

PDR



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

November 19, 1990

The Honorable Morris K. Udall, Chairman  
Committee on Interior and Insular Affairs  
United States House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

Enclosed, at the request of Dr. Henry Myers of your staff, are responses  
to his request of October 17, 1990, concerning Seabrook welds.

Sincerely,

Dennis K. Rathbun, Director  
Congressional Affairs  
Office of Governmental and  
Public Affairs

Enclosures:  
As Stated

cc: The Honorable Don Young

9012050173 901119  
PDR ADOCK 05000443  
U PNU

ATTACHMENT

RESPONSE TO DR. H. MYERS' REQUESTS OF OCTOBER 17, 1990

Request 1:

(Provide) information requested per Seabrook Welds XXXIV, an August 15, 1990 memorandum to you from me.

Response:

It is our understanding that the information requested has already been provided by NRC Headquarters.

Request 2:

(Provide) a listing by weld number of Seabrook welds that the ASME Code required to be examined by radiographic testing.

Response:

A complete listing of the welds, by weld number, that were required to be examined by radiographic testing (RT) in accordance with the ASME Code, does not currently exist either in the possession of the NRC or in any readily retrievable format within the licensee's QA records or files.

The ASME Boiler and Pressure Vessel Code, Section III (1977 edition with winter '77 addenda) represents the construction code of record for the design, fabrication, examination and testing of the ASME components installed by welding at Seabrook Station. Components which include welds (e.g., tanks, heat exchangers, etc.) that were ordered prior to 1977 and supplied by various vendors in accordance with the ASME Code were fabricated to other editions of the Code (e.g., 1974 edition with various addenda). For components other than piping erected by welding at the Seabrook site, the particular code edition of record in the procurement documents, along with the specific weld joint category and nominal sizing, would govern the method of examination required for the welds. Thus, for the nonpiping ASME welds, no generally broad statements cover all cases where radiography was required. However, with regard to the ASME piping installed by welding at Seabrook to the 1977 code edition with winter '77 addenda, it can be generally stated that the class 1 and 2 welds, depending upon weld configuration, were radiographed.

Therefore, although a listing of ASME welds, fabricated at Seabrook and required to be radiographically examined, cannot be provided, as requested, a generic description of the Seabrook fabricated welds which were radiographed in accordance with the Code can be stated, as follows:

All circumferential weld joints connecting pipe spools to each other, to valves, to pumps, to heat exchangers, and to other pressure vessels (e.g., steam generators, pressurizer, reactor vessel) that were field fabricated and designated as ASME Code class 1 and 2 components at Seabrook Station were required to be field radiographed. Additionally, certain base metal repairs to ASME Code class 1 and 2 components effected in the field were also required to be field radiographed.

Request 3:

(Provide) documents that specify conditions required to be met prior to placement of a YAEC signature on a Radiographic Inspection Report (RIR) and/or documents that describe precisely what was being approved when the YAEC official affixed his signature to the RIR.

Response:

No specific procedure or documented requirement delineates the meaning or conditions attached to the placement of a YAEC signature on a RIR. However, the YAEC Quality Engineering Group (QEG) NDE Review Group Procedure No. 5 documents the following condition imposed upon the YAEC radiography review process.

"Methods and criteria used to review radiographs shall be the same as the originators."

Even though this procedure was not formally issued until May 1984, the YAEC signatures on the RIRs, both before and after procedural issuance, were intended to signify a YAEC review to the same criteria "as the originators" (i.e., Pullman-Higgins). This position was confirmed in discussions with YAEC personnel who had been involved in the film review process. Additionally, the NRC Independent Review Team evaluated the YAEC film review process and documented in NUREG-1425, Appendix 8, the observation that:

"Discussions with YAEC personnel involved in the review of film indicated that their reviews of final film always included a review for weld defects and film quality. The team's film review (see Section 8 of this report) supported this statement."

This conclusion is also logically corroborated by the fact that the YAEC reviewer's signature or initials, along with the date reviewed, appear at the bottom of the RIR form, near the signatures of the Pullman-Higgins reviewers (Level II and Level III) and that of the Authorized Nuclear Inspector (ANI) for ASME welds. A YAEC official affixing his signature/initials to an RIR meant that he had reviewed both the RIR and the applicable radiographs to the same code criteria as the Pullman-Higgins personnel whose signatures were already documented.

This position is also substantiated by the evidence indicating that YAEC reviewers would not sign the RIRs if they identified problems during their review. This evidence not only is documented in numerous deficiency reports (DRs), several of which were issued prior to May 1984 when the YAEC QEG NDE Procedure No. 5 was formalized, but also was provided to Dr. Myers in response to a previous request (XXXII) of August 6, 1990. At that time, the NRC was requested to explain what it meant for a specific number of welds to be listed on DRs issued after the RIRs had been signed by YAEC reviewers. NRC inspection, review and response for all of the examples cited by Dr. Myers revealed that "in each case, the corrective action was completed prior to YAEC acceptance of the radiographic package and sign-off of the RIR."

