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Detroit Edison

10CFR50.55a

April 30, 2001
NRC-01-0038

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

References:
1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) NRC Letter to Gary L. Vine, Electric Power Research Institute, "Safety Evaluation Report Related to EPRI Risk-Informed Inservice Inspection Evaluation Procedure (EPRI TR-112657, Revision B, July 1999," dated October 28, 1999

3) NRC Letter to Carl Terry, BWRVIP Chairman, "Safety Evaluation of the BWRVIP Vessel and Internals Project, Technical Basis for Revisions to Generic Letter 88-01 Inspection Schedules (BWRVIP-75), EPRI Report TR-113932, October 1999 (TAC No. MA5012)," dated September 15, 2000

4) BWR Vessel and Internals Project, "Induction Heating Stress Improvement Effectiveness on Crack Growth in Operating Plants (BWRVIP-61)," EPRI Report TR-112076, January 1999

5) NRC Letter to Detroit Edison, "Fermi 2 – Relief Requests for the Second 10-Year Interval Inservice Inspection (ISI) Nondestructive Examination (NDE) Program (TAC No. MA6391)," dated March 30, 2000

A047

Subject: Submittal of Relief Request (RR-A30) for Applying the Risk-Informed Inservice Inspection Program Along with BWRVIP-75 Weld Examination Schedule

Pursuant to 10CFR50.55a(a)(3)(i), Detroit Edison hereby submits for NRC review and approval a proposed Risk-Informed Inservice Inspection (RI-ISI) program as an alternative to the American Society of Mechanical Engineers (ASME) Section XI inspection requirements for Class 1 piping.

Detroit Edison has developed the RI-ISI program for Fermi 2 in accordance with Electric Power Research Institute (EPRI) Topical Report TR-112657, Revision B-A, using the Nuclear Energy Institute (NEI) template methodology. The NRC acceptance of the EPRI TR-112657 report is discussed in Reference 2. The implementation of the RI-ISI program will result in a reduction in piping weld examinations, with an associated reduction in occupational radiation exposure and little or no change in risk to the public due to piping failure. Therefore, this request for relief is an alternative that provides an adequate level of quality and safety in accordance with 10CFR50.55a(a)(3)(i).

The second ISI interval for Fermi 2 began on February 17, 2000. Upon NRC approval of this request, Detroit Edison intends to perform weld examinations during the upcoming eighth refueling outage (RFO8) in accordance with the RI-ISI program.

The Enclosure to this letter provides the proposed RI-ISI program. As discussed verbally with the NRC staff and as described in the Enclosure, Detroit Edison plans to concurrently implement the guidance in Boiling Water Reactor Vessel and Internals Project (BWRVIP) Report No. 75 with the implementation of the RI-ISI program. BWRVIP-75 provides an alternative criteria to NRC Generic Letter 88-01 requirements for the examination of welds subject to Intergranular Stress Corrosion Cracking (IGSCC). The NRC acceptance of the BWRVIP-75 report is discussed in Reference 3.

The Fermi 2 Class 1 piping boundary subject to RI-ISI or augmented inspection requirements includes only Category A and B welds. As delineated in the Enclosure to this letter, Category A welds will be examined in accordance with the RI-ISI program. For Category B welds, Reference 3 indicates that the BWRVIP-75 inspection criteria for Normal Water Chemistry (NWC) may be applied if the plant complies with the recommendations of Reference 4. Fermi 2 has properly applied Induction Heating Stress Improvement (IHSI) and Ultrasonic (UT) examination techniques as described in Reference 3. Additionally, moderate Hydrogen Water Chemistry (HWC) is being used; however, Detroit Edison will maintain augmented weld inspection at 25% every 10 years until effective HWC has been demonstrated.

Detroit Edison requests the approval of this request by August 31, 2001 to allow for implementation of the RI-ISI program along with the augmented inspection guidance provided in BWRVIP-75 during the upcoming RFO8, currently planned to start on October 26, 2001.

In addition, upon approval of this request, Fermi 2 Relief Requests Number RR-A23 "Class 1 Pressure Retaining Piping Weld Coverage Limitations" and RR-A29 "Austenitic Stainless Steel Coolant Piping Weld Sample Expansion," approved by the NRC in Reference 5, will no longer be required and are; therefore, withdrawn.

Should you have any questions or require additional information, please contact Mr. Norman K. Peterson of my staff at (734) 586-4258.

Sincerely

P. Fessler

Enclosure

cc: M. A. Ring
M. A. Shuaibi
NRC Resident Office
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

ENCLOSURE TO
NRC-01-0038

FERMI 2 DOCKET NO. 50-341
NRC LICENSE NO. NPF-43

RISK-INFORMED INSERVICE INSPECTION (RI-ISI) PROGRAM PLAN
RELIEF REQUEST (RR-A30)
[24 Pages]

RISK-INFORMED INSERVICE INSPECTION PROGRAM PLAN

FERMI NUCLEAR POWER PLANT, UNIT 2

Table of Contents

1. INTRODUCTION

The Fermi Nuclear Power Plant Unit 2 (Fermi 2) is currently in the second inservice inspection (ISI) interval as defined by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Section XI Code for Inspection Program B. The second ISI interval for Fermi 2 commenced on February 17, 2000. Pursuant to 10 CFR 50.55a(g)(4)(ii), the applicable ASME Section XI Code for the second ISI interval is the 1989 Edition, no Addenda.

The objective of this submittal is to request a change to the ISI Program for Class 1 piping through the use of a risk-informed inservice inspection (RI-ISI) program. The RI-ISI process used in this submittal is described in Electric Power Research Institute (EPRI) Topical Report (TR) 112657 Rev. B-A "Revised Risk-Informed Inservice Inspection Evaluation Procedure." The RI-ISI application was also conducted in a manner consistent with ASME Code Case N-578 "Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method B."

1.1 Relation to NRC Regulatory Guides 1.174 and 1.178

As a risk-informed application, this submittal meets the intent and principles of Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis" and Regulatory Guide 1.178, "An Approach for Plant-Specific Risk-Informed Decisionmaking Inservice Inspection of Piping". Further information is provided in Section 3.6.2 relative to defense-in-depth.

