs to only a single column Allowable Value format (CREATS Instrumentation previously submitted)
- Use an Allowable Value equivalent to rack portion of instrument loop that supports trip bistable (COT)

  bistable uncertainties

  test/measuring equipment uncertainties

  anything between test module and bistable

Question 1

- Ginna instrumentation setpoint methodology updated since the issue of ISA S67.04-1994 Part I and II
- Methodology follows the guidelines of the ISA Standard, NRC Reg. Guide 1.105 and Generic Letter 91-04 for Drift Analyses
- There has been no specific docketed NRC review and approval of the Ginna in-house methodology

Question 2

- No effect, the assumptions that support time constants in the lead/lag calculations are unaffected
- This is also the process followed for most, if not all, nuclear plants in the U.S.

Questions 3, 4, 5, and 6

- A table has been developed by RGE and will be provided in our response which lists the values for the various functions
- The next slide shows the planned format of the table

ITS Section	Item	Analytical Limit	Allowable Value ISA-RP67.04-PART II, method 3	Calculated Setpoint	Nominal Setpoint	Tolerance
3.3.1	Function #2.a	118%	≤113.4%	112.3%	108%	107.46 to 108.54%
	Function #2.b	35%	≤30.4%	29.28%	24%	23.88 to 24.12%
	Function #7.a	1760 psig	≥1777 psig	1791.2 psig	1873 psig	1865.0 to 1881.0 psig
	Function #7.b	2410 psig	≤2406 psig	2396.2 psig	2377 psig	2369.0 to 2385.0 psig
3.3.2	Function #1.c	6.0 psig	≥5.71 psig	4.61 psig	4 psig	3.40 to 4.60 psig
	Function #1.d	1715 psig	≥1731 psig	1744.8 psig	1750 psig	1742.0 to 1758.0 psig

Question 7

- In most cases the calibration tolerance is greater than or equal to the device reference accuracy (RA)
- Both the tolerance and RA are included in the calculation for cases where the calibration tolerance is less than the RA

Question 8

- As-found and as-left data is recorded within the Ginna calibration and channel operability test procedures
- Ginna drift analysis includes plant specific data for all functions on Tables 3.3.1-1 and 3.3.2-1
- The basis for a drift analysis program is shown in the attached slides

SURVEILLANCE EXTENSION

- ELEMENTS OF THE PROGRAM (GENERIC LETTER 91-04)

  Comparative Review of Surveillance Testing
  Surveillance and Corrective Maintenance History Review
  Drift Analysis
  Setpoint Analysis

GENERIC LETTER 91-04

- **NRC STAFF IDENTIFIED SPECIFIC ACTION THAT LICENSEES SHOULD ADDRESS:**

Confirm that instrument drift as determined by As Found / As Left calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval.

The surveillance and maintenance history for instrument channels should demonstrate that most problems affecting instrument operability are found as a result of surveillance tests other than the instrument calibration. If the calibration data show that instrument drift is beyond acceptable limits on other than rare occasions, the calibration interval should not be increased because instrument drift would pose a greater safety problem in the future.

GENERIC LETTER 91-04
(continued)

- **NRC STAFF IDENTIFIED SPECIFIC ACTION THAT LICENSEES SHOULD ADDRESS:**

Confirm that the values of drift for each instrument type (make, model, and range) and application have been determined with a high probability and high degree of confidence. Provide a summary of the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant calibration data.

