

Rosemount Nuclear Instruments

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4 April 2000

Ref: Grand Gulf Nuclear Station message on INPO plant reports, subject Rosemount Instrument Setpoint Methodology, dated March 9, 2000

Dear Customer:

This letter is intended to eliminate any confusion that may have arisen as a result of the reference message from Grand Gulf. The message was concerned with statistical variation associated with published performance variables and how the variation relates to the published specifications in Rosemount Nuclear Instruments, Inc.(RNII) pressure transmitter models 1152, 1153 Series B, 1153 Series D, 1154 and 1154 Series H. According to our understanding, the performance variables of primary concern are those discussed in GE Instrument Setpoint Methodology document NEDC 31336, namely

1. Reference Accuracy
2. Ambient Temperature Effect
3. Overpressure Effect
4. Static Pressure Effects
5. Power Supply Effect

It is RNII's understanding that GE and the NRC have accepted the methodology of using transmitter testing to insure specifications are met as a basis for confirming specifications are $\pm 3\sigma$. The conclusions we draw regarding specifications being $\pm 3\sigma$ are based on manufacturing testing and screening, final assembly acceptance testing, periodic (e.g., every 3 months) audit testing of transmitter samples and limited statistical analysis. Please note that all performance specifications are based on zero-based ranges under reference conditions. Finally, we wish to make clear that no inferences are made with respect to confidence levels associated with any specification.

1. **Reference Accuracy**

All (100%) RNII transmitters, including models 1152, 1153 Series B, 1153 Series D, 1154 and 1154 Series H, are tested to verify accuracy to $\pm 0.25\%$ of span at 0%, 20%, 40%, 60%, 80% and 100% of span. Therefore, the reference accuracy published in our specifications is considered $\pm 3\sigma$.

2. **Ambient Temperature Effect**

All (100%) amplifier boards are tested for compliance with their temperature effect specifications prior to final assembly. All sensor modules, with the exception of model 1154, are temperature compensated to assure compliance with their temperature effect specifications. All (100%) model 1154, model 1154 Series H and model 1153 gage and absolute pressure transmitters are tested following final assembly to verify compliance with specification. Additionally, a review of audit test data performed on final assemblies of model 1152 and model 1153 transmitters not tested following final assembly indicate

conformance to specification. Therefore, the ambient temperature effect published in our specifications is considered $\pm 3\sigma$.

3. **Overpressure Effect**

Testing of this variable is done at the module stage. All (100%) range 3 through 8 sensor modules are tested for compliance to specifications. We do not test range 9 or 10 modules for overpressure for safety reasons. However, design similarity permits us to conclude that statements made for ranges 3 through 8 would also apply to ranges 9 and 10. Therefore, the overpressure effect published in our specifications is considered $\pm 3\sigma$.

4. **Static Pressure Effects**

All (100%) differential pressure sensor modules are tested for compliance with static pressure zero errors. Additionally, Models 1153 and 1154 Ranges 3, 6,7 and 8 are 100% tested after final assembly for added assurance of specification compliance. Audit testing performed on ranges 4 and 5 have shown compliance to the specification. Therefore, static pressure effects published in our specifications are considered $\pm 3\sigma$.

5. **Power Supply Effect**

Testing for conformance to this specification is performed on all transmitters undergoing sample (audit) testing. This variable has historically exhibited extremely small performance errors and small standard deviation (essentially a mean error of zero with a standard deviation typically less than 10% of the specification). All transmitters tested were found in compliance with the specification. Therefore, power supply effect published in our specifications is considered $\pm 3\sigma$.

Should you have any further questions, please contact Jerry Edwards at (612) 828-3951.

Sincerely,



Jerry L. Edwards
Manager, Sales, Marketing and Contracts
Rosemount Nuclear Instruments, Inc.