1.2 PSA Quality

The Fermi 2 Level 1 and Level 2 Individual Plant Examination (IPE) results were used to evaluate the consequences of pipe ruptures for the RI-ISI assessment during power operation. The base IPE Core Damage Frequency (CDF) is 5.7E-6 events per year and the base IPE Large Early Release Frequency (LERF) is 8.0E-7 events per year. The Probabilistic Safety Assessment (PSA) model update history is discussed below, and no changes to the risk-informed Class 1 piping ISI consequence conclusions are anticipated from planned PSA model revisions.

The NRC review of the Fermi 2 IPE was issued in November 1994. The Staff Evaluation Report (SER) concluded the following regarding the Fermi 2 IPE:

- The IPE is complete with respect to the information requested in Generic Letter 88-20 and associated Supplement 1;
- The IPE analytical approach is technically sound and capable of identifying plant-specific vulnerabilities;
- the IPE had been peer-reviewed;
- the IPE specifically evaluated the Fermi 2 decay heat removal functions for vulnerabilities;
- Fermi 2 had responded appropriately to the Containment Performance Improvement program recommendations.

The NRC's SER noted that the IPE had identified a potential plant improvement for modifying site operating procedures to specifically address a single division loss of power. This action has been implemented.

The Fermi 2 Level 1 PSA model (IPE95) was revised in 1995 to accommodate software upgrades and to incorporate plant modifications since the IPE. This model was utilized to support a risk-informed emergency diesel generator extended out of service time (submitted 1995, approved 1998). Fermi's Level 1 risk model (PSA97C approved 1997) reflected an increased unavailability from the IPE assumptions as Fermi 2 capacity factor increased and more system outage work was planned on-line within limits of PSA guidance. This resulted in the minor increase in CDF from 5.7E-6 to 7.1E-6 events per year. In 1997, a Boiling Water Reactor Owner's Group (BWROG) PSA Peer Certification Review was performed on the updated model PSA97C. The following is a brief summary from the Fermi 2 PSA Peer Review Report:

> "All of the PSA elements identified as part of the peer review were included in the scope of the PSA. In terms of the overall assessment of each element, all were consistently graded as sufficient to support applications requiring a sound risk ranking process and several elements were sufficient to be used for a risk-significance determination supported by deterministic risk insights."

The consequence evaluation was reviewed versus the 97PSA update. No changes in the consequence rank assignment or in the delta risk evaluation were identified in that review, as presented in the memo to file referenced as NFGE-01-0008.

2. PROPOSED ALTERNATIVE TO CURRENT ISI PROGRAM REQUIREMENTS

2.1 ASME Section XI

ASME Section XI Examination Categories B-F and B-J currently contain the requirements for the nondestructive examination (NDE) of Class 1 piping components. The alternative RI-ISI program for piping is described in EPRI TR-112657. The RI-ISI program will be substituted for the current program for Class 1 piping (Examination Categories B-F and B-J) in accordance with 10 CFR 50.55a(a)(3)(i) by alternatively providing an acceptable level of quality and safety. Other non-related portions of the ASME Section XI Code will be unaffected. EPRI TR-112657 provides the requirements for defining the relationship between the RI-ISI program and the remaining unaffected portions of ASME Section XI.

2.2 Augmented Programs

The following augmented inspection program was considered during the RI-ISI application:

- Fermi 2 has informed the NRC of their intent to implement the guidance contained in BWR Vessel and Internals Project Report No. BWRVIP-75. BWRVIP-75 provides alternative criteria to NRC Generic Letter 88-01 for the examination of welds subject to intergranular stress corrosion cracking (IGSCC). BWRVIP-75 will be implemented concurrently with the RI-ISI Program for the examination of Class 1 welds that are subject to IGSCC. Both Generic Letter 88-01 and BWRVIP-75 specify examination extent and frequency requirements for austenitic stainless steel welds that are classified as Categories "A" through "G", depending on their susceptibility to IGSCC. In accordance with EPRI TR-112657, piping welds identified as Category "A" are considered resistant to IGSCC, and, as such are assigned a low failure potential provided no other damage mechanisms are present. The augmented inspection program for the other piping welds subject to IGSCC (i.e., Category "B") is unaffected by the RI-ISI program and will be conducted in accordance with the recommendations in BWRVIP-75.

3. RISK-INFORMED ISI PROCESS

The process used to develop the RI-ISI program conformed to the methodology described in EPRI TR-112657 and consisted of the following steps:

- Scope Definition
- Consequence Evaluation
- Failure Potential Assessment
- Risk Characterization
- Element and NDE Selection
- Risk Impact Assessment
- Implementation Program
- Feedback Loop

A deviation to the EPRI RI-ISI methodology has been implemented in the failure potential assessment for Fermi 2. Table 3-16 of EPRI TR-112657 contains criteria for assessing the potential for thermal stratification, cycling and striping (TASCS). Key attributes for horizontal or slightly sloped piping greater than 1" nominal pipe size (NPS) include:

1. Potential exists for low flow in a pipe section connected to a component allowing mixing of hot and cold fluids, or
2. Potential exists for leakage flow past a valve, including in-leakage, out-leakage and cross-leakage allowing mixing of hot and cold fluids, or
3. Potential exists for convective heating in dead-ended pipe sections connected to a source of hot fluid, or
4. Potential exists for two phase (steam/water) flow, or
5. Potential exists for turbulent penetration into a relatively colder branch pipe connected to header piping containing hot fluid with turbulent flow,

And

$\Delta T > 50^{\circ}F$,

And

Richardson Number > 4 (*this value predicts the potential buoyancy of a stratified flow*)

These criteria, based on meeting a high cycle fatigue endurance limit with the actual ΔT assumed equal to the greatest potential ΔT for the transient, will identify all locations where stratification is likely to occur, but allows for no assessment of severity. As such, many locations will be identified as subject to TASCS where no significant potential for thermal fatigue exists. The critical attribute missing from the existing methodology that would allow consideration of fatigue severity is a criterion that addresses the potential for fluid cycling. The impact of this additional consideration on the existing TASCS susceptibility criteria is presented below.

