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Perry Nuclear Power Plant
Docket No. 50-440
Submittal of In-Service Examination Program Relief Request

Ladies and Gentlemen:

In accordance with 10 CFR 50.55a(a)(3)(i), a relief request for the Perry Nuclear Power Plant In-Service Examination Program is being requested. Attachment 1 contains Relief Request IR-049, which proposes the implementation of a Risk-Informed Inservice Inspection Program for certain American Society for Mechanical Engineers Class 1 welds. Attachment 1 contains the identification of the affected components, the applicable code requirements, the description and basis of the proposed relief request, and the proposed alternate testing. PNPP desires to implement this program for use during the second period of the second inspection interval (November, 2001). It is therefore requested that Nuclear Regulatory Commission review and approval be completed by July, 2001 to permit adequate time for the PNPP staff to implement the revised program prior to the start of the second period.

Attachment 2 contains a listing of the commitments associated with the proposed risk-informed program.

If you have questions or require additional information, please contact Mr. Gregory A. Dunn, Manager - Regulatory Affairs, at (440) 280-5305.

Very truly yours,

John K Wood

Attachments

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III

A047

Perry Nuclear Power Plant Unit 1
RELIEF REQUEST No. IR-049

I. Identification of Components

ASME Section XI, Class 1, Table IWB-2500-1, Examination Category B-F, "Pressure Retaining Dissimilar Metal Welds," and Examination Category B-J, "Pressure Retaining Welds in Piping."

II. ASME B&PV Section XI Requirements

All the ASME Code, Section XI, 1989 Edition with no Addenda, Article IWB requirements as they apply to Examination Categories B-F and B-J.

III. Relief Request

Pursuant to 10 CFR 50.55a(a)(3)(i), a risk-informed program will be substituted for the current program for Class 1 piping (Examination Categories B-F and B-J).

IV. Basis for Relief

See attached "Template Submittal" prepared in accordance with Electrical Power Research Institute (EPRI) Topical Report (TR) 112657, Rev B-A, "Revised Risk-Informed Inservice Inspection Evaluation Procedure."

V. Alternative Examination(s)

See attached "Template Submittal" prepared in accordance with Electrical Power Research Institute (EPRI) Topical Report (TR) 112657, Rev B-A, "Revised Risk-Informed Inservice Inspection Evaluation Procedure."

VI. Implementation Schedule

See attached "Template Submittal" prepared in accordance with Electrical Power Research Institute (EPRI) Topical Report (TR) 112657, Rev B-A, "Revised Risk-Informed Inservice Inspection Evaluation Procedure."

RISK-INFORMED INSERVICE INSPECTION PROGRAM PLAN - PERRY NUCLEAR POWER PLANT, UNIT 1

Table of Contents

1. INTRODUCTION

Inservice inspections (ISI) are currently performed on piping to the requirements of the ASME Boiler and Pressure Vessel Code Section XI, 1989 Edition as required by 10CFR50.55a. Unit 1 is currently in the second inspection interval as defined by the Code for Program B.

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, Section XI, Division 1."

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."

1.2 Probabilistic Risk Assessment (PRA) Quality

The Perry Nuclear Power Plant (PNPP) prepared a Level 1 and Level 2 PRA in response to Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities." This PRA model was named BASE. The NRC review of the PNPP PRA, including PNPP responses to NRC requests for additional information, was issued in August 1994. The Staff Evaluation concluded that the PNPP PRA had met the intent of Generic Letter 88-20.

In 1997, a Boiling Water Reactor Owner's Group (BWROG) Probabilistic Safety Assessment (PSA – note, PSA and PRA are interchangeable terms) Peer Certification review was performed on the PNPP PRA model PSAREV. The following is a brief summary of the PNPP Peer Review Certification Process results:

> "All of the PSA elements identified as part of the BWROG PSA Peer Review Certification Process were included in the PSA. In terms of the overall assessment of each element, all were consistently graded as sufficient to support meaningful rankings for the assessment of systems, structures, and components, when combined with deterministic insights."

