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Millstone Nuclear Power Station
Comments on DRG-1063, "An Approach for Plant-Specific Decision-making: Inservice Inspection of Piping" and Standard Review Plan (SRP) Section 3.9.8, "Standard Review Plan for the Review of Risk-Informed Inservice Inspection of Piping"

On October 15, 1997, by notice in the Federal Register (Volume 62, Number 199, Pages 53664-53667), the NRC requested public comment related to the guidance described in DRG-1063 and SRP Section 3.9.8.

Attachment 1 to this letter provides Northeast Nuclear Energy Company's (NNECO's) comments on Draft Regulatory Guide DG-1063 and SRP Section 3.9.8. Specific responses to NRC questions were requested in the FRN and are provided. NNECO considers risk-informed assessments and decision-making important to safe, economical, and reliable electricity from nuclear power, and is pleased to review and comment on these documents.

Should you have any questions regarding these comments, please contact Mr. Mario Robles, Jr. at (860) 447-1791, extension 0279.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

M L Bowling

M. L. Bowling
Recovery Officer - Millstone Unit No. 2

Attachment

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Attachment 1

Comments on:
Draft Regulatory Guide DRG-1063
"An Approach for Plant-Specific Decision-making: Inservice Inspection of Piping"

and

Standard Review Plan (SRP) Section 3.9.8
"Standard Review Plan for the Review of Risk-Informed Inservice Inspection of Piping"

January 1998

RESPONSES TO FEDERAL REGISTER NOTICE QUESTIONS

(A1) Is the level of detail in the guidance contained in the proposed regulatory guide and SRP clear and sufficient, or is more detailed guidance necessary? (A2) What level of detail is needed?

(A1) There is not enough detail in some sections of DG-1063 and too much in others. Use of 10 CFR 50.59 in its current form on Risk-Informed Inservice Inspection (RI-ISI) has the potential to eliminate any safety/cost benefits associated with the implementation of the risk-informed application. For example, RI-ISI has the potential to add accidents and malfunctions that are currently not under its scope. 10 CFR 50.59 guidance should be revisited and clarified for RI-ISI. The SRP seems to be adequate in its level of detail.
(A2) Repetition of guidance provided in DG-1061 is not necessary in DG-1063. Guidance in DG-1061 should only be referenced. (Section 4.3 Integrated Decision Making, Pages 28, 29, and 30 is an example where this comment is applicable. This section should be deleted from DG-1063 and replaced by a reference to DG-1061).

(B1) Is it acceptable to use qualitative information (e.g., not quantifying the change in risk--Δ CDF and Δ LERF) to propose changes in ISI programs? (B2) If so, does DG-1063 provide adequate guidance in this regard? (B3) Can qualitative assessments be used to identify and categorize piping segments as high, medium and low safety significant? How? (B4) What are the limitations of such an approach?

(B1) The original RI-ISI program assessment should include a quantitative comparison of risk between the existing Section XI ISI program and the proposed RI-ISI program to assure that, on a plant specific basis, these changes do not result in an unacceptable risk increase. Based on the knowledge gained from this original quantitative comparison, it should be acceptable to make minor program changes to a RI-ISI program on a qualitative basis once the delta risk margin is understood. (B2) Yes, the principles to be addressed are adequately described. (B3 & B4) Since the entire RI-ISI process includes both qualitative and quantitative, no prohibition should be put on either approach as long as a basis is documented for the decisions that are made.

(C1) Under the risk-informed approach, what is the appropriate size of the sample of welds or piping segment areas that should be inspected? (C2) What should the criteria be for selecting the sample size?

(C1) The approach in DG-1063 is adequate. One-hundred percent of the high failure potential high consequence elements should be examined and none of the low failure potential low consequence elements. However, in lieu of using the Perdue-Abramson model to determine the number of elements to be examined in each segment whose failure potential is low and whose consequence is high, the experience gained through the Westinghouse Owners Group (WOG) application studies should be allowed to be used. (C2) Based on the WOG experience, one element per each type of low failure potential and high consequence segments should be acceptable without application of

the model. Additionally, use of the Perdue-Abramson model has shown that aggregation of similar segments into one lot from which a single element may be examined is also acceptable. The NRC should consider evaluating the results of the WOG application studies to ascertain if a minimum of one element per segment or lot can be allowed when the segment is considered to have a low failure potential and high consequence without additional calculations and still maintain an acceptable confidence level.