- **Turbulent penetration TASCS**

  Turbulent penetration typically occurs in lines connected to piping containing hot flowing fluid. In the case of downward sloping lines that then turn horizontal, significant top-to-bottom cyclic ΔTs can develop in the horizontal sections if the horizontal section is less than about 25 pipe diameters from the reactor coolant piping. Therefore, TASCS is considered for this configuration.

  For upward sloping branch lines connected to the hot fluid source that turn horizontal or in horizontal branch lines, natural convective effects combined with effects of turbulence penetration will keep the line filled with hot water. If there is no potential for in-leakage towards the hot fluid source from the outboard end of the line, this will result in a well-mixed fluid condition where significant top-to-bottom ΔTs will not occur. Therefore TASCS is not considered for these configurations. Even in fairly long lines, where some heat loss from the outside of the piping will tend to occur and some fluid stratification may be present, there is no significant potential for cycling as has been observed for the in-leakage case. The effect of TASCS will not be significant under these conditions and can be neglected.

- **Low flow TASCS**

  In some situations, the transient startup of a system (e.g., RHR suction piping) creates the potential for fluid stratification as flow is established. In cases where no cold fluid source exists, the hot flowing fluid will fairly rapidly displace the cold fluid in stagnant lines, while fluid mixing will occur in the piping further removed from the hot source and stratified conditions will exist only briefly as the line fills with hot fluid. As such, since the situation is transient in nature, it can be assumed that the criteria for thermal transients (TT) will govern.

- **Valve leakage TASCS**

  Sometimes a very small leakage flow of hot water can occur outward past a valve into a line that is relatively colder, creating a significant temperature difference. However, since this is a generally a "steady-state" phenomenon with no potential for cyclic temperature changes, the effect of TASCS is not significant and can be neglected.

- **Convection heating TASCS**

  Similarly, there sometimes exists the potential for heat transfer across a valve to an isolated section beyond the valve, resulting in fluid stratification due to natural convection. However, since there is no potential for cyclic temperature changes in this case, the effect of TASCS is not significant and can be neglected.

In summary, these additional considerations for determining the potential for thermal fatigue as a result of the effects of TASCS provide an allowance for the consideration of cycle severity in assessing the potential for TASCS effects. The above criteria has previously been submitted by EPRI for generic approval (Letter dated February 28, 2001, P.J. O'Regan (EPRI) to Dr. B. Sheron (USNRC), "Extension of Risk-Informed Inservice Inspection Methodology").

3.1 Scope of Program

The systems included in the RI-ISI program are provided in Table 3.1. The piping and instrumentation diagrams and additional plant information including the existing plant ISI program, were used to define the Class 1 piping system boundaries.

3.2 Consequence Evaluation

The consequence(s) of pressure boundary failures were evaluated and ranked based on their impact on core damage and containment performance (i.e., isolation, bypass and large, early release). The impact on these measures due to both direct and indirect effects was considered using the guidance provided in EPRI TR-112657.

3.3 Failure Potential Assessment

Failure potential estimates were generated utilizing industry failure history, plant specific failure history, and other relevant information. These failure estimates were determined using the guidance provided in EPRI TR-112657, with the exception of the previously stated deviation.

Table 3.3 summarizes the failure potential assessment by system for each degradation mechanism that was identified as potentially operative.

3.4 Risk Characterization

In the preceding steps, each run of piping within the scope of the program was evaluated to determine its impact on core damage and containment performance (i.e., isolation, bypass and large early release) as well as its potential for failure. Given the results of these steps, piping segments are then defined as continuous runs of piping potentially susceptible to the same type(s) of degradation and whose failure will result in similar consequence(s). Segments are then ranked based upon their risk significance as defined in EPRI TR-112657.

The results of these calculations are presented in Table 3.4.

3.5 Element and NDE Selection

In general, EPRI TR-112657 requires that 25% of the locations in the high risk region and 10% of the locations in the medium risk region be selected for inspection using appropriate NDE methods tailored to the applicable degradation mechanism. In addition, per Section 3.6.4.2 of EPRI TR-112657, if the percentage of Class 1 piping locations selected for examination falls substantially below 10%, then the basis for selection needs to be investigated. As depicted in the table at the end of this section, the percentage of Class 1 welds selected for examination per the RI-ISI process is greater than 10% for Fermi 2. It should be noted that the 10% figure was achieved based on welds that are subject to volumetric examination rather than just a VT-2 visual examination. In addition, as stated in TR-112657, the augmented IGSCC inspection program provides the means to effectively manage this mechanism. No additional credit was taken for any IGSCC augmented inspection program locations beyond those selected by the RI-ISI process to meet the sampling percentage requirements.

A brief summary is provided below, and the results of the selection are presented in Table 3.5. Section 4 of EPRI TR-112657 was used as guidance in determining the examination requirements for these locations.

Unit	Class 1 Piping Welds[1]	
	Total Number of Welds	RI-ISI Program Selections
2	587	66

Notes

1. Includes all Category B-F and B-J locations. All in-scope piping components, regardless of risk classification, will continue to receive Code required pressure testing, as part of the current ASME Section XI program. VT-2 visual examinations are scheduled in accordance with the station's pressure test program that remains unaffected by the RI-ISI program.

3.5.1 Additional Examinations

The RI-ISI program in all cases will determine through an engineering evaluation the root cause of any unacceptable flaw or relevant condition found during examination. The evaluation will include the applicable service conditions and degradation mechanisms to establish that the element(s) will still perform their intended safety function during subsequent operation. Elements not meeting this requirement will be repaired or replaced.

The evaluation will include whether other elements in the segment or additional segments are subject to the same root cause conditions. Additional examinations will be performed on these elements up to a number equivalent to the number of elements required to be inspected on the segment or segments initially. If unacceptable flaws or relevant conditions are again found similar to the initial problem, the remaining elements identified as susceptible will be examined. No additional examinations will be performed if there are no additional elements identified as being susceptible to the same root cause conditions.

