



July 31, 1992

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U. S. Nuclear Regulatory Commission
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Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NPF-6
Inservice Inspection Program Revisions

Gentlemen:

In letter dated January 12, 1990 (2CAN019005), Entergy Operations submitted the Second 10-Year Interval Inservice Inspection (ISI) Program for Arkansas Nuclear One, Unit 2 (ANO-2). The program was updated to the 1986 Edition of the ASME Code. In letter dated June 7, 1990 (2CNA069002), the Staff requested additional information and Entergy Operations provided ANO-2's response on January 15, 1991 (2CAN019103). The January 15, 1991 submittal included a complete revision to the ANO-2 ISI program.

On November 22, 1991 (2CNA119101), the NRC Staff issued the Safety Evaluation (SE) for the ANO-2 Second 10-Year ISI Program. In this letter the Staff requested that Entergy Operations provide a revised schedule for submitting the ISI program revisions as listed in Section 2.0 of the SE. In letter dated January 15, 1992 (2CAN019102), Entergy Operations committed to submit the required program revisions listed in Section 2.0 of the SE by July 31, 1992.

The purpose of this submittal is to provide the ANO-2 response to the NRC's request for additional information and to reissue the ANO-2 second ten-year ISI program in its entirety.

Request 1

Section 2.0 (a) of the NRC's SE requested the Program Plan be revised to include examinations of at least 7.5% of the Class 2 piping welds in the Containment Spray and Shutdown Cooling systems.

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Response to Request 1

Entergy Operations has modified the Program Plan by applying the 7.5% required Code sampling across the board for Class 2 piping systems regardless of the nominal wall thickness (NWT). All nonexempt Class 2 piping systems (i.e., Containment Spray, Shutdown Cooling, majority of Safety Injection) whose NWT is less than 3/8" are now treated in the same manner as those piping systems whose NWT is equal to or greater than 3/8 inch. This ensures the selection of a prorated equal share of these piping welds for examination.

As discussed in our January 15, 1992, letter the application of the Code in the modified manner discussed above is not in accordance with the actual Code requirements. Therefore, Entergy Operations has prepared a relief request to address the modified sampling selection philosophy adopted for Code Category C-F-1 piping systems at ANO-2. The relief request is provided in Attachment 1.

Request 2

Section 2.0 (b) of the NRC's SE requested the Program Plan to be revised to include augmented examinations in response to Branch Technical Position Paper MEB 3-1, "Postulated Rupture Locations in Fluid Systems Inside and Outside Containment" and IE Bulletin 79-17, "Pipe Cracks in Stagnant Borated Water Systems at PWR Plants", and USNRC Regulatory Guide 1.150, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination".

Response to Request 2

ANO-2 currently meets all of the requirements of MEB 3-1, Revision 0. However, ANO has reviewed the requirements of MEB 3-1, Revision 2 for applicability to ANO-2. In response, the current Code required examination sampling has been supplemented with the development of an augmented program to volumetrically examine all main run circumferential and longitudinal piping welds on both main steam headers from the containment penetrations to the first restraint just beyond the main steam block valves. The piping welds that comprise this augmented program have been distributed equally over the second 10-year inspection interval. Since break points are postulated outside containment on each of the Main Feedwater System piping lines at the containment penetrations, where the line is anchored by the flued head (terminal end), volumetric examinations for these piping lines is not required by MEB 3-1, Revision 2.

Entergy Operations believes that the intent of Bulletin 79-17 has been satisfied by folding its augmented requirements into the modified Code Category C-F-1 piping weld selection philosophy that has been adopted for piping systems with a NWT less than 3/8 inch. As stated by the NRC in a conference call on December 10, 1991, the concern for thin-wall piping (i.e., less than 3/8" NWT) is due to inside diameter (ID) degradation.

Entergy Operations stated in the conference call that because the concern is ID degradation, a surface examination would not accomplish the desired goal. Therefore, Entergy Operations concluded that only a volumetric examination should be performed on those piping welds selected for examination in piping systems whose NWT is less than 3/8 inch.

The concern of Bulletin 79-17 is also ID degradation (i.e., IGSCC) in stagnant borated water systems. A primary reason the bulletin required a volumetric examination is because ASME Section XI (1977, 1980, and 1983 Editions) could not be relied upon to detect this failure mechanism since it only mandated a surface examination for the subject piping. By applying the 7.5% sampling rate to all Class 2 piping systems regardless of NWT, which includes the piping systems of concern in the bulletin, and by performing a volumetric examination, the integrity of the piping will be ensured and the intent of the bulletin satisfied.

As noted in letter dated January 15, 1992, ANO-2 will utilize USNRC Regulatory Guide 1.150 in the ISI program. However, this Regulatory Guide in itself does not increase the scope of the ISI Program beyond the Code requirements. ANO-2 will comply with the Regulatory Guide in the performance of Reactor Vessel Examinations but considers this to be a matter of examination approach (e.g., near surface scanning) and not a true augmented program.

