

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

March 15, 1971

R. C. DeYoung, Assistant Director for Pressurized Water Reactors, DRL
THRU: D. R. Muller, Chief, PWR Projects Branch #1, DRL *KK FOR DRL*

POTENTIAL REQUEST FOR FUEL LOADING, CONSOLIDATED EDISON COMPANY OF NEW
YORK, INC., INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 DOCKET NO. 50-247
MINUTES OF MEETING ON MARCH 3, 1971

SUMMARY

Con Ed is considering a request to the Atomic Safety and Licensing Board for permission to load fuel and perform precritical testing. They desire our concurrence in such a request. We outlined the additional information required to provide us with a basis for reaching a conclusion regarding their request. They will attempt to provide this information in writing in about two weeks.

MEETING CONTENTS

A meeting was held with representatives of Con Edison to discuss their plans to request the Atomic Safety and Licensing Board for permission to load fuel and perform precritical testing at Indian Point Unit 2. They want to obtain our concurrence before petitioning the Board. Their basis for their request to load fuel is that it would expedite availability of the plant for power operation after a license is issued. They stated that their discussions with intervenors indicated that they might be neutral in regard to this request.

In response to our question as to what specific activities were contemplated they presented the following:

- Physically load the fuel and sources
- Replace pressure vessel head, couple drives, button up primary system
- Conduct precritical testing in fully borated condition at 2000 ppm boron concentration as below:
 - Control rod drive continuity testing
 - Control rod drop tests, hot and cold and no flow and full flow

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- Calibration of RDT's (hot)
- Internals vibration measurements
- Drive tests on moveable incore instrumentation
- Final check on primary system instrumentation

Con Edison also stated generally with some detail as to what systems instrumentation, and procedures and their status would in their view be required to perform the above operations. They indicated that plant systems would be functional in terms of specific procedures required to perform the above operations and the required systems would be kept isolated essentially by administrative control to prevent interaction with the unfinished plant. They concluded that there was no activity and no hazard.

Subsequent to further discussion it was requested that Con Edison provide in writing for our review additional information as follows:

- (1) What systems need to be complete and to what degree?
- (2) What systems will be completed?
- (3) What procedures are required?
- (4) What tests are to be performed?
- (5) What are the safety implications of fuel loading and precritical testing?
- (6) What is the schedule of construction and projected construction activity subsequent to fuel loading and what assurance of safety and security is there during this period?

Con Edison indicated that they would respond with a written report within a period of about two weeks.



Karl Kniel, Project Leader
PWR Projects Branch #1
Division of Reactor Licensing

Distribution:

Docket File

DRL Reading

PWR-1 Reading

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Compliance (4)

Branch Chiefs, DRL/DRS

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R. W. Klecker

CONSOLIDATED EDISON COMPANY (INDIAN POINT 2) -
 DOCKET NO. 50-247, RE: ADEQUACY OF THE
 SAFETY INJECTION SYSTEM ACCUMULATOR VALVES
 FOR THE SERVICE FOR WHICH THEY ARE INTENDED.

N. C. Moseley X
 Region I

Your memo, dated August 13, 1970, together with the CDNs for Peach Bottom and Vermont Yankee, dated June 9 and 11 respectively, prompted our memo (dated October 23, 1970) to DRS for a determination of the validity of MSS-SP66 for evaluating the adequacy of Class I valves.

DRS response to the four specific questions raised by CO is attached. Your specific concern as to the acceptable stress level to be used, is question number 2. While the response does not address itself specifically to the two stress intensities (5/8 yield and 90% yield) assigned by the tables in Section I of the ASME code, it is our understanding that DRS takes the position that since the higher values are assigned by the code specified by MSS-SP66, they are therefore acceptable to use in evaluating the pressure/temperature rating of valves in accordance with MSS-SP66.

Enclosure:

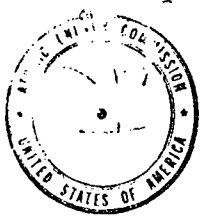
Ltr. E. G. Case to L.D. Low
 dts. 12/9/70 with attachment

cc: J. P. O'Reilly

J.P.O.

