Commonwealth Edison Company
July 2, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In The Matter of	)	
	)	
COMMONWEALTH EDISON COMPANY	)	Docket Nos. 50-454 OL 50-455 OL
	)	
	)	
(Byron Nuclear Power Station, Units 1 & 2)	)	

SUMMARY OF DIRECT TESTIMONY OF
RICHARD P. TUETKEN

I. Richard P. Tuetken is the Startup Coordinator - Byron Station.

II. Mr. Tuetken testified before this Board on Aug. 11, 1983 (Tr. ff. 7760).

III. Mr. Tuetken is familiar with the Reinspection Program implemented at Byron in response to the NRC Staff's 1982 CAT inspection. As Assistant Superintendent, Project Construction Department, Mr. Tuetken was the senior construction manager directly responsible for implementation of the Reinspection Program. Mr. Tuetken also participated in the development of the Program.

IV. Mr. Tuetken describes the implementation of the Reinspection Program, beginning with the initial meeting, at which participating contractors were instructed in the operation of the Program. Subsequently, weekly meetings were held between those contractors and Edison's Byron Project Construction Department and Byron Quality Assurance Department.

V. Mr. Tuetken describes the role of Allen Koca in the Reinspection Program.

VI. Mr. Tuetken describes the steps taken by the contractors to identify the inspections performed by the inspectors selected to be reinspected in their first three months of work.

VII. Mr. Tuetken then testifies concerning the certification of inspectors who acted as reinspectors in the Reinspection Program.

VIII. Mr. Tuetken's testimony also describes the measures that were taken to ensure that reinspections were performed properly. This testimony also encompasses the issue of whether the fact that reinspectors were aware of whose work they were reinspecting biased the results of the Program. Mr. Tuetken also discusses the procedure that was followed when contractors raised questions concerning the manner in which the Reinspection Program was to be implemented.

IX. Mr. Tuetken's testimony also includes discussion of those inspections performed by Hatfield, Hunter and Pittsburgh Testing Laboratory which were included in the Reinspection Program, and which types could not be reinspected due to inaccessibility or non-recreatability.

X. The testimony then describes the documentation generated by Hatfield, Hunter and PTL during the Program, and the measures that were taken to confirm the accuracy of the reinspection data that was generated by the contractors.

XI. Mr. Tuetken testifies concerning the problem that arose with regard to the documentation of discrepancies identified by Hatfield, Hunter and PTL during the Reinspection Program.

XII. The testimony then discusses the third-party review of reinspections of visual weld inspections and the results of this third-party review.

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TESTIMONY OF RICHARD P. TUETKEN

Q.1. Please state your name.

A.1. Richard P. Tuetken

Q.2. Did you testify before this Board on August 11, 1983?

A.2. Yes.

Q.3. Who is your employer?

A.3. Commonwealth Edison Company

Q.4. Do you hold the same position at this time that you held at the time of your earlier testimony?

A.4 No. On August 11, 1983, I held the position of Assistant Superintendent, Project Construction Department - Byron Station. On January 9, 1984, I assumed the position of Startup Coordinator - Byron Station. As Assistant Superintendent, Project Construction - Byron Station, I was responsible for overall coordina-

tion and management of construction activities associated with construction of the Byron Generating Units.

Q.5. Please describe your current job responsibilities.

A.5. As Startup Coordinator, I am responsible for overall coordination of design, construction, and preoperational and startup testing operations associated with the commissioning of the Byron Station.

Q.6. Please describe your work experience prior to becoming Assistant Superintendent, Project Construction Department.

A.6. As I testified during my prior appearance before the Board, immediately prior to assuming my current position I was lead mechanical engineer with the Construction Department at Byron, from April, 1976, to April, 1981. Before that, I was an engineer in the Station Nuclear Engineering Department for the Byron and Braidwood projects, from November, 1974, to April, 1976. From November, 1973, to November, 1974, I was a staff assistant to an Edison vice president, and from February, 1970, to November, 1973, I was an engineer in the Station Construction Department assigned to various projects, including Zion, Powerton, Quad Cities, and Kincaid.

Q.7. Are you familiar with the reinspection program implemented by Edison at Byron in response to noncompliance item 82-05-19 identified in the NRC Staff's 1982 CAT inspection?

A.7. Yes.

Q.8. What is the scope of your testimony?

A.8. My testimony discusses the implementation of the QC inspector Reinspection Program at Byron, with emphasis on Hatfield Electric Company, Hunter Corporation, and Pittsburgh Testing Laboratory. My testimony will encompass the release of Allen Koca, as well as some of the questions concerning the Reinspection Program that were explicitly raised at pages 28 and 29 of the Atomic Safety and Licensing Appeal Board's Byron Memorandum and Order (ALAB-770, May 7, 1984).

Q.9. What was your role in the implementation of the Reinspection Program?

A.9. As Assistant Superintendent, Project Construction Department, I was the senior construction manager directly responsible for implementation of the Reinspection Program. I also participated in the development of the Program prior to its actual implementation. My primary role during implementation was to

direct the contractors in execution of the Program, and I also oversaw the tabulation of reinspection data by the participating contractors.

Q.10. How many hours did you personally spend in implementing the Reinspection Program?

A.10. Between February, 1983, and February, 1984, I spent 20% to almost 100% of my time in any given week on the Reinspection Program, depending on the nature of the work being implemented at the time.

Q.11. When did implementation of the Reinspection Program begin?

A.11. Implementation of the Reinspection Program began in February, 1983, when I, Robert Klingler, and one or more representatives of the site quality assurance department met with specific contractors whose work was to be reinspected. Mr. Klingler is the Byron Project Construction Department Quality Control Supervisor, and he was responsible for the day-to-day implementation of the Reinspection Program, reporting directly to me.

Q.12. What was discussed at that meeting?

A.12. At the initial meeting the purpose and nature of the reinspection activities to be performed and the

requirements of the February 23, 1983 letter from Edison to the NRC Staff which outlined the program and criteria for reinspection were discussed. The basic instructions given to the contractors were that: (1) the reinspections were to be conducted employing the original acceptance criteria used at the time of the original inspections; and (2) individuals involved in reinspection of work could not be the same inspectors who performed the original inspection. The contractors also were informed that the need for removal of fireproofing, paint, and insulation did not render an item inaccessible for the purposes of reinspection.

Q.13. Were there subsequent meetings with contractors regarding the Reinspection Program?

A.13. Yes. As the Program proceeded, weekly meetings were held between the participating contractors and Commonwealth Edison's Byron Project Construction Department and Byron Quality Assurance Department to communicate and resolve questions concerning the ongoing program, to establish methods to be employed in recording results, and to determine action to be taken on discrepancies observed in the reinspection effort.

Q.14. What steps did the contractors take to implement the Reinspection Program?

A.14. After the first meeting, at the end of February, 1983, the contractors began the process of searching their records to identify the inspections performed by the selected inspectors during the first three months of these inspectors' work after their initial certification. This process produced a sufficient volume of work to enable physical reinspection activities to begin by about the middle of March, 1983. In addition to the general guidance discussed above, specific guidance concerning implementation of the reinspection program was provided to each contractor. Mr. Klingler provided oral guidance in the first three to six weeks of the Program to each of the participating contractors, including Hatfield, Hunter, and PTL, so that the contractors implemented their reinspection programs in appropriate fashion. Among the items on which Mr. Klingler provided guidance were the identification of appropriate reinspection procedures and criteria to be applied to the selected inspection population.

Q.15. What contractor officials were responsible for implementation of the Program?

A.15. The contractor officials primarily responsible for implementation of the Program were the senior site quality assurance personnel for each contractor. The exception to this was that in the case of Peabody Testing Services, which was no longer on site, Pittsburgh Testing implemented the reinspection of Peabody Testing's inspection work.

Q.16. What was the role of Allen Koca in the Reinspection Program?

A.16. Allen Koca's role in the Reinspection Program was limited to supervising the Hatfield QA clerical staff review of certification records to identify the roster of inspectors based on certification date(s). This roster provided the basis from which the first and every fifth inspector thereafter were drawn for the Reinspection Program. Subsequent to this, Mr. Koca's role consisted solely of supervising the clerical staff members who were responsible for searching the inspection record files to identify each individual inspection performed by the selected inspectors in their first 90 days.

Q.17. Was Mr. Koca's release from Hatfield in October, 1983, related in any way to his work on the Reinspection Program?

A.17. No. Mr. Koca was released because of the fact that friction between Hatfield quality control inspectors and Mr. Koca was believed to be undermining his ability to assist in the implementation of an effective quality assurance program by Hatfield. In addition, the NRC Region III Staff had expressed concern about Mr. Koca's job capabilities generally, and Edison shared the Staff's concern.

Q.18. Was the work performed by Mr. Koca on the Reinspection Program satisfactory?

A.18. Mr. Koca's work was satisfactory, as demonstrated by audits performed by the Commonwealth Edison Byron Site Quality Assurance Department in June, 1983 (Audit 6-83-66) and August, 1983 (Audit 6-83-124). These audits confirmed that Hatfield had properly prepared the chronological listing of inspectors from which the reinspection sample was selected, and had properly established the population of inspections for each selected inspector.

Q.19. What was the role of Edison's Byron Project Construction Department as the Reinspection Program proceeded?

A.19. The role of Edison's Byron Project Construction Department basically was to guide the contractors in

the implementation of the Program, responding to questions of implementation, coordinating schedules for implementation, monitoring performance and assessing and directing personnel and time resources. This direction was provided primarily through weekly scheduled meetings with the contractors and through direct involvement on a daily basis with the contractors by Mr. Klingler.

Q.20. Please describe Mr. Klingler's responsibilities as Byron Project Construction Department Quality Control Supervisor.

A.20. As the Project Construction Department Quality Control Supervisor Mr. Klingler is responsible for the development by site contractors of their quality assurance procedures and for the training by the contractors of their QA/QC personnel. Mr. Klingler's responsibilities also include execution of corrective action taken in response to items identified by the NRC and by Edison's site and corporate quality assurance departments, direction of Field Change Request close-outs, and direction of receiving inspections for the site.

Q.21. Please describe Mr. Klingler's work experience prior to his becoming Project Construction Department Quality Control Supervisor.

A.21. Mr. Klingler became Project Construction Department Quality Control Supervisor in October, 1981. Immediately prior to that Mr. Klingler was a Quality Assurance Supervisor at Byron, with responsibilities in the areas of electrical work, independent testing, and documentation. As a QA Supervisor Mr. Klingler was directly responsible for the site quality assurance department's involvement with Pittsburgh Testing Laboratory and Hatfield. Mr. Klingler was a QA Supervisor from December, 1980, to October, 1981. From March, 1978, to December, 1980, Mr. Klingler was a Quality Assurance Engineer at Byron with responsibilities in the electrical and mechanical areas. As a QA engineer Mr. Klingler performed quality assurance functions involving Hatfield and Hunter. Mr. Klinger began his employment with Commonwealth Edison in 1975.

In October, 1980, Mr. Klingler was certified as a Level III Inspector in quality assurance. At the time he was a QA Engineer Mr.Klinger was certified as a Level II Inspector in the areas of visual weld, radiographic, liquid penetration, magnetic particle, receiving, and other types of inspections. Mr. Klingler received a Masters Degree in Electrical Engineering from Purdue University in 1974.