(Request 3 Continued)

Therefore, although no documents clearly delineate either the conditions or what was being approved by the YAEC reviewer when he signed the RIR, the available evidence suggests that he was accepting the RIR as a quality document and accepting the disposition of the RIR as to the acceptability of the radiographic weld quality. As noted above, this position was confirmed by the NRC Independent Review Team, by NRC inspection follow-up of issues raised by the Congressional staff, and by discussions with licensee personnel directly involved in the YAEC radiograph review process.

Request 4:

(Provide) evidence of the purported 100% YAEC review; e.g. documents that enumerate by weld number the welds that were reviewed, the results of any such review, etc.

Note: Contrary to the statement that appears in NUREG-1425, Appendix 8, page 8, "practically all" surveillance reports did not identify the film being reviewed by weld number. Moreover, the surveillance reports provided in response to Seabrook Welds XXXVI do not provide evidence of a 100% radiograph review; instead, the surveillance reports increase confidence in our conclusion that the preponderance of evidence indicates that prior to late 1983, YAEC did not conduct a review 100% of radiographs following approval by Pullman-Higgins.

Response:

As has been documented several times in previous responses to Congressional staff requests, the documented evidence of the YAEC performance of a 100% review of the Pullman-Higgins radiographs for safety-related welds is provided by the YAEC reviewer signature/initials on the RIRs applicable to each radiographed weld. NRC inspection, to include follow-up of specific cases identified by the Congressional staff, has not identified any welds for which YAEC radiographic review was not conducted.

For radiographic weld quality, the objective evidence is available in the radiographs themselves; and documentation of the licensee's QA program review of the acceptability of those radiographs is provided in the Radiographic Inspection Reports (RIRs). The YAEC practice to sign/initial and date each RIR to signify review and acceptance of the Radiographic Inspection Report and the radiographs which it covered was both a convenient and consistent way of providing objective evidence that YAEC reviewers were performing their review function.

The Congressional staff indicates in the above request that the surveillance reports do not provide evidence of a 100% radiographic review. We agree with this assessment, but would add that it was never the intention of YAEC to document on surveillance reports each and every radiographic film package reviewed. The use of surveillance reports as such would have been redundant to the YAEC practice of signing each RIR, a practice which commenced in 1979 when the first set of radiographic film packages were turned over by Pullman-Higgins.

Furthermore, the Congressional staff statement in the above request that "prior to late 1983, YAEC did not conduct a review 100% of radiographs following approval by Pullman-Higgins" confused the understanding of what actually did occur. It may be true that YAEC did not conduct a review of radiographs immediately following approval by Pullman-Higgins. As has been stated previously in response to Congressional staff requests, YAEC reviewed the film after Pullman-Higgins turned it over for review. Whenever that turnover occurred, relative to when Pullman-Higgins completed their review, was dependent upon Pullman-Higgins initiative to provide the accepted radiographs to YAEC for their review.

(Request 4 Continued)

YAEC film reviewer involvement in the transmittal process of Pullman-Higgins radiographs to the Records Vault and acceptance of the film for owner storage encompassed a technical review function, rather than an accountability exercise. This is why YAEC instituted in 1985 a re-inventory and indexing program for all film already stored in the Records Vault to confirm that the radiographs had been correctly accounted for, stored and labeled. During their re-inventory, YAEC reviewers checked that receipt of the film transmittal packages had resulted in evidence of proper review and indexing. Where deemed necessary, individual radiographs and the applicable RIRs were examined. It was during their re-inventory and indexing program that the problems identified in Deficiency Notice (DN) 090 were identified, as is noted in the discussion provided in Congressional staff Request 5.

Furthermore, when the YAEC QEG NDE Review Group Procedure No. 5 was issued in 1984 "to perform review of all safety-related vendor and site generated radiographs," this requirement imposed a 100% review activity independent of time. Since the radiographs already accepted by YAEC prior to May 1984 were available in the Records Vault, YAEC would have been required to initiate a retrofit effort to review all stored film if they had not been doing so as a routine activity during the turnover process. As confirmed in discussions with YAEC personnel, such a major retrofit activity was unnecessary because the 100 percent film review was considered a normal surveillance activity, routinely conducted over time. Issuance of this procedure also meant that any film that had not been previously reviewed and accepted by YAEC (regardless of when the radiographs were shot or when they were accepted by Pullman-Higgins or whether they were backlogged film or even whether they might have mistakenly made it to the vault and were subsequently discovered during the re-inventory in 1985) was now procedurally required to be reviewed. During the conduct of the NRC Construction Appraisal Team (CAT) inspection in 1984, when over 3,400 pieces of radiographic film from the Record Vault were reviewed, no problems were identified with the radiographs from the 180 Pullman-Higgins pipe welds which were examined. This is most likely because the Pullman-Higgins film stored in the vault had been subject to the YAEC review program and as documented in CAT inspection report (i.e., 50-443/84-07), "no deficiencies were identified with the radiographs that had received the applicant's review."

In summary, YAEC imposed upon themselves a procedural requirement to perform a 100% review of all safety-related, Pullman-Higgins radiographs. This requirement was not time dependent relative to its applicability. Therefore, all RIRs, including those dating back to 1979, were procedurally required, with the implementation of the YAEC QEG NDE Review Group Procedure No. 5, to show evidence of YAEC review for acceptability. This evidence is provided by the YAEC reviewer signature/initials on the RIR. Finally, as has been previously stated, NRC inspection, including that of the Independent Review Team, has not identified any weld for which the YAEC required 100% radiographic review was not conducted.