OFFICE ▶	CO	CO			
SURNAME ▶	DEWhitesell:nv	JBHenderson	J. B. Henderson		
DATE ▶	3/10/71			3/10/71	

M. Anderson - Co



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

DEC 9 1970

L. D. Low, Director
Division of Compliance

USE OF MSS-SP-66 FOR DESIGN OF REACTOR COOLANT SYSTEM VALVES

In response to the Division of Compliance's request (memo of October 23, 1970) concerning the acceptability of the use of MSS-SP-66 standard for the design of reactor coolant system valves, the Division of Reactor Standards has prepared the enclosed discussion and responses to your four questions.

Under the proposed AEC Codes and Standards rule (Part 50.55(a)), the use of MSS-SP-66 would not be acceptable for Class 1 valves in water coolant nuclear power plants, whose construction permit has been issued on or after January 1, 1971 without specific AEC approval. Reference to this valve standard is not included in the ASME Code for Pumps and Valves for Nuclear Power which would be adopted in the AEC Codes and Standard Rule.

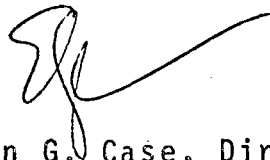
However, a recent ASME Code Case (1466) would permit the use of MSS-SP-66 valves for Class I applications when supplemented by a design analysis. Since the application of ASME Code Cases also would not be acceptable without specific AEC approval, the AEC Codes and Standards rule would require Commission authorization before Code Case 1466 could be applied in nuclear power plants whose construction permit had been issued on or after January 1, 1971.

L. D. Low, Director
Division of Compliance

USE OF MSS-SP-66 FOR DESIGN OF REACTOR COOLANT SYSTEM VALVES

DEC 9 1970

In the interim period until the AEC Codes and Standards rule is approved, we believe the recommendations discussed in our response to your questions and the procedure outlined in enclosed Appendix A, (which is based on comparison with the current rules in ASME Code for Pumps and Valves), should be used on an individual case basis for determining acceptability.



Edson G. Case, Director
Division of Reactor Standards

Enclosure:
Response to Questions and Information
on MSS-SP-66 dated October 23, 1970

cc w/encl.
P. A. Morris, DRL
A. Giambusso, CO
L. Kornblith, CO
J. Henderson, CO ←
D. Lange, DRS
K. Wichman, DRS
J. Knight, DRS

1. Is MSS-SP-66 an acceptable standard for design of large valves within the primary coolant system boundary?

Large valves designed in accordance with the MSS-SP-66 standard may be considered acceptable for use in the reactor coolant pressure boundary provided a comparative evaluation is made that is based on the pressure-temperature rating requirements specified in the current edition of the ASME Code for Pumps and Valves for Nuclear Power. These comparative evaluations would have to be made on an individual case by case basis because of the variations in valve designs among the supplier of such valves.

The rules of paragraph 452.1 b of the ASME Code for Pumps and Valves may be used to determine the design pressure-temperature rating of a non-standard pressure rated valve, provided the design conditions are specified and minimum wall thickness of the valve's pressure-containing body is known. An example of this procedure, (as applied to the case of the Vermont Yankee valves in question) is given in the enclosed Appendix A.

2. What are acceptable design stress levels for these valves?

The MSS-SP-66 standard (originally issued January 1964) requires that the stress used for the purpose of design comply with allowable stresses specified in the ASME Boiler and Pressure Vessel Code Section I for the valve material at design temperature.

However, the design formula contained in MSS-SP-66 contains a factor which, in effect, reduces the stresses of the Section I Code to 2/3 of the listed allowable stress.

For alloy steel valves, the pressure-temperature rating charts in ASME Code for Pumps and Valves are based on a primary service rating established by using a stress of 7000 psi. Because of the different procedures used in rating valves to the MSS-SP-66 standard and the USAS B16.5 standard, it is recommended that the pressure-temperature rating of valves be determined by the procedure outlined under 1. above.