(D1) How should welds or piping segment areas in the inspection sample be selected for inspection: randomly, those most likely to experience degradation, or some combination of random and possible degradation? (D2) What would be the basis for the recommended selection process?

(D1) The selection of welds or piping segment areas should be performed based on engineering insight as to the scope that is most likely to experience degradation. (D2) The overall high reliability of piping warrants a focused approach to examination selections. Experience has shown that Non-Destructive Examination (NDE) reliability is much more effective in identifying specific degradation than applying a random approach.

(E1) Once selected, should the same welds or piping segment areas be inspected at each inspection interval or should different welds or piping segment areas be included in the sample? (E2) What would be the basis?

(E1) There are advantages to both methods. The different weld sample examination method provides some qualitative reduction in the uncertainty associated with picking welds based on a postulated degradation mechanism. However, the same weld sample examination method could provide potential trending of possible degradation. We believe that, for the purpose of a RI-ISI program, the selection should be based on a weld's potential for failure during each inspection interval. If the process identifies a different weld to have the highest failure potential in subsequent inspection intervals or periodic program updates then that weld should be examined. (E2) The RI-ISI process could result in either method occurring and both should be equally acceptable.

(F) DG-1063 proposes a method for meeting the criteria for acceptable safety and quality, as addressed in 10 CFR 50.55a(a)(3)(I). That method applies leak frequency target goals to maintain piping performance levels at or improved over the existing performance observed when implementing ASME Section XI requirements. Are there other acceptable risk-informed means by which to meet the criteria in 10 CFR 50.55a(a)(3)(I)?

(F) Control of future leak frequencies using consumer risk model methods such as those contained in the Perdue-Abramson model provides some assurance. Of course there are no guarantees of leak frequency control. Historically, leak frequencies are dominated by the effects of active mechanisms such as flow assisted corrosion or vibration fatigue. Effective control of leak frequencies is therefore directly related to success in detection and control of active degradation mechanisms. Random ISI

exams in piping that is not subject to an active degradation mechanism does little to reduce observable leak rates. Thus the purpose of ISI is to detect any degradation mechanisms that could cause the piping to develop leaks. If there is an active mechanism, then the ISI can serve to monitor it, preferably in a mechanism-specific program such as for Inter-Granular Stress Corrosion Cracking (IGSCC).

Since ISI does not by itself reduce leak frequencies, demonstration of future control of leak frequencies should not be a subsidiary regulatory requirement. Based on analysis performed for the Surry plant, leak frequencies are not expected to rise when the RI-ISI program is implemented. In fact, they should fall because inspections will concentrate on actual or probable degradation sites. Therefore, quality and safety are maintained to equivalent levels as required by the regulation.

Surry's analytic demonstration of leak frequency control is illustrative. A plant that uses a quantitative approach to its program development would be penalized for performing a better analysis. Instead, the emphasis should be on program performance and monitoring. Following the program, if there is a flaw or leak, each plant will follow a corrective action and feedback mechanism that concentrates on identification of mechanisms and adjustment of the ISI program as necessary. There is also adequate reporting to allow the NRC to monitor industry leak frequencies, and compile a database of events to identify emerging issues. With the accumulation of experience, there is little motivation for front-end analytical prediction of performance.

(G) Should the scope of DG-1063 permit licensees to propose ISI changes to selected systems, in lieu of assessing the entire piping in the plant? For example, would it be acceptable for a licensee to limit its analysis to Class 1 piping (reactor coolant system piping) and not consider other piping in the plant? Such an analysis would not provide information required for categorizing piping in the plant and thereby grading the inspection based on plant risk. It would also discourage the use of risk-insights (e.g., PRA) to identify risk-significant piping within the plant. How can the concept of assessing risk in an integrated fashion be maintained if the scope were limited to one or a limited number of systems, such as Class 1 piping. What is gained by analyzing all the systems versus only selected systems? What is lost by minimizing the scope?