Q.22. How was the work performed by Hatfield Electric Company, Hunter Corporation, and Pittsburgh Testing Laboratory inspectors in their first 90 days of work identified?

A.22. Great care was taken to identify and isolate the inspections performed during an inspector's first three months of work. Such care was necessary because of the fact that over the years many attributes were inspected more than once, by different inspectors. Multiple inspections of an attribute could occur under various circumstances, such as where an installed component was reworked as a result of a design revision or other reason. Consequently, contractor personnel, under the supervision of Edison's Byron Project Construction Department and Byron Quality Assurance, carefully reviewed inspection records to ensure that the appropriate initial inspections were reinspected. In order to ensure that appropriate steps were being taken to identify the appropriate inspections, Mr. Klingler personally reviewed the programs being followed by each contractor.

With regard to Hatfield Electric, due to the fact that the inspection records were filed by inspection report number rather than by inspector or by component, the process of identifying those inspections performed by

the selected inspectors required that every inspection report be reviewed to determine its inspector. Also, due to the fact that the inspection reports were filed sequentially by inspection report number, the files were reviewed to ensure that an inspection report associated with an inspector's first 90 days had not been superceded by a revision to the installation which was covered by a subsequent inspection report. Due to the vast number of weld traveler cards prepared for installation and inspection of Hatfield components (i.e., a single Hatfield component could have as many as 10 weld traveler cards prepared during the course of installation), steps had begun prior to the reinspection program to place weld traveler data on a Wang electronic data base in order to assure accuracy and accessibility for Hatfield weld records. This program was completed during the course of the reinspection program, and the electronic data base was used to ensure that the appropriate weld inspections were reinspected for the selected inspectors.

Hunter Corporation recorded inspections by component. Thus, determination of the inspections performed by the selected inspectors in their first 90 days was primarily done by review of the inspectors' daily logs to determine the components they had inspected.

With regard to Pittsburgh Testing Laboratory, the inspections were filed by inspection, a system similar to that described above for Hatfield. The inspection reports on file were reviewed to identify the inspections performed by the selected inspectors during their first three months. To ensure that the identified inspections had not been subsequently superceded, PTL also conducted further reviews. For visual weld reinspections PTL examined the component files of Blount Brothers Corporation, Mid-City Architectural Iron, and American Bridge to determine whether revisions to welding had occurred after the date of initial inspection. PTL inspectors performed weld inspections for these contractors, and review of the contractors' component records was necessary because of the fact that PTL's own inspection records would not necessarily include the inspection data detail found in the component records. For concrete expansion anchors, the other attribute reinspected by PTL, any modification of the component would be evident at the time of reinspection. Therefore, PTL would either review the component records of the installing contractor or, if a contractor's work did not provide ready accessibility to information on CEAs, examine the component in the field.

Q.23. Why was it important to reinspect the actual inspection performed by a particular inspector, rather than to simply reinspect the attribute that had at one time been inspected by the inspector?

A.23. It was important to reinspect the actual inspection performed by a particular inspector due to the fact that the questions and uncertainties which caused the Reinspection Program were associated with the qualification and certification practices used to establish inspector capability. In order to address this question, the necessary focus was on the performance of individual inspectors rather than on types of inspections. Therefore, identification and isolation of the inspections performed by the selected inspectors was a prerequisite to valid results as the Reinspection Program progressed.

Q.24. Who were the inspectors that performed reinspections?

A.24. The inspectors who performed reinspections were QC inspectors for the contractors whose work they were reinspecting.

Q.25. Were the inspectors who performed reinspections properly qualified and certified?

A.25. Yes. These inspectors were qualified and certified to the standards that were developed by Edison in

response to IE Report Nos. 50-454/82-05 and 50-455/82-04. In response to noncompliance 82-05-19, on June 9, 1982, Edison directed its Byron contractors to develop inspector qualification and certification programs which incorporated standardized requirements for the attributes included in ANSI N45.2.6, such as work experience, education, on-the-job training, testing, and demonstrated capability. The procedures submitted by the contractors participating in the Reinspection Program were reviewed by Edison and all were approved for use by the end of September, 1982. Hunter's and Hatfield's revised procedures were approved in August, 1982, and PTL's in September, 1982.

From the point that a contractor's revised inspector qualification/certification procedures were approved for use each new inspector was trained and certified to the new procedures. In addition, beginning at the time of procedure approval, each existing inspector was recertified to the new procedures.

During subsequent review of these procedures by Edison's Byron Quality Assurance Department, minor modifications were made to the contractors' certification procedures. These modifications did not require significant alteration of the procedures in place, however, and Edison's site QA department deemed all

inspectors who were certified to the procedures approved by the end of September, 1982, to be properly qualified and certified.

Consequently, the reinspection Program was performed by reinspectors who had been either newly-certified or properly recertified before commencing reinspections. It should be noted that a Hunter inspector began reinspecting on April 7, 1983, even though he was not formally recertified until April 26, 1983. This inspector, however, had completed the training necessary for recertification by March 24, 1983, and thus was certifiable under the revised procedures although the documents indicating that he was officially recertified were not signed off until several weeks later.

One inspector, who had performed inspections subsequent to his recertification, later was determined to have not been properly certified. In early 1983, the NRC Senior Resident Inspector, William Forney, determined that a Hatfield weld inspector, Tom Wells, was not properly certified. Mr. Wells had been recertified in October, 1982, but Mr. Forney concluded that Mr. Wells' experience background did not meet the requirements for prior nuclear-related work, in that much of Mr. Wells' prior work experience involved non-safety-related work for Eko-cel, a Byron contrac-

tor. Hatfield had interpreted the prior experience requirement for inspector certification to allow inclusion of this non-safety-related work performed at the site. Mr. Wells was a veteran Hatfield inspector, and in order to demonstrate his capability as an inspector Hatfield reinspected the first 30 days of Mr. Wells' work subsequent to the date of his recertification. This reinspection resulted in a 99.07% acceptance rate for the reinspectable visual weld inspections performed by Mr. Wells during the 30-day period. Mr. Wells' qualifications as an inspector were further demonstrated by his performance in the reinspection program; Mr. Wells was one of the Hatfield weld inspectors whose work was reinspected, and he achieved an acceptability level of 96.9% in the first three months of inspections that he performed for Hatfield. Subsequently, in April, 1983, Mr. Wells was again recertified through the substitution of additional training for prior work experience. Mr. Wells did not perform reinspections until he was recertified in April, 1983.

Q.26. Did Hatfield, Hunter, and Pittsburgh Testing Laboratory inspectors who were already on-site at the time that the revised certification procedures were approved for use by these contractors continue to perform inspections pending their recertification?

A.26. Yes. These inspectors continued to perform inspections pending their recertification.

Q.27. What is the assurance that the inspections performed by these inspectors prior to their recertification were performed properly?

A.27. The work of all these inspectors was encompassed by the Reinspection Program, insofar as these inspectors had been certified prior to the approval of the revised certification procedures. Consequently, the Reinspection Program's demonstration of the quality of the inspection work performed by inspectors certified prior to September, 1982, encompassed the inspections performed by inspectors who subsequently were recertified in accordance with the revised procedures.

Moreover, the Reinspection Program itself reviewed inspections performed subsequent to the approval of revised certification procedures. That is, the program examined the first three months of work performed by inspectors who were certified from 1976 right up to the date the revised procedures were implemented; thus, the program included the first three months of work of at least a small number of inspectors who were certified during the summer of 1982, and this three-month period extended into or beyond September, 1982.

Q.28. How many inspectors performed reinspections?

A.28. For all of the contractors participating in the Reinspection Program, a total of 152 inspectors participated in the Program as reinspectors.

Q.29. How many man-hours were involved in the performance of reinspections?

A.29. Approximately 80,000+ man-hours of actual reinspections were performed, and approximately 160,000+ additional man-hours were spent in construction, clerical, and administrative support work related to the Reinspection Program.

Q.30. How many reinspections were performed?

A.30. Over 202,000 inspection points were reinspected.

Q.31. Were measures taken to ensure that the reinspections were performed accurately?

A.31. In order to ensure that the reinspections were being accurately performed, Commonwealth Edison's Byron Quality Assurance Department directed Pittsburgh Testing Laboratory to perform a special unit concept inspection to determine if PTL's inspectors would independently arrive at the same inspection results as the contractors' quality control inspectors who were performing the reinspections. This overinspection was

performed during the period of August 1 through September 19, 1983. The PTL overinspectors rechecked the work of seventeen reinspectors who were employed by Hatfield, Hunter, Blount Brothers, NISCo, Johnson Controls, and Powers-Azco-Pope. Work which these contractors' reinspectors had found to be acceptable was rechecked by the Pittsburgh Testing inspectors. The PTL overinspection was then supplemented by independent third-party reviews of the visual weld inspections rejected by PTL. Of about 1,185 objective and subjective items checked by overinspection, only nine (involving six inspectors) were deemed to be discrepant after the unit concept inspection and independent third-party review. Therefore Edison concluded that the reinspections were being performed in accurate fashion.

Q.32. Were measures taken to ensure that inspectors did not reinspect their own work?

A.32. Yes. When supervisors assigned work to reinspectors they did so after verifying that the inspector performing the reinspection was not the original inspector.

Q.33. Were the reinspectors aware of whose work they were reinspecting?

A.33. In most cases, the reinspectors were aware of whose work they were reinspecting. Generally, the information provided to reinspectors to enable them to perform their reinspections contained the name or initials of the original inspector. The exception to this was the case of as-built dimension inspections. For these reinspections the original documents which recorded the results were not provided and in their place drawings and information which did not contain the original inspector's initials or name were provided for implementation of reinspection.

Q.34. Did the results of the Reinspection Program indicate whether or not reinspectors demonstrated bias in favor of the inspectors they reinspected?

A.34. The unit concept inspection conducted by Pittsburgh Testing Laboratory, described in answer to Q.31 above, demonstrated that the reinspectors did not bias their results in favor of the inspectors whose work they were reinspecting. The PTL inspectors who performed the unit concept inspection were totally independent from the contractors being reviewed, and consequently the results of this overinspection demonstrated the integrity of the reinspections performed by the contractors' reinspectors.

Q.35. Did the contractors performing the reinspections provide periodic reports to Edison?

A.35. Yes. The contractors performing reinspections provided periodic status reports to Edison's Byron Quality Control Supervisor (Mr. Klingler), usually in the weekly scheduled meetings. In the initial stages, these reports consisted primarily of information regarding record searches being performed to identify the appropriate population of inspections for each inspector; subsequently, as actual reinspections were occurring, the reports encompassed the number of reinspections completed, the resources being committed to reinspections in terms of numbers of inspectors, identification of needs for craft support to enable access to perform the inspections, and other needs and information pertaining to Reinspection Program coordination. As the Program reached its approximate midpoint, the reports identified the results of reinspections, either on tabulation sheets or through oral communication. As the Program was approaching its end-point, contractor reports identified the development of appropriate nonconformance system documentation associated with corrective action requirements for discrepancies found in the program, and ultimately the final statistics associated with each individual inspector.