Note: See discussion in response to Request No. 8 regarding identification of weld numbers on surveillance reports.

Request 5:

The following is requested (excerpted):

A reconciliation of NUREG-1425 findings with apparent data inconsistencies and evidence of faulty and belated YAEC reviews:

- The inconsistency is in that the Weld Repair Order log shows some 250 repairs on CS system welds while only 4 of the 61 CS welds identified in the SR reports had, prior to the surveillance, been the subject of weld repairs.
- There is an inconsistency between on the one hand finding zero discrepancies in the 61 CS packages during the period prior to October 1983 and, on the other hand, the subsequent findings of deficiencies in CS welds per NCR's 7300, 7307, 7308, 7318, 7320, 7876 and 8453.

Response:

A listing of the YAEC surveillance reports reviewed by the NRC Independent Review Team is provided in NUREG-1425, Appendix 8. A discussion and analysis of these surveillance reports as they related to radiography are also documented in detail in Appendix 8.

As has been described in previous responses to Congressional letters and requests, YAEC surveillance activities were considered QA program Level 2 overviews of contractor work. With the exception of the YAEC review of radiographs, which was a program of 100% review of all safety-related weld film, surveillances were considered sample activities and not intended to cover each and every piece of work performed by the contractor. On the other hand, the Pullman-Higgins Repair Order Control Log was a contractor work control document that was not considered a QA record.

Any attempt to broadly compare the number of repair orders generated against any particular system (e.g., CS) with the surveillance findings against that system is a meaningless exercise unless it is done on a weld-for-weld basis to determine the history of each required repair activity. The problems with reaching any meaningful conclusions based upon a broader numerical comparison are enumerated below:

- (1) The vast majority of the Repair Order Control Log entries relate to the identification of problems by Pullman-Higgins itself, without any YAEC involvement. This is both normal and expected since Pullman-Higgins quality control and NDE personnel performed the QA program Level 1 function with a larger scope and at a point in time normally before the YAEC surveillance (Level 2) activities were performed.
- (2) The Repair Order Control Log lists all types of required repairs, not just those resulting from a problem identified with radiography. Arc strike repairs, base metal (as opposed to weld) repairs, and repairs relating to

(Request 5 Continued)

visual, liquid penetrant and magnetic particle examinations are all listed in addition to any radiographic rejects in the Repair Order Control Log. Thus, the number of CS welds requiring repair as a result of radiographic rejects is some significantly smaller number than the total of 250 repairs mentioned in the above request.

- (3) The surveillance reports beginning with SR 1796 and ending with SR 5611, which represent the subject of the above request, are listed in NUREG-1425, Appendix 8. They cover a variety of subjects, including in-process welding, RT review, NDE, welding repair, field process sheets, and others. It is quite possible that a YAEC surveillance of in-process welding activities prior to completion of the weld might identify no discrepancies for a CS weld which Pullman-Higgins themselves would subsequently reject based upon their review of the radiograph of the completed weld.

It is important to point out that the types of discrepancies that the YAEC surveillances (as a QA program Level 2 activity) hoped to uncover were ones missed by the Pullman-Higgins quality control (i.e., the QA Level 1) program. Therefore, an active Pullman-Higgins quality control program which identified defects and initiated repair orders (e.g., the 250 CS repairs stated in the above request) would be the type of Level 1 program that would result in the YAEC Level 2 surveillance program identifying few discrepancies. We do not know if this was, in fact, the case with respect to the CS system. However, our position is that without a detailed weld-by-weld review of each CS weld repair, the reason for the repair, and its relation to previous YAEC surveillance activities, one should not draw general conclusions as to supposed inconsistencies in the data.

Furthermore, with respect to the NCRs listed in the above request, NUREG-1425 documents each one in Appendix 10 as a nonconformance report reviewed by the NRC Independent Review Team. The following note is included in the NUREG comment relative to each of these seven NCRs:

"Note: YAEC had not reviewed these films".

What this means is that the radiographic problems identified in these NCRs were found by Pullman-Higgins prior to YAEC review of the film. Contrary to the inference implied by the second point in the above request, no inconsistency in data can be logically deduced. (How can the YAEC surveillance program be faulted for missing radiographic discrepancies in film they had not yet reviewed?) The YAEC review, in fact, occurred after Pullman-Higgins had performed its secondary Level III review of film to which the licensee had committed in 1982, as partial corrective action to an NRC violation identified in inspection report 50-443/82-06. It is quite likely that the re-review of radiographs resulting in the seven questioned NCRs was actually the secondary review required of Pullman-Higgins to comply with the licensee's commitment to the NRC in 1982. Thus, the lapse in time between the original Pullman-Higgins acceptance of the weld and the subsequent radiograph rejection resulting in the issuance of the NCRs is explainable in light of the existence of the

(Request 5 Continued)

backlog of radiographic film awaiting final Pullman-Higgins review prior to turnover to YAEC. This backlog is discussed and analyzed in detail in Section 4 of NUREG-1425.