Request 3

Section 2.0 (c) of the NRC's SE requested clarification regarding the discrepancies between the "Itemized Weld List" and the "Summary of Examinations Table". As noted in letter dated January 15, 1992, in responding to the Staff's request for additional information, dated June 7, 1990, Entergy Operations completely revised the Second 10-Year ISI Program. The revised program was submitted to the Staff in letter dated January 15, 1991.

Response to Request 3

The response to this request was provided in our January 15, 1992 submittal. As discussed, additional C-F-2 welds have been selected to ensure that a minimum of 28 welds will be examined per Category C-F-2, Footnote (2) of Table IWC-2500-1.

Revised ANO Program Submittal

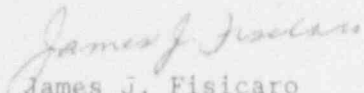
The attached ANO-2 ISI program is using a slightly modified computerized format which replaces the previous ANO-2 ISI Programs for the second 10-year interval. This new ISI program lists all components within the ASME Section XI Code boundaries. Components selected for augmented examination are identified in the "Remarks" column of the plan's examination tables.

ANO has further enhanced the program by conducting a review of all Class 1, 2, and 3 piping lines. This development of a "piping line list" was performed as a precursor to making the NRC requested program revisions. By reestablishing the piping line Code boundaries and factoring this information into the program, several piping lines have been added along with a few being removed. The determination of the safety function(s) (i.e., CHR, RHR, ECCS) of each piping line was of utmost importance in our review. This concept is consistent with the anticipated future change in Section XI toward Risk-Based Inspection Guidelines. ANO believes that this ensures a conservative program from both a Code and safety function perspective.

Attachment 2 contains the revised ANO-2 Second 10-year ISI Program which supercedes the previous ANO-2 ISI program submittals. This revision includes the two augmented programs, the additional C-F-2 welds, and the other changes described above and as discussed with the NRC Staff.

Should you have any questions regarding this issue, please contact me.

Very truly yours,


James J. Fisicaro
Director, Licensing

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Attachments

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Attachment 1

Relief Request 92-001

1986 ASME Section XI Code Edition Requirement

Footnote (2) of Table IWC-2500-1, Examination Category C-F-1, Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping

- (2) The welds selected for examination shall include 7.5%, but not less than 28 welds, of all austenitic stainless steel or high alloy welds not exempted by IWC-1220. (Some welds not exempted by IWC-1220 are not required to be nondestructively examined per Examination Category C-F-1. These welds, however, shall be included in the total weld count to which the 7.5% sampling rate is applied.) The examinations shall be distributed as follows:
- (a) the examinations shall be distributed among the Class 2 systems prorated, to the degree practicable, on the number of nonexempt austenitic stainless steel or high alloy welds in each system (i.e., if a system contains 30% of the nonexempt welds, then 30% of the nondestructive examinations required by Examination Category C-F-1 should be performed on that system);
 - (b) within a system, the examinations shall be distributed among terminal ends and structural discontinuities prorated, to the degree practicable, on the number of nonexempt terminal ends and structural discontinuities in that system; and
 - (c) within each system, examinations shall be distributed between line sizes prorated to the degree practicable.

Request

Selection of a flat 7.5% sampling of welds in Category C-F-1 piping systems whose nominal wall thickness (NWT) is equal to or greater than 3/8", instead of an adjusted higher percentage due to the influence of piping welds less than 3/8" NWT.

Explanation of Request

Code rules require that a 7.5% sampling rate be applied to all Category C-F-1 welds not exempted by IWC-1220. The total weld count to which the sampling rate is applied includes welds required to be examined (i.e., $\geq 3/8$ " NWT) and welds not required to be examined (i.e., $< 3/8$ " NWT). The total number of welds required to be examined are then distributed, in a prorated manner, among those systems requiring examination. Those piping welds less than 3/8" NWT, while not required to be examined, have an impact on the number of examinations required in system piping greater than or equal to 3/8" NWT.

For Arkansas Nuclear One, Unit 2, the piping in the Containment Spray System, Residual Heat Removal System, and the majority of the Safety Injection System has a NWT less than 3/8 inch. The NRC, in its Safety Evaluation of the ANO-2 Second Inspection Interval ISI Program Plan, has requested that ANO-2 select a 7.5% sampling of welds in these systems for volumetric examination. The NRC expressed a concern, in a December 10, 1991, conference call, regarding inside diameter (ID) degradation (IE Bulletin 79-17) in these systems. As also discussed in this conference call, if ANO-2 were to now select a 7.5% sampling of welds in these systems, ANO-2 would effectively be doubling its efforts, since these welds have already been factored into and significantly increased, the number of welds to be examined in those systems whose NWT is greater than or equal to 3/8 inch.

Therefore, ANO-2 has applied the 7.5% sampling rate across the board for Category C-F-1 piping regardless of NWT. This has ensured a prorated equal share of the examinations are distributed among system piping equal to or greater than 3/8" NWT and system piping less than 3/8" NWT. To accomplish this, ANO-2 has removed some of the previous weld examination selections in those systems greater than or equal to 3/8" NWT. A flat 7.5% sampling of the welds in these systems is now selected, instead of an adjusted higher percentage due to the influence of the piping welds less than 3/8" NWT.

Attachment 2

ANO-2 Second Ten-Year
Inservice Inspection
Program Revision