Q.36. As the Program proceeded did the contractors raise questions concerning the manner in which the Reinspection Program was to be implemented?

A.36. Yes. When a contractor had a question concerning implementation of the Reinspection Program, its personnel would raise the issue with either Robert Klingler or myself. If Mr. Klingler or I determined that the issue required the contractor's implementation of the Program be modified to reflect the problem, we would direct the contractor to place its question in written form. Upon receipt of the written request for interpretation of the Reinspection Program, Mr. Klingler or I would sign off on the request, numbering each such request sequentially to ensure that they were properly recorded. A total of 22 such "interpretations" were generated during the reinspection process, and they are appended to my testimony as Attachment A. These interpretations were disseminated to all of the contractors involved in the Reinspection Program, for their guidance.

Q.37 Aside from the questions which led to the creation of the interpretations described in Q.36, above, did other problems arise during Hatfield's, Hunter's, and PTL's implementation of the Reinspection Program?

A.37 The audits and surveillances performed on the Reinspection Program by Edison's Byron Quality Assurance Department noted several findings and observations in the implementation of the Program by the contractors. These audits and surveillances are discussed by Mr. Shenski.

Other than these issues, and in addition to the broader questions which led to the creation of the interpretations, minor implementation problems did arise for each of these contractors. For example, changes made in the identification numbers of plant components by Sargent & Lundy as a result of S&L's ongoing engineering evaluations performed during construction posed problems for several of the contractors participating in the Reinspection Program, particularly Hatfield; the elimination of original surveyor point-of-reference marks at locations in the plant made it more difficult to establish reference points for some of the inspections that were being reinspected; and construction activity rendered access to otherwise reinspectable inspections significantly more difficult. Although problems such as these posed obstacles to performance of the reinspections which were to be conducted by Hatfield, Hunter, and PTL, the contractors were instructed to devote the additional effort neces-

sary to identify the appropriate inspections to be reinspected and to obtain access to the inspections. In short, unless the contractor formally obtained approval from Edison's Byron Project Construction Department, through a numbered interpretation, to not perform particular reinspections, the contractor was required to take the steps necessary to properly implement the Reinspection Program.

Q.38. What types of inspections performed by Hatfield, Hunter, and Pittsburgh Testing Laboratory were included in the Reinspection Program, and what types could not be reinspected due to inaccessibility or non-recreatability?

A.38. Attachment B to my testimony presents a tabulation which lists type of inspection, whether it was reinspectable or not, and if not, why it was inaccessible and/or not recreatable.

Q.39. Approximately what proportion of total inspections performed by Hatfield, Hunter, and PTL could not be reinspected because of inaccessibility and/or non-recreatability?

A.39. For Hatfield, approximately 80% of the total inspections performed during the contractor's tenure at Byron (up to the date its revised certification proce-

dures were implemented) was reinspectable. For Hunter, this number was approximately 70%. For Pittsburgh Testing Laboratory, appreciably less than 50% of the inspections performed prior to the implementation of its revised certification procedures was reinspectable.

Q.40. Please describe the documentation generated by Hatfield, Hunter, and PTL during the Reinspection Program.

A.40. The contractors developed documentation which consisted of the original inspection report prepared by the reinspected inspector, the record generated by the reinspector (which generally was a duplicate of the original inspection record with the reinspector's notations added), the tabulations prepared for each inspector to determine whether the inspector satisfied acceptability requirements, and the tabulations of discrepancies identified through reinspections.

Q.41. What measures were taken to confirm the accuracy of the reinspection data generated by Hatfield, Hunter, and PTL?

A.41. Edison's Byron Quality Assurance Department conducted an audit (6-83-93) and surveillances to ensure that the tabulations of data prepared by the contractors

were accurate. Audit 6-83-93 and the surveillances are discussed in Mr. Shewski's testimony.

In addition, in late 1983 and early 1984 Sargent & Lundy reviewed the data generated by these contractors when it performed its evaluation of the discrepancies identified during the Reinspection Program. With minor exceptions, Sargent & Lundy confirmed that the numbers reported by the contractors for acceptable and unacceptable inspections were accurate.

Q.42. Did problems arise with regard to the documentation of discrepancies identified by Hatfield, Hunter, and PTL as the Reinspection Program progressed?

A.42. Edison Byron Quality Assurance Department Audit 6-83-66, conducted in June and July, 1983, found that certain contractors, including Hatfield, Hunter, and Pittsburgh Testing Laboratory, had not yet initiated the documentation required by the contractors' quality assurance programs to correct or disposition discrepancies identified by the Reinspection Program. Each contractor was recording all discrepancies on its reinspection records, but each discrepancy had not yet been documented either on an individual discrepancy report or as part of a nonconformance report.

Q.43. What steps were taken by Hatfield, Hunter, and PTL in response to Audit 6-83-66?

A.43. Documentation of discrepancies was performed through the utilization of discrepancy reports and nonconformance reports, in accordance with the contractors' quality assurance programs.

Q.44. Were all discrepancies identified by Hatfield, Hunter and PTL, in the Reinspection Program, whether identified before or after Audit 6-83-66, documented in accordance with the QA programs of these contractors?

A.44. Yes. All discrepancies which had been identified prior to the issuance of the audit, as well as those identified subsequent to the audit, were documented through the use of discrepancy reports or nonconformance reports.

Q.45. Were all identified discrepancies included in the data base of the Reinspection Program, regardless of whether they were identified before or after Audit 6-83-66?

A.45. Yes.

Q.46. Please describe the third-party review of reinspections.

A.46. In order to assure that reinspection results of visual weld inspections were consistent and valid, thirdparty overview inspection was performed on those weld inspections which were found to be discrepant by reinspectors. Third-party review of weld reinspections was incorporated into the Reinspection Program due to recognition of the subjective nature of visual weld inspection; third-party review by a Level III inspector was designed to ensure that rejections of original inspections were proper, and that such rejections were not the result of overconservatism on the part of reinspectors. All but one of the third-party reviewers were Level III inspectors employed by Sargent & Lundy and by Daniels Construction Company, the other being a Sargent & Lundy Level II inspector.

Q.47. What were the results of the third-party review of reinspections for Hatfield, Hunter, and PTL?

A.47. The results of the third-party review are found in Table A-5 of Appendix A of the February, 1984, Report on the Byron QC Inspector Reinspection Program. The third-party reviewers examined 3,136 weld discrepancies identified by Hatfield reinspectors, and determined that 1,150 of these should have been accepted by the reinspectors rather than rejected. The thirdparty reviewers examined 121 weld discrepancies identified

by Hunter and determined that 12 should have been accepted rather than rejected. For PTL the third-party reviewers examined 999 weld discrepancies identified by reinspectors, concluding that 94 should actually have been accepted. PTL reinspectors also were responsible for the reinspection of work performed by Peabody Testing, and third-party reviewers examined 46 weld discrepancies identified by PTL reinspectors, determining that six should have been accepted rather than rejected.

These third-party review results confirmed for Edison that the reinspectors of Hunter, Hatfield, and PTL generally were evaluating weld inspections consistently and accurately, except for the conservatism which appeared in the results of each of the contractors. Such conservatism enhances the results of the reinspection effort of visual weld inspections, suggesting that the contractors' overall reinspection results have a slight conservative bias, in addition to the conservatisms built into the Reinspection Program as a whole.

Q.47. When was the Reinspection Program completed?

A.47. The basic Reinspection Program was completed in mid-January, 1984. The Report on the Byron QC Inspec-

tor Reinspection Program was then completed in February, 1984. As a result of questions by the NRC Staff, supplemental inspections (which were not encompassed by the requirements of the Reinspection Program) were performed between February and April, 1984. In addition, a Supplement to the February, 1984 Report was completed in June, 1984, reflecting further review of the Reinspection Program by Sargent & Lundy and Edison's Project Engineering Department.

TUETKEN ATTACHMENT A

Interpretations Summary

1. Taking of Level I data w/o knowing result (HECo)
2. Punch Marks. Missing; not reinspectable
   Turn of nut; not reinspectable
   Retorque; Record value snug up
   Type 3 & 4 subsequent inspections } (Hunter)
3. Receiving Inspection not reinspectable (JCI)
4. Structural bolting sample - not reinspectable (PTL)
5. Alloy Steel Bolt Relaxation (Hunter)
6. Hot functional Testing Substitute Inspections (Hunter)
7. Transco Fire Stops - do not remove (HECo)
8. Reliable Sheet Metal welds not reinspectable (PTL)
9. Minimum quantity of inspections 25/50 (CECo)
10. Class D work not reinspected (Hunter)
11. PTL AWS weld criteria used (PTL)
12. CEA Bolt torque not reinspectable (PTL)
13. As-built tolerance for reinspection ± 3 inches (HECo)
14. Peabody reports (some) are not traceable (PTL)
15. Missed inspection due to IHF & ILRT shall be reinspected (Hunter)
16. Piping System bolt torque not reinspectable (Hunter)
17. Design Documents not updated per verbal concurrence (HECo)
18. Partial Penetration Weld (Nisco)
19. Weld Gage Tolerance & Full Size Fillet Def (Hunter)
20. Arc Strikes (HECo)
21. Overwelding (HECo)

Attachment A

Interpretations Summary

22. Tolerances on HP-9A-1 Supplement Sheets (HECO)

I
INTERPRETATION
TO be used during
Reinspection
R B Klingler
CECO QCD

HATFIELD ELECTRIC COMPANY

QA/QC MEMORANDUM #730

TO: All Lead Inspectors
FROM: J.K. Buchanan
DATE: March 12, 1983
SUBJECT: Managers Instruction 108

Please be advised that all reinspections performed in the scope of Managers Instruction 108 shall be done by taking raw data and comparing same with the previous inspection data. In no case shall we allow the inspector to take the information currently in the file and simply reverify the data.

See me at once if you have any questions concerning this directive.

This direction is a result of a discussion with Bill Forney and Kevin Connaughlar of the U.S.N.R.C.

NOTE

J.K. Buchanan

File 1.108
cc: R.B. Klingler

only related to dimensional data verification
i.e. don't provide the reinspection inspector with dimensional data identifying what is expected in that this may influence the actual data taking.

BOB:
YOU MIGHT CHECK WITH FORNEY & ADVISE ALL CONTRACTORS OF HIS WISHES !

Jim

HUNTER CORPORATION

INTER-COMPANY CORRESPONDENCE

Interpretation 2
Methodology Acceptable should be used consistently by all contractors in inspection
BB Klingler 4/12/83

DATE: April 12, 1983
TO: Bob Klingler
FROM: Lee E. Hadick
SUBJECT: NPC Reinspection Meeting of April 11, 1983

It was my understanding that we will not perform any turn of the nut inspections. They will be shown as inaccessable.

If punch marks are not present on a fit-up inspection (small bore) the inspection will be shown as inaccessable.

Final torque will be verified by using a calibrated wrench. We will tighten each bolt in sequence, stop when the nut begins to turn, and record this data for each stud. We will not bring the bolt up to final torque condition.

