SURRY POWER STATION UNIT 2

RISK-INFORMED INSERVICE INSPECTION (RI-ISI)
PROGRAM FOR ASME CLASS 1 PIPING

April 2000

RISK-INFORMED INSERVICE INSPECTION PROGRAM PLAN

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1. INTRODUCTION/RELATION TO NRC REGULATORY GUIDE 1.174

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. The unit is currently in the third inspection interval as defined by the Code for Program B.

The objective of this submittal is to request a change to the ISI program plan for piping through the use of a Risk-Informed ISI Program. The risk-informed process used in this submittal is described in Westinghouse Owners Group WCAP-14572, Revision 1-NP-A, "Westinghouse Owners Group Application of Risk-Informed Methods to Piping Inservice Inspection Topical Report," and WCAP-14572, Revision 1-NP-A, Supplement 1, "Westinghouse Structural Reliability and Risk Assessment (SRRA) Model for Piping Risk-Informed Inservice Inspection."

As a risk-informed application, this submittal meets the intent and principles of Regulatory Guide 1.174. Further information is provided in Section 3.10 relative to defense-in-depth.

PRA Quality

The plant-specific Level 1 and Level 2 probabilistic risk assessment (PRA) model, Version S7B (3TM), dated June 1998 was used to evaluate the consequences of pipe ruptures during operation in Modes 1 and 2. The base core damage frequency (CDF) and base large, early release frequency (LERF) from this version of the PRA model are 3.83E-05/yr and 2.72E-06/yr, respectively.

PRA model updates are scheduled for 18-month intervals to coincide with the refueling outages. The administrative guidance for this activity is contained in our administrative procedures.

The RI-ISI evaluation included a determination that the PRA model and supporting documentation accurately reflect the current plant configuration and operational practices consistent with its intended application. An evaluation, based on Appendix B of the EPRI PSA Applications Guide, was performed as part of the Surry Unit 1 RI-ISI Pilot Program to confirm that the PRA conforms to the industry state-of-the-art with respect to completeness of coverage of potential scenarios.

The PRA model has been extensively reviewed including peer reviews during the IPE process and internal reviews during the PRA model updates. The model has also been reviewed using the Westinghouse Owner's Group (WOG) peer review certification process.

2. PROPOSED ALTERNATIVE TO ISI PROGRAM

2.1 ASME Section XI

ASME Section XI Categories B-F and B-J currently contain the requirements for examining (using NDE) ASME Class 1 piping components. The current Surry Unit 2 ISI program reflects these requirements. The alternative Risk-Informed Inservice Inspection (RI-ISI) Program for piping is described in WCAP-14572, Revision 1-NP-A. The RI-ISI Program will be substituted for the current examination program on piping in accordance with 10 CFR 50.55a(a)(3)(i) by alternatively providing an acceptable level of quality and safety. The alternative program will be limited to ASME Class 1 piping only. Other non-related portions of the ASME Section XI Code will be unaffected. WCAP-14572, Revision 1-NP-A, provides the requirements defining the relationship between the risk-informed examination program and the remaining unaffected portions of ASME Section XI.

2.2 Augmented Programs

The augmented inspection programs remain unchanged.

3. RISK-INFORMED ISI PROCESSES

The processes used to develop the RI-ISI Program are consistent with the methodology described in WCAP-14572, Revision 1-NP-A.

The process that is being applied, involves the following steps:

- Scope Definition
- Segment Definition
- Consequence Evaluation
- Failure Assessment
- Risk Evaluation
- Expert Panel Categorization
- Element/NDE Selection
- Implement Program
- Feedback Loop

There are no significant deviations to the process described in WCAP-14572, Revision 1-NP-A except for attached relief request R1 (APPENDIX A) which asks for an alternative examination of socket welds.

3.1 Scope of Program

The ASME Class 1 systems to be included in the RI-ISI Program are provided in Table 3.1-1.

3.2 Segment Definitions

Once the systems to be included in the program are determined, the piping for these systems is divided into segments.

The number of pipe segments defined for the five ASME Class 1 systems are summarized in Table 3.1-1. The Surry Power Station ISI Classification Boundary drawings and Inservice Inspection Isometric drawings were used to define the segments.

3.3 Consequence Evaluation

The consequences of pressure boundary failures are measured in terms of core damage and large early release. The impact on these measures due to both direct and indirect effects was considered.

