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US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Clarification of Circumstances Related to Safety Relief Valve Leakage

On July 5, 1994, members of the Monticello Nuclear Generating Plant staff discussed with Jim Davis and Beth Wetzel, of the NRC Staff, operational concerns cited in a letter dated July 5, 1994 from Representatives Sam Gejdenson, Nancy Johnson and Barbara Kennelly to Chairman Selin concerning the Monticello Nuclear Generating Plant. The letter expressed the Representatives' concerns regarding the use of dimensionally non-conforming nuts and bolts in the nuclear power industry. The letter states:

"We are also aware of at least two instances in the nuclear industry in which nut and bolt failures have been directly linked to dimensionally nonconforming parts which passed the System 21 test. In an incident at the Monticello plant in March, 1993, a safety relief valve leaked repeatedly and the plant was shut down. Fourteen nuts and bolts holding the valve together were examined and thirteen were found to be out of compliance and one was so badly damaged that it could not be tested."

The above statement is incorrect. The purpose of this letter is to clarify the circumstances and significance of the Monticello valve leakage described in the July 5, 1994 letter from the three Representatives to Chairman Selin.

On March 23, 1993 the Monticello Nuclear Generating Plant was returning to power operations following a refueling outage. With the reactor at 10% power, elevated temperatures were observed at the discharge line from the "B" Safety Relief Valve, which is one of the eight safety relief valves installed in the plant. Elevated discharge pipe temperatures are usually indicative of valve internal seat leakage, so plant Operations personnel continued to monitor the discharge line temperatures closely. The "B" safety relief valve discharge pipe temperature continued to increase, so the decision was made to commence a normal reactor shutdown to repair the valve.

The leaking safety relief valve was disassembled and inspected. It was determined that the elevated discharge line temperature was indeed caused by seat leakage at either the second stage disc or at the pilot stage disc (see

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attached Figure 1), which are integral components of the valve actuating mechanism (also referred to as the valve top works). Contrary to what was implied in the July 5, 1994 letter from the three Representatives to Chairman Selin, the leakage was in no way linked, either directly or indirectly, to any bolting concern.

The "B" safety relief valve seat leakage was repaired by replacing the actuating mechanism (top works) for the valve (see attached Figure 1). Reactor startup was commenced on March 25, 1993 and full power operation was reached on March 26, 1993. Safety relief valve temperatures were monitored closely during ascension to full power operation and no further abnormalities were observed.

The Safety Relief Valve actuating mechanism is bolted to the valve body by twelve 1.125 inch bolts and nuts. The actuating mechanisms for the eight safety relief valves are currently removed each refueling outage and replaced with spare actuators which have been tested in accordance with plant Technical Specifications. While performing this work, maintenance personnel frequently experience bolt-to-nut galling during disassembly of the fasteners utilized to connect the actuating mechanisms to the valve bodies. This represents a maintenance concern in that it increases the time needed to complete valve actuator replacement work, thereby increasing radiation dose and labor costs associated with this task. However, the problem of bolt-to-nut galling has no impact on plant operations or plant safety, and in no way impacts the health and safety of the public.

The Monticello plant staff has been performing a root cause investigation in order to arrive at a solution to the problem of bolt-to-nut galling during valve disassembly. Earlier this year, the Monticello Plant staff was made aware of a new type of gaging equipment which could reportedly be employed to verify bolt and nut thread tolerance with a higher degree of accuracy than conventional methods. The Monticello Nuclear Generating Plant is not required to use this alternative gaging system, nor is its use considered necessary to confirm the adequacy of fasteners already found to be acceptable using conventional inspection methods. However, it was decided to test the new gaging equipment using fasteners of the type used for safety relief valve assembly in an effort to obtain additional information that might aid our root cause investigation of the bolt-to-nut galling problem.

Testing was performed using the criteria established in ASME Code, ASME B1.1-1989, Unified Inch Screw Threads, and the System 22 gaging option provided by the code. In February of 1994, testing equipment was employed by the Johnson Gage Company to check the thread tolerance of bolts and nuts of the type used to connect the safety relief valve actuator to the valve body. Contrary to what was implied in the July 5, 1994 letter from the three Representatives to Chairman Selin, this testing did not involve any bolting from the safety relief valve which had been identified as having internal seat leakage in

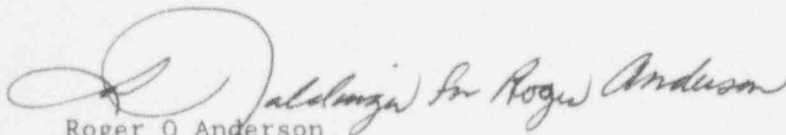
March of 1993. A number of the bolts and nuts tested came from a mock-up valve assembly or other similar sources and had been used repeatedly as training aids. The remainder of the sample was drawn from warehouse stock. Most of the bolts, and a few of the nuts, did not meet the more demanding System 22 criteria. A copy of the test report is available at the Monticello Nuclear Generating Plant for NRC review.

To determine whether or not the threads found to be out of tolerance using the more demanding System 22 gaging criteria were the cause of safety relief valve fastener galling, subsequent testing was performed by the plant staff using fasteners of known measurements taken from the sample lots described above. This testing indicated that the fastener galling associated with safety relief valves during actuator changeout is not due to any fastener thread tolerance issue. We now suspect that a factor contributing to the galling may be thread lubrication dry-out during extended plant operation at high temperatures. We continue to evaluate the necessary corrective actions to resolve this maintenance concern; however, this issue has no impact the strength of the fasteners, nor on plant operations, valve operability, or public safety.

The fasteners utilized for the actuator to valve assembly for the Monticello safety relief valves are manufactured and inspected in accordance with quality assurance programs satisfying the criteria of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants", as well as the applicable industry codes and standards for this component. Contrary to the implication of the letter from the three Representatives to Chairman Selin, the fact that some of this bolting did not meet the more demanding System 22 gaging option of the ASME code is not indicative of any potential bolting failure. This bolted joint was designed in accordance with applicable industry codes with adequate safety margins to ensure safe and reliable service.

This letter contains no new NRC commitments, nor does it modify any prior commitments.

Please contact Marv Engen, Sr Licensing Engineer ((612) 295-1291) or Terry Coss, Sr Licensing Engineer ((612) 295-1449) if you require further information.



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c: Regional Administrator - III, NRC

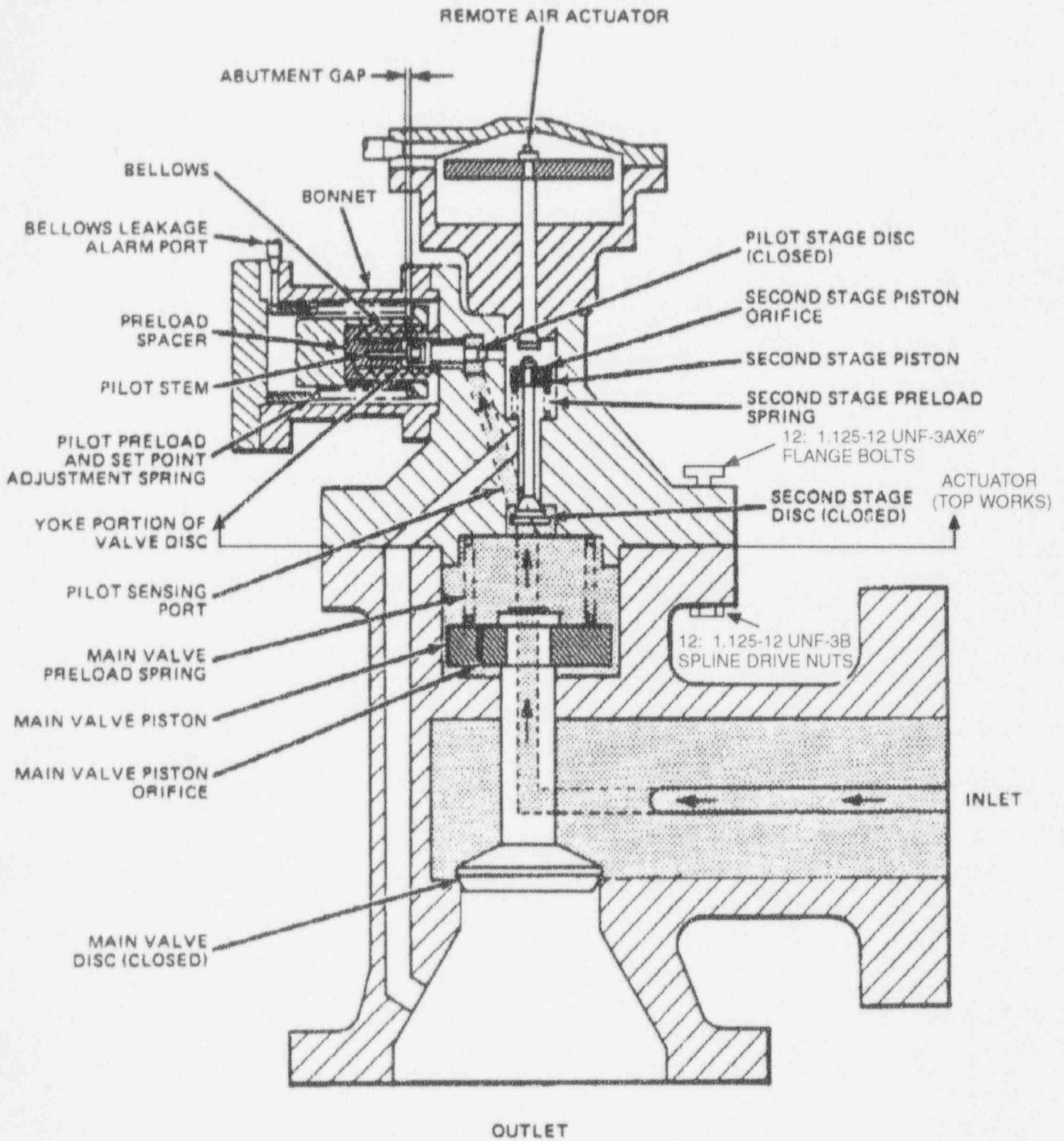
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NORTHERN STATES POWER COMPANY

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Attachments: Figure (1) - Monticello Safety Relief Valve

MONTICELLO SAFETY RELIEF VALVE



HIGH PRESSURE FLUID