(G) Based on the work performed at Millstone Unit No. 3, we believe that limiting the analysis to a single system or class of piping will not provide the full benefit of a risk-informed process. The entire process is based on ranking based on risk. If the process is skewed to one or two systems, major segments of piping that may be large contributors to risk will not be examined.

(H) The decision metrics described in Attachment 2 to DG-1063 identify a 2-by-2 matrix for identifying a graded approach to inspection based on risk and failure potential. Piping segments categorized as high-safety-significant and high-failure-potential receive more inspections than segments categorized as high-safety-significant and low-failure-potential. The number of inspections for the high-safety-significant and low-failure-potential segments is based on meeting

target leak frequency goals and incorporates uncertainties in the probability of detection. What other methods are available to provide a comparable level of quality and safety? What are the technical bases for those other methods?

(H) The currently described process is acceptable. It should not be necessary to continue to use a statistical model to determine how many locations need to be examined in a segment. See response to questions in (C) above.

(I) How should the time dependence of degradation mechanisms be accounted for in selecting inspection intervals and categorizing the safety significance of pipe segments?

(I) Active degradation mechanisms such as IGSCC and Free Available Chlorine (FAC) are controlled by augmented inspection programs. These augmented programs will remain intact and may be enhanced based the insights gained by a Risk-Informed process. For normal fatigue, the 10-year inspection interval is adequate to cover the time dependence issue.

(J) On what basis could the requirement for ISI be eliminated? For example, if a detailed engineering analysis identifies a Class 1 or 2 piping segment as low-safety-significant and low-failure-potential, is it acceptable to eliminate the requirement for ISI or should a Class 1 or a 2 pipe segment be considered part of the defense-in-depth consideration and be required to have some level of inspection regardless of its categorization as low-safety-significant and low-failure potential? If yes, why? If not, why not?

(J) Yes. The statistical evaluations performed in the Westinghouse Surry pilot plant study showed that these examinations could be eliminated. Low failure potential, low consequence segments have no significant driving force for failure. If failures do occur, they will in likely consist of small leaks. Continued ASME Code pressure tests should be adequate to cover risk in these segments. It is important to note that, as part of the RI-ISI process, defense-in-depth is considered within the expert panel review.

K) Are data bases available on degradation mechanisms and consequences of piping failures? Is data available to identify the secondary effects that can result from a pipe break, such as high-energy pipe whip damaging other piping and components in the vicinity of the break? What are the industry's plans for developing and maintaining an up-to-date data base on plant piping performance? Should a commitment to develop and maintain such a data base be required for a RI-ISI program? How could it be ensured that the data base is maintained?

(K) Yes. We believe that databases are available that provide sufficient information for a RI-ISI program. We think that the references provided in Table A2.5 are excellent. However, we do recognize that an industry focused database that is maintained to support this process would be beneficial. We believe that with reporting requirements already regulated, the NRC would be in the best position to develop and maintain such

a database. If the NRC developed and maintained this database, it should be available to the public and made accessible through the INTERNET.

Based on the work that was performed at Millstone Unit No. 3, we suggest a caution statement be added in DG-1063 when using industry failure databases, stating that "Variations among individual plants may be lost in the data if industry databases are used to derive failure potentials. Moreover, the event descriptions contained in these databases typically lack a detailed root cause analysis providing the specifics about the precursors that lead to failures. It is important to use plant specific failure data when available".

At Millstone Unit No. 3, we found the information available in these databases to be about 30% helpful for determining failure potential. The remainder of the determination was based on detailed evaluation of Millstone-specific conditions and the Westinghouse SRRA code.

(L) Does the application of the Perdue-Abramson model (DG-1063, Attachment 4), with the use of the decision metrics and leak frequency goals (DG-1063, Attachment 2) provide an alternative acceptable level of quality and safety as required by 10 CFR 50.55a(a)(3)(I)? Alternatively, should there be a leak frequency goal independent of core damage frequency goal, as a measure of defense in depth?