△ after RI by Retorque to desired value

On type 3/4 inspections damage will be considered inaccessable. If we are verifying a type 3 inspection and a type 4 was performed, it will be shown as inaccessable. If we are verifying a type 4 inspection and another type 4 (45 day) was performed, it will be shown as inaccessable. If we are verifying a type 4 inspection, we will do it without removing the covering (inplace, intact).

We will proceed in the fashion shown unless otherwise informed.

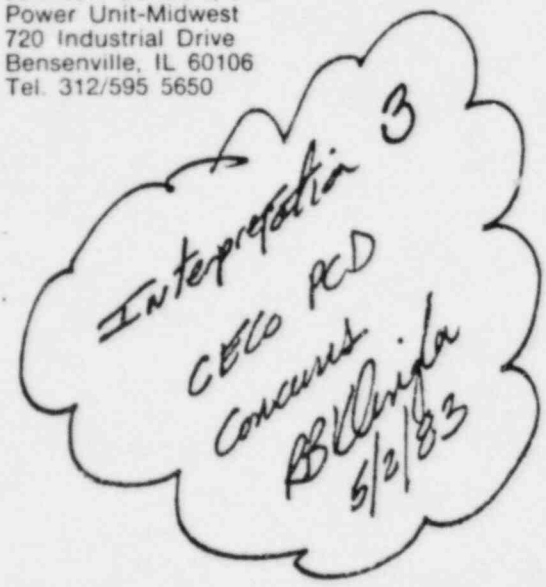
Lee E. Hadick

LEE E. HADICK
Quality Control Supervisor

cc: M. L. Somsag

LEH/pb

Johnson Controls, Inc.
Power Unit-Midwest
720 Industrial Drive
Bensenville, IL 60106
Tel. 312/595 5650



JOHNSON CONTROLS
Systems Engineering & Construction Division

Date: April 29, 1983

COMMONWEALTH EDISON COMPANY
Byron Station Construction
R.R. #1 P.O. Box B
Byron, Illinois 61010

Attn: Mr. R. Klingler

Subject: N.R.C. Re-Inspection Meeting of April 11, 1983

Dear Bob,

It was my understanding that we will not perform any receiving inspections as material has already been used. They will be shown as inaccessable.

We will proceed in the fashion shown unless otherwise informed.

Sincerely,

Bansi Shah
QA Manager

BS/lm

FROM: **PITTSBURGH TESTING LABORATORY**
Byron Station
P.O. Box 416
Byron, IL 61010

SENDER'S NAME: Don. L. Smith

TO: Bob Klingler

REPLY ☒ IN WRITING
☐ BY TELEPHONE
(815) 234-5095

☒ IMMEDIATELY
☐ AS SOON AS ABLE
☐ NOT NECESSARY
BY ~~5-2~~ 1:00 Pm Date 5-2-83

SUBJECT: STRUCTURAL Bolting
DATE SENT:
DATE RECEIVED:
DATED ACTED UPON:
DATE RETURNED:

Interpretation 4
CECo PCD
CONCURS
RB Klingler
5/4/83

FOLD

AS PER OUR CONVERSATION, P.T.L Feel that there is NO WAY TO do A REINSPECTION OF STRUCTURAL Bolting. Peabody & P.T.L documentation does NOT Show the item (10% square) that was INITIALLY INSPECTED, therefore We Feel there is NO WAY to do A REINSPECTION OF STRUCTURAL Bolting, Please Advise.

SIGNED Don Smith

CECo PCD Concurs, do not reinspect structural bolted connections

FOLD

A-6

5/4/83 B Klingler
SIGNED

Commonwealth Edison
Byron Generating Station
P.O. Box B
Byron, Illinois 61010

Torque Relaxation

INTERPRETATION TO BE USED during Reinspection
B Klingler QCE
Sheet 1 of 2

May 11, 1983

TO: Hunter Corporation
P. O. Box 674
Byron IL 61010

ATTN: B. Krasawaski

Powers-Azco-Pope
P. O. Box 392
Byron IL 61010

ATTN: B. Schulz

SUBJECT: Relaxation of Bolt Torque

Due to the physical phenomena of decrease in bolt stress as a result of creep in the bolt and/or gasket material, activities of reinspection of piping system bolt torque shall use the reduction value identified in the attached Sargent & Lundy letter SLBT-1050.

If you have any questions on the foregoing or attached, please contact us.

Very truly yours,

COMMONWEALTH EDISON CO.

R. Tuetken 5/11/83

R. Tuetken
Assistant Superintendent
Project Construction Dept.

RPT:bg

Attachment

cc: M. Lohmann (1/wl)
M. Stanish (1/wl)
B. Klingler (1/wl)
D. DeMoss (1/wl)
M. Somsag (1/wl)
B. Larkin (1/wl)

SARGENT & LUNDY
ENGINEERS
CHICAGO

BYRON FIELD TRANSMITTAL FORM

COMMONWEALTH EDISON COMPANY
Byron Station - Units 1 & 2
Project Nos. 4391/92

Date 5-06-83
Trans. No. SLBF-1050
Page 1 of 1

Subject: Piping System Bolt Torque Relaxation - Alloy Steel Bolts

From: D. A. Gallagher/D. Demoss
To: R. P. Tuetken Company: Commonwealth Edison

cc: W. C. Cleff - 22

S&L has reviewed piping system bolt torque relaxation and finds reductions in torque of up to 30% of initial torque can occur. If bolt torques are found to be below 70% of initial torque, the bolts should be pulled up to achieve the initial torque. Bolts used include A-193, A-325 and A-490.

Crane Engineering Data Handbook Section 31 - Bolting - contains an expanded discussion of bolt torque relaxation.

D Demoss

INTERPRETATION 5
Sheet 2 of 2

HUNTER CORPORATION

3800 - 179TH STREET, HAMMOND, INDIANA 46323, (219) 845-8000 (312) 731-8000

INTERPRETATION 6
To be used during
Reinspection
BB Klinger
CELG PCD

Date: June 1, 1983

To: Bob Klinger

From: Lee E. Hadick

Subject: NRC Reinspection

Per our conversation of May 31, 1983:

When hardware/weld reinspections cannot be performed due to the hot functional testing taking place in Unit 1, we will show it as inaccessible and state why. The inspectors surveillances will be researched sequentially for the next hardware/weld inspection (beyond his first three months) which will then be used in lieu of the original.

We will proceed in the fashion shown unless otherwise informed.

Lee E. Hadick

LEE E. HADICK
Quality Control Supervisor

cc: M.L. Somsag

Lee -
ok during the
~ 3 week period
of testing.
RBK
6/1/83

A-8

Hatfield Electric Company

Byron Units 1 & 2

QA/QC Memorandum #876

INTERPRETATION 7
To be used during reinspection
AB Hyle
CECo PCD

TO: R. Klingler, CECo P.C.D.
FROM: J. T. Hill, QA/QC Manager
DATE: 6-20-83
SUBJECT: Removal of Transco Firestops for reinspection of Conduit Hanger

There are some conduit hangers involved in the N.R.C. reinspection program which have been covered by "Transco" firestops thru floor penetration. Locations are: 451' - 1PA04J, 1PA09J, 1PA10J, 1PA12J, and 1POA22J, Aux. equipment room.

Should we request removal of this material or delete them from the reinspeciton program? Known hanger population at this time is 27. Removal of this material could possibly damage cables encasd in these firestops.

Please Advise!

J. T. Hill
QA/QC Manager

JTH/ljs
cc: File 9.23
0188C

Due to possible damage of cables when removing a firestop, we do not recommend this procedure.
6/20/83.

FROM: **PITTSBURGH TESTING LABORATORY**
Byron Station
P.O. Box 416
Byron, IL 61010

SENDER'S NAME: M.R. Tallent, Jr. CH-3850

TO: R.B. Klingler
CECo PCD

INTERPRETATION 8
To be used during reinspection
B Klingler CECo PCD

REPLY ☐ IN WRITING
☐ BY TELEPHONE
(815) 234-5005

☐ IMMEDIATELY
☐ AS SOON AS ABLE
☐ NOT NECESSARY

BY _____ Date _____

SUBJECT: Reinspection

DATE SENT: June 7, 1983

DATE RECEIVED:

DATED ACTED UPON:

DATE RETURNED:

FOLD

Per our recent conversation, we are considering that welds for RSM are "not reproduceable" due to the following features:

1) The welds have been, and are being, reworked
2) We do not have a tracking system to determine reworked items
3) We cannot determine, from our reports, which welds on a given hanger were originally inspected.

dlh

SIGNED Jon Smith 6-7-83

FOLD

Method Acceptable

A-11

SIGNED B Klingler 6/14/83

RECIPIENT

Commonwealth Edison
Byron Generating Station
P.O. Box B
Byron, Illinois 61010

July 7, 1983

TO: Hatfield Electric
Attn: T. Hill

Hunter Corp.
Attn: L. Hadick

Blount
Attn: W. Wills

Powers-Azco-Pope
Attn: R. Larkin

Pittsburgh Testing Lab/Peabody
Attn: M. Tallent

NISCO
Attn: K. Jackson

Johnson Controls Inc.
Attn: B. Shah

SUBJECT: Quantity of QC Inspector Reinspections
(Interpretation No. 9)

REFERENCE: Letter Stiede to Keppler dated 2/23/83

During the selection of items ⚠ to be reinspected for each QC inspector, it is possible that within the initial 90 day period a low quantity of reinspectable items exsist.

The following minimum quantity of items are to be respected per inspector:

Contractor	Minimum Items
PTL, Peabody	25
Hatfield, Hunter, JCI, Blount, PAP, and Nisco	50

If required the additional items falling outside the initial 90 day period shall be chosen chronologically up to and including the last day of scheduled reinspection for the entire population.

Please contact me if you have any questions or cannot meet this minimum requirement.

Note 1: An installation (or part of) which requires evaluation to all checklist criteria.

Robert B. Klingler 7/7/83
Robert B. Klingler
Project Construction Dept.
QC Supervisor
Byron Station

cc: G. Sorensen
R. Tuetken
M. Stanish
File, G9.0; 82-05/82-04

HUNTER CORPORATION

3800 - 179TH STREET, HAMMOND, INDIANA 46323, (219) 845-8000 (312) 731-8000

Interpretation 10
Reinspection Program

Date: July 8, 1983

To: Bob Klinger

From: Lee E. Hadick

Subject: NRC Reinspection

Class D Inspections have not been included as a part of the NRC Reinspection Program; consequently, they will not be listed on the computer printouts.

Please inform us if this policy is acceptable.

Lee E. Hadick

LEE E. HADICK
Quality Control Supervisor

cc: M. L. Somsag

cj

Acceptable - unless the class D weld is made to Safety Related Structure

RB Klinger 7/13/83

PTL – CHICAGO

D. A. DUNN, P.E.
Manager

Pittsburgh Testing Laboratory

July 11, 1983
Letter #70-83-040

Interpretation 11
Reinspection Program
RB Klufa

Mr. R.P. Tuetken
Asst. Construction Superintendent
COMMONWEALTH EDISON COMPANY
Byron Nuclear Power Station
Byron, Illinois 61010

SUBJECT: Reinspection Program

Dear Mr. Tuetken:

We have been carefully evaluating the resultant data obtained from our reinspection activities, and have noticed an item relating to visual welding inspection that causes us some concern.