3.4 Failure Assessment

Failure estimates were generated utilizing industry failure history, plant specific failure history and other relevant information. The engineering team that performed this evaluation used the Westinghouse structural reliability and risk assessment (SRRA) software program (described in WCAP-14572, Revision 1-NP-A, Supplement 1) to aid in the process.

Table 3.4-1 summarizes the failure probability estimates by failure mechanism and also identifies the systems susceptible to these mechanisms.

Another consideration was whether a segment is addressed by the plant stress corrosion cracking augmented program. This information was used to determine which failure probability is used in the risk-informed ISI process. The failure probabilities used in the risk-informed process are documented and maintained in the plant records.

3.5 Risk Evaluation

Each piping segment within the scope of the program was evaluated to determine its core damage frequency (CDF) and large, early release frequency (LERF) due to the postulated piping failure. Calculations were also performed with and without operator action.

Once this evaluation is completed, the total pressure boundary core damage frequency and large early release frequency are calculated by summing across the segments for each system. The results of these calculations are presented in Table 3.5-1. The core damage frequency due to piping failure without operator action is 2.80E-05/year, and with operator action is 2.78E-05/year. The large early release frequency due to piping failure without operator action is 2.89E-07/year, and with operator action is 2.88E-07/year.

To assess safety significance, the risk reduction worth (RRW) and risk achievement worth (RAW) were calculated for each piping segment.

3.6 Expert Panel Categorization

The final safety determination (i.e., high and low safety significance) of each piping segment was made by the expert panel using both probabilistic and deterministic insights. The expert panel was comprised of personnel who have expertise in the following fields; probabilistic safety assessment, inservice examination, nondestructive examination, stress and material considerations, plant operations, plant and industry maintenance, repair, and failure history, system design and operation, and SRRA methods including uncertainty. Members associated with the Maintenance Rule were used to ensure consistency with the other PRA applications. Alternates were used if their expertise and training were sufficient.

The expert panel had the following positions represented by either the permanent or alternate member at all times during an expert panel meeting.

- Probabilistic Risk Assessment (PRA engineer)
- Operations (SRO or STA – current or previously qualified)
- Inservice Inspection (ISI)
- Plant & Industry Maintenance, Repair, and Failure History (System Engineer)

A minimum of four members or alternates filling the above positions constituted a quorum. This core team of panel members was supplemented by other experts, including a metallurgist and piping stress engineer, as required for the piping system under evaluation.

The expert panel chairperson was appointed by the Manager - Nuclear Engineering. The chairperson conducted and ruled on the proceedings of the meeting.

Members and alternates received training and indoctrination in the risk-informed inservice inspection selection process. They were indoctrinated in the application of risk analysis techniques for ISI. These techniques included risk importance measures, threshold values, failure probability models, failure mode assessments, PRA modeling limitations and the use of expert judgment. Training documentation is maintained with the expert panel's records.

Worksheets were provided to the panel on each system for each piping segment containing information pertinent to the panel's selection process. This information, in conjunction with each panel member's own expertise and other documents as appropriate, was used to determine the safety significance of each piping segment.

A consensus process was used by the expert panel. Consensus is defined as unanimous during first consideration and 2/3 (rounding conservatively) of members or alternates present in the second or subsequent considerations. The chairperson was required to allow appropriate time duration between considerations for deliberation.

The chairperson appointed an individual to record the minutes of the meeting. The minutes included 1) the names of members and alternates in attendance, 2) whether a quorum was present, 3) relevant discussion summaries and 4) the results of membership voting. The minutes are available as program records.

3.7 Identification of High Safety Significant Segments

The number of high safety significant segments for each system, as determined by the expert panel, is shown in Table 5-1.

3.8 Structural Element and NDE Selection

The structural elements in the high safety significant piping segments were selected for inspection, and appropriate non-destructive examination (NDE) methods were defined.

The initial program being submitted addresses the high safety significant (HSS) piping components placed in regions 1 and 2 of Figure 3.7-1 in WCAP-14572, Revision 1-NP-A. Region 3 piping components, which are low safety significant, are to be considered in an Owner Defined Program and are not considered part of the program requiring approval. Region 1, 2, 3 and 4 piping components will continue to receive Code required pressure testing, as part of the current ASME Section XI Program. For the 139 piping segments that were evaluated in the RI-ISI Program, Region 1 contains 31 segments, Region 2 contains 22 segments, Region 3 contains 23 segments, and Region 4 contains 63 segments.