In summary, no apparent data inconsistencies or evidence of faulty and belated YAEC reviews, which have not already been discussed in detail in NUREG-1425 (e.g., the history and handling of Deviation Notice 090), appear to exist in the general examples and discussion provided by the Congressional staff in this request. As has already been stated previously in response to Congressional requests, a case-by-case review of each questioned weld package and radiographic inspection report is required to answer specific questions regarding how each weld repair was handled. One cannot generally compare and correlate Repair Order Control Log data with surveillance report results or infer inadequacies in the YAEC surveillance program from NCRs documenting contractor findings.

Where the Congressional staff has in the past requested data and explanations regarding specific weld histories, the NRC staff has provided what was requested with evidence of the acceptability of both the process and the final weld. NUREG-1425 provides the results of the NRC Independent Review Team's assessment of welding/NDE at Seabrook Station.

Request 6:

(Provide) an explanation of which items in Master Check List: ASME Section V, Revision 0 indicate that radiographs were reviewed for the purpose of identifying weld deficiencies. [For example, what is the basis for believing the Master Check List was to be used to determine whether proper procedures had been followed, as opposed to being used to determine whether the radiograph reviews had actually identified defects as required by the Code?]

Response:

The Master Checklist in question (i.e., ASME Section V, Revision 0) was used by the YAEC QA program personnel in the surveillance of radiography to check that the specific standards and criteria (i.e., the referenced T-numbers) delineated in Article 2, Radiographic Examination, of the ASME Boiler and Pressure Vessel Code, Section V, were being implemented by Pullman-Higgins NDE personnel. While ASME Section V, Article 2, does not prescribe criteria for the actual evaluation of defects, it does cover two areas (T-233.2, Quality of Radiographs and T-290, Evaluation of Radiographs) where radiographic interpretation is discussed. The Master Checklist in sections 1.6 and 1.7 detail evaluation points which reference the noted ASME Section V interpretation criteria, T-233.2, T-291 and T-292.

When the YAEC film reviewers were conducting RT surveillance activities, their use of Master Checklists in examining final film also involved a radiographic interpretation of that film. As an example related to the use of Master Checklist section 1.7, where the film area of interest was viewed for marks which would interfere with a proper radiographic interpretation, a YAEC review of the film for weld defects was implicit in the viewing of that film for any marks which might mask those defects. Also, the Master Checklist section 1.6 asks in effect whether an RIR evaluation of weld quality accompanies the radiographs being reviewed. Implicit in the YAEC film review personnel's answer to this checklist question is their assessment of the correctness of that RIR evaluation. Thus, the YAEC film reviewers were indeed reviewing and interpreting the radiographs in line with evaluating the procedural and other Section V, Article 2, criteria listed. If YAEC QA personnel, other than the film reviewers, conducted RT surveillance activities, their completion of the Master Checklist would not fulfill the requirements of the YAEC 100 percent radiograph review function. In that case, an additional YAEC film review was required to sign off the RIRs.

Discussions with YAEC personnel involved in the radiographic review process confirmed the position that when final film was being examined by the film reviewers during a YAEC surveillance activity, weld quality as well as film quality was reviewed. This point is also discussed in NUREG-1425 on page 8 of Appendix 8.

Furthermore, Master Checklists, other than "ASME Section V, Revision 0", were utilized in the YAEC QA program surveillances of the radiographic review process. For example, another Master Checklist (i.e., "RT-1, R-0") specifies in section 1.2 sign-off criteria to "verify radiographic film review" and

(Request 6 Continued)

dictates in section 1.3 the examination of the area of interest to include the question, "were all relevant indications addressed on RIR?" An additional Master Checklist (i.e., "248-5") used by YAEC personnel has within its surveillance criteria inspection items that also suggest a review of radiographs for defects is inherent in the conduct of the radiography surveillance activity.

Therefore, the NRC believes that the Master Checklists utilized in the YAEC surveillance of radiography activities were used both to verify procedural adherence, as well as to conduct an additional radiographic review of the film to confirm Code compliance. The basis for this position, as is questioned in the above request, is the NRC review of the various Master Checklists, discussions with some of the YAEC personnel involved with their use in the conduct of surveillances, and the fact that several of the surveillance reports themselves (i.e., the QA record to which the Master Checklists are attached) clearly identify that YAEC reviews of radiographs for weld quality were conducted.

Request 7:

(Provide) precise statements by past or present YAEC employees concerning the scope, time frame, findings and documentation of the YAEC radiograph reviews.

Response:

The NRC staff does not possess any "precise statements" of the nature requested. The only transcribed interview conducted by the NRC relative to the welding/NDE issues at Seabrook Station was that of Mr. Wampler, as is documented in Appendix 4 of NUREG-1425.

Additionally, the NRC Independent Review Team conducted five interviews with past and present workers at Seabrook Station, including YAEC employees, that were documented in inspection field notes. In response to a Congressional letter to the NRC, dated August 9, 1990, the NRC staff provided, as requested by Question VI of an attachment to that letter, a copy of the inspection field notes regarding those five interviews.