(L) As has been discussed previously in the response to item (F), leak frequency goals should not be interjected as a subsidiary goal or used to govern the selection of inspection locations. A secondary goal will lead to loss of focus and trade-offs in an effort to satisfy two goals simultaneously. Leak frequency should be monitored via actual program performance, consistent with the goal to reduce the frequency of actual leaks. Reduction in leaks will occur as focused inspection for actual or potential degradation mechanisms becomes widespread throughout the industry. It is our view that attempting to control leak frequency is not an effective defense-in-depth attribute for controlling CDF. Especially when quantitative methods are used for development of the RI-ISI program, control of CDF is directly demonstrated by the quantitative analysis. Reduction of leak frequency is a desirable <u>byproduct</u> of achieving the main objective of controlling the CDF.

(M) Is the guidance proposed by the staff for finding a fracture mechanics computer model acceptable for use in RI-ISI programs clear and adequate? If not, what is missing?

(M) Yes. The guidance provided in Section A1.2 is clear and adequate.

(N) Is the guidance on risk categorization clear and sufficient, or is additional guidance needed? What additional guidance is needed?

(N) Yes. The guidance on risk categorization is clear.

(O) Table A5.1, in DG-1063, identifies a proposed checklist that could assist in identifying potential locations for various degradation mechanisms in a pipe. Is this checklist complete? What additional information could enhance the usefulness of such a check list?

(O) Yes. This is good guidance as long as it is not intended to be used as an all inclusive checklist. Plant-specific materials and resultant degradation mechanisms should be evaluated on a case-by-case basis.

COMMENTS BY SECTION/PAGE DG-1063

Section 1.2 Purpose of the Guide, Page 3 - This Section states that Licensees that propose to apply a RI-ISI program will be required to amend their Final Safety Analysis Report (FSAR, Sections 5.34 and 6.6) accordingly. It is not clear based on the guidance provided as to whether a Technical Specification change will also be required.

Section 1.6 Abbreviations/Definitions, Page 7 - The definition of Expert Elicitation" alludes to using outside experts (i.e., experts not part of the plant staff) as the acceptable standard when applying expert elicitation to estimate failure probabilities and associated uncertainties of material in question for specified degradation mechanisms. We find that the recommendation to use outside experts as the acceptable standard is unnecessary as part of the definition. It should be up to a licensee to determine the best qualified individuals to perform this function.

Section 1.6, Abbreviations/Definitions, Page 7 - The definition of "Expert Panel" should be expanded and revised to include specific reference to the personnel that actually are used. It is not made up of primarily inservice inspection (ISI) personnel that are experienced in inservice inspection program development. The ISI personnel are just one part of the panel makeup. Primary members on the panel are those personnel that provide insights from Operations, Maintenance, Engineering, and PRA.

Section 1.6, Abbreviations/Definitions, Page 8 - RRW "Risk Reduction Worth" needs to be added, defined, and recognized as an importance measure.

Section 2, Element 2: Perform Engineering Analysis, Last Paragraph, Page 11 - We believe that the use of an "Expert Panel" is essential to the process and any reference to making sound engineering judgments by combining traditional engineering analysis and PRA methods without an expert panel is unacceptable. As one of the 2 WOG plants that applied this process, it is unlikely that a plant review committee could look at this process once all the work has been completed and ascertain its acceptance. Use of an expert panel should not be permissive, but mandatory under this paragraph. ((f.) E. A. Oswald and R. A. West, "Use of an Expert Panel in the Development of a Risk-Informed Inservice Inspection Program for Piping," *Risk Informed Decision Making*, PVP-Vol. 358, pp. 15-24, American Society of Mechanical Engineers, July 1997.)

Section 3.2 Formal Interactions With The Nuclear Regulatory Commission, Paragraph 2. Page 13 - Reference to performing a 10 CFR 50.59 evaluation is cited in this paragraph when changes are made to a RI-ISI program. The first example on page 14 under this statement says that such an evaluation is acceptable provided that the effect of the changes on plant risk increase is insignificant. A direct tie needs to be stated that insignificant increases in risk are defined in Reference 9 (DG-1061) and that these increases are acceptable in lieu of the requirements that an Unreviewed Safety Question exists under 10 CFR 50.59, evaluation "[i.e., 50.59(2)(i)] if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased."