The Perry PRA Level 1 model has been through three revisions following submittal to the NRC. In 1998, PSAREV2 was completed to support a license amendment request for an extended allowed out of service time for the diesel generators. PNPP received approval for this license amendment request (Amendment 99) in early 1999. The current model, PSACY08, was completed in June 2000. The main purpose of this revision was to update plant-specific system unavailability data and to address over-conservatism's used in the diesel generator Common Cause Failures (CCFs).

2. PROPOSED ALTERNATIVE TO CURRENT ISI PROGRAM REQUIREMENTS

2.1 American Society of Mechanical Engineers (ASME) Section XI

ASME Section XI Categories B-F and B-J currently contain the requirements for the Nondestructive Examination (NDE) of Class 1 piping components. The proposed 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). The alternative program for piping is described in EPRI TR-112657 and will provide 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

In accordance with EPRI TR-112657, piping welds identified as Category "A" per NUREG-0313, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping", are considered resistant to Inter-Granular Stress Corrosion Cracking (IGSCC), and as such, are assigned a low failure potential provided no other damage mechanisms are present. The existing augmented inspection program for the other NUREG-0313 piping welds at PNPP (Categories "C" and "E") remains unchanged at this time. The augmented inspection program for Flow Accelerated Corrosion (FAC) in accordance with Generic Letter 89-08, "Erosion/Corrosion-Induced Pipe Wall Thinning", is relied upon to manage this damage mechanism but is not otherwise affected or changed by the proposed RI-ISI program. The augmented inspection program for piping welds in the High Energy Break Exclusion Region (HEBER) remains unchanged at this time.

3. RISK-INFORMED In-Service Inspection (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, and
- Implementation and Monitoring.

Deviation to EPRI Methodology

A deviation to the EPRI RI-ISI methodology has been implemented in the failure potential assessment for PNPP. 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.

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 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 facing lines, significant top-to-bottom ΔTs can develop in horizontal sections within about 25 pipe diameters and the conditions can potentially be cyclic. For an upward or horizontal facing branch line connected to the hot fluid source, natural convective effects will fill the line with hot water. In the absence of in-leakage towards the hot fluid source, this will result in a well-mixed fluid condition where significant top-to-bottom ΔTs will not occur. 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. 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., Residual Heat Removal (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 can occur outward past a valve into a line with 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.

These additional considerations for determining the potential for thermal fatigue as a result of the effects of TASCS were applied in the failure potential assessment for PNPP. This constitutes a deviation to the requirements of EPRI TR-112657, since the methodology does not presently provide any allowance for the consideration of cycle severity in assessing the potential for TASCS effects. For the reasons discussed above, this approach is considered technically justifiable. Furthermore, EPRI concurs with this position and intends to address this issue in a future revision to the methodology.

PNPP-Specific RI-ISI Process

3.1 Scope Definition

The systems included in the RI-ISI program are provided in Table 3.1-1. 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 (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.

Table 3.3-1 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 (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 3.4-1.

3.5 Element and Non-Destructive Examination (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, with the NDE methods tailored to the degradation mechanism that has been defined for that location.

In accordance with Section 3.6.4.2 of EPRI TR-112657, states that the inspection percentage of Class 1 elements should be 10%. In fact, when the RI-ISI selections are combined with the defense-in-depth selections and the Category "C" and "E" augmented IGSCC inspection program locations, a 10% sampling has been achieved. A brief summary is provided below and the results of the selection are presented in Table 3.5-1. It should be noted that no credit was taken for any FAC or HEBER augmented inspection program locations in meeting this requirement. Section 4 of EPRI TR-112657 was used as guidance in determining the examination requirements for these locations.

Totals	Description
800(1)	Class 1 Piping Welds
47(2)	RI-ISI Program Selections in High and Medium Risk Regions
13(3)	RI-ISI Program Selections in Low Risk Region
23(4)	NUREG-0313 Augmented Inspection Program Locations

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.
2. Includes four NUREG-0313 Category "C" IGSCC piping welds selected for RI-ISI purposes due to the presence of other damage mechanisms.
3. NUREG-0313 Category "A" IGSCC piping welds selected for risk-informed defense-in-depth considerations.
4. Includes all of the remaining NUREG-0313 IGSCC piping welds consisting of twenty-one Category "C" locations and two Category "E" locations.