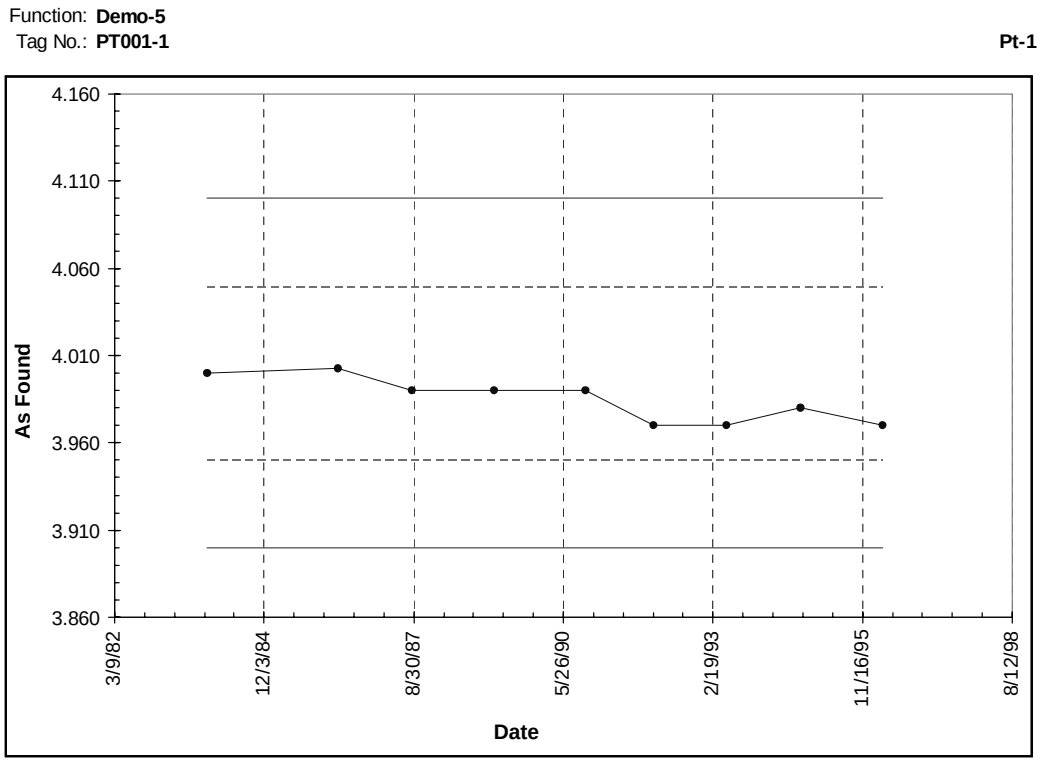
The licensee should have a body of As Found / As Left calibration data that permits the determination of the rate of instrument drift with time over the calibration interval. This data should allow the determination of instrument drift for those instruments that perform safety functions.

DRIFT ANALYSIS

ISA RP67.04 APP E

Determine the amount of drift that has occurred for a specific make/model instrument, process and unit

IHPA TRENDING PLOT



TRENDING BENEFITS

Monitor performance of instrumentation to determine failure rates

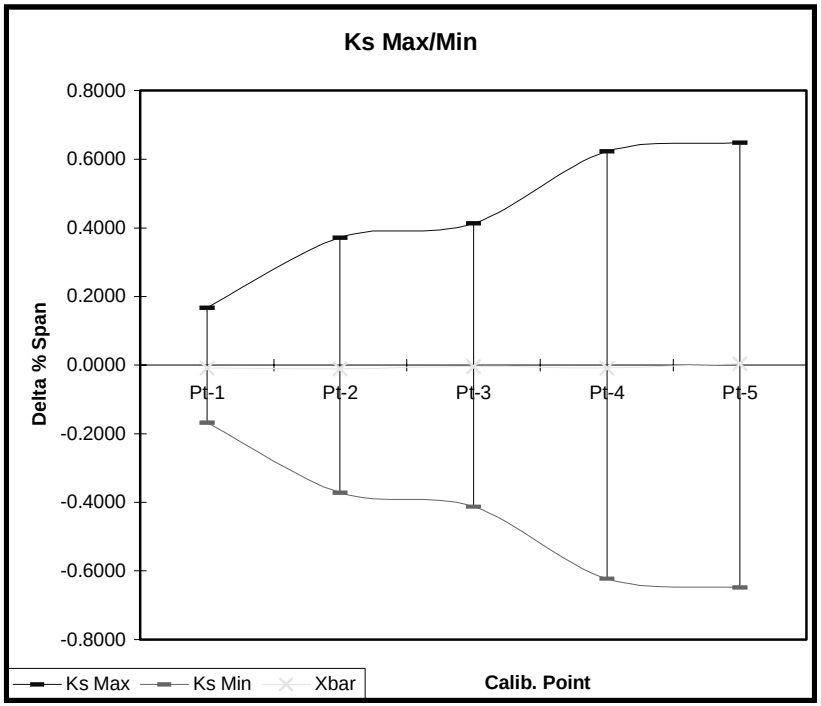
Provide pro-active maintenance schedules

