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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

September 15, 1976

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Docket No.: 50-247

Consolidated Edison Company
of New York, Inc.
ATTN: Mr. William J. Cahill, Jr.
Vice President
4 Irving Place
New York, New York 10003

Gentlemen:

Our letter of May 27, 1975, requested summary information on the analyses or tests performed to confirm the integrity of the main steam isolation valves (MSIV's) under accident conditions at Indian Point Unit No. 2. By letter dated May 28, 1976, you responded to our request.

We have completed our review of your operating experience with the MSIV's at Indian Point Unit No. 2 and the modifications which you will implement. As discussed in the enclosed safety evaluation, we have concluded that the modifications are acceptable and that the performance of the MSIV's under conditions similar to accident conditions, has been acceptably demonstrated.

Sincerely,

A handwritten signature in cursive script that reads "Robert W. Reid".

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosure:
Safety Evaluation

cc w/enclosure: See next page

**Consolidated Edison Company
of New York, Inc.**

cc w/enclosure(s):

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING THE INTEGRITY OF MAIN STEAM

ISOLATION VALVES DURING ACCIDENT CONDITIONS

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2

DOCKET NO. 50-247

Introduction

Adverse operating experience concerning main steam isolation valves (MSIV's) has been reported to the Office of Inspection and Enforcement (OI&E) following operational tests and spurious closures at various pressurized water reactor (PWR) stations over an extended period of time. In an effort to gain a better understanding of these events, Information Request No. 74-2 was sent to all PWR stations by OI&E. The information thus obtained was used as input to a generic study conducted by the NRC. During our review, we had the benefit of discussions with personnel representing various valve manufacturers and also with utility representatives whose facilities were affected.

Our concern was the ability of the swing-check type MSIV's to withstand the dynamic forces associated with rapid closure in the event of a steam line rupture. As a result of this generic study, it was determined that in some cases there may be a need to upgrade both the materials and the design of the larger swing-check MSIV's in order to prevent degradation during normal service and to assure performance of all design safety functions.

Therefore, on May 27, 1975, the Nuclear Regulatory Commission (NRC) requested a number of licensees of pressurized water reactors (PWR's) to supply summary information on the analyses or tests performed to confirm the ability of the main steam isolation valves (MSIV's) to withstand the forces associated with rapid closure under postulated steam line break conditions. By letter dated May 28, 1976, Consolidated Edison Company of New York, Inc. (ConEd) responded to our request.

The MSIV's presently installed at Indian Point Unit No. 2 are Atwood and Morrill Co., Inc. (A&M), swing-disc type check valves. These valves have carbon steel discs and carbon steel disc arms. The valves were analyzed for static differential pressure loadings in accordance with the codes in effect at the time of purchase (ANSI B 16.5). These MSIV's have experienced several closures at full power with no apparent damage to the valve discs or seats from the resulting dynamic loadings.

Evaluation

The Indian Point Unit No. 2 MSIV's are of the same design as those installed at the Joseph M. Farley Nuclear Plant, Units Nos. 1 and 2. The MSIV's at Indian Point Unit No. 2 will be modified to incorporate the design changes made to the Farley MSIV's. These modifications would replace the existing carbon steel valve discs and disc arms with stainless steel discs and redesigned stiffer disc arms to reduce valve strains developed during closure following a postulated downstream pipe break.

ConEd has used an elastic plastic analysis of similar valves installed at Farley to determine the structural response at Indian Point Unit No. 2 of the disc-valve body contact under faulted condition impact closure. As a result of analysis the discs and disc arms for Indian Point Unit No. 2 valves were redesigned to more uniformly transfer the kinetic energy from disc to valve body during impact. Also, materials were upgraded to stainless steel to better withstand the local strains of the contact region.

Design criteria were established to limit local strains in the body-disc contact region to limit general strain in the central portion of the disc. Conformance with these criteria will not prevent some permanent deformation of the valve but will be adequate to prevent a steam flow path past the closed disc.

The licensee's analysis indicates that computed strains are well within acceptable limits on strain, thus providing adequate margin.

Conclusions

Our evaluation of these modifications indicates that they will reduce the likelihood of damage due to spurious closure and thus prevent excessive degradation of the valves during normal service. We have also determined that the rapid closures of the MSIV's which have been experienced combined with the low probability of a steam line break provide assurance that the valves will perform their designed safety function until modifications are completed.

Therefore, we conclude that the MSIV's as modified at Indian Point Unit No. 2 will satisfy General Design Criterion 4 of Appendix A to 10 CFR Part 50 and that the licensees plans and schedule for completing the modifications are acceptable.

Dated: September 15, 1976