This concern is as follows:

1) We believe the acceptance criteria we are currently using, regarding visual welding inspections made by our Reinspection Team, is not the same as that used in the original inspection.

NOTE: We are aware that AWS D1.1 is the written criteria which was stated as acceptance criteria for the original inspection. However, we believe the original inspectors did not envoke all the criteria of AWS D1.1, Chapter 6 and Para 8.15, as we are now trying to do, plus, the original inspectors were using more "judgement" in their inspections than today's Reinspection Team. This is due, in part, to our practice of now trying to apply the letter of the Code (AWS) rather than the intent.

Based on this concern, we have prepared what we propose to use as acceptance criteria, with justification, for the reinspection of visual welding inspector's work. This data is shown by ATTACHMENT 1 to this correspondence.

Please note that in this correspondence, we are not saying the proposed criteria is necessarily correct or incorrect, merely that this criteria was used in the original inspection.

A-15

Please review the proposed criteria, and advise of acceptability.

If you have any questions, please do not hesitate to contact me.

Very truly yours,

PITTSBURGH TESTING LABORATORY

M.R. Tallent, Jr.
Site Manager
Byron Station

dlh
Attachment

PROPOSED ACCEPTANCE CRITERIA
FOR
VWI REINSPECTION

A weld subject to visual inspection shall be acceptable if visual inspection shows that:

1) The weld has no cracks.

2) Thorough fusion exists between weld metal and base metal.

3) All craters are filled to the full cross section of the welds.

4) Weld profiles shall be in accordance with the following:

   A) Undercut shall not exceed 1/32" in depth.

      Justification: The 0.01" criteria shown by AWS for certain conditions is dependant upon knowing various design stresses. Our inspectors would have no knowledge of these stresses.

   B) Welds shall be free from overlap.

      Definition of overlap: Overlap shall be considered as "the protrusion of weld metal beyond the bond at the toe of the weld" (This is to say that overlap exists when unfused weld metal lays on the base metal at the toe of the weld).

      Justification: This is standard industry practice and we believe the wording/diagrams/photographs contained in the following documents support this conclusion:

      1) "Welding Inspection" (Published by AWS)
      2) ASME Section VIII, Division 1, Appendix III, Titled "Definitions"
      3) AWS A3.0-80 Figures 27C and 27D

   C) Insufficient throat shall be cause for rejection on welds other than fillet welds, and shall be evaluated based on item 6 below for fillet welds.

5) The sum of diameters of piping porosity shall not exceed 3/8" in any linear inch of weld and shall not exceed 3/4" in any 12" length of weld.

6) Fillet welds in any single continuous weld shall be permitted to underrun the nominal fillet size required by 1/16" without correction provided that the undersize weld does not exceed 10% of the length of the weld. On web-to-flange welds on girders no underrun is permitted at the ends for a length equal to twice the width of the flange.

Site QA concurs with the above criteria for the reinspection program

M Stanish 7/13/18

FROM: PITTSBURGH TESTING LABORATORY
Byron Station
P.O. Box 416
Byron, IL 61010

BY TELEPHONE
(815) 234-5095

☐ IMMEDIATELY
☐ AS SOON AS ABLE
☐ NOT NECESSARY

BY _____ Date _____

SENDER'S NAME: M.R. Tallent, Jr.

CH-3850

TO: R.B. Klingler
CECo PCD

SUBJECT: Torque Inspection of CEA's

DATE SENT: July 6, 1983

DATE RECEIVED:

DATED ACTED UPON:

DATE RETURNED:

FOLD

Interpretation 12 Reinspection Program RB Klingler 8/5/83

We propose to categorize CEA torque inspection as a non-reproduceable item based on the following:

The torque value in a CEA decreases over a period of time, thus making the original inspection for this attribute non-reproduceable.

Please advise as to your acceptance of this proposal.

dlh

SIGNED Mr. Tallent

unknown as of 7/15/83

CEA bolt Torque is not reinspectable

RB Klingler CECo PCD see attached SL letter.

FOLD

SIGNED

RECIPIENT

SARGENT & LUNDY
ENGINEERS
FOUNDED 1891
55 EAST MONROE STREET
CHICAGO, ILLINOIS 60603
(312) 269-2000
TWX 910-221-2807

O.R.T.
O B.K.

July 28, 1983
Project No. 4391/4392
File Nos. 1.1/5.27

Commonwealth Edison Company
Byron Station - Units 1 & 2

Re-Inspection Criteria for
Concrete Expansion Anchors

Mr. R. Tuetken
Commonwealth Edison Company
Project Construction
Byron Station
Byron, Il 61010

Dear Mr. Tuetken:

We have reviewed Mr. R. Byers request regarding re-inspection of concrete expansion anchors. We were requested to provide the re-inspection torque for expansion anchors installed as long as 5 years ago.

Our test data to establish a re-inspection torque is limited to tests measuring anchor relaxation up to 500 days. Variables that exist in the actual installation that were not considered in the test program include:

a. The effect of concrete creep in relation to the compressive strength of concrete.

b. The effect of loading applied to the expansion anchor due to a support attachment to the plate.

It is our understanding that the purpose of this re-inspection program is to show that previous QC inspections were performed adequately. Establishing a re-inspection torque value from the limited test data available will not answer if the original inspection was adequately performed. However, if original installation was being questioned, then retorquing the anchor to the original installation torque would be recommended.

If you have any questions on this information, please do not hesitate to call us.

Yours very truly,

R. J. Netzel
Senior Structural Project Engineer

RJN:kg
Copies:
G. Sorensen
R. Cosaro
M. A. Stanish
R. E. Querio
D. L. Leone/W. C. Cleff
B. G. Treece
R. Hooks/D. C. Patel
T. J. Ryan/G. Willman

Hatfield Electric Company

Byron Units 1 & 2

QA/QC Memorandum #959

Interpretation 13 Reinspection Program

Hatfield only

TO: R. Klingler, CECo
FROM: J.T. Hill, QA/QC Manager
DATE: August 29, 1983
SUBJECT: Tolerances for "As-Built" Reinspections

At the present time we are using a tolerance of ± 1" for location measurements on the "As-Built" reinspection program. However, the original "As-Built" program had no tolerances specified.. The ± 6" field installation tolerance was the only criteria specified on any drawing. Per J. Delnosky, S & L, all "As-Built" information received used the ± 6" tolerance as a basis for any required calculations on hangers. Can we therefore use ± 6" as acceptance criteria for field measurements?

JTH/klh

cc: File 9.07
0212C

Use ± 3" as an acceptable measurement tolerance

RB Klingler 8-31-83

FROM: **PITTSBURGH TESTING LABORATORY**
Byron Station
P.O. Box 416
Byron, IL 61010

SENDER'S NAME
M.R. Tallent, Jr. CH-3850

TO:
R. Klingler

interpretation #14
Reinspection
Program
B Klingler
8-31-83

REPLY ☐ IN WRITING
☐ BY TELEPHONE
(815) 234-5095

☐ IMMEDIATELY
☐ AS SOON AS ABLE
☐ NOT NECESSARY

BY _____ Date _____

SUBJECT:
Reinspection

DATE SENT:
8/31/83

DATE RECEIVED:

DATED ACTED UPON:

DATE RETURNED:

FOLD

Problems with traceability on certain Peabody reports make it impossible to determine the specific welds inspected initially. Based on this data, we request your concurrance to classify these cases as inaccessable. Reports of this nature comprise approximately 80% of the Peabody VWI activities.

NOTE: This memo is to supercede the previous memo on this subject dated 8/16/83.

dlh

SIGNED M.R. Tallent

CECO PCD concurs, remember a minimum of 25 welds is still required per inspector.

FOLD

A-22

SIGNED B Klingler 8-31-83
CECO PCD

RECIPIENT

Area NRC REINSPECTION

Shift DAY

A-23

Reinspection INTERPRETATION 15 RBKlingler

DAILY INSPECTION REPORT

HUNTER CORPORATION

BYRON PROJECT

H

9 1/2

Inspector MARK M. TABEER

Date 83

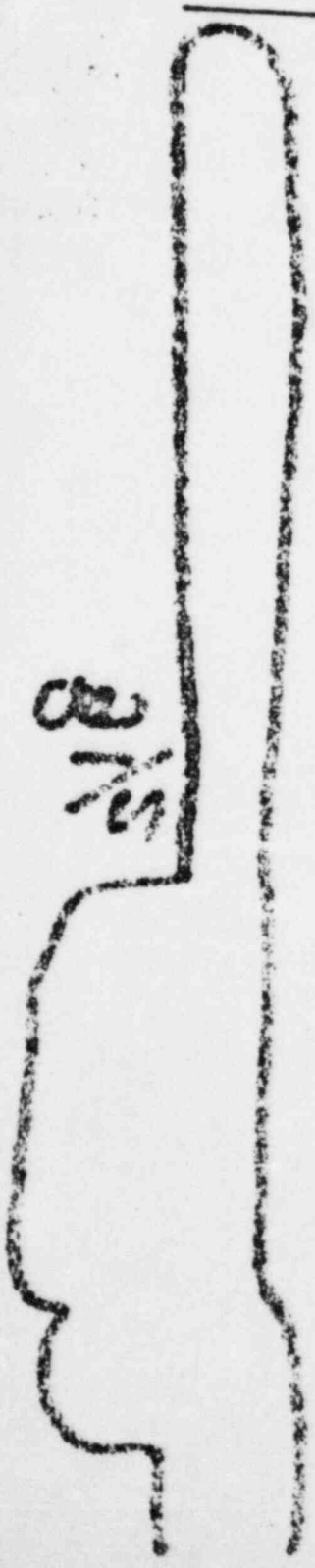
RT- SHOULD we reinspect these? RBK

"INACCESSIBLE INSPECTIONS, NOT PERFORMED" BECAUSE OF HOT FUNCTIONAL TESTING

INSP.	WELDS	DIMENSIONALS	TORQUES	[illegible] 3
1354	3	0	0	10
1313	79	6	0	1
9076	3	0	0	0
1130	0	0	0	1
1605	0	1	0	0
1529	5	4	0	0
9446	9	1	0	0
1714	1	0	4	0
1515	1	0	2	0
9208	9	0	0	0
9357 I-1 LEVEL I	0	0	0	52
1041 II-1 LEVEL I	0	0	0	1
TOTAL	110	12	6	55

MARK M. TABEER

B 2/2



HUNTER CORPORATION

3800 - 179TH STREET, HAMMOND, INDIANA 46323, (219) 845-8000 (312) 731-8000

Reinspection Interpretation # 16 RB Closed 9-15-83 pg 1 of 2

September 15, 1983

Commonwealth Edison Company
4450 North German Church Road
Byron, Illinois 61010

Attention: Mr. R. Tuetken
Assistant Superintendent
Project Construction Dept.

Subject: NRC Reinspection Program, Piping System Bolt Torque Relaxation.

Mr. Tuetken:

In your opinion does the attribute of piping system bolt torque (as it applies to the NRC Reinspection Program) fall within the definition of inaccessible?