Other discussions with licensee employees relative to the YAEC radiographic review program were conducted as part of routine NRC inspection activities and documented in various NRC inspection reports (e.g., 50-443/85-31, paragraph 7b - previously provided to the Congressional staff). More recent discussions with licensee personnel have been conducted to gain information and provide some of the basis for the response to several sets of Congressional staff questions on the subject of the YAEC radiographic review process. Also, certain persons listed in NUREG-1425 were contacted for the availability of specific information, relating to the YAEC film review program. NUREG-1425 is based in part upon the discussions with these contacts with the pertinent information documented throughout the NUREG.

Therefore, while "precise statements", as are requested, do not exist in documented form, it is important to note that the discussion points and verbal statements made by YAEC employees have formed part of the basis upon which the responses to Congressional requests and NUREG-1425 have documented the NRC findings and conclusions.

Note: On November 2, 1990, licensee personnel discovered in their files and provided to the NRC a copy of a memo written by the Pullman-Higgins RT Level III reviewer in May 1983. This memo and a flowchart, entitled "STRUCTURE" which was attached, are enclosed with this response. The apparent purpose of the memo was to discuss the Pullman-Higgins investigation of the "Padovano" case, as had been documented on NCR-4490, a copy of which was previously provided to the Congressional staff. Of particular interest in the body of this memo and on the flowchart is the recognition that the YAEC review of film was a routine activity for "customer acceptance" of the radiographs for final storage. This recognition (in May 1983, which was one full year before the procedural requirement for the YAEC film review was formalized) provides additional evidence, as questioned in Request 4, that a YAEC 100% review of radiographs was ongoing and was standard practice at Seabrook Station.

Request 8:

(Provide) the staff's position on the correctness of the following statement which appears in NUREG-1425, Appendix B, page 8:

Although documentation for the early surveillance reports 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.

Response:

It is the NRC staff's position that the statement quoted above is correct when viewed in the context of the entire discussion documented on page 8 of NUREG-1425, Appendix B.

In paragraphs both leading up to and following the quoted statement, several references are made to "early surveillances" and "early surveillance reports," and this last phrase is also quoted in the above statement itself. NRC use of the term "early surveillances" is also documented on the same page by the following statement:

"The description was typical of the way surveillance reports were written before 1982."

Therefore, the intent of the statement quoted in the above request was to describe the Independent Review Team's observation relative to the surveillance reports they had reviewed which were issued prior to 1982. A re-review of 49 of the pre-1982 YAEC surveillance reports involved with pipe welding and radiography revealed that 46 of these reports identified the welds under surveillance.

Thus, in response to the above request and also in clarification of the Congressional staff's disagreement with the quoted statement as noted in Request 4, it is the NRC staff's position that practically all of the early (pre-1982) surveillance reports identified the film being reviewed by weld number. A complete reading of the section entitled "Radiography" beginning on page 7 of Appendix 8 up to and past the quoted statement on page 8 indicates that the "early phase (before 1982)" surveillances were the subject of this NUREG discussion.

Request 9:

(Provide) the staff's position concerning specific failings of the licensee, YAEC, and/or P-H to comply with Appendix B, particularly regard to compliance with Criteria II, V, VI, IX, XV, XVI, XVII, and XVIII.

Response:

As has been discussed in the NRC response, dated September 21, 1990, to the July 30, 1990 letter from Congressmen Dingell and Kostmayer regarding welding issues at Seabrook Station, 28 notices of violations related to piping, welding and NDE activities at Seabrook Station were issued by the NRC during the construction period from 1978 to 1986. Twenty-three of these violations were cited during the period 1980 to 1983, resulting in significant corrective action on the part of the licensee and resulting in improved performance, as reflected by both the declining number of enforcement actions and improved Systematic Assessment of Licensee Performance (SALP) ratings in this area.

With regard to the NRC Independent Review Team inspection of the adequacy of the welding and NDE programs at Seabrook Station, the following major findings and conclusions are summarized in the Executive Summary of NUREG-1425:

- P-H failed to identify and correct film and weld deficiencies until long after they occurred, violating NRC requirements and permitting the same mistakes to keep occurring. However, through the YAEC film overview program, the licensee did eventually resolve these problems by ensuring that the final welds and associated film met applicable code requirements.
- In some instances, records and procedural adherence-type problems of lesser safety significance may have violated NRC requirements during the construction period. These problems were investigated to the depth necessary to reach a conclusion regarding their safety significance.

One of the noted procedural adherence-type problems was reviewed by NRC Region I inspectors with the finding that certain construction procedures had not been followed. This issue was documented in Inspection Report 50-443/90-12 and classified as a severity level V, non-cited violation in accordance with the NRC Enforcement Policy (10 CFR Part 2, Appendix C, Section V.A). The team also identified one weld that had a previously unidentified linear indication 1/8-inch greater than code allowable. The licensee's engineering organization evaluated the indication and determined that the weld was acceptable for its intended service. The team agreed.

Furthermore, with regard to the unspecified failures to comply with eight of the eighteen criteria of Appendix B, referenced in the above request, a further explanation of the intent of 10 CFR 50, Appendix B, is warranted. The Introduction to Appendix B includes the following cogent points relative to its applicability:

(Request 9 Continued)

"Every applicant for a construction permit is required by the provisions of section 50.34 to include in its preliminary safety analysis report a description of the quality assurance program to be applied to the design, fabrication, construction, and testing of the structures systems, and components of the facility."

and

"As used in this appendix, quality assurance comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service."