3. If MSS-SP-66 is not an acceptable standard, what special tests are required to demonstrate acceptability of valves already manufactured to MSS-SP-66?

MSS-SP-66 valves should be given a hydrostatic test at pressures 1-1/2 times the pressure rating corresponding to a temperature of 100°F. This requirement corresponds to the hydrostatic test requirements specified in Tables 451 of the ASME Code for Pumps and Valves (Equivalent to USAS B16.5 Standard).

The calculated test pressure should be adjusted for the difference in design stress level used in an MSS-SP-66 valve and the stress level of 7000 psi as applied in the pressure-temperature rating tables 451 of ASME Code for Pumps and Valves.

4. Since MSS-SP-66 considers only stress levels in the valve body, what consideration must be given to valve bonnet attachments and to functional operability of the valves under design basis events such as LOCA?

The adequacy of MSS-SP-66 valve design from a stress standpoint should be determined on the basis of the satisfactory performance of the hydrotest in accordance with the requirements outlined in the response to Question 3. above.

With respect to functional operability, we understand that the valves in question for Vermont Yankee (e.g., valves in the recirculating loops), are not required to function in a ruptured loop in the event of a LOCA, except that at least one valve must be capable of automatic closure in any one of the unbroken loops. Functional testing of these valves in the installed system should be required. The Draft ASME Code for Inservice Testing of Valves in Nuclear Power Plants (PTC-34) dated June 1970 provides guidance testing requirements.

APPENDIX A

Procedure for Determining Acceptability of MSS-SP-66 Valves

Example -

Vermont Yankee - 24" Recirculation Loop Valves
2" Minimum Wall Thickness (t_d)

Design Conditions

P_d , pressure 1233 psig

T_d , temperature 575°F

Hydrotest-Conditions

P_t , = 2350 psia

T_t , = 100°F

Material

A 351 Grade CF8 (Type 304 Stainless Steel)

Allowable Stress - MSS-SP-66 Standard (Table PG-23.1

ASME Section I Code.) = 10950 (S_m)

Allowable Stress - USAS B16.5 standard (par. 6.1) and ASME Code
for Pumps & Valves (452.1 b) = 7000 psi

Valve Body Thickness adjustment from values listed in Table 452.1
of ASME Code for Pumps and Valves

For 900 lb rating - $2.59 (7000/10950) = 1.65 (t_{r_1})$

For 1500 lb. rating - $4.51 (7000/10950) = 2.88 (t_{r_2})$

Adjusted Pressure Rating

From Table 451.4 (900 lb. rating) at 575°F

Primary pressure rating, $P_{r_1} = 1167$ psig

From Table 451.5 (1500 lb. rating) at 575°F

Primary pressure rating $P_{r_2} = 1937$ psig

Interpolation of pressure ratings based on thickness of 2"

$$P_r = P_{r_1} + (t_d - t_{r_1}) / (t_{r_2} - t_{r_1}) \times (Pr_2 - Pr_1)$$
$$= 1167 + (2 - 1.65) / (2.88 - 1.65) \times (1937 - 1167) = 1386 \text{ psig at } 575^\circ\text{F}$$

These valves are acceptable for the specified design conditions.

Hydrotest Requirements

From Table 451.4 (900 lb. rating) at 100°F Primary pressure rating - 1850 psig

From Table 451.5 (1500 lb. rating) at 100°F primary pressure rating - 3085 psig

Interpolating pressure ratings based on 2" thickness

$$P_r = 1850 + (2-1.65)/(2.88-1.65) \times (3085 - 1167) = 2395 \text{ psig at } 100^\circ\text{F}$$

Hydrotest pressure

$$P_t = 1.5 P_r = 1.5 \times 2395 = 3600 \text{ psig}$$

Adjusting for difference in design stress levels

$$P_{\text{test}} = P_t \times \frac{7000}{S_m}$$
$$= 3600 \times (7000/10950) = 2350 \text{ psig}$$

The hydrotest pressure of 2350 psig is acceptable for these valves.