



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

September 21, 1990

CHAIRMAN

The Honorable Edward J. Markey
United States House of Representatives
Washington, D.C. 20515

Dear Congressman Markey:

I am responding to the August 9, 1990 letter from you and several other Members of Congress concerning the Nuclear Regulatory Commission (NRC) Independent Review Team (IRT) Report, "Welding and Nondestructive Examination Issues at Seabrook Nuclear Station" (NUREG 1425), and in particular, its treatment of the 100 percent review of radiographs conducted by the Yankee Atomic Electric Company (YAEC). A detailed response to your specific questions is enclosed. Please note that Attachment 2 to the enclosure provides the IRT notes of interviews with licensee and contractor staff. Such inspector notes are normally not made publicly available, and we request that you restrict their access and use to members of your staff.

The YAEC 100 percent review of radiographs, together with many other issues raised by members of the Congressional staff, was reviewed in detail by the IRT with members of the Congressional staff at the Seabrook site on August 28 and 29, 1990. This was the fifth meeting between the NRC staff and Congressional staff to review issues raised by the latter. As we note in the enclosure, the YAEC 100 percent reviews were only one source of NRC assurance of weld quality at the time of the Seabrook full power operating license issuance. Additional information, such as independent NRC radiographic inspection of welds, review of process and radiograph records, review of radiograph film, and observation of in-process welding, was considered by the NRC in arriving at its decision regarding weld quality. The IRT Report notes that although there were some procedural lapses, the YAEC 100 percent reviews were generally conducted in accordance with 10 CFR 50, Appendix B requirements under the auspices of the Quality Assurance Surveillance Program as described in the Seabrook Final Safety Analysis Report. The NRC also believes that previous explanations of the nature and duration of the YAEC 100 percent reviews are consistent and that a comprehensive and accurate discussion of the reviews is provided in NUREG-1425.

I trust that the information we are providing will resolve your concerns on this issue. Commissioner Remick did not participate in the preparation of this response.

Sincerely,

Kenneth C. Rogers

Kenneth C. Rogers
Acting Chairman

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Enclosure:
Detailed Response to
Specific Questions

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CHAIRMAN

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

September 21, 1990

The Honorable Edward M. Kennedy
United States Senate
Washington, D.C. 20510

Dear Senator Kennedy:

I am responding to the August 9, 1990 letter from you and several other Members of Congress concerning the Nuclear Regulatory Commission (NRC) Independent Review Team (IRT) Report, "Welding and Nondestructive Examination Issues at Seabrook Nuclear Station" (NUREG 1425), and in particular, its treatment of the 100 percent review of radiographs conducted by the Yankee Atomic Electric Company (YAEC). A detailed response to your specific questions is enclosed. Please note that Attachment 2 to the enclosure provides the IRT notes of interviews with licensee and contractor staff. Such inspector notes are normally not made publicly available, and we request that you restrict their access and use to members of your staff.

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A handwritten signature in cursive script that reads "Kenneth C. Rogers".

Kenneth C. Rogers
Acting Chairman

Enclosure:
Detailed Response to
Specific Questions



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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September 21, 1990

The Honorable John F. Kerry
United States Senate
Washington, D.C. 20510

Dear Senator Kerry:

I am responding to the August 9, 1990 letter from you and several other Members of Congress concerning the Nuclear Regulatory Commission (NRC) Independent Review Team (IRT) Report, "Welding and Nondestructive Examination Issues at Seabrook Nuclear Station" (NUREG 1425), and in particular, its treatment of the 100 percent review of radiographs conducted by the Yankee Atomic Electric Company (YAEC). A detailed response to your specific questions is enclosed. Please note that Attachment 2 to the enclosure provides the IRT notes of interviews with licensee and contractor staff. Such inspector notes are normally not made publicly available, and we request that you restrict their access and use to members of your staff.

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Kenneth C. Rogers
Acting Chairman

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CHAIRMAN

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NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

September 21, 1990

The Honorable Peter H. Kostmayer
United States House of Representatives
Washington, D.C. 20515

Dear Congressman Kostmayer:

I am responding to the August 9, 1990 letter from you and several other Members of Congress concerning the Nuclear Regulatory Commission (NRC) Independent Review Team (IRT) Report, "Welding and Nondestructive Examination Issues at Seabrook Nuclear Station" (NUREG 1425), and in particular, its treatment of the 100 percent review of radiographs conducted by the Yankee Atomic Electric Company (YAEC). A detailed response to your specific questions is enclosed. Please note that Attachment 2 to the enclosure provides the IRT notes of interviews with licensee and contractor staff. Such inspector notes are normally not made publicly available, and we request that you restrict their access and use to members of your staff.