As discussed in the NRC response, dated September 21, 1990, to an August 9, 1990 letter from five members of Congress regarding welding and NDE issues at Seabrook Station, the Final Safety Analysis Report (FSAR) provides a discussion, as required by 10 CFR 50.34, of how the applicable requirements of 10 CFR 50, Appendix B are satisfied. The YAEC program for quality assurance involved three control levels. As the QA program related to Pullman-Higgins pipe welding and NDE, Pullman-Higgins quality control personnel provided Level 1 QA functions, while YAEC provided the Level 2 (surveillance) and Level 3 (audit) overviews.

As noted in the Introduction to Appendix B, these multiple level of controls and quality overviews comprise the total Quality Assurance program. YAEC QA personnel in their surveillances and audits identified problems in the Pullman-Higgins radiographic review program and required corrective measures (e.g., adding an additional review by a RT Level III film reviewer) to be initiated. They further continued a licensee film review effort at a scope in excess of what would have been normally expected of a Level 2 surveillance activity. Such corrective action and licensee management attention is viewed as a QA program that is working as intended. Of course, if Pullman-Higgins QA Level 1 controls had been more effective, the YAEC QA Level 2 and 3 controls would not have needed to become so involved in the radiographic review effort. However, the fact that YAEC QA personnel did programmatically become involved is not evidence of general noncompliance with Appendix B, but rather is evidence of compliance with Appendix B.

Furthermore, NRC efforts like the Construction Appraisal Team (CAT) and NDE Van inspections, along with SALP evaluations, assessed the effectiveness of the YAEC QA program activities and the corrective action progress in the welding and NDE areas. As was noted earlier, significant improvements in project performance were noted in these areas from 1984 forward.

Request 10:

(Provide) documentation to support the staff's apparent conclusion that the Seabrook licensee took appropriate corrective actions (including determination of root causes and generic impact) with regard to heat treatment and weld material control deficiencies.

Response:

The heat treatment and weld material control deficiencies to which the above request refers were themselves identified within the Seabrook QA program system of controls. Such deficiencies were documented on nonconformance reports (NCRs), deficiency reports, surveillance reports and other corrective action documents, as appropriate. Indeed, it can logically be assumed from the very statement of the above request, that Congressional staff learned of such deficiencies from a review of such types of documents provided to them by the NRC. The use of such documents (e.g., NCRs) at Seabrook Station provided the format for the identification of the corrective action proposals and the documentation of the acceptability of the corrective measure implementation. In the case of significant deficiencies, these measures are required to assure that the cause of the condition is determined and repetition of the problem is precluded.

The NRC staff, over the course of construction activities at Seabrook Station, evaluated the effectiveness of the licensee's corrective action programs. In the areas of piping, welding and NDE, over 70 separate inspections, to include several checks of weld rod material and welding heat treatment controls, were performed to evaluate not only the adequacy of ongoing activities, but also the effectiveness of licensee corrective actions, where required. As an example relating to NRC involvement in weld rod material control issues, an enclosure to this response provides excerpts from NRC inspection reports from 1982 through 1985 detailing NRC overview inspection of this area and the licensee's handling of identified problems.

Additionally with respect to post weld heat treatment (PWHT) issues, the NRC Independent Review Team evaluated the base metal repairs to the reactor vessel and steam generator, considering PWHT requirements. The results of that inspection are documented in NUREG-1425, Section 10. In response to concerns raised by Mr. Wampler and the Congressional staff, the inspection of weld repairs, as documented in Sections 12 and 13 of NUREG-1425, considered the PWHT requirements, where appropriate, to evaluate the weld repair program. Also, the Independent Review Team conducted a general review of Pullman-Higgins NCRs relating to welding/NDE issues (reference: NUREG-1425, section 15) and concluded that NCRs were generally written and issued in a timely manner and that the NCR dispositions were generally appropriate and in compliance with the governing codes. These inspection findings confirmed the NRC routine inspection results relative to the overall effectiveness of the licensee's corrective action program during the construction period.

ENCLOSURE TO RESPONSE TO REQUEST 7  
(Two pages, including attached flowchart, entitled STRUCTURE)

INVESTIGATION BASED ON NCR 4490

Research of Isotope Utilization Logs, Source Survey Cards, and Dosimeter Records show that J. Padovano was involved, as part of a group effort, in the radiographing of 473 joints.

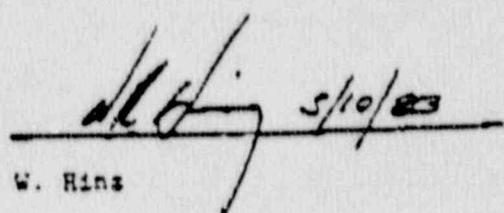
In 374 cases he functioned as a radiographer's assistant with other assistants as part of a three to five man crew under the direction of a Level II or Level II' Lead Radiographer.

In the remaining 99 cases he functioned as a Level II Radiographer accompanied (Federal Safety Requirements) by other Radiographers and assistants.