Identify measuring and test equipment errors

leading to less re-calibrations or out of tolerance notices

GRAPHICAL RESULTS

Two-Sided



Calib. Point:	Pt-1	Pt-2	Pt-3	Pt-4	Pt-5

Question 8 (Cont.)

- Surveillance results compared with TIU values including most current drift values
- Values found outside of TIU are entered into the Ginna corrective action program
- Drift results are periodically reviewed

Question 9

- Ginna does the following for Allowable Value (AV) calculations:

  Includes conservative number of parameters to what ISA S67.04 Part II includes:

  - Drift
  - Accuracy
  - Setting Tolerance

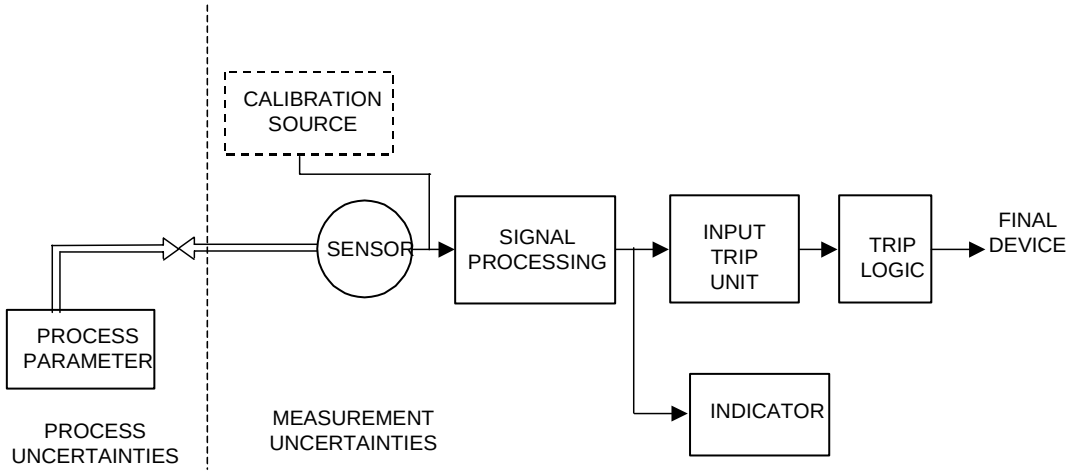
Question 9(Cont.)

Same methodology used to calculated AV as Total Loop Uncertainty – SRSS - not arithmetic