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Sincerely,

Kenneth C. Rogers
Acting Chairman

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WASHINGTON, D. C. 20555

September 21, 1990

The Honorable Nicholas Mavroules
United States House of Representatives
Washington, D.C. 20515

Dear Congressman Mavroules:

I am responding to the August 9, 1990 letter from you and several other Members of Congress concerning the Nuclear Regulatory Commission (NRC) Independent Review Team (IRT) Report, "Welding and Nondestructive Examination Issues at Seabrook Nuclear Station" (NUREG 1425), and in particular, its treatment of the 100 percent review of radiographs conducted by the Yankee Atomic Electric Company (YAEC). A detailed response to your specific questions is enclosed. Please note that Attachment 2 to the enclosure provides the IRT notes of interviews with licensee and contractor staff. Such inspector notes are normally not made publicly available, and we request that you restrict their access and use to members of your staff.

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Kenneth C. Rogers
Acting Chairman

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ENCLOSURE

Question I:

Is it the Commission's position that the YAEC 100% review was an activity affecting quality? If so, under 10 CFR 50, Appendix B of the Commission's regulations, what documentation of this review is required to be maintained?

Response:

The Yankee Atomic Electric Company (YAEC) 100% radiograph review was an activity affecting quality. The required documentation is that which is needed to show weld quality. These matters are further discussed below.

I.A Quality Aspects

The following quality assurance (QA) program excerpt relates to the design and construction of Seabrook Station and is from the Final Safety Analysis Report (FSAR), which is required in accordance with 10 CFR 50.34 to include a discussion of how the applicable requirements of 10 CFR 50, Appendix B, are satisfied.

The YAEC program for quality assurance normally involves three control levels:

Level 1 - Quality control by vendors, constructors and United Engineers and Constructors (UE&C) on the activities they perform, [and] by YAEC on startup activities. This includes reviews, inspections and tests.

Level 2 - Surveillance of design, fabrication and construction activities, including Level 1 Quality Control. Contractors provide this level for the design and procurement phases. UE&C and YAEC Nuclear Services Division (YNSD) provide additional surveillance on site construction activities.

Level 3 - Audits by YAEC QA Department of activities performed by Level 1 and 2 organizations.

Assurance by YAEC that contractor programs are properly implemented is accomplished, in part, by surveillance and audits at the construction site by YAEC QA representatives.

The YAEC program for the review of radiographs supplied by Pullman-Higgins (P-H) and other contractors and vendors was a surveillance activity which, as discussed above, was a Level 2 QA program activity affecting quality. Concurrent with the start of radiographic examinations of piping in 1979, YAEC began an overview of all P-H pipe weld film with the intent to reduce the 100% overview when confidence in P-H's ability to properly identify and correct deficiencies had been obtained. The overview continued

throughout the piping installation and from all indications appeared to have resulted in YAEC performing a 100% overview on all P-H final pipe weld radiographs. The 100% scope and application of this program was not specified by a regulatory or code requirement but was voluntarily implemented by YAEC to provide confidence that equipment, structures, and systems will perform satisfactorily in service. It is in this context that the NRC Independent Review Team (IRT) documented the following:

These 100-percent inspection activities were in excess of the ASME Code, the ANSI B31.1 Code, and 10 CFR Part 50, Appendix B requirements normally employed at a construction site.

As pointed out in the cover letter transmitting these Congressional questions to the NRC, the IRT also concluded that:

These additional overviews needed to be performed in order to identify deficiencies missed by the piping contractor.

A similar NRC conclusion was reached in 1984 based on the nondestructive examination (NDE) assessment results identified during the NRC Construction Appraisal Team (CAT) inspection. In a March 15, 1990 letter to Congressman Kostmayer in response to his questions regarding the CAT inspection report (IR 50-443/84-07), the NRC staff noted that:

In documenting the difference between the radiographic film which had been reviewed by the applicant and that which had not, the CAT inspectors specifically highlighted the fact that the radiographic review process would have represented a regulatory concern had it not been for the applicant's review process. Hence, this area of inspection was not listed as one where either potential enforcement actions or significant weaknesses were identified.