Yours very truly,

Lee E. Hadick

LEE E. HADICK
Quality Control Supervisor

☒ Yes ☒ No checked no in error R. Tuetken 9/15/83

R. Tuetken date 9/15/83
R. Tuetken

See Attached S&L letter on flange bolt relaxation dated Sept. 14, 1983

R. Tuetken 9/15/83

cc: M. L. Somsag
K. Selman
file

LEH/pb

SARGENT & LUNDY
ENGINEERS
FOUNDED 1891
55 EAST MONROE STREET
CHICAGO, ILLINOIS 60603
(312) 269-2000

Page 2 of 2

September 14, 1983
Project Nos. 4391/4392-00

Commonwealth Edison Company
Byron Station - Units 1 & 2

Flange Bolt Torque Relaxation

Mr. G. Sorensen
Commonwealth Edison Company
Byron Station
P. O. Box B
Byron, Illinois 61010

Dear Mr. Sorensen:

At the request of Mr. R. P. Tuetken, we have reviewed the subject of flange bolt torque relaxation and determined that all flange bolts will experience some degree of torque relaxation. The two mechanisms responsible for bolt torque relaxation are flange bolt relaxation and flange gasket creep and relaxation.

Flange bolt relaxation normally results from piping system operation (pressure and temperature effects) and operating transients. Flange gasket creep and relaxation normally occur immediately following flange bolt torquing. Flange gasket relaxation may also result from plant construction activities and system start-up testing. Even though the phenomena of flange bolt torque relaxation is understood, it is not possible to accurately predict the level of total bolt torque relaxation.

In summary, flange bolt torque values will relax over time. This will result in lower final bolt torque values than initially applied. If you have any additional questions on this subject, please call me.

Yours very truly,

Dennis Demoss

Dennis Demoss
Mechanical Engineer

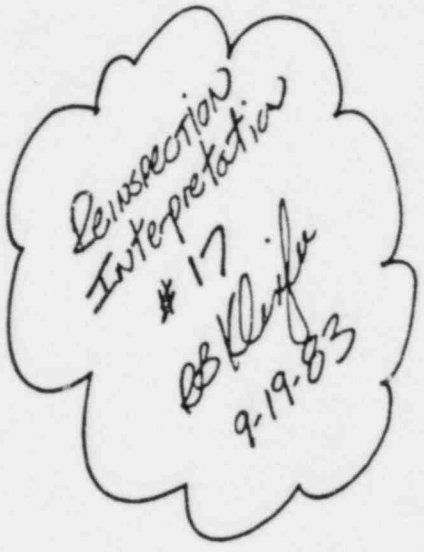
DD:cl
Copies:
J. T. Westermeier
R. Cosaro
M. Lohmann
R. P. Tuetken
D. L. Leone/W. C. Cleff
B. G. Treece
R. J. Netzel
D. A. Gallagher

A-26

Hatfield Electric Company

Byron Units 1 & 2

QA/QC Memorandum #980



TO: R. Klingler, CECo
FROM: J.T. Hill, QA/QC Manager
DATE: September 19, 1983
SUBJECT: N.R.C. Reinspection Program

During the years 1980 and 1981 many verbal approvals for changes to installation drawings were given by on-site S & L Engineers with paperwork to follow. In some cases these changes did not get incorporated on the applicable drawings ⊛ As a result we are experiencing some rejections in the reinspection program because the drawings do not reflect the installations as production was instructed to install them. I do not believe the inspectors should be penalized with rejections because of this. Please advise.

klh
File 9.09
0261C

We concur. Include copies of existing memos, sketches, or other documents which reflect the instructions provided by S&L Engineer. These conditions cause the reinspection to be classified as inaccessable-not recreatable.

R. Tuetken
9/19/83

⊛ for example:
Δ Could not install ESW Hangers as designed
Δ Could not install pull points as designed on Cross tie 439 el. UNIT 2

BK
9-19-83

NISCO

NUCLEAR INSTALLATION SERVICES COMPANY

P.O. BOX 752 BYRON, ILL. 61010

TELEPHONE (815) 234-5240

September 19, 1983
3004-BYC-264

Reinspection Interpretation #18 BB Klingler 10-3-83

Commonwealth Edison Co
Project Construction
PO Box B
Byron, IL 61010

Attention: R. Klingler

During the QA verification of the Reinspection Program, Pittsburgh Testing identified (4) four full penetration welds which had only been welded partially penetrated.

This incident immediatly made the original inspections of T.J.Pruitt and R.Shultz suspect.

I am submitting the following information to clarify this situation.

The Process Control Sheets which were used for the original inspections called for a Hold Point and QC Inspection of fitup to be done according to Drawing S-844. The final weld was to be Visual Inspected per NISCO's ES-100-5 prior to PT Inspection. The Process Control Sheet step (5.0) five which called for "QC Perform Visual Inspection of Finished Weld" was applied to inspect the front surface condition of the weld for size, undercut, underfill, overfill, weld profile and obvious cracks, prior to PT Inspection.

In this case both the original inspectors and the reinspectors performed the same inspections and found the same acceptable results. Pittsburgh Testing while performing their QA verification found a deficiency with the back surface of these welds.

The deficiency is a result of the clarity of the Process Control Sheet and should not be a reflection on the inspectors ability.

Sincerely,

P.E. Deeds, Jr.
Asst. Corp. QA Manager

A-28

Acceptable method to be used for analysis of reinspection data. Deficiency was a function of Process sheet, not inspector action.
Note that NCR 97 has been disposition as acceptable for use as is.
R. Tuetken 10/3/83

HUNTER CORPORATION

3800 - 179TH STREET, HAMMOND, INDIANA 46323, (219) 845-8000

HC-QA-485

Interpretation 19
12-16-83
Page 1 of 5

December 15, 1983

Commonwealth Edison Company
4450 North German Church Road
Byron, Illinois 61010

Attention: Project Construction Department
R.P. Tuetken
Assistant Project Superintendent

Subject: Interpretation for NRC Reinspection

Mr. Tuetken:

The Hunter Corporation requests the following interpretation.

Interpretation No. 1: Is it acceptable to use 2.3.2 and 2.3.2.1 from AWS D1.1-82 for the inspection of fillet welds?

Interpretation No. 2: Attachments 2, 3, and 4 indicate the accuracy of the welding gages we use for the measurement of fillet size. As you can see the best they can offer is ± .025". Telephone conversation with Goodwin Lycan, President of the GAL Gage Co. indicated that there are no commercially manufactured gages that are more accurate than his. Comparison of his fillet gages against like gages manufactured by Fibre Metal have shown differences of up to .050". Therefore, using similiar gages will it be acceptable to find any fillet weld up to .025" undersize acceptable under the NRC reinspection program?

Yours very truly

Lee E. Hadick

LEE E. HADICK
Quality Control Supervisor

cc: M.L. Somsag
K. Selman
QA Vault

LEH/pb

Reply: Interpretation 1 it is acceptable to use AWS D1.1 articles 2.3.2 and 2.3.2.1. - R. Tuetken 12/16/83

Interpretation 2 when reinspecting fillet weld size, based on the varying accuracy of gauges employed, the reinspection measurement shall allow variance up to .025" undersize to be acceptable. - R. Tuetken 12/16/83

STRUCTURAL WELDING CODE
ANSI/AWS D1.1-82

Interpretation 14
Page 3 of 5

ATTACHMENT 1

(1) having an included angle of 60 deg or greater at the root of the groove when deposited by any of the following welding processes: shielded metal arc, submerged arc, gas metal arc, flux cored arc, or electrogas welding; or

(2) having an included angle not less than 45 deg at the root of the groove when deposited in flat or horizontal positions by gas metal arc or flux cored arc welding.

2.3.1.4 The effective throat thickness for flare groove welds when filled flush to the surface of the solid section of the bar shall be as shown in Table 2.3.1.4.

(1) Random sections of production welds for each welding procedure, or such test sections as may be required by the Engineer, shall be used to verify that the effective throat is consistently obtained.

(2) For a given set of procedural conditions, if the contractor has demonstrated that he can consistently provide larger effective throats than those shown in Table 2.3.1.4, the contractor may establish such larger effective throats by qualification.

(3) Qualification required by (2) shall consist of sectioning the radiused member, normal to its axis, at midlength and terminal ends of the weld. Such sectioning shall be made on a number of combinations of material sizes representative of the range used by the contractor in construction or as required by the Engineer.

2.3.1.5 The minimum effective throat of a partial joint penetration groove weld shall be as specified in Table 2.10.3.

2.3.2 Fillet Welds. The effective area shall be the effective weld length multiplied by the effective throat. Stress in a fillet weld shall be considered as applied to this effective area, for any direction of applied load.

2.3.2.1 The effective length of a fillet weld shall be the overall length of the full-size fillet, including end returns. No reduction in effective length shall be made for either the start or crater of the weld if the weld is full size throughout its length.

2.3.2.2 The effective length of a curved fillet weld shall be measured along the center line of the effective throat. If the weld area of a fillet weld in a hole or slot computed from this length is greater than the area found from 2.3.3, then this latter area shall be used as the effective area of the fillet weld.

2.3.2.3 The minimum effective length of a fillet weld shall be at least four times the nominal size, or the size of the weld shall be considered not to exceed one fourth its effective length.

2.3.2.4 The effective throat shall be the shortest distance from the root of the face of the diagrammatic weld. See Appendix A. Note: See Appendix B for formula governing the calculation of effective throats for fillet welds in skewed T-joints. A convenient tabulation of measured legs (W) and acceptable gaps (G) related to effective throats (E) has been provided for dihedral angles between 60 deg and 135 deg.

2.3.3 Plug and Slot Welds. The effective area shall be the nominal area of the hole or slot in the plane of the faying surface.

2.3.4 The effective throat of a combination partial joint penetration groove weld and a fillet weld shall be the shortest distance from the root to the face of the diagrammatic weld minus 1/8 in. (3.2 mm) for any groove detail requiring such deduction (see Appendix A).

Part B
Structural Details

2.4 Fillers

2.4.1 Fillers may be used in

2.4.1.1 Splicing parts of different thicknesses.

2.4.1.2 Connections that, due to existing geometric alignment, must accommodate offsets to permit simple framing.

2.4.2 A filler less than 1/4 in. (6.4 mm) thick shall not be used to transfer stress but shall be kept flush with the welded edges of the stress-carrying part. The sizes of welds along such edges shall be increased over the required sizes by an amount equal to the thickness of the filler (see Fig. 2.4.2).

2.4.3 Any filler 1/4 in. (6.4 mm) or more in thickness shall extend beyond the edges of the splice plate or connection material. It shall be welded to the part on which it is fitted, and the joint shall be of sufficient strength to transmit the splice plate or connection material stress applied at the surface of the filler as an eccentric load. The welds joining the splice plate or connection material to the filler shall be sufficient to transmit the splice plate or connection material stress and shall be long enough to avoid overstressing the filler along the toe of the weld (see Fig. 2.4.3).

2.5 Partial Joint Penetration Groove Welds

Partial joint penetration groove welds subject to tension normal to their longitudinal axis shall not be used where design criteria indicate cyclic loading could produce fatigue failure. Joints containing such welds, made from one side only, shall be restrained to prevent rotation.