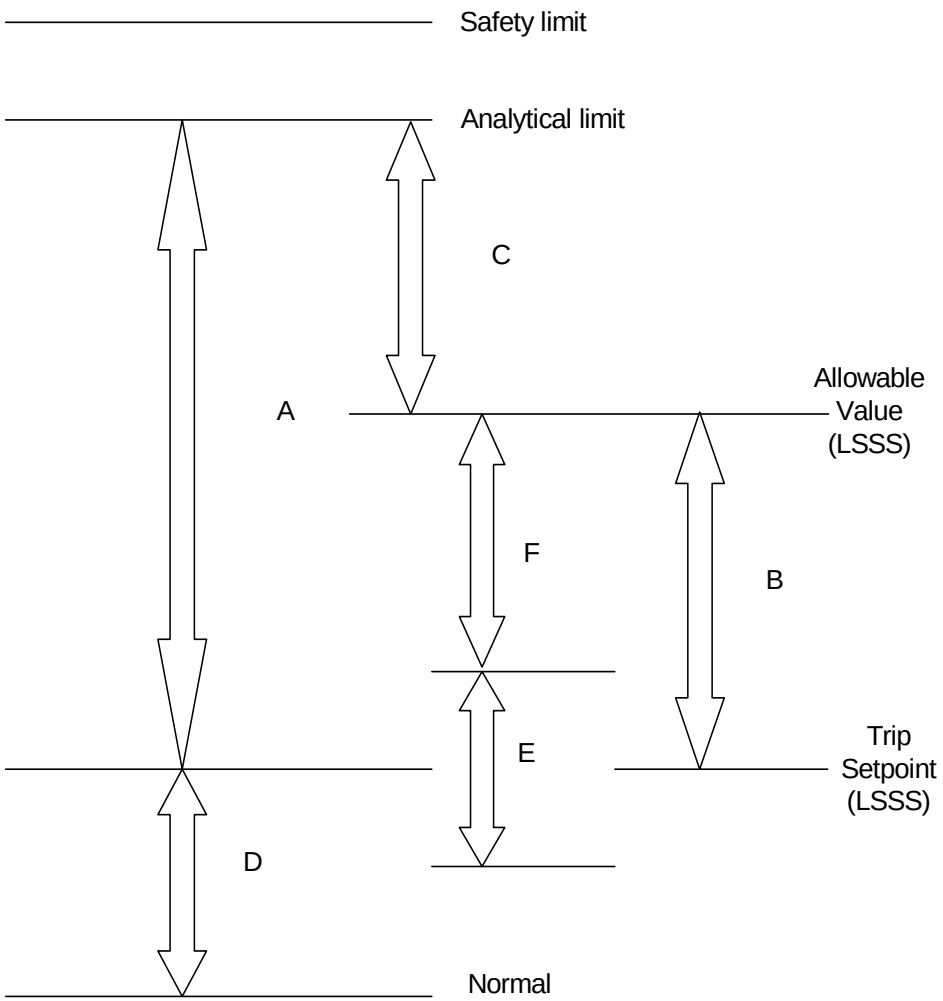
Additional margin added to calculated setpoint in most cases

COT calibration limit including plant specific drift and Ginna corrective action program is station assurance that AV is not challenged.

Example I&C Loop

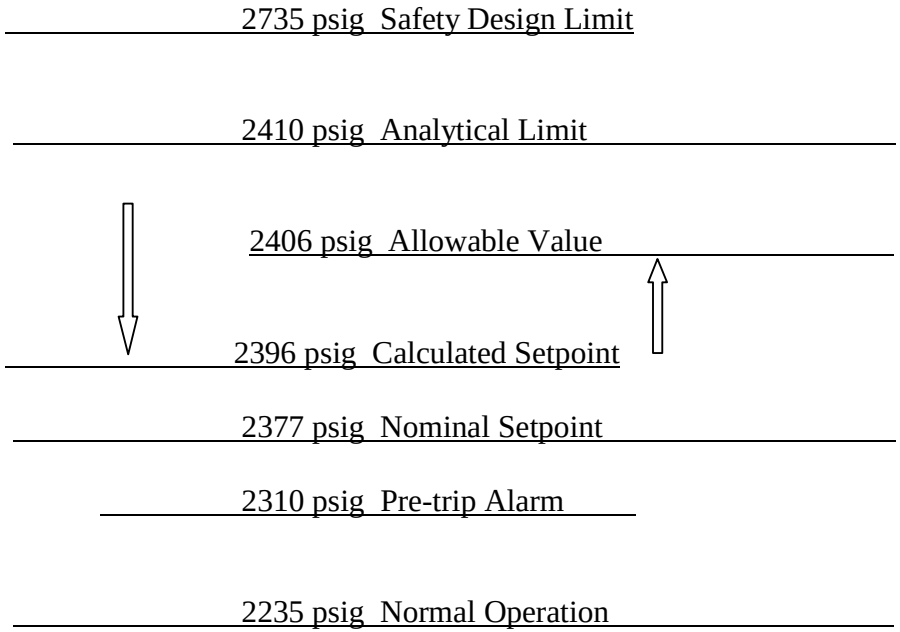


Setpoint Relationships (ANSI/ISA S67.04.01-1994)