The NRC staff considered the YAEC radiograph review program to be an activity affecting quality commencing with its implementation as a QA program Level 2 activity. Further, since surveillances are normally planned as sampling activities, the NRC staff initially considered the conduct of the YAEC radiograph review program at a "100%" level to be a conservative licensee measure to comprehensively address problems identified in the QA Level 1 contractor programs, not a specific program requirement. Had the licensee chosen to implement less than a 100% review, no NRC regulation or code requirement would necessarily have been violated. However, ongoing NRC construction inspections, like the CAT inspections and Region I NDE Van inspections, would have evaluated the effectiveness of any reduced level of overview and any quality inadequacies identified would have been considered for enforcement action. The licensee, in this case, voluntarily adopted a program of radiograph review for 100% of the film after it was turned over by Pullman-Higgins. In May 1984, YAEC proceduralized the scope and performance of the film review activities it had been conducting as surveillances.

Thus, the documents provided to Congress evidencing NRC cognizance in December 1983 of a 100% review of contractor radiographs were consistent with both earlier inspection records (e.g., IR 50-443/82-06) and subsequent inspection reports (e.g., the CAT inspection in 1984) in acknowledging and assessing the effectiveness of the licensee's radiograph reviews. Whether the NRC inspection records prior to and after December 1983 document the YAEC film review program as a 100% effort or not indicates neither a conflict nor inadequate licensee performance. In support of this position is the after-the-fact IRT assessment which concluded in NUREG-1425 that:

The 100-percent overview performed by the licensee's agent, YAEC, was an effective program for radiographic film interpretation, in that it successfully found and required the contractor to correct the missed deficiencies.

I.B Documentation Aspects

10 CFR 50, Appendix B, Criterion XVII requires that sufficient records shall be maintained to furnish evidence of activities affecting quality. At Seabrook, the essential sufficiency of the weld records was found during construction and by after-the-fact NRC review. Many documents, including surveillance reports, deficiency reports, deviation notices, management action requests, immediate action requests, controlled speed letters, non-conformance reports, and audit reports related to the YAEC radiograph review program, were classified as QA records. However, in accordance with the procedural requirements of the YAEC "QEG NDE Review Group" procedure issued in May 1984, Radiographic Review Requests (YRT-1s) and Radiographic Review Summaries (YRT-2s) should have been controlled and retained as QA records, but were not. This omission was caused by the licensee decision to treat the YRT form usage as an administrative control rather than a QA record activity. The licensee determined that, since evidence of the YAEC 100% review of P-H radiographs was provided by YAEC reviewer signature or initials on the Radiographic Inspection Reports (RIRs), retention of the YRT forms was redundant and unnecessary. The NRC staff agreed that the annotated RIRs would meet the requirement for documenting weld quality. However, since the procedural requirement to retain the YRT forms as QA records was never revised, a procedural violation was identified. The NRC staff evaluated this violation in accordance with the NRC Enforcement Policy (10 CFR Part 2, Appendix C, Section V.A) and documented this inspection finding in Region I IR 50-443/90-12.

The Code of Federal Regulations, in particular 10 CFR 50, Appendix B, does not mandate the specific records which must be maintained on safety-related pipe welding or repair welding. A commitment in this regard is documented in the Seabrook Station Final Safety Analysis Report (FSAR), which indicates general consistency with USNRC Regulatory Guide 1.88, Revision 2. Regulatory Guide 1.88, titled "Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records," endorses American National Standards Institute (ANSI) Standard ANSI N45.2.9-1974 for quality assurance records associated with nuclear power plants.

Additionally, the safety-related piping at Seabrook Station was generally installed in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, 1977 edition through the Winter 1977 addenda. The ASME Code (Section III, Subsection NA) identifies general requirements for quality assurance records.

For welding and weld repair activities on the safety-related piping installed at Seabrook Station, the quality records must include the final results of the code-required nondestructive examination (including final radiographs, where RT is required). The results of such radiographic examinations were documented on the RIRs. As noted above and in responses to Congressional staff members on this subject, the evidence of the YAEC review of radiographs is provided by the YAEC reviewer signature or initials on the RIRs. This was demonstrated during the reviews of final P-H RIRs by the IRT, in that each RIR consistently included the YAEC reviewer's signature or initials. The Radiographic Inspection Reports, which are retrievable for each weld requiring radiography, represent not only complete evidence of the film review but also record the acceptable results of these reviews in accordance with 10 CFR 50, Appendix B, Criterion XVII. These RIRs, supported by the actual radiographs, were maintained as QA records and provide sufficient documentary evidence of both the radiographic quality of the welds and the completeness of the YAEC overview program.