Section 3.2 Formal Interactions With The Nuclear Regulatory Commission, Paragraph 3. Page 14 - For a licensee that chooses to use DG-1063, it should be explicitly stated that inspection method changes to a RI-ISI program are acceptable without NRC approval, if the requirements of ASME Section XI, IWA-2240 "Alternative examination methods, a combination of methods, or newly developed techniques may be substituted for the methods specified in this Division, provided the Inspector is satisfied that the results are demonstrated to be equivalent or superior to those of the specified method", are met under the endorsed ASME Code Edition and Addenda requirements of 10 CFR 50.55a(b).

Section 4.1 Traditional Analysis, Third Sentence, Page 15 - The statement that PRA insights may be useful in the evaluation by providing information on relative importance of various SSCs should be deleted. This paragraph describes traditional analysis and does not refer to PRA insights.

Section 4.1.2 Defense-in-Depth, Page 16 - Defense-in-depth is not defined in the regulations. It is used in 10 CFR 50 Appendix R, Generic Letters, and numerous Information Notices. It has been stated to be a philosophy and a concept that a licensee has to meet. The guidance in this section provides a clear statement of the attributes needed to meet the philosophy and concept of defense-in-depth and is a positive point for the process. Since the attributes described in DG-1061 are the same as those printed in DG-1063, there is rationale to have them printed in both documents. DG-1063 should reference DG-1061 in this section.

Section 4.1.3 Safety Margins, Page 17 - The implicit philosophy of this section is that ISI essential safety margins need to be reexamined. The concept of margin applies to the difference between operation at levels of "loading" with high assurance of performance versus levels at which failure is a realistic concern. While ISI and performance monitoring provide assurance related to piping reliability, it does not directly provide margin. Margin is indirectly incorporated by use of conservative design allowables, conservative permitted flaw sizes, and conservative flaw evaluation methods, as required by the ASME Code. There are no proposals to reduce such margins as part of a RI-ISI program. Thus, safety margins are maintained. Piping reliability is best addressed as a quality assurance and corrective action concern rather than a safety margin issue.

Use of leak frequency targets is a necessary input to the Perdue-Abramson model and the values suggested in Section A2.7.3.3 of DG-1063 appear reasonable when that model is used. However to turn these model input parameters into a program objective is unnecessary and a distraction from the main focus of the program. See our comments to items (F) and (L).

Also, since the application of the Perdue-Abramson model uses the goals to help determine how many structural elements will be selected for examination, their application is limited to High Safety Significant piping segments. Given the WOG pilot work that has been completed, it is clear that the Perdue-Abramson model does not have to be applied to any segments other than those which fall into the low failure potential portion of Group 1 or entirely in Group 2 of Figure A2.8 (i.e., segments with high consequence and low failure probability).

If leak target goals are imposed, the targets should be at least partly plant-specific. Each plant would consider the failure insights gained from industry experience. However, it is more important to evaluate plant specific pipe segment materials, pipe sizes, and operational parameters within the subject systems to determine adequate target leak frequency goals. It is our view that such goals, if required, should also be adjusted depending not just on size, but also on piping system energy level, since industry experience has shown that a given leak occurrence rate is more tolerable for low energy systems such as service water than for high energy systems such as main steam or feedwater.

Section 4.2 Probabilistic Risk Assessment, Reference to Figure 4.1 and Figure 4.1, Pages 18 and 19 - We do not believe that Figure 4.1 is necessary and it should be deleted. The quality attributes described in the process are sufficient to meet all of these criteria.

Section 4.2.2 Piping Segments, Page 22 - We do not agree that a piping segment must be subject to the same degradation mechanism. The work at Millstone and Surry did not determine piping segments based on the consideration that each segment had to be subject to the same failure mechanism. Using this criteria results in an additional burden on a licensee with no resultant increase in the effectiveness of the process. Many segments have multiple potential degradation mechanisms and we see no value in this requirement.