A. Allowance described in paragraph 4.3.1
B. Allowance described in paragraph 4.3.2
C. Region where channel may be determined inoperable
D. Plant operating margin
E. Region of calibration tolerance (acceptable as left condition) described in paragraph 4.3.1
F. Safety margin

PZR High Pressure Trip Setpoint



Allowable Value Methodology

- Important Points for ITS
  - Allowable Value is used for determination of past operability
  - Overall setpoint uncertainty methodology and Allowable Value Methodology is conservative
  - All existing nominal setpoints have been shown to be conservative with new calculation
  - Surveillances are generally performed quarterly

AV Methodology (Cont.)

- Important Points (Cont.)
  - Statistical drift monitoring is in place
  - Corrective action program ensures that appropriate corrective actions are implemented in a timely manner
  - A number of other utilities have approved use of method 3 methodology for AV determination in ITS and 24 Month Extensions

AV Methodology(Cont.)

- Difference in statistical analysis of large errors vs. small:

  CASE 1:
  - TLU = $(6^2 + 1^2 + 1^2 + 1^2)^{½} = 6.25$
  - AV = $(1^2 + 1^2)^{½} = 1.41$

  CASE 2:
  - TLU = $(1^2 + 1^2 + 1^2 + 1^2)^{½} = 2.00$
  - AV = $(1^2 + 1^2)^{½} = 1.41$

Question 10

- Yes – selected method at Ginna per EP-3-S-505, Rev. 1 uses Method 3 with conservative number of allowances included in the AV calculations
- Upgraded calculations using plant specific drift methodologies per Generic Letter 91-04 and kept same setpoints for conservatism in as many cases as possible