The number of locations to be inspected in a HSS segment was determined using the Westinghouse statistical (Perdue) model as described in section 3.7 of WCAP-14572, Revision 1-NP-A. Ten of the HSS piping segments in Region 1 and 15 of the HSS piping segments in Region 2 were evaluated using the Perdue model. Segments with socket welds or with vibration fatigue postulated as the failure mechanism will be examined with the VT-2 method (See APPENDIX A, Relief Request R1).

Table 4.1-1 in WCAP-14752, Revision 1-NP-A, was used as guidance in determining the examination requirements for the HSS piping segments. VT-2 visual examinations are scheduled in accordance with the station's pressure test program, which remains unaffected by the risk-informed inspection program.

<u>Additional Examinations</u>

Additional examinations will be performed in accordance with WCAP 14572, Revision 1-NP-A.

3.9 Program Relief Requests

Existing partial relief requests will only be used as reference information to any new relief requests documenting examination limitations (≤ 90%); however, they will be credited for the interval if the locations they address were already examined under the old ASME Section XI ISI Program for the third interval.

The following programmatic relief requests approved for Surry Unit 2 will no longer be needed upon approval of the RI-ISI Program:

SR-001 (NRC approval, 8/10/95) –	B-F Weld Examination,
SR-008 (NRC approval, 8/30/95) –	B-J Weld Selection,
SR-018 (NRC approval, 4/7/98) –	B-J Weld Selection.

All other programmatic relief requests will remain in place.

3.10 Change in Risk

The RI-ISI program has been done in accordance with Regulatory Guide 1.174, and the risk from implementation of this program is expected to slightly decrease when compared to that estimated from current requirements.

A comparison between the proposed RI-ISI Program and the current ASME Section XI ISI Program was made to evaluate the change in risk. The approach evaluated the change in risk with the inclusion of the probability of detection as determined by the SRRA model. This evaluation resulted in the identification of two piping segments which now require examination.

The results from the risk comparison are shown in Table 3.10-1. As seen from the table, the RI-ISI Program reduces the risk associated with piping CDF/LERF slightly more than the current ASME Section XI Program while reducing the number of examinations. The RC system was the dominant contributor to the risk of the Class 1 systems. Risk neutrality was maintained by selecting the two additional most dominant piping segments in the RC system.

Defense-In-Depth

Three RCS main loop segments in the hot legs were retained for defense-in-depth. Three dissimilar metal welds to the reactor vessel were selected for inspection. This provided 100% examination of the reactor vessel nozzle dissimilar metal welds (cold legs were already selected due to being high safety significant segments). The RC system piping will continue to receive a system pressure test and visual VT-2 examination as currently required by the Code.

Additionally, a comparison was made between Surry Unit 1 and Unit 2 Class 1 results and is summarized in Appendix B (attached).

4. IMPLEMENTATION AND MONITORING PROGRAM

Upon approval of the RI-ISI Program, procedures that comply with the guidelines described in WCAP-14572, Revision 1-NP-A, will be prepared to implement and monitor the program. The new program will be integrated into the existing ASME Section XI interval. (Reference previous letter regarding implementation of the Surry Unit 2 RI-ISI Program, dated December 10, 1999 – Serial No. 99-518).

The applicable aspects of the 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 would be retained and would be modified to address the RI-ISI process, as appropriate.

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

A. Identify
B. Characterize
C. Evaluate
   (1) Determine cause and extent of the condition identified
   (2) Develop corrective action plan(s)
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. Significant changes may require more frequent adjustment as directed by NRC bulletin or Generic Letter requirements, or by plant specific feedback.

5. PROPOSED ISI PROGRAM PLAN CHANGE

A comparison between the RI-ISI Program and the current ASME Section XI Program requirements for piping is given in Table 5-1. An identification of piping segments that are part of plant augmented programs is also included in Table 5-1. Table 5-2 provides Surry Unit 1 Class 1 results.

The program will be implemented in accordance with our previous proposal as delineated in our letter dated December 10, 1999 (Serial No. 99-518). It is our intention to complete 100% of the RI-ISI locations over the current third inspection interval by either the current ASME Section XI ISI Program or by the proposed RI-ISI Program.