Question II:

Is it the Commission's position that the Seabrook licensee failed to comply with NRC regulations by not conducting its 100% radiograph review in accord with the requirements of 10 CFR 50, Appendix B?

Response:

As discussed in the response to Question I, the YAEC 100% radiograph review program was in general compliance with 10 CFR 50, Appendix B. YAEC performed the review within the framework of its QA surveillance program by requiring experienced film reviewers to inspect and interpret all P-H pipe weld radiographs of the finished weld as well as to review samples of in-process pipe weld radiographs. The 100% scope of the YAEC film review was considered to be a specific requirement only after the licensee's internal procedures mandated the review of all safety-related vendor and site generated radiographs. An NRC assessment of the YAEC film review program was documented in a Systematic Assessment of Licensee Performance (SALP) report, covering the last six months of 1983, in which the following was noted:

Apparent deficiencies in the contractor quality programs have been detected and are being corrected by licensee management overview.

Thus, the NRC was aware of the licensee's overview and, in reviewing this aspect of the program when it was in progress, found the licensee effort in conformance with NRC regulations.

This is not meant to imply that individual violations of 10 CFR 50, Appendix B, did not occur over the course of the licensee's conduct of radiograph reviews. For example, during an NRC Region I NDE Van inspection (50-443/82-06) in June 1982, independent NRC radiography found that a rejectable weld indication had been missed by the licensee's review. A Notice of Violation against 10 CFR 50, Appendix B, Criterion IX, was issued and resulted in significant corrective action to include initiation of secondary review of radiographs by the piping contractor prior to submittal to YAEC. Another example of noncompliance with 10 CFR 50, Appendix B, was the procedural violation relative to the handling of the YRT Forms discussed in the response to Question I. NRC staff evaluation of this violation, consistent with the NRC Enforcement Policy, was documented in Region I Inspection Report 50-443/90-12.

Notwithstanding individual violations of 10 CFR 50, Appendix B, it is the NRC staff's position that the overall YAEC film review program was conducted in conformance with NRC regulations and that adequate welds resulted. This position is confirmed by the IRT findings and conclusions documented in NUREG-1425.

It is also significant that the codes, standards, and regulations governing the design and construction of a nuclear power plant specify minimum requirements. Licensees must establish programs that meet or exceed such minimum requirements and tailor those programs to the unique circumstances and specific needs of

their particular situations and sites. Whether a defined level of review is adequate to meet the requirements of 10 CFR 50, Appendix B, is determined by the extent of the problem and the effectiveness of the review. In this case, the licensee's 100% review process was determined to be effective in that it resulted in technically adequate welds.

Question III:

With respect to the 100% film review performed by the Seabrook licensee's agent, the Yankee Atomic Electric Company (YAEC), the NRC staff has provided inconsistent descriptions of the review's duration, nature and regulatory significance. Attached to this letter is a listing of characterizations of this review.

Since the NRC has relied upon the existence of the 100% YAEC review for assurance of weld quality, please provide a coherent and comprehensive description of the YAEC review's purpose and duration, documents subject to this review, review procedures, record keeping requirements, and procedures for handling deficiencies.

Response:

III.A Assurance of Weld Quality

The NRC staff did not rely solely upon the 100% YAEC review of radiographs for assurance of weld quality. Other processes were also used to control and ensure weld quality. For example, 10 CFR 50.55a prescribes compliance with the ASME Boiler and Pressure Vessel Code, Section III, for nuclear power plant component (including pipe weld) design, fabrication, construction, testing, and inspection. A specific example of the associated design margins and construction conservatism applied to the erection of ASME piping systems is that the installed piping is subjected to a system hydrostatic test of not less than 125% of the design pressure. This testing requirement is applied to all of ASME piping, including Class 3 systems, the welding of which does not even require radiography.

Additionally, 10 CFR 50, Appendix B, Criterion IX, requires that measures be established to ensure that welding, heat treating, and nondestructive testing are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, specifications, and criteria. This generic requirement applies to a series of welding procedures and controls for qualifying each welding procedure, testing each welder, controlling the welding material and welding process variables; specifying the sequence of welding, heat treating, and NDE operations; and implementing a system of in-process checks, weld inspections, and nondestructive examinations that are designed to confirm overall weld quality.