3.5.1 Additional Examinations

The proposed 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 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 (per Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds") 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.

At this time, all the RI-ISI examination locations that have been selected provide >90% coverage with one exception as noted below. In instances where other locations may be 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. Upon approval of the proposed RI-ISI program, the following relief requests can be withdrawn or modified for the reasons provided below. All other relief requests will remain in place.

Relief Request	Brief Description and Basis for Withdrawal or Modification
IR-004(1)	Pertains to partial examination coverage of a single weld that is not a RI-ISI selection.
IR-005(1)	Pertains to partial examination coverage of multiple welds that are not RI-ISI selections.
IR-029(1)	Pertains to the substitution of non "high stress" locations for "high stress" locations as required by the 1989 Edition of the ASME Section XI Code. Replaced by application of the RI-ISI process.
IR-024(2)	Pertains to partial examination coverage of five welds of which only one location (1B13-N5A-KC) is a RI-ISI selection while the other four locations (1B13-N5B-KC, 1B13-N6A-KC, 1B13-N6B-KC and 1B13-N6C-KC) are not. Weld 1B13-N5A-KC is a risk category 4 selection (i.e., high consequence and low failure potential/no degradation mechanism).

Notes

1. Relief Requests IR-004, IR-005 and IR-029 can be withdrawn.
2. Relief Request IR-024 can be modified.

3.6 Risk Impact Assessment

The proposed 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 the 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 within 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.

PNPP 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 (1E-02) and CLERP (2E-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.

Table 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 FAC and IGSCC were adjusted for in the performance of the quantitative analysis by excluding their impact on the risk ranking. However, in an effort to be as informative possible,

for those systems where FAC and/or IGSCC are present, the information in Table 3.6-1 is presented in such a manner as to depict what the resultant risk categorization is both with and without consideration of FAC and/or IGSCC. This is accomplished by enclosing the FAC and/or IGSCC damage mechanisms, 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 (ANO-2) pilot application. An example is provided in the following table.

System	Risk		Consequence Rank	Failure Potential	
	Category	Rank[1]		DMs	Rank
1N27	5 (3)	Medium (High)	Medium	TASCS, TT, (FAC)	Medium (High)

In this example if FAC is not considered, the failure potential rank is "medium" instead of "high" based on the TASCS and TT damage mechanisms. When a "medium" failure potential rank is combined with a "medium" consequence rank, it results in risk category 5 ("medium" risk) being assigned instead of risk category 3 ("high" risk).

In this example if FAC were considered, the failure potential rank would be "high" instead of "medium". If a "high" failure potential rank were combined with a "medium" consequence rank, it would result in risk category 3 ("high" risk) being assigned instead of risk category 5 ("medium" risk).

Note

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

Only those locations selected strictly for RI-ISI purposes were compared to the Section XI inspection locations to determine the change in risk. As indicated in the table below, 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.

System[(1)]	$\Delta Risk_{CDF}$		$\Delta Risk_{LERF}$	
	w/ POD	**w/o POD**	**w/ POD**	**w/o POD**
1B13	3.29E-09	3.33E-09	6.49E-10	6.53E-10
1B21	5.00E-11	5.00E-11	1.00E-11	1.00E-11
1B33	negligible	negligible	negligible	negligible
1C41	-5.00E-11	-5.00E-11	-1.00E-11	-1.00E-11
1E12	-2.00E-10	1.40E-09	-4.00E-11	2.80E-10
1E21	2.00E-10	2.00E-10	4.00E-11	4.00E-11
1E22	2.50E-10	2.50E-10	5.00E-11	5.00E-11
1E32	-1.00E-10	-1.00E-10	-2.00E-11	-2.00E-11
1E51	-3.55E-09	-1.89E-09	-7.10E-10	-3.84E-10
1G33	5.00E-11	5.00E-11	1.00E-11	1.00E-11
1N22	-1.93E-09	-1.07E-09	-3.73E-10	-2.07E-10
1N27	-1.81E-09	-8.90E-10	-3.61E-10	-1.89E-10
Total	**-3.79E-09**	**1.28E-09**	**-7.54E-10**	**2.33E-10**

Note

1. Systems are described in Table 3.1-1.

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, first, a determination of each location's susceptibility to degradation and second, an independent assessment of the consequence of the piping failure. These two ingredients assure defense in depth is maintained. First off, by evaluating a location's susceptibility to degradation, the likelihood of finding flaws or indications that may be precursors to leaks 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

Upon approval of the proposed 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. Changes will be required to commitments made as a result of the implementation of the guidance contained in Generic Letter 88-01, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping."