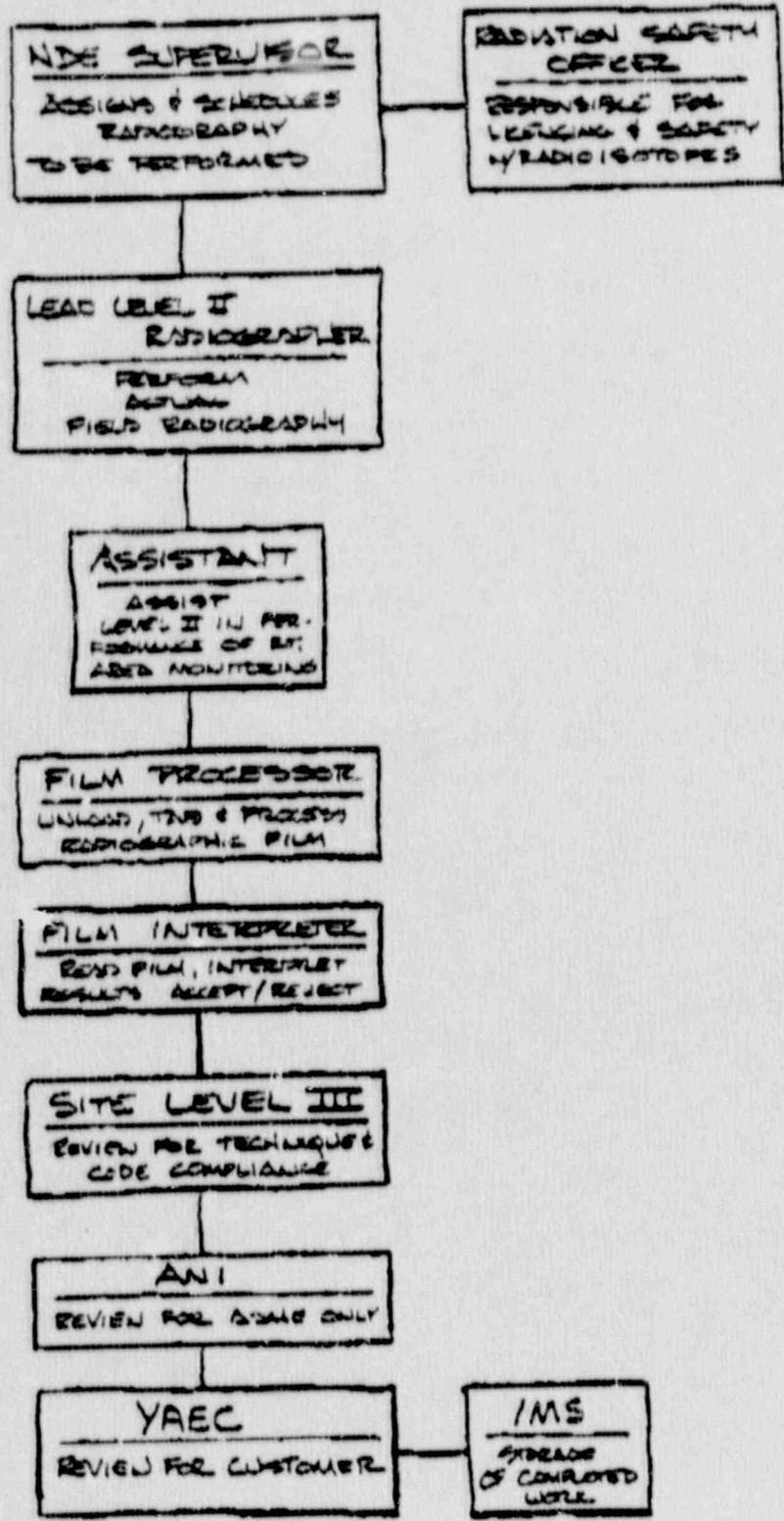
In all cases his work was assigned by the WDE Supervisor, the actual radiography was witnessed or directed by other Radiographers/Assistants, the film was unloaded and processed by the designated film processor, interpreted and evaluated for acceptance by the film interpreter, reviewed by the Site Level III, reviewed by the ANI (ASME Film), and finally reviewed by the YAEC film reviewer for customer acceptance.

He was not involved with the processing or interpretation/evaluation of any radiographs, eliminating the possibility of penetrameter enhancement. The attached chart shows the overall structure of the radiography program & why J. Padovano's participation would not have a negative effect.

Again, as with his MI & PI inspections, the majority of his work was in the Turbine I area is under R.31.1 Code Classification.