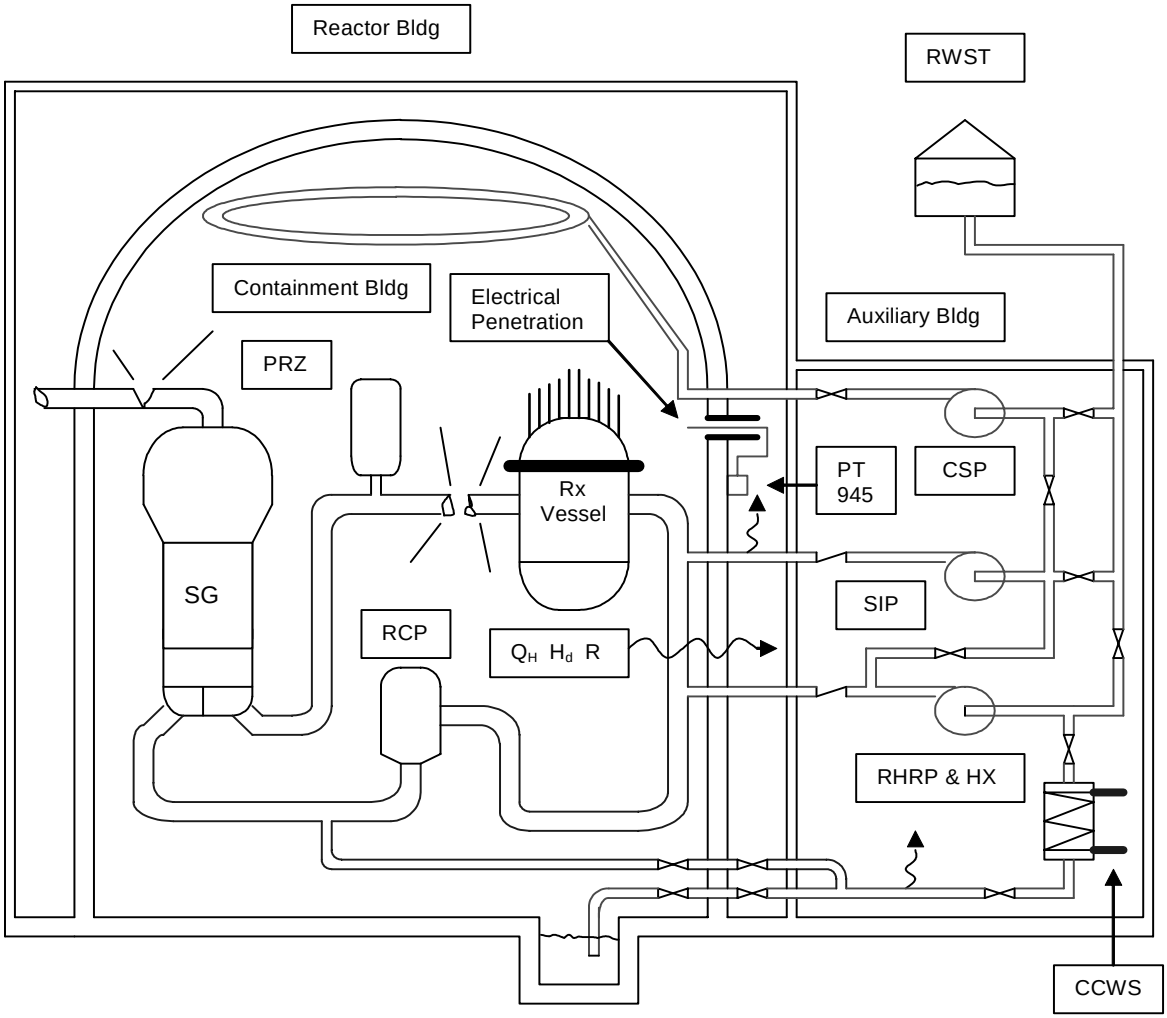
Question 11

- Setpoint methodology at Ginna meets the 95/95 confidence and probability levels for safety related setpoints following Reg. Guide 1.105 and Generic Letter 91-04 for 24 month nominal surveillance interval
- Reg. Guide 1.105 Rev. 3 endorses ISA S67.04 Part I

NRC
DOCUMENTS

Enclosure 3

Typical PWR Plant Schematic



Notes:

1. P-945 Safety Functions

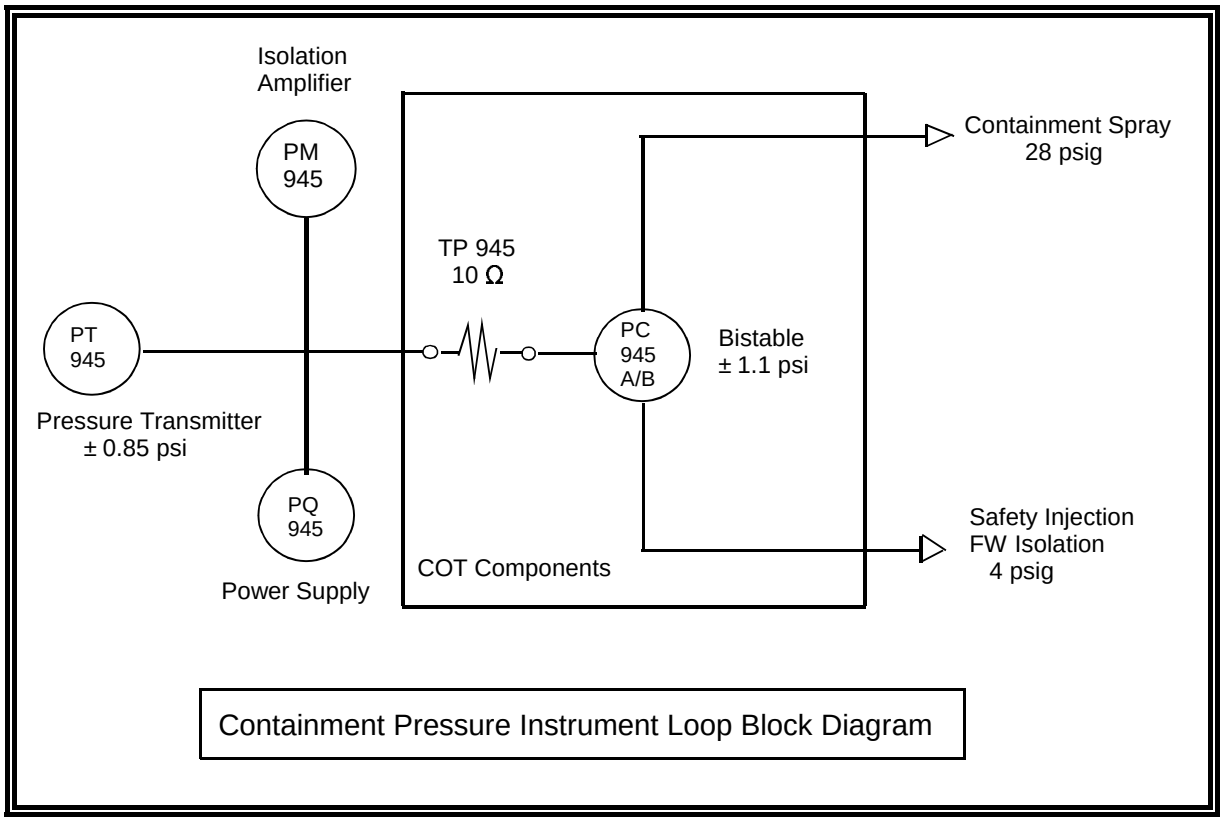
   a. Initiate SI at 4 psi
   b. Initiate FW isolation at 4 psi
   c. Initiate CS at 28 psi
   d. Post Accident Monitoring