The applicable aspects of the ASME Code not affected by this change would 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, or

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

D. Decide,

E. Implement,

F. Monitor, and

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 proposed RI-ISI program and 1989 ASME Section XI Code Edition program requirements for in-scope piping is provided in Tables 5-1 and 5-2. Table 5-1 provides a summary comparison 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 3.6-1.

PNPP intends to implement the RI-ISI program in the second period (beginning November 18, 2001) of the second inspection interval assuming NRC approval. By the end of the first period (November 17, 2001), PNPP will have completed 22% of the Class 1 piping weld examinations required by the 1989 Edition of the ASME Section XI Code. PNPP then intends to examine 78% of the selected RI-ISI program locations during the second and third periods of the second inspection interval. Subsequent inspection intervals will entail inspection of 100% of the selected RI-ISI program locations.

6. REFERENCES/DOCUMENTATION

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

ASME Code Case-N578, 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

Risk-Informed Inservice Inspection Consequence Evaluation of Class 1 Piping for the Perry Nuclear Power Plant, Rev. 1, dated July 21, 2000

Calculation No. EPRI-156-301, Degradation Mechanisms Evaluation for Perry, Rev. 4, dated October 9, 2000

Condition Report No. 00-3093, Plant Specific Service History Review for Perry

Perry Risk Ranking Summary, Matrix and Report, Rev. 3

FirstEnergy Nuclear Operating Company Memorandum, RI-ISI Element Selection Meeting Minutes / Results, dated July 24, 2000

Risk Impact Analysis for Perry, Rev. 1

Table 3.1-1

System Selection and Segment / Element Definition

System Description	Number of Segments	Number of Elements
1B13 – Reactor System	40	42
1B21 – Main Steam and Reactor Vessel Head Vent System	30	123
1B33 – Reactor Recirculation System	18	112
1C41 – Standby Liquid Control System	3	34
1E12 – Residual Heat Removal System	15	114
1E21 – Low Pressure Core Spray System	3	33
1E22 – High Pressure Core Spray System	3	30
1E32 – MSIV Leakage Control System	4	12
1E51 – Reactor Core Isolation Cooling System	6	43
1G33 – Reactor Water Cleanup System	17	127
1N22 – Main, Reheat, Extraction and Miscellaneous Drains System	6	66
1N27 – Main Feedwater System	17	64
Totals	**162**	**800**

Table 3.3-1

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
1B13	X	X	X						X		X
1B21											
1B33											
1C41											
1E12		X									
1E21											
1E22											
1E32											
1E51		X									
1G33											
1N22		X									
1N27	X	X									X

Note

1. Systems are described in Table 3.1-1.

Table 3.4-1

Number of Segments by Risk Category With and Without Impact of FAC and 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
1B13			5[2]	5	6[3]	0	5	5	17[4]	17	7	13		
1B21							4	4			25	25	1	1
1B33											18	18		
1C41							2	2			1	1		
1E12			2	2			6	6			7	7		
1E21							2	2			1	1		
1E22							2	2			1	1		
1E32							4	4						
1E51			2	2			1	1	2	2	1	1		
1G33							1	1			12	12	4	4
1N22			1	1					4	4	1	1		
1N27	2[5]	0	0	2	15[6]	0			0	14	0	1		
Total	2	0	10	12	21	0	27	27	23	37	74	81	5	5

Notes

1. Systems are described in Table 3.1-1.
2. These five segments remain Category 2 after IGSCC is removed from consideration due to the presence of other "medium" failure potential damage mechanisms.
3. These six segments become Category 5 after FAC and IGSCC are removed from consideration due to the presence of other "medium" failure potential damage mechanisms.
4. Of these seventeen segments, ten segments remain Category 5 after IGSCC is removed from consideration due to the presence of other "medium" failure potential damage mechanisms; six segments become Category 6 after IGSCC is removed from consideration due to no other damage mechanisms being present; one segment is unaffected since neither FAC nor IGSCC is present
5. These two segments become Category 2 after FAC is removed from consideration due to the presence of other "medium" failure potential damage mechanisms.
6. Of these fifteen segments, fourteen segments become Category 5 after FAC is removed from consideration due to the presence of other "medium" failure potential damage mechanisms; one segment becomes Category 6 after FAC is removed from consideration due to no other damage mechanisms being present.