NRC inspections and assessments were conducted as independent checks of the effectiveness of the licensee's program of piping installation controls. NRC involvement in the inspection of pipe welding and NDE activities at Seabrook Station is documented in publicly available

NRC inspection reports dating back to 1978. Certain of these inspections resulted in NRC enforcement actions, and licensee corrective actions in response to several of the violations involved significant programmatic changes. An example was the response to NRC Immediate Action Letter IAL 80-55 issued in December 1980 relative to NRC-identified pipe repair welding problems. A dual repair process sheet system, providing more control of the repair welding process along with the establishment of additional verification hold points, was instituted after a temporary "stop-work" action was taken by the licensee for pipe repair welding. Another example was the corrective action on the NDE violations issued in 1982 in conjunction with Inspection Report 50-443/82-06. In this case, the contractor initiated a secondary review of radiographs prior to turnover to the YAEC (Yankee Atomic Electric Company). These examples reflect licensee program changes to correct NRC-identified problems and directly impacted the welding records, repair welding, and NDE activities which have been the specific subject of Congressional questions.

In the areas of piping, welding, and NDE, the NRC conducted over 70 separate inspections prior to the issuance of a fuel load license. Several of these were conducted by resident inspectors monitoring field activities over an extended period and were supported by specialist inspections, as necessary. The NRC Mobile NDE Van was used on three separate inspections at Seabrook Station to conduct independent measurements and examinations of piping material, components, and welds. Independent radiography was an integral part of the Van inspections. A fourth inspection, by NRC technicians using NDE Van equipment, was performed to verify the adequacy of a licensee weld surface re-examination program. Over 200 completed welds were independently inspected by NRC personnel utilizing NDE Van equipment. One of these was a reactor coolant system weld specifically highlighted as a concern of Congress in an April 2, 1990 letter to the NRC from six Members, including all of the Members who signed the August 9, 1990 letter to the NRC. This weld was the subject of independent NRC radiography and inspection evaluation with no adverse findings. Additionally, several hundred other piping welds were the object of NRC examination of in-process or completed welding or NDE activities during routine resident and region-based inspections at Seabrook Station.

In addition to NDE Van and routine inspections, NRC inspections have included independent review of licensee radiographs to verify weld quality. During one such inspection by an NRC Construction Appraisal Team (CAT), over 3,400 pieces of radiographic film were reviewed. In total, these NRC radiograph review inspections, along with the NRC routine welding examination and independent NDE Van inspection efforts which were conducted prior to the issuance of the fuel load license in 1986, established NRC confidence in the quality of Seabrook welds and overall adequacy of pipe erection. Therefore, while the YAEC radiographic review program was an important part of the integrated system which provided assurance of pipe weld quality, it was clearly not the only aspect relied upon by the NRC to assure weld adequacy.

III.B Consistency of NRC Statements

Question III and its reference to attached NRC quotations question the consistency of NRC statements on the YAEC film review process. Several requests from Congressional staff members on these matters have involved questions of how the Pullman-Higgins radiographs were handled.

As we have previously described to the Congressional staff, the YAEC radiograph review program also encompassed the examination of film supplied by vendors and site contractors other than Pullman-Higgins. The radiographs for vendor-supplied component welds (e.g., Dravo pipe shop welds, manufacturer seam welds for equipment, etc.) were received on site in conjunction with the component delivery to the site. These radiographs were placed in vault storage for control and preservation prior to review by YAEC film reviewers. This process was different from the one for handling Pullman-Higgins (P-H) radiographs in that P-H film was reviewed as it was turned over to YAEC and placed in the vault only if accepted by the YAEC review.

The NRC CAT inspection (50-443/84-07) in 1984 appraised the entire welding and NDE program being implemented for the construction of Seabrook Station, not just that of Pullman-Higgins. Thus, the selected quotations from the CAT inspection report which were highlighted in the Congressional letter attachment reflect the difference between the film already reviewed by YAEC (e.g., Pullman-Higgins) and the film not yet so reviewed (e.g., vendor film), and do not contradict other NRC documentation and information provided to Congressional staff members.

A March 15, 1990 letter from NRC Chairman Carr provided an NRC staff response to a question in this regard raised by Congressman Kostmayer on March 7, 1990. The following is an excerpt from that response:

If the film in which the irregularities were identified by the CAT inspectors had been final accepted radiographs, enforcement actions would have been pursued. Instead, the CAT inspectors recognized that the licensee's program required the noted YAEC review of all safety related vendor and site generated radiographs.