ATTACHMENT 2
interpretation 19
Page 3 of 5

G.A.L. Gage Co.

Post Office Box 23
2953 Hinchman Road
Stevensville, Michigan 49127
616-465-5750

November 23, 1982

Mr. Lee Hadick

c/o Hunter Corp.
P. O. Box 674
Byran, IL 61010

Subject: 72 Partial Sets Fillet Weld Gage
P. O. #265003

Dear Mr. Hadick,

The manufactures tolerance of the Fillet Weld Gage on your P. O. #265003 are within the .025± range.

The welding gage is intended for general dimensional inspection of welded fabricatcn where close tolerances are not ecpected. It should not be compared in precision with gages where a high degree of accuracy is required.

Sincerely,
G.A.L. Gage Co.

Goodwin A. Lycan
President

GAL/jkh

Interpretation 19 page 4 of 5
ATTACHMENT 3

G.A.L. Adjustable Fillet Weld Gage

MEASURE ANY FILLET WELD TO 1/32" ACCURACY WITH JUST ONE SIMPLE-TO-USE GAGE.

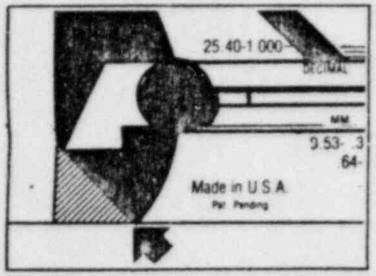
Measuring fillet welds used to be a trial with complicated or inaccurate gages. Not anymore. Now you can measure fillet welds from 1/8" to 1" (with ± 1/32" accuracy) with one economical, simple-to-understand gage.

The G.A.L. Adjustable Fillet Weld Gage uses an offset arm which slides at a 45° angle to make fillet weld length measurements. Simply adjust the arm until it touches the toe of the vertical leg. The gage is calibrated to 32nds, with metric equivalents given, so you get more accurate readings. Four screws hold the offset arm in position for future adjustments.

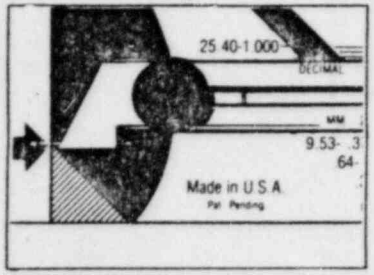
This gage also measures weld throat thicknesses to 1/32nds of an inch by adjusting a pointer until it touches the center of the weld. A thumb screw holds the pointer in position for future reference. If the weld is concave, more filler material can be added to build the weld throat up to standard.

The G.A.L. Adjustable Fillet Weld Gage is made of durable, rust resistant stainless steel. Its 2¼" x 3" slim design weighs only 1½ oz., fits easily into a shirt pocket. And because there is just one gage needed to make all measurements, the chance of losing essential fillet weld gage blades is eliminated. Fumbling through seven different, inaccurate gage blades is also eliminated.

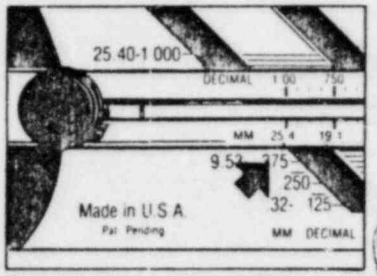
G.A.L. Adjustable Fillet Weld Gage is easy to use.



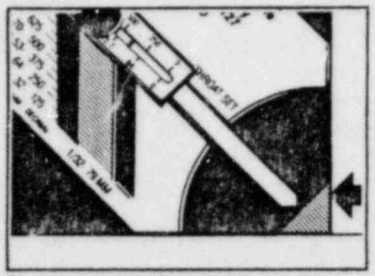
To measure fillet welds place irregular curve edge flush to horizontal toe of weld so the straight edge is in line with the horizontal member.



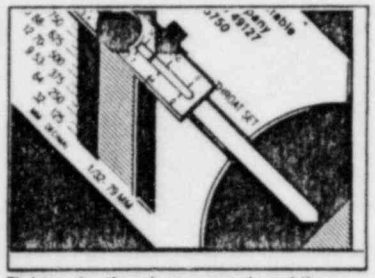
Adjust the offset arm up or down along the diagonal slots until the tip of the arm touches the top of the weld.



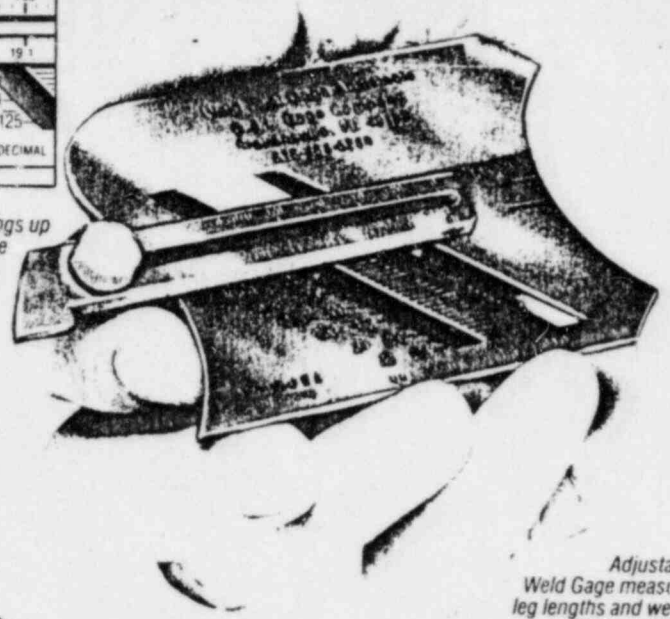
Read the weld size indicated. The increments are in 1/32" and 1/8" markings up to 1". All numerals are etched into the surface and filled for easier reading.



To measure weld throat thickness place the 45° angle end flush to the horizontal and vertical members. Loosen the thumb screw and slide the pointer until it touches the face of the weld.



Tighten the thumb screw and read the measurement from the 1/32" calibrations along the pointer. A quick, sure way to find convex or concave welds and to correct them with additional filler material to meet standards.



G.A.L. Adjustable Fillet Weld Gage measures both leg lengths and weld throat fillet weld thickness.

U.S. patents pending.
Gages available through your welding supply distributor, or contact:

G.A.L. Gage Co.

P.O. Box 23, Stevensville, Michigan 49127 Telephone 616/465-5750 TELEX 729453 GAL GAGE STVL

A-32

ATTACHMENT 4
Interpretation 19
Page 5 of 5

WELDING GAUGE

IMPORTANT NOTICE

The Welding Gauge is intended for general dimensional inspection of welded fabrications where close tolerances are not expected. It should not be compared in precision with gauges used for measuring machined components and, where a high degree of accuracy is required, machine shop type measuring instruments will need to be used.

The Welding Institute Abington Hall Cambridge CB1 6AL

01/80

Interpretation 20
Reinspection Program
1-25-84

Hatfield Electric Company

Byron Units 1 & 2

QA/QC Memorandum #1135

TO: Bob Klingler
FROM: J.D. Spangler
DATE: January 25, 1984
SUBJECT: NRC Reinspection

In HECo's Procedure 13AE, Rev. 0, Issue I, dated 2-8-79, which is used in the reinspection of Peter Lane. Paragraph 5.2 states that deviations from the requirements of the welding procedure will constitute unacceptability. In the welding Procedure 13AA, Rev. 0, Issue I, dated 6-1-78, paragraph 5.8.5, states that cracks or blemished cause by arch strikes should be ground to a smooth contour.

Could you please interpret the acceptance criteria and corrective action for arch strikes.

Action to be taken
if arc strike is
(1) on weld itself;
count as unacceptable
(2) on base metal only;
count as acceptable &
notify production to
grind to smooth
contour.
1-25-84

J Duane Spangler 1-25-84

Interpretation #1
Reinspection Program
RB Klingler
2-2-84 pg 1 & 2

HATFIELD ELECTRIC COMPANY

UNITS 1 & 2

QA/QC Memorandum #1148

TO: Bob Klingler
FROM: Daryl L. Heider
DATE: February 2, 1984

It has been brought to my attention that welds are being rejected for overwelding. Situations noted are:

1. Where a continuous weld has been made in place of stich welds.
2. Weld lengths in excess of detail requirements. Also these situations do not have any visual distortion.

Could you please interpret the acceptance criteria and corrective action for overwelding.

Daryl L. Heider

Daryl L. Heider

DLH/klh
cc: File 15.00

Action to be taken:
for items above
1. accept continuous weld in lieu of required stitch
2. accept excess weld lengths or extra welds over and above actual required.
if Δ's no visual distortion exists Δ weld quality is acceptable
RBK
2-2-84

Speed Letter

To BOB KLINGLER
CECO

From J. D. SPANGLER
HECO

Interp 21
Page 2 of 2

Subject INTERPRETATION #21 - NRC REINSPECTION

—No. 9 & 10 FOLD

MESSAGE

THERE WERE NO OVER WELDING CALLS BECAUSE OF NOT PER DETIAL ON ANY AUX STEEL CONNECTIONS. THESE CALLS PERTAINED TO CONDUIT HGRS WHERE THEY WERE ATTACHED TO THE EMBED

Date 3-14-84 Signed J D Spangler

REPLY

TNX

—No. 9 FOLD

—No. 10 FOLD

Date 3-14-84 Signed B Klingler

Wilson Jones Company
GRAPHIC FORM 44 902 2-FAN
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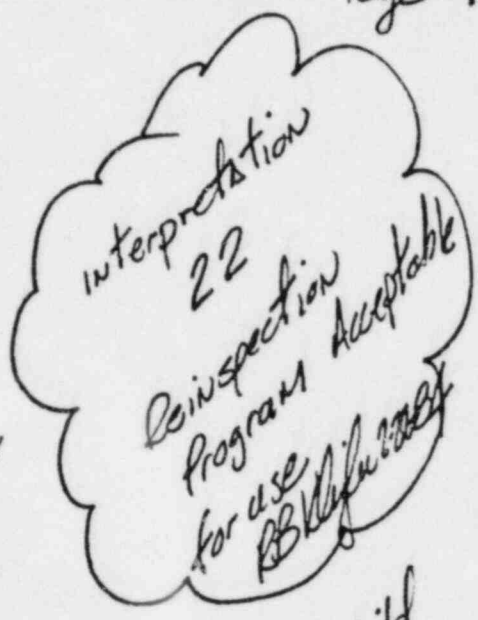
RECIPIENT—RETAIN WHITE COPY, RETURN PINK COPY



Hatfield Electric Company

Byron Units 1 & 2

QA/QC Memorandum #1170

Hatfield only

TO: R. Tueken/R. Klingler, CECo
FROM: J.T. Hill, QA Supervisor
DATE: February 18, 1984
SUBJECT: Tolerances on HP-9A-1 Supplement Sheets

I am inquiring as to what tolerances are allowed when grading HP-9A-1 Supplement Sheets (Cable Pan Hangers) used for the NRC Reinspection Program. Measuring criteria has changed since hangers in question were originally inspected.