3.5.2 Program Relief Requests

An attempt has been made to select RI-ISI locations for examination such that a minimum of >90% coverage (i.e., Code Case N-460 criteria) is attainable. However, some limitations will not be known until the examination is performed, since some locations may be examined for the first time by the specified techniques.

It is expected that all the RI-ISI examination locations that have been selected provide >90% coverage. In instances where locations are found at the time of the examination that do not meet the >90% coverage requirement, the process outlined in EPRI TR-112657 will be followed.

The relief requests in the following tables can be withdrawn for the reasons provided in the table, with all other relief requests remaining in place.

Relief Request	Brief Description and Basis for Withdrawal
RR-A23	Relief Request RR-A23 addresses limited examination coverage on welds that were formerly selected for examination in the ASME Section XI ISI Program, but are not selected for examination in the RI-ISI Program. As such, Relief Request RR-A23 is no longer needed, and is being withdrawn.
RR-A29	In Relief Request RR-A29, Fermi 2 commits to using the additional examination criteria of Generic Letter 88-01 as an alternative to ASME Section XI, paragraph IWB-2430, for Class 1 welds subject to IGSCC. Once the RI-ISI Program is approved, the examination requirements for IGSCC Category "A" welds, including additional examinations, will be in accordance with the RI-ISI Program. Since Fermi 2 is implementing BWRVIP-75 criteria as an alternative to Generic Letter 88-01 for IGSCC Category "B" through "G" welds, the additional examination requirements for those welds will be in accordance with BWRVIP-75. As such, Relief Request RR-A29 is no longer needed, and is being withdrawn.

3.6 Risk Impact Assessment

The RI-ISI program has been conducted in accordance with Regulatory Guide 1.174 and the requirements of EPRI TR-112657, and the risk from implementation of this program is expected to remain neutral or decrease when compared to that estimated from current requirements.

This evaluation identified the allocation of segments into High, Medium, and Low risk regions of the EPRI TR-112657 and ASME Code Case N-578 risk ranking matrix, and then determined for each of these risk classes what inspection changes are proposed for each of the locations in each segment. The changes include changing the number and location of inspections within the segment and in many cases improving the effectiveness of the inspection to account for the findings of the RI-ISI degradation mechanism assessment. For example, for locations subject to thermal fatigue, examinations will be conducted on an expanded volume and will be focused to enhance the probability of detection (POD) during the inspection process.

3.6.1 Quantitative Analysis

Limits are imposed by the EPRI methodology to ensure that the change in risk of implementing the RI-ISI program meets the requirements of Regulatory Guides 1.174 and 1.178. The EPRI criterion requires that the cumulative change in core damage frequency (CDF) and large early release frequency (LERF) be less than 1E-07 and 1E-08 per year per system, respectively.

Fermi 2 conducted a risk impact analysis per the requirements of Section 3.7 of EPRI TR-112657. The analysis estimates the net change in risk due to the positive and negative influence of adding and removing locations from the inspection program. A risk quantification was performed using the "Simplified Risk Quantification Method" described in Section 3.7 of EPRI TR-112657. The conditional core damage probability (CCDP) and conditional large early release probability (CLERP) used for high consequence category segments was based on the highest evaluated CCDP (5E-03) and CLERP (5E-03), whereas, for medium consequence category segments, bounding estimates of CCDP (1E-04) and CLERP (1E-05) were used. The likelihood of pressure boundary failure (PBF) is determined by the presence of different degradation mechanisms and the rank is based on the relative failure probability. The basic likelihood of PBF for a piping location with no degradation mechanism present is given as x_o and is expected to have a value less than 1E-08. Piping locations identified as medium failure potential have a likelihood of $20x_o$. These PBF likelihoods are consistent with References 9 and 14 of EPRI TR-112657. In addition, the analysis was performed both with and without taking credit for enhanced inspection effectiveness due to an increased POD from application of the RI-ISI approach.

Tables 3.6-1 presents a summary of the RI-ISI program versus 1989 ASME Section XI Code Edition program requirements and identifies on a per system basis each applicable risk category. The presence of IGSCC was adjusted for in the performance of the quantitative analysis by excluding its impact on the risk ranking. However, in an effort to be as informative as possible, for those systems where IGSCC is present, Table 3.6-1 presents the information in such a manner as to depict what the resultant risk categorization is both with and without consideration of IGSCC. This is accomplished by enclosing the IGSCC damage mechanism, as well as all other resultant corresponding changes (failure potential rank, risk category and risk rank), in parenthesis. Again, this has only been done for information purposes, and has no impact on the assessment itself. The use of this approach to depict the impact of degradation mechanisms managed by augmented inspection programs on the risk categorization is consistent with that used in the delta risk assessment for the Arkansas Nuclear One, Unit 2 pilot application. An example is provided below:

System	Risk		Consequence Rank	Failure Potential	
	Category	Rank[1]		DMs	Rank
RCR	4 (2)	Medium (High)	High	None (IGSCC)	Low (Medium)

In this example if IGSCC is not considered, the failure potential rank is "low" instead of "medium". When a "low" failure potential rank is combined with a "high" consequence rank, it results in risk category 4 ("medium" risk) being assigned instead of risk category 2 ("high" risk).

In this example if IGSCC were considered, the failure potential rank would be "medium" instead of "low". If a "medium" failure potential rank were combined with a "high" consequence rank, it would result in risk category 2 ("high" risk) being assigned instead of risk category 4 ("medium" risk).

Note

1. The risk rank is not included in Table 3.6 but it is included in Table 5-2.

As indicated in the following table, this evaluation has demonstrated that unacceptable risk impacts will not occur from implementation of the RI-ISI program, and satisfies the acceptance criteria of Regulatory Guide 1.174 and EPRI TR-112657.