A similar explanation applies to item 12 of the Attachment to the Congressional letter of August 9, 1990. What is highlighted in this item is a previous NRC staff response to Congressional staff questions on this matter which discusses "the licensee's intent to review 100% of the radiographs transmitted to the document control vault as quality records." The term "intent" was used in the NRC staff response because, as of December 1983, notwithstanding the fact that a YAEC 100% review of contractor radiographs was being conducted, there existed no regulatory, code, or procedural requirement for this 100% review to continue. As discussed in the response to Question 1, the licensee could have reduced the level of

their review below 100% anytime prior to May 1984, when the 100% scope of this surveillance activity was incorporated in a procedure. Had that occurred, NRC inspection would have evaluated the effectiveness of such a decision. In fact, the NRC CAT inspection in April and May 1984 observed the need for and value of continued application of a rigorous licensee film review program. It was in this context that the inspection findings and conclusions of the NRC CAT inspection were documented in IR 50-443/84-07 and were discussed and explained in the March 15, 1990 NRC response to Congressman Kostmayer's questions.

It is noteworthy that the 1984 NRC CAT documented the fact that "no deficiencies were identified with the radiographs that had received the applicant's review." No deficiencies were identified by the CAT in radiographs supplied by Pullman-Higgins because all of the Pullman-Higgins radiographs stored in the vault had already been appropriately reviewed and accepted by YAEC reviewers.

The NRC staff does not believe there are contradictions in the NRC statements quoted in the Attachment to the Congressional letter of August 9, 1990, forwarding this current set of questions. Concerns expressed in this regard appear to relate more to phrase interpretations and the evolution of NRC inspection documentation than to substantive conflicts in the NRC understanding of what transpired in that historical time frame. As a case in point, although it was not quoted in the current set of Congressional questions, a response to a Congressional staff member's request of May 29, 1990, regarding the YAEC 100% radiograph program is provided as an attachment (Attachment 1). This document illustrates consistency in the NRC understanding, responses, and NUREG-1425 documentation of this issue.

The NRC staff believes that a coherent and comprehensive description of the YAEC radiograph review program is documented in NUREG-1425. That report is consistent with the responses provided by the NRC staff to over 30 sets of questions on this subject from Congressional staff members and documents the findings of an inspection by the NRC Independent Review Team. That team inspection focused on the quality of the finished hardware and associated records as well as on the adequacy of the overall quality assurance program applied to the fabrication and NDE programs for pipe welds.

Question IV.A:

Of the welds approved by the senior Pullman-Higgins reviewer at the time of approval, which ones were the subject of subsequent repairs as a result of defects identified by the YAEC overview?

Response:

The NRC does not have this information. To ascertain the number of such welds, a considerable record search would be required. However, the team determined that the YAEC, in its overview of radiographs, rejected welds for various reasons, including weld defects that required repair and other code-required technique deficiencies. For example, if YAEC rejected a film for failure to meet the code (density is one example), the film was returned to Pullman-Higgins for further review and retest. The retest, in some instances, disclosed rejectable weld defects that were repaired by Pullman-Higgins in accordance with Pullman-Higgins' program. These situations would have been documented on a Pullman-Higgins nonconformance report (NCR) which did not necessarily cross-reference the YAEC document. Since the Pullman-Higgins program corrected the deficiencies and resolved the safety concerns, the exact number of welds that were eventually repaired does not affect the adequacy of the final welds. What is important, and what has been verified by the NRC staff, is that the final welds and weld records are technically acceptable and consistent with NRC requirements.

Question IV.B:

NUREG-1425 (p.14-2) contains a table indicating the number of weld packages reviewed by YAEC during the years 1979 through 1986. Please provide a listing of the dates on which each of the welds reviewed during the years 1981 through 1984 was initially approved by the then current senior Pullman-Higgins reviewer. This information should be readily available from the source of the data on which the NUREG-1425 table was based. If this data is not available, what is the basis for the numbers in the "Weld-quality rejects" column?

Response:

The basis for the "Weld-quality rejects" column provided to the IRT by the licensee was a review of deficiency reports (DRs) and deviation notices (DNs), including welds that were rejected for weld quality by the YAEC reviewers. It should be noted that the IRT did not believe the data contained in the table was germane to its determination of weld quality. Nonetheless, because of previously expressed Congressional staff interest in such data, the licensee was requested to develop the information. It does not include the results of any follow-up reviews and retests done by Puliman-Higgins.