6. REFERENCES/DOCUMENTATION

- WCAP-14572, Revision 1-NP-A, "Westinghouse Owners Group Application of Risk-Informed Methods to Piping Inservice Inspection Topical Report," February 1999

- WCAP-14572, Revision 1-NP-A, Supplement 1, "Westinghouse Structural Reliability and Risk Assessment (SRRA) Model for Piping Risk-Informed Inservice inspection," February 1999

Supporting Onsite Documentation

- Calculation No. SM-1244, Rev. 0, "Segment Definitions for Surry Unit 2 RI-ISI Program"

- Calculation No. SM-1245, Rev. 0, "Risk-Informed Inservice Inspection - Quantification of Core Damage Frequency (CDF), SPS U2"

- Calculation No. SM-1246, Rev. 0, "Risk-Informed Inservice Inspection - Indirect Effects Analysis, SPS U2"

- Calculation No. SM-1247, Rev. 0, "Risk-Informed Inservice Inspection - Quantification of Large Early Release Frequency (LERF), SPS U2"

- ET ISI 00-0001, Rev. 0, "RI-ISI Failure Probabilities, Surry Power Station Unit 2 "

- Calculation No. SM-1250, Rev. 0, "Surry Unit 2 Risk-Informed Inservice Inspection – Risk Evaluation"

- Calculation No. SM-1251, Rev. 0, "MS Access Database for the Risk Informed Inservice Inspection (RI ISI) Program, SPS U2"

- Calculation No. SM-1252, Rev. 0, "Risk-Informed ISI Perdue Model Calculations, SPS U2"

- ET ISI 00-0002, Rev. 0, "RI-ISI Miscellaneous Documentation, Surry Power Station Unit 2"

- Calculation No. SM-1257, Rev. 0, "Change in Risk Calculations for Surry Unit 2 Risk-Informed Inservice Inspection"

Table 3.1-1 ASME Class 1 System Selection and Segment Definition			
System Description	PRA	Section XI .	Number of Segments
ACC (SI) – Accumulator	Yes	Yes	9
CH - Chemical & Volume Control	Yes	Yes	14
ECC (SI) – Emergency Core Cooling	Yes	Yes	13
RC - Reactor Coolant	Yes	Yes	100
RH - Residual Heat Removal	Yes	Yes	3
Total			139

Table 3.4-1 Failure Probability Estimates (without ISI)		
Failure Mechanism	Failure Probability Range (Small Leak probability @40 years, no ISI)	Susceptible Systems
Fatigue	3E-07 - 7E-04	ACC,CH,ECC,RC,RH
Stress Corrosion Cracking	9E-03 - 1E-02	RC
Striping/Stratification	1E-04 - 3E-03	ECC,RC
Vibratory Fatigue	4E-05 - 8E-03	CH,RC

Table 3.5-1 Number of Segments and Piping Risk Contribution by System (without ISI) (Values shown are expected values)					
System	# of Segments	CDF without Operator Action (/yr)	CDF with Operator Action (/yr)	LERF without Operator Action (/yr)	LERF with Operator Action (/yr)
ACC	9	1.08E-09	1.07E-09	2.50E-11	5.31E-12
CH	14	1.74E-06	1.74E-06	2.70E-08	2.70E-08
ECC	13	2.94E-07	2.94E-07	3.58E-10	3.58E-10
RC	100	2.60E-05	2.57E-05	2.62E-07	2.61E-07
RH	3	3.30E-11	3.30E-11	1.38E-11	1.38E-11
TOTAL	139	2.80E-05	2.78E-05	2.89E-07	2.88E-07

Table 3.10-1 COMPARISON OF CDF/LERF FOR CURRENT SECTION XI AND RISK-INFORMED ISI PROGRAMS RC SYSTEM WAS THE DOMINANT CONTRIBUTOR TO THE CHANGE		
Case (Systems Contributing to Change)	Piping CDF/LERF Current Section XI	Piping CDF/LERF Risk-Informed
CDF No Operator Action	4.52E-06	4.50E-06
CDF with Operator Action	4.51E-06	4.49E-06
LERF No Operator Action	5.37E-08	5.36E-08
LERF with Operator Action	5.36E-08	5.36E-08