Risk Impact Results

System[1]	$\Delta Risk_{CDF}$		$\Delta Risk_{LERF}$	
	w/ POD	w/o POD	w/ POD	w/o POD
RPV	negligible	negligible	negligible	negligible
CRD	no change	no change	no change	no change
JPI	7.50E-11	7.50E-11	7.50E-11	7.50E-11
MS	9.75E-10	9.75E-10	9.75E-10	9.75E-10
RCR	4.10E-09	4.10E-09	4.10E-09	4.10E-09
RHR	2.25E-10	2.25E-10	2.25E-10	2.25E-10
CS	6.50E-10	6.50E-10	6.50E-10	6.50E-10
HPCI	2.50E-11	2.50E-11	2.50E-11	2.50E-11
RCIC	negligible	negligible	negligible	negligible
RWCU	1.25E-10	1.25E-10	1.25E-10	1.25E-10
FW	-4.78E-09	8.25E-10	-4.78E-09	8.25E-10
Total	**1.40E-09**	**7.00E-09**	**1.40E-09**	**7.00E-09**

Note

1. Systems are described in Table 3.1.

3.6.2 Defense-in-Depth

The intent of the inspections mandated by ASME Section XI for piping welds is to identify conditions such as flaws or indications that may be precursors to leaks or ruptures in a system's pressure boundary. Currently, the process for picking inspection locations is based upon structural discontinuity and stress analysis results. As depicted in ASME White Paper 92-01-01 Rev. 1, "Evaluation of Inservice Inspection Requirements for Class 1, Category B-J Pressure Retaining Welds," this method has been ineffective in identifying leaks or failures. EPRI TR-112657 and Code Case N-578 provide a more robust selection process founded on actual service experience with nuclear plant piping failure data.

This process has two key independent ingredients, that is, a determination of each location's susceptibility to degradation and secondly, an independent assessment of the consequence of the piping failure. These two ingredients assure defense-in-depth is maintained. First, by evaluating a location's susceptibility to degradation, the likelihood of finding flaws or indications that may be precursors to leak or ruptures is increased. Secondly, the consequence assessment effort has a single failure criterion. As such, no matter how unlikely a failure scenario is, it is ranked High in the consequence assessment, and at worst Medium in the risk assessment (i.e., Risk Category 4), if as a result of the failure there is no mitigative equipment available to respond to the event. In addition, the consequence assessment takes into account equipment reliability, and less credit is given to less reliable equipment.

All locations within the reactor coolant pressure boundary will continue to receive a system pressure test and visual VT-2 examination as currently required by the Code regardless of its risk classification.

4. IMPLEMENTATION AND MONITORING PROGRAM

Upon approval of the RI-ISI program, procedures that comply with the guidelines described in EPRI TR-112657 will be prepared to implement and monitor the program. The new program will be integrated into the second inservice inspection interval. No changes to the Updated Final Safety Analysis Report are necessary for program implementation.

The applicable aspects of the ASME Code not affected by this change will be retained, such as inspection methods, acceptance guidelines, pressure testing, corrective measures, documentation requirements, and quality control requirements. Existing ASME Section XI program implementing procedures will be retained and modified to address the RI-ISI process, as appropriate.

The monitoring and corrective action program will contain the following elements:

A. Identify

B. Characterize

C. (1) Evaluate, determine the cause and extent of the condition identified

   (2) Evaluate, develop a corrective action plan or plans

D. Decide

E. Implement

F. Monitor

G. Trend

The RI-ISI program is a living program requiring feedback of new relevant information to ensure the appropriate identification of high safety significant piping locations. As a minimum, risk ranking of piping segments will be reviewed and adjusted on an ASME period basis. In addition, significant changes may require more frequent adjustment as directed by NRC Bulletin or Generic Letter requirements, or by industry and plant specific feedback.

5. PROPOSED ISI PROGRAM PLAN CHANGE

A comparison between the RI-ISI program and ASME Section XI Code program requirements for in-scope piping is provided in Tables 5-1 and 5-2. Table 5-1 provides summary comparisons by risk region. Table 5-2 provides the same comparison information, but in a more detailed manner by risk category, similar to the format used in Table 3.6.

Fermi 2 is currently in the first period of its second inservice inspection interval. As such, 100% of the required RI-ISI program inspections will be completed in the second interval using methods specific to the degradation mechanisms assigned. Examinations will be performed during the interval such that the period examination percentage requirements of ASME Section XI, paragraph IWB-2412 are met.

6. REFERENCES/DOCUMENTATION

EPRI TR-112657, "Revised Risk-Informed Inservice Inspection Evaluation Procedure", Rev. B-A

ASME Code Case N-578, "Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method B, Section XI, Division 1"

Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis"

Regulatory Guide 1.178, "An Approach for Plant-Specific Risk-Informed Decisionmaking Inservice Inspection of Piping"

Supporting Onsite Documentation

Duke Engineering and Services, “Risk-Informed Inservice Inspection Consequence Evaluation of Class 1 Piping, Fermi 2 Nuclear Power Plant,” Rev. 0, March 2001

Calculation Number EPRI-156-310, "Degradation Mechanisms Evaluation for Class 1 Piping Welds at Fermi 2," Rev. 0, March 30, 2001

Electric Power Research Institute, "Fermi 2 Risk Ranking Summary, Matrix and Report," Rev. 0, March 30, 2001

Record of Conversation No. ROC-001, "Minutes of the Element Selection Meeting for the Risk-Informed ISI Project at the Fermi 2 Nuclear Power Plant," dated March 2, 2001

Duke Engineering and Services Memorandum, "Risk Impact Analysis for Fermi 2," Rev. 0, March 30, 2001

Fermi 2 ISI Evaluation 01-018, “Service History Review for Fermi 2,” Rev. 0, April 9, 2001

Duke Engineering and Services Memorandum, “Impact of Fermi PSA97 Update on the RI-ISI Consequence Evaluation,” NFGE-01-0008, dated April 27, 2001