2. PT-945

   Model – Foxboro N-E11GM-HIB1-BE
   PE - diaphragm
   PE_U - N/A

3. P-945 Uncertainty Calculations

   Per RG&E $TLU_A = TLU_N$
   Per ISA $TLU_A > TLU_N$
   (conservatively account for possible environmental effects (T, R, H_d) due to HELB inside containment)



Containment Pressure Instrument Loop Block Diagram

1. INPUT DATA:

Per RG&E Set Point Calculation Procedure, DA-EE-92-041-21

Bistable + Test Resistor Uncertainty

$U_{cot} = \pm 1.1$ psi

Pressure Transmitter Uncertainty

$U_{pt} = \pm 0.85$ psi

Power Supply Uncertainty

$U_{PQ} = \pm 0.0$ psi

Isolation Amplifier Uncertainty

$U_{PM} = \pm 0.0$ psi

RG&E SETPOINT METHODOLOGY

2. TOTAL LOOP UNCERTAINTY

$$TLU = \pm\sqrt{U_{cot}^2 + U_{pt}^2 + U_{pq}^2 + U_{pm}^2} = \pm\sqrt{1.1^2 + 0.85^2} = \pm 1.39 \text{ psi}$$

3. BISTABLE CALCULATED SETPOINT

$$SP = AL - TLU = 6.0 - 1.39 = 4.61 \text{ psi}$$

4. ALLOWABLE VALUE (RG&E)

$$AV_{RG\&E} = SP + U_{cot} = 4.61 + 1.1 = 5.72 \text{ psi}$$

5. SAFETY MARGIN (RG&E)

$$SM_{RG\&E} = AL - AV_{RG\&E} = 6.0 - 5.72 = 0.28 \text{ psi}$$

ANSI/ISA - RP67.04 SETPOINT METHODOLOGY

1. REQUIRED SAFETY MARGIN

A. Per ISA the required safety margin must account for the uncertainties associated with design-basis events. All other uncertainties are accounted for by performing surveillance testing of the *complete instrument loop* (i.e., a reference signal is applied to the pressure transmitter input and the difference between the voltage level at which the bistable changes state and the desired voltage level is measured).