As stated in NUREG-1425 (p.14-1), "[a]t the team's request, the licensee provided a rundown (by year) for the period 1979 - 1986 of total weld packages reviewed by YAEC, and the number and percentage of radiographic film rejects found during the period from mid-1982 through 1986." The team did not request that the licensee provide information relative to the Pullman-Higgins reviewer of each weld. Also, as discussed in NUREG-1425 (p.3-4, 14-1 & 14-2), the data was provided based on deficiency reports and deviation notices which were reviewed by the team and did not include rejects identified in the YAEC overview program before mid-1982, those found through the YAEC QA audit program, or those that were handled by sending controlled speedletters rather than by issuing DRs or DN's.

Question IV.C:

NUREG-1425 (p.14-3), in reference to Deficiency Report (DR) #527, "...none of the discrepancies involved weld quality defects."

Congressional staff have evidence that a least two welds in the DR 527 list were the subject of weld repairs subsequent to issuance of DR 527. What is the evidentiary basis for the NRC conclusion that none of the DR 527 discrepancies involved weld-quality defects?

Response:

We agree that the possibility exists that welds listed in DR 527 may have later been determined to need weld repair as a result of the followup or other types of reviews. However, the basis for the NRC conclusion that none of the DR 527 discrepancies involved weld-quality defects is a document entitled "YAEC RT INTERPRETATION," which lists the welds enumerated in DR 527. This list was provided to the Congressional staff as supplemental information to a staff member's request of May 29, 1990. The listing, which represented a hand-written, YAEC generated document which was not retained by the licensee as a quality record, was found attached to DR 527 in an NRC Systematic Assessment of Licensee Performance (SALP) report file. At the time of the SALP meeting with the licensee and issuance of the final SALP report in 1984, this listing supported the licensee's position that only one code rejectable indication requiring field weld repair had been identified by the YAEC radiograph review conducted during the current SALP cycle. That code rejectable indication requiring field weld repair was documented on DR 544, which was issued on December 28, 1983, and resulted in the issuance of Pullman-Higgins Nonconformance Report (NCR) No. 5773. Additional information related to this matter was provided in a NRC staff response to requests from a Congressional staff member on July 13, 1990, questioning the basis for the revision to the 1984 SALP report.

Further, as stated in NUREG-1425 (p.2-3), "if weld quality was defective, a nonconformance report (NCR) had to be issued per P-H Procedure XV-2." An example is NCR 5773 resulting from the DR 544 finding noted above. For DR 527, none of the deficiencies documented on the YAEC RT INTERPRETATION list directly resulted in the issuance of an NCR, further corroborating the position that none of these deficiencies involved weld quality defects.

The NRC staff is aware that certain of the listed welds were re-radiographed after issuance of DR 527 and certain welds may have received subsequent repair and re-radiography based upon subsequently identified problems (e.g., base metal repairs in proximity to the field weld). Therefore, while the NRC staff does not know which specific welds the Congressional staff is referring to as the subject of subsequent weld repairs, such subsequent repair does not conflict with the position that none of the specific discrepancies in the YAEC RT INTERPRETATION list associated with DR 527 involved weld-quality defects which required weld repair.

Question IV.D:

NUREG-1425, Appendix 8, p.7 contains the following statement:

The team reviewed all of the surveillances listed above whose subject is "RT Review" to determine the nature of the overview of RT film performed by YAEC.

Please list the welds referred to in the surveillance reports to which the foregoing statement refers. Please provide, in addition, descriptions of corrective actions with regard to weld or radiograph deficiencies taken with respect to these welds.

Response:

As stated in NUREG-1425 (Appendix 8, p. 8), "Although documentation for the early surveillances did not always indicate whether P-H or YAEC identified the discrepancies listed or whether the films reviewed were in process or final, practically all surveillance reports identified the film being reviewed by weld number." Also as stated in NUREG-1425 (p.2-2), any film discrepancies identified by YAEC were returned to Pullman-Higgins for disposition and were re-reviewed by YAEC following corrective action by Pullman-Higgins. The Pullman-Higgins program required the issuance of an NCR that listed the weld by number if the re-review found a nonconforming condition. During the course of the inspection, the IRT reviewed numerous NCRs (see NUREG-1425, Appendix 10) to ensure that corrective actions with regard to welds or radiograph deficiencies were adequate. The IRT did not compile a list of weld numbers referenced in the surveillance reports reviewed because it was not deemed necessary to do so in arriving at a conclusion regarding the adequacy of weld quality. However, copies of the surveillance reports retained by the IRT are being provided to the Congressional staff in response to a recent Congressional staff request dated August 17, 1990.