Table 3.1

System Selection and Segment / Element Definition

System Description	Number of Segments	Number of Elements
RPV -- Reactor Pressure Vessel	3	3
CRD -- Control Rod Drive	1	1
JPI -- Jet Pump Instrumentation	2	4
MS -- Main Steam	12	113
RCR -- Reactor Coolant Recirculation	70	121
RHR -- Residual Heat Removal	14	74
CS -- Core Spray	12	46
HPCI -- High Pressure Coolant Injection	3	14
RCIC -- Reactor Core Isolation Cooling	3	16
RWCU -- Reactor Water Clean-Up	8	72
FW -- Feedwater	29	123
Totals	**157**	**587**

Table 3.3

Failure Potential Assessment Summary

System[(1)]	Thermal Fatigue		Stress Corrosion Cracking				Localized Corrosion			Flow Sensitive	
	TASCS	TT	IGSCC	TGSCC	ECSCC	PWSCC	MIC	PIT	CC	E-C	FAC
RPV											
CRD			X								
JPI			X								
MS											
RCR			X						X		
RHR			X								
CS			X						X		
HPCI											
RCIC											
RWCU			X								
FW	X								X		

Note

1. Systems are described in Table 3.1.

Table 3.4

Number of Segments by Risk Category With and Without Impact of IGSCC

System[1]	High Risk Region						Medium Risk Region				Low Risk Region			
	Category 1		Category 2		Category 3		Category 4		Category 5		Category 6		Category 7	
	With	Without	With	Without	With	Without	With	Without	With	Without	With	Without	With	Without
RPV											3	3		
CRD			1[2]	0			0	1						
JPI			2[3]	0			0	2						
MS							8	8			4	4		
RCR			48[4]	10			22	60						
RHR			3[5]	0			6	10			4	4		
CS			4[6]	2			6	8			2	2		
HPCI							2	2			1	1		
RCIC							2	2			1	1		
RWCU			2[7]	0			5	7			1	1		
FW			14	14			12	12			3	3		
Total			**74**	**26**			**64**	**112**			**19**	**19**		

Notes

1. Systems are described in Table 3.1.
2. This one segment becomes Category 4 after IGSCC is removed from consideration due to no other damage mechanisms being present.
3. These two segments become Category 4 after IGSCC is removed from consideration due to no other damage mechanisms being present.
4. Of these forty-eight segments, thirty-eight segments become Category 4 after IGSCC is removed from consideration due to no other damage mechanisms being present.
5. These three segments become Category 4 after IGSCC is removed from consideration due to no other damage mechanisms being present.
6. Of these four segments, two segments become Category 4 after IGSCC is removed from consideration due to no other damage mechanisms being present.
7. These two segments become Category 4 after IGSCC is removed from consideration due to no other damage mechanisms being present.

Table 3.5 Number of Elements Selected for Inspection by Risk Category Excluding Impact of IGSCC														
System[1]	**High Risk Region**						**Medium Risk Region**				**Low Risk Region**			
	Category 1		**Category 2**		**Category 3**		**Category 4**		**Category 5**		**Category 6**		**Category 7**	
	Total	**Selected**	**Total**	**Selected**	**Total**	**Selected**	**Total**	**Selected**	**Total**	**Selected**	**Total**	**Selected**	**Total**	**Selected**
RPV											3	0		
CRD							1	1[2]						
JPI							4	1[3]						
MS							105	11			8	0		
RCR			10	3[4]			111	12[5]						
RHR							28	4[6]			46	0		
CS			2	1[7]			26	4[8]			18	0		
HPCI							12	2			2	0		
RCIC							14	2			2	0		
RWCU							61	7[9]			11	0		
FW			35	9			82	9			6	0		
Total			**47**	**13**			**444**	**53**			**96**	**0**		

Notes

1. Systems are described in Table 3.1.
2. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
3. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
4. These three welds were selected for examination by both the IGSCC Program and the RI-ISI Program. Since crevice corrosion was identified along with IGSCC as a potential damage mechanism for these welds, the examinations will include the requirements identified in EPRI TR-112657 for crevice corrosion examinations in order to be credited for both the IGSCC and RI-ISI Programs.
5. Eight of these twelve welds were selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for these welds, the IGSCC examination will be credited toward both programs.

Notes for Table 3.5 (cont'd)

6. One of these four welds was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
7. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since crevice corrosion was identified along with IGSCC as a potential damage mechanism for this weld, the examination will include the requirements identified in EPRI TR-112657 for crevice corrosion examinations in order to be credited for both the IGSCC and RI-ISI Programs.
8. One of these four welds was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
9. One of these seven welds was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.

Table 3.6-1

Risk Impact Analysis Results

System(1)	Category	Consequence Rank	Failure Potential		Inspections			CDF Impact(4)		LERF Impact(4)	
			DMs	Rank	Section XI(2)	RI-ISI(3)	Delta	w/ POD	w/o POD	w/ POD	w/o POD
RPV	6	Medium	None	Low	3	0	-3	negligible	negligible	negligible	negligible
RPV Total								**negligible**	**negligible**	**negligible**	**negligible**
CRD	4 (2)	High	None (IGSCC)	Low (Medium)	1	1	0	no change	no change	no change	no change
CRD Total								**no change**	**no change**	**no change**	**no change**
JPI	4 (2)	High	None (IGSCC)	Low (Medium)	4	1	-3	7.50E-11	7.50E-11	7.50E-11	7.50E-11
JPI Total								**7.50E-11**	**7.50E-11**	**7.50E-11**	**7.50E-11**
MS	4	High	None	Low	50	11	-39	9.75E-10	9.75E-10	9.75E-10	9.75E-10
MS	6	Medium	None	Low	1	0	-1	negligible	negligible	negligible	negligible
MS Total								**9.75E-10**	**9.75E-10**	**9.75E-10**	**9.75E-10**
RCR	2 (2)	High	CC, (IGSCC)	Medium (Medium)	10	3	-7	3.50E-09	3.50E-09	3.50E-09	3.50E-09
RCR	4 (2)	High	None (IGSCC)	Low (Medium)	27	8	-19	4.75E-10	4.75E-10	4.75E-10	4.75E-10
RCR	4	High	None	Low	9	4	-5	1.25E-10	1.25E-10	1.25E-10	1.25E-10
RCR Total								**4.10E-09**	**4.10E-09**	**4.10E-09**	**4.10E-09**
RHR	4 (2)	High	None (IGSCC)	Low (Medium)	6	1	-5	1.25E-10	1.25E-10	1.25E-10	1.25E-10
RHR	4	High	None	Low	7	3	-4	1.00E-10	1.00E-10	1.00E-10	1.00E-10
RHR	6	Medium	None	Low	8	0	-8	negligible	negligible	negligible	negligible
RHR Total								**2.25E-10**	**2.25E-10**	**2.25E-10**	**2.25E-10**
CS	2 (2)	High	CC, (IGSCC)	Medium (Medium)	2	1	-1	5.00E-10	5.00E-10	5.00E-10	5.00E-10
CS	4 (2)	High	None (IGSCC)	Low (Medium)	2	1	-1	2.50E-11	2.50E-11	2.50E-11	2.50E-11
CS	4	High	None	Low	8	3	-5	1.25E-10	1.25E-10	1.25E-10	1.25E-10
CS	6	Medium	None	Low	0	0	0	no change	no change	no change	no change
CS Total								**6.50E-10**	**6.50E-10**	**6.50E-10**	**6.50E-10**

