

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

September 10, 1979

IE Circular No. 79-18

PROPER INSTALLATION OF TARGET ROCK SAFETY-RELIEF VALVES

Description of Circumstances:

As a result of NRC monitoring of operating experiences involving the Target Rock safety-relief valve, two potential problems have been identified. One potential problem is that the performance of the valve has been found to be impaired by either excessive or insufficient insulation around the valve body when installed in its service environment. The other potential problem is that improper assembly of the modified valve can result in inoperability of the remote air actuator.

The Target Rock safety-relief valve is a dual purpose valve in that overpressure response is provided by pilot valve action and automatic depressurization (ADS) is provided by a remote air actuator. Valve operation has been found to be affected by the amount of insulation placed around the valve body. A previous IE Bulletin No. 76-06 was issued on July 21, 1976 as a result of operating experiences where excessive insulation was installed on the valve. The excessive insulation caused excessive heat to be retained producing a higher temperature environment for the elastomeric diaphragm which resulted in accelerated deterioration of the elastomer. Failure of the elastomeric diaphragm, makes the valve inoperable in the power-operation mode (i.e. manual and ADS). Subsequently, a silicone-nomex diaphragm was developed by the manufacturer to provide a longer life in high temperature environments. In addition, the IE Bulletin explicitly required that insulation be installed in accordance with the manufacturer's recommendations.

A recent licensee event report from the Monticello facility identified a potential problem resulting from insufficient insulation (i.e. just opposite of the condition addressed by IE Bulletin 76-06). During the performance of special testing of the response to safety-relief valve operation, a valve was discovered to be exceeding its design delay time for opening. Subsequent inspection and testing of the valve revealed that insufficient insulation may cause condensation to accumulate in the pressure venting ports which then results in delaying the opening of the main disk. This slower response time is significant with respect to primary system overpressure and similar transient response analyses. Although the reported event at Monticello involved the three-stage Target Rock safety-relief valves, the requirements for proper amounts of insulation are similarly applicable to the two-stage Target Rock safety-relief valves.

The second potential problem was recently experienced at the Hatch facility. The licensee event report indicated that improper assembly of the modified design two-stage valve resulted in preventing the air actuator to function.

During the changeover to modify these valves from the previous three-stage type to the current two-stage design, two valves were inadvertently reassembled with the air-actuator angularly displaced. This misalignment restricted the air flow via the air inlet port thereby preventing the safety-relief valve from functioning in the air actuation mode. The misalignment was noted and corrected prior to the return of the reactor to operations.

Recommended Actions for BWR Licensee's Consideration:

All holders of operating licenses for BWR facilities employing Target Rock safety-relief valves should be aware of the potential problems described above. It is recommended that this matter be reviewed at your facility in the following respects:

1. Verify that the installed Target Rock safety-relief valves include the silicone-nomex diaphragms which have the superior time-temperature-environment characteristics and that these diaphragms are periodically replaced in accordance with the most conservative recommendations of the reactor vendor or valve manufacturer.
2. Verify that the thermal insulation on the valve is installed in accordance with the valve manufacturer's recommendation.
3. Verify that procedures are adequate to assure proper assembly of the air actuator, pilot and main disk in accordance with the vendor's installation instructions for the two-stage valve.

This Circular is being forwarded for information to all BWR facilities with construction permits and to all other power reactor facilities with an operating license or construction permit. No written response to this Circular is required. If you need additional information regarding this matter, contact the Director of the appropriate NRC Regional Office.

LISTING OF IE CIRCULARS ISSUED IN
LAST SIX MONTHS

Circular No.	Subject	Date of Issued	Issued to
79-18	Proper Installation of Target Rock Safety-Relief Valves	9/10/79	All Power Reactor Licensees with a CP and/or OL
79-17	Contact Problem in SB-12 Switches on General Electric Company Metalclad Circuit Breakers	8/14/79	All Power Reactor Licensees with a CP and/or OL
79-16	Excessive Radiation Exposures To Members Of The General Public And A Radiographer	8/16/79	All Radiography Licensees
79-15 (Correc- tion)	Bursting of High Pressure Hose and Malfunction of Relief Valve "O" Ring in Certain Self-Contained Breathing Apparatus	8/22/79	All Research Reactors
79-15	Bursting of High Pressure Hose and Malfunction of Relief Valve "O" Ring in Certain Self-Contained Breathing Apparatus	8/8/79	All Materials Priority I, Fuel Cycle and Operating Power Reactor Licensees
79-14	Unauthorized Procurement and Distribution of XE-133	7/13/79	All Medical Licensees except Teletherapy Medical Licensees and to all Radiopharmaceutical Suppliers
79-13	Replacement of Diesel Fire Pump Starting Contactors	7/13/79	All Power Reactor Operating Facilities and all Utilities having a CP
79-12	Potential Disel Generator Turbocharger Problem	6/28/79	All Power Reactors Operating Facilities and all Utilities having a CP

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LAST SIX MONTHS

Circular No.	Subject	Date of Issue	Issued to
79-11	Design/Construction Interface Problem	6/27/79	All Applicants for, and Holders of Power Reactor CPs
79-10	Pipefittings Manufactured from Unacceptable Material	6/26/79	All Power Reactor Licensees with a CP and/or OL
79-09	Occurrences of Split or Punctured Regulator Diaphragms In Certain Self Contained Breathing Apparatus	6/22/79	All Materials Priority I, Fuel Cycle and Operating Reactor Licensees
79-08	Attempted Extortion - Low Enriched Uranium	5/18/79	All Fuel Facilities Licensed by NRC
79-07	Unexpected Speed Increase of Reactor Recirculation MG Set Resulted in Reactor Power Increase	5/2/79	All Holders of BWR OL's or CP's
79-06	Failure to Use Syringe and Bottle Shields in Nuclear Medicine	4/19/79	All Holders of Medical Licensees except teletherapy licensees