Question V:

NUREG-1425 (p.1-4) states:

The IRT leader met routinely with licensee representatives to keep them apprised of the team's activities, plans, and findings.

Is it standard practice for a leader of an NRC independent regulatory review to keep the licensee apprised of the review teams' activities, plans, and findings while the investigation was in progress? What is the basis for confidence that such discussion of activities, plans and findings with licensee officials did not compromise the NRC assessment? Is such conduct routinely within the scope of what the Commission regards as an independent regulatory review?

Response:

It is standard practice during NRC inspections for the inspectors to ensure that licensee on-site management is made aware of the overall scope and schedule of inspection activities. An NRC inspection manual procedure specifies that inspectors should keep licensee representatives apprised of preliminary findings, including any violations of regulatory requirements or other safety-related concerns. A basic reason for keeping the licensee apprised is that the licensee's interim responses to inspector questions and the additional records which knowledgeable licensee personnel can quickly provide are essential to reaching substantiated NRC conclusions in a reasonable time frame. Additionally, in the event a safety issue or violation is identified, it enables the licensee to initiate appropriate corrective action in a more timely manner.

The Independent Review Team (IRT), in response to Congressional concerns about the adequacy of welding and NDE at Seabrook Station, conducted an overall assessment of the licensee's program during construction and an inspection of the results of this program to include records and other objective evidence of weld quality. The follow-up of Congressional concerns was integrated directly into the inspection plan. The independent nature of the IRT mission was delineated in the internal NRC memorandum of March 27, 1990, issuing the IRT Charter (see Appendix 1 to NUREG-1425), wherein it was stated that "NRC staff and consultants who had previous significant involvement with pipe welding activities at Seabrook will not be a part of the review team."

The IRT inspection plan issued on April 5, 1990, (Appendix 2 to NUREG-1425), fully intended the after-the-fact, independent assessment of pipe welding/NDE activities to be conducted as an "inspection," utilizing qualified NRC inspectors and consultants and governed by the standard practice for NRC

inspections. The IRT inspection plan was not made available to the licensee prior to the issuance of NUREG-1425. The conduct of IRT inspection activities over the course of several weeks provided the IRT leader appropriate opportunity (e.g., upon interim IRT departures from the site) to apprise licensee representatives of the team findings to date and of future inspection activities in order to facilitate the inspection. As evidenced by the documents reviewed by the IRT (listed in Appendices 10-12 of NUREG-1425), the vast majority of the documents reviewed were records which had to be retrieved from the licensee's record file.

The basis for concluding that the Independent Review Team's discussion of findings with the licensee did not compromise the findings is that the findings were based on objective evidence (records) provided by the licensee as well as on interviews, discussions, and physical observations. The results of all the inspection activities were analyzed to arrive at the final staff findings. As supported by the IRT findings and bases discussed in NUREG-1425, the use of the standard NRC inspection practice did not compromise either the conduct or the results of this IRT assessment.

Question VI:

NUREG-1425 (p.1-4) lists principal individuals contacted by NRC staff who participated in the Seabrook weld assessment. Please provide transcripts (other than the Wampler transcript included in NUREG-1425), memoranda and other documents which provide a record of the substance of conversations with the listed individuals.

Response:

During their inspection, the NRC Independent Review Team conducted five interviews that were documented by the inspectors conducting the interviews. The interviews, although not recorded, were documented in inspection field notes (see Attachment 2). The documentation was typed by the inspector and provided to the other team members for reference in performing the on-site inspections. These interviews were conducted primarily during the early stages of the IRT inspection to ascertain the overall views and recollection of certain personnel involved in the radiography/NDE process during the early and mid-1980s timeframe. These interviews assisted the team in focusing the inspection efforts and identified differences in the recollections which the team had to follow up prior to reaching its findings.

Other persons listed in NUREG-1425 were contacted for inspection coordination or the availability of specific information as needed. The information received from all persons contacted was evaluated in conjunction with information obtained from all other sources (e.g., records, radiographs, direct observations) to arrive at appropriate inspection findings as documented in NUREG 1425.