JTH/klh
cc: File 15.00

Acceptable if repeat dimension within

Hangers

A : + or - 4"
B : Ref Only
C : + 2" - 8"
D - E - F - G between Horizontals are Reference Only Measurements
W : 5½"

INTERNAL DIAGONAL MEASUREMENTS

J.
K.
P.
Q
> + Or - 3"

Braces

J
K
E
F
T
> + Or - 6"

Location : Braced Hgr. + or - 2"
Unbraced Hgr. + or - 4"

Attachments shall Be As Specified

The above shall be used when grading Supplementary Information Sheet To Form HP-9A-1

R. Luethen
2/10/64

TUETKEN ATTACHMENT B

HATFIELD ELECTRIC
Attribute Inspection Summary

Procedure	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
#2	Embedded Conduit	Inaccessible	Encased in concrete
#3	Underground Duct Runs	Inaccessible	Encased in concrete, buried
#5	Material & Equipment Receiving	Not Recreatable	Physical condition changed by subsequent activities
#9A	Cable Pan Hangers	REINSPECTED	
#9B	Cable Pans	REINSPECTED	
#9C	Cable Pan Covers	Reinspectable, But No Inspections Captured	No Inspector Captured in Sample*
#9E	Cable Pan Identification	Reinspectable, But No Inspections Captured	No Inspector Captured in Sample*
#10	Cable Installation	Not Recreatable & Inaccessible	Pulling tension in-process event; initial raceway condition covered by cables; cables buried amongst others, to trace required disassembly to use signal generator
#11	Cable Terminations	REINSPECTED	
#12	Equipment Installation	REINSPECTED	
#12A	Equipment Modifications	REINSPECTED	
#12B	Non-Seg Bus Duct	Inaccessible & Not Recreatable	Requires disassembly to access
#13AE	Visual Weld Inspection	REINSPECTED	
#14	Material Handling	Not Recreatable	Inspections performed in process

*No inspectors being reinspected performed this type of inspection during the first three months of work.

HATFIELD ELECTRIC
Attribute Inspection Summary

Procedure	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
#20	Exposed Conduit	REINSPECTED	
#25	A325 Bolt Installation	REINSPECTED	
#26	Stud Welding	Inaccessible	Requires disassembly to access; Bonding adequate by Visual and Load Test
#27	Limit Switch Gasket Replacement	Not Recreatable	Affected switches subsequently replaced
#28	Removal of Heat Shrink Tubing On Conax Penetrations	Not Recreatable	Inspections performed in process
#30	Housekeeping	Not Recreatable	Ongoing activities change conditions
N/A	Conduit As Built	REINSPECTED	

HUNTER CORPORATION
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
(1) Visual Weld	Piping - Visual Weld Inspection	REINSPECTED	
(1) Visual Weld	Whip Restraint - Visual Weld Inspection	REINSPECTED	
(1) Visual Weld	Component Support - Visual Weld Inspection	REINSPECTED	

HUNTER CORPORATION
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
(2) Documentation	Piping - Mech. Jt. Documentation	REINSPECTED	
(2) Documentation	Ferrite Inspection Documentation	Not Recreatable	Inspector of record change because of re-review
(2) Documentation	Hydrostatic Test Documentation	REINSPECTED	
(2) Documentation	Weld Interpass Temp. Documentation	REINSPECTED	
(2) Documentation	Joules Test Documentation	Not Recreatable	Inspector of record change because of re-review
(2) Documentation	Code Name Plate Change Documentation	Not Recreatable	Inspector of record change because of re-review
(2) Documentation	Documentation of Weld Defect Removal Cavity	Not Recreatable	Inspector of record change because of re-review

HUNTER CORPORATION
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
(2) Documentation	Piping - Weld Documentation	REINSPECTED	
(2) Documentation	Whip Restraint - Weld Documentation	REINSPECTED	
(2) Documentation	Component Support - Weld Documentation	REINSPECTED	
(2) Documentation	Piping - Component Inspection Documentation	REINSPECTED	
(2) Documentation	Whip Restraint - Component Inspection Documentation	REINSPECTED	
(2) Documentation	Piping - Fitup Documentation	REINSPECTED	
(2) Documentation	Whip Restraint - Fitup Documentation	REINSPECTED	
(2) Documentation	Piping - Bend Documentation	REINSPECTED	
(2) Documentation	Component Support Inspection - Documentation	REINSPECTED	
(2) Documentation	Dimensional Location of Field Welds	REINSPECTED	

HUNTER CORPORATION
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
(2) Documentation	Buried Pipe Covering Inspection - Documentation	REINSPECTED	
(2) Documentation	Concrete Expansion Anchor - Documentation	REINSPECTED	
(2) Documentation	Piping - Pre-Heat Insp. Documentation	REINSPECTED	
(2) Documentation	Whip Restraint - Pre-Heat Inspection Documentation	REINSPECTED	
(2) Documentation	Pipe Weld - Shield Gas Documentation	REINSPECTED	
(2) Documentation	Component Support - Snubber Stroking Documentation	Not Recreatable	Inspector of record change because of re-review
(2) Documentation	Piping & Component Support, Temporary Attachments Documentation	REINSPECTED	
(2) Documentation	Bolting - Turn-of-Nut Documentation	Not Recreatable	Inspector of record change because of re-review

HUNTER CORPORATION
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
(2) Documentation	Piping - Small Bore Final Inspection (Type 3) Documentation	REINSPECTED	
(2) Documentation	Piping - Small Bore Final Inspection (Type 4) Documentation	REINSPECTED	
(2) Documentation	Whip Restraint - Final Inspection (Type 3) Documentation	REINSPECTED	
(2) Documentation	Whip Restraint - Final Inspection (Type 4) Documentation	REINSPECTED	
(2) Documentation	Piping - Large Bore Final Inspection (Type 3) Documentation	REINSPECTED	
(2) Documentation	Component Support - Final Inspection (Type 3) Documentation	Reinspectable, But No Inspections Captured	No Inspector captured in sample*
(2) Documentation	Component Support - Final Inspection (Type 4) Documentation	Reinspectable, But No Inspections Captured	No Inspector captured in sample*
(2) Documentation	Equipment Installation- Final Inspection (Type 3) Documentation	REINSPECTED	

*No inspectors being reinspected performed this type of inspection during the first three months of work.

HUNTER CORPORATION
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
(3) Hardware	Piping - Mech. Jt. Torque	REINSPECTED	
(3) Hardware	Visual Inspection of Valves	Inaccessible	Requires disassembly to access
(3) Hardware	Ferrite Inspection	Inaccessible	Inspections performed in process
(3) Hardware	Piping Hydrostatic Test	Not Recreatable	Inspections performed in process
(3) Hardware	Piping Weld Interpass Temperature Inspection	Not Recreatable	Inspections performed in process
(3) Hardware	Joules Test Inspection	Not Recreatable	Inspections performed in process
(3) Hardware	Code Name Plate Change	Not Recreatable	Inspections performed in process
(3) Hardware	Inspection of Weld Defect Removal Cavity	Not Recreatable	Cavities refilled
(3) Hardware	Piping - Component Inspection	REINSPECTED	
(3) Hardware	Whip Restraint - Component Inspection	REINSPECTED	
(3) Hardware	Piping - Fitup & Tack Weld	REINSPECTED (Limited Amount)	Inspections performed in process

HUNTER CORPORATION
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
(3) Hardware	Whip Restraint - Fitup & Tack Weld	Not Recreatable	Inspections performed in process
(3) Hardware	Piping - Bends	REINSPECTED	
(3) Hardware	Component Support Inspection	REINSPECTED	
(3) Hardware	Dimensional Location of Field Welds	REINSPECTED	
(3) Hardware	Component Support Torque	REINSPECTED	
(3) Hardware	Buried Pipe Covering Inspection	Inaccessible	Encased in concrete, buried
(3) Hardware	Concrete Expansion Anchor Inspection	REINSPECTED	
(3) Hardware	Piping - Pre-Heat Inspection	Not Recreatable	Inspections performed in process
(3) Hardware	Whip Restraint - Pre-Heat Inspection	Not Recreatable	Inspections performed in process
(3) Hardware	Pipe Weld - Shield Gas Verification	Not Recreatable	Inspections performed in process
(3) Hardware	Component Support - Snubber Stroking	Inaccessible	Requires disassembly to access

HUNTER CORPORATION
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
(3) Hardware	Piping & Component Support, Temporary Attachments	REINSPECTED	
(3) Hardware	Bolting - Turn-of-Nut	Not Recreatable	Inspections performed in process
(3) Hardware	Piping - Small Bore Final Inspection (Type 3)	REINSPECTED	
(3) Hardware	Piping - Small Bore Final Inspection (Type 4)	REINSPECTED	
(3) Hardware	Whip Restraint - Final Inspection (Type 3)	REINSPECTED	
(3) Hardware	Whip Restraint - Final Inspection (Type 4)	REINSPECTED	
(3) Hardware	Piping - Large Bore Final Inspection (Type 3)	REINSPECTED	
(3) Hardware	Component Support - Final Inspection (Type 3)	Reinspectable, But No Inspections Captured	No Inspector captured in sample*

*No inspectors being reinspected performed this type of inspection during the first three months of work.

HUNTER CORPORATION
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
(3) Hardware	Component Support - Final Inspection (Type 4)	Reinspectable, But No Inspections Captured	No Inspector captured in sample*
(3) Hardware	Equipment Installation	No Inspections Captured	No Inspector captured in sample*

*No inspectors being reinspected performed this type of inspection during the first three months of work.

PITTSBURGH TESTING LABORATORY
Attribute Inspection Summary

Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
CEA's - Blount CEA's - Hunter CEA's - Hatfield CEA's - P-A-P CEA's - RSM CEA's - JCI	Supports, Columns Piping, Hangers Conduit / Cable Pan Hangers Instrument Piping Hangers Ductwork Hangers Instrument Piping Hangers	REINSPECTED	
Rebar Detection - Blount Hunter Hatfield P-A-P RSM JCI	For Installation of CEA's	Not Recreatable	Requires disassembly to access
Bolting - Turn-of-Nut - Blount	Connections	Not Recreatable	Inspections performed in process
Calibrations - Blount Hunter Hatfield P-A-P RSM JCI NISCo Midway	Torque wrenches, Thermometers, Feeler Gauges, Scales, Gauges	Not Recreatable	Change of conditions from initial state

PITTSBURGH TESTING LABORATORY
Attribute Inspection Summary

1 Attribute Classification	Inspection Type	Reinspection Condition	Why Inaccessible/Not Recreatable
Calwelds - Blount	Rebar Coupling	Not Recreatable	Visual, Measure, Record Data QC-CWI-1
Soils - Blount	Back Fill	Not Recreatable	Compaction, moisture content, density, QC-ST-1
Concrete Field - Blount	Placement	Not Recreatable	Monitor pour, sample, slump, air, unit weight, mold specimens, temperature & sign off. QC-FSTC-1
Concrete Lab - Blount	Aggregate	Not Recreatable	Sample, run C-29, C-40, C-117, C-123, C-127, C-128, C-136, C-142, C-119, C-235 Monitor curling temps., Cap, Measure & Break Cubes. QC-LT-1
Visual Weld Inspection - Am. Bridge Mid-City Blount	Weld Inspection	REINSPECTED	