Table 3.5-1

Number of Elements Selected for Inspection by Risk Category Excluding Impact of FAC and 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
1B13			5	2[2] + 3[3]			5	1	17	3[2] + 14[3]	15	0 + 6[3]		
1B21							4	1			117	0	2	0
1B33											112	11[4]		
1C41							7	1			27	0		
1E12			4	1			75	8			35	0		
1E21							29	3			4	0		
1E22							26	3			4	0		
1E32							12	2						
1E51			6	2			2	1	26	3	9	0		
1G33							2	1			117	2[5]	8	0
1N22			2	1					63	7	1	0		
1N27			2	1					59	6	3	0		
Total	0	0	19	7 + 3	0	0	162	21	165	19 + 14	444	13 + 6	10	0

Notes

1. Systems are described in Table 3.1-1.
2. Category 2 – both of these piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and have additionally been selected for RI-ISI purposes due to the presence of other damage mechanisms; Category 5 – two of these three piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and have additionally been selected for RI-ISI purposes due to the presence of other damage mechanisms.
3. Category 2 – these three piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and are credited per Section 3.6.5 of EPRI TR-112657; Category 5 – twelve of these fourteen piping welds are identified as Category "C" locations and the other two piping welds are identified as Category "E" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and are credited per Section 3.6.5 of EPRI TR-112657; Category 6 – these six piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC program and are credited per Section 3.6.5 of EPRI TR-112657.
4. These eleven piping welds have been selected for risk-informed defense-in-depth considerations.
5. These two piping welds have been selected for risk-informed defense-in-depth considerations.

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
1B13	2 (2)	High	CC, (IGSCC)	Medium (Medium)	5	2	-3	3.00E-09	3.00E-09	6.00E-10	6.00E-10
1B13	4 (2)	High	None (IGSCC)	Low (Medium)	5	1	-4	2.00E-10	2.00E-10	4.00E-11	4.00E-11
1B13	5 (3)	Medium	TASCS, TT, CC, (IGSCC, FAC)	Medium (High)	6	1	-5	1.80E-11	5.00E-11	1.80E-12	5.00E-12
1B13	5 (5)	Medium	CC, (IGSCC)	Medium (Medium)	10	1	-9	9.00E-11	9.00E-11	9.00E-12	9.00E-12
1B13	5	Medium	TT	Medium	0	1	1	-1.80E-11	-1.00E-11	-1.80E-12	-1.00E-12
1B13	6 (5)	Medium	None (IGSCC)	Low (Medium)	6	0	-6	negligible	negligible	negligible	negligible
1B13	6	Medium	None	Low	5	0	-5	negligible	negligible	negligible	negligible
1B13 Total								**3.29E-09**	**3.33E-09**	**6.49E-10**	**6.53E-10**
1B21	4	High	None	Low	2	1	-1	5.00E-11	5.00E-11	1.00E-11	1.00E-11
1B21	6	Medium	None	Low	20	0	-20	negligible	negligible	negligible	negligible
1B21	7	Low	None	Low	0	0	0	no change	no change	no change	no change
1B21 Total								**5.00E-11**	**5.00E-11**	**1.00E-11**	**1.00E-11**
1B33	6	Medium	None	Low	28	11	-17	negligible	negligible	negligible	negligible
1B33 Total								**negligible**	**negligible**	**negligible**	**negligible**
1C41	4	High	None	Low	0	1	1	-5.00E-11	-5.00E-11	-1.00E-11	-1.00E-11
1C41	6	Medium	None	Low	0	0	0	no change	no change	no change	no change
1C41 Total								**-5.00E-11**	**-5.00E-11**	**-1.00E-11**	**-1.00E-11**

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
1E12	2	High	TT	Medium	2	1	-1	-6.00E-10	1.00E-09	-1.20E-10	2.00E-10
1E12	4	High	None	Low	16	8	-8	4.00E-10	4.00E-10	8.00E-11	8.00E-11
1E12	6	Medium	None	Low	12	0	-12	negligible	negligible	negligible	negligible
1E12	6	Low	TT	Medium	0	0	0	no change	no change	no change	no change
1E12 Total								**-2.00E-10**	**1.40E-09**	**-4.00E-11**	**2.80E-10**
1E21	4	High	None	Low	7	3	-4	2.00E-10	2.00E-10	4.00E-11	4.00E-11
1E21	6	Medium	None	Low	2	0	-2	negligible	negligible	negligible	negligible
1E21 Total								**2.00E-10**	**2.00E-10**	**4.00E-11**	**4.00E-11**
1E22	4	High	None	Low	8	3	-5	2.50E-10	2.50E-10	5.00E-11	5.00E-11
1E22	6	Medium	None	Low	0	0	0	no change	no change	no change	no change
1E22 Total								**2.50E-10**	**2.50E-10**	**5.00E-11**	**5.00E-11**
1E32	4	High	None	Low	0	2	2	-1.00E-10	-1.00E-10	-2.00E-11	-2.00E-11
1E32 Total								**-1.00E-10**	**-1.00E-10**	**-2.00E-11**	**-2.00E-11**
1E51	2	High	TT	Medium	0	2	2	-3.60E-09	-2.00E-09	-7.20E-10	-4.00E-10
1E51	4	High	None	Low	2	1	-1	5.00E-11	5.00E-11	1.00E-11	1.00E-11
1E51	5	Medium	TT	Medium	9	3	-6	-8.88E-27	6.00E-11	-8.88E-28	6.00E-12
1E51	6	Medium	None	Low	0	0	0	no change	no change	no change	no change
1E51 Total								**-3.55E-09**	**-1.89E-09**	**-7.10E-10**	**-3.84E-10**
1G33	4	High	None	Low	2	1	-1	5.00E-11	5.00E-11	1.00E-11	1.00E-11
1G33	6	Medium	None	Low	14	2	-12	negligible	negligible	negligible	negligible
1G33	7	Low	None	Low	2	0	-2	negligible	negligible	negligible	negligible
1G33 Total								**5.00E-11**	**5.00E-11**	**1.00E-11**	**1.00E-11**

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
1N22	2	High	TT	Medium	0	1	1	-1.80E-09	-1.00E-09	-3.60E-10	-2.00E-10
1N22	5	Medium	TT	Medium	0	7	7	-1.26E-10	-7.00E-11	-1.26E-11	-7.00E-12
1N22	6	Low	TT	Medium	0	0	0	no change	no change	no change	no change
1N22 Total								**-1.93E-09**	**-1.07E-09**	**-3.73E-10**	**-2.07E-10**
1N27	2 (1)	High	TASCS, TT, (FAC)	Medium (High)	0	1	1	-1.80E-09	-1.00E-09	-3.60E-10	-2.00E-10
1N27	5 (3)	Medium	TASCS, TT, (FAC)	Medium (High)	10	4	-6	-1.20E-11	6.00E-11	-1.20E-12	6.00E-12
1N27	5 (3)	Medium	TT, (FAC)	Medium (High)	7	2	-5	6.00E-12	5.00E-11	6.00E-13	5.00E-12
1N27	6 (3)	Medium	None (FAC)	Low (High)	0	0	0	no change	no change	no change	no change
1N27 Total								**-1.81E-09**	**-8.90E-10**	**-3.61E-10**	**-1.89E-10**
Grand Total								**-3.79E-09**	**1.28E-09**	**-7.54E-10**	**2.33E-10**

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 are included in this count. Inspection locations previously subjected to a surface examination only are not considered in accordance with Section 3.7.1 of EPRI TR-112657.
3. Only those inspection locations selected strictly for RI-ISI purposes are included in this count. Augmented IGSCC inspection locations credited (see Table 3.5-1) in accordance with Section 3.6.5 of EPRI TR-112657 are not reflected in this total.
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 1989 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		Vol/Sur	Sur Only	RI-ISI	Other		Vol/Sur	Sur Only	RI-ISI	Other
1B13	B-F	5	5	0	2[2]	3[3]	21	21	0	3[2]	14[3]	9	9	0	0	4[3]
	B-J						1	0	0	1		6	2	1	0	2[3]
1B21	B-J						4	2	0	1		119	20	11	0	
1B33	B-J											112	28	0	11[4]	
1C41	B-F											1	0	1	0	
	B-J						7	0	2	1		26	0	8	0	
1E12	B-F											1	1	0	0	
	B-J	4	2	0	1		75	16	0	8		34	11	1	0	
1E21	B-J						29	7	0	3		4	2	0	0	
1E22	B-J						26	8	0	3		4	0	0	0	
1E32	B-J						12	0	3	2						
1E51	B-J	6	0	0	2		28	11	0	4		9	0	0	0	
1G33	B-F											8	5	3	1[5]	
	B-J						2	2	0	1		117	11	18	1[5]	

Table 5-1

Inspection Location Selection Comparison Between 1989 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		Vol/Sur	Sur Only	RI-ISI	Other		Vol/Sur	Sur Only	RI-ISI	Other
1N22	B-J	2	0	1	1		63	0	15	7		1	0	0	0	
1N27	B-J	2	0	0	1		59	17	0	6		3	0	0	0	
Total	B-F	5	5	0	2	3	21	21	0	3	14	19	15	4	1	4
	B-J	14	2	1	5	0	306	63	20	37	0	435	74	39	12	2

Notes

1. Systems are described in Table 3.1-1.
2. High Risk Region – both of these piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and have additionally been selected for RI-ISI purposes due to the presence of other damage mechanisms; Medium Risk Region – two of these three piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and have additionally been selected for RI-ISI purposes due to the presence of other damage mechanisms.
3. High Risk Region – these three piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and are credited per Section 3.6.5 of EPRI TR-112657; Medium Risk Region – twelve of these fourteen piping welds are identified as Category "C" locations and the other two piping welds are identified as Category "E" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and are credited per Section 3.6.5 of EPRI TR-112657; Low Risk Region – these six piping welds (four B-F and two B-J) are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC program and are credited per Section 3.6.5 of EPRI TR-112657.
4. These eleven piping welds have been selected for risk-informed defense-in-depth considerations.
5. These two piping welds (one B-F and one B-J) have been selected for risk-informed defense-in-depth considerations.

Table 5-2

Inspection Location Selection Comparison Between 1989 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
1B13	2 (2)	High (High)	High	CC, (IGSCC)	Medium (Medium)	B-F	5	5	0	2[2]	3[3]
1B13	4	Medium	High	None	Low	B-F	5	5	0	1	-
1B13	5 (3)	Medium (High)	Medium	TASCS, TT, CC, (IGSCC, FAC)	Medium (High)	B-F	6	6	0	1[2]	5[3]
1B13	5 (5)	Medium (Medium)	Medium	CC, (IGSCC)	Medium (Medium)	B-F	10	10	0	1[2]	9[3]
1B13	5	Medium	Medium	TT	Medium	B-J	1	0	0	1	-
1B13	6 (5)	Low (Medium)	Medium	None (IGSCC)	Low (Medium)	B-F	4	4	0	0	4[3]
						B-J	2	2	0	0	2[3]
1B13	6	Low	Medium	None	Low	B-F	5	5	0	0	-
						B-J	4	0	1	0	-
1B21	4	Medium	High	None	Low	B-J	4	2	0	1	-
1B21	6	Low	Medium	None	Low	B-J	117	20	10	0	-
1B21	7	Low	Low	None	Low	B-J	2	0	1	0	-
1B33	6	Low	Medium	None	Low	B-J	112	28	0	11[4]	-
1C41	4	Medium	High	None	Low	B-J	7	0	2	1	-
1C41	6	Low	Medium	None	Low	B-F	1	0	1	0	-
						B-J	26	0	8	0	-

Table 5-2

Inspection Location Selection Comparison Between 1989 ASME Section XI Code and EPRI TR-112657 by Risk Region

System	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
1E12	2	High	High	TT	Medium	B-J	4	2	0	1	-
1E12	4	Medium	High	None	Low	B-J	75	16	0	8	-
1E12	6	Low	Medium	None	Low	B-F	1	1	0	0	-
						B-J	24	11	0	0	-
1E12	6	Low	Low	TT	Medium	B-J	10	0	1	0	-
1E21	4	Medium	High	None	Low	B-J	29	7	0	3	-
1E21	6	Low	Medium	None	Low	B-J	4	2	0	0	-
1E22	4	Medium	High	None	Low	B-J	26	8	0	3	-
1E22	6	Low	Medium	None	Low	B-J	4	0	0	0	-
1E32	4	Medium	High	None	Low	B-J	12	0	3	2	-
1E51	2	High	High	TT	Medium	B-J	6	0	0	2	-
1E51	4	Medium	High	None	Low	B-J	2	2	0	1	-
1E51	5	Medium	Medium	TT	Medium	B-J	26	9	0	3	-
1E51	6	Low	Medium	None	Low	B-J	9	0	0	0	-
1G33	4	Medium	High	None	Low	B-J	2	2	0	1	-
1G33	6	Low	Medium	None	Low	B-F	8	5	3	1(5)	-
						B-J	109	9	17	1(5)	-
1G33	7	Low	Low	None	Low	B-J	8	2	1	0	-

Table 5-2

Inspection Location Selection Comparison Between 1989 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
1N22	2	High	High	TT	Medium	B-J	2	0	1	1	-
1N22	5	Medium	Medium	TT	Medium	B-J	63	0	15	7	-
1N22	6	Low	Low	TT	Medium	B-J	1	0	0	0	-
1N27	2 (1)	High (High)	High	TASCS, TT, (FAC)	Medium (High)	B-J	2	0	0	1	-
1N27	5 (3)	Medium (High)	Medium	TASCS, TT, (FAC)	Medium (High)	B-J	18	10	0	4	-
1N27	5 (3)	Medium (High)	Medium	TT, (FAC)	Medium (High)	B-J	41	7	0	2	-
1N27	6 (3)	Low (High)	Medium	None (FAC)	Low (High)	B-J	3	0	0	0	-

Notes

1. Systems are described in Table 3.1-1.
2. Category 2 (2) – both of these piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and have additionally been selected for RI-ISI purposes due to the presence of other (CC) damage mechanisms; Category 5 (3) – this piping weld is identified as a Category "C" location in PNPP's NUREG-0313 augmented IGSCC inspection program and has additionally been selected for RI-ISI purposes due to the presence of other (TASCS, TT, CC) damage mechanisms; Category 5 (5) – this piping weld is identified as a Category "C" location in PNPP's NUREG-0313 augmented IGSCC inspection program and has additionally been selected for RI-ISI purposes due to the presence of other (CC) damage mechanisms.
3. Category 2 (2) – these three piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and are credited per Section 3.6.5 of EPRI TR-112657; Category 5 (3) – three of these five piping welds are identified as Category "C" locations and the other two piping welds are identified as Category "E" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and are credited per Section 3.6.5 of EPRI TR-112657; Category 5 (5) – these nine piping welds are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and are credited per Section 3.6.5 of EPRI TR-112657; Category 6 (5) – these six piping welds (four B-F and two B-J) are identified as Category "C" locations in PNPP's NUREG-0313 augmented IGSCC inspection program and are credited per Section 3.6.5 of EPRI TR-112657.
4. These eleven piping welds have been selected for risk-informed defense-in-depth considerations.
5. These two piping welds (one B-F and one B-J) have been selected for risk-informed defense-in-depth considerations.

Commitments

The following table identifies those actions which are considered to be regulatory commitments. Any other actions discussed in this document represent intended or planned actions, are described for the NRC's information, and are not regulatory commitments. Please notify the Manager - Regulatory Affairs at the Perry Nuclear Power Plant of any questions regarding this document or any associated regulatory commitments.

Commitments
1. Implement a monitoring program that is consistent with the guidelines contained in EPRI TR-112657.
2. The commitments associated with Generic Letter 88-01 will need to be revised to reflect the proposed risk-informed program once it is approved.