Figure 4.2 General Approach to Risk-Impact Evaluation of Piping, Page 26 - The first step depicted in this figure requires the identification of the associated weld populations in a segment. This requirement is appropriate for piping segments which are currently within the examination boundaries of an existing ISI program. However, when segments include piping that is field run, is non-Code class, or is presently exempt from Section XI ISI requirements, it becomes difficult for a licensee to count all the welds in the segment. Estimated numbers of welds in such segments should be allowed to be used. In older plants, it would be necessary to remove insulation and physically go out and count the welds to meet this requirement. This level of intrusion is not warranted in this process.

Section 4.2.6.4 Human Reliability Analysis, Page 27 - Attachments 4 and 5 are not provided. To be evaluated as part of the RI-ISI process, the HRA associated with a pipe failure should include potential recovery actions such as isolating the pipe leak or aligning alternate systems.

Section 4.2.7 Element Selection, Page 27 and 28 - This section attempts to describe what criteria can be used to demonstrate an acceptable level of quality and safety to allow a licensee to prove that a RI-ISI program can be used in lieu of an existing Section XI ISI program. We do not believe that target leak rate goals can be directly related to an acceptable level of quality and safety between these programs.

Section 4.3 Integrated Decision Making, Pages 28, 29, and 30 - This section is identical to DG-1061 and should be deleted. A reference to DG-1061 would be more appropriate.

Section 5.4 Acceptance Guidelines, I. Inspection Program (1) and (2), Page 39 - There appears to be no need to inform the NRC when items are deleted from the RI-ISI program. NRC notification is required when items are added to the program. We believe that changes in numbers of items that are included for examination within a RI-ISI program should be identified to the NRC as part of any periodic program update. Details on each item should remain at the plant for audit. There should be no distinction between additions and deletions for reporting purposes.

Section 5.4 Acceptance Guidelines, K. Additional Examinations, Pages 40 and 41 Requirements for additional examinations must consider that, in a RI-ISI program, welds that did not require volumetric examination during construction will now require this level of examination. When this occurs construction weld flaws such as slag and porosity will be identified that may not meet the original construction code requirements if a volumetric examination had been required. The requirements of this section allow an evaluation to be performed to determine the cause of the flaws identified. If there is no active degradation mechanism(s), then no additional examinations should be required. A licensee's evaluation would determine if repair was warranted on the individual weld examined. No additional examinations should be required. This is an important point to address in this section. It is not the intent of a RI-ISI program to have to rebuild a plant to a higher quality level than it was originally constructed. Requiring additional examinations and possible corrective actions based on discovering non-active degradation is not a requirement of this program. We suggest that a statement be provided in this section to clearly address this point.

Section 6.2.2.2 Determination and Quantification of Accident Sequences, Page 48 This section essentially requires that the entire PRA be submitted as part of the program documentation. This requirement appears to be excessive and only a summary should be required for submittal with a RI-ISI program. Actual detailed information should remain at the plant site for audit.

Section 6.4 Development of ISI Program, 2nd Paragraph, Page 51 - The second sentence should be deleted in this paragraph. The program determines the elements to examine and restating current Code selection requirements is not necessary. It may happen that the selected elements for examination are highly stressed, at geometric discontinuities, and at terminal ends, but requiring these locations to be in the program by a general statement does not provide any substantive benefit.

Section 6.6, Table 6.1 Documentation Summary Table, Page 54 - The requirements in this table are excessive and appear to be what has to be included in a RI-ISI program submittal. Under the "Categorization" block a requirement exists to document additional piping elements that will undergo ISI, but are outside the scope of this document. If the intent of this requirement is to identify all augmented inspection program locations (i.e., IGSCC and FAC locations), this could duplicate effort with no additional value in this process. We believe that the requirement to have to identify existing Section XI ISI elements for examination and compare those to the proposed RI-ISI program elements is unneccessary. A description of the changes by numbers should be sufficient. If a new plant were to have to meet this requirement, they would have to go through the expense of developing a Section XI ISI program for the purpose of comparing it to their RI-ISI program. This same situation could also apply to an existing plant that is developing a new 10-year interval ISI program. This requirement should not exist outside of a pilot plant submittal that is intended to prove the acceptability of the process. If the NRC accepts the methodology to develop a RI-ISI program there is no reason to continually check the program against the requirements in Section XI.