Therefore, in accordance with ANSI/ISA - RP67.04 the required safety margin if the complete instrument loop is tested is defined as:

$$SM_{ISA} = \pm\sqrt{TLU_A^2 - TLU_N^2} \quad \text{(see Eq. 15, pg 111, ANS / ISA – RP67.04)}$$

B. In practice the complete instrument loop is not tested during surveillance testing. The reference signal is applied only to the bistable/resistor combination and the setpoint deviation measured. This partial test of the instrument loop is called the Channel Operability Test (COT) and is use to verify that the uncertainties associated with the bistable setpoint is within its normal operating range (± 1.1 psi). The COT is performed on a quarterly basis. The required safety margin for the COT is defined as:

$$SM_{cot} = \pm\sqrt{TLU_A^2 - U_{cot}^2}$$

This equation for the COT safety margin accounts for all uncertainties due to design-basis event effects, if applicable, plus those components not tested during the COT (pressure transmitter, power supply, isolation amplifier, etc),

For example, RG&E claims that PT-945 is not located in a harsh environment and, therefore, $TLU_A = TLU_N$. For these conditions the COT safety margin is equal to:

$$SM_{cot} = \pm\sqrt{TLU_N^2 - U_{cot}^2}$$

$$SM_{cot} = \pm\sqrt{1.39^2 - 1.1^2} = \pm 0.85 \text{ psi}$$

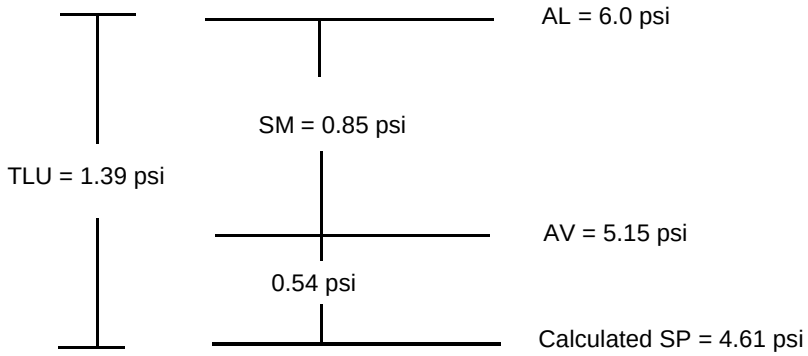
2. ALLOWABLE VALUE

The allowable value is equal to the Analytical Limit (AL) minus the Required Safety Margin (SM_{cot}):

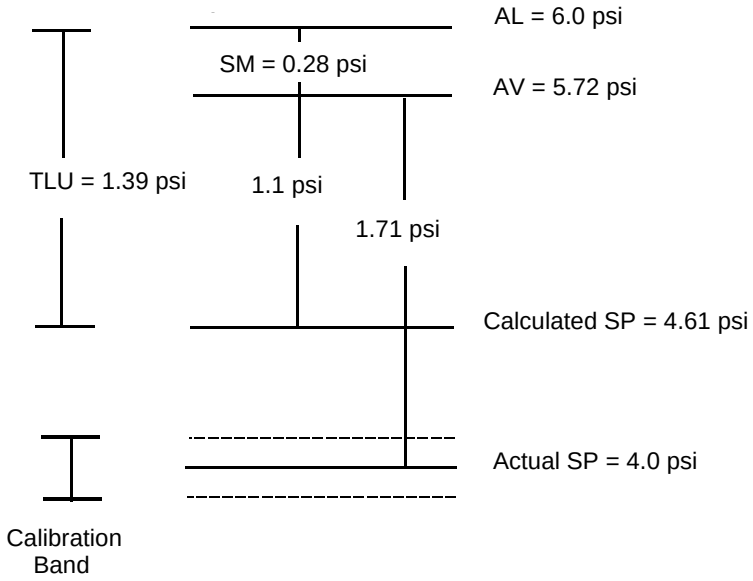
$$AV_{ISA} = AL - SM_{cot} = 6.0 - 0.85 = 5.15 \text{ psi}$$

SUMMARY

Method 1 (ANSI / ISA - RP67.04)



Method 2 (RG&E)



PROPOSED SOLUTION

Method 3