  
W. Hinz

# STRUCTURE



## ENCLOSURE TO RESPONSE TO REQUEST 10

Excerpts from NRC Inspection Reports (IR) with dates of inspection noted

### 1. IR 50-443/82-06, section 4.3.3 (June-July 1982)

The inspector reviewed records of actions taken by YAEC to correct the P-H management and programmatic deficiencies identified during YAEC surveillance and audits. The following records were examined:

- YAEC quarterly Quality Assurance Evaluation Reports to the licensee. The February 1982 report discussed the lack of P-H Corporate support and stated that a meeting had been scheduled with P-H Vice President of Quality Assurance to outline actions required to resolve this matter. The April, 1982 report discussed the results of the P-H Corporate audit.
- YAEC weekly reports to management. The reports of January 8, 1982, January 21, 1982, March 12, 1982 and May 28, 1982 discussed the above-mentioned meeting (January 6, 1982), P-H management actions, and a meeting with the P-H site management concerning lack of timely and positive corrective action.
- Management Quarterly QA Review Meetings. The P-H program weakness was discussed during the January 14, 1982 meeting.
- Site meeting with P-H, June 24, 1982. The lack of adequate and timely corrective actions was discussed. Major concerns identified were weld monitoring and material identification. P-H stated that QA operations would be strengthened by assignment of two corporate personnel. YAEC Field QA group was directed to perform daily surveillance of weld monitoring.

The inspector discussed the P-H deficiencies and YAEC efforts to obtain their correction with YAEC management. The problems had been identified by YAEC site QA and audit personnel as well as by P-H internal auditors during mid-1981 and on numerous occasions thereafter. YAEC management was aware of the problems and had attempted to obtain corrective action by P-H at least since January, 1982.

As of June 28, 1982, the major concerns, weld monitoring and material identification, were still unresolved and were still attributed to lack of adequate supervision. Failure to resolve these deficiencies despite the attention of both YAEC and P-H shows a lack of effective YAEC management and is a significant weakness in the QA program.

2. IR 50-443/83-22, section 3a (December 1983 - January 1984)

(Closed) Significant weakness (443/82-06-X4): Lack of effective YAEC management concerning P-H control of weld monitoring and weld material identification. The inspector reviewed YAEC audit reports dated July 1982 through December 1983, YAEC surveillance findings summary, Supervisory Support Group (SSG) correspondence, YAEC Mini-SALP report and trend analysis reports.

Action to establish more effective controls have recently been implemented by P-H as a result of the SSG and Mini-SALP analysis and recommendations. It appears that the weld monitoring concern expressed in the Construction Te inspection (82-06) is under control. However, material identification remains a concern. Recent findings appear to indicate that recurring weld material identification problems are on the downtrend. Disposition of each finding is timely.

However, since the most effective corrective actions have only recently been established, this item is unresolved pending further review of the licensee/contractors' performance in weld material ID areas (443/83-22-01). In the past, licensee corrective measures have not always been effective in identifying all problem areas and causes. Thus, the effectiveness of the new controls must be monitored against evidence of continued improvement or future findings.

3. IR 50-443/84-07, section VII.B.2.b(2) (April - May 1984)

The NRC CAT inspectors found that repeated in-process weld material control deficiencies were identified. A review of YAEC Surveillance Reports (SRs) relative to P-H activities revealed that 85 weld material control deficiencies had been recorded since January 7, 1982, including 45 such deficiencies reported from January 1983 through March 1984.

Most of these deficiencies involved failure of welders to return unused weld rod and/or stubs as required, and such material was left in the plant work areas. The NRC CAT inspectors also found similar deficiencies as described in Section VI of this report.

The large number of repeated deficiencies requires more positive corrective action. It is noted that this matter has been identified by NRC Region I (unresolved item 83-22-01) and is still under review.

4. IR 50-443/84-13, section 3c (August - October 1984)

(Closed) Unresolved Item (443/83-22-01): Trend analysis indicates weakness in maintaining weld material control. The inspector reviewed five YAEC Field Quality Assurance Group surveillance reports. The surveillances had taken place between 7/25/84 and 10/3/84. During this period two deficiencies were identified concerning weld rod hold ovens: (1) two different types of alloy rod 309L and 316L in the same oven and (2) a portable rod oven 28°F lower than setting. Item (1) was closed stating that it was a violation of governing procedures and that it was verified no weld material was issued from the oven. Item (2) was corrected on the spot. The temperature range was not compromised.

Based upon the continued licensee trending, the lower recurrence of deficiencies, and the appropriate corrective action, this unresolved item is considered to be closed.

5. IR 50-443/85-15, section 7.2 (June 1985)

The inspector reviewed the UE&C program for filler metal control and conducted an inspection of two filler metal issue stations and the warehouse storage area for filler metals. Portable electrode ovens are properly employed for hygroscopic electrodes. Review of FGQP-17 indicated that UE&C recently changed the requirement for discarding electrode stubs to permit stubs to be discarded in more conveniently located receptacles than at the filler metal distribution centers. The inspector found a few electrode stubs on the floor adjacent to the pressurizer relief tank. This is considered to be an isolated case as the inspectors found no other improperly discarded stubs during the two week period of this inspection.

Inspection of the filler metal distribution (issue) stations indicated that the filler metals were properly identified (with AWS/ASME designations), filler metal heat numbers were maintained, storage ovens were at proper temperature, thermometers were properly calibrated and the filler metal issue OAE personnel were fully knowledgeable of their functions. The warehouse storage area inspected indicated the filler metals to be properly stored and identified. However, one filler metal (utilized for balance of plant welding) was identified by its commercial designation rather than by AWS/ASME designation. Review of the applicable WFS showed that both designations were indicated thus minimizing the adverse effect of using the commercial designation.

The filler metal control system met licensee quality requirements and met or exceeded minimum codes and standards requirements.