Table 3.6-1

Risk Impact Analysis Results

System[1]	Category	Consequence Rank	Failure Potential		Inspections			CDF Impact[4]		LERF Impact[4]	
			DMs	Rank	Section XI[2]	RI-ISI[3]	Delta	w/ POD	w/o POD	w/ POD	w/o POD
HPCI	4	High	None	Low	3	2	-1	2.50E-11	2.50E-11	2.50E-11	2.50E-11
HPCI	6	Medium	None	Low	0	0	0	no change	no change	no change	no change
HPCI Total								**2.50E-11**	**2.50E-11**	**2.50E-11**	**2.50E-11**
RCIC	4	High	None	Low	2	2	0	no change	no change	no change	no change
RCIC	6	Medium	None	Low	1	0	-1	negligible	negligible	negligible	negligible
RCIC Total								**negligible**	**negligible**	**negligible**	**negligible**
RWCU	4 (2)	High	None (IGSCC)	Low (Medium)	5	1	-4	1.00E-10	1.00E-10	1.00E-10	1.00E-10
RWCU	4	High	None	Low	7	6	-1	2.50E-11	2.50E-11	2.50E-11	2.50E-11
RWCU	6	Medium	None	Low	1	0	-1	negligible	negligible	negligible	negligible
RWCU Total								**1.25E-10**	**1.25E-10**	**1.25E-10**	**1.25E-10**
FW	2	High	TASCS, CC	Medium	7	6	-1	-3.30E-09	5.00E-10	-3.30E-09	5.00E-10
FW	2	High	TASCS	Medium	3	3	0	-1.80E-09	no change	-1.80E-09	no change
FW	4	High	None	Low	22	9	-13	3.25E-10	3.25E-10	3.25E-10	3.25E-10
FW	6	Medium	None	Low	0	0	0	no change	no change	no change	no change
FW Total								**-4.78E-09**	**8.25E-10**	**-4.78E-09**	**8.25E-10**
Grand Total								**1.40E-09**	**7.00E-09**	**1.40E-09**	**7.00E-09**

Notes

1. Systems are described in Table 3.1-1.
2. Only those ASME Section XI Code inspection locations that received a volumetric examination in addition to a surface examination were included in the count. Inspection locations previously subjected to a surface examination only were not considered in accordance with Section 3.7.1 of EPRI TR-112657.
3. Risk Category 4 (2) inspection locations selected for examination by both the IGSCC Program and the RI-ISI Program were included in both counts, since these locations were previously credited in the Section XI Program and are being credited in the RI-ISI Program.
4. Per Section 3.7.1 of EPRI TR-112657, the contribution of low risk categories 6 and 7 need not be considered in assessing the change in risk. Hence, the word "negligible" is given in these cases in lieu of values for CDF and LERF Impact. In those cases where no inspections were being performed previously via Section XI, and none are planned for RI-ISI purposes, "no change" is listed instead of "negligible".

Table 5-1

Inspection Location Selection Comparison Between ASME Section XI Code and EPRI TR-112657 by Risk Region

System[1]	Code Category	High Risk Region					Medium Risk Region					Low Risk Region				
		Weld Count	1989 Section XI		EPRI TR-112657		Weld Count	1989 Section XI		EPRI TR-112657		Weld Count	1989 Section XI		EPRI TR-112657	
			Vol/Sur	Sur Only	RI-ISI	Other[2]		Vol/Sur	Sur Only	RI-ISI	Other[2]		Vol/Sur	Sur Only	RI-ISI	Other[2]
RPV	B-J											3	3	0	0	
CRD	B-F						1	1	0	1[3]						
JPI	B-F						2	2	0	1[4]						
	B-J						2	2	0	0						
MS	B-J						105	50	0	11		8	1	0	0	
RCR	B-F	10	10	0	3[5]		2	2	0	1[6]						
	B-J						109	34	0	11[7]						
RHR	B-F						3	3	0	1[8]						
	B-J						25	10	0	3		46	8	0	0	
CS	B-F	2	2	0	1[9]		2	2	0	1[10]						
	B-J						24	8	0	3		18	0	0	0	
HPCI	B-J						12	3	0	2		2	0	0	0	
RCIC	B-J						14	2	0	2		2	1	0	0	
RWCU	B-F						2	2	0	0						
	B-J						59	10	5	7[11]		11	1	0	0	
FW	B-J	35	10	0	9		82	22	0	9		6	0	0	0	
Total	B-F	12	12	0	4		12	12	0	5						
	B-J	35	10	0	9		432	141	5	48		96	14	0	0	

Notes

1. Systems are described in Table 3.1.

Notes for Table 5-1 (cont'd)