Appendix 1: A1.3.6 vs. Appendix 2: A2.5.2 Credit for Leak Detection - The Appendix 1 section recommends that "pipe failures that would be detected by observations of leakage should not be included ..." when calculating failure probabilities. We strongly endorse this position because it is consistent with the "as-built, as-operated" approach for performing risk-informed analysis and helps to realistically address what can be accomplished by ISI. It should be noted that leak detection does not usually affect small leak probabilities since there is no leak detection until the leak occurs; only disabling leaks and rupture probabilities are affected.

In contrast to Appendix 1, Appendix 2 states that when calculating risk importance of a segment, leak detection should not be credited. This approach is questionable because the risk importance calculated in this way is entirely hypothetical. The risk calculated in this way is not that portion of the total risk that can be controlled or affected by an ISI program. If one were investigating the risk of deleting a certain leak detection instrument (e.g., a tank level gage) then calculation of segment risks without credit for leak detection would be technically correct. However, for determining the effectiveness of ISI, the analysis should be consistent with the "as-built, as-operated" philosophy. Pilot plant experience in expert panel meetings has shown they will not take excessive credit for such detection.

Appendix 2: Page A2-3, re: compensation for reduced number of inspections - The continuing paragraph at the top of page A2-3 of DG-1063 states "Licensees who apply for ... decreases in the number of inspected elements are expected to ... seek improvement in inspections that would compensate for ... the decreased number of elements inspected." The underlying assumption in this statement is that one must perform a deterministic compensatory balancing using examination effectiveness. This is inconsistent with a risk-informed approach for determining which elements should be inspected. While there is often a benefit to improving inspection technology for a postulated degradation mechanism, this requirement is not justified. Also, it may be necessary to extend inspection technology to new configurations, similar to the extension of the examination volume that is beneficial for counter-bored welds. However, it is possible to develop a perfectly adequate risk-informed program that does not have an increased inspection effectiveness for individual elements if the postulated degradation mechanism is covered by the existing Code examination. Such improved technology should not be mandated on a deterministic basis.

This same reasoning applies to modification of inspection intervals for the sole purpose of compensatory balancing.

Appendix 2: Section A2.6 Risk Impact from Proposed Changes to the ISI Program, Mitigating System(s) Consequence, Pages A2-33, 34 - In the explanation of the exposure time, it is defined as the down time for a failed system/train or the time the system/train would be unavailable before the plant shutdown. It is a function of the test interval, the detection time and the allowed outage time (AOT). The OT or AOT term is used in the equation for piping failures in a standby system. We disagree with the use of this term in defining $T_{exposure}$ since in most situations once the pipe leak/break is discovered, operations personnel would take steps to isolate the break, thus changing the consequences. In other words, the consequences for the AOT period would be less severe than before the discovery. In addition, it is mentioned that the mission time of 24 hours was omitted because the time is short compared to the test interval. This could also be said of the AOT which is generally 72 hours and which is also small in comparison to the test intervals. Other reasons for not using the AOT are provided on Page 100 of the WCAP-14572 Rev. 1 "Westinghouse Owners Group Application of Risk Informed Methods to Piping Inservice Inspection Topical Report".

The above argument can also be used for OT's used in the System Continuously Operating situation.

COMMENTS BY SECTION/PAGE SRP 3.9.8

General all Sections - Use of the term "More and "Less" Safety Significant should be changed to "High" and "Low" Safety Significant.

Section II.2.2.2 Piping Segments, Page 3.9.8-11 - Piping segments should not be required to be subject to the same degradation mechanism.

Section II.3 Element 3: Implementation and Monitoring Programs, 4th Paragraph down, Page 3.9.8-17 - The inspection interval for the program should be 10-years as stated in ASME Section XI, unless specific data on a degradation mechanism frequency suggests that a different interval is required.