

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555

April 30, 1992

NRC INFORMATION NOTICE 92-33: INCREASED INSTRUMENT RESPONSE TIME WHEN
PRESSURE DAMPENING DEVICES ARE INSTALLED

Addressees

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to increased response times for pressure sensing instruments that occur when pressure dampening devices are installed in the instrument sensing lines. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

On September 25, 1991, the GPU Nuclear Corporation, licensee for the Oyster Creek Nuclear Generating Station, initiated a plant shutdown after determining that seven of eight isolation condenser line break pressure sensors did not meet the plant technical specification requirements for instrument response times. The licensee's trouble shooting determined that pressure dampening devices in the sensing lines for these differential pressure sensors had caused an increase in the response times. Furthermore, the licensee found that the time delay caused by these devices is significant at both low and high pressures.

Discussion

The pressure dampening devices (snubbers) which utilize sintered stainless steel elements are generally installed in instrument sensing lines to dampen pressure oscillations or to protect the instruments from particulate contamination.

When the sensors failed to meet the required response times during surveillance tests, the licensee reviewed the pressure sensing system and found that the snubbers were causing unacceptable time delays. The licensee later removed the snubbers because they are not needed when using the upgraded Barton pressure sensors that were installed.

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updated on 6-9-92

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Snubber time delay will not be detected in response time testing conducted directly at the sensing instrument (see Figure 1.) The effect of a snubber will differ from sensor to sensor because of differences in the volumetric displacement of fluid within the pressure sensing mechanisms. System response time can also be degraded by the accumulation of foreign material in sensing line snubbers.

The NRC's Office of Nuclear Regulatory Research is conducting a generic study on the performance of pressure instrumentation at nuclear power plants. The staff plans to publish the results in NUREG/CR 5851, "Long Term Performance and Aging Characteristics of Nuclear Plant Pressure Transmitters." The staff has completed a part of this effort, and the results of tests conducted on pressure sensor response time testing were published in an ISA (Instrument Society of America) transaction 91-720, "Response Time Testing of Pressure Transmitters in Nuclear Power Plants." This publication addresses various causes for delays in sensor response and documents that significant time delays can occur.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.


Charles E. Rossi, Director
Division of Operational Events Assessment
Office of Nuclear Reactor Regulation

Technical contacts: Thomas Koshy, NRR
(301) 504-1176

Iqbal Ahmed, NRR
(301) 504-3252

Attachments:

1. Figure 1. Test Configuration that Excludes the Effect of Snubbers
2. List of Recently Issued NRC Information Notices

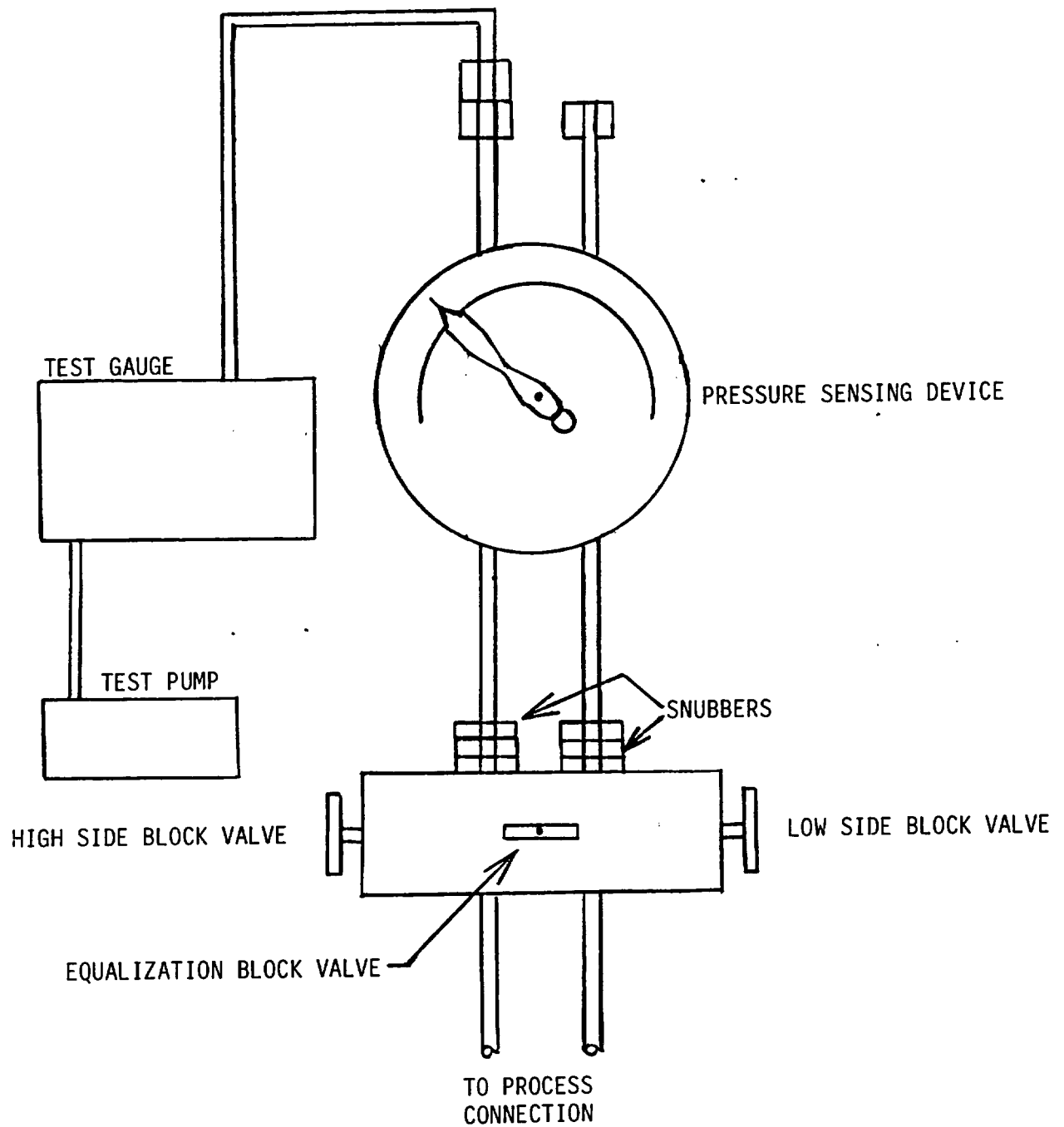


Figure 1.

Test Configuration That Excludes the Effect of Snubbers

LIST OF RECENTLY ISSUED
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
92-32	Problems Identified with Emergency Ventilation Systems for Near-Site (Within 10 Miles) Emergency Operations Facilities and Technical Support Centers	04/29/92	All holders of OLs or CPs for nuclear power reactors.
92-31	Electrical Connection Problem in Johnson Yokogawa Corporation YS-80 Programmable Indicating Controllers	04/27/92	All holders of OLs or CPs for nuclear power reactors.
92-30	Falsification of Plant Records	04/23/92	All holders of OLs or CPs for nuclear power reactors and all licensed operators and senior operators.
92-21, Supp. 1	Spent Fuel Pool Reactivity Calculations	04/22/92	All holders of OLs or CPs for nuclear power reactors.
92-29	Potential Breaker Miscoordination Caused by Instantaneous Trip Circuitry	04/17/92	All holders of OLs or CPs for nuclear power reactors.
92-28	Inadequate Fire Suppression System Testing	04/08/92	All holders of OLs or CPs for nuclear power reactors.
92-27	Thermally Induced Accelerated Aging and Failure of ITE/GOULD A.C. Relays Used in Safety-Related Applications	04/03/92	All holders of OLs or CPs for nuclear power reactors.
92-26	Pressure Locking of Motor-Operated Flexible Wedge Gate Valves	04/02/92	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
CP = Construction Permit

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Original Signed by
Charles E. Rossi

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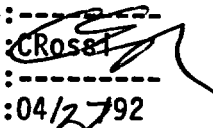
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Reviewed by J. Main, Technical Editor, on 02/07/92

*SEE PREVIOUS CONCURRENCE

OFC	:OEAB:DOEA	:SICB:DST	:SC:OEAB:DOEA:C:SICB:DST	:C:OEAB:DOEA	:C:OGCB:DOEA	:D:DOEA
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DATE	:02/12/92	:03/03/92	:03/06/92	:03/18/92	:03/19/92	:04/20/92 :04/27/92

Since the snubbers are mounted upstream of the sensors, this time delay will not be experienced in response time testing conducted directly at the sensing instrument (see Figure 1.) These snubbers could degrade and reduce the flow through the device, further increasing the time delay. The effect of a snubber would differ between various sensors because of the differences in the volumetric displacement of fluid within their pressure sensing mechanism. System response time could be degraded by the presence and condition of snubbers in the sensing line.

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