2. The column labeled "Other" is generally used to identify augmented inspection program locations credited per Section 3.6.5 of EPRI TR-112657. The EPRI methodology allows augmented inspection program locations to be credited if the inspection locations selected strictly for RI-ISI purposes produce less than a 10% sampling of the overall Class 1 weld population. As stated in Section 3.5 of this template, Fermi 2 achieved greater than a 10% sampling without relying on augmented inspection program locations beyond those selected by the RI-ISI process. The "Other" column has been retained in this table solely for uniformity purposes with the other RI-ISI application template submittals.
3. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
4. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
5. These three welds were selected for examination by both the IGSCC Program and the RI-ISI Program. Since crevice corrosion was identified along with IGSCC as a potential damage mechanism for these welds, the examinations will include the requirements identified in EPRI TR-112657 for crevice corrosion examinations in order to be credited toward both the IGSCC and RI-ISI Programs.
6. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
7. Seven of these eleven welds were selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for these welds, the IGSCC examinations will be credited toward both programs.
8. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
9. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since crevice corrosion was identified along with IGSCC as a potential damage mechanism for this weld, the examination will include the requirements identified in EPRI TR-112657 for crevice corrosion examinations in order to be credited toward both the IGSCC and RI-ISI Programs.
10. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
11. One of these seven welds was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.

Table 5-2

Inspection Location Selection Comparison Between ASME Section XI Code and EPRI TR-112657 by Risk Category

System[1]	Risk		Consequence Rank	Failure Potential		Code Category	Weld Count	1989 Section XI		EPRI TR-112657	
	Category	Rank		DMs	Rank			Vol/Sur	Sur Only	RI-ISI	Other[2]
RPV	6	Low	Medium	None	Low	B-J	3	3	0	0	
CRD	4 (2)	Medium (High)	High	None (IGSCC)	Low (Medium)	B-F	1	1	0	1[3]	
JPI	4 (2)	Medium (High)	High	None (IGSCC)	Low (Medium)	B-F	2	2	0	1[4]	
						B-J	2	2	0	0	
MS	4	Medium	High	None	Low	B-J	105	50	0	11	
MS	6	Low	Medium	None	Low	B-J	8	1	0	0	
RCR	2 (2)	High (High)	High	CC, (IGSCC)	Medium (Medium)	B-F	10	10	0	3[5]	
RCR	4 (2)	Medium (High)	High	None (IGSCC)	Low (Medium)	B-F	2	2	0	1[6]	
						B-J	71	25	0	7[7]	
RCR	4	Medium	High	None	Low	B-J	38	9	0	4	
RHR	4 (2)	Medium (High)	High	None (IGSCC)	Low (Medium)	B-F	3	3	0	1[8]	
						B-J	3	3	0	0	
RHR	4	Medium	High	None	Low	B-J	22	7	0	3	
RHR	6	Low	Medium	None	Low	B-J	46	8	0	0	
CS	2 (2)	High (High)	High	CC, (IGSCC)	Medium (Medium)	B-F	2	2	0	1[9]	
CS	4 (2)	Medium (High)	High	None (IGSCC)	Low (Medium)	B-F	2	2	0	1[10]	
CS	4	Medium	High	None	Low	B-J	24	8	0	3	
CS	6	Low	Medium	None	Low	B-J	18	0	0	0	
HPCI	4	Medium	High	None	Low	B-J	12	3	0	2	
HPCI	6	Low	Medium	None	Low	B-J	2	0	0	0	
RCIC	4	Medium	High	None	Low	B-J	14	2	0	2	
RCIC	6	Low	Medium	None	Low	B-J	2	1	0	0	

Table 5-2

Inspection Location Selection Comparison Between ASME Section XI Code and EPRI TR-112657 by Risk Category

System[1]	Risk		Consequence Rank	Failure Potential		Code Category	Weld Count	1989 Section XI		EPRI TR-112657	
	Category	Rank		DMs	Rank			Vol/Sur	Sur Only	RI-ISI	Other[2]
RWCU	4 (2)	Medium (High)	High	None (IGSCC)	Low (Medium)	B-F	2	2	0	0	
						B-J	6	3	0	1[11]	
RWCU	4	Medium	High	None	Low	B-J	53	7	5	6	
RWCU	6	Low	Medium	None	Low	B-J	11	1	0	0	
FW	2	High	High	TASCS, CC	Medium	B-J	12	7	0	6	
FW	2	High	High	TASCS	Medium	B-J	23	3	0	3	
FW	4	Medium	High	None	Low	B-J	82	22	0	9	
FW	6	Low	Medium	None	Low	B-J	6	0	0	0	

Notes

1. Systems are described in Table 3.1.
2. The column labeled "Other" is generally used to identify augmented inspection program locations credited per Section 3.6.5 of EPRI TR-112657. The EPRI methodology allows augmented inspection program locations to be credited if the inspection locations selected strictly for RI-ISI purposes produce less than a 10% sampling of the overall Class 1 weld population. As stated in Section 3.5 of this template, Fermi 2 achieved greater than a 10% sampling without relying on augmented inspection program locations beyond those selected by the RI-ISI process. The "Other" column has been retained in this table solely for uniformity purposes with the other RI-ISI application template submittals.
3. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
4. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
5. These three welds were selected for examination by both the IGSCC Program and the RI-ISI Program. Since crevice corrosion was identified along with IGSCC as a potential damage mechanism for these welds, the examinations will include the requirements identified in EPRI TR-112657 for crevice corrosion examinations in order to be credited toward both the IGSCC and the RI-ISI Programs.
6. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
7. These seven welds were selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for these welds, the IGSCC examinations will be credited toward both programs.
8. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.

Notes for Table 5-2 (cont'd)

9. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since crevice corrosion was identified along with IGSCC as a potential damage mechanism for this weld, the examination will include the requirements identified in EPRI TR-112657 for crevice corrosion examinations in order to be credited toward both the IGSCC and the RI-ISI Programs.
10. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.
11. This one weld was selected for examination by both the IGSCC Program and the RI-ISI Program. Since IGSCC was the only potential damage mechanism identified for this weld, the IGSCC examination will be credited toward both programs.