Surry Unit 2 Structural Element Selection Results and Comparison to ASME Section XI 1989 Edition Requirements
Table 5-1

System	Number of High Safety-Significant Segments (No. in Augmented Program)	RI-ISI Program High Safety-Significant Structural Elements (Class 1 only)	ASME Section XI ISI Program 1989 Edition Examination Category Weld Selections		Total Number of Segments Credited in Augmented Programs
			B-F	B-J	
ACC	0	0	0	10	0
CH	6	6[a]	0	70	0
ECC	13	7[b] + 18[c]	0	45	0
RC	34(3)	12[a] + 1[b] + 32[c]	18	166	3
RH	0	0	0	4	0
TOTAL	53(3)	18[a] + 8[b] + 50[c]	18	295	3

Notes

a) Focused VT-2 examination of segment due to failure mechanism postulated as vibration fatigue.

b) Scheduled focused VT-2 examination of segment socket welds.

c) Scheduled volumetric examinations.

Surry Unit 1 Structural Element Selection
Results and Comparison to ASME Section XI
1989 Edition Requirements
Table 5-2

System	Number of High Safety-Significant Class 1 Segments (No. in Augmented Program)	RI-ISI Program High Safety-Significant Structural Elements (Class 1 only)	ASME Section XI ISI Program 1989 Edition Examination Category Weld Selections		Total Number of Segments Credited in Augmented Programs
			B-F	B-J	
ACC	0	0	0	9	0
CH	6	13[a] + 6[b]	0	39	0
ECC	6	10[a] + 12[c]	0	4	0
RC	21(3)	21[a] + 9[b] + 21[c] + 3[d]	18	146	3
RH	1	1[c]	0	4	0
TOTAL	34(3)	44[a] + 15[b] + 34[c] + 3[d]	18	202	3

Notes

a) Scheduled augmented surface examinations required by subpanel. These examinations were combined with volumetric and visual examination required locations.

b) Scheduled focused VT-2 examination of segment due to failure mechanism postulated as vibration fatigue.

c) Scheduled volumetric examinations.

d) Scheduled volumetric examinations of socket welds.

APPENDIX A

Relief Request R-1

Relief Request R-1

I. Identification of Components

ASME Class 1 socket weld connections identified as being High Safety Significant (HSS).

II. Impractical Code Requirements

Code Case N-577, Table 1 Examination Category R-A and WCAP-14572, Rev. 1-NP-A, Table 4.1-1, both require examination of HSS components based upon the postulated failure mechanism for the element of piping being examined. The requirement does not account for the geometric limitations imposed by socket welds when volumetric examinations are specified. Therefore, the current requirement is considered impractical.

III. Basis for Relief

Certain socket weld connections for Surry Unit 2 have been identified as HSS and require volumetric examination for their postulated failure mechanism. These instances are associated with a potential thermal fatigue damage mechanism either caused by a postulated temperature stratification or as a default mechanism for segments selected for their consequence of failure with no assumed active mechanism occurring. Performing a volumetric examination on a socket weld connection provides little or no benefit, being limited by the joint configuration and the smaller pipe size.

The ASME Code Committee recognized this problem and revised Code Case N-577 to allow substitution of the VT-2 examination method for all damage mechanisms on socket weld connections selected as HSS. The revised version is noted as Code Case N-577-1 and provides for the substitution in note 12 of Table 1 in the revised Code Case. The revised Code Case has passed Subcommittee XI, ASME Main Committee, and the Board on Nuclear Codes and Standards. (Note: The letter ballot closed March 28, 2000 with approval.) The revised Code Case will be issued with the next addenda of ASME Section XI.

Performing a VT-2 examination on the identified HSS location, where volumetric examination is specified, is the most reasonable alternative. The examination would be performed each refueling in conjunction with the required pressure tests, thus providing reasonable assurance of continued structural integrity.

IV. <u>Alternate Provisions</u>

Pursuant to 10 CFR 50.55a(a)(3)(ii) performing a volumetric examination on socket weld connections would result in unusual difficulty without providing any meaningful results, and thus no compensating increase in the level of quality and safety. Substituting a VT-2 examination as an alternative each refueling outage for these locations ensures reasonable assurance of component integrity.

APPENDIX B

Comparison of Surry Units 1 and 2 Summary of Results

Summary of Results
Surry Units 1 and 2

The Surry Unit 2 RI-ISI Class 1 Program identified 53 high safety significant (HSS) segments. As a result, 50 volumetric examinations and 26 focused VT-2 examinations will be performed over the inspection interval. The reduction in NDE (volumetric and surface type) examinations from the current Section XI Program for locations is approximately 84%. A detailed summary is provided in Table 5-1 of the submittal by system.

Although not required by the NEI template submittal, a comparison of the Surry Unit 2 results was made with Surry Unit 1. A detailed summary for Surry Unit 1 (Class 1 only) is provided in Table 5-2 of the submittal by system.

Several differences between the units with regard to design and RI-ISI analysis should be noted. Surry Unit 1 has extra check valves in the ECC and CH systems. These valves were placed in the system to separate sensitized stainless steel from the RCS during construction. The extra check valves allow different Class 1 boundaries for the ECC and CH systems on Surry Unit 1 than for Surry Unit 2. Correspondingly, there are more Class 1 welds in the Section XI Program on Surry Unit 2 than on Surry Unit 1 for the CH and ECC systems as a result.

The Surry Unit 2 RI-ISI analysis created more piping segments on the ECC system than on Surry Unit 1. Twelve of the thirteen HSS segments on Surry Unit 2 would correspond to the six HSS segments on Surry Unit 1. The analysis on Unit 2 was performed with segments separated by pipe size, while on Unit 1 the analysis combined several pipe sizes. The remaining ECC segment on Surry Unit 2 was a Class 2 segment on Unit 1 due to the extra check valves on Surry Unit 1. Similarly the CH system on Surry Unit 2 had more Class 1 segments due to an extra check valve on Surry Unit 1, however the number and location of the Class 1 HSS segments remained the same for both units.

The Surry Unit 2 RI-ISI Program is a Class 1 program only. As such, the segment ranking did not have ASME Class 2, 3 or nonclass segments as in Unit 1 to lower the relative ranking of the Class 1 segments. Additionally, the Surry Unit 2 Expert Panel noted as a result that more of the Class 1 segments were higher numerically when compared to their Unit 1 counterparts. They opted to include as HSS some of the Class 1 segments on Surry Unit 2 that were higher numerically, but did not exceed the automatic quantitative selection (>1.005 RRW). As a result a larger number of Surry Unit 2 piping segments were classified HSS. Correspondingly, Surry Unit 2 has an increased number of volumetric examinations required in the RI-ISI Program as compared to Surry Unit 1.

The RHR system for Surry Unit 2 did not have any HSS segments, while for Surry Unit 1 there was one HSS segment. Reviewing the Surry Unit 1 analysis identified that the segment in question had postulated some SCC potential on the 316 stainless steel material. The Unit 1 analysis was performed coincident to new information being received associated with SCC failures on the system. The extent and cause was not fully understood at the time. Prior to the Unit 2 analysis the SCC extent and cause was more fully understood as being limited to sensitized portions of type 304 stainless steel in the RHR system and not on the 316 type stainless steel. As such, on Surry Unit 2 SCC was not postulated for the segment as it was 316 stainless steel, but instead postulated thermal fatigue leading to a factor of approximately 7 in failure probability reduction. Additionally, the Surry PRA was updated between the Surry Unit 1 and Unit 2 RI-ISI analyses. The RHR system importance was lowered by new modeling assumptions. Both inputs combined to significantly lower the numerical results for the segment in question and for Surry Unit 2 the Expert Panel categorized the segment low safety significant (LSS).

The Surry Unit 1 RI-ISI Program was developed prior to the completion of WCAP-14572 Rev. 1-NP-A and NRC review. The ASME Section XI Code 1989 edition used by Surry requires surface examinations in conjunction with volumetric examinations or as stand alone examinations. As such, the engineering subpanel included surface examinations on many locations as an augmented requirement to both visual and volumetric examinations. Neither the WCAP nor Code Case N-577 requires surface examinations for the identified elements and the postulated damage mechanisms. The Surry Unit 2 analysis follows the WCAP and Code Case N-577. As such, there are no surface examinations in the Surry Unit 2 program. The Surry Unit 2 program also makes use of a relief request to perform visual (VT-2) examinations on socket welds as allowed by proposed ASME Code Case N-577-1, where volumetric examination would be impractical.