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United States Nuclear Regulatory Commission Document Control Desk Washington, DC 20555

Gentlemen:

10CFR21 NOTIFICATION G. H. BETTIS ACTUATORS HOPE CREEK GENERATING STATION DOCKET NO. 50-354

Pursuant to the notification requirements of 10CFR21, Public Service Electric and Gas (PSE&G) hereby provides the attached report concerning a deficiency in the assembly process for Containment Atmosphere Control System Valve replacement actuators manufactured by G. H. Pettis Corporation. This deficiency was reported to the NRC Operations Center on May 29, 1992.

Attachment 1 fully describes the identified deficiency and corrective actions implemented.

Please do not hesitate to contact us if there are any questions regarding this submittal.

Sincerely,

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### Background

On May 29, 1992, PSE&G reported a deficiency in the assembly process for the replacement actuators to be utilized on Containment Atmosphere Control System Valves (PSE&G tag number 1GS-HV-11541, -4952, -4950, -4962, -4964 and -5029). These valves provide a containment isolation function following a design basis accident. The replacement actuators manufactured by G. H. Bettis Corporation (Model Nos. NT420-SR3-M7 and NT520-SR2-M7) along with new valves are currently planned to be installed during the next Hope Creek Outage.

### Evaluation

PSE&G was performing a surveillance of the G. H. Bettis facility to witness functional testing and perfort a final inspection of the actuators prior to shipment to the valve manufacturer for final assembly. The surveillance was performed from January 22 through January 24, 1992. Functional testing was performed to verify that all actuators failed closed when the solenoid was deenergized, and that all actuators stroked to the fully closed position in less than 3 seconds with various air pressures applied. A 24 hour hydraulic leak test was also completed for three of the actuators. All actuators were found to satisfy the test acceptance criteria.

However, during testing it was noted that one pilot valve operated erratically when the actuator cycled to the fail closed position. The cause of this erratic operation was found to be the presence of pipe dope in the pilot valve as well as inside the actuator cylinder on the piston near the inlet port. Pipe dope was used during the assembly process. A partial cleaning of the excess pipe dope in the pilot valve performed by G. H. Bettis allowed the device to function properly confirming that the pipe dope was the cause of the erratic operation. All actuator units were disassembled, leaned, reassembled and leak tested (manual override) in accordance with the test plan and found to be acceptable.

G. H. Bettis Corporation completed an evaluation of all six actuators. The pilot valve manufacturer, Automatic Valve confirmed the presence of pipe dope. Automatic Switch Company - ASCO also confirmed the presence of pipe dope in three of the six solenoid valves installed on the actuators.

The functional acceptance test verified the actuators' ability to perform their intended design function in accordance with purchase order P1-381331 although one pilot valve did operate erratically. G. H. Bettis did not identify any previous instances of malfunction or erratic operation resulting from the presence of pipe dope.

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On March 25, 1992, G. H. Bettis Corporation submitted a letter to PSE&G indicating that it was their determination that this deficiency was not reportable under 10CFR21. PSE&G initiated a separate evaluation of this concern in accordance with 10CFR21 because it was believed that this deficiency may in fact be reportable.

PSE&G determined that the root cause of this concern was a lack of procedural controls during the manufacturing process and inadequate training of G. H. Bettis personnel. G. H. Bettis personnel used an excessive amount of pipe dope during the assembly of the actuators. This resulted in the introduction of the contaminants into the valves. This activity was not controlled by any assembly procedures. In addition, it was noted during testing that the control air that was used to operate the valves was not filtered to trap any contaminants (oil, water, particles) in excess of 50 microns as required in the ASCO assembly instructions. this could also introduce contaminants into the valves. NUREG 1275, Volume 6 addresses the use of Loctite materials and other potential contaminants that may cause this kind of erratic operation or failure of SOVs. Several instances of SOV failures were identified in .U'EG 1275 as a result of the introduction of contaminant The use of pipe dope as a sealant may also contri. to to similar failures of solenoid valves and pilot valves based on what was witnessed during the functional test. Although G. H. Bettis' review did noc identify any previous instances of erratic operation or malfunction of their actuators due to the presence of pipe dope, the long term operability of these valves, based on the past operating experiences documented in NUREG-1275, could be significantly affected. Should these actuators have failed from the presence of pipe dope, a substantial safety hazard may be created by loss of containment isolation function following a DBA. Therefore, this issue was determined to be reportable pursuant to 10CFR21.

#### Corrective Actions

The Automatic Valve Company pilot valves and ASCO solenoid valves were returned to their tacilities for evaluation. ASCO provided new replacement solenoid valves for installation and Automatic Valve Company rebuilt the pilot valves and certified them as new. New procedures were developed to instruct assembly personnel how to properly use pipe mealant. Nuclear Grade Pipe Sealant #580 manufactured by Loctite Corporation is to be used by G. H. Betcis in all future nuclear applications.

PSE&G observed the installation of the ASCO Solenoid Valves and Automatic Valve pilot valves on the actuators in accordance with the new procedures. A leakage test of all threaded connections was performed and all actuators were

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satisfactory. Each actuator unit was then functionally tested, and found to fail closed within the required 3 seconds. The actuators have been released to C&S Valve Company for attachment to their butterfly valves to complete the assembly of the valves.

G. H. Bettis Corporation has installed an air filter in the compressor's main air line to complement the smaller air filters that had been installed at the assembly air outlets to